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November 19, 2025

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VIA E-FILING

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Office of Chief Counsel
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Public Record

Cynthia T. Brown, Chief
Section of Administration, Office of Proceedings
Surface Transportation Board
395 E Street, SW
Washington, DC 20423-0001

Re: CSX Transportation, Inc.—Petition for a Declaratory Order, Finance Docket No. 36886

Dear Ms. Brown,

Attached for filing in the above-referenced docket is CSX Transportation, Inc.'s Petition for Declaratory Order. The sum of $1,400, representing the appropriate fee for this filing, has been tendered electronically via Pay.gov.

Thank you for your assistance in this matter. Please contact me if you have any questions or need further information.

Respectfully submitted,

Michael K. Murphy
Attorney for CSX Transportation, Inc.

Enclosures

FEE RECEIVED
November 19, 2025
SURFACE
TRANSPORTATION BOARD

FILED
November 19, 2025
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BEFORE THE
SURFACE TRANSPORTATION BOARD

Finance Docket No. 36886

CSX TRANSPORTATION, INC.
PETITION FOR DECLARATORY ORDER

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Dated: November 19, 2025

BEFORE THE
SURFACE TRANSPORTATION BOARD

Finance Docket No. 36886

CSX TRANSPORTATION, INC.
PETITION FOR DECLARATORY ORDER

CSX Transportation, Inc. ("CSXT") respectfully requests that the Surface Transportation Board ("Board") issue a declaratory order finding that certain conditions in Maryland's operating permit requirements for CSXT's Curtis Bay Piers transloading facility are preempted by the ICC Termination Act ("ICCTA"), 49 U.S.C. § 10501(b). This Petition is brought pursuant to 5 U.S.C. § 554(e) and 49 U.S.C. § 1321(b)(4).

I. Introduction

In 2023, the Maryland Department of the Environment ("MDE") announced its intention to "'consider a new permit for the Curtis Bay coal terminal through the lens of environmental justice.'" Ex. 6. The Curtis Bay Piers ("Curtis Bay Piers" or the "Terminal") coal transloading facility in Baltimore has operated at the same site for over 100 years and was previously subject to reasonable permitting conditions that did not interfere with CSXT operations in an Air Quality State Permit to Operate issued in 2018, which CSXT applied to renew in 2023. After two years of review, MDE issued a final permit to operate on July 29, 2025, carrying through with its promise to apply an environmental justice viewpoint. *See* Ex. 5 ("'This is the most protective permit ever issued for this site, reflecting our commitment to environmental justice.'").

For CSXT to continue transloading operations, the renewed operating permit requires CSXT to construct a 100-foot-tall physical barrier surrounding all transloading coal piles at Curtis Bay Piers, and to do so on a timeline prescribed by the State of Maryland. Ex. 2, at 9–10 (Permit

Conditions, Part D, (1)–(3)); Ex. 1 ¶¶ 15–16. Specifically, permit conditions D(1)–(3) require CSXT to both "construct a windscreen" which "at a minimum surround[s] all coal storage piles," and then limit the "maximum coal pile height . . . at a level that is less than the height of the windscreen at all times." Ex. 2, at 9. CSXT is further required to "seek approval from [MDE] on the type of windscreen that it intends to use," and to "complete construction and place in operation the windscreen" "[w]ithin 18 months of [MDE's] approval." *Id.* at 9–10.

MDE's requirement to install an enormous windscreen completely surrounding and taller than the maximum height of the transloading coal piles—a form of fugitive dust control which is neither necessary to control fugitive dust from the Terminal's operations[1] nor used at any similar facilities in Maryland—will interfere with CSXT's rail operations at the Terminal both during construction and for as long as the windscreen must be maintained on site. *See* Ex. 1. Because the windscreen must be higher than the maximum height of the coal piles at all times, the windscreen would need to be at least 100 feet tall to accommodate operations and the site's footprint and topography. *Id.* ¶ 16. Given the space constraints at the Terminal and the proximity of the railroad tracks and other infrastructure to the coal storage piles, construction of a single windscreen or multiple windscreens as required by the permit would require other significant modifications to the Terminal to accommodate the operational constraints and safety hazards introduced by the barrier(s). *Id.* ¶¶ 18–19. Construction would require: (i) substantially curtailing Terminal activities, (ii) removing and relocating trackage, and, in the long run, (iii) reducing the

[1] The Terminal controls fugitive emissions through a sophisticated wet suppression system, covered conveyors, dumper sheds and other comprehensive dust control measures that are documented in a Fugitive Dust Control Plan enforceable by MDE. The dust control practices described in the Fugitive Dust Control Plan have proven effective in controlling fugitive dust emissions associated with the Terminal's coal transloading operations. Air monitoring data collected at the facility's fenceline further demonstrates that air quality surrounding the Terminal is satisfactory and particulate matter emissions are below health- and safety-based federal air quality standards. In fact, there have been no air permit violations in the last 25 years relating to the discharge of fugitive dust from the Terminal's coal storage areas. Ex. 3 at 2, 30, 39.

amount of coal that can be stored at the Terminal to ensure ongoing safe operations between the new barrier and the coal piles. The Part D permit conditions would force CSXT to modify critical portions of the Terminal at great expense to meet its common carrier obligations under federal law, pursuant to which CSXT must provide "transportation or service on reasonable request" to shippers. 49 U.S.C. § 11101(a).

MDE thus seeks to directly regulate CSXT's railroad activities, including the design, construction, operation, and maintenance of coal transloading facilities at Curtis Bay Piers. In issuing the permit, the state agency openly boasted that MDE is "holding CSX to a higher standard," an explicitly discriminatory, and thus preempted, act. Ex. 5.

CSXT is not asking the Board to find that the whole MDE permit is preempted by ICCTA, or even that most of the conditions are preempted. CSXT is not arguing that the conditions found in Part A (providing MDE unlimited access to the Terminal for inspection and sampling), Part B (requiring compliance with all applicable Maryland and federal air pollution control regulations), Part C (requiring compliance with certain monitoring and operational requirements), or Part E (recordkeeping and reporting requirements) are preempted. *See* Ex. 2, at 3–13. Rather, CSXT is challenging only Part D—requiring the construction of an unprecedented physical structure, with the structure's design and construction specifications, including the location within CSXT's property and the material, dictated and subject to approval by the State of Maryland—as preempted by the ICCTA, because it will unduly burden, interfere with, and discriminate against, rail transportation.

Under well-established Board and judicial precedent, MDE's requirement that CSXT construct and maintain an enormous physical structure at a height and location selected by MDE as a precondition for continuing to operate a transloading facility is preempted by Section 10501(b)

of the ICCTA. Accordingly, CSXT respectfully requests that the Board issue a declaratory order finding that conditions D(1)–(3) of the permit are preempted.

II. Board's Authority and Relief Sought

Under 5 U.S.C. § 554(e) and 49 U.S.C. § 1321, the Board may issue a declaratory order to terminate a controversy or remove uncertainty. The Board has broad discretion in determining whether to issue a declaratory order. *Grafton & Upton R.R.*, FD 35779, slip op. at 4 (Jan. 22, 2014) (citing *Bos. & Me. Corp. v. Town of Ayer*, 330 F.3d 12, 14 & n.2 (1st Cir. 2003) and *Delegation of Auth.—Declaratory Ord. Proc.*, 5 I.C.C.2d 675, 675 (1989)).

The Interstate Commerce Act ("ICA") is "among the most pervasive and comprehensive of federal regulatory schemes." *Chi. & N.W. Transp. Co. v. Kalo Brick & Tile Co.*, 450 U.S. 311, 318 (1981). As revised by the ICCTA, this Act provides that the jurisdiction of the Board over "transportation by rail carriers" is "exclusive." 49 U.S.C. § 10501(b). The statute defines "transportation" expansively to encompass any property, facility, structure or equipment "related to the movement of passengers or property, or both, by rail, regardless of ownership or an agreement concerning use." *Id.* § 10102(9)(A). Moreover, "railroad" is defined broadly to include "a switch, spur, track, terminal, terminal facility, freight depot, yard, and ground, used or necessary for transportation." *Id.* § 10102(6)(C). Section 10501(b) provides that "the remedies provided under [49 U.S.C. §§ 10101–11908] with respect to regulation of rail transportation are exclusive and preempt the remedies provided under Federal or State law."

As the Board and courts have observed, "[i]t is difficult to imagine a broader statement of Congress' intent to preempt state regulatory authority over railroad operations." *Tri-City R.R.*, FD 35915, slip op. at 5 (STB served Sept. 14, 2016) (citing *City of Auburn v. United States*, 154 F.3d 1025, 1030 (9th Cir. 1998)). The ICCTA broadly preempts state regulation of matters that

involve "transportation." 49 U.S.C. § 10102(9). This, of course, includes "transloading operations" where property transported by rail is moved to other modes of transport, such as trucks, ships, or barges. *Norfolk S. Ry. v. City of Alexandria*, 608 F.3d 150, 159 & n.11 (4th Cir. 2010); *see Green Mountain R.R. v. Vermont*, 404 F.3d 638, 644 (2d Cir. 2005) ("*Green Mountain*") ("transloading and storage facilities are integral to the railroad's operation and are easily encompassed within the Transportation Board's exclusive jurisdiction over 'rail transportation'"); *Grafton & Upton Ry. Co.*, FD 36696, slip op. at 9 (STB served Nov. 15, 2023) ("Transloading is part of 'transportation by rail carrier,' 49 U.S.C. § 10501(b)(1), and subject to the Board's exclusive jurisdiction, when performed or operated by, or under the auspices of, a rail carrier.").

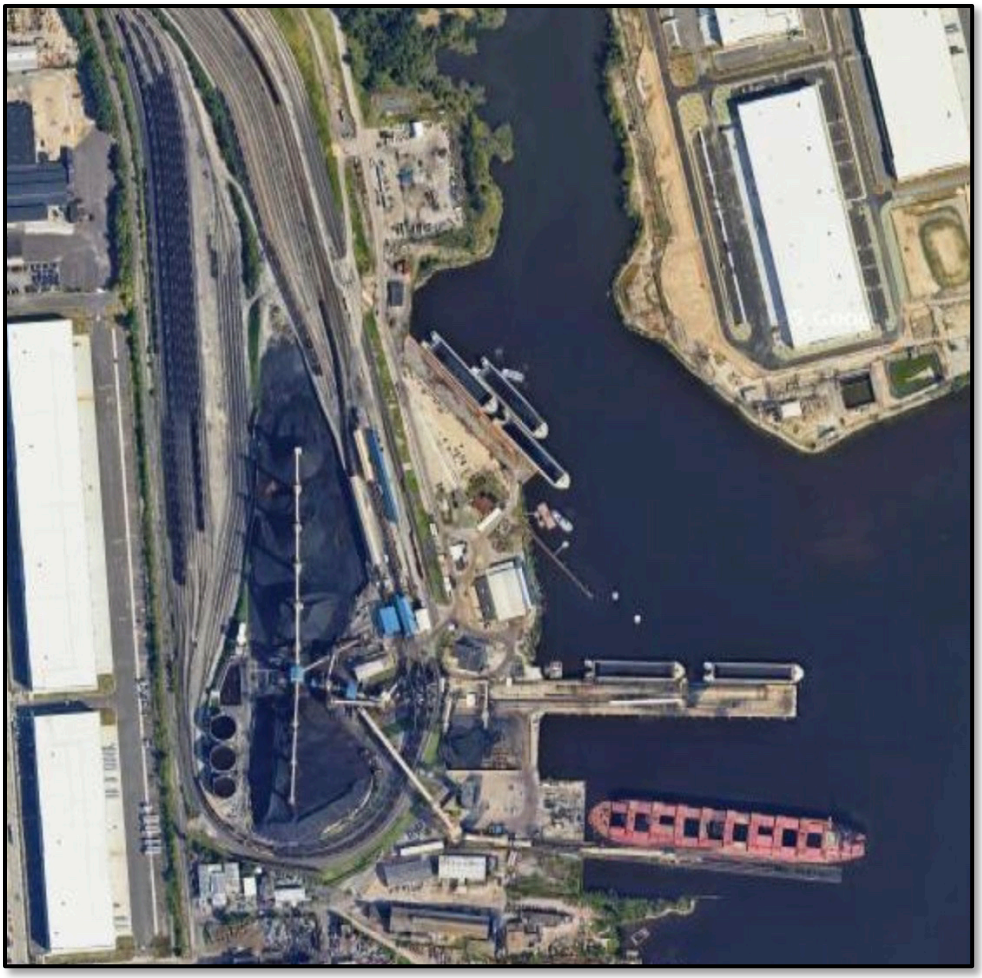
The Board should exercise its discretionary authority to issue a declaratory order finding that MDE's permit conditions are an impermissible attempt to regulate CSXT's rail transportation operations at the Terminal. Federal courts and the Board may both determine the issue of ICCTA preemption, but the "Board is 'uniquely qualified to determine whether state law . . . should be preempted' by the Termination Act." *Green Mountain*, 404 F.3d at 642 (quoting *CSX Transp., Inc. v. Ga. Pub. Serv. Comm'n*, 944 F.Supp. 1573, 1584 (N.D. Ga. 1996), *Medtronic, Inc. v. Lohr*, 518 U.S. 470, 496 (1996)).

III. Factual and Procedural Background

CSXT is a Class I rail carrier that operates railroad transportation facilities across 26 states east of the Mississippi River (including Maryland), the District of Columbia, and two Canadian provinces. Ex. 1 ¶ 2. As a common carrier, CSXT is required by federal law to provide "transportation or service on reasonable request" to shippers, including to coal shippers. 49 U.S.C. § 11101(a). Federal law gives the Board exclusive jurisdiction over rail transportation, *id.* § 10501(b), in part to protect common carriers like CSXT from a patchwork of state-by-state

regulations that would make operating interstate rail networks costly, burdensome, inefficient, impractical, and in many cases impossible. *See San Pedro Peninsula Homeowner's United Inc., et al.*, FD 36065, slip op. at 2 (STB served Mar. 6, 2017) ("The primary purpose of § 10501(b)'s broad preemption provision is to prevent a patchwork of state and local regulation from interfering with interstate commerce.").

CSXT owns and operates Curtis Bay Piers, located at 1910 Benhill Avenue, Curtis Bay, Maryland, 21226. Ex. 1 ¶ 3. The facility is located in the Curtis Bay Industrial Area, part of the Maritime Industrial Zoning Overlay District. *Id.* CSXT and its predecessors (going back to the Baltimore & Ohio Railroad) have operated the facility continuously for approximately 125 years for transloading—the process of removing coal from trains and loading it onto ships and barges that, in turn, deliver it locally and to ports around the world. *Id.* ¶¶ 3, 5, 7–9. An aerial view of the Terminal from Google Maps depicting the coal piles, piers, and rail track is provided below.



The facility plays a vital role in the national and international supply chain by removing coal[2]—mined primarily from the northern Appalachians—from the trains that bring it to the Terminal and transferring the coal to ships and barges that deliver it locally and to ports around the world. Ex. 1 ¶ 5. The Terminal specializes in "just-in-time" transfer of coal onto water vessels. Depending on cargo volume, coal quality, and origination point, a large percentage of coal arriving

[2] *See* E.O. 14261, *Reinvigorating America's Beautiful Clean Coal Industry and Amending Executive Order 14241*, 90 Fed. Reg. 15517 (Apr. 14, 2025) ("It is the policy of the United States that coal is essential to our national and economic security. It is a national priority to support the domestic coal industry by removing Federal regulatory barriers that undermine coal production, encouraging the utilization of coal to meet growing domestic energy demands, increasing American coal exports, and ensuring that Federal policy does not discriminate against coal production or coal-fired electricity generation.").

at the Terminal is transferred directly from railcars to oceangoing vessels or coastal barges. This has the benefit of reducing the need for long-term ground storage of coal. *Id.* ¶ 7.

Inbound coal shipments arrive via railcar and are offloaded using three railcar dumpers. The dumpers are housed in partially enclosed buildings designed to minimize potential fugitive dust emissions by blocking wind during railcar unloading. Inside the dumper buildings, the coal is sprayed with atomized water mist for dust suppression while hopper cars are rotated to drop the coal onto an underground conveyor. *Id.* ¶ 8. The coal moves from the dumpers around the Terminal through a network of aboveground and underground conveyors and is delivered either directly to outbound marine vessels at the pier or to one of nine temporary material storage areas before being loaded onto ships or barges. Separate inventory piles are maintained for customer and product variability. *Id.* ¶ 9.

MDE's new permit conditions will require CSXT to construct a more than 100-foot-tall windscreen surrounding the coal piles located in these nine temporary material storage areas due to the maximum height of the coal piles. *Id.* ¶ 16. The Terminal is engaged only in transloading, including incidental storage. It does not include any coal processing equipment and does not combust coal. *Id.* ¶ 12.

As required by Code of Maryland Regulations ("COMAR") 26.11.02.13A(38), CSXT operates Curtis Bay Piers pursuant to Maryland's air quality regulations. Ex. 3, at 37. Specifically, the Terminal is a minor source of particulate matter emissions and operates under Maryland State Permit to Operate No. 510-2263. *Id.* at 17 The stationary source subject to the Permit to Operate is the existing coal transloading facility. *Id.* The permit contains general conditions that apply to all State Permits to Operate and specific conditions that are particular to Curtis Bay Piers. *Id.* at 37. The permit requires CSXT to comply with applicable federal and state air pollution

regulations, many of which are aimed at controlling fugitive dust during operations, including visible emissions under COMAR 26.11.06.02C(2) (visible emissions standards from an installation or building); particulate matter emissions under COMAR 26.11.06.03C (particulate matter emissions from unconfined sources); and COMAR 26.11.06.03D (particulate matter emissions from materials handling). Ex. 3, at 37. To comply with these regulations, the Terminal uses a variety of dust control measures which are documented in an enforceable Fugitive Dust Control Plan accompanying the permit, which is drafted by CSXT and subject to MDE review and approval. Ex. 3, at 37. Having an MDE-approved Fugitive Dust Control Plan outside of the Operating Permit provides the Terminal with operational flexibility to make upgrades related to the prevention of fugitive dust without modifying the permit. *Id.* at 7 & n.32.

On July 18, 2023, CSXT applied to MDE to renew the Terminal's Permit to Operate, which had been issued October 1, 2018, and was set to expire September 30, 2023.[3] *Id.* at 2.

Rather than following the renewal process prescribed by the Code of Maryland Regulations for a minor source permit to operate, *see* COMAR 26.11.02, MDE developed an unprecedented permit renewal process for Curtis Bay Piers that is inconsistent with Maryland law, the Agency's published guidance, prescribed timelines for renewing state minor source permits to operate, and MDE's treatment of other permitted facilities. *See* Ex. 3, at 40–43.

MDE initially delayed issuance of the renewal permit by several months to allow additional time for citizens' groups opposed to the continued operation of the Terminal to complete a community-led air monitoring project. In December 2023, six months after CSXT submitted its

[3] CSXT submitted a timely and complete application for renewal of the State Permit to Operate on July 18, 2023. The 2018 State Permit to Operate has been administratively extended per COMAR 26.11.02.08B, which allows continued operation of a source pending final disposition on a renewal application (including for the duration of any administrative appeals).

permit renewal application, MDE announced the release of a community-led study that purported to show that coal dust from the Terminal is present in the Curtis Bay community. In a press release accompanying the community study, MDE announced its intention to have the study "lead the way as we consider a new permit for the Curtis Bay coal terminal through the lens of environmental justice."[4] Ex. 6.

On August 29, 2024, more than a year after CSXT submitted its renewal application, MDE made available for review and public comment a draft permit and scheduled a public meeting, despite the fact that no public meeting was required and that this procedure deviated from MDE's standard procedures.[5] The draft permit included unprecedented conditions requiring CSXT to construct a physical barrier to prevent coal dust from being transported from any coal storage piles on the site into the surrounding area. Similar to the final permit, the draft permit conditions required that the physical barrier completely "surround all coal storage piles" and be taller than the "maximum coal pile height . . . at all times." Ex. 2, at 9.

CSXT participated in the public meeting held on October 10, 2024, and submitted written comments on the draft permit (Ex. 3) on December 16, 2024. Among other objections, CSXT objected to MDE's requirements on the basis that the physical barrier conditions were preempted by the ICCTA. Ex. 3, at 6, 15–16, 28, 36–39. CSXT informed MDE that the draft permit condition requiring construction of a physical barrier gives MDE the power to approve operational decisions by imposing restrictions on the height of the coal piles, and so manages or governs rail

[4] Environmental justice is not a relevant factor for renewing a state minor source permit to operate under the relevant Maryland regulations. *See* COMAR 26.11.02.06C–D. MDE also performed an environmental justice screening, even though State Permits to Operate are not subject to them. Md. Code, Env't § 1-601.1(a).

[5] State Permit to Operate renewals are not subject to public notice, informational meetings, public hearings, or other public participation procedures under Maryland regulations. *See* COMAR 26.11.02.14E.

transportation, unreasonably burdens or interferes with rail transportation, and applies in a manner that discriminates against rail operations. *Id.*; *see Norfolk S. Ry. v. City of Alexandria*, 608 F.3d 150, 157–58 (4th Cir. 2010); *Ass'n of Am. R.R. v. S. Coast Air Quality Mgmt. Dist.*, 622 F.3d 1094, 1097–98 (9th Cir. 2007). CSXT also informed MDE that it is well settled that the ICCTA categorically preempts state or local permitting or preclearance requirements, including environmental and land use permitting requirements, that could be used to deny or unreasonably delay a railroad from engaging in rail and rail-related operations. *Green Mountain*, 404 F.3d at 643, 644 ("Notwithstanding the environmental goals of the legislation, Act 250's permitting process necessarily interferes with Green Mountain's ability to construct facilities and conduct economic activities.") (citation modified).

Nevertheless, on July 29, 2025, after a delay of 22 months, MDE issued the final permit,[6] requiring CSXT to install a specific type of physical barrier—a windscreen—that surrounds all coal storage areas and that is taller than the maximum height of the coal piles at all times. Ex. 2, at 9. It also requires CSXT to seek MDE approval for the type of windscreen it plans to construct, and to complete construction within 18 months of receiving MDE's approval. *Id.* at 9–10. In full, conditions Part D(1)–(3) are as follows:[7]

[6] CSXT is engaged in a contested case hearing before an Administrative Law Judge of the Maryland Office of Administrative Hearings, challenging Permit Conditions D(1)–(3) on ICCTA preemption grounds. OAH Case No. MDE-ARMA-012-25-25750. The Board does not need to wait for any further action by the State to issue a Declaratory Order regarding ICCTA preemption, because the "Board is 'uniquely qualified to determine whether state law . . . should be preempted' by the Termination Act." *Green Mountain*, 404 F.3d at 642 (quoting *CSX Transp., Inc. v. Ga. Pub. Serv. Comm'n*, 944 F.Supp. 1573, 1584 (N.D. Ga. 1996), *Medtronic, Inc. v. Lohr*, 518 U.S. 470, 496 (1996)); *see Diana Del Grosso, et al—Pet. for Decl. Ord.*, No. FD 35652, slip op. at *2 (STB served Dec. 5, 2014) (rejecting an administrative exhaustion requirement, because there is "no statutory provision or Board regulation requiring a party to exhaust state law remedies before seeking a declaratory order from the Board."), *overturned on other grounds by Grosso v. Surface Transportation Bd.*, 804 F.3d 110 (1st Cir. 2015).

[7] CSXT is not arguing that a water spraying requirement contained in Part D(4) is preempted.

Part D - Physical Barrier and Dust Control Requirements

(1) The Permittee shall construct a windscreen to minimize coal dust being transported from any coal storage piles on the site into the surrounding community. The windscreen must at a minimum surround all coal storage piles, either individually or in a single enclosure within the facility's property boundary, except where openings are needed to allow vehicular access into and out of the interior of the structure or where necessary to allow for the movement of coal into or out of the structure via conveyors or rail. The maximum coal pile height shall be maintained at a level that is less than the height of the windscreen at all times.

(2) Within 120 days following the issuance date of this Permit to Operate, the Permittee shall send a notification to and seek approval from the Department on the type of windscreen that it intends to use to satisfy the Part D(1) requirement of this Permit to Operate. The notification shall include revisions to the Fugitive Dust Plan applicable when the windscreen chosen to satisfy the Part D(1) requirement is in operation. Once approved by the Department the revisions will be incorporated into the Permit to Operate.

(3) Within 18 months of the Department's approval of the Permittee's windscreen, unless a different timeline is specified in the Department's approval, the Permittee shall complete construction and place in operation the windscreen required under the Part D(1) requirement of this Permit to Operate.

IV. Argument

MDE directly regulates CSXT's rail transportation and transloading operations at Curtis Bay Piers by mandating, as a condition of CSXT's continued operation, the construction of a physical barrier surrounding the coal piles that is at all times taller than the maximum height of the coal piles. Any action by state or local officials that "permits a non-federal entity to restrict or prohibit the operations of a rail carrier" is preempted. *City of Alexandria*, 608 F.3d at 158 (applying ICCTA preemption to regulations targeting a transloading facility moving ethanol from rail onto trucks). As such, permit conditions D(1)–(3) are preempted by the ICCTA under both a categorical and an as-applied analysis.

First, Section 10501(b) facially and categorically preempts "states and localities from imposing requirements that, by their nature, could be used to deny a rail carrier's ability to conduct rail operations." *Grafton & Upton R.R.*, FD 35779, slip op. at 4 (STB served Jan. 27, 2014). Categorical preemption is analyzed without requiring a factual analysis of [the state requirements']

effect on transportation." *Grafton & Upton R.R.*, FD 36696, slip op. at 6 (STB served Nov. 15, 2023). "Thus, state or local permitting or preclearance requirements, including building permits, zoning ordinances, and environmental and land use permitting requirements, are categorically preempted as to any facilities that are an integral part of rail transportation." *Grafton & Upton R.R.*, FD 35779, slip op. at 4 (STB served Jan. 27, 2014) (citing *Green Mountain*, 404 F.3d at 643). The windscreen requirement is categorically preempted as a permitting and preclearance condition because it gives MDE the power to "deny [CSXT's] ability to conduct rail operations." *Id.*

Second, even if not categorically preempted, the windscreen requirements are preempted as applied because they "would have the effect of unreasonably burdening or interfering with rail transportation." *Id.* (collecting cases). Courts routinely hold that ICCTA preempts local police powers where, as here, the exercise of those powers involves an open-ended process that, if left to the local authorities' discretion, could burden rail transportation activity. *See City of Alexandria*, 608 F.3d at 160 ("Although the Ordinance and Permit commendably seek to enhance public safety, they unreasonably burden rail carriage and thus cannot escape ICCTA preemption under the police power exception."). States "cannot use their police powers to indirectly regulate matters reserved to the Board," *Soo Line R.R.*, FD No. 35850, slip op. at 5 (STB served Dec. 23, 2014), and state regulations "must not have the effect of foreclosing or restricting the railroad's ability to conduct its operations or otherwise unreasonably burdening interstate commerce." *Borough of Riverdale*, FD 33466, slip op. at 6 (STB served Sept. 10, 1999).

The construction of the windscreen will result in severe disruption to facility operations, and presents a significant engineering challenge. Ex. 1 ¶ 16. It will unreasonably interfere with rail transportation at the Terminal because it will require a temporary shutdown or reduction in operations during construction and cause an ongoing disruption to existing coal storage and

handling operations. *See id.* ¶¶ 20–30; *e.g.*, *id.* ¶ 20 ("The coal storage areas, adjacent tracks, and coal piers themselves would likely need to be shut down for months to allow for construction"); *id.* ¶ 22 ("CSXT may need to stage trains outside of the facility and wait to unload them until the coal can be directly loaded into vessels. The fully loaded coal trains (which can reach lengths of 10,000 feet) would need to be held in other yards until they could be directly loaded into vessels. This process would create significant rail transportation impacts beyond Curtis Bay.")

Even after construction, the windscreen will unduly burden Terminal operations *permanently*, as it will result in a fixed cap on the Terminal's coal storage capacity, require relocation of existing aboveground and underground infrastructure to accommodate the windscreen's foundation and clearance, and have potential ongoing impacts to operational safety. *Id.* ¶ 28 ("Construction of a windscreen structure . . . would create significant safety hazards for workers at the Terminal."). States "cannot use their police powers to indirectly regulate matters reserved to the Board," *Soo Line R.R.*, FD No. 35850, slip op. at 5 (STB served Dec. 23, 2014), but may only enforce "generally applicable, non-discriminatory regulations" like "[e]lectrical, plumbing and fire codes" that have only an "incidental" effect on rail transportation. *Green Mountain*, 404 F.3d 638, 643. Here, MDE is effectively limiting the maximum amount of coal that can be stored at the Terminal, constraining transloading operations and CSXT's ability to meet rail customer needs. *Id.* ¶¶ 18, 23–24.

Third, MDE's requirements are explicitly discriminatory. Indeed, MDE's press releases have touted that the permit is "one of the most stringent in state history," and that MDE is "holding CSX to a higher standard." Ex. 5. CSXT is not aware of any other Maryland Permit to Operate which has required construction of a physical barrier taller than all material storage piles for material handling facilities, coal-fired power plants, or even other transloading facilities in

Maryland. Ex. 3, at 38. That includes the Consol Marine Terminal, which has similar coal piles and is also located within the Port of Baltimore. An ICCTA discrimination analysis does not require the level of fact-specific inquiry conducted during an as-applied analysis. *See Ass'n of Am. R.R. v. Hudson*, 144 F.4th 582, 591–92 (4th Cir. 2025) (describing discrimination analysis as proceeding either as-applied or as a "facial discrimination claim under the ICCTA."). "In practice, of course, many ICCTA discrimination claims *will* proceed on an as-applied basis," but a searching fact-specific inquiry is not required because "[a] state law that does not 'regulate' railroads is still impliedly preempted if it discriminates against rail carriers or unreasonably burdens rail transit; either one is enough[.]" *Id.* Permit conditions D(1)–(3)—and the process through which they were issued—treat CSXT transloading differently than similarly situated facilities and are thus preempted.

Finally, the permit conditions challenged here are state regulations, notwithstanding the fact that the Maryland Statewide Implementation Plan ("SIP") under the Clean Air Act incorporates relevant COMAR regulations. The windscreen requirement is a state law requirement that is subject to preemption analysis, not harmonization with ICCTA.

CSXT therefore respectfully requests that the Board issue a declaratory order finding that the MDE's permit requirements are preempted by the ICCTA, both categorically and as applied.

A. MDE's Permit Conditions Are Facially and Categorically Preempted by the ICCTA

Under Section 10501(b), two categories of state regulation are preempted "regardless of the context or rationale for the action." *Ass'n of Am. R.R.*, FD 36369, slip op. at 2 (STB served Dec. 29, 2020) (quoting *CSX Transp., Inc.*, FD 34662, slip op. at 3 (STB served May 3, 2005)). The categories are: first, state or local permitting or preclearance requirements that could be used to deny a railroad the ability to conduct some part of its operations or proceed with activities that

the Board has authorized, and second, state or local regulation of matters that are directly regulated by the STB. The permit implicates the first of these categories.

As the Board has long held, railroads are "exempt from traditional permitting and zoning processes," because "literal compliance with state or local laws often may be impractical in cases involving railroad facilities." *Bos. & Me. Corp. and Town of Ayer*, FD 33971, slip op. at 7 (STB served May 1, 2001). By its terms, and as interpreted by the Board and the courts, the ICCTA preempts MDE's requirement that CSXT construct a 100-foot-tall windscreen around the coal piles at its transloading facilities.

1. CSXT's Coal Transloading Operations Are Rail Transportation

CSXT's transloading and related operations are part of rail operations which fall within the preemptive scope of the ICCTA. "Such activity is not merely activity that economically benefits from being near a railroad. Rather, the loading, unloading, and temporary storage activities that comprise transloading indisputably facilitate the movement of property by rail and thus are part of 'transportation.'" *Grafton & Upton R.R.*, FD 36696, slip op. at 9 (STB served Nov. 15, 2023) (internal citations omitted). Transloading facilities and operations clearly "fit within the plain text of the Termination Act preemption clause." *N.Y. Susquehanna & W. Ry. Corp. v. Jackson*, 500 F.3d 238, 247 (3d Cir. 2007).

2. The ICCTA Categorically Preempts State Permit Requirements Like MDE's Permit Conditions

MDE's requirement that CSXT obtain a permit to operate the coal transloading facility, irrespective of the requirements, could "deny a rail carrier's ability to conduct rail operations." *Grafton & Upton R.R.*, FD 35779, slip op. at 4 (Jan. 22, 2014). It thus is categorically preempted as a precondition to operations. Applications of unsettled, ill-defined, uncertain, open-ended, discretionary, or subjective environmental regulations to railroads are preempted by the ICCTA.

Green Mountain, 404 F.3d 638, 645; *Vermont Ry. v. Town of Shelburne*, No. 2:16-CV-16, 2016 WL 3629081, at *10 (D. Vt. June 29, 2016).

CSXT has attempted to work in a collaborative fashion with Maryland regulators and the community, but permit conditions D(1)–(3) go well past the line of what the Board or the Courts have allowed states to require. The Board has explained that, because of the ICCTA's broad preemptive effect, local communities need to operate with "a certain degree of pragmatism," because they cannot directly regulate railroads; instead, "cooperation on the part of railroads is necessary to reach reasonable solutions to state and local concerns that do not unreasonably interfere with interstate commerce." *Bos. and Me. Corp. and Town of Ayer*, FD 33971, slip op. at 7 (STB served May 1, 2001).

> Examples of solutions that appear to us to be reasonable include conditions requiring railroads to (1) share their plans with the community, when they are undertaking an activity for which another entity would require a permit; (2) use state or local best management practices when they construct railroad facilities; (3) implement appropriate precautionary measures at the railroad facility, so long as the measures are fairly applied; (4) provide representatives to meet periodically with citizen groups or local government entities to seek mutually acceptable ways to address local concerns; and (5) submit environmental monitoring or testing information to local government entities for an appropriate period of time after operations begin.

Id. And, in fact, CSXT has previously made its "own determination" that some cooperation was reasonable. *Id.* ("[T]o the extent a railroad is willing to undertake an activity or restriction, the activity or restriction generally should be seen as reflecting the carrier's own determination that the condition is reasonable and will not unduly burden interstate commerce.") Here, MDE's physical barrier construction requirements go far beyond reasonable solutions or generally applicable building codes. *Id.*; *see Green Mountain*, 404 F.3d at 643 (generally applicable and objective regulations are not preempted).

For example, CSXT pursued each of the five solutions that the Board suggested in *Boston and Maine*, as CSXT explained in its comments to MDE on the draft permit. *See* Ex. 3, at 1–7.

- "CSX largely supports many of the conditions included in the draft PTO. The conditions in Part C (operating conditions) and Part E (recordkeeping conditions), for example, are consistent with CSX's existing permit obligations." Ex. 3, at 1.
- "CSX has listened to and recognizes the concerns raised by the South Baltimore Community Land Trust ('SBCLT'), the Community of Curtis Bay Association ('CCBA'), and others in the Curtis Bay community about the impact of dozens of industrial sources, including the Terminal, as well as heavy diesel truck traffic, on air quality in Curtis Bay." *Id.*
- "CSX is the first facility in Maryland to install and operate a fenceline monitoring system for particulate matter. This best-in-class system monitors [particulate matter] continuously at eight locations along the perimeter of the Terminal and publishes the data in real time to a public website, providing interested community members 24/7 access to information about current outdoor air quality conditions in the vicinity of the Terminal.[8] Fifteen months of fenceline monitoring data prove that particulate matter concentrations at the Terminal's fenceline are below 24-hour primary and secondary National Ambient Air Quality Standards ('NAAQS') set to protect sensitive individuals, including asthmatics, children, and the elderly." *Id.* at 1–2.
- "The Terminal's fenceline monitoring program was developed specifically to address environmental justice concerns in the community." *Id.* at 6.
- "The Terminal controls fugitive emissions through a sophisticated wet suppression system that uses real time weather data, covered conveyors, dumper sheds, telescoping chutes, and a southern boundary wind fence." *Id.* at 2.
- "Curtis Bay Piers has operated and continues to operate in compliance with its PTO, MDE-approved Fugitive Dust Control Plan, and the additional operating and monitoring conditions in the September 2022 Permit to Construct ('2022 PTC'). A 2022 analysis of toxic air pollutant ('TAP') emissions from the Terminal done in connection with the 2022 PTC demonstrated that all TAP emissions, including coal dust and silica emissions, are at levels that are protective of public health." *Id.* at 2.
- "The controls MDE now proposes would require CSX to undertake complex and costly construction projects, are technically and economically infeasible, and depart significantly from the monitoring and recordkeeping requirements typically included in a state PTO for a minor particulate matter source." *Id.* at 3.

Notably, since December 2023, CSXT has voluntarily sought to cooperate with MDE by continuing to enhance its dust control practices. CSXT has gone above and beyond Maryland's

[8] Curtis Bay Monitoring, available at https://www.csxcurtisbayfacts.com/monitoring/.

environmental justice requirements. Despite CSXT's continued cooperation and demonstrated commitment to addressing community concerns, MDE has not been satisfied.

Regulations can avoid preemption if they "are settled and defined, can be obeyed with reasonable certainty, entail no extended or open-ended delays, and can be approved (or rejected) without the exercise of discretion on subjective questions." *Green Mountain*, 404 F.3d at 643. The classic examples of permissible state regulations are "[e]lectrical, plumbing and fire codes," which are broadly applicable, well established, objective, and non-discriminatory. *Id.*

In contrast, MDE's approach to CSXT's Permit to Operate renewal has been the antithesis of such regulatory regimes. In issuing the permit, MDE has granted itself the right to grant "approval" for the windscreen. Ex. 2, at 9. This includes discretion over the final plans, the location on CSXT's property, the windscreen material porosity and selection, and the placement of openings to allow for vehicular access and the movement of coal by, into, or out of the windscreen structure via conveyors or rail. *Id.* This "exercise of discretion on a subjective question" is *exactly* the type of state regulation the ICCTA preempts. *Grafton & Upton R.R.*, FD 35779, slip op. at 4 (STB served Jan. 27, 2014) (quoting *Green Mountain*, 404 F.3d at 643). Nor has the permit renewal process had any "reasonable certainty"; instead, it has been riddled with "open-ended delays," and now explicitly requires "the exercise of discretion on subjective questions." *Green Mountain*, 404 F.3d at 643.

MDE's retention of sole discretion could be used to deny CSXT the ability to conduct some part of its rail and transloading operations, reserves to the State of Maryland some manner of decisional authority over rail operations, and could lead to further delays if MDE subjectively determines that CSX's plan is not sufficient and requires revision or alteration. *See Grafton & Upton R.R.*, FD 35779, slip op. at 5 (STB served Jan. 27, 2014) (regulations must "entail no

extended or open-ended delays"). Already MDE has extended and delayed the permit renewal for years to allow for an "extensive public engagement process that incorporated the findings of community-driven science" and proudly touted its "90-day public comment period . . . that was not required by law." Ex. 5. MDE ultimately issued the final permit more than two years after CSXT first applied. By comparison, the average time from application to issuance for a State Permit to Operate in Maryland is four months.[9]

State regulations that apply unsettled, ill-defined, uncertain, open-ended, discretionary, or subjective environmental regulations to railroads are preempted by the ICCTA. *See Green Mountain*, 404 F.3d 638, 645 (finding that Vermont's environmental land use statute mandating preconstruction permits "is necessarily preempted by the Termination Act"); *Vermont Ry. v. Town of Shelburne*, No. 2:16-CV-16, 2016 WL 3629081, at *10 (D. Vt. June 29, 2016) (state permit process that "'depends upon the discretionary rulings of a . . . local agency'" are preempted (citing *Green Mountain*)). The Board should find that MDE's subjective, discretionary permit condition for a windscreen is categorically preempted.

B. MDE's Permit Conditions Are Preempted by the ICCTA as Applied

If the Board finds (as it should) that permit conditions D(1)–(3) are categorically preempted, it need not conduct a fact-intensive as-applied preemption analysis.

State permit requirements are preempted as applied when they have the effect of unreasonably burdening or interfering with rail transportation. *Elam v. Kansas City S. Ry. Co.*, 635 F.3d 796, 807 (5th Cir. 2011). As-applied preemption analyses are based on the facts and circumstances of the regulation as applied to the rail carrier. *N.Y. Susquehanna & W. Ry. v. Jackson*, 500 F.2d 238, 253 (3d Cir. 2007). Regulations must also be "non-discriminatory" to

[9] Ex. 3, at 49–50.

avoid preemption. *Id.* at 254 ("[F]or a state regulation to pass muster, it must address state concerns generally, without targeting the railroad industry."). Non-discriminatory regulations are usually "subordinate outlays that all firms build into the cost of doing business." *Id*; *see Borough of Riverdale*, FD 33466, slip op. at 6 (STB served Sept. 10, 1999) ("while state and local government entities . . . may apply non-discriminatory regulation to protect public health and safety, their actions must not have the effect of foreclosing or restricting the railroad's ability to conduct its operations or otherwise unreasonably burdening interstate commerce.").

The permit conditions fail under all three tests: burden, interference, and discrimination. The requirement to construct an enormous windscreen on and around CSXT's transloading coal piles that is taller than the maximum height of the coal piles at all times will unreasonably interfere with rail transportation operations, will impose an undue burden on Terminal operations, and is applied in a discriminatory manner. Ex. 1 ¶¶ 15–16, 30.

These impacts will be felt both during construction, and for so long as the physical barrier exists at the Terminal.

1. Construction of the Windscreen Will Unreasonably Interfere With and Unduly Burden CSXT's Rail Transportation Operations at the Terminal

The construction of a windscreen taller than and surrounding the Terminal's coal piles will unreasonably interfere with rail transportation because it will require a temporary shutdown or reduction in operations at the Terminal. Ex. 1 ¶¶ 24–26. CSXT informed MDE of this in its comments on the draft permit, and hired expert engineering firms to evaluate enclosing the coal piles. Ex. 3, at 37–38; *see id.* at 205–34 (Arcadis memo); *id.* at 235–52 (HDR memo).

Construction of a windscreen would also affect the Marley Neck track that services local customers south of the Terminal and would impact their ability to receive products needed for their manufacturing processes. Ex. 1 ¶ 25. If rail customers are not able to receive their products by

rail along the Marley Neck track, those customers would need to receive their products by truck, leading to increased truck traffic in the area and increased shipping costs for those customers. *Id.* This would be disruptive both locally and regionally.

The Part D Conditions require that CSXT complete construction and place the windscreen in operation within an 18-month timeframe. In truth, the construction-period impact would exceed 18 months. When evaluating a similar requirement in the draft permit, CSXT's expert consultants concluded that MDE's 18-month timeframe is "infeasible," and construction, with the attendant impact on transloading capacity, would in fact be longer. Ex. 3, at 206. Efforts to meet MDE's 18-month timeframe could jeopardize both safety and the integrity of rail operations. *Id.*

This intrusive level of state regulation is impermissible under an ICCTA as-applied preemption analysis. *See CSX Transportation, Inc. v. City of Sebree, Kentucky*, 924 F.3d 276, 284 (6th Cir. 2019) ("The Ordinance could thus be used to deny CSX the ability to conduct its preferred method of maintenance both pretextually and indefinitely. Indeed, the Ordinance was used to deny CSX the ability to conduct maintenance. . . . Such an open-ended regulation is prohibited by the Termination Act.").

Because the permit conditions will interfere with and unduly burden the Terminal, the Board should find the windscreen requirement is preempted as applied.

2. Maintenance of the Windscreen Imposes Permanent Restrictions on the Terminal, Including Operating as an Upper Limit on the Quantity of Coal That the Terminal Can Store

Maintaining a 100-foot-tall windscreen to meet MDE's requirements, and which surrounds all of the coal piles as MDE requires, will permanently interfere with and unduly burden CSXT's transportation and transloading operations. *See* Ex. 1 ¶¶ 15–30. For example:

> CSXT's ability to enclose the coal piles with a windscreen is also constrained by the Terminal's lack of available space. The Terminal occupies a much smaller footprint than other coal terminals around the country. The total existing coal

> storage area at the terminal is less than 13 acres in size. Consequently, CSXT has already maximized the constrained layout for the throughput demanded by its common carrier rail and ocean vessel shippers. A windscreen surrounding the coal piles will disrupt the orderly process of coal transloading operations, impacting how coal is stored and transported, and would require further shrinking of the coal piles for operations to continue safely. While the permit provides allowances for openings to allow vehicle access, conveyors, and track, that does not mitigate the dramatic hardships imposed by construction and maintenance of the windscreen.

Id. ¶ 18. For years beyond the operational and safety impacts which will occur during construction, the windscreen will permanently change and limit CSXT's operations at the Terminal. *Id.* ¶ 26 ("The permanent reduction in storage capacity—due to the height restrictions imposed by the windscreen or the need to shrink the diameter of the coal piles for worker safety—may leave CSXT unable to meet the needs of its shippers."). It is not feasible for CSXT to build a windscreen with the requisite height and in the necessary location to meet MDE's permit requirement without permanently changing the Terminal's operations. *Id.* ¶ 23 ("If the facility's storage capacity is reduced due to the construction of the windscreen, CSXT will be forced to modify its operations in ways that are detrimental to its customers.").

The height and location of the windscreen are constrained by the feasibility of construction at the facility. It is not feasible for CSXT to build a compliant windscreen around the coal piles as they exist today without disrupting or relocating tracks, or without decreasing the size of the coal storage area to accommodate the necessary structural support. *Id.* ¶¶ 18–19, 22, 25 (describing impacts to track during and after construction).

Specifically, the required placement of the windscreen would unreasonably burden CSXT and limit the ability to maintain certain safety and transloading operations at the Terminal because it will limit the field of vision and create additional work hazards for the bulldozer operators operating around the coal storage piles. *Id.* ¶ 29. For example, workers at the Terminal would need to maneuver around the windscreen at all times. In *City of Lincoln*, the Board found that

ICCTA preempted state eminent domain authority over part of the railroad's right of way, because of the railroad's evidence that the exercise of such authority would "present a safety hazard" and "would not leave enough room for equipment used in track maintenance and in clearing derailments." FD 34425, slip op. at 4 (STB served Aug. 12, 2004).

So too here. The MDE-dictated location of the windscreen may inhibit future (but currently unanticipated) expansions, developments, or other rail transportation plans or needs. Given the pre-existing space constraints at the Terminal and the close proximity of the railroad tracks to the coal storage area, construction of the windscreen would necessitate other, significant modifications to the Terminal to accommodate the operational constraints and safety hazards created by the windscreen. Ex. 1 ¶¶ 25, 27–29; *see also* Ex. 3, at 38; *id.* at 205–34; *id.* at 235–52. This would require permanently and significantly limiting the size of the coal piles. Ex. 1 ¶¶ 21–26. This will impact and interfere with operations by limiting CSXT's ability to serve customers.

Further, the permanent presence of the windscreen would create significant safety hazards for workers at the Terminal. *Id.* ¶¶ 24–29. The coal piles cannot be stacked against a windscreen, which will require appropriate clearance area setbacks between the coal piles and the windscreen. *Id.* ¶ 24. Without appropriate clearance areas between the coal piles and the structure, bulldozers and other equipment could become trapped between the wall and the coal—which can be a life-threatening scenario. *Id.* ¶ 28. Designing the structure in such a way that creates a sufficient clearance zone between the edge of the pile and the wall will further reduce the diameter of the coal storage area and result in a substantial reduction in facility throughput. This would create a dangerous operational situation for employees that does not exist today. *Id.*

Compelling CSXT to construct a windscreen that satisfies permit conditions D(1)–(3) effectively limits the capacity of the coal yard, and CSXT's transloading operations, i.e., "rail transportation." 49 U.S.C. § 10501(b); *id.* § 10102(9).

In *City of Alexandria*, the Fourth Circuit found a city regulation prohibiting trucking of certain hazardous materials preempted where the evidence confirmed "the common-sense proposition that limiting the number of trucks that leave the Facility directly affects how many railcars can be unloaded." 608 F.3d at 158 (citation modified). Likewise, a windscreen that must at all times exceed the height of the coal pile will limit the footprint of the coal piles to allow for safe operations, which will limit the number of trains that can enter the Terminal to deposit coal, and the number of ships that can be loaded to depart. Ex. 1 ¶¶ 14, 26, 30.

This is a state-imposed regulatory limit on the transloading operations at the Terminal, because MDE requires CSXT to predetermine, now, the maximum quantity of coal the Terminal could ever store for the rest of time. Because CSXT has common carrier obligations that it cannot simply ignore, the decision made today may be insufficient if CSXT is asked to move coal above that limit in the future. *Id.* ¶¶ 23, 26. If the facility's storage capacity is reduced due to the construction of the windscreen, CSXT would be forced to modify its operations in ways that are detrimental to its customers. *Id.* ¶ 26.

Consider, for example, an emergency at the Port during which time coal cannot be shipped from the Terminal at a rate sufficient to maintain the coal stockpile below the height of the windscreen. This is not theoretical: after the collapse of the Francis Scott Key Bridge in February 2024, the Terminal was largely shuttered for two months because ships could not access it.[10] If

[10] *See, e.g.*, https://www.csx.com/index.cfm/about-us/csx-reopens-curtis-bay-coal-piers-after-tragic-francis-scott-key-bridge-collapse/.

CSXT's rail transportation customers nevertheless continued to request shipments of coal by rail to Curtis Bay, CSXT would be unable to unload those deposits onto the coal pile, lest CSXT violate the permit requirements by exceeding the windscreen's height. In turn, that could cause a backup in rail traffic, or require CSXT to contravene the permit condition that "[t]he maximum coal pile height shall be maintained at a level that is less than the height of the windscreen at all times." Ex. 2, at 9.

Because the windscreen requirement would impose an effective limit on the quantity of coal that could be stored at the Terminal, as well as interfering with and burdening rail transportation, the Board should find that the windscreen requirement is preempted as applied.

3. The Windscreen Permit Conditions Are Discriminatory Against Rail

MDE's requirements are discriminatory against rail, directly targeting CSXT's rail and transloading operations. That is independently sufficient to trigger preemption. CSXT is not aware of any other Maryland Permit to Operate which has required construction of a physical barrier taller than all material storage piles for material handling facilities, coal-fired power plants, or other transloading facilities in Maryland. In addition, MDE's press releases have touted the permit as "one of the most stringent in state history" and have emphasized that Maryland is "holding CSX to a higher standard." Ex. 5. As CSXT noted in its comments to the draft permit, "MDE has pointed to no precedent for imposing this type of enclosure requirement on another facility, railroad or non-railroad, and CSX is aware of none." Ex. 3, at 38.

The windscreen is a novel approach to air pollution control by MDE, not applied to any other operator in Maryland, including the Consol Marine Terminal, which has similar coal piles across the Patapsco River. As such, it is a discriminatory, differing standard which will interfere with CSXT's ability to uniformly operate its rail lines, which in turn will adversely affect the movement of freight through the Terminal. MDE's own publicly stated justification for the

windscreen, and the actions of community and outside activists, demonstrate that CSXT is being singled out as a rail carrier.[11]

In *New York Susquehanna & Western Railroad v. Jackson*, 500 F.3d 238 (3d Cir. 2007), the Third Circuit considered the non-discriminatory prong of the as-applied analysis.

> The non-discriminatory prong is particularly useful in determining whether a state is regulating principally to discriminate against a specific industry. Much of the Board's logic in finding that standard building, fire, and electrical codes are not preempted is that, while the costs of compliance may be high in some sense, *they are "incidental" when they are subordinate outlays that all firms build into the cost of doing business*. *See Riverdale*, 1999 WL 715272, at *6. Thus, for a state regulation to pass muster, it must address state concerns generally, without targeting the railroad industry.

Id. at 254 (emphasis added). The Court of Appeals for the Fourth Circuit recently analyzed discrimination-based preemption as a standalone basis for ICCTA preemption, which can be conducted with or without factual inquiry. *Ass'n of Am. R.R. v. Hudson*, 144 F.4th 582, 591–92 (4th Cir. 2025).

> The district court doubted that the preemption doctrine's "anti-discrimination prong" could be a standalone basis for implied preemption, noting that our decisions in *PCS Phosphate* and *Edwards* identified only the "unreasonable interference" prong in describing ICCTA implied preemption. *AAR*, 2024 WL 1626105, at *13 n.10. But that is because the plaintiffs in *PCS Phosphate* and *Edwards* raised only "unreasonable interference" claims; neither plaintiff alleged discrimination, so in neither case was there occasion to discuss it. *See PCS Phosphate*, 559 F.3d at 214; *Edwards*, 983 F.3d at 122. And our reasoning in *City of Alexandria*, 608 F.3d at 160—state laws that either discriminate against or unduly burden railroads fall outside the scope of permissible police powers under the ICCTA—is consistent with a consensus among the courts, with which the Surface Transportation Board agrees. *See Green Mountain*, 404 F.3d at 643; *N.Y. Susquehanna*, 500 F.3d at 253–54; *Adrian & Blissfield R.R. Co. v. Vill. of Blissfield*, 550 F.3d 533, 541 (6th Cir. 2008); *Delaware v. Surface Transp. Bd.*, 859 F.3d 16, 18–19 (D.C. Cir. 2017); *CSX Transp., Inc.*, 2005 WL 584026, at *8 (S.T.B. Mar. 14, 2005).

Ass'n of Am. R.R. v. Hudson, 144 F.4th at 592 & n.6.

[11] It is also true that the windscreen is not necessary to achieve the air quality levels applicable to the Terminal.

Here, MDE has made clear that it is targeting CSXT alone. "We are holding CSX to a higher standard by requiring an enclosure to control dust . . . . This is the most protective permit ever issued for this site, reflecting our commitment to environmental justice." Ex. 5. MDE cannot dispute that the permit discriminates against rail transportation. MDE expanded an ordinarily simple process to renew a State Permit to Operate into a full-blown community-led environmental justice examination of Curtis Bay Piers.

MDE acknowledged in its response to community comments its true goal, saying MDE "lacks the legal authority or basis to shut the facility down or to deny the permit renewal application as long as requirements applicable to the facility's operation are met." Ex. 4, at 7. This was because community and outside activists used MDE's improperly expanded process to argue against the continued operations of the Terminal. Lacking the power to directly shut down the Terminal, MDE instead expanded its administrative process beyond its authority to draw out the process for CSXT at great expense of time and resources, imposed a windscreen requirement intended to burden and curtail CSXT's operations, and promised the community members that CSXT would pay. *Id.* at 10 ("Also, if a financial penalty is being sought as part of an enforcement action, consideration is given to the use of a Supplemental Environmental Project as a means to *ensure a portion of any penalty dollars secured by the Department benefit the community directly*.") (emphasis added).

Because the permit requirements apply solely to CSXT's transloading facilities, and similar requirements have not been imposed on any other similar operator or other forms of material storage piles in the State of Maryland, the permit "discriminate[s] against railroad operations." *N.Y. Susquehanna*, 500 F.3d at 253. The Board surmised in *Boston and Maine and Town of Ayer* that the town appeared to be using federal water statutes "as a pretext to do what Congress

expressly precluded: interfere with interstate commerce by imposing a local permitting or environmental process as a prerequisite to the railroad's ability to conduct its operations." FD 33971, slip op. at 6 (STB served May 1, 2001). The Board concluded that because the town's "actions do not appear needed to carry out the [Safe Drinking Water Act] or the [Clean Water Act], we agree" that the "pre-construction approval process [is] preempted." *Id.* at 7. Here too, MDE's requirements are not necessary to carry out any statutory requirements. Instead, the windscreen will be a material outcome of an environmental justice decision, impacting efforts to revitalize the coal industry. It will physically represent the conflict between state environmental policy and orderly, federally regulated, rail transportation, situated less than 50 miles from the federal capital.

Because the permit renewal process and the requirements for a windscreen have been and are being discriminatorily applied to rail transloading operations, the Board should find that the windscreen requirement within the State Permit to Operate process is preempted as applied.

C. Harmonization Is Not Required Because the Windscreen Requirement Is Not Federal Law

MDE has suggested that its State Permit to Operate is incorporated into federal law because it is authorized by a state regulation that is incorporated by reference in Maryland's Statewide Implementation Plan (SIP). But CSXT is *not* arguing that the ICCTA categorically preempts all of Maryland's COMAR air regulations or Maryland's SIP, into which the U.S. EPA incorporated by reference the COMAR regulations. *See* 42 U.S.C. § 7410; 40 C.F.R. § 52.1070 (Maryland SIP). A State's SIP contains measures to ensure it meets air quality standards, including approval for enforcement of certain control measures. 42 U.S.C. § 7410(a)(1), (a)(2).[12]

[12] Notably, Maryland's SIP does not contain approval to impose windscreen requirements as a control measure at any facility.

Rather, CSXT is challenging Maryland's specific inclusion of conditions D(1)–(3) in the Curtis Bay State Permit to Operate as preempted by ICCTA. These permit conditions are not somehow federalized just because COMAR regulations are incorporated by reference in the Maryland SIP. For example, other Maryland source-specific requirements from MDE permits and orders *are* incorporated into the SIP by the EPA.[13] CSXT's permit to operate is not. And even if that absurd result—that all permits issued in accordance with a state's SIP were federal law which required harmonization with ICCTA—were true, the windscreen requirement here cannot be harmonized with ICCTA. *See, e.g.*, *In re Volkswagen "Clean Diesel" Mktg., Sales Pracs., & Prods. Liab. Litig.*, 264 F. Supp. 3d 1040, 1047–48 (N.D. Cal. 2017) ("These holdings undeniably support that EPA-approved SIPs have a status different from traditional state law. But it may be more accurate to characterize SIPs as having characteristics of both state and federal law. After all, Wyoming drafted and proposed the SIP, not Congress or EPA, and Wyoming's tampering and concealment provisions remain in the State's Rules and Regulations.").

1. State Permit Conditions Are Not Federal Law Unless Incorporated into a Statewide Implementation Plan

Maryland's generally applicable particulate rule, COMAR 26.11.06.03, is incorporated by reference into Maryland's SIP, but conditions D(1)–(3) of CSXT's permit to operate are state-specific requirements dictating that the Terminal must construct and maintain a windscreen, a specific operational requirement which is not included, referenced, or even contemplated by the SIP. These conditions are not dictated by (or necessary to attain) federal emission standards, and are therefore not federal requirements.

[13] *See* EPA Approved Maryland Source-Specific Requirements (last accessed Oct. 30, 2025), available at https://www.epa.gov/air-quality-implementation-plans/epa-approved-maryland-source-specific-requirements.

The U.S. EPA's approval of a state's SIP incorporates it by reference into federal law in 40 C.F.R. Part 52. The reference in that Part to COMAR 26.11.06.03 does not automatically convert every subsequent state permitting decision or facility-specific condition brought pursuant to that state regulation into a federal law. *See, e.g.*, *Dep't of Fin. v. Comm'n on State Mandates*, 378 P.3d 356, 370 (Cal. 2016), *as modified on denial of reh'g* (Nov. 16, 2016) ("In issuing the Permit, the Regional Board was implementing both state and federal law and was authorized to include conditions more exacting than federal law required. It is simply not the case that, because a condition was in the Permit, it was, *ipso facto*, required by federal law." (internal citations omitted)).

Only state regulations and requirements specifically incorporated into the SIP have the force and effect of federal law. *Ass'n of Am. Railroads v. Randolph*, No. 2:23-CV-01154, 2024 WL 4347408, at *13 (E.D. Cal. Sept. 30, 2024) (In *AAR*, the Ninth Circuit "reasoned that the rules did not have the force and effect of federal law, *even if they might if incorporated into California's EPA-approved SIP* in [the] future and found no harmonization between the CAA and ICCTA was necessary." (emphasis added)). And here, the Terminal is in compliance with the relevant SIP requirements for attainment of particulate matter. Ex. 3, at 20–23; *id.* at 38 (Trinity Memorandum) (The Terminal "is also in compliance with the applicable visible emissions regulations in COMAR 26.11.06.02 and PM requirements in COMAR 26.11.06.03. This suggests PM control measures currently in place at the facility are adequate.").

This has two natural consequences. First, if a permit condition merely reflects a state agency's discretionary application of a SIP, that condition remains state law unless and until the EPA approves and incorporates it by reference into the state's SIP. Second, if harmonization is required, unless and until there is incorporation of that condition into the SIP, the federal law to

"harmonize" with ICCTA is the SIP provision itself setting an air standard (the approved COMAR rule), not the individualized permit condition issued pursuant to that state rule.

The incorporation by reference of Maryland's generally applicable regulatory authority to regulate air emissions into federal law does not transform every State Permit to Operate requirement issued thereafter—including MDE's windscreen requirement—into a federal law to be "harmonize[d]" with the ICCTA. *Ass'n of Am. Railroads v. S. Coast Air Quality Mgmt. Dist.*, 622 F.3d 1094, 1097, 1098 (9th Cir. 2010) (finding state regulations being challenged had not been submitted to or approved by the EPA, so did not have the force and effect of federal law, and therefore state agencies must enforce them "in a way that does not unreasonably burden railroad activity"). Otherwise, thousands of state permits around the country, which the U.S. EPA has never seen or approved, would be federal law and shielded from preemption under scores of federal laws which explicitly preempt state laws. That would be an absurd result. As the Ninth Circuit recently noted:

> As our opinion in *AAR* illustrates, it is the EPA's approval of statewide plans that imbues local environmental regulations with the force of federal law. In *AAR*, we were tasked with determining whether a California district's state air quality rules were preempted by the ICCTA. 622 F.3d at 1096. We first considered whether the district's rules, which purported to implement the CAA's regulatory scheme, were exempt from ICCTA preemption as "federally recognized regulations" capable of harmonization with the ICCTA. *Id.* at 1098 (discussing *Town of Ayer*, 2001 WL 458685, at *5). We held that the district's rules did not have the force and effect of federal law because the EPA had not yet approved them. *Id.* ("[U]ntil approved by the EPA, state implementation plans do not have the force and effect of federal law.").

*BNSF Ry. v. Clark Cnt*y, 11 F.4th 961, 968 (9th Cir. 2021).

And while "EPA-approved SIPs have a status different from traditional state law," "it may be more accurate to characterize SIPs as having characteristics of both state and federal law." *In re Volkswagen "Clean Diesel" Mktg., Sales Pracs., & Prods. Liab. Litig.*, 264 F. Supp. 3d 1040, 1047–48 (N.D. Cal. 2017). Because the state "drafted and proposed the SIP, not Congress or

EPA," the state's regulations "remain in the State's Rules and Regulations." *Id.* Federal enforceability does not vault a SIP into a co-equal provision of federal law with ICCTA.

A windscreen is not required to meet any federally enforceable standard in Maryland, and therefore MDE's Conditions D(1)–(3) are state regulations preempted by ICCTA. *See, e.g.*, *Dep't of Fin.*, 378 P.3d at 369–70 ("[T]he Regional Board was not required by federal law to impose any specific permit conditions. The federal CWA broadly directed the board to issue permits with conditions designed to reduce pollutant discharges to the maximum extent practicable. But the EPA's regulations gave the board discretion to determine which specific controls were necessary to meet that standard. . . . Here, the State was not compelled by federal law to impose any particular requirement.").

CSXT is not arguing that the Terminal is exempt from the Maryland SIP or that it can ignore federal air quality standards. But the Terminal is—and has for 25 years been—in compliance with the applicable federal standards. Ex. 3, at 178 ("The data collected to date demonstrate compliance with the 24-hour NAAQS for both PM10 and PM2.5."). Rather, CSXT is arguing only that MDE cannot discretionarily impose a windscreen requirement that will drastically alter operations at the Terminal under the guise of enforcing air quality regulations. The permit condition is not federal law that needs to be harmonized with ICCTA; it is a discretionary state regulation that is analyzed under the preemption analysis set forth above.

2. Even if the Permit Requirement Were Federal Law, It Cannot Be Harmonized with ICCTA

SIP-implemented rules that manage or govern rail transportation are not protected from preemption. *Randolph*, 2024 WL 4347408 at *12–13 (discussing the harmonization discussion of *United States Env't Prot. Agency—Petition for Declaratory Ord.*, FD 35803, 2014 WL 7392860, slip op. at 8–9 (STB served Dec. 30, 2014)). Even if considered federal law, MDE's inclusion of

the windscreen requirement would still be, at a minimum, preempted because it imposes an unreasonable burden and interferes with CSXT's rail transportation operations and alters the Terminal's rail configuration.

Even if harmonization were required here, the Board could "giv[e] effect to both laws," *AAR*, 622 F.3d at 1097, by finding that Maryland's SIP and the COMAR regulations incorporated by reference are not preempted and that the Terminal must meet the air quality standards they require. That is, the law to be harmonized is the applicable SIP, not the issued permit conditions. Accordingly, the Board would find that MDE's specific regulatory choice to include a windscreen condition in CSXT's permit may not be applied to the Terminal because it will unreasonably burden and interfere with rail transportation. *Randolph* confirms that even where harmonization is required, state action is preempted unless it "is being applied so as to not unduly restrict the railroad from conducting its operations, or unreasonably burden interstate commerce." 2024 WL 4347408, at *12 (citing *Bos. & Me. Corp. and Town of Ayer*, FD 33971, slip op. at 6 (STB served May 1, 2001)). ICCTA need not give way to a state requirement to install a windscreen, because harmonization does not require deference to regulations that would unreasonably burden or interfere with rail transportation. Just the opposite.

As discussed in detail above, *supra* Section IV.B, the windscreen condition unreasonably burdens and interferes with rail transportation. It will cap the coal-pile heights and constrain Terminal safety and operations. It will severely disrupt rail and transloading operations during construction, and permanently alter how the Terminal is laid out and run (including stockpiling operations, safety and maintenance, and coal throughput). Under the Board's precedent, the windscreen requirement is preempted either categorically or as applied.

V. Conclusion

For the reasons discussed above, CSXT respectfully requests that the Board issue a declaratory order finding that MDE's permit requirement that CSXT construct a windscreen surrounding its transloading facilities is preempted by the ICCTA.

Respectfully submitted,

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Dated: November 19, 2025

Certificate of Service

I hereby certify that I have caused the Petition for Declaratory Order of CSX Transportation, Inc. to be served upon counsel for the Maryland Department of the Environment by email:

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BEFORE THE
SURFACE TRANSPORTATION BOARD

Finance Docket No. 36886

CSX TRANSPORTATION, INC.
PETITION FOR DECLARATORY ORDER

EXHIBIT 1

Declaration of Aleek Young, Terminal General Manager, Curtis Bay Piers Regarding Operational Impact of Permit Conditions

DECLARATION OF ALEEK YOUNG

1. My name is Aleek Young, and I currently serve as the General Manager, Coal and Ore Terminals at CSX Transportation, Inc. ("CSXT"). I am based in Baltimore, Maryland and manage terminal operations at Curtis Bay Piers in Baltimore, Maryland and Toledo Docks in Toledo, Ohio. I have been employed at Curtis Bay Piers since 2019 and became General Manager in 2021. I oversee approximately 120 employees. I previously served as Terminal Trainmaster, Line of Road Trainmaster, Assistant Superintendent, Terminal Manager Superintendent, Terminal Manager of Coal, and General Manager of Coal and Ore and have been with CSXT for 24 years. As General Manager Coal and Ore Terminals, I have significant experience with all aspects of CSXT's operations, from managing the freight network that brings coal into the facility through loading the coal onto outgoing vessels. I am also knowledgeable regarding the aboveground and underground infrastructure at Curtis Bay Piers.

2. CSXT is a Class I rail carrier and operates railroad transportation facilities across 26 states, including Maryland. CSXT serves more than 70 ocean, river, and lake ports in the United States and Canada, including multiple locations in the Port of Baltimore.

3. CSXT owns and operates two terminals to support coal and iron ore movements, including Curtis Bay Piers ("Curtis Bay Piers" or the "Terminal"), located at 1910 Benhill Avenue, Curtis Bay, Maryland, 21226. The facility is located in the Curtis Bay Industrial Area, part of the Maritime Industrial Zoning Overlay District. Curtis Bay Piers is a dry materials storage, transfer, and shipment terminal that has been located in Curtis Bay, Baltimore since 1900 and has operated continuously for the last 125 years.

4. CSXT employs approximately 918 Marylanders and supports an overall port system of nearly 140,000 local jobs, including family-owned businesses in Curtis Bay that work on our piers.

5. The facility plays a vital role in the national and international supply chain by removing coal—mined primarily from the northern Appalachian—from the trains that bring it to the Terminal and transferring it to ships and barges that deliver the coal locally and to ports throughout the world.

6. This declaration will address (A) an overview of coal handling and storage operations at Curtis Bay Piers, (B) CSXT's common carrier obligations to its customers, (C) the impact of constructing a windscreen on short-term and long-term facility operations, (D) safety hazards associated with construction of a windscreen, and (E) the potential impact of a temporary shutdown or permanent reduction in throughput on the Terminal, the CSXT network, and the global supply chain.

A. Overview of Operations at Curtis Bay Piers

7. Curtis Bay Piers specializes in "just-in-time" transfer of coal into water vessels. Depending on the cargo volume size, coal quality and origination point, a large percentage of coal arriving at Curtis Bay Piers can go directly from the rail cars to an ocean-going vessel or coastal barge, reducing the need to store coal on the ground for any significant length of time.

8. Coal arrives at Curtis Bay Piers via rail car and is offloaded using three rail car dumpers. These dumpers are housed in partially enclosed railcar dumper buildings designed to minimize potential fugitive dust emissions by blocking wind during railcar unloading. Inside the dumper buildings, the coal is sprayed with atomized water mist for dust suppression while hopper cars are rotated to drop coal onto an underground conveyor.

9. Coal moves from the dumpers around the facility using a network of aboveground and underground conveyors, and is delivered directly to an outbound marine vessel at the pier or to one of nine temporary material storage areas before it is loaded into ships or barges. Separate inventory piles are maintained for customer and product variability. A sophisticated network of water sprays around the facility keeps coal dust from becoming airborne during temporary storage.

10. Curtis Bay Piers uses a variety of proven dust control measures, including the wet suppression system described above, to minimize fugitive dust during coal loading and storage operations. These dust control measures are described in the facility's MDE-approved Fugitive Dust Control Plan.

11. CSXT regularly reviews and updates the facility's fugitive dust control measures. In the last two years, for example, we upgraded the water suppression system to include atomized mist technology, enhanced our water truck usage on facility roadways, and added metal skirting within the conveyance system. We also installed and began operating Maryland's first fenceline monitoring system for particulate matter. Data from the fenceline monitoring system is posted in near-real-time on a public website so that community members have real-time access to information about air quality conditions surrounding the Curtis Bay Piers facility. The real-time fenceline monitoring data is available at https://www.csxcurtisbayfacts.com/monitoring/.

12. The Terminal does not include any coal processing equipment and does not combust coal.

B. CSXT's Common Carrier Obligation

13. CSXT is a common carrier and obligated under federal law to move freight upon reasonable request. As a freight railroad, CSXT is obligated to ship coal from mines located on our rail lines to domestic and international markets. When a mine on our rail line requests that we transport their coal, we are obligated to meet their needs.

14. CSXT cannot simply choose to ship a different commodity through Curtis Bay Piers or lower the height of its coal storage piles (and thus limit the amount of coal it can store on site) and still meet the needs of its customers.

C. The Impact of Constructing a Physical Barrier on Short-Term and Long-Term Operations

15. I have reviewed the permit to operate provided by the Maryland Department of the Environment (MDE), including the requirement in Part D to "construct a windscreen to minimize coal dust being transported from any coal storage piles on the site into the surrounding community." This condition requires that "[t]he windscreen must at a minimum surround all coal storage piles, either individually or in a single enclosure" and provides that "[t]he maximum coal pile height shall be maintained at a level that is less than the height of the windscreen at all times."

16. During operations, the coal storage piles at Curtis Bay Piers can be a maximum height of between 80–90 feet. Due to the topographical and geotechnical constraints at the Terminal, permit condition (D)(1) therefore will require CSXT to build an approximately 100-foot windscreen around the coal storage areas with openings to allow the movement of coal in and out of the windscreen via the existing conveyor system. Even with allowances for those openings, fully surrounding the coal storage area will result in severe disruption to facility operations. Construction of a windscreen presents significant engineering challenges given the extremely limited available space at the Terminal for such a sizeable structure, the location of existing tracks, and the lack of available space for access roads.

Disruption to existing coal storage and handling operations during construction

17. CSXT's ability to enclose the coal piles with a windscreen is constrained by the Terminal's layout, geotechnical condition, and existing aboveground and underground infrastructure. Building a windscreen may require relocation of aboveground conveyors and other

infrastructure, depending on the final design that MDE discretionarily approves. Terminal infrastructure also includes a network of underground utilities (including electrical equipment and critical communication infrastructure for CSXT), underground tunnels and conveyors associated with coal handling operations, and underground piping associated with the water conveyance system used for dust suppression. Constructing a 100-foot-tall windscreen will require driving possibly dozens of supports some distance into the ground in various locations around the Terminal, to be determined based on a geotechnical survey. Other critical non-CSXT infrastructure runs underneath the Terminal, including one of Baltimore City's 42-inch sewer lines, a stormwater line that discharges into Curtis Bay, and an eight-inch gas pipeline. Construction of the windscreen thus may require reconfiguration of this infrastructure.

18. CSXT's ability to enclose the coal piles with a windscreen is also constrained by the Terminal's lack of available space. The Terminal occupies a much smaller footprint than other coal terminals around the country. The total existing coal storage area at the terminal is less than 13 acres in size. Consequently, CSXT has already maximized the constrained layout for the throughput demanded by its common carrier rail and ocean vessel shippers. A windscreen surrounding the coal piles will disrupt the orderly process of coal transloading operations, impacting how coal is stored and transported, and would require further shrinking of the coal piles for operations to continue safely. While the permit provides allowances for openings to allow vehicle access, conveyors, and track, that does not mitigate the dramatic hardships imposed by construction and maintenance of the windscreen.

19. Another significant constraint on the large-scale windscreen construction project at the Terminal is the lack of space available for a laydown yard and construction staging area. To build a 100-foot structure, CSXT would need, at minimum, a five-acre staging area with access to

the coal storage area. There is no available on-site location of this size for equipment staging during construction. The only possible area is the approximately five-acre M Pad, an area located on the northeast corner of the Terminal, which lacks a feasible access road connecting to the coal piles. Transporting material from the M Pad to the coal piles to construct a windscreen would require moving through heavily trafficked operation areas at the Terminal that would be a logistical challenge and also present significant safety concerns to employees operating in these areas. The M Pad is also regularly used for other purposes and not available as a laydown yard for construction of a windscreen without disrupting other aspects of the facility's operations. Given the dense network of rail tracks running through the facility as well as the variability in terrain, a sufficient laydown and staging area to support construction of a 100-foot windscreen simply does not exist on-site.

20. Enclosing the facility's coal storage areas with a windscreen would have significant impacts on the Terminal's operations and the CSXT rail network. The coal storage areas, adjacent tracks, and coal piers themselves would likely need to be shut down for months to allow for construction, leaving CSXT unable to satisfy its obligations to customers under preexisting contracts. The cost of such a project would be tens of millions of dollars in construction costs, in addition to the loss of the use of the Terminal by CSXT for a considerable period of time, costing additional millions of dollars in lost rail transportation and transloading revenue.

21. Further, the construction disruption and attendant costs may make it uneconomical for customers to use the Port of Baltimore. Increased shipping costs may force customers to move business through other ports and bypass the Port of Baltimore entirely, which would have negative economic impacts on the Port of Baltimore. Further, there is not sufficient throughput capacity at other existing terminals to easily allow the shifting of this coal to other East Coast terminals.

22. If CSXT's ability to store coal at the facility during construction of the windscreen is reduced or eliminated for a period of time, then CSXT may need to stage trains outside of the facility and wait to unload them until the coal can be directly loaded into vessels. The fully loaded coal trains (which can reach lengths of 10,000 feet) would need to be held in other yards until they could be directly loaded into vessels. This process would create significant rail transportation impacts beyond Curtis Bay, as staging coal trains along the CSXT network would delay non-coal train traffic from reaching other destinations. And at every point during construction of the windscreen, some portion of the track that serves the Terminal will be inaccessible. Construction will lead to a decrease in track capacity, which affects the total rail network because it creates congestion along the entire network coming from west to east, which would also increase costs for CSXT and CSXT customers.

23. If the facility's storage capacity is reduced due to the construction of the windscreen, CSXT will be forced to modify its operations in ways that are detrimental to its customers and prevent it from fulfilling its common carrier obligations.

Long-term operational impacts of building a windscreen around the coal storage area

24. Construction of a windscreen would also permanently impact the volume of coal that can be moved through the Terminal due to the height and locations of the windscreen that MDE requires. Construction of a windscreen around the coal piles individually would necessitate reducing the overall size of the coal storage area to safely accommodate the barrier foundations as well as to create adequate clearance between the barrier and the coal piles to ensure operational and employee safety.

25. There is no room to construct a windscreen without temporarily shutting down portions of the adjacent railroad track, which would severely disrupt operations at the Terminal

and throughout the CSXT network. Construction may require staging construction equipment on the tracks given the close proximity of the tracks to the coal piles and lack of other available construction areas, impacting operations and introducing the risk of damage to the tracks themselves. Any construction close to the western boundary of the property will impact the Marley Neck track that services local customers south of the Terminal and would impact their ability to receive products needed for their manufacturing processes during construction. If our customers are not able to receive their products by rail, those customers will need to receive their products by truck, leading to increased truck traffic in the area and increased shipping costs for those customers.

26. The permanent reduction in storage capacity—due to the height restrictions imposed by the windscreen or the need to shrink the diameter of the coal piles for worker safety—may leave CSXT unable to meet the needs of its shippers.

D. Impact of a Physical Barrier on Operational Safety

27. CSXT is committed to safe operations in Curtis Bay, and we prioritize the safety and health of our employees, customers and neighbors in all aspects of our operations.

28. Construction of a windscreen structure which encloses the coal storage area, whether individually around the coal piles or around the perimeter of the entire coal storage area, would create significant safety hazards for workers at the Terminal. The coal piles cannot be stacked against a wall structure, like a windscreen. Allowing coal to be placed up against the structure creates a hazard for the bulldozers acting on the coal. Without appropriate clearance areas between the coal piles and the structure, bulldozers and other equipment could become trapped between the wall and the coal—that can be a life-threatening scenario. Designing the structure in a way that creates a sufficient clearance zone between the edge of the pile and the wall will further reduce the diameter of the coal storage area and result in a substantial reduction in facility

throughput. This would create a dangerous operational situation for employees that does not exist today.

29. Any windscreen would create extra safety hazards for employees and contractors driving around the site. It would limit the field of vision and create additional work hazards for the bulldozer operators operating around the coal storage piles.

E. Impact of Temporary Shutdowns and Permanent Reductions in Throughput Capacity on the CSXT Network and Global Supply Chain

30. An interruption of our service has a global effect. A smaller footprint or a facility shutdown for multiple months would impact the ability of our customers to get their product to the global market due to insufficient capacity on the East Coast to absorb volume intended for Curtis Bay Piers. This could impact the financial solvency of customers and also cause our customers to not meet contractual obligations they have with their own customers. Curtis Bay Piers supplies coal to customers across the world that produce steel and other critical manufacturing components. A reduction in service at Curtis Bay would negatively impact the local, state, and national economy.

31. In accordance with 28 U.S.C. § 1746, I declare under penalty of perjury that the foregoing is true and correct.

Executed on November 19, 2025.

/s/ Aleek Young
Aleek Young

General Manager, Coal and Ore Terminals
CSX Transportation, Inc.

BEFORE THE
SURFACE TRANSPORTATION BOARD

Finance Docket No. 36886

CSX TRANSPORTATION, INC.
PETITION FOR DECLARATORY ORDER

EXHIBIT 2

Final Air Quality State Permit to Operate for Curtis Bay Piers Facility, Issued by the Maryland Department of the Environment (July 25, 2025)

KEEP PERMIT AT SITE

CONTROL NO. B - 07950

Wes Moore
Governor

State of Maryland

Serena McIlwain
Secretary

DEPARTMENT OF THE ENVIRONMENT

Air and Radiation Administration
1800 Washington Boulevard, Suite 720
Baltimore, MD 21230

[ ] Construction Permit

[X] Operating Permit

PERMIT NO. 510-2263

DATE ISSUED JUL 29 2025

PERMIT FEE N/A

EXPIRATION DATE September 30, 2029

LEGAL OWNER & ADDRESS

CSX Transportation, Inc.
500 Water St; J-275
Jacksonville, FL 32202-4422
Attn: Mr. Raghu Chatrathy

SITE

Curtis Bay Piers Facility
1910 Benhill Avenue
Curtis Bay, MD 21226
Premises # 510-2263
AI # 10261

SOURCE DESCRIPTION

Coal storage and transfer facility.

This source is subject to the conditions described on the attached pages.

Page 1 of 13

Program Manager

Director, Air and Radiation Administration

MDE/ARMA/PER.009 (REV. 10-08-03)

(NOT TRANSFERABLE)

CSX TRANSPORTATION, INC. – CURTIS BAY PIERS
PERMIT-TO-OPERATE
PERMIT No. 510-2263

INDEX

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Part B – Applicable Regulations
Part C – General Operating Conditions
Part D – Physical Barrier and Dust Control Requirements
Part E – Record Keeping and Reporting
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Appendix 2 – Fence Line Monitoring Plan

This permit-to-operate incorporates requirements for the following registered installations:

ARA Registration No.	Description	Date of Installation
510-2263-9-0352 and 9-0335	Coal, ore, limestone, and other dry material transfer and storage facility that primarily consists of the following stationary source process related equipment: Railcar unloaders; Material belt conveyors (including transfer towers); Stacking silos; Material storage piles; and; Ship and barge loading equipment. SP-1 - Limestone, iron ore, coal storage including three (3) 84" wide conveyors added to the dry material and storage operation in 2013. Added a continuous conveyor belt (BC-7) to replace the damaged conveyor in the existing North Reclaim Tunnel and conducted associated equipment repairs to the tunnel roof, BC-7 head chute, the A/B drives, the BC-7 tensioner, replacement of the BC-7 truss, and installation of the steel support frame for the BC-2 tensioner in 2022.	1923, modified in 1980, 2013, and 2022
	Coal Facility – equipped with railcar unloaders and ship and barge loading	1980

Part A – General Provisions

(1) The application (Form 26) received on July 18, 2023 at the Maryland Department of the Environment ("Department") for the renewal of the Permittee's permit-to-operate is incorporated into this permit by reference. If there are any conflicts between representations in the application and representations in this permit, the representations in the permit shall govern. Estimates of dimensions, volumes, emissions rates, operating rates, feed rates and hours of operation included in the application for renewal do not constitute enforceable numeric limits beyond the extent necessary for compliance with applicable requirements.

(2) Upon presentation of credentials, representatives of the Maryland Department of the Environment and the Baltimore City Health Department shall at any reasonable time be granted, without delay and without prior notification, access to the Permittee's property and permitted to:

(a) determine compliance with the requirements of this permit and any applicable regulations;

(b) sample, as necessary to determine compliance with requirements of this permit and applicable regulations, any materials stored or processed on site, any waste materials, and any discharge into the environment;

(c) inspect any monitoring equipment required by applicable regulations or by any permit issued by the Department's Air and Radiation Administration;

(d) review and copy any records, including all documents required to be maintained by this permit and by applicable regulations, relevant to the Department's determination of compliance with an air pollution control requirement; and

(e) obtain any photographic documentation or evidence necessary to determine compliance with the requirements of this permit and applicable regulations.

(3) If any provision of this permit is declared by proper authority to be invalid, the remaining provisions of the permit shall remain in effect.

(4) Nothing in this permit authorizes the violation of any rule or regulation or the creation of a nuisance or air pollution.

Part B – Applicable Regulations

(1) This source is subject to all applicable federal air pollution control requirements.

(2) This source is subject to all applicable federally enforceable State air pollution control requirements including, but not limited to, the following regulations:

(a) COMAR 26.11.01.04A(1) – Requirements for Testing
"The Department may require any person to conduct or have conducted testing to determine compliance with this subtitle. The Department, at its option, may witness or conduct these tests. This testing will be done at a reasonable time, and all information gathered during a testing operation will be provided to both parties."

(b) COMAR 26.11.01.07C – Report of Excess Emissions
"(1) In the case of any occurrence of excess emissions, expected to last or actually lasting for 1 hour or more, from any installation required by COMAR 26.11.02.13 to obtain a State permit to operate, the owner or operator shall report the onset and shall report the termination of the occurrence to the Department by telephone.

(2) Telephone reports of excess emissions shall include the following information:
(a) The identity of the installation and the person reporting;
(b) The nature or characteristics of the emissions (for example, hydrocarbons, fluorides);
(c) The time of occurrence of the onset of the excess emissions and the actual or expected duration of the occurrence; and
(d) The actual or probable cause of the excess emissions."

(c) COMAR 26.11.02.09A – Sources Subject to Permit to Construct and Approval
"A person may not construct or modify or cause to be constructed or modified any of the following sources without first obtaining, and having in current effect, the specified permits to construct and approvals: (6) All sources, including installations and air pollution control equipment, except as listed in Regulation .10 of this chapter--permit to construct required."

(d) COMAR 26.11.06.03C – Particulate Matter from Unconfined Sources
"(1) A person may not cause or permit emissions from an unconfined source without taking reasonable precautions to prevent particulate matter from becoming airborne. These reasonable precautions shall include, when appropriate as determined by the Department, the installation and use of hoods, fans, and dust collectors to enclose, capture, and vent emissions. In making this determination, the Department shall consider technological feasibility, practicality, economic impact, and the environmental consequences of the decision."

(e) COMAR 26.11.06.03D – Particulate Matter from Materials Handling and Construction
"A person may not cause or permit any material to be handled, transported, or stored, or a building, its appurtenances, or a road to be used, constructed, altered, repaired, or demolished without taking reasonable precautions to prevent particulate matter from becoming airborne. These reasonable precautions shall include, but not be limited to, the following when appropriate as determined by the control officer:

(1) Use of water or chemicals for control of dust in the demolition of existing buildings or structures, construction operations, the grading of roads, or the clearing of land.
(2) Application of asphalt, oil, water, or suitable chemicals on dirt roads, materials stockpiles, and other surfaces which can create airborne dusts.
(3) Installation and use of hoods, fans, and dust collectors to enclose and vent the handling of dusty materials. Adequate containment methods shall be employed during sandblasting of buildings or other similar operations.
(4) Covering, at all times when in motion, open-bodied vehicles transporting materials likely to create air pollution. Alternate means may be employed to achieve the same results as would covering the vehicles.
(5) The paving of roadways and their maintenance in clean condition.
(6) The prompt removal from paved streets of earth or other material which has been transported there by trucks or earth moving equipment or erosion by water."

(3) This source is subject to all applicable State-only enforceable air pollution control requirements including, but not limited to, the following regulations:

(a) COMAR 26.11.02.13A – Sources Subject to State Permits to Operate.
"A. Except for a source that is covered by a Part 70 permit, a person may not operate or cause to be operated any of the following sources without first obtaining, and having in current effect, a State permit to operate as required by this regulation: (38) Coal or ore export loading or unloading installations."

(b) COMAR 26.11.02.14D – Procedure for Obtaining State Permit to Operate and Permits to Construct Certain Sources and Permits to Construct Control Equipment on Existing Sources.
"A complete application for the renewal of a State permit to operate shall be submitted not later than 60 days before the expiration date in a State permit to operate. If a timely application for a renewal has been submitted, the current State permit to operate remains in effect until the Department makes a final decision to issue or deny the permit."

(c) COMAR 26.11.02.19C – Information Required to be Maintained by a Source.
"(1) Beginning January 1, 1994, the owner or operator of a source for which a permit to operate is required shall maintain records necessary to support the emission certification, including the following information:
(a) The total amount of actual emissions of each regulated pollutant and the total of all regulated pollutants;
(b) An explanation of the methods used to quantify the emissions and the operating schedules and production data that were used to determine emissions, including significant assumptions made;
(c) Amounts, types, and analyses of all fuels used;
(d) Emission data from continuous emission monitors that are required by this subtitle or EPA regulations, including monitor calibration and malfunction information;
(e) Identification, description, and use records of all air pollution control equipment and compliance monitoring equipment, including significant maintenance performed, malfunctions and downtime, and episodes of reduced efficiency of this equipment;

(f) Limitations on source operation or any work practice standards that significantly affect emissions; and
(g) Other relevant information as required by the Department.

(2) The logs and other records of information required by §C(1) of this regulation shall be retained for a period of 5 years and made available to the Department upon request.

(3) If the owner or operator of a source for which a permit to operate is required fails to maintain or provide the data required by this section, which the Department requests in order to verify the emissions during the previous calendar year, the annual emission-based fee for that source shall be based on the estimated allowable emissions, as defined in COMAR 26.11.01.01B(4), of that source, as determined by the Department."

(d) COMAR 26.11.02.19D – Emission Certification
"(1) Beginning January 1, 1994, the responsible official designated by the owner or operator of a source for which a permit to operate is required shall certify, as provided at Regulation .02F of this chapter, the actual emissions of regulated air pollutants from all installations at the plant or facility.

(2) Certification shall be on a form obtained from the Department and shall be submitted to the Department not later than April 1 of the year following the year for which certification is required.

(e) COMAR 26.11.06.08 – Nuisance
"An installation or premises may not be operated or maintained in such a manner that a nuisance or air pollution is created. Nothing in this regulation relating to the control of emissions may in any manner be construed as authorizing or permitting the creation of, or maintenance of, nuisance or air pollution."

(f) COMAR 26.11.06.09 – Odors
"A person may not cause or permit the discharge into the atmosphere of gases, vapors, or odors beyond the property line in such a manner that a nuisance or air pollution is created."

(g) COMAR 26.11.15.06 – Requirements for New Installations, Sources, or Premises
"A(1) Except as provided in §A(2) of this regulation, a person may not construct, modify, or operate, or cause to be constructed, modified, or operated, any new installation or source without first demonstrating to the satisfaction of the Department using procedures established in this chapter that total allowable emissions from the premises of each toxic air pollutant discharged by the new installation or source will not unreasonably endanger human health."

Part C – General Operating Conditions

(1) The Permittee shall maintain and operate all installations and associated air pollution control equipment so as to assure full and continuous compliance with all applicable air pollution control regulations and permit conditions.

(2) The Permittee shall properly maintain, calibrate, and operate all control panel instrumentation and all devices employed to monitor performance of the facility's air pollution control devices.

(3) Fugitive dust from plant roads, uncovered stockpiles, and other surfaces that have the potential to create airborne dusts, shall be controlled by applying water, asphalt, oil, or suitable chemical dust suppressants or combination thereof, as necessary to comply with COMAR 26.11.06.03C and D.

(4) The Permittee shall not transfer more than 500,000 tons of limestone and iron ore, and 1,000,000 tons of coal during any rolling 12-month period at the dry material handling and storage operation at the limestone storage area (SP-1) installed in 2013 as authorized by ARA Registration No. 510-2263-9-0335. The Permittee shall notify the Department prior to increasing quantities and/or changing the types of any materials subject to this limitation. If the Department determines that such increases or changes constitute a modification, the Permittee shall obtain a permit-to-construct prior to implementing the modification. The three (3) 84" wide conveyors referenced in ARA Registration No. 510-2263-9-0335 are not subject to this limitation, nor does this tonnage limitation apply to other storage areas and conveyors at the facility.

(5) The Permittee shall continue to comply with Condition C(2) of the Permit to Construct issued on September 7, 2022 for the replacement of the damaged conveyor BC-7 that required:

(a) Equipping the North Reclaim Tunnel with improved tunnel air flow beyond a level prior to the December 30, 2021 incident, which shall be maintained at a minimum of 300 feet per minute (fpm).
(b) Installing and operating a fixed gas detection system inside the tunnel system to monitor for methane.
(c) Implementing preventative measures, including metal skirting panels around the conveyor and water sprays within the tunnel, which will be incorporated into the facility's Fugitive Dust Plan to ensure safe working conditions and minimize fugitive dust inside the tunnel.

(6) The Permittee shall comply with the requirements of the facility's May 2023 Fugitive Dust Plan. If the plan is amended by the Department, any amendments will be incorporated into this Permit to Operate, at which time the Permittee will be subject to them.

(7) The Permittee shall comply with the requirements of the facility's approved Fence Line Monitoring Plan and any future amendments proposed by the Permittee and approved by the Department. The current plan, approved by the Department on June 26, 2023, is included in Appendix 2 of this permit.

Part D – Physical Barrier and Dust Control Requirements

(1) The Permittee shall construct a windscreen to minimize coal dust being transported from any coal storage piles on the site into the surrounding community. The windscreen must at a minimum surround all coal storage piles, either individually or in a single enclosure within the facility's property boundary, except where openings are needed to allow vehicular access into and out of the interior of the structure or where necessary to allow for the movement of coal into or out of the structure via conveyors or rail. The maximum coal pile height shall be maintained at a level that is less than the height of the windscreen at all times.

(2) Within 120 days following the issuance date of this Permit to Operate, the Permittee shall send a notification to and seek approval from the Department on the type of windscreen that it intends to use to satisfy the Part D(1) requirement of this Permit to Operate. The notification shall include revisions to the Fugitive Dust Plan applicable when the windscreen chosen to satisfy the Part D(1) requirement is in operation. Once approved by the Department the revisions will be incorporated into the Permit to Operate.

(3) Within 18 months of the Department's approval of the Permittee's windscreen, unless a different timeline is specified in the Department's approval, the Permittee shall complete construction and place in operation the windscreen required under the Part D(1) requirement of this Permit to Operate.

(4) Within 120 days following the issue date of this permit, the Permittee shall replace the existing water spray system in the railcar unloading sheds with a system that uses atomized spray nozzles to increase the overall dust control efficiency. Documentation for meeting the increased control efficiency requirement shall be provided to the Department within the same 120-day period. The improved nozzle system will be incorporated into the Fugitive Dust Plan within 90 days of the replacement nozzle system being installed.

Part E – Record Keeping and Reporting

(1) The Permittee shall maintain for at least five (5) years, and shall make available to the Department upon request, records of the following information:

(a) Records of the monthly amounts of limestone, iron ore, and coal processed in the dry materials handling and storage operation at the limestone storage area (SP-1) associated with ARA Registration No. 510-2263-9-0335. The three (3) 84" wide conveyors referenced in ARA Registration No. 510-2263-9-0335 are not subject to this requirement, nor does this requirement apply to other storage areas and conveyors at the facility.

(b) Records of all coal and ash speciation data used to determine toxic air pollutant emissions and a copy of the most recent, premises-wide air toxics compliance demonstration.

(c) A copy of the current, Department-approved Fugitive Dust Plan and all records required by the plan to ensure compliance with COMAR 26.11.06.03D.

(d) A copy of the current, Department-approved Fence Line Monitoring plan and all records required by the plan.

(2) The Permittee shall maintain at the facility for at least five (5) years records necessary to support annual certifications of emissions and demonstrations of compliance for toxic air pollutants. Such records shall include, if applicable, the following:

(a) mass emissions rates for each regulated pollutant, and the total mass emissions rate for all regulated pollutants for each registered source of emissions;

(b) accounts of the methods and assumptions used to quantify emissions;

(c) all operating data, including operating schedules and production data, that were used in determinations of emissions;

(d) amounts, types, and analyses of all fuels used;

(e) any records, the maintenance of which is required by this permit or by State or federal regulations, that pertain to the operation and maintenance of continuous emissions monitors, including:

(i) all emissions data generated by such monitors;

(ii) all monitor calibration data;

(iii) information regarding the percentage of time each monitor was available for proper service; and

(iv) information concerning any equipment malfunctions.

Note: Fence line particulate monitors installed and operated in accordance with the Permittee's Fence Line Monitoring Plan are not considered continuous emissions monitors subject to this requirement.

(f) information concerning operation, maintenance, and performance of air pollution control equipment and compliance monitoring equipment, including:

(i) identifications and descriptions of all such equipment;

(ii) operating schedules for each item of such equipment;

(iii) accounts of any significant maintenance performed;

(iv) accounts of all malfunctions and outages; and

(v) accounts of any episodes of reduced efficiency.

(g) limitations on source operation or any work practice standards that significantly affect emissions; and

(h) other relevant information as required by the Department.

(3) The Permittee shall submit to the Department by April 1 of each year during the term of this permit a certification of emissions for the previous calendar year. The certifications shall be prepared in accordance with requirements, as applicable, adopted under COMAR 26.11.01.05 – 1 and COMAR 26.11.02.19D.

(a) Certifications of emissions shall be submitted on forms obtained from the Department.

(b) A certification of emissions shall include mass emissions rates for each regulated pollutant, and the total mass emissions rate for all regulated pollutants for each of the Permittee's registered sources of emissions.

(c) The person responsible for a certification of emissions shall certify the submittal to the Department in the following manner:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

(4) The Permittee shall submit to the Department, by April 1 of each year during the term of this permit, a written certification of the results of an analysis of emissions of toxic air pollutants from the Permittee's facility during the previous calendar year. Such analysis shall include either:

(a) a statement that previously submitted compliance demonstrations for emissions of toxic air pollutants remain valid; or

(b) a revised compliance demonstration, developed in accordance with requirements included under COMAR 26.11.15 & 16, that accounts for changes in operations, analytical methods, emissions determinations, or other factors that have invalidated previous demonstrations.

(5) The Permittee shall report, in accordance with requirements under COMAR 26.11.01.07, occurrences of excess emissions to the Compliance Program of the Air and Radiation Administration.

APPENDIX 1
Fugitive Dust Plan

FUGITIVE DUST CONTROL PLAN

CSX TRANSPORTATION, INC.
CURTIS BAY PIERS
BALTIMORE, MARYLAND
Premises No. 510-2263

Revised MAY 2023

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1.0 INTRODUCTION

CSX Transportation, Inc. (CSXT), Curtis Bay Piers is a material storage, transfer, and shipment terminal located at 1910 Benhill Avenue, Baltimore, Maryland, 21226. Curtis Bay Piers currently operates under Permits to Construct and Operate[1], each for Premises No. 510-2263, issued by the Maryland Department of the Environment (MDE). Potential fugitive air emissions sources at Curtis Bay Piers result from the following operations:

- Railcar unloading,
- Material transfer via covered conveyors,
- Coal stacking tubes,
- Material storage piles,
- Marine vessel loading,
- Vehicle parking, and
- Paved and unpaved roadways.

CSXT utilizes various operational controls and water sprays to prevent and control fugitive dust emissions. Water used for dust suppression is supplied from an onsite stormwater reclaim and collection system, with backup water supply from city sources.

Figure 1 shows the facility layout.

Curtis Bay Piers is manned 24 hours per day. Site supervisors conduct daily briefings with employees and contractors for safety, weather, and operations. Safety bulletins are used to communicate daily weather conditions, including forecasted high winds, tornados, and thunderstorms; as well as dry conditions that could potentially promote fugitive dust. All personnel are trained and instructed to promptly notify management if any dust is observed during daily operations. Upon notice, additional control measures, such as more frequent water spraying, can be implemented as necessary. The water spray system for dust control can be manually started at any time from onsite or remotely. During severe weather or other unsafe weather conditions observed by employees, there will be a STOP WORK communication across the site.

CSX aims to maintain 100 percent compliance with all rules and safety procedures. Employees are empowered to immediately address hazardous conditions; STOP WORK and halt operations if they observe hazardous or unsafe conditions.

It has been the experience of the historical operations at the facility that visible emissions monitoring, as required by the operating permit, has been adequate to control fugitive dust from the coal piles and during loading and unloading operations. To evaluate and enhance our dust control measures, CSXT will

[1] Permit to Operate issued October 1, 2018, Control No. B-05570, Permit to Construct issued September 7, 2022, Control No. B-07188.

implement an opacity monitoring program for a period of twelve (12) months to aid in the identification and discovery of fugitive dust emissions at the facility. Section 5.0 contains additional details on how the visible emission cameras will be used to evaluate the effectiveness of the facility's fugitive dust control measures. On November 6, 2022, CSXT submitted the *CSXT Curtis Bay Piers Visible Emissions (VE) Camera Test Protocol* to the Department which contained descriptions of the program's proposed objectives, test methods, equipment, and timeline.

The objectives of the 12-month opacity monitoring program include:

- Determine if there are fugitive dust concerns at the facility;
- Quantify any concerns in percent opacity consistent with best practices; and
- Evaluate whether additional fugitive dust controls are necessary based on monitoring test results.

CSXT will routinely review and update this Fugitive Dust Control Plan to continuously improve and minimize sources of fugitive dust emissions and implement precautions to prevent particulate matter from becoming airborne.

2.0 AIR REGULATORY OVERVIEW

The following Code of Maryland Air Regulations (COMAR) sections apply to air emissions sources at Curtis Bay Piers:

- COMAR 26.11.01.03: Delineation of Areas—Area III is defined as "the Baltimore metropolitan area of the state comprising Baltimore City and the counties of Anne Arundel, Baltimore, Carroll, Harford, and Howard."
- COMAR 26.11.01.04A(1): Testing and Monitoring—MDE "may require any person to conduct or have conducted testing to determine compliance with this subtitle."
- COMAR 26.11.01.07C: Report of Excess Emissions—This regulation requires permittees to report "any occurrence of excess omissions, expected to last or actually lasting for 1 hour or more."
- COMAR 26.11.02.09A: Permits to Construct—This regulation requires permittees to obtain a permit-to-construct if any installation is to be modified in a manner that causes a change in the quantity, nature, or characteristics of emissions referenced in the permit-to-construct issued for that installation.
- COMAR 26.11.06.02C: Visible Emissions—"In Areas III and IV, a person may not cause or permit the discharge of emissions from any installation or building, other than water in an uncombined form, which is visible to human observers."

- COMAR 26.11.06.03B(2): Particulate Matter from Confined Sources—In Areas III and IV, "a person may not cause or permit to be discharged into the outdoor atmosphere from any other installation, particulate matter in excess of 0.03 [grain per standard cubic foot dry] gr/SCFD (68.7 [milligrams per dry standard cubic meter] mg/dscm)."

- COMAR 26.11.06.03D: Particulate Matter from Material Handling and Construction—"A person may not cause or permit any material to be handled, transported, or stored, or a building, its appurtenances, or a road to be used, constructed, altered, repaired, or demolished without taking reasonable precautions to prevent particulate matter from becoming airborne. These reasonable precautions shall include, but not be limited to, the following when appropriate as determined by the control officer:

  (1) Use of water or chemicals for control of dust in the demolition of existing buildings or structures, construction operations, the grading of roads, or the clearing of land.

  (2) Application of asphalt, oil, water, or suitable chemicals on dirt roads, materials stockpiles, and other surfaces which can create airborne dusts.

  (3) Installation and use of hoods, fans, and dust collectors to enclose and vent the handling of dusty materials. Adequate containment methods shall be employed during sandblasting of buildings or other similar operations.

  (4) Covering, at all times when in motion, open-bodied vehicles transporting materials likely to create air pollution. Alternate means may be employed to achieve the same results as would covering the vehicles.

  (5) The paving of roadways and their maintenance in clean condition.

  (6) The prompt removal from paved streets of earth or other material which has been transported there by trucks or earth moving equipment or erosion by water."

- COMAR 26.11.06.08: Nuisance—"An installation or premises may not be operated or maintained in such a manner that a nuisance or air pollution is created. Nothing in this regulation relating to the control of emissions may in any manner be construed as authorizing or permitting the creation of, or maintenance of, nuisance or air pollution."

- COMAR 26.11.06.09: Odors—"A person may not cause or permit the discharge into the atmosphere of gases, vapors, or odors beyond the property line in such a manner that a nuisance or air pollution is created."

The following Part C operating conditions are incorporated into CSXT's permit to operate and are applicable to air emissions sources and operations at Curtis Bay Piers:

- Curtis Bay Piers "shall maintain and operate all installations and associated air pollution control equipment so as to assure full and continuous compliance with all applicable air pollution control regulations and permit conditions."
- Curtis Bay Piers "shall properly maintain, calibrate, and operate all control panel instrumentation and all devices employed to monitor performance of the facility's air pollution control devices."

3.0 POTENTIAL FUGITIVE AIR EMISSIONS SOURCES AND CONTROL MEASURES

Sources of fugitive air emission sources at the facility include roadways and parking (paved and unpaved); railcar unloading; material stacking and storage; material conveying; and ship loading. For clarity, CSX does not process coal at Curtis Bay Piers. Various controls have been implemented to prevent and minimize dust. Controls include operating practices, physical controls, and water sprays. On site personnel continually observe the site for evidence of dust and work together to ensure controls are properly operating. CSX will continue to evaluate and measure the existing dust controls and operating practices to ensure compliance and will evaluate additional controls for future improvements.

3.1 UNPAVED ROADWAYS

CSXT minimizes the road surface silt loading on all unpaved roadways and parking areas throughout the facility by keeping the unpaved roadways clean and free of any debris and applying water as necessary. Vehicle traffic onsite is predominately light-duty vehicles. Fugitive dust from unpaved roads is influenced by surface material moisture content and vehicle speed. The following methods are used to minimize dust on unpaved roads:

- The average vehicle weight traveling on the unpaved roadways will be predominately restricted to CSXT vehicles that average less than 5 tons.
- CSXT maintains a water truck onsite and waters the unpaved roadway surfaces to increase the moisture content of the surface material as deemed necessary based on visual observations and operational experience.
- Speed limits are posted throughout Curtis Bay Piers to reduce the maximum vehicle speed on unpaved roadways to no more than 14.5 mph.
- Watering and posted speed limits represent reasonable precautions for minimizing fugitive dust emissions from unpaved roadways at Curtis Bay Piers.

3.2 PAVED ROADWAYS AND PARKING AREAS

Most of the roadways at the facility are paved. CSXT minimizes the silt loading and fugitive dust on the paved roadways and parking areas throughout Curtis Bay Piers by employing the following best practices:

- Sweeping the road surfaces with a sweeper truck and flushing the road surfaces with water as deemed necessary based on visual observations and operational experience.
- Vehicles traveling on the paved roadways will be predominately restricted to employee, CSXT, and contractor vehicles with an average weight of less than 5 tons.
- Sweeping, flushing with water, and posted speed limits represent reasonable precautions[2] for minimizing fugitive dust emissions from paved roadways and parking areas at Curtis Bay Piers.
- A water spray truck will be utilized at least weekly on primary pathways as noted in **Figure 2** unless weather has deemed the activity unnecessary (e.g., rain, ice, or snow). A summary of water truck activity (water spray dates, times, and movement) will be saved to an internal network drive on a monthly basis.

See **Figure 2** for a map of the truck watering route.

3.3 RAILCAR UNLOADING

Dry material is received at Curtis Bay Piers in railcars and is unloaded through the use of a rotary railcar unloading process. Railcars are rotated to dump the dry material into a hopper for transfer via belt conveyors. There are three enclosed railcar dumper buildings (dumpers) at the facility. Each dumper is open at both ends for the railcars to enter and exit. The building design minimizes potential fugitive dust emissions by blocking wind. Weather permitting, fugitive dust is controlled with fixed water sprays located on both sides of the dumper buildings and along the side wall. The water sprays are activated automatically as the railcar is dumping or can be operated manually, as necessary, based on visual observations. VE camera testing and/or visual observations can also be used to evaluate the effectiveness of the water sprays at the railcar dumper buildings. During inclement cold weather conditions, facility history has shown that coal solidifies with ice and minimizes potential dust.

3.4 MATERIAL STORAGE PILES AND STACKING TUBES

CSXT maintains several areas for outdoor material storage at Curtis Bay Piers. Coal is conveyed to storage piles via a network of covered belt conveyors and coal stacker tubes. Coal is released inside the stacker tube to the height of the active pile; coal flows out of perimeter windows on the tubes to forms storage piles.

[2] U.S. EPA, AP-42, Section 13.2.2., Unpaved Roads, Section 13.2.2.3. November 2006.

This arrangement of multiple perimeter windows minimizes the drop distance, which in turn minimizes dust emissions.

The coal piles are also shaped and compacted by bulldozers. The pile shaping procedures use operational experience and best practices to compact the material and minimize fugitive dust and coal pile height. Bulldozers are only used for shaping the storage piles and for coal reclamation during ship loading.

Fugitive dust from the storage piles is also controlled with the use of water sprayers located at the top of each stacker tube and around the perimeter of the storage areas. CSXT employs a dust suppression system and a wind fence as a best practice for minimizing potential fugitive dust emissions from outdoor material storage piles. The wind fence was selected after considering other options such as screens and tree plantings. Additional information on the wind fence follows in section 3.4.2.

CSX will continue to evaluate the potential for additional dust control measures around the facility such as wind breaks and barriers that would reduce wind velocity across the site; and the potential usage of dust suppression chemicals on the coal piles and at transfer points in addition to water. Vegetation wind breaks under consideration include shrubs and tree planting along the facility's fenceline.

3.4.1 DUST SUPPRESSION SYSTEM

CSXT maintains a sophisticated dust suppression system designed to control fugitive particulate matter emissions associated with the handling, transferring, and storage of coal. The dust suppression system utilizes a network of water sprays located throughout the facility. These water sprays have been strategically placed around the perimeter of the north and south storage piles, around the RP1 storage area, and on top of each stacking tower (there are 8 stacking towers in total) to ensure the highest degree of dust control. The dust suppression system is capable of operating in automatic and manual modes. The dust suppression system utilizes real time weather data to monitor wind speed, wind direction, and rain activity. US National Weather Service data are integrated to help the system anticipate and respond to weather forecast changes. The dust suppression system's multiple operating modes are described in the following chart:

System Operating Modes	Description
Standard Automatic Mode	This mode is the system default spray cycle, each water sprayer operates once every four hours
Wind Detection Mode	If the system detects onsite wind speeds greater than 12 miles per hour (mph), the **Wind Detection Mode** will activate and increase the watering frequency to once every hour. Wind speed is measured at the top of Tower 8 at 150 feet above grade. Wind speed at this height is typically greater than wind speed measured at the ground level or at the top of the coal storage piles.
Early Warning System	The system includes a weather service feature that monitors local weather forecasts for *Severe Weather* as defined by the National Weather Service and high winds. If *Severe Weather* is forecasted within 3 hours, the spray frequency is changed to once every hour. Thus, the system relies on proactive water spraying at increased frequencies based on forecasted weather.
High Wind Mode	When wind events are detected above 12 mph, the spray system has the capability of automatically adjusting both the ground and tower sprays toward the direction of the wind to improve coal moisture content and minimize potential dust.
Manual Mode	The system can be manually triggered to spray any specific area at any time. Employees and contractors are instructed to watch for dust and alert management to trigger manual spray. The spray system can be manually activated through onsite systems or mobile devices.
Override Capability	If the system is disabled by manual activation (**Manual Mode**) and a high wind event is approaching or detected, the **Wind Detection Mode** will override and activate the system to immediately operate.

See **Figure 3** for the dust suppression system layout and location of each water spray nozzle system.

As described in the above chart, the weather service feature tracks rain and wind events. Certain rain event intensities can trigger the spray system to pause operation ranging from a few hours to up to 24 hours depending on the amount of rainfall over a period of time. An onsite meteorological station monitors for wind and rain and creates triggers for the system. Trigger settings are modified based on actual site conditions and visual observations to ensure fugitive dust emissions are controlled.

The 12 mph wind velocity set point for the automatic Wind Detection Mode is considered a conservative set point. Fugitive dust emissions from the storage piles are expected at wind velocities of greater than 12 mph and the maximum pile height is approximately 100 feet. Lowering this wind velocity set point below 12 mph was evaluated, but is not expected to further reduce fugitive emissions. Hence the established set point was retained following a review of available literature related to wind velocity and particulate matter emissions from storage piles.[3]

In addition to the weather service monitoring, CSX annually trains employees and contractors with the CSX safety rules (CSX SAFE WAY) curriculum. This training includes adjustments to field operations during *Severe Weather* events such as tornados and thunderstorms. During such an event, operations will cease and personnel will relocate to a safe assembly area. Outside operations such as truck movement, bulldozers, and vessel loading would stop during severe weather conditions. The dust suppression system would remain in operation for dust control.

CSX will continue to evaluate the effectiveness of the dust suppression system as well as evaluate additional controls such as the usage of dust suppression chemicals in addition to water spray to determine if the spray effectiveness can be further improved.

3.4.2 WIND FENCE

CSXT installed a thirty (30) foot high DustTamer Wind Fence for 315 linear feet along the south side of the property in order to help effectively reduce the wind speeds and minimize potential fugitive dust. The DustTamer Wind Fence is designed to exert a drag force on oncoming wind velocity and reduce wind speeds. The fence allows air to pass through and help equalize the differential pressure, thereby lowering the wind velocity and minimizing particulate matter from becoming airborne.

The placement of the existing wind fence along the southern border was selected to minimize wind action on the coal storage piles and minimize dust that could travel in the north and northwest direction from the

[3] *See, e.g.*, AP-42, Chapter 13.2.5: Industrial Wind Erosion Updated 2006 and WRAP Fugitive Dust Handbook (2006), Chapter 9. These sources provide a threshold wind velocity (defined as the wind speed at which measurable emissions are expected to commence) of 22 mph measured at 7 meters above the ground surface for coal storage piles. This converts to approximately 27.7 mph at 150 feet. The 12 mph wind velocity set point used for the dust suppression system's automatic Wind Detection Mode (measured at 150 feet above ground level) is more conservative than the threshold wind speeds referenced in the literature.

facility; in the direction of the closest residential areas. Note the predominant wind directions, as measured from the nearest certified weather station (BWI airport) are from the north and northwest direction.

CSX will continue to evaluate and measure the effectiveness of the existing wind fence as well as model potential effectiveness and feasibility of additional wind fence locations. Visual observations are one example of methods used to confirm the effectiveness of the existing DustTamer Wind Fence.

3.5 MATERIAL CONVEYING

Dry material is moved across the property with the use of covered conveyors and enclosed transfer points. Covered conveyors and enclosed transfer points minimize potential fugitive dust emissions by protecting the material from the effects of the wind. Water sprays are strategically located at several points throughout the material conveying process and are activated as necessary to minimize dust, based on visual observations.

Conveyors are designed with 45 degree sides to minimize movement and loss of coal during conveying operations and to minimize the effects of wind.

Material conveyors are covered or completely enclosed in the reclaim tunnels, but 100 percent coverage is not possible in all areas. For the areas not covered or enclosed, the conveyors are equipped with windscreens, where practical, to minimize the effect of the wind across the conveying belt. Water sprays have been installed inside the North and South Reclaim Tunnels in compliance with the Permit to Construct.

The use of covered conveyors, enclosed transfer points, and water sprays, as necessary, represent reasonable precautions for minimizing fugitive dust emissions from material conveying at Curtis Bay Piers. CSX will continue to evaluate and measure effectiveness of conveyor transfer points and enclosures for potential system improvements. Visual observations are one example of methods used to confirm the effectiveness of dust controls.

3.6 SHIP/BARGE LOADOUT

CSXT loads dry material into ships and barges through a barge/shiploader, equipped with a vertical telescoping chute to minimize potential fugitive dust emissions. A telescoping chute minimizes the drop height of the material and the effect of wind within the hold of the ship. The ship loadout operator performs continual visual observations for potential emissions and manually activates water spray controls upstream of the ship loadout process to minimize fugitive dust emissions, as necessary.

The use of a telescoping chute during ship/barge loadout and water sprays, as necessary, during ship loadout represent reasonable precautions for minimizing fugitive dust emissions from ship/barge loadout at Curtis Bay Piers.

4.0 NUISANCE DUST

CSXT is dedicated to ensuring its compliance with COMAR Title 26, Subtitle 11, Chapter 6.03(D), Particulate Matter from Material Handling and Construction. CSXT will continue to take reasonable precautions to prevent particulate matter from becoming airborne by adhering to this fugitive dust control plan. If neighboring properties or the public notify CSXT of any complaint(s) regarding fugitive dust emissions from Curtis Bay Piers, CSXT will work with state and/or local authorities to identify the source of the fugitive dust emissions; ensure the proper operation of the dust suppression system at the facility; and address the complaint in a timely manner. Operational records will be reviewed in response to reports of nuisance dust.

In November 2022, CSXT submitted a Fence Line Monitoring Plan to measure PM_{10} and $PM_{2.5}$ at the facility. In accordance with the Fence Line Monitoring Plan, CXT will install and operate a fenceline monitoring system consisting of one continuous federal equivalent method (FEM), at least one collocated $PM_{10}/PM_{2.5}$ sensor, and multiple $PM_{10}/PM_{2.5}$ sensors around the facility.

5.0 OPACITY MONITORING

In reviewing the Fugitive Dust Control Plan, CSX evaluated measures that could be utilized to ensure that the facility's existing dust control measures are adequately controlling fugitive dust from coal storage and handling operations. The facility's sophisticated dust suppression system, along with covered conveyors, enclosures, sweeping, and visual emission observations, adequately controls fugitive dust during facility operations. Nonetheless, CSX will continually evaluate additional dust control measures and features to further enhance and improve the facility's fugitive dust control practices.

Emissions that are visible to the human eye are normally comprised of particulate matter (PM) ranging from PM10-100 microns or more. The fugitive dust associated with coal handling operations are primarily larger than PM_{10}. Visible emissions are regulated by level of opacity, meaning the level at which the dust reduces the transmission of light or obscures an observer's view. Opacity is measured in five percent increments, from 0 to 100 percent, increasing as the visible emissions ability to obscure the background increases. Opacity cameras are considered the best available control technology (BACT) for measuring fugitive dust.[4] The use of opacity cameras will provide a consistent means to measure visible emissions at the facility and evaluate whether fugitive dust from the coal piles and unloading/loading operations is adequately controlled by existing practices.

Therefore, CSX will conduct a twelve (12) month monitoring program for opacity focused on the facility's fence line as described in the Visible Emissions Camera Test Protocol submitted to the Department on

[4] See Federal Register of June 30, 2015, (80 FR 37366)(FRL-9928-66-OAR), RTR for Ferroalloy NESHAP, 40 CFR 63 Subpart XXX, https://www.regulations.gov/document/EPA-HQ-OAR-2010-0895-0280.

November 6, 2022. The monitoring program will use two visual emission (VE) cameras to digitally monitor and measure visible emissions with the digital camera opacity technique (DCOT) (ASTM D7520-16, *Standard Test Method for Determining the Opacity of a Plume in the Outdoor Ambient Atmosphere*, aka EPA Alternative Method 082). The opacity monitoring program will include:

- Mounting all-weather pan-tilt-zoom (PTZ) cameras to allow visible observations of the CSXT fence line.
- Formal observations will be recorded in coordination with onsite visual observations.
- Camera VE observations with be reported in standard Visible Emission Observation (VEO) form format.
- An evaluation of the effectiveness of current fugitive dust control measures.

The data generated from the opacity monitoring program will be used to determine if action levels or other alerts are warranted by observed conditions. The data may also inform whether adjustments to the dust controls in place at the facility are needed. For example, the camera observations will allow CSXT to determine if specific locations or certain operations have greater need for fugitive dust control.

Note that opacity monitoring is not applicable during extreme weather events, such as fires and hurricanes, per EPA guidance.[5] Cameras will record a higher opacity bias during heavy rain events. Similarly, it is unsafe for employees to perform a visible emissions observation during severe weather events.

6.0 TRAINING

CSXT provides annual training to all Curtis Bay Piers employees on the requirements and conditions of this Fugitive Dust Control Plan and the air operating permit at Curtis Bay Piers. Training includes the identification of fugitive dust emissions sources at Curtis Bay Piers, the reasonable precautions employed to minimize fugitive dust emissions from becoming airborne, and the means of deploying dust control measures as needed. This Fugitive Dust Control Plan will be reviewed and updated as necessary prior to annual training events.

All personnel are empowered to stop operations and/or implement the Dust Suppression System in the event of fugitive dust observations.

[5] See: Treatment of Air Quality Data Influenced by Exceptional Events (Homepage for Exceptional Events) | US EPA, and 40 CFR Section 50.14 – Treatment of Air Quality Monitoring Data Influenced by Exceptional Events.

7.0 SUMMARY OF CONTROL MEASURES

CSXT employs the following fugitive dust control measures to minimize particulate matter from becoming airborne at Curtis Bay Piers:

Facility Activity	Control Measures	Evidence and Recordkeeping
Unpaved roadways	Watering, as necessary	Log of water spray activities
	Vehicle weight minimization	Log of visual observations
	Posted speed limits	Signs in place
Paved roadways and parking areas	Sweeping, as necessary	Log of visual observations
	Watering, as necessary	Log of water spray
	Posted speed limits	Signs in place
Railcar unloading	Minimize wind with enclosure design	Log of visual observations
	Automatic water sprays when dumping	Log of water spray activity
Material storage piles	Automatic and manual water sprayers	Log visual observations
	Water sprays on ground around the storage pile perimeter and on towers	Log of water spray activity
Material conveying	Covered conveyors	Log of visual observations
	Enclosed transfer points	Maintenance Procedures
Ship/barge loadout	Telescoping chute for material drop and wind	Log of visual observations
	Water sprays, as necessary	Log of water spray activity
Fugitive Dust Training	Annual Employee Training	Log of training events
	Annual Contractor Training	Log of training events

Daily observations and records are maintained by the facility as confirmation of dust control measures and related activities: water suppression, water trucks, relevant equipment maintenance. Records are available for MDE review upon request.

On site records include:

- Water suppression system operations (existing)
  - Date/time and duration of each nozzle
  - Reason for water spray (operation mode recorded)
  - Daily weather conditions
  - Maintenance inspection and repair
- Water truck operations
  - Electronic log of date/time and duration
  - Electronic log of path traveled
  - Comments and observations during activity
  - Routine inspection and maintenance records
- Log of visual observations (Updated)
  - Date/time
  - Person
  - Activities observed
  - If VE is observed, a summary of actions taken
- Log of employee and contractor training

Summary of Changes

The following table is used to track the main changes as this document is revised.

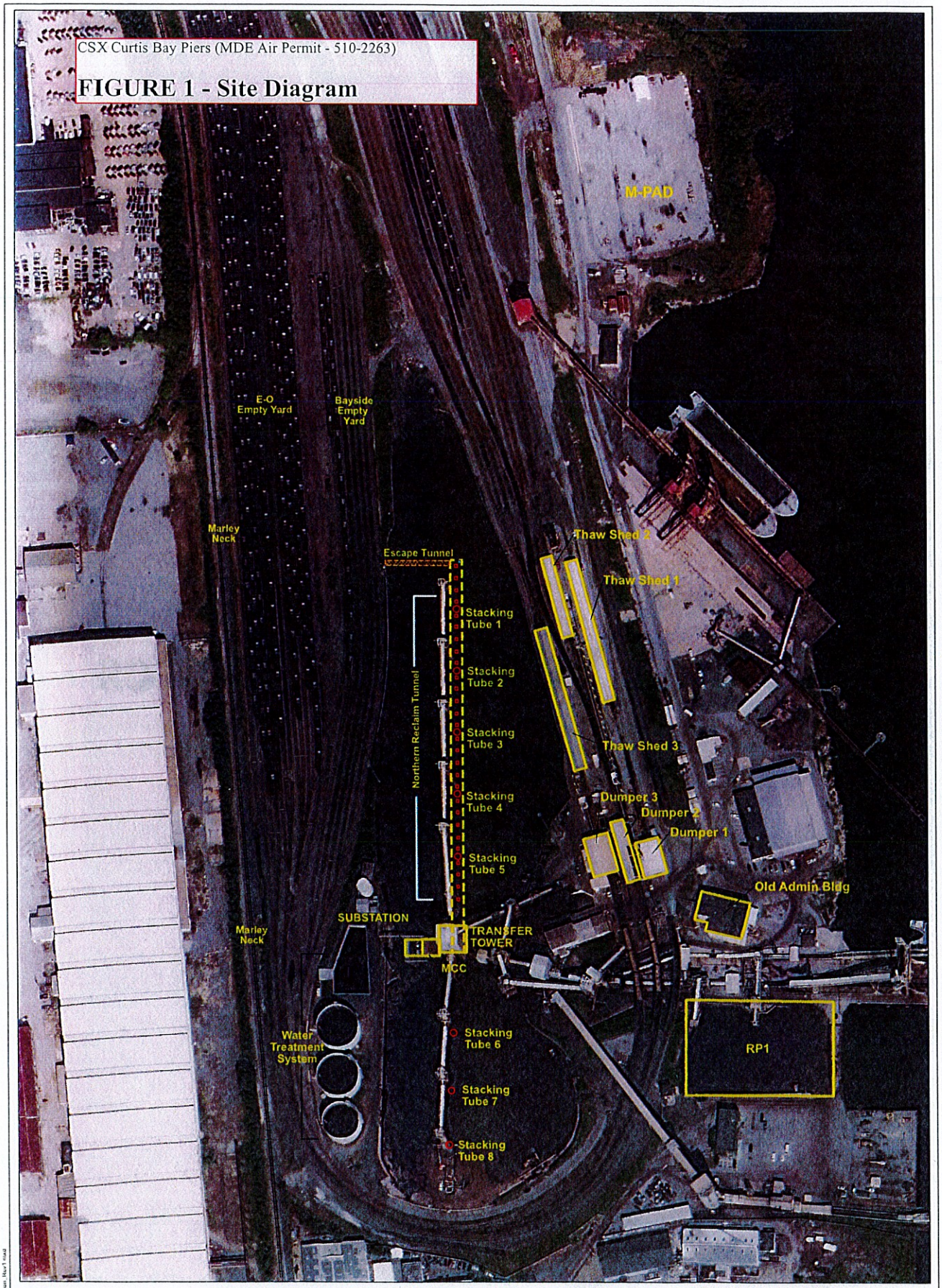
Version	Description of Change
11/6/2022	Section 5.0 - 6-month opacity test and related test protocol
5/24/2023	Section 3.2 - Additional recordkeeping for water spray truck operations, information on frequency of water truck operations, and inclusion of a map of truck watering route.
	Section 3.4 - Information on additional dust control measures under consideration.
	Section 3.4.1 - improved description of Dust Suppression System operating modes and adjustments to operations prior to and during severe weather. Added discussion of wind speed set point for Wind Detection Mode.
	Section 3.4.2 - Added information regarding criteria for wind fence evaluation.
	Section 5.0 - increased opacity test duration from 6-months to 12-months and provided clarification on number of cameras and more information on severe weather events.
	Section 6.0 - Annual training for employees and contractors, an existing practice that is added to the plan. Review of plan in advance of annual training.
	Section 7.0 - Updated recordkeeping information

Figure 1

Facility Layout

CSX Curtis Bay Piers (MDE Air Permit - 510-2263)

FIGURE 1 - Site Diagram



Legend

- Approximate location of North Reclaim Tunnel
- Buildings
- Approximate location of Northwest Escape Tunnel
- Active Rail Line (Marley Neck)
- Stacking Tube (approximate)
- Feeder Port location (approximate)
- North Reclaim Tunnel Sump (~4'x4'x4')

Note: North Reclaim Tunnel location is shown offset east from the actual location because of the oblique aerial view.

0 160 320
Feet
1 inch = 200 feet

Map Date: 1/3/2022

CSX Curtis Bay Coal Terminal
1910 Benhill Ave., Curtis Bay, MD

NORTH RECLAIM TUNNEL LOCATION

MONTROSE ENVIRONMENTAL

Service Layer Credits: Source: Arcgis, Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Figure 2

Truck Watering Routes

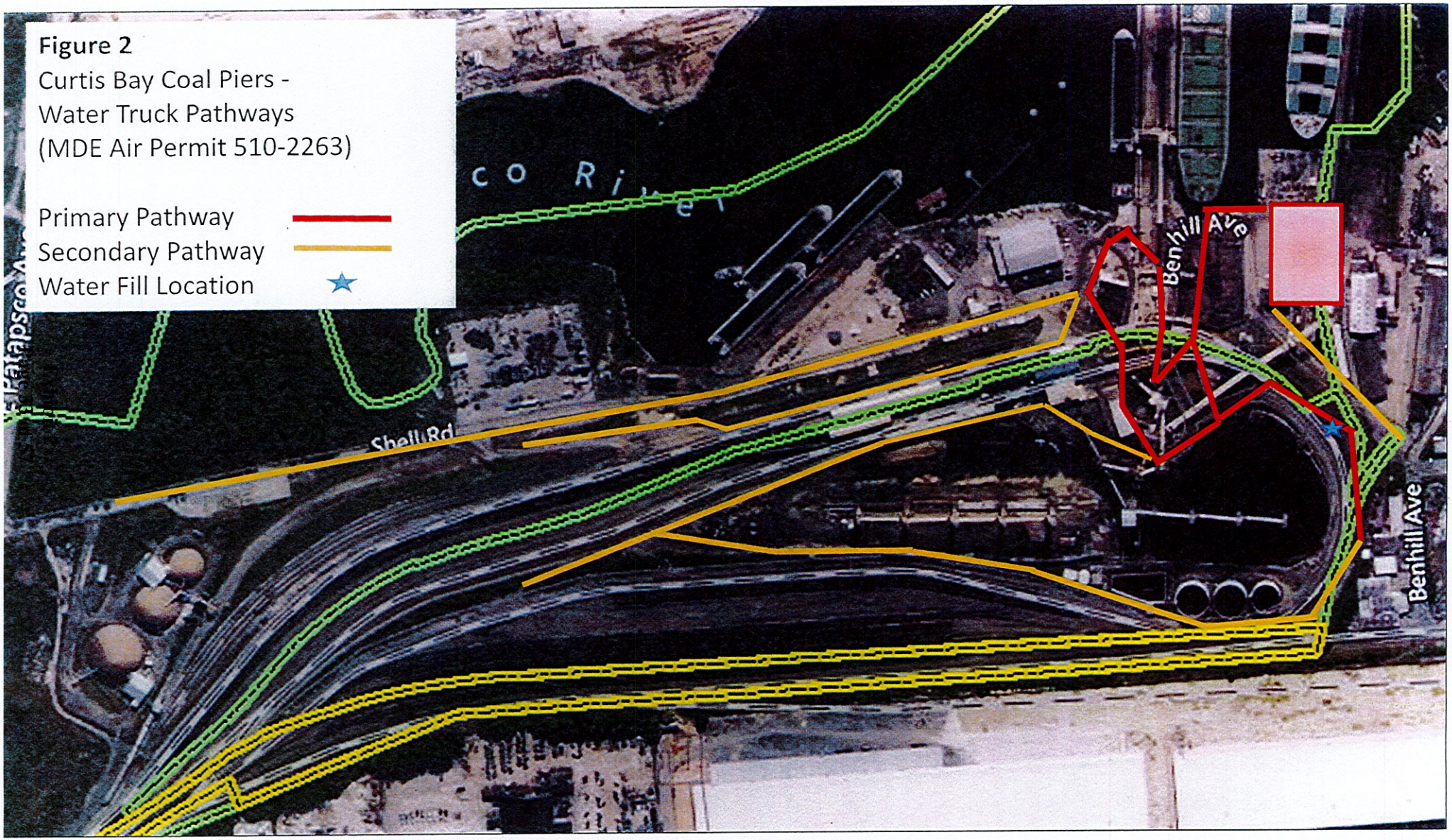
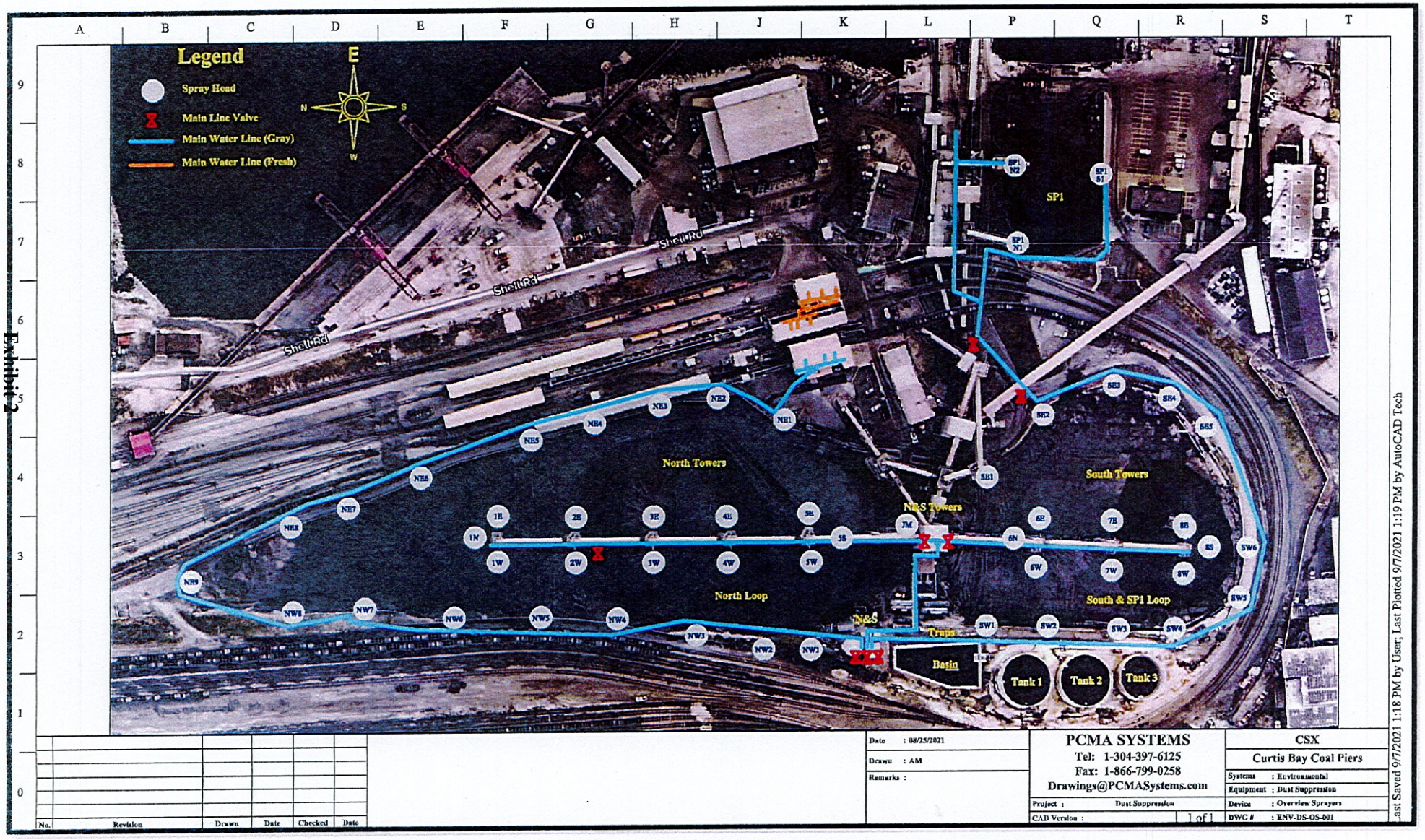

Figure 2
Curtis Bay Coal Piers -
Water Truck Pathways
(MDE Air Permit 510-2263)
Primary Pathway
Secondary Pathway
Water Fill Location
Shell Rd
Benhill Ave
Benhill Ave

Figure 3

Dust Suppression System Layout

CSX Curtis Bay – Fugitive Dust Plan (MDE Air Permit – 510-2263)

Figure 3 – Dust Suppression System Layout



APPENDIX 2

Fence Line Monitoring Plan

Fence Line Monitoring Plan

CSX TRANSPORTATION, INC.
CURTIS BAY PIERS
BALTIMORE, MARYLAND

Version November 6, 2022

Executive Summary

CSX Transportation, Inc. (CSX), Curtis Bay Piers is a material storage, transfer, and shipment terminal located at 1910 Benhill Avenue, Baltimore, Maryland, 21226. Daily operations at the CSX Curtis Bay Piers (CBP) involve the handling of coal and other bulk materials. These operations are conducted in compliance with a fugitive dust mitigation plan pursuant to the facility operating permit issued by the Maryland Department of Environment (Permit to Operate No. 510-2263).

CSX will implement this Fence Line Monitoring Plan (FLMP) in compliance with the Maryland Department of the Environment (MDE) Permit to Construct for Premises Number 510-2263 issued September 7, 2022 to monitor ambient air. As provided in Part D5 of the Permit to Construct, the FLMP includes:

- A plan for the installation and operation of a fence line monitoring system designed to monitor for fugitive dust.
- One (1) continuous Federal Equivalent Method (FEM) monitor for both PM10 and PM2.5 and at least one (1) collocated PM2.5/PM10 sensor
- Multiple PM2.5/PM10 sensors around the CSX property.
- A 10-meter meteorological monitoring system that meets all the requirements of the Quality Assurance Handbook for Air Pollution Measurement Systems - Volume IV: Meteorological Measurements should also be installed at an appropriate location on the CSX property.

The implementation of this plan is anticipated to be performed in five phases:

1. Start-up,
2. Integration and Normalization (I&N),
3. Initial Operating Capability (IOC),
4. Full Operational Capability (FOC), and
5. Operations and Maintenance.

CSX will engage an independent consultant to assist with data review and project implementation as well as to perform quality assurance and control.

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APPENDIX A – EPA Inspection Form for FEM

APPENDIX B – LCS Equipment Details

APPENDIX C – Meteorological Station – Weather Monitoring Devices

Related Online Reference Documents:

- Quality Assurance Handbook for Air Pollution Measurement Systems Volume 1, Principles and Field Guide
- Quality Assurance Handbook for Air Pollution Measurement Systems Volume 2, Ambient Air Measurements, 2017
- Quality Assurance Handbook for Air Pollution Measurement Systems Volume 4, Meteorological Measurements, 2008, 2012
- EPA Air Sensors Tool Box, Online current
- ASTM D7520-16 Determining the Opacity of a Plume in the Outdoor Ambient Atmosphere.
- Teledyne T640X Operations Manual
- EPA Standard Operating Procedure Teledyne Model 640x Real-Time Continuous PM Monitor
- Quant-AQ, ModulAir PM Operations Manual QAN-001

1. Introduction

CSX has implemented an evaluation process to determine appropriate equipment and methods for ambient air monitoring at the Curtis Bay, MD facility. This Fence Line Monitoring Plan (FLMP) meets the requirements of the Maryland Department of the Environment (MDE) Construction Permit for Premises Number 510-2263 issued September 7, 2022. The following sections of this plan outline the activities for the installation and operation of a site specific ambient air monitoring plan.

The ambient air monitoring equipment selected for installation at Curtis Bay Piers is presented in Section 3. The combination and co-location of a federal equivalent monitor (FEM) and multiple low cost sensors (LCS) will allow for data correlation, data analysis, objective quality assurance and control, and site evaluation. Monitor locations were determined using EPA guidance and facility dispersion modeling results. These monitor locations were also discussed with MDE. Section 4 contains a summary of the selected monitor site locations. The equipment, monitors and sensors require specific installation, maintenance, and calibration – these details are summarized in Sections 5, 6 and 7. The planned schedule is detailed in Section 8. The implementation of this plan is estimated to take between 12 and 24 months. Section 9 contains an overview of quality control and quality assurance (QA/QC) processes necessary for successful implementation of this FLMP.

2. Definitions

2.1. Particulate Matter

Particulate matter (PM) is a complex mixture of solid particles and liquid droplets found in the air. These particles may include dust, dirt, soot, smoke, and drops of liquid. Particulates are defined by their aerodynamic diameter for air quality regulatory purposes. PM2.5 represents particles smaller than 2.5 microns and PM10 represents particles smaller than 10 microns. Small dust particles (PM2.5 and PM10) are not visible to the human eye unless the concentration is considerable within the ambient air. PM10 may be large enough to be detected by the human eye in lower concentrations. PM10 and PM2.5 often derive from different emissions sources and also have different chemical compositions. Due to its light weight, size and resultant transient nature PM2.5 and PM10 are considered "Regional Pollutants" by the United States Environmental Protection Agency (EPA): the pollutant can be carried by the wind hundreds of kilometers from the point of origin.

Regional designations for Attainment or Non-Attainment represent localized achievement of EPA standards. EPA establishes National Ambient Air Quality Standards (NAAQS) for primary and secondary health standards for PM:

- PM2.5 annual average standards: 12.0 $\mu g/m^3$ primary and 15.0 $\mu g/m^3$ secondary,
- PM2.5 24-hour standard: 35 $\mu g/m^3$, and
- PM10 24-hour standards: 150 $\mu g/m^3$.

2.2. Visible Emissions

Air emissions that are visible to the human eye are normally comprised of particulate matter (PM) ranging from PM10-100 microns or more. The fugitive dust associated with coal handling operations are primarily larger than PM10. Visible Emissions are regulated in percent opacity: 0 percent opacity is not visible to the human eye and with 100 percent opacity the emission completely obscures the background behind the emission. Opacity is measured in five percent increments, from 0 to 100 percent, increasing as the visible emissions ability to obscure the background increases. Opacity serves as an indicator of PM emissions. CSX will utilize various visual observations to better understand operations, validate, and quality assure the PM and weather monitors.

3. Monitor Equipment Summary

CSX completed a review of available monitoring technology for applicability to permitted requirements. Equipment selection was based on data reporting, reliability, and project viability. Table 3.0 summarizes the capabilities of the monitoring equipment selected for the CSX FLMP, including data reported, verification and calibration requirements, and the estimated implementation period. Equipment selection was based on a review of currently available equipment specifications and capabilities, along with recommendations from industry professionals. CSX will communicate any changes with MDE should monitor availability be impacted by supply chain issues, or if there are other changes from the equipment listed in Table 3.0.

Table 3.0 – Summary of Selected Monitoring Equipment

Equipment	Data Reported	Verification/Calibration
FEM – Teledyne T640X	• Location • Date/Time • PM2.5 • PM10 • Wind Direction. • Wind Speed	• Monthly verification • Quarterly calibration • Semi-Annual cleaning • Annual filter change
LCS – QuantAQ ModulAir-PM	• Location • Date/Time • PM2.5 • PM10 • Wind Direction • Wind Speed	• Monthly visual check • Quarterly rotation with spare units • Annual calibration
MET Station – Campbell Scientific	• Location • Date/Time • Temperature • Relative Humidity Barometric Pressure. • Wind Speed • Wind Direction	• Quarterly operations check • Semi-Annual cleaning and calibration check.

4. Monitor Site Locations

Monitor site locations were determined based on wind rose data, air dispersion modeling results, and EPA guidance. CSX air modeling site characterization identified scenarios with higher parameter concentration. Monitors were located inside these areas and with correlated cross-wind locations. This will enable data comparison for predominant wind patterns across the facility. Table 4.0 lists a summary of monitor locations, Figure 4.0 shows wind rose data based on the BWI airport, and Figure 4.1 shows the eight selected equipment locations around the facility. Position 8 was selected as the FEM location based on potential modeled emission impacts and alignment with existing Curtis Bay community monitors. This FEM position meets the requirements of EPA Quality Assurance Handbook for Air Pollution Measurement Systems (QAHAPM) Volumes 1 and 2. LCSs were positioned with the FEM and around the property boundary per QAHAPM guidance. These planned locations were discussed with MDE.

The meteorological (MET) station was positioned based on discussions with industry professionals, collaboration with the Maryland Department of the Environment, and review of QAHAPM V4 siting procedures. The "M-Pad" material storage area of the facility was selected for the MET station (Figure 4.1, Location 5) due to flat ground; clearance from obstructions; not being located in wind tunnels or channels; and having space and electrical power available. A 10 meter tower is being planned for construction in the SW corner of the M-Pad as shown as Location 5 in Figure 4.1.

Table 4.0 - CSX Curtis Bay Monitor Locations

Map Location	Location	Latitude	Longitude	Power	Comments
1	LCS 1	39.22168	-76.581948	Yes	On guard shack at facility main entrance
2	LCS 2	39.22191	-76.58448	No	Pole on west side of Marley Neck track
3	LCS 3	39.22713	-76.584838	No	Pole in between tracks
4	LCS 4	39.22938	-76.585278	No	Pole in between tracks
5	Met Tower	39.22773	-76.58096	Yes	M Pad Storage Pad
5	LSC 5	39.22773	-76.58096	Yes	Co-located On MET Tower
6	LCS 6	39.22479	-76.580096	Yes	Approximate location at ore pier
7	LCS 7	39.22148	-76.576314	Yes	Eastern edge of dock
8	FEM 1	39.2232	-76.584003	Yes	On pump house; 16 ft from grade
8	LCS 8	39.2232	-76.584003	Yes	Co-located LSC with FEM
8	LCS 9 spare	39.2232	-76.584003	Yes	Co-located LSC with FEM- Spare
8	LCS 10 spare	39.2232	-76.584003	Yes	Co-located LSC with FEM- Spare

Figure 4.0 - Wind Rose from BWI Airport

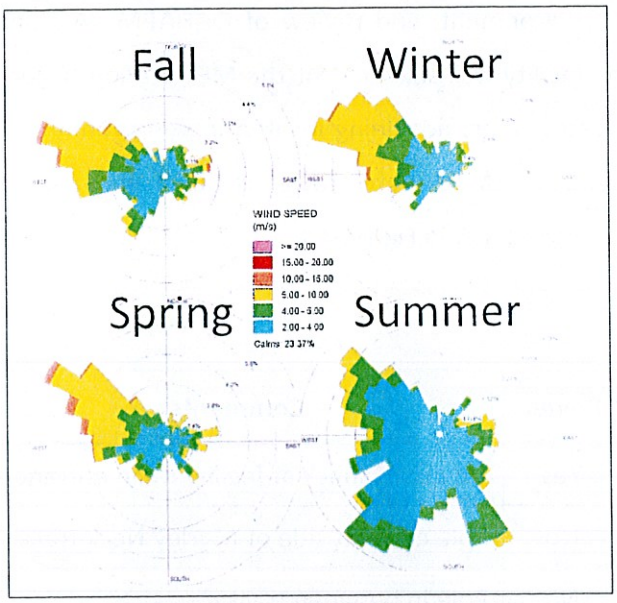
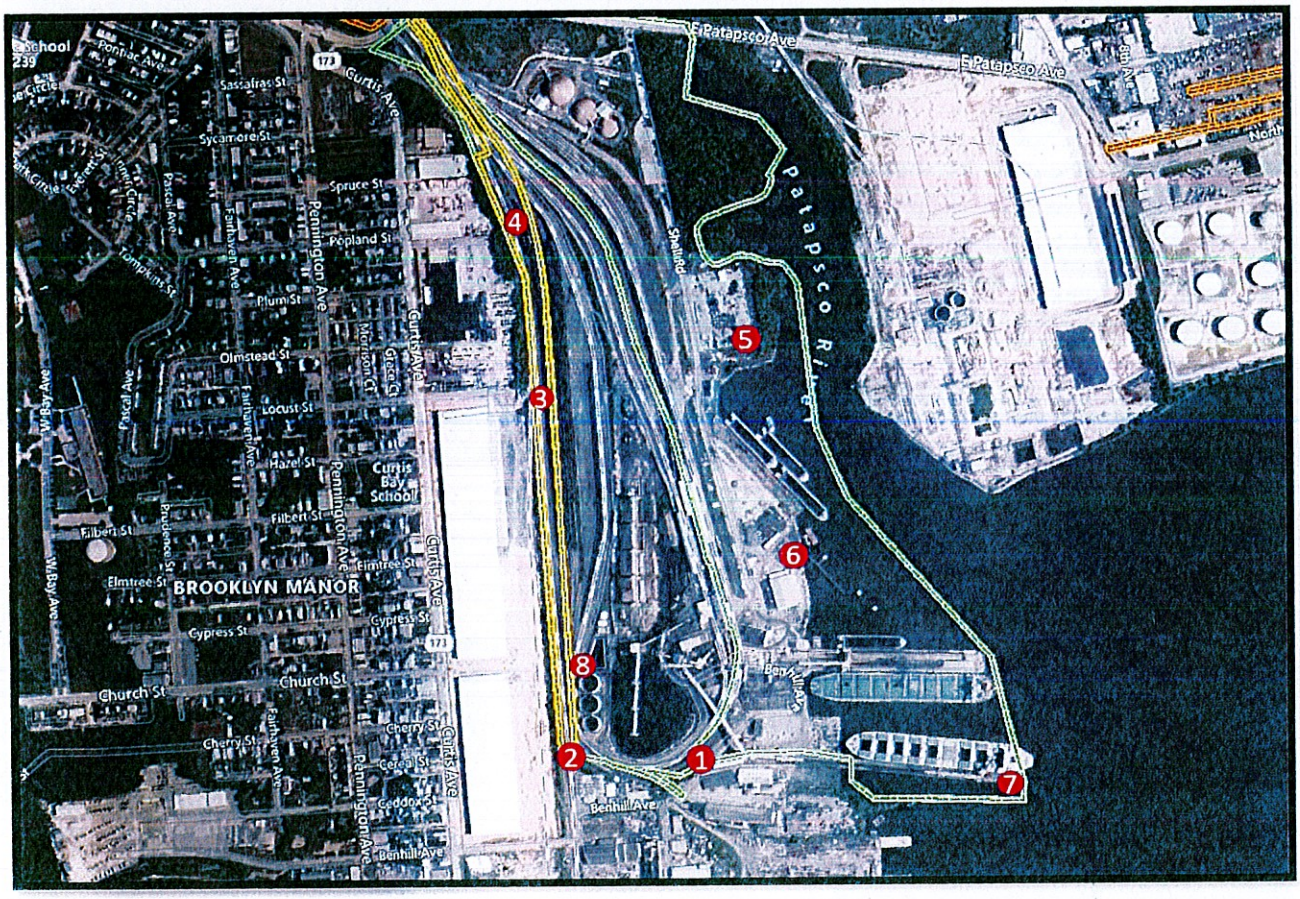


Figure 4.1 - CSX Curtis Bay Monitor Locations



5. Monitor Installation

Monitors will be installed in accordance with the site preparation guidance published in the QAHAPM V2 Ambient Air, and the respective manufacturer manuals for the specific monitor.

- **Mounting -** Sensors will be mounted firmly to the posts (approximately 6 feet above ground level) set in the eight locations shown in Figure 4.1. Fence monitors will be installed with corrosion resistant hardware. Mounting will be in a fashion that will enhance performance by ensuring the units are properly grounded and tightly secured. Quick disconnect pole mounts will be used to facilitate the LCS equipment rotation from the FEM location to the fence locations.
- **Power -** Most monitors will have 120 volt alternating current (VAC) power from the local grid with the exception of SW and NW corner positions, which will be solar powered units. See Table 4.0 for power options at each location. All units will be equipped with battery backup.

  Monitors near primary facility infrastructure, and the MET tower will be powered by local grid 120VAC power. This plug-in power is adequate to charge the batteries of the MET tower, FEM and LCS sensors. Full battery charge can operate the MET Station for approximately one week; the FEM for approximately 4 hours; and the LCS units for approximately 12 hours.

- **Security** - Monitors will be mounted on posts just inside the CSX property line to facilitate the security of the monitoring units. CSX will perform periodic security surveillance.
- **Communications –** Monitors will communicate via wireless communications with manufacturer cloud data systems. Each unit can be accessed via their online communications platform. CSX will engage an outside consultant to develop data export routines using the Application Program Interface (API) and a central data management system. Data will be maintained on a 5 year rolling basis.

6. General Monitoring Requirements

Monitoring requirements will be established during FLMP implementation. As the project progresses actionable data will be defined with reliable, repeatable, reproducible data at specific time increments. Data alert levels and subsequent actions will be defined to sustain operations. See Table 9.0 for an example of data alert levels.

Data integration will be necessary to enable quality checks as the implementation schedule transitions to the Initial Operational Capability (IOC) phase of the project. CSX will work with MDE to develop data checks, reporting format and frequency.

7. Validation and Calibration

7.1 FEM

The FEM will be calibrated based on the protocol as detailed in the EPA published Standard Operating Procedures for the Teledyne 640X. Calibrations will be performed when the monthly flow check or the quarterly maintenance check differs by more than ±4.1% of reference, 5.1% of the design flow rate for PM2.5 and 5.1% of the transfer standard for PM10. The temperature sensors and barometric pressure sensors for each PM sampler will be calibrated when they approach ±2.1 degrees C or ±10.1 mmHg difference, respectively. Specific troubleshooting will include the Teledyne Operators Guide. The monitor will be checked monthly and quarterly using procedures from published guidance, by qualified technicians, and documented as detailed in Appendix A.

Table 7.1 - FEM Sensor Measurement Quality Objectives

Parameter	Sample Method	Reporting Unit	Operating Range	Resolution	Data Collection Frequency	Evidence of Completeness
PM2.5	Dual Laser Particle Counter	ug/m^3	0-100,000 ug/ m3	0.1 ug/m^3	1-minute	75% of every hour the 1-minute data will be recorded.
PM10	Dual Laser Particle Counter	ug/m^3	0-100,000 ug/m^3	0.1 ug/m^3	1-minute	75% of every hour the 1-minute data will be recorded.

7.2. Low Cost Sensors

The FEM will be used for correlation and calibration of the LCS units to verify PM2.5 and PM10 data. During the project start-up phase, the FEM will be established and co-located with the LCS units at a single location (Figure 4.1, Location 8) for a minimum of one week. Data reported for the FEM and the LCS monitors will be compared using the FEM as the baseline. Any co-located LCS unit with a deviation of more than 20 percent from the FEM in a comparison of 24-hour averages will be inspected and repaired,

and possibly returned to the manufacturer for replacement. This 20 percent value is based on LCS manufacturer input. LCS units will be deployed to the fence line locations after confirmation of data correlation.

This plan includes spare LCS monitors co-located with the FEM to enable continuous correlation. A minimum of one LCS unit will be co-located with the FEM at all times. The co-location will assist in developing local correlation factors between the FEM and LCSs. Fence line LCS units will be rotated with spare LCS units during the quarterly maintenance activities.

If a co-located LCS/FEM unit varies more than 20% from the FEM unit based on 24-hr average data comparison, the unit will be checked for issues in the field, and possibly returned to the manufacturer for repair. Returned/repaired monitors will re-enter the facility after co-locating with the FEM for a period of no less than 1 week for quality assurance.

Table 7.2 - Low Cost Sensor Quality Objectives

Parameter	Sample Method	Reporting Unit	Operating Range	Resolution	Data Collection Frequency	Evidence of Completeness
PM2.5	Laser Particle Counter	ug/m^3	0-80,000 ug/m^3	1 ug/m^3	1-minute	75% of every hour the 1-minute data will be recorded
PM10	Laser Particle Counter	ug/m^3	0-80,000 ug/m^3	1 ug/m^3	1-minute	75% of every hour the 1-minute data will be recorded

7.3 Meteorological Station

Field calibrations of the meteorological equipment will be performed semi-annually as well as whenever an instrument exceeds specified control limits, undergoes major maintenance or repair, or fails a performance audit. Meteorological equipment calibrations will be performed with equipment that is in current calibration and is traceable to National Institute of Standards and Technology (NIST) or Laboratory Accreditation & Assessment Services (A2LA) standards. The meteorological station is composed of multiple weather monitoring devices, each device has separate data quality verification requirements. **Appendix C** contains references for data quality objectives of each weather monitor.

7.4. Routine Maintenance

Routine maintenance will be performed per the published manufacturer requirements for each monitor type and site-specific experience. Maintenance instructions are detailed in EPA and equipment manufacturer documents: EPA Standard Operating Procedure (SOP) Teledyne Model 640X; and the LCS by Quanta QAM01 ModulAir Operations Guide. Weather instrument maintenance is also dictated by the QAHAPMS V4. Table 7.4 summarizes equipment routine maintenance activities.

Table 7.4 – Summary of Routine Maintenance

Equipment	Monthly	Quarterly	Semi-Annual	Annual
FEM – Teledyne T640X	Monthly inspection; record with EPA form (Appendix A)	Clean inlet; Calibration with SpanDust (SPAN)	Clean optical channels and relative humidity/temp sensors	Change filters
LCS – QuantAQ Modulair	Visual inspection; data verification	Quarterly rotation of spare units from FEM location; clean, reset time, clear MicroSD	n/a	Data calibration check with FEM
Weather Monitors	Data Availability	Data compare to fence line monitors	Calibration check per Appendix C	Accuracy check per Appendix C

8. Monitoring Project Schedule

The FLMP will be implemented in an iterative fashion to improve capability, data quality, and quality assurance as the system matures. There will be five phases:

1. Start-up,
2. Integration and normalization (I&N),
3. Initial Operating Capability (IOC),
4. Full Operational Capability (FOC), and
5. Operations and Maintenance.

(1) **Start-up** – During the Start-up phase, monitors will be installed across the facility, powered up, calibrated, and data reporting confirmed. Key tasks during the Start-up phase include:

- Purchase equipment,
- Establish all monitoring locations,
- Receive monitoring equipment and begin calibration process, and
- Initiate data communication.

Upon Start-up, there will be stand-alone data sets:

- FEM: PM2.5, PM10 in 1-minute data averaged over 24 hours,
- LCS: PM2.5, PM10 in 1-minute data averaged over 24 hours, and
- Weather attributes in 1-minute data averaged over 24 hours.

The Start-up phase will be complete when all equipment is installed and operational.

Note - the three data sets are managed independently of each other; manual integration will be required to review and validate the data sets.

(2) **Integration and Normalization (I&N)** - During this phase, CSX will compare data sets to confirm proper operation and identify necessary field adjustments. The goal is to ensure equipment produces a normalized set of actionable data. Tasks included in this phase:

- Application Program Interfaces (API) will be designed to extract data from the separate manufacturer systems,
- Implement and sustain data extractions to investigate for irregularity and phenomenon,
- Implement and sustain API from cloud data sources with correction factors, and
- Build Quality Assurance Plan.

(3) **Initial Operating Capability (IOC)** - The IOC phase will involve significant discovery and anomaly resolution to convert actionable data into actionable information. The independent consultant will be engaged to help understand limits, resolve anomalies discovered through data comparison, data completeness, availability, and interpretation, and to implement QA/QC data solutions. The phase will include:

- Manual review of normalized data sets,
- Establish alert limits for monitor types, and
- Development of QA/QC data checks and implement solutions.

This phase will be considered complete once the anomalies of the system are understood; data streams are verified; cross monitor checks are implemented and operational, and quality control is implemented.

(4) **Full Operational Capability (FOC)** - The FOC phase includes the development and sustainment of knowledge-based data reporting. This phase includes:

- Internal operations and controls reporting; and
- External community engagement and education.

The FOC phase will be complete when reporting dashboards have been deployed and CSX had demonstrated abilities to operate and sustain necessary elements of the FLMP.

(5) **Operations and Maintenance** – The monitoring systems will require ongoing equipment operations and maintenance to sustain the knowledge-based reporting. CSX will determine an appropriate review frequency for this FLMP.

The projected implementation is estimated to be 12-24 months to achieve full capabilities.

9. Quality Assurance and Quality Control

The plan is designed to monitor ambient air conditions surrounding the facility. Quality assurance and quality control (QA/QC) processes are established to verify and validate monitoring data results.

Ambient air monitoring equipment manufacturers have documented that their sensors are sensitive to weather impacts such as temperature and humidity changes. Additional data impacts may include transient PM and Regional Air Pollutants that follow global wind patterns. CSX will implement procedures to verify and validate PM data to better understand site conditions and regional air impacts.

The FEM will be defined as the data benchmark at the facility. During the project start-up phase:

- LCS monitors will be co-located with the FEM and shall not vary more than 20%, based on 24-hour averaged data over 7 days,
- If LCS monitor data vary more than 20% from the FEM standard, the LCS will be inspected and repaired, or possibly will be returned to the manufacturer for troubleshooting,
- LCS equipment that passes the 20% test will be deployed to the fence line positions,
- CSX will maintain spare equipment at the FEM location to establish a rotation that will bring each fence unit through the calibration cycle annually for approximately three months.

CSX will perform data verification and validation quarterly:

- Rolling 24 hour 1-minute data will be compared for FEM and LCS locations. If LCS data correlate within 20% the equipment is assumed calibrated,
- If LCS data do not correlate within 20%, then co-located LCS equipment will be compared to each other. If they correlate within 10%, then it will be assumed the FEM requires recalibration,
- For any LCS that fails correlation beyond 20%, it will be assumed faulty. Faulty equipment will be inspected and repaired, and possibly returned to the manufacturer for repair.

During the quarterly maintenance and QA, LCS monitors will be rotated from the FEM location to fence locations. This quarterly cycle will ensure each of the LCS units is validated and re-calibrated at least once annually.

The meteorological system provides background weather conditions for all PM readings. CSX will utilize secondary methods to investigate high PM monitor data: weather conditions and visible observations will help define operating conditions. High PM readings may be influenced by relative humidity and barometric pressure. The QA/QC review of the weather system will be provided by the contractor's semi-annual calibration checks per the QAHAPMS V4.

CSX intends to develop a summary of QA/QC data checks for all equipment. An example of potential data checks is shown in Table 9.0.

Table 9.0 – Potential Data Checks

Monitor	Pollutant	Normal Data Correlation	Alert	Action 1	Action 2	Action 3	Action 4
FEM	PM2.5 ug/m^3	< 20 % with co-located units	> 35 ug/m^3 on rolling 24 hr average	Visual Verify	Trigger Controls	Cross Check with Up and Down wind Monitors	Document event in lessons learned for review
LCS	PM2.5 ug/m^3	< 20 % with co-located units	> 35 ug/m^3 on rolling 24 hr average	Visual Verify	Trigger Controls	Cross Check with Up and Down Wind Monitors	Document event in lessons learned for review

Monitor	Pollutant	Normal Data Correlation	Alert	Action 1	Action 2	Action 3	Action 4
FEM	PM10 ug/m^3	< 20 % with co-located units	> 150 ug/m^3 on rolling 24 hr average	Visual Verify	Trigger Controls	Cross Check with Up and Down wind Monitors	Document event in lessons learned for review
LCS	PM10 ug/m^3	< 20 % with co-located units	> 150 ug/m^3 on rolling 24 hr average	Visual Verify	Trigger Controls	Cross Check with Up and Down wind Monitors	Document event in lessons learned for review
Weather Monitors	Wind Speed m/s	< 5 m/s	> 5 m/s	Trigger Controls	Check for drop in Fence Monitors	Cross check with Up and Down wind Monitors	Document event in lessons learned for review
Weather Monitors	Wind Direction Degrees North = 0	Except 70-140 degrees	70-140 degrees Wind into the community	Trigger Controls into wind	Check West Fence for VE	Cross check all west PM for high	Document event in lessons learned for review
Weather Monitors	Relative Humidity	< 65%	> 65%	Cross check east side locations with west side Monitors	Visually validate any higher-than normal readings on water side	Compare >60% readings with <60% readings water side	Document event in lessons learned for review

9.1 Potential Data Issues

This plan is designed utilizing proven high quality, high reliability equipment. However, it is our understanding that these monitors do not have substantial operating experience at sites with large size fugitive particles. That is, sites with particle size substantially greater than PM10 such as Curtis Bay Piers.

Both the FEM and the LCS equipment are also known to be sensitive to changes in atmospheric humidity, barometric pressure, and temperature. These changing conditions are likely at this facility. During the implementation of this FLMP we will strive to understand known data issues that may occur, such as:

- Resolution of time synchronization,
- Impact of high humidity and operating temperatures,
- Impact of barometric pressure changes, and
- Impact of high PM exposure.

Time synchronization – The FEM and MET station sensors are designed to align with the National Time Server (NTS). These data sets should synchronize and match in time sequence. LCS monitors do not utilize the NTS and their data may experience slight differences in time between each LCS.

During the Integration and Normalization (I&N) phase, time synchronization differences will be worked to resolution. Solutions may include:

- Development of adjustment factors or tolerance bands to the comparison averages,
- Sum the 1-minute data into 24-hour averages for comparison purposes to provide an acceptable time offset, and
- Time resolution may require larger average blocks.

Humidity - During the first year, it is anticipated that LCS sensors located on the eastern side of the facility will not be able to operate in high humidity or saltwater conditions. CSX will investigate technologies and recommend solutions to normalize known high or low readings. Enhanced data analytics may be required to resolve for site specific weather conditions.

High Exposure to Particulate Matter - The coal storage piles at CBP are a potential large particle fugitive dust source (i.e., particle size substantially greater than 10 microns). Each of the equipment manufacturers has disclosed known data issues with their equipment for the detection of larger particles. The particle weight may plug filters or the air intakes. CSX will analyze for these conditions and discuss potential resolution.

Appendix A – EPA Inspection Form for FEM

							Order of Monthly Checks:
Station:							1. Document any alarms and then clear. 2. Record parameters as found from Dashboard. 3. Take instrument "Off Scan" from data system. 4. Perform zero test; clean PM $_{10}$ well. 5. Perform verifications of: a. BP b. Ta c. Total flow (16.67 lpm) d. Sample flow (5.00 lpm) e. Span Dust (performed quarterly) 6. Perform, only if needed calibrations of pressure, flow, and PMT. 7. Put instrument back together. 8. Clear any remaining alarms. 9. Wait minimum of 10 minutes to ensure PM concentrations are representative of ambient air. 10. Record "After" parameters from Dashboard in far-right column. 11. Bring instrument back on line to data system.
Operator:							
Analyzer S/N:							
Date:							
Time monitor out of service (LST):							
Time monitor back in service (LST):							
Any alarms enabled? List alarm/date/time if applicable							
Parameters from Dashboard:						***As found / After***	
Amb P. (mm Hg)		PMT Setting		Current PMT hv			
Amb T. (°C)		Box T. (°C)		LED Temp. (°C)			
$PM_{2.5}$ Conc. (µg/m^3)		ASC Heater Duty		Pump PWM (%)			
PM_{10} Conc. (µg/m^3)		Sample Temp. (°C)		Sample Flow (lpm)			
PM_{10} STP (µg/m^3)		Sample RH (%)		Valve PWM (%)			
Package Version				Total Flow (lpm)			
Monthly QC Checks:							
Audit Device:		**S/N:**		**Last Cert. Date:**			
QC Check	**Verifications:**		**Calibrations:**		**Tolerance**		
	Audit Actual	**T640x**	**Audit Actual**	**T640x**			
Zero Test	NA		Re-zero if any issues found and corrected:		0.0 on each PM metric		
BP					+/- 10 mm Hg		
Ta					+/- 2°C		
Total Flow 16.7 lpm					+/- 5% of T640x (e.g., 15.87 - 17.53 lpm)		
Sample Flow 5.00 lpm					+/- 5% of T640x (e.g., 4.75 - 5.25 lpm)		
Bypass Flow 11.7 lpm (only as needed)					+/-5% of T640x (e.g., 11.12 - 12.29 lpm)		
Additional Checks and Maintenance (longer than monthly):					***Date Completed***		
Quarterly	**Span Dust™** (+/- 0.5 value on Span Dust™ bottle)	Peak Ch. = PMT Setting = Peak Ch. Counts =					
	Inlet	1. Clean PM_{10} Inlet (above PM_{10} well)					
Every 6 Months		1. Clean Optical Chamber 2. Clean RH Sensor 3. Clean Ta Sensor					
Every 12 months or if valve or pump PWM value approaches 80%		1. New internal (5.0 lpm) Disposable Filter Unit (DFU) [inside front panel] 2. New external (11.67 lpm) Disposable Filter Unit (DFU) [at back of instrument]; It is recommended to change both DFUs on the same day.					

Appendix B – LCS Equipment Details

- QuantAQ (quant-aq.com)
- Modulair-PM Product Manual

Appendix C - Meteorological Station – Weather Monitoring Devices

QAHAPM Vol 4 summarizes the QA/QC requirements for each of the Meteorological Monitors.

Table 0.12 Siting and Exposure for Meteorological Sensors[a]

Measurement	Distance from Obstruction	Distance Above Ground	Recommended Group Cover	Comments
Wind Speed/Direction	10x the height of the obstruction	10 meters	Grass or gravel	The standard exposure of the wind instruments over level, open terrain is 10 meters above ground
Temperature/Dew Point	1.5x the tower diameter	1.25 to 2 meters	Non-irrigated or un-watered short grass, or natural earth	The surface should not be concrete or asphalt or oil-soaked. Reflection from these surfaces may affect the performance of the sensor.
Vertical Temperature Difference	1.5x the tower diameter	2 meters and 10 meters	Non-irrigated or un-watered short grass, or natural earth	The surface should not be concrete or asphalt or oil-soaked. Reflection from these surfaces may affect the performance of the sensor.
Solar Radiation	2 meters	2 to 10 meters	No requirements	Sensor should be free from obstructions above the plane of the sensor. It should be located so that shadows will not cast on the device.
Barometric pressure	1meter	1 to 10 meters	No requirements	The location should have uniform, constant temperature, shielded from the sun, away from drafts or heaters
Precipitation	2x to 4x the obstruction height	30 cm, minimum	Natural vegetation or gravel	Asphalt or concrete should be avoided to avoid splashing the gage. The gage should be high enough to avoid it being covered by snow.

Table 0-3 NCore Meteorological Measurement Quality Objectives

Measurement	Method	Reporting Units	Operating Range	Resolution	Minimum Sample Frequency	Raw Data Collection Frequency	Completeness
(Required)							
Ambient Temperature	Thermistor	°C	-30 - 50	0.1	Hourly	1 minute	75%
Relative Humidity	Psychrometer/ Hygrometer	%	0 - 100	0.5	Hourly	1 minute	75%
Wind Speed	Cup, prop or sonic anemometer	m/s	0.5 - 50.0	0.1	Hourly	1 minute	75%
Wind Direction	Vane or sonic anemometer	Degrees	0 - 360 (540)	1.0	Hourly	1 minute	75%
Vector Data Wind Speed Wind Direction	DAS[2] Calculations	 m/s degrees	 0 - 50.0 0 - 360	 0.1 1.0	Hourly	 1 minute 1 minute	75%
(Optional)							
Solar Radiation	Pyranometer	Watts/m^2	0 - 1100	10	Hourly	1 minute	75%
Precipitation	Tipping Bucket	mm/hr	0 - 25 mm/hr	0.2 mm	Hourly	1 minute	75%
Barometric Pressure	Aneroid Barometer	mb	600 - 1100	0.5	Hourly	1 minute	75%

Table 0-4 NCore Calibration and Accuracy Criteria

Measurement	Verification/Calibration			Accuracy		
	Type	Acceptance Criteria	Frequency	Type	Acceptance Criteria	Frequency
Ambient Temperature	3 pt. Water Bath with NIST-traceable thermistor **or** thermometer	±0.5 °C	Semi-Annually	3 pt. Water Bath With NIST-traceable thermistor **or** thermometer	±0.5 °C	Annually
Relative Humidity	NIST-traceable Psychrometer **or** standards solution	±7% RH	Semi - Annually	NIST-traceable Psychrometer **or** standards solution	±7% RH	Annually
Wind Speed	NIST-traceable Synchronous Motor, CTS method[a]	±0.25m/s ≤5m/s; 5%>2m/s not to exceed 2.5m/s	Semi-Annually	NIST-traceable Synchronous Motor	0.25m/s ≤5m/s; 5%>2m/s not to exceed 2.5m/s	Annually
Wind Direction	Solar Noon, GPS Magnetic Compass, CTS method[a]	±5 degrees; includes orientation error	Semi-Annually	Solar Noon, GPS or Magnetic Compass	±5 degrees; includes orientation error	Annually
Solar Radiation	NIST-traceable Pyranometer	10 w/m3 below 200 w/m3 above 200 w/m3 ±5%	Semi-Annually	NIST-traceable Pyranometer	10 w/m3 below 200 w/m3 above 200 w/m3 ±5%	Annually
Barometric Pressure	NIST-traceable Aneroid Barometer	±3 mb	Semi-Annually	NIST-traceable Aneroid Barometer	±3 mb	Annually
Precipitation	Separatory funnel and graduated cylinder	±10% of input volume	Semi-Annually	Separatory funnel and graduated cylinder	±10% of input volume	Annually

BEFORE THE
SURFACE TRANSPORTATION BOARD

Finance Docket No. 36886

CSX TRANSPORTATION, INC.
PETITION FOR DECLARATORY ORDER

EXHIBIT 3

CSXT Comments on Renewal of State Permit to Operate No. 510-2263 for CSX Transportation Curtis Bay Piers (Dec. 16, 2024)

Daniel E. Schmitt
Assistant General Counsel

***Admitted in Washington, DC**
Not Admitted in Florida
Authorized Florida House Counsel

500 Water Street
Jacksonville, FL
32202

December 16, 2024

Via Email

Suna Sariscak
Air Quality Permits Program
Air and Radiation Management Administration
Maryland Department of the Environment
1800 Washington Blvd.
Baltimore, MD 21230

Re: Comments on Renewal of State Permit to Operate No. 510-2263 for CSX Transportation Curtis Bay Piers

Dear Ms. Sariscak:

CSX Transportation, Inc. ("CSX") appreciates the Maryland Department of the Environment's ("MDE" or "Department") consideration of our comments and expert technical reports in support of the renewal of State Permit to Operate ("PTO") No. 510-2263 for Curtis Bay Piers ("Curtis Bay Piers" or the "Terminal"). Curtis Bay Piers is an essential part of the national freight rail network and the Port of Baltimore. Curtis Bay Piers is also a longstanding member of the Curtis Bay community—we have operated continuously in Curtis Bay for the past 124 years and have invested over $60 million over the last 5 years to advance operational safety and environmental stewardship at Curtis Bay Piers.

CSX largely supports many of the conditions included in the draft PTO. The conditions in Part C (operating conditions) and Part E (recordkeeping conditions), for example, are consistent with CSX's existing permit obligations. **But CSX does not support draft conditions D(1)-D(5) and strongly urges MDE to remove these conditions from the final permit.** These comments focus primarily on the technical and legal issues draft conditions D(1)-(5) raise.

CSX has listened to and recognizes the concerns raised by the South Baltimore Community Land Trust ("SBCLT"), the Community of Curtis Bay Association ("CCBA"), and others in the Curtis Bay community about the impact of dozens of industrial sources, including the Terminal, as well as heavy diesel truck traffic, on air quality in Curtis Bay. Consistent with environmental justice principles, CSX has taken significant steps to directly address the community's concerns by providing the public with access to accurate and representative particulate and meteorological information for the Terminal.

CSX is the first facility in Maryland to install and operate a fenceline monitoring system for particulate matter. This best-in-class system monitors PM_{10} and $PM_{2.5}$ continuously at eight locations along the perimeter of the Terminal and publishes the data in real time to a public website, providing interested community members 24/7 access to information about current outdoor air

quality conditions in the vicinity of the Terminal.[1] Fifteen months of fenceline monitoring data prove that particulate matter concentrations at the Terminal's fenceline are below 24-hour primary and secondary National Ambient Air Quality Standards ("NAAQS") set to protect sensitive individuals, including asthmatics, children, and the elderly.[2]

Curtis Bay Piers is classified as a minor source of particulate matter emissions.[3] As a minor source, CSX is required by state law to take reasonable precautions to prevent particulate matter from becoming airborne from the Terminal.[4] Maryland regulations provide examples of reasonable precautions to prevent fugitive particulate matter emissions from unconfined sources and materials handling, many of which are already in place at Curtis Bay Piers.[5] The Terminal controls fugitive emissions through a sophisticated wet suppression system that uses real time weather data, covered conveyors, dumper sheds, telescoping chutes, and a southern boundary wind fence. These and other comprehensive dust control measures are documented in an enforceable Fugitive Dust Control Plan and have proven effective in controlling fugitive dust emissions associated with the Terminal's coal storage and handling operations. In fact, there have been no air permit violations in the last 25 years relating to the discharge of fugitive dust from the Terminal's coal storage areas.[6]

Curtis Bay Piers has operated and continues to operate in compliance with its PTO, MDE-approved Fugitive Dust Control Plan, and the additional operating and monitoring conditions in the September 2022 Permit to Construct ("2022 PTC"). A 2022 analysis of toxic air pollutant ("TAP") emissions from the Terminal done in connection with the 2022 PTC demonstrated that all TAP emissions, including coal dust and silica emissions, are at levels that are protective of public health.[7]

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[1] Curtis Bay Monitoring, available at https://www.csxcurtisbayfacts.com/monitoring/.

[2] Appendix 3; Memorandum from Trinity Consultants to CSX regarding "CSXT Curtis Bay Piers – Fenceline Monitoring Network Status" at 2-3 (Dec. 10, 2024) ("Fenceline Monitoring Summary"); *see also* U.S. EPA, NAAQS Table, https://www.epa.gov/criteria-air-pollutants/naaqs-table.

[3] *See* Appendix 13; MDE Air and Radiation Administration, Fact Sheet, Air Quality Permit to Construct for CSX Transportation Curtis Bay Piers (Sep. 2022) at 3, available at https://mde.maryland.gov/programs/permits/AirManagementPermits/Documents/CSX%20Fact%20Sheet.pdf ("MDE PTC Fact Sheet") ("CSX is a true minor source of particulate matter emissions, inherently limited by the design capacity of the plant.").

[4] COMAR 26.11.06.03C & .03D.

[5] Examples of "reasonable precautions" in COMAR 26.11.06.03D include application of asphalt, oil, water, or suitable chemicals on dirt roads, materials stockpiles, and other surfaces which can create airborne dust; and the paving of roads and their maintenance in a clean condition.

[6] No air permit violations were issued to Curtis Bay Piers between 2000 and 2022. In July 2022, MDE issued a notice of violation to CSX alleging that a December 2021 explosion resulted in air emissions. This explosion was the result of methane buildup in an underground tunnel and was not related to the outdoor storage of coal in stockpiles. On September 9, 2024, MDE issued a notice of violation to CSX due to visible emissions generated during railroad track maintenance work. An out-of-state CSX crew, unaffiliated with Curtis Bay Piers, generated visible dust during the replacement of worn-out railroad ties along a section of track. This track maintenance work did not involve the Terminal's coal handling and storage operations or any transloading equipment. Curtis Bay Piers employees saw the visible dust and, in accordance with Section 1 of the Fugitive Dust Control Plan, immediately shut down the track maintenance work until additional dust control measures could be put in place. The visible dust event lasted approximately 45 minutes. This track maintenance work was an unusual occurrence as railroad ties are replaced approximately once every 8-10 years.

[7] *See* Appendix 13; MDE PTC Fact Sheet at 4.

Ordinarily, this demonstrated history of compliance with air quality rules and safe and lawful operation would support issuance of a permit renewal without significant changes. Yet Part D of the draft PTO[8] contains six new conditions requiring CSX to construct additional dust controls "to both better prevent coal dust from leaving the facility and to remedy nuisance conditions."[9] Draft conditions D(1)-(3) require CSX to "construct a physical barrier to prevent coal dust from being transported from any coal storage piles on the site into the surrounding community" that surrounds all coal storage piles completely and is higher than the stockpiles' maximum height.[10] In practice, this means building a physical structure at least 110 feet tall (the maximum height of the Terminal's stockpiles)—an engineering feat never before required or achieved at any other coal transloading facility in North America—or a significant limit on the Terminal's storage capacity, an unlawful interference with railroad operations. Draft conditions D(4)-(5) require installation of a system that applies water to railcar loads as they enter the Curtis Bay Piers property even though CSX and MDE have never identified railcars as an emissions source at the Terminal.

Draft conditions D(1)-(5) are not reasonable precautions to control fugitive dust at Curtis Bay Piers, and CSX cannot accept these conditions in the Terminal's PTO.[11] As drafted, these conditions impose an unrealistic and legally unsupported zero-emissions requirement at the Terminal. The "reasonable precaution" standard on which these conditions are based does not require a facility to install unproven and cost-prohibitive controls to prevent every particle of dust from crossing its property line. Rather, MDE is required to consider "technological feasibility, practicability, economic impact, and the environmental consequences of the decision" when evaluating a reasonable precaution.[12] The regulation's examples of "reasonable precautions" are all either in place at Curtis Bay Piers already or have been evaluated previously by CSX and determined not to be appropriate for controlling dust at the Terminal.[13] The controls MDE now proposes would require CSX to undertake complex and costly construction projects, are technically and economically infeasible, and depart significantly from the monitoring and recordkeeping requirements typically included in a state PTO for a minor particulate matter source.

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[8] Draft Permit to Operate, Permit No. 510-2263, CSX Transportation, Inc. – Curtis Bay Piers, available at https://mde.maryland.gov/programs/permits/AirManagementPermits/Documents/DRAFT-2024RenewalSPTO-CSX.pdf ("Draft PTO").

[9] MDE Air and Radiation Administration, Fact Sheet and Tentative Determination, CSX Transportation – Curtis Bay Piers, Renewal of Air Quality State Permit to Operate, available at https://mde.maryland.gov/programs/permits/AirManagementPermits/Documents/FactSheet-RenewalPermitCSX.pdf ("Draft PTO Fact Sheet").

[10] The draft condition allows for openings in the enclosure to allow vehicular access into and out of the interior of the structure or where necessary to allow for the movement of coal into or out of the physical barrier via conveyers.

[11] CSX does not object to draft permit condition D(6) which is consistent with language proposed by CSX prior to issuance of the draft permit. Appendix 11 to this comment letter is a memo prepared by Trinity Consultants and titled, "Analysis of Upgraded Water Spray System in Railcar Dumper Sheds," which explained how the ongoing upgrades to the existing water spray system at each dumper shed would reduce emissions from the railcar dumping process. Specifically, the combination of atomized sprays within the dumper shed and partial enclosure provides 90 percent control of particulate emissions from the railcar dumper sheds.

[12] COMAR 26.11.06.03C.

[13] *See, e.g.,* Appendix 9; CSX Letter and Kimley Horn Full Enclosure Evaluation at 3-4 (June 17, 2024) ("Full Enclosure Evaluation"). For example, following the Key Bridge collapse, CSX evaluated the effectiveness of using chemical dust suppressants on the coal piles and determined that this dust control practice would not be effective for numerous reasons, included the short-term nature of coal storage at Curtis Bay Piers.

In evaluating the feasibility of the proposed controls in Part D, CSX has consulted with global design and engineering firms and experts in air permitting and monitoring, particulate matter speciation, and toxicology, many of whom have submitted reports in support of these comments.[14] None could identify any precedent for this type of construction requirement in a minor source operating permit for a coal transfer or storage facility (or even in major source permits for the largest emitters of particulate matter), or any guidance on the expected emissions reductions or public health benefits from such an unprecedented barrier structure. The engineering firms raised concerns about engineering infeasibility, safety, severe disruption to operations both during construction and permanently, high costs, and unintended community impacts.[15] CSX has also presented MDE with information on the technical and economic infeasibility of fully enclosing the coal storage piles, a control that raises the same concerns. Notably, the fact sheet accompanying the draft PTO ("Draft PTO Fact Sheet") does not reference any technical feasibility or economic analysis performed to support the draft permit conditions, as the reasonable precaution regulations require.

MDE justifies these extraordinary permit conditions based on reports of coal particles found in the surrounding community. In the Draft PTO Fact Sheet, MDE explains that the additional conditions are based solely on the findings of an "on-going air pollution monitoring exercise" conducted in 2023 by a consortium of community groups, local universities, and MDE itself.[16] This air pollution monitoring exercise is described in a December 2023 report titled, *Collaborative Investigation of Coal Dust, Air Pollution, and Health Concerns in Curtis Bay, South Baltimore, Maryland, USA, 2022-2023* (the "Collaborative Report"). The Draft PTO Fact Sheet states that the Collaborative Report's "findings with respect to coal dust establish that the current precautions being taken by CSX at its coal terminal are inadequate to prevent dust from reaching the community."[17]

CSX objects strongly to MDE using the Collaborative Report as the basis for permitting decisions at Curtis Bay Piers. Permitting decisions based on the Collaborative Report are arbitrary and capricious, and not in compliance with state and federal law.[18] The Collaborative Report uses flawed analytical methods to draw unfounded conclusions about air quality and air pollution sources in Curtis Bay. These methods cannot adequately differentiate coal from other black particles that could originate from other sources, such as mobile source combustion, incinerators, other heavy industry in the community, and natural sources of particulate matter like fires, pollen, and earthen materials.[19] In fact, the Collaborative Report emphasizes that heavy diesel truck traffic

[14] *See* Appendix 5; Memo from Trinity Consultants to CSX regarding "CSX Curtis Bay Piers – Environmental Feasibility of Barrier Proposed by MDE in Draft PTO" (Dec. 12, 2024) ("Trinity Barrier Feasibility Evaluation"); Appendix 7; Memo from Arcadis to CSX regarding "CSX Curtis Bay Coal Pier, Engineering Alternatives Evaluation for Draft Air Permit Requirements" (Dec. 10, 2024) ("Arcadis Engineering Alternatives Evaluation"); Appendix 8; HDR, Technical Memo Curtis Bay Piers Barrier Options (Nov. 2024) ("HDR Barrier Engineering Feasibility Analysis").
[15] *See* Appendices 5, 7 & 8.
[16] Draft PTO Fact Sheet at 5-7.
[17] *Id.* at 6.
[18] Appendix 2; CSX Transportation, Inc. (CSXT) Response to the *Collaborative Investigation of Coal Dust, Air Pollution, and Heath Concerns in Curtis Bay, South Baltimore, Maryland*, submitted to MDE on Feb. 16, 2024 at 2 ("CSX Expert Response to Collaborative Report").
[19] *Id.* at 91.

is a significant mobile source of pollution in Curtis Bay.[20] The Collaborative Report does not follow any recognized test methods and relies on inaccurate air quality data from ten low-cost air monitoring sensors that cannot be used for regulatory decision-making.[21] The Collaborative Report also does not quantify dust and does not reach supported scientific conclusions on whether the material found—whether from Curtis Bay Piers or not—has the potential to cause health impacts or property damage.[22] In short, the Collaborative Report does not show that Curtis Bay Piers is a source of actionable levels of coal dust in the community. There is no precedent in Maryland or federally for basing permitting decisions on air monitoring data obtained from non-regulatory-grade low-cost sensors located in a nearby community,[23] particularly when there is scientific evidence demonstrating that particulate matter concentrations at the Terminal boundary are protective of public health.

CSX retained nationally recognized experts in particulate matter speciation, air quality monitoring, and toxicology to perform a scientific review of the Collaborative Report. These experts developed a formal response to the Collaborative Report, titled *Response to the Collaborative Investigation of Coal Dust, Air Pollution, and Health Concerns in Curtis Bay, South Baltimore, Maryland,* which was submitted to MDE on February 16, 2024 ("CSX's Expert Response") and is also included with these comments.[24] Despite meeting with CSX's experts in January 2024 to discuss their critical review of the scientific methods in the Collaborative Report and receiving CSX's Expert Response in February 2024, MDE has not addressed the deficiencies raised by CSX and has instead continued to rely on the Collaborative Report's deeply flawed analysis as the sole basis for imposing unproven and costly construction requirements.[25] MDE's reliance on the Collaborative Report in the Draft PTO Fact Sheet attempts to establish the Report as "fact" without acknowledgement of any critical scientific review.

MDE has also developed an unprecedented PTO renewal process for Curtis Bay Piers that is inconsistent with Maryland law, MDE guidance, and the normal procedures the Department follows for minor source PTO renewals. Maryland law does not provide the public an opportunity to participate in the renewal of a state PTO or require an environmental justice screening. Nonetheless, MDE has facilitated extensive public participation in this permit renewal process through regular meetings with community groups and has collaborated with community scientists and local universities to study whether coal dust from the Terminal is present in the Curtis Bay community.[26] MDE initially delayed issuance of the permit by several months to allow community

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[20] Collaborative Investigation of Coal Dust, Air Pollution, and Health Concerns in Curtis Bay (Dec. 14, 2023) at 5 ("This pollution burden comes from many different pollution sources in the area, including significant coal dust and diesel truck traffic."), 6 ("Heavy diesel truck traffic is a significant mobile source of pollution in Curtis Bay with levels of black carbon along Pennington and Curtis Ave. similar to levels on major Baltimore highways."), 104 (attributing high levels of black carbon in the community to diesel truck traffic) ("Collaborative Report").

[21] *Id*. at 5.

[22] CSX Expert Response to Collaborative Report at 95.

[23] *See* 40 CFR Part 50 Appendices; U.S. EPA, Air Now: Citizen Science and Sensors, ("Air sensors are a valuable educational tool, although they do not replace regulatory monitors, which have met rigorous scientific review."); *see also* Appendix 2; CSX Expert Response to the Collaborative Report at 6, 63 ("Low-cost sensors are not used for regulatory monitoring and are not suitable for comparison or compliance demonstrations with the NAAQS").

[24] *See* Appendix 2; CSX Expert Response to Collaborative Report.

[25] *See* Draft PTO Fact Sheet at 5-6.

[26] MDE CSX Transportation Permit, available at http://mde.maryland.gov/programs/permits/AirManagementPermits/Pages/CSX-Transportation-Permit.

scientists additional time to complete the Collaborative Report,[27] ultimately extending the delay to over a year to allow for additional community input, including an extended public notice and comment period on the draft permit. The duration of this approval process for a minor source PTO renewal is approaching MDE's established turnaround time for Title V permits associated with *new major sources* of air pollution. This permit renewal process and approach to the control of particulate matter emissions from Curtis Bay Piers is also inconsistent with MDE's treatment of other facilities located in environmental justice areas, including major sources of non-attainment criteria air pollutants.

Instead of following the minor source PTO renewal process described in its regulations and guidance, MDE has relied on the Collaborative Report to "lead the way as [MDE] consider[s] a new permit for the Curtis Bay coal terminal through the lens of environmental justice."[28] Notably, CSX has gone above and beyond the environmental justice requirements in Maryland law. The Terminal's fenceline monitoring program was developed specifically to address environmental justice concerns in the community.[29] CSX's fenceline monitoring program surpasses the minimum requirements in the 2022 PTC and was installed and placed into operation ahead of schedule. Since December 2023, CSX has voluntarily posted real time 24-hour rolling average data for PM_{10} and $PM_{2.5}$ from the fenceline monitoring system to a public website. The Draft PTO Fact Sheet discusses the community's environmental justice concerns, including concerns about disproportionate exposure to particulate pollution, yet fails to acknowledge that the fenceline monitoring system has been operational for over a year or that near-real time data is posted on a public website (CSXCurtisBayFacts.com) to provide accurate information to the public about particulate matter concentrations at the Terminal's fenceline. By neither sharing this information with the public nor apparently considering it in drafting the permit, MDE has effectively predetermined both the public comment and permitting process outcome.

MDE's refusal to act consistent with federal and state law is harming CSX's ability to conduct operations at Curtis Bay Piers, unreasonably burdening its rail carrier operations, and discriminating against it as a rail carrier. For these reasons, the draft permit conditions in Part D interfere with rail operations in violation of the Interstate Commerce Commission Termination Act ("ICCTA"), which preempts state permit requirements that unreasonably burden rail operations or discriminate against rail carriers. The draft permit conditions would force CSX to redesign and reconstruct critical portions of Curtis Bay Piers at great expense to meet its common carrier obligations under federal law. The conditions would impose restrictions on rail transportation and interfere with operation of a terminal subject to the jurisdiction of the Surface Transportation Board.

MDE ultimately lacks a reasonable basis to require the construction of a massive physical structure and does not require other similarly situated companies to do the same. MDE has pointed

[27] MDE Press Release, New Scientific Study Confirms Airborne Coal Dust in Curtis Bay Community (Dec. 14, 2023), https://news.maryland.gov/mde/2023/12/14/new-scientific-study-confirms-airborne-coal-dust-in-curtis-bay-community/.

[28] *Id.*

[29] *See* Appendix 14; MDE Air and Radiation Administration, Response to Comments Regarding Air Quality Permit to Construct for CSX Transportation – Curtis Bay Piers (Sep. 6, 2022 at 2, available at https://mde.maryland.gov/programs/permits/AirManagementPermits/Documents/CSXResponsetoComments%20PDF%20FINAL.pdf ("PTC Response to Comments").

to no precedent for requiring enclosure at any other facility, railroad or non-railroad, and CSX is aware of none. Any requirement to enclose the coal storage piles at Curtis Bay Piers would be inconsistent with MDE's treatment of other material handling facilities.

There are many ways to reduce fugitive dust emissions short of building an open-air barrier wall around the coal piles or fully enclosing the Terminal. A reasonable and appropriate final permit condition would require CSX to revise the current Fugitive Dust Control Plan to include enhanced dust control measures based on the standard technology review process employed by air quality experts when determining the feasibility of air pollution control technology.[30] In a June 2024 letter[31] to the Air and Radiation Administration, CSX committed to implementing numerous enhancements to its dust control practices through a revision to the Terminal's Fugitive Dust Control Plan, including:

(1) Lowering the dust suppression system's wind speed trigger point from 12 mph to 8 mph.
(2) Enhanced record keeping practices around street sweeping and water truck usage.
(3) Installation of an atomized water mist dust suppression at the railcar dumper buildings.[32]
(4) A commitment to install a wind fence along a portion of the western property boundary to further reduce wind action at the Terminal.

CSX remains willing to implement these enhancements through a revised Fugitive Dust Control Plan.

CSX is committed to ensuring compliance with all applicable environmental rules and regulations and operating in a way that both protects the surrounding community and allows CSX to meet its federal common carrier obligations. The draft PTO's enclosure and railcar watering requirements prevent CSX from doing either. CSX therefore urges MDE to reconsider these conditions and use all information at its disposal to evaluate the need for and feasibility of additional dust control measures.

[30] *See* Appendix 1; Memo from Trinity Consultants to CSX regarding "CSXT Curtis Bay Piers – Assessment of Permit to Operate Process" at 3-4 (Dec. 11, 2024) ("Trinity PTO Process Assessment").
[31] Appendix 9; Full Enclosure Evaluation.
[32] MDE has memorialized this commitment in draft permit condition D(6). CSX agrees that installation of an atomized water mist dust suppression system at the railcar dumper buildings constitutes a reasonable precaution to prevent fugitive dust from becoming airborne. CSX maintains that this dust control practice is more appropriately memorialized in the fugitive dust control plan rather than the permit itself as having an MDE-approved plan outside of the PTO provides the facility with operational flexibility to make upgrades related to the prevention of fugitive dust without modifying the permit.

Overview of Expert Reports and Memoranda Prepared in Support of These Comments

CSX consulted with global design and engineering firms and experts in air permitting and monitoring, particulate matter speciation, and toxicology in preparing these comments. These experts prepared reports and technical memoranda in support of these comments and included in the Appendix. These documents are summarized below.

Appendix 1: Memorandum from Trinity Consultants to CSX regarding *CSXT Curtis Bay Piers – Assessment of Permit to Operate Process* (Dec. 11, 2024)

- This memorandum provides an assessment of how MDE's PTO renewal process for Curtis Bay Piers has deviated from the regulatory requirements for minor sources like Curtis Bay Piers, MDE's PTO guidance, and Trinity's experience with PTO approvals issued for other minor sources of air emissions. Trinity describes the well-established pollution control technology review process typically employed by engineers and air quality experts for evaluating control technology feasibility under the Clean Air Act, the typical approval process and timing for minor source permit renewals in Maryland, and the applicability of the state's environmental justice program.

Appendix 2: CSX Response to the *Collaborative Investigation of Coal Dust, Air Pollution, and Heath Concerns in Curtis Bay, South Baltimore, Maryland* (Feb. 16, 2024)

- CSX submitted an Expert Response to the Collaborative Report to MDE shortly after the Collaborative Report's publication. The Expert Response contains scientific reviews of the data and conclusions in the Collaborative Report performed by nationally recognized experts in particulate matter speciation, air quality monitoring, and toxicology. These expert reports were prepared by RJ Lee Group (characterization and speciation of particulate matter using electron microscopy), Trinity Consultants (air permitting and monitoring), and GHD (toxicology). The Expert Response concluded that the Collaborative Report used unreliable data and flawed statistical methods to draw unfounded conclusions about air quality and air pollution sources in Curtis Bay.

Appendix 3: Memorandum from Trinity Consultants to CSX regarding *Fenceline Monitoring Network Status* (Dec. 10, 2024)

- This memorandum provides an overview of the fenceline monitoring program at Curtis Bay Piers and the data collected over the past 17 months of full operation. The data collected to date demonstrate compliance with the 24-hour NAAQS for both PM_{10} and $PM_{2.5}$.

Appendix 4: Report from RJ Lee Group in *Response to Aubourg et. al. Science of the Total Environment Journal Article* (2024) (Dec. 11, 2024)

- This report addresses the reanalysis of two settled dust samples as documented in an article published by Aubourg et al., and titled, "Use of electron microscopy to determine presence of coal dust in a neighborhood bordering an open-air coal terminal in Curtis Bay, Baltimore, Maryland." RJ Lee Group conducted a critical review of the article's findings and

supplementary materials. RJ Lee Group notes that the Aubourg study results actually indicate that coal dust > 5 μm is present only in trace concentrations in Curtis Bay, and no information was provided to substantiate the claim that coal dust poses a health threat to the community.

Appendix 5: Memorandum from Trinity Consultants to CSX regarding the *Environmental Feasibility of the Physical Barrier Proposed by MDE in Draft PTO* (Dec. 12, 2024)

- This memorandum contains Trinity's analysis of draft permit condition D(1) requiring construction of a physical barrier. Trinity found no precedent for this type of requirement in an operating permit renewal and is unable to find any guidance on the expected emissions control from such a structure. Trinity concluded that the draft condition is unnecessary, technically and economically infeasible, and should not be included in the final permit.

Appendix 6: Memorandum from Trinity Consultants to CSX regarding the *Rail Yard Boundary Fugitive Emissions Monitoring Study and Analysis* (Dec. 10, 2024)

- This memorandum contains Trinity's analysis of draft permit conditions D(4)-(5) requiring the application of water to loaded railcars at the point where railcars enter the Terminal property. Trinity conducted an air monitoring study in November 2024 to measure particulate matter concentrations at the boundary where railcars enter the Curtis Bay Piers property and found no exceedances of the 24-hour NAAQS attributable to emissions from loaded railcars.

Appendix 7: Memorandum from Arcadis to CSX regarding an *Engineering Alternatives Evaluation for the Draft Air Permit Requirements* (Dec. 10, 2024)

- Arcadis evaluated possible structural barrier options for compliance with the conditions in Part D of the draft permit. Arcadis evaluated the timing, design, construction, engineering, and cost considerations associated with several potential barrier options at the Terminal, including a steel frame wall, stacked shipping containers, tilt-up structures, a sheet pile wall, and a block-and-steel wall. Arcadis found little precedent for such structures at material handling facilities at the height required for CSX to continue operating at current capacity. Arcadis also evaluated the use of a geodesic dome or monolithic dome to fully enclose the storage piles. Arcadis identified significant impediments to the draft permit's 18-month construction timeline.

Appendix 8: Technical Memo from HDR to CSX regarding *Physical Barrier Engineering Feasibility Analysis* (Dec. 5, 2024)

- HDR prepared an engineering feasibility evaluation of draft permit condition D(1)-(3) and identified engineering infeasibility, significant safety concerns, environmental impacts, significant disruption to operations, economic impact, and unintended community impacts as impediments to compliance with the draft permit conditions.

Appendix 9: CSX Letter and Kimley Horn Full Enclosure Evaluation (June 17, 2024)

- Appendix 9 summarizes additional evaluations performed by CSX at MDE's request, including a conceptual design and cost analysis for fully enclosing the coal storage areas; an

analysis of enclosing the ends of the railcar buildings; and an analysis of the feasibility of installing screens or vegetative barriers along a portion of the western property boundary. Kimley Horn concluded that constructing fully enclosed structures in place of the current outdoor coal storage area is akin to a full-scale rebuild of the Terminal and would require a multi-year phased construction project costing hundreds of millions of dollars.

Appendix 10: Memo from Trinity Consultants to CSX regarding *CSX Curtis Bay Piers – Analysis of Fugitive Dust Emissions from Railcars On Site* (Aug. 21, 2024)

- Trinity evaluated the necessity, feasibility, and potential impacts of installing a water spray system at the Curtis Bay Piers property boundary to wet loaded railcars as required by the draft permit. Trinity noted that CSX already requires shippers to apply dust suppression and other wind erosion minimization techniques when loading railcars and that chemical dust suppressants applied during loading remain on the railcars during transit. Trinity also notes that watering loaded railcars would require additional water management obligations to avoid environmental impacts without providing meaningful air quality benefits.

Appendix 11: Memo from Trinity Consultants to CSX regarding *CSX Curtis Bay Piers – Analysis of Upgraded Water Spray System in Railcar Dumper Sheds* (Aug. 20, 2024)

- Trinity evaluated the dust control benefits of upgrades to the Terminal's existing watering spray system at the dumper sheds. Trinity concluded that these upgrades would reduce fugitive emissions just as much if not more than installing enclosures at the openings of the railcar sheds.

Appendix 12: Declaration of Aleek Young, General Manager Coal and Ore Terminals at CSX Transportation, regarding Operational Impact of Draft Permit Conditions

- Mr. Young manages terminal operations at Curtis Bay Piers. He has extensive experience with all aspects of CSX's operations as well as the aboveground and underground infrastructure at Curtis Bay Piers. His declaration describes the impact of constructing a physical barrier on short-term and long-term facility operations; the safety hazards associated with construction of a physical barrier around the coal storage areas; and the impact of a partial or complete facility shutdown on the Terminal, the CSX rail network, and the global supply chain.

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I. Background

A. Curtis Bay Piers has operated in an industrial area for over a century.

Curtis Bay Piers has served the Baltimore region for more than a century. It was built before 1900 for the Baltimore & Ohio Railroad, which became part of CSX in the 1980s. For the past 124 years it has been used for transloading—the process of removing coal from trains and loading it on to ships and barges.[33] Curtis Bay Piers is an essential part of the national freight rail network and the Port of Baltimore, employing approximately 918 Marylanders, and supports an overall port system of nearly 140,000 local jobs, including family-owned businesses in Curtis Bay that work on the Terminal.[34]

The Terminal specializes in "just-in-time" transfer of coal into water vessels. Depending on cargo volume, coal quality, and origination point, a large percentage of coal arriving at Curtis Bay Piers is transferred directly from railcars to oceangoing vessels or coastal barges.[35] This has the benefit of reducing the need for long-term ground storage of coal. The facility plays a vital role in the national and international supply chain by removing coal—mined primarily from the northern Appalachians—from the trains that bring it to the Terminal and transferring the coal to ships and barges that deliver it locally and to ports around the world. [36]

Inbound coal shipments arrive via railcar and are offloaded using three railcar dumpers. The dumpers are housed in partially enclosed buildings designed to minimize fugitive dust emissions by blocking wind during railcar unloading.[37] Inside the dumper buildings, the coal is sprayed with atomized water mist for dust suppression while hopper cars are rotated to drop the coal onto an underground conveyor.[38] The coal moves from the dumpers around the Terminal through a network of aboveground and underground conveyors and is delivered either directly to outbound marine vessels at the pier or to one of nine temporary material storage areas before being loaded onto ships or barges.[39] Separate inventory piles are maintained for customer and product variability.

In accordance with Maryland regulations, EPA guidance, and best practices, a sophisticated network of water sprays around the Terminal keeps coal dust from becoming airborne during temporary storage.[40] The Terminal uses a variety of proven dust control measures, including the wet suppression system described above, to minimize fugitive dust during coal loading and storage operations. These dust control measures are described in the Terminal's

[33] *See Baker-Whiteley Coal Co. v. Balt. & Ohio R.R. Co.*, 188 F. 405, 407 (4th Cir. 1911) (describing the construction of the facility); *Harmon v. Balt. & Ohio R.R. Co.*, 560 F. Supp. 914, 915 (D.D.C. 1983), *aff'd*, 741 F.2d 1398 (D.C. Cir. 1984) (recounting how "[a]t Curtis Bay Coal Pier, coal is unloaded from railroad cars onto oceangoing vessels").
[34] *See* Appendix 12; Declaration of Aleek Young, Terminal Manager, Curtis Bay Piers regarding Operational Impact of Draft Permit Conditions at 1("Young Declaration").
[35] *Id.*
[36] *Id.*
[37] *Id.* at 2.
[38] *Id.*
[39] *Id.*
[40] *Id.*

MDE-approved Fugitive Dust Control Plan. The Terminal does not include any coal processing equipment and does not combust coal.[41]

The Terminal is located in a heavily industrialized area in the Port of Baltimore and surrounded by numerous other industrial facilities.[42] It is located in what the City of Baltimore has officially designated as the Curtis Bay Industrial Area, part of the Maritime Industrial Zoning Overlay District.[43] There are approximately 70 MDE-regulated stationary sources of air pollution in the area, including the Curtis Bay Energy medical waste incinerator, the BRESCO municipal solid waste incinerator, the Quarantine Road Landfill, the Patapsco Wastewater Treatment Plant, a coal-fired power plant, concrete crushing plants, asphalt manufacturing, chemical plants, and oil and gas terminals.[44] Hundreds of diesel trucks per day move materials along two diesel truck routes, Pennington and Curtis Avenues, that run through the middle of the community.[45] A study published recently by community groups and MDE actually concluded that heavy-duty diesel truck traffic is a significant source of air pollution—mainly black carbon—in Curtis Bay.[46] The coal storage and handling operations at Curtis Bay Piers are not a source of black carbon.[47]

As the Draft PTO Fact Sheet acknowledges, CSX is one of many industrial operations in Curtis Bay.[48] Notably, however, a study performed by RJ Lee Group in CSX's Expert Response to the Collaborative Report demonstrated, through an analysis of wind rose data, that the Terminal is not a significant source of PM_{10} in Curtis Bay.[49] This study also demonstrated, through an analysis of average $PM_{2.5}$ concentrations and wind rose data, that the air quality in the community is primary affected by local and regional background (non-Terminal) sources.[50] Nonetheless, CSX has responded proactively to the concerns raised by Curtis Bay community groups about particulate matter pollution in the community by publishing the fenceline monitoring data discussed throughout these comments.

B. CSX is a common carrier required by federal law to transport coal.

CSX is a Class I rail carrier that provides common carrier railroad transportation for compensation.[51] It operates railroad transportation facilities across 26 states, including Maryland. CSX serves more than 70 ocean, river, and lake ports in the U.S. and Canada, including multiple locations in the Port of Baltimore. Because CSX is a common carrier, federal law requires CSX

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[41] Appendix 13; MDE PTC Fact Sheet at 3.
[42] Collaborative Report at Section 2.
[43] Department of Planning, *Maritime Industrial Zoning Overlay District*, https://planning.baltimorecity.gov/sites/default/files/MIZODREPORT2010_1.pdf.
[44] Collaborative Report, Sections 2 and 3.
[45] Collaborative Report, Section 2.
[46] R. Dickerson et al., *Mobile laboratory measurement of air pollutants in Baltimore, MD elucidate issues of environmental justice*, Journal of the Air & Waste Management Association (Sep. 2024).
[47] EPA Staff. Black Carbon Research and Future Strategies - Reducing emissions, improving human health and taking action on climate change, 2011 (describing black carbon as "the sooty black material emitted from gas and diesel engines, coal-fired power plants, and other sources that burn fossil fuel. It comprises a significant portion of particulate matter or PM."); *see also* Appendix 2: CSX Expert Report to the Collaborative Report at 4, 26, 28, and 35.
[48] Draft PTO Fact Sheet at 6 (stating there is "a high concentration of significant and impactful industrial and government operations [in Curtis Bay], each of which contributes to the pollution burden impacting the community").
[49] Appendix 2; CSX Expert Response to the Collaborative Report at 38-39 and 40-51.
[50] *Id.*
[51] 49 U.S.C. § 10102(5).

to transport all types of commodities, including coal, on behalf of American shippers. Shippers, not railroads, determine the origin and destination of the coal within the railroad network.

The Surface Transportation Board is the federal agency charged with regulating the freight rail industry. The Interstate Commerce Commission Termination Act ("ICCTA") assigns the Surface Transportation Board broad and exclusive authority over "transportation by rail carriers" and "the construction, acquisition, operation, abandonment, or discontinuance" of tracks or "facilities."[52] ICCTA "provide[s] uniform regulation of rail transportation and [] ensure[s] the free flow of interstate commerce, particularly by preventing a patchwork of differing regulations across states."[53] And it preempts states from imposing overly burdensome environmental permit requirements on railroads that could disrupt interstate commerce.[54] During the public meeting on the draft PTO, many commentators urged MDE to deny CSX's application to renew the PTO.[55] As explained in Section V below, denial of the permit or issuance of a final permit that includes the barrier and loaded railcar watering requirements in Part D would constitute an impermissible interference with national rail transportation preempted by ICCTA.

If a freight railroad fails to meet shippers' transportation needs, the shippers can sue the railroad and have their complaints heard by the Surface Transportation Board. The Surface Transportation Board routinely issues orders requiring freight railroads to transport goods, including coal, on behalf of shippers.[56] CSX cannot simply choose to ship a different commodity through Curtis Bay Piers or lower the height of its coal storage piles (and thus limit the amount of coal it can store on site) and still meet the needs of its shippers.[57]

C. CSX is committed to safe and environmentally sound operations.

CSX is committed to safe and environmentally sound operations in Curtis Bay and throughout Maryland. CSX engages in an ongoing iterative process to evaluate and enhance dust control at Curtis Bay Piers. Recent enhancements to the Terminal's dust control measures have included additional wet suppression and installation of metal skirting within the conveyor system. The Terminal is currently evaluating using biodiesel blends (B20) for the on-site locomotives, an initiative that would reduce both carbon intensity and particulate matter.

Additionally, CSX, in partnership with the Maryland Department of Transportation, has been awarded a Consolidated Rail Infrastructure and Safety Improvement Program ("CRISI")

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[52] 49 U.S.C. § 10501(b). "Transportation" is broadly defined to include not just railcars, but also any "warehouse . . . yard, property, [or] facility . . . related to the movement of passengers or property, or both, by rail." 49 U.S.C. § 10102(9).

[53] 49 U.S.C. § 10501(b).

[54] *See Norfolk S. Ry. Co. v. City of Alexandria*, 608 F.3d 150, 158 (4th Cir. 2010) (Any action by state or local officials that "permits a non-federal entity to restrict or prohibit the operations of a rail carrier" is preempted).

[55] *See* Video recording of CSX Draft Operating Permit Comment Meeting in Curtis Bay (Oct. 10, 2024), https://www.youtube.com/watch?v=NvMRkmpgOwA

[56] *See, e.g.,* Surface Transportation Board, Navajo Transitional Energy Company, LLC—Ex Parte Petition for Emergency Service Order, Decision, Docket No. NOR 42178 (June 23, 2023) at 1, https://dcms-external.s3.amazonaws.com/DCMS_External_PROD/1687536795653/51749.pdf (ordering BNSF to transport a minimum of 4.2 million tons of coal from a Navajo nation mine to a coal export terminal in British Columbia under BNSF's common carrier obligation).

[57] *See* Appendix 12; Young Declaration at 2.

grant to purchase and implement three zero-emissions battery electric locomotives and a battery charging station to Curtis Bay Piers.[58] Phase 1 of this project is valued at $23 million for three (3) 6-axle battery electric switcher locomotives and one charging station.[59] CSX's battery electric locomotives will be the first such locomotives used in the state of Maryland and at any east coast port in the U.S. As explained by the Maryland Department of Transportation: "This Project would result in significant environmental and health benefits, including benefits to the surrounding environmental justice community, while maintaining supply chain fluidity at one of the nation's busiest seaports."[60] The locomotives are expected to be delivered in 2025 and will result in reductions of CO_2, NO_x, and $PM_{2.5}$. Specifically, these locomotives will result in annual emission savings of 1,530 metric tons of CO_2, 71 metric tons of NO_x, and 3.43 metric tons of $PM_{2.5}$. Locomotive noise will also be reduced by 70%.

Most significantly, as discussed at length in Section II.C. below, CSX has implemented a comprehensive fenceline monitoring program for PM_{10} and $PM_{2.5}$, the first of its kind in the state of Maryland. The system monitors particulate matter continuously at eight locations along the perimeter of the Terminal and posts that data in near real-time on a publicly accessible website.

D. Curtis Bay Piers is a minor source of air emissions.

Curtis Bay Piers is a minor source of particulate matter emissions and operates under State PTO No. 510-2263.[61] The stationary "source" subject to the PTO is the existing coal transloading facility. Mobile sources that transport coal to and from Curtis Bay Piers, including locomotives and vessels, are not subject to any state permitting requirements. As a "true minor source," the Terminal's potential to emit regulated criteria air pollutants is well below major source thresholds.[62] The majority of emissions from Curtis Bay Piers are PM_{10}.[63] The major source PM_{10} emissions thresholds are 100 tons per year ("tpy") for Title V permitting and 250 tpy for Prevention of Significant Deterioration ("PSD") permitting.[64] In 2023, PM_{10} emissions from the CSX Terminal were 20.06 tpy, just 20% of Title V thresholds and less than 10% of PSD thresholds.[65]

[58] The Office of Governor Wes Moore, https://governor.maryland.gov/news/press/pages/governor-moore-announces-204-million-in-grant-funding-from-the-biden-administration-to-support-marc-train-and-cleaner-opera.aspx.
[59] *Id.*
[60] Maryland Department of Transportation, Port of Baltimore Strategic Acquisition of Battery Electric Locomotives Project at 1 (Dec. 2022), https://www.mdot.maryland.gov/OPCP/Port_of_Baltimore_Strategic_Acquisition_of_Battery_Electric_Locomotives.pdf.
[61] *See* Appendix 13; MDE PTC Fact Sheet at 3 ("CSX is a true minor source of particulate matter emissions, inherently limited by the design capacity of the plant.").
[62] *Id.*; *see also* Appendix 1; Trinity PTO Process Assessment at 6.
[63] Appendix 1; Trinity PTO Process Assessment at 6.
[64] Coal handling and shipping is not on EPA's list of facilities subject to a major source threshold of 100 tpy for PSD.
[65] Appendix 1; Trinity PTO Process Assessment at 5.

II. The Terminal complies with air quality rules and does not endanger public health.

A. MDE issued a permit in 2022 that provided "meaningful public health protections."

In September 2022, MDE issued CSX the 2022 PTC to repair a conveyor and other equipment damaged during a December 2021 explosion at the Terminal.[66] MDE conducted a comprehensive review of the Terminal's potential and actual emissions and concluded "that the proposed facility is expected to comply with all applicable state and federal air quality regulatory requirements."[67] And in fact, the Terminal has complied with all applicable state and federal air quality regulatory requirements during normal coal transloading operations. MDE also concluded that, as a result of issuing the 2022 PTC, "[e]missions will likely *decrease* due to the addition of new wet suppression systems and metal skirting."[68]

In response to environmental justice concerns raised by community members during the 2022 PTC review process, MDE explained that the 2022 PTC provided "meaningful public health protection benefits to the community" through the fenceline monitoring requirement and the enhanced dust control measures. MDE also described the type of additional provisions that could be added to the PTO:

> As for this permit and it being issued for a project in an area with environmental justice concerns, we consider the permit being issued as one that provides meaningful public health protection benefits to the community. The requirements for fence line monitoring and enhanced dust control are two such provisions. The former will help gather data for policy makers to decide whether any future provisions regarding dust control will be needed and the latter will help over a shorter timeframe to reduce the potential for dust leaving CSX's property. The permit also locks in requirements to ensure gas and coal dust levels in the underground tunnels will be monitored so they will not reach a point where they can cause another explosion.
>
> Beyond this permit, there will be the need to reevaluate the provisions of the existing 5-year operating permit starting next summer. That reevaluation will be an opportunity to impose on CSX any needed provisions relating to monitoring, reporting and recordkeeping based on how the facility is performing with respect to regulatory requirements at that time.[69]

There have been no changes to Terminal operations since issuance of the 2022 PTC. And the quality-assured fenceline monitoring network data collected over the last 15 months demonstrates that particulate matter concentrations at the Terminal's fenceline are consistent with the 24-hour NAAQS for PM_{10} and $PM_{2.5}$,[70] which are health-based standards set by EPA based on

[66] *See* Appendix 13; MDE PTC Fact Sheet.
[67] *See* Appendix 14; PTC Response to Comments at 1.
[68] Appendix 13; MDE PTC Fact Sheet at 2.
[69] Appendix 14; PTC Response to Comments at 2.
[70] Appendix 3; Fenceline Monitoring Summary at 2; *see* Appendices 17a-17e (Fenceline Monitoring Quarterly Reports).

the latest scientific knowledge that other states have used to evaluate whether coal handling and storage operations present a public health risk.[71] For example, the Virginia Department of Health in 2017 compared PM_{10} concentrations in a community near the Norfolk Southern Coal Pier in Norfolk, Virginia to the 24-hour PM_{10} NAAQS and concluded: "Exposure to PM_{10} near the sampling sites in Norfolk, VA, is not expected to harm people's health because the average concentration and the highest concentration reported for PM_{10} are below the NAAQS."[72]

MDE has not issued any notices of violation with respect to fugitive dust from the Terminal's coal handling or storage operations,[73] and there have been no verified reports of visible emissions from coal handling operations. The combination of fenceline monitoring data, lack of visible emissions associated with coal storage and handling operations, and CSX's compliance with air quality rules demonstrates that the dust control measures in the current PTO and MDE-approved Fugitive Dust Control Plan are sufficient to control fugitive dust at the Terminal.

B. The 2022 TAPs analysis shows that operations do not endanger public health.

CSX is also in compliance with Maryland's toxic air pollutants ("TAPs") regulations,[74] as confirmed by MDE in late 2022.[75] There have been no changes to the health standards for coal dust since that analysis. As discussed in more detail below, MDE is relying on the community-led Collaborative Report as the basis for imposing unprecedented permit conditions on a minor source rather than the TAPs compliance demonstration required under Maryland law.

The purpose of Maryland's TAPs regulations is to protect the public from toxic air pollutant emissions from stationary sources of air pollution.[76] The ambient impact requirement in COMAR 26.11.15.06 states that stationary sources of air pollution must demonstrate that their TAPs emissions will not unreasonably endanger public health. Each TAP subject to the ambient impact requirement must be evaluated individually to determine that emissions will not endanger public health by ensuring that facility-wide emissions are below screening levels. Screening levels (*i.e.*, acceptable ambient concentrations for toxic air pollutants) are conservative and generally

[71] Virginia Department of Health Division of Environmental Epidemiology, Public Health Implications of PM_{10} Concentrations Collected near Lambert's Point Coal Terminal, Norfolk, VA, Letter Health Consultation (July 19, 2017), https://www.vdh.virginia.gov/content/uploads/sites/12/2018/08/Lamberts-point-PM10-LHC-7-19-2017-FINAL.pdf.
[72] *Id.* at 3.
[73] *See supra* note 6. On September 9, 2024, MDE issued a notice of violation to Curtis Bay Piers due to visible emissions generated during railroad track maintenance work being performed on site by an out-of-state CSX track maintenance crew unaffiliated with Curtis Bay Piers. Importantly, the track maintenance work involved the replacement of railroad ties using specialized equipment brought in by rail to Curtis Bay Piers—it did not involve the facility's coal handling and storage operations. In accordance with the procedures in the Fugitive Dust Control Plan, Terminal employees shut down this maintenance work immediately after observing visible dust. As described in the Fugitive Dust Control Plan, all Terminal personnel are trained and instructed to promptly notify management if any dust is observed during daily operations. "Employees are empowered to immediately address hazardous conditions; STOP WORK and halt operations if they observe hazardous or unsafe conditions." Plan at 1.
[74] COMAR 26.11.15 and 16.
[75] Appendix 1; Trinity PTO Process Assessment at 2.
[76] *See* COMAR 26.11.15; *see also* MDE, TAP Regulatory Guidance dated March 21, 2016.

established at one-hundredth of allowed worker exposure levels (TLVs).[77] MDE's guidance explains that "public health is protected when the emissions of a facility are less than the maximum allowable emissions or when off-site impacts of the premises-wide emission or each TAP is less than the screening levels for the TAP."

Before issuing the 2022 PTC, MDE required CSX to demonstrate that the Terminal's TAPs emissions would not endanger public health by performing an air toxics compliance demonstration. As explained by MDE in the fact sheet accompanying the 2022 PTC ("MDE PTC Fact Sheet"): "This was done to provide assurance to the public that emissions from toxic air pollutants were evaluated in a more rigorous manner than other sources regulated by the Department and the evaluation's conclusions [] show that public health is not threatened using the standard analytical methods available to the Department."[78] These standard analytical methods are described in Maryland's air toxics regulations and guidance.[79]

CSX demonstrated, consistent with Maryland's TAP regulations, that TAPs emissions did not exceed allowable emission rates based on conservative screening levels and are therefore protective of public health. CSX also conducted a more in-depth analysis for coal dust and crystalline silica.[80] In issuing the 2022 PTC, MDE confirmed that "emissions of coal dust and crystalline silica emissions are at levels that are protective of public heath for areas within the public domain."[81] The Terminal's compliance with Maryland's TAP regulations, using conservative modeling and exceedingly low thresholds, further demonstrates that coal dust emissions from the Terminal do not pose a public health risk. This same established methodology should be used in issuing the PTO renewal just like it was used to issue the 2022 PTC.

C. Publicly available fenceline monitoring data show compliance with the NAAQS.

CSX has successfully implemented Maryland's first facility fenceline monitoring program for PM_{10} and $PM_{2.5}$. The objective of the fenceline monitoring program is to obtain representative particulate and meteorological information for Curtis Bay Piers that may be used for informational purposes, including community awareness and comparison with regional air quality.[82]

As noted in the excerpt above in Section II.A from the PTC Response to Comments, the purpose of the fenceline monitoring requirement was "to help gather data for policy makers to

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[77] *See* MDE, TAP Regulatory Guidance. TLVs are threshold limit values (exposure limits) established for toxic materials by the American Conference of Governmental Industrial Hygienists (ACGIH). Some TLVs are established for short-term exposure (TLV – STEL), and some are established for longer-term exposure (TLV – TWA), where TWA is an acronym for time-weight average.

[78] Appendix 13; MDE PTC Fact Sheet at 3-4.

[79] MDE, TAP Regulatory Guidance, available at https://mde.maryland.gov/programs/permits/AirManagementPermits/Documents/TAP%20Compliance%20Demonstration%20Guidance%2003-21-2016.pdf.

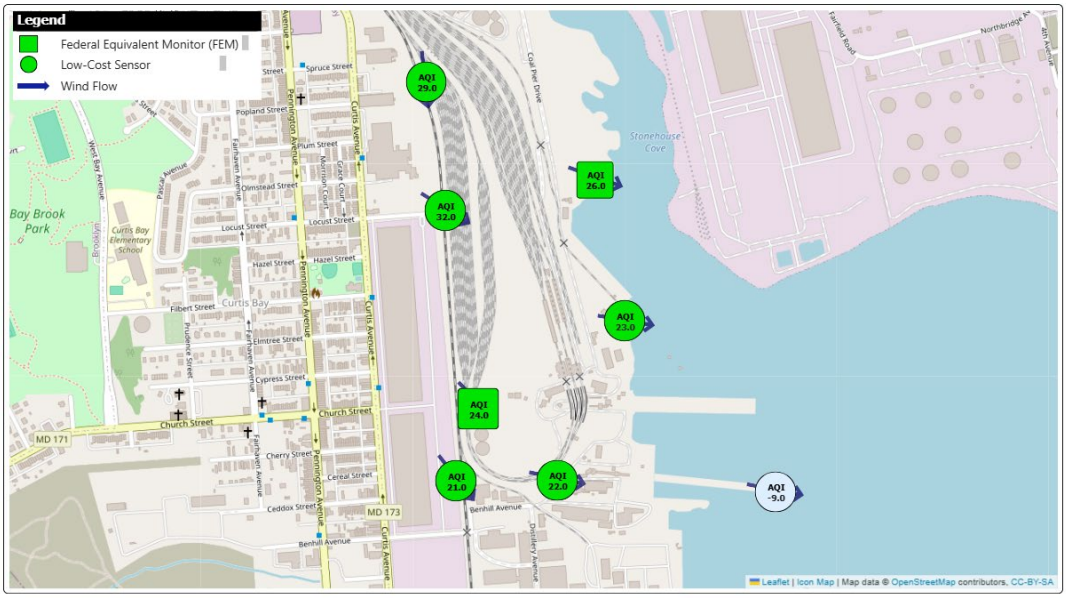
[80] *See* Appendix 15; Montrose Environmental, Toxic Air Pollutant Modeling & Impact Assessment Report, CSX Transportation, Inc. Curtis Bay Piers (Aug. 12, 2022, revised Aug. 25, 2022), available at https://mde.maryland.gov/programs/permits/AirManagementPermits/Documents/CBP_TAP_Report%20(2022%2008%2025%201710).pdf ("2022 TAPs Analysis").

[81] Appendix 13; MDE PTC Fact Sheet at 4.

[82] Appendix 16; Trinity Consultants, Quality Assurance Project Plan for Continuous PM_{10}, $PM_{2.5}$, and Meteorological Measurements at CSXT Transportation, Inc., Curtis Bay Piers Facility, Revision 0 at A-10 (Nov. 2023) ("QAPP").

decide whether any future provisions regarding dust control will be needed."[83] The 2022 PTC required CSX to submit a plan that included one federal equivalent monitor to measure both PM_{10} and $PM_{2.5}$, multiple low-cost sensors capable of measuring PM_{10} and $PM_{2.5}$ and one 10-meter meteorological tower that meets current U.S. EPA protocols and guidance.[84] CSX worked diligently to implement a program that went above and beyond these requirements and had the program operational ahead of schedule.[85] CSX also engaged Trinity to prepare a rigorous Quality Assurance Project Plan ("QAPP") to ensure that data and technical information are documented and are of appropriate quality and usability.[86] The QAPP ensures the collection of high-quality and validated data in accordance with EPA guidance.

CSX provides quality-assured data from the fenceline monitoring program to MDE in quarterly reports.[87] CSX also launched a public website in 2023 to publish PM_{10} and $PM_{2.5}$ measurement data and wind direction from the fenceline monitoring system on a 24-hour rolling average.[88] This was not a requirement of the 2022 PTC or the fenceline monitoring plan. CSX did this voluntarily to provide the public real-time and user-friendly access to air quality information. The Figure below shows the fenceline monitoring data map that appears on the public website. A user can hover over the monitor locations to view the 24-hour rolling average data for PM_{10} and $PM_{2.5}$. The arrow displayed at the monitor location indicates the current wind direction. The data is color coded as the current AQI value in accordance with EPA standards.



[83] Appendix 14; PTC Response to Comments at 2.
[84] 2022 PTC Condition D(5).
[85] SBCLT and CCBA provided MDE with detailed comments on CSX's fenceline monitoring plan in January 2023. CSX implemented its fenceline monitoring program consistent with many of the community's recommendations including, an expedited implementation schedule, installing multiple federal equivalent method ("FEM") monitors, quarterly submission of monitoring reports to MDE, and, mostly importantly, making data from the fenceline monitoring system publicly available on a website in near-real time.
[86] Appendix 16; QAPP at A-10 to A-11.
[87] Appendices 17a-17e.
[88] Curtis Bay Facts, https://www.csxcurtisbayfacts.com/monitoring/.

EPA notes that fenceline monitoring at industrial facilities provides meaningful public health benefits to nearby communities.[89] And not only has CSX implemented such monitoring, the data confirm that particulate matter concentrations at the Terminal's fenceline do not exceed the EPA-set health-based NAAQS. Trinity reviewed 15 months of fenceline monitoring data and compared these to the 24-hour NAAQS. Trinity concluded:

> The PM_{10} standard is met if the 24-hour average PM_{10} concentration does not exceed 150 $\mu g/m^3$ more than once per year on average over a three-year period. To date, none of the monitoring stations at the site have measured a 24-hour PM_{10} concentration above 150 $\mu g/m^3$.
>
> The $PM_{2.5}$ standard is met when the three-year average of annual 98th percentile of 24-hour $PM_{2.5}$ concentrations does not exceed 35 $\mu g/m^3$. The 24-hour $PM_{2.5}$ standard is a probabilistic standard, meaning a certain percentage of exceedances are acceptable. Specifically, the annual 98th percentile results in the eighth highest concentration in a year. The average of the eighth-highest concentrations for the past three years is the value used for comparison to the standard . . . none of the monitoring stations have had more than eight exceedances over the five quarters of data reported to date, meaning the average 98th percentile value does not exceed the NAAQS.[90]

CSX has submitted this same 15 months of quality-assured data in five quarterly reports to MDE.[91] And even though MDE said that it would use these data to "help gather data for policy makers to decide whether any future provisions regarding dust control will be needed," it does not appear to have considered them in this PTO renewal process. Contrary to what the data show, MDE says in the Draft PTO Fact Sheet that "the current precautions being taken by CSX at its coal terminal are inadequate to prevent coal dust from reaching the community."[92] And the Draft PTO Fact Sheet makes no mention that these data even exist, noting only that the fenceline monitoring plan was submitted to MDE in November 2022 and later approved.[93]

CSX implemented a fenceline monitoring system at MDE's request that went beyond what MDE required in the 2022 PTC. The data show that concentrations of PM_{10} and $PM_{2.5}$ detected in ambient air are below the NAAQS, which as discussed above, regulators in neighboring Virginia have used to assess if coal handling and storage operations emit PM_{10} at levels that could impact human health. MDE told the public it would use these data to evaluate the need for additional dust controls at the Terminal, and the data clearly show that current dust control measures at the Terminal are effective. Yet the Draft PTO Fact Sheet contains no discussion of this data or the

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[89] *E.g.*, EPA, Tracking Emissions Using New Fenceline Monitoring Technology (June 18, 2018), https://www.epa.gov/sciencematters/tracking-emissions-using-new-fenceline-monitoring-technology

[90] Appendix 3; Fenceline Monitoring Summary at 2-3.

[91] *See* Appendix 17; Fenceline Monitoring Reports for Q3 2023, Q4 2023, Q1 2024, Q2 2024, and Q3 2024. This data was shared with MDE in accordance with the data sharing procedures in the QAPP. *See* Appendix 16.

[92] Draft PTO Fact Sheet at 6.

[93] MDE approved the fenceline monitoring plan in August 2023. CSX installed the regulatory grade monitors in March 2023, brought the system to full operation in July 2023, and developed a public website to share the data in real-time which went live in December 2023.

operation of the fenceline monitoring program. Instead, as discussed below, MDE has proposed a permit with unprecedented dust control measures detached entirely from the data.

III. The Part D conditions are not reasonable precautions to control fugitive dust.

A. The reasonable precautions standard.

Under Maryland state regulations, "a person may not cause or permit emissions from an unconfined source without taking reasonable precautions to prevent particulate matter from becoming airborne."[94] In determining whether a dust control measure meets the reasonable precaution standard, MDE must consider "technological feasibility, practicability, economic impact, and the environmental consequences of the decision."[95] The regulations similarly require reasonable precautions to prevent particulate matter emissions from material handling and construction.[96] Examples of "reasonable precautions" for material handling include, among other measures, application of asphalt, oil, water, or suitable chemicals on dirt roads, materials stockpiles, and other surfaces which can create airborne dust; and the paving of roads and their maintenance in a clean condition.[97]

Selection of pollution control technology typically involves a "top-down" engineering analysis that considers factors like technological feasibility, cost, and environmental impacts.[98] In fact, the unconfined source regulation requires MDE to consider "technological feasibility, practicability, economic impact, and the environmental consequences of the decision."[99] Reasonable precautions need not prevent all particulate matter from leaving a facility.

B. The Terminal's existing dust control measures are reasonable precautions.

CSX uses its MDE-approved Fugitive Dust Control Plan to identify sources of fugitive dust emissions and document implementation of reasonable precautions to prevent fugitive dust from becoming airborne. Sections 3.3 through 3.5 of the Fugitive Dust Control Plan describes CSX's practices for minimizing potential fugitive dust emissions from railcar unloading and material conveying operations. They include use of a sophisticated dust suppression water spray system,[100] covered conveyors to the extent possible, enclosed transfer points, dumper sheds to block wind, and use of windscreens. CSX also relies on visible emissions monitoring to control fugitive dust from the coal piles and during loading and unloading operations.[101]

Having an MDE-approved plan for dust control that is reviewed and updated regularly rather than PTO conditions provides operational flexibility to the facility to make enhancements

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[94] COMAR 26.11.06.03C.
[95] *Id.*
[96] COMAR 26.11.06.03D.
[97] *Id.*
[98] Appendix 1; Trinity PTO Process Assessment at 3.
[99] COMAR 26.11.06.03C.
[100] The dust suppression system utilizes a network of water sprays located throughout the facility. These water sprays have been strategically placed to ensure the highest degree of dust control. The dust suppression system utilizes real time weather data to monitor wind speed, wind direction, and rain activity to control fugitive particulate matter associated with the handling, transferring, and storage of coal.
[101] Curtis Bay Piers Fugitive Dust Control Plan at 4, 9.

and upgrades to its fugitive dust controls without undergoing a permit action. In fact, CSX engages in an ongoing iterative process to evaluate and enhance its dust control measures and has made significant investments at Curtis Bay Piers over the permit term to advance long-term operational safety and improve the Terminal's dust suppression system.

These MDE-approved practices are plainly "reasonable precautions;" they are in fact all included in the list of reasonable precautions for material handling in COMAR 26.11.06.03D (stating that reasonable precautions may include application of asphalt, oil, water, or suitable chemical on dirt roads, material stockpiles, and other surfaces that can create fugitive dust). MDE inspections have not identified any deficiencies in the existing Fugitive Dust Control Plan. And as both visible emission data and fenceline monitoring data show, these measures are sufficient to minimize the amount of fugitive dust leaving the facility.

C. The physical barrier condition is not a reasonable precaution and should be removed from the PTO.

The reasonable precaution standard is not a zero-emission standard.[102] Like all other material handling and storage facilities in Maryland, Curtis Bay Piers emits some amount of particulate matter when it operates, as its PTO allows. If reasonable precautions were meant to prevent every particle of dust from escaping the property line, every material handling and storage facility PTO would include an enclosure requirement. This is not the case. Rather, facilities like Curtis Bay Piers use the same types of controls, or "reasonable precautions," that CSX uses at the Terminal to prevent fugitive dust from becoming airborne. A physical barrier over 100 feet tall with openings for vehicle access and conveyors that could still allow dust to escape and large enough to completely surround the coal storage areas is not a reasonable precaution to control fugitive dust.

CSX retained two engineering, planning, and construction firms to identify and evaluate possible structural barrier solutions that would satisfy the draft permit conditions. Both firms produced an evaluation of draft permit conditions D(1)-(3), which are provided as Appendices 7 and 8 to these comments. These firms have "extensive in-house experience and subject matter expertise in facilities engineering, air permitting and permit compliance, and dust control and mitigation measures."[103] Both engineering firms, Arcadis and HDR, identified engineering infeasibility, significant safety concerns, environmental consequences, significant disruption to operations, economic impact, and unintended community impacts as impediments to compliance with the draft permit condition. Aleek Young, CSX's General Manager for Coal and Ore Terminals, also identified significant disruptions to existing coal storage and handling operations, permanent reductions in storage capacity, the need to relocate existing aboveground and underground infrastructure, impacts to operational safety, the lack of available space at Terminal for construction activities; and the impact of construction on the CSX network and global supply chain, as impediments to constructing a physical barrier around the coal piles.[104] The degree of emissions control provided by an open-top impermeable barrier is unknown,[105] and the experts

[102] *See* Appendix 1; Trinity PTO Process at 2, 5-6.
[103] Appendix 7; Arcadis Engineering Alternatives Evaluation at 2; *see also*, Appendix 8; HDR Barrier Engineering Feasibility Analysis at 3.
[104] *See* Appendix 12; Young Declaration at 2-6.
[105] Appendix 7; Arcadis Engineering Alternatives Evaluation at 11.

were unable to identify any other material transfer or storage facility in North America that has been required to or voluntarily installed a barrier of the size MDE has prescribed here.[106] Consistent with the experts' findings that such a structure could have negative effects on the surrounding community,[107] community members commented during the public meeting that they do not support the proposed permit condition and do not agree that an open-air physical barrier is a highly effective dust control measure.

Arcadis evaluated the timing, design, construction, engineering, and cost considerations associated with several potential barrier options at the Terminal, including a steel frame wall, stacked shipping containers, tilt-up structures, a sheet pile wall, and a block-and-steel wall. Of these options, Arcadis concluded that only a steel frame wall was theoretically possible to construct.[108] But Arcadis found no precedent for a steel frame wall used to control dust at a material handling and storage facility anywhere in the U.S., and the highest comparable structure Arcadis identified in the entire country was approximately 30 feet—less than one-third the height CSX would need here to continue operating at capacity in accordance with its federal common carrier obligations.[109] The one steel frame wall Arcadis identified as used for dust suppression anywhere in the world (in Spain) was only 50 feet high and did not support the impermeable panels that would likely be required to meet condition D(1).[110] Arcadis concluded:

> A steel frame wall may be technically feasible to construct at the facility; however, the engineering aspects of a wall approaching or exceeding 100 feet in height entail significant uncertainty due to the lack of comparable structures present at any similar facilities. Scaling up existing structural concepts to larger-than-previously-achieved scales may also entail unexpected challenges or consequences and entails substantial risk. [111]

Arcadis also questioned the efficacy of a steel frame wall at controlling dust, noting "[t]here is no published information available about the dust control efficiency of open-top steel wall barriers."[112] And in addition to its questionable air quality improvement effects, a steel frame wall could negatively impact the environment and community, potentially causing negative land use, stormwater, water quality, biological, aesthetic, and noise effects.[113] Finally, Arcadis estimated that a 100-foot steel frame wall would cost up to $120 million just to design and construct.[114]

[106] *Id.* at 10; *see also*, Appendix 8: HDR Barrier Engineering Feasibility Analysis at 3.
[107] Appendix 7; Arcadis Engineering Alternatives Evaluation at 17 (noting increased diesel truck traffic during construction, noise and vibrations, visual impacts).
[108] *See* Appendix 7; Arcadis Engineering Alternatives Evaluation at 30.
[109] *Id.* at 10, 30.
[110] *Id.* at 10.
[111] *Id.*
[112] *Id.* at 11.
[113] *Id.* at 7-10.
[114] *Id.* at 12.

HDR's feasibility evaluation reached the same conclusions. Among other issues, HDR noted the following:

- Building a foundation capable of supporting a barrier at least as high the coal piles would require a foundation depth of up to 240 feet, which "could present driving difficulties due to potential refusal in dense to very dense sand deposits."
- The length and diameter of the structural sections necessary to construct the barrier "would not be safe nor physically able to be handled as singular elements," requiring installation in shorter lengths and additional time to weld sections together.
- A structure of this size would pose structural integrity concerns.
- The amount of steel required could require procurement beyond the 18 months MDE has provided for CSX to construct the structure and would require a material storage and laydown area that neither the Terminal itself nor adjoining properties could accommodate with substantial logistical challenges and operational disruptions.
- The construction equipment required to construct a structure of this size would take up considerable space, and pile driving necessary for installation could cause noise and vibration impacts with the potential to damage nearby structures and disturb the surrounding community.
- The amount of time required to build the necessary structure also extends well beyond the 18 months MDE provides in the permit, potentially requiring more than 5 years of construction and associated operational impacts to the Terminal.
- The cost of a king pile and sheet pile wall would be approximately $98.6 million.[115]

HDR identified similar challenges with constructing a semi-permeable structure—which it is not clear would even satisfy the draft Part D conditions—and estimated the cost to be $83.9 million.[116] Trinity concluded that a semi-permeable barrier would be determined to be economically infeasible based on the cost per ton of PM controlled.[117] HDR concluded that a semi-permeable barrier around the coal piles would still require a king pile wall and significant foundations given the structural integrity challenges associated with any barrier taller than the maximum height of the coal piles.[118] Construction of a permeable structure would also have significant impacts on CSX's operations given the extremely limited available space at the Terminal for a large structure around the coal piles, the location of existing tracks, and the lack of available space for access roads.[119] Regardless of the permeability of the structure, CSX would face the same constraints on the ability to store coal at the facility during construction and reductions in permanent storage capacity needed to accommodate the barrier's foundation and adequate safety clearances.[120]

[115] Appendix 8; HDR Barrier Engineering Feasibility Analysis at 5-9.
[116] *Id.* at 12-13.
[117] Appendix 5; Trinity Barrier Feasibility Evaluation at 3-4.
[118] *Id.*
[119] *Id.*; *see also* Appendix 12; Young Declaration at 3.
[120] Appendix 12: Young Declaration at 3-5 ("Construction of a physical barrier around the coal piles would necessitate reducing the overall size of the coal storage area to safely accommodate the barrier foundations as well as to create adequate clearance between the barrier and the coal piles to ensure operational and employee safety").

To reiterate, two reputable engineering firms with significant experience advising facilities like the Terminal on dust control identified no precedent for the size and scope of barrier the draft PTO requires. And the one option either firm deemed possible to construct "entails substantial risk," has no proven fugitive dust control efficacy, would severely disrupt coal handling and storage operations at the Terminal for months or years, could actually harm the environment and local community, and would be cost-prohibitive to design and build. CSX is willing to consult with experts and MDE to evaluate additional dust control measures based on air dispersion modeling and technical feasibility analysis for inclusion in the Fugitive Dust Control Plan. But because the enclosure and barrier proposed by MDE is not feasible, economical, or necessary, it must be removed from the final PTO.

D. Full enclosure of coal storage piles at transloading facilities is not a reasonable precaution.

Conditions D(1)-D(3) do not explicitly require full enclosure of the storage piles although a full enclosure would satisfy the draft permit conditions. Full enclosure is also not a reasonable precaution for preventing fugitive dust because it would be akin to a full-scale reconstruction of the Terminal, cost hundreds of millions of dollars, and severely disrupt the operations at Curtis Bay Piers and along the broader CSX rail network.

MDE previously requested that CSX evaluate the feasibility of fully enclosing the coal storage areas at Curtis Bay Piers and provide the Department with cost estimates and a construction timeline. In compliance with MDE's request, CSX retained a nationally recognized engineering firm, Kimley Horn, and consulted with a company that produces silos for bulk material storage. CSX obtained cost estimates, construction plans, and construction timelines for building storage silos and associated conveyance infrastructure at Curtis Bay Piers.

Kimley Horn's evaluation, and correspondence summarizing CSX's findings with respect to the feasibility and cost of full enclosure is attached to these comments as Appendix 9. This evaluation confirmed that fully enclosing the coal storage piles is akin to a full-scale rebuild of the Terminal and could only be achieved through a multi-year phased construction project. [121] Adding silos to Curtis Bay Piers would require the construction of new reclaim tunnels under the silos and a new conveyance system capable of loading out coal to the silos and reclaiming coal from the silos for loading onto vessels. [122] Building silos would constitute a major modification and involve significant planning, engineering, and permitting, including an air permit to construct from MDE. The cost to reconstruct the Terminal to install a silo system would be hundreds of millions of dollars—roughly equal to the cost of building an entirely new coal transloading facility—and would take at least five years to permit and construct. [123] And even assuming that silos were able to prevent all dust from escaping, full enclosure poses safety concerns because of the potential for methane, carbon monoxide, and oxygen buildup increasing the risk of combustion. Kimley Horn also identified no enclosed coal transloading facilities in the U.S.

[121] Appendix 9; CSX Letter and Kimley Horn Full Enclosure Evaluation at 3.
[122] *See id.* at 20-21.
[123] *See id.* at 3, 10.

Arcadis also evaluated the feasibility of fully enclosing the storage piles using either geodesic domes or monolithic domes. Arcadis acknowledged that geodesic domes could be constructed at the Terminal but identified no coal loading and storage facility with geodesic domes anywhere in the U.S., and no geodesic dome anywhere in the country with an interior height comparable to the height a dome at the Terminal would require.[124] Arcadis concluded that geodesic domes would require substantial permitting and logistical resources and could negatively affect the environment and surrounding community.[125] Arcadis also concluded that a dome "entails significant temporary and permanent impacts on facility operations," would require existing infrastructure "to be redesigned and relocated," would take longer than 18 months to construct, and would likely cost well over $100 million.[126]

Consistent with these engineering findings, EPA does not even recommend enclosure of active material stockpiles. To the contrary, EPA guidance on aggregate handling and storage piles specifically acknowledges the need for outdoor storage piles when bulk materials are frequently transferred into and out of storage.[127]

Reasonable precautions do not require the wholesale reconstruction of a facility or even significant operational disruptions to prevent all fugitive dust. Full enclosure of the Terminal's storage piles—whether using silos or domes—would likely require both. Not only is such a drastic measure unwarranted under Maryland law, it is also preempted by federal law. As discussed below in Section V, ICCTA preempts state laws and environmental permit conditions that unreasonably burden or interfere with interstate rail operations. Because full enclosure would require CSX to either shut down or significantly reduce operations at the Terminal and prevent it from meeting its federal common carrier obligations, federal law preempts MDE from requiring full enclosure of the Terminal's coal storage areas.

E. The railcar watering condition is not a reasonable precaution and should be removed from the PTO.

Draft conditions (D)(4)-(5) require CSX to install a system that applies water to loaded railcars at the point where railcars enter the boundary of the Curtis Bay Piers property and to have this system operational within six months of receiving the final permit.[128] These conditions are inappropriate and must be removed from the final permit. The loaded railcars are not a source of fugitive dust emissions at Curtis Bay Piers and have never been included in the Terminal's potential to emit calculations. As explained by air modeling expert Trinity:

> Conditions [D(4) and D(5)] should be removed from the permit to operate because emissions from loaded railcars are considered de minimis (or zero) and coal freight

[124] Appendix 7; Arcadis Engineering Alternatives Evaluation at 23-26.
[125] *Id.*
[126] *Id.* at 26.
[127] *See* U.S. EPA, Aggregate Handling and Storage Piles, available at https://www.epa.gov/sites/default/files/2020-10/documents/13.2.4_aggregate_handling_and_storage_piles.pdf.
[128] Draft PTO at 10

> shippers must mitigate for coal dust and apply 'in-transit dust suppressant' or 'effectively mitigate for coal dust under all weather conditions.'[129]

The movement of railcars into the Curtis Bay Piers railyard at low speeds is not causing fugitive dust emissions beyond the terminal boundary. Air monitoring data from Trinity at Appendix 6 show that loaded railcars at the property boundary are not emitting particulate matter at levels exceeding the 24-hour NAAQS.[130] Trinity used Federal Equivalent Method monitors to monitor particulate matter emissions for one month (October 30 to November 30, 2024) at the CSX Rail Yard just north of Patapsco Avenue used frequently by railcars delivering coal to the Terminal.

Trinity also tracked the number of railcars entering the Rail Yard and delivering coal to the Terminal during this month. Notably, some of the highest concentrations detected (again, all well below the NAAQS) were on days when no coal was delivered. For example, the second-highest PM_{10} and $PM_{2.5}$ readings occurred on October 30, a day when no loaded railcars were logged as arriving at the Terminal. And neither of the days with the highest number of coal trains arriving at the Terminal (November 7 and November 9) accounted for the highest concentrations detected.[131]

As this analysis confirms, the installation of a railcar watering system would provide little or no decrease in emissions because loaded railcars are not associated with elevated particulate matter emissions. In any event, CSX already requires the use of dust suppressants and other erosion and dust suppression techniques when loading and transporting coal by rail.[132] Further, the installation of a water spray system at the property boundary would create logistical and environmental issues. As Trinity explains in Appendix 10:[133]

> The proposed condition also introduces other operational challenges in terms of water management and additional environmental challenges (e.g., stormwater management requirements under general permit 20-SW). Specifically, any spray system installed at the property boundary would result in excess water that will contact railcars and require management of the residual liquids and solids. Solid material (e.g., filtered solids) in the collected water would need to be managed in accordance with solid waste management regulations and the resultant wastewater would need to be managed in accordance with local and state regulatory requirements (i.e., either as recycled water or for disposal).[134]

There is simply no justification for this permit condition. The railcars are not a source of emissions at the Terminal, the coal is already treated with a dust suppressant resulting in minimal fugitive dust and no visible emissions beyond CSX's property boundary, and fenceline monitoring

[129] Appendix 10; Memo from Trinity Consultants to CSX regarding "CSX Curtis Bay Piers – Analysis of Fugitive Dust Emissions from Railcars On Site" at 1 (Aug. 21, 2024) ("Trinity Railcar Fugitive Dust Analysis").
[130] *Id.* at 2-4.
[131] *Id.* at 4.
[132] *Id.* at Attachment 1: Excerpts from CSX Transportation Publication CSXT 8200 Terms and Conditions of Service & Prices for Accessorial Services & Common Carrier Line-Haul of Coal, Coke, & Iron Ore.
[133] *Id.*
[134] *Id.* at 2.

demonstrates that PM_{10} concentrations are below the NAAQS. Watering of railcars at the Terminal boundary is not necessary, and conditions D(4)-(5)must be removed from the permit.

F. The draft Part D conditions are not consistent with the dust control measures that would be selected through ordinary emission control selection procedures.

MDE's requirement to construct a physical barrier taller than the coal piles and apply water to loaded railcars to control fugitive dust is not only inconsistent with what the reasonable precaution standard requires, it also departs from the Department's ordinary practice for evaluating and selecting permit conditions. MDE's State PTO guidance provides that "the Department may impose reasonable terms and conditions on the permit to ensure compliance and to protect public health."[135] The guidance also provides that, for state PTO renewals, "[t]he Department review the application and *inspects* the company to determine compliance with all applicable operating conditions required by permits to construct or orders, and all applicable state and federal air pollution control regulations."[136]

The additional conditions in Part D are not the result of inspections or in response to any violations of the existing PTO. Curtis Bay Piers was in compliance with all conditions of both the current PTO and the 2022 PTC when the draft permit was issued, and MDE has not indicated on any recent inspection that Curtis Bay Piers required enclosure of its storage piles and watering of its loaded railcars to address fugitive dust. The conditions are also not necessary to protect public health because, as MDE concluded just two years ago, "emissions of coal dust and crystalline silica emissions are at levels that are protective of public health for areas within the public domain."[137] And as discussed above, the fenceline monitoring data show that particulate emissions at the facility fenceline are below the health- and safety-based NAAQS. In an ordinary permit review, the fenceline data, the TAPs analysis, and the lack of deficiencies noted in facility inspections would be more than sufficient information for MDE to approve the renewal of the PTO at CSX (*i.e.*, site fugitive dust plan is adequate).[138]

And conditions D(1)-D(5) are not just solutions in search of a problem; they were also selected without regard for the factors state regulations require MDE to consider when selecting reasonable precautions for unconfined sources like coal storage piles, including technical and economic feasibility and environmental considerations. Sections III.B-E above make clear that these solutions are not technically or economically feasible and could actually cause other environmental harm even if they successfully reduce fugitive dust.

In addition to not applying the regulatory criteria for selecting reasonable precautions for the storage piles, MDE did not use the top-down engineering analysis ordinarily employed by regulators to evaluate control technology. As explained by Trinity:[139]

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[135] *See* MDE, 1.05 Air Quality State Permit to Operate Guidance, available athttps://mde.maryland.gov/programs/permits/Documents/2008permitguide/ARMA/1.05.pdf.
[136] MDE, 1.05 Air Quality State Permit to Operate Guidance, available at https://mde.maryland.gov/programs/permits/Documents/2008permitguide/ARMA/1.05.pdf.
[137] MDE PTC Fact Sheet at 4.
[138] Appendix 1; Trinity PTO Process Assessment at 3.
[139] *Id.*

> . . . When pollution controls are required by regulation or permit condition, the controls are typically reviewed for technical and economic feasibility. The "reasonable precautions" required to prevent fugitive dust at a minor source like CSXT are ordinarily evaluated in a similar way to control technologies required under the Clean Air Act's reasonably available control technology (RACT) and best available control technology (BACT) requirements for major sources in that they are case-specific and consider technical and economic feasibility although no formal evaluation is typically required. The process employed by engineers and air quality experts when determining RACT or BACT, and that would ordinarily be applied here, is a top-down methodology that includes the following steps:
>
> - Identify all control technologies;
> - Eliminate technically infeasible control technologies;
> - Rank remaining technologies;
> - Evaluate cost effectiveness; and
> - Select control technology.

The record does not show that MDE conducted a technical or economic feasibility analysis of the sort state agencies and the EPA regularly use under the Clean Air Act. Nor does it appear MDE has reviewed information CSX previously presented the Department on the cost and technical feasibility of some of these draft permit conditions. In fact, MDE's selection of the controls in conditions D(1)-(5) would fail the top-down evaluation a regulatory would ordinarily use. Trinity concludes: "the controls proposed by MDE in the draft permit—including the construction of a physical barrier higher than the maximum height of the coal storage piles and surrounding the coal piles—would not be BACT for major PSD sources because they are technically and/or economically infeasible. CBP is an existing minor source in an area designated as attainment for PM_{10} and $PM_{2.5}$. It is therefore unreasonable to require CSXT, a minor source of particulate matter, to install controls that would not be BACT for a major source in the same location."[140]

For all of these reasons, draft conditions D(1)-(5) are not reasonable precautions. CSX already has comprehensive dust control measures in place to minimize fugitive dust from operations at the Terminal, including a sophisticated dust suppression system, covered conveyors, minimal drop heights when the coal is transferred to the piles, and partially enclosed dumper sheds. Fenceline monitoring data and a rigorous TAPs analysis performed in accordance with Maryland regulations and approved by MDE confirm that these existing measures control fugitive dust effectively. These unprecedented and unreasonable draft conditions must be removed from the final permit, and CSX should be allowed to continue implementing and improving fugitive dust controls at the facility using its MDE-approved Fugitive Dust Control Plan.

[140] *Id.* at 3-4.

IV. MDE should not base permit decisions on flawed and limited community studies.

A. The Collaborative Report does not show that coal dust is present in the community at harmful levels and should not be used as a basis for permitting.

MDE's justifications for imposing Conditions D(1)-(5)—despite the fact that they are not reasonable precautions—are the findings from a December 2023 report titled, *Collaborative Investigation of Coal Dust, Air Pollution, and Health Concerns in Curtis Bay, South Baltimore, Maryland, USA, 2022-2023* ("Collaborative Report"). The Collaborative Report, authored by a consortium of community groups opposed to the Terminal, local universities, and MDE was initiated to investigate community concerns of dark dust found on homes assumed to be from the coal loading operations at Curtis Bay Piers. The Collaborative Report's findings are not supported by the data in the Collaborative Report itself and should not be used to inform regulatory decisions.[141] MDE's reliance on the unsupported conclusions in the Collaborative Report as the basis for imposing onerous permitting conditions on CSX is arbitrary and capricious and not in compliance with Maryland law.

In February 2024, CSX submitted a comprehensive critical review of the Collaborative Report, prepared by nationally recognized experts in particulate matter speciation, ambient air quality monitoring, and toxicology.[142] CSX's Expert Response, titled *CSX Transportation, Inc. (CSXT) Response to the Collaborative Investigation of Coal Dust, Air Pollution, and Heath Concerns in Curtis Bay, South Baltimore, Maryland* ("CSX's Expert Response") is attached to this letter as Appendix 2. The CSX Expert Response to the Collaborative Report fully addresses the shortcomings of the Collaborative Report, including the findings with respect to coal dust relied on by MDE in the draft permit fact sheet. The Draft PTO Fact Sheet does not acknowledge CSX's Expert Response, and MDE did not include any mention of CSX's Expert Response on the public webpage it created for the CSX PTO renewal.[143]

Instead, the Draft PTO Fact Sheet states that the Collaborative Report's three preliminary findings[144] establish that the Terminal's current dust control measures are inadequate to prevent coal dust from reaching the community. These preliminary findings are: (1) Coal dust is present throughout the community; (2) Coal dust finds its way into the community on a day-to-day basis and is correlated with both activity at the coal terminal and wind direction; and (3) The Curtis Bay community is overburdened by air pollution, with the community sensor network measuring average particle pollution levels that are higher than at nearby MDE regulatory monitors. [145]

CSX's Expert Response extensively reviewed and refuted each of these findings.[146] In short, the Collaborative Report (1) fails to present evidence showing that coal dust is present throughout the Curtis Bay community; (2) fails to show that particulate matter from coal handling

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[141] *See* Appendix 2; CSX Expert Response to Collaborative Report at 1-2, 39.
[142] *See generally* Appendix 2; CSX Expert Response to Collaborative Report.
[143] *See* MDE, CSX Transportation – Curtis Bay Piers, available at https://mde.maryland.gov/programs/permits/AirManagementPermits/Pages/CSX-Transportation-Permit.aspx.
[144] Collaborative Report, Executive Summary at 1 ("This report summarizes the preliminary findings of this collaborative work . . . .").
[145] *Id.* at 1-2.
[146] *See generally* Appendix 2; CSX Expert Response to Collaborative Report.

operations at Curtis Bay Piers has a substantial impact on air quality in the Curtis Bay community; and (3) fails to present evidence demonstrating that the Curtis Bay community is overburdened by particulate matter air pollution as compared to other areas of Baltimore City.[147] The Collaborative Report also confirms the community is in attainment with the 24-hour PM_{10} and $PM_{2.5}$ NAAQS.[148]

Nonetheless, the Draft PTO Fact Sheet, relying solely on the Collaborative Report, says that the current precautions CSX takes are inadequate to prevent coal dust from reaching the community and that the Terminal's operations have created a nuisance.[149] To be clear, the Collaborative Report does not and cannot establish that CSX's current dust control measures are inadequate or that the Terminal's operations create a nuisance. But even if it could, the mere presence of coal dust does not establish that the Terminal's current dust control measures are inadequate or that operations of the Terminal have created a nuisance, and certainly does not justify the imposition of unprecedented permit conditions. To the contrary, as discussed above in Section II, CSX's fenceline monitoring data and MDE's own TAPs analysis show that the Terminal's dust control measures keep emissions at levels protective of human health. To reiterate, neither the PTO nor Maryland law contain a zero emissions standard.

The Collaborative Report did not follow accepted methodologies or standardized practices published by EPA for making defensible and representative air quality measurements.[150] CSX strongly objects to MDE using the disputed Collaborative Report as the basis for imposing additional permit conditions on Curtis Bay Piers. Importantly, and as extensively documented in CSX's Expert Response, the community monitoring data and information provided in the Collaborative Report does not demonstrate that coal dust from the Terminal contributes to overall particulate matter concentrations in Curtis Bay. Data from the network of community monitors demonstrates that levels of particulate matter in the Curtis Bay community are consistent with that of Baltimore generally and are influenced by local and regional background sources, not the Terminal.[151]

The Collaborative Report is simply inconsistent with the facts about air quality in Curtis Bay and CSX's own environmental record. A disputed report based on inaccurate data from non-regulatory-grade monitors cannot form the basis of MDE's permitting decision here.

B. The forthcoming Aubourg Study does not support MDE's conclusion that the Terminal creates a nuisance and cannot be used as a basis for permitting.

Later this month, the results of a study by community members and university researchers who participated in the Collaborative Report will be published in the Science of the Total Environment Journal.[152] At the October 10, 2024 public meeting, the study authors and community members touted this article as proving that coal dust from the Terminal is present

[147] *Id.*
[148] Appendix 2; CSX Expert Response to Collaborative Report at 8-9.
[149] Draft PTO Fact Sheet at 6.
[150] Appendix 2; CSX Expert Response to Collaborative Report at 6, 60.
[151] *See* Appendix 2; CSX Expert Response at 8, 39, 61.
[152] M. Aubourg et al, Use of electron microscopy to determine presence of coal dust in a neighborhood bordering an open-air coal terminal in Curtis Bay, Baltimore, Maryland, USA, Science of the Total Environment, Dec. 20, 2024.

throughout Curtis Bay, and is both a nuisance and a threat to public health.[153] But the study, *Use of electron microscopy to determine presence of coal dust in a neighborhood bordering an open-air coal terminal in Curtis Bay, Baltimore, Maryland, USA* ("Aubourg Study") does not provide evidence to prove nuisance or a threat to public health.[154] In fact, it actually indicates that coal dust is present only in trace concentrations in Curtis Bay. This data do not support residents' statements that there is rapid accumulation of black dust on their homes.[155]

The Aubourg Study is much more limited than the Collaborative Report and does not validate the Collaborative Report's findings. The Aubourg Study reanalyzed two settled dust samples collected in October 2023 and originally reported in the Collaborative Report.[156] The reanalysis was done with a better defined analysis protocol, but only was used to identify the "presence" or "absence" of coal particles in settled dust samples collected at two locations in Curtis Bay, one 345 meters and the other 1,235 meters away from the Terminal.[157] The Aubourg Study found that coal particles were "present" in both samples but failed to characterize whether the amount found is major, minor, or trace. [158]

To show whether and to what degree the coal particle concentrations detected by the study actually darken surfaces, RJ Lee Group performed a laboratory study documented in Appendix 4. The purpose of the laboratory study was to obtain a coal particle concentration at the level observed in the Curtis Avenue and Church Street sample (approximately 345 meters from the Terminal) where the study reported ~13 coal particles/mm^2 in order to show whether such a concentration would be visible. [159] RJ Lee Group found that coal particles > 5 µm at a concentration of ~20 particles/mm^2—above the maximum ~13 particles/mm^2 detected in the 2024 study—had no visible discoloration on the filter. [160] When viewed by eye, the sample cannot be distinguished from a blank filter as shown in Figure 1. In other words, coal dust at concentrations detected by the Aubourg Study does not create visible dust at all, let alone the black dust that researchers and the community claim rapidly accumulates daily. [161]

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[153] *See e.g.,* CSX Draft Operating Permit Public Comment Meeting Recording at 1:27 (Dr. Heaney: The [Science of the Total Environment] Paper confirms the presence of coal and dark dust in the communities here in Curtis Bay was accepted for publication under peer review."); at 1:58 (Russell Dickerson: there is "coal dust in this neighborhood, it is there in substantial quantities, it is both a nuisance and threat to human health."); *see also* Clean Water Watch and University of Maryland Environmental Law Clinic, Guide for Written Testimony on CSX Curtis Bay Coal Terminal's Draft Permit to Operate, https://cleanwater.org/2024/11/13/submit-comments-csxs-draft-permit-operate-coal-terminal-curtis-bay (urging Maryland residents to submit a form letter that reads in part: "New peer-reviewed research proves what residents have long said: coal dust contaminates the community.").
[154] M. Aubourg at 7-8.
[155] Collaborative Report at 3 (claiming that researchers observed coal dust building up on surfaces in as little as 40 seconds and accumulation of coal dust after just three days of exposure).
[156] Appendix 4; RJ Lee Group, Response to Aubourg et. al. Science of the Total Environment Journal Article (2024) at 2 (Dec. 11, 2024) ("Aubourg Study Response").
[157] M. Aubourg at 3.
[158] *Id.* at 7-8.
[159] Appendix 4; Aubourg Study Response at 2.
[160] *Id.* at 3.
[161] *See id.* at 3-4.

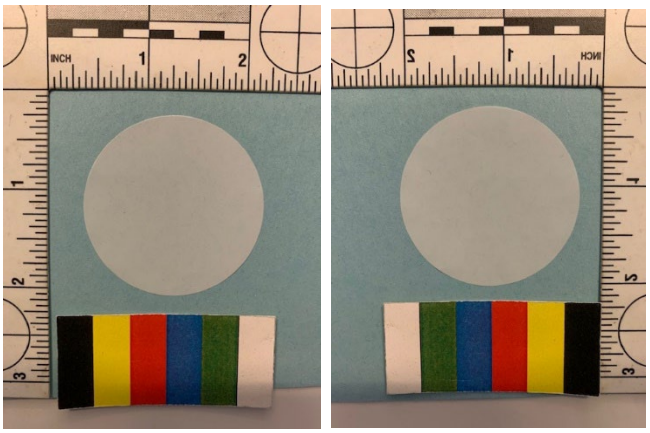


Figure 1. Photograph comparing a filter with a coal concentration of 20 particles/mm^2 (left) to a blank filter (right). The samples cannot be differentiated by eye.[162]

Further, as discussed in the RJ Lee Group report at Appendix 4, visual observations of buildings at and near the Terminal do not show indications of dark dust.[163] If coal dust from the Terminal were causing rapid accumulation of visible dust in the community, then surely it would blacken a large white warehouse along the Terminal's western boundary. Photos showing a lack of black discoloration on the roof and sides of the building shows this is not the case.

In addition to the fact that dust is well-controlled at the Terminal through existing practices, the lack of dark dust accumulation on a building along the Terminal's western boundary also makes sense considering the majority of winds at the Terminal blow in the opposite direction of the community, also located west of Curtis Bay Piers. Using wind rose data collected between March 2023 and December 2024, RJ Lee Group found that winds came mostly from the west, not toward it.[164] RJ Lee Group also analyzed wind rose data from October 24-28, 2024 and found that "winds from the direction of the CSX Terminal accounted for less than 5 percent over the four day period," indicating "that there are other source(s) responsible for particulate matter that is darkening surfaces" in the community.[165]

Despite the Aubourg Study's limiting finding that coal dust is "present" in the community (without any attempt to determine whether the concentrations harm property or health), its authors and community members opposed to the Terminal continue to overstate the Study's findings. One of the study's authors continues to claim that "there is coal dust in this neighborhood, it is there in substantial quantities, it is both a nuisance and a threat to human health."[166] The Study does not support this; it makes no findings about whether the coal particle concentrations detected present a nuisance or human health threat.[167] The Study merely confirms that trace amounts of coal particles are present in the community, and like the Collaborative Report off of which it piggybacks, it cannot be used as the basis for permitting decisions.

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[162] *Id.*
[163] *Id.* at 5-6.
[164] *Id.* at 6-7.
[165] *Id.*
[166] *See* video recording of CSX Draft Operating Permit Comment Meeting in Curtis Bay at 1:58.
[167] In fact, other authors of the study have emphasized that the study is just a first step.

V. The Part D conditions are preempted by ICCTA.

"Congress recognized long ago that a uniform regulatory scheme is necessary to the operation of the national rail system."[168] For more than a century, Congress has exercised its authority under the Commerce Clause to regulate rail transportation.[169] With the passage of ICCTA, 49 U.S.C. § 10101, *et. seq*, Congress eliminated concurrent state and federal regulation of rail transportation.[170] ICCTA sought to replace state regulation with a uniform system of regulations.[171] To this end, ICCTA vested the Surface Transportation Board with exclusive jurisdiction over rail transportation operations. This exclusive jurisdiction covers "transportation by rail carriers . . . with respect to rates, classifications, rules . . . , practices, routes, services, and facilities of such carriers" and over "the construction, acquisition, operation, abandonment, or discontinuance of [tracks] or facilities."[172] And Congress expressly "preempt[ed] the remedies provided under Federal or State law."[173] Under ICCTA's plain language, only the Surface Transportation Board may regulate "property [or] facility . . . of any kind related to the movement of passengers or property, or both, by rail" and "services related to that movement."[174] ICCTA also defines a "Railroad" as including all "ground, used or necessary for transportation,"[175] which includes Curtis Bay Piers.

As courts have recognized, "[i]t is difficult to imagine a broader statement of Congress' intent to preempt state regulatory authority over railroad operation."[176] It is well-settled that "[s]tate law preclearance or permitting requirements that could be used to deny or unreasonably delay a rail carrier's ability to conduct rail operations typically are categorically preempted, without requiring a factual analysis of their effect on transportation."[177] Importantly, "what is preempted here is the permitting process itself, not the length or outcome of that process in particular cases."[178]

MDE's attempt to require CSX to place a barrier around or enclose the coal storage area and conveyance system at Curtis Bay Piers is preempted by ICCTA. Because CSX is a common carrier under federal law, it must "provide transportation or service on reasonable request."[179] That preemption includes environmental laws, including permitting requirements, and including for

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[168] *Skidmore v. Norfolk S. Ry.*, 1 F.4th 206, 217 (4th Cir. 2021).
[169] *See Chi. & N.W. Transp. Co. v. Kalo Brick & Tile Co.*, 450 U.S. 311, 318 (1981).
[170] H.R. Rep. 104-311, at *96 (1995), *reprinted in* 1995 U.S.C.C.A.N. 793, 807 (noting that ICCTA was enacted "to reflect the direct and complete pre-emption of State economic regulation of railroads").
[171] S. Rep. 104-176, at *6 (1995) ("Subjecting rail carriers to regulatory requirements that vary among the States" would undermine the system of national railroads).
[172] 49 U.S.C. § 10501(b).
[173] *Id.*
[174] *Id.* § 10102(9).
[175] *Id.* § 10102(6)(C).
[176] *CSX Transp., Inc. v. City of Sebree*, 924 F.3d 276, 283 (6th Cir. 2019).
[177] *Grafton & Upton, Pet. For Dec. Order*, FD Dkt. 36696, 2023 STB LEXIS 207 (STB Nov. 14, 2023) (ICCTA categorically preempts "state or local permitting or preclearance requirements, including environmental and land use permitting requirements, of [transloading] facilities . . . . [transloading] activity is not merely activity that economically benefits from being near a railroad. Rather, the loading, unloading, and temporary storage activities that comprise transloading indisputably facilitate the movement of property by rail and thus are part of 'transportation.'" (emphasis added)).
[178] *Green Mt. R.R. Corp. v. Vermont*, 404 F.3d 638, 644 (2d Cir. 2005).
[179] 49 U.S.C. § 11101(a).

transloading (*e.g.* train-to-ship) facilities operated by rail carriers. Any action by state or local officials that "permits a non-federal entity to restrict or prohibit the operations of a rail carrier" is preempted.[180] Pursuant to this preemption, state or local regulation is permissible only "so long as (1) it is not unreasonably burdensome, and (2) it does not discriminate against railroads."[181]

A. The permit conditions unreasonably interfere with rail transportation.

As required by COMAR 26.11.02.13A(38), CSX operates Curtis Bay Piers pursuant to an air quality permit from MDE. The PTO contains general conditions that apply to all state permits to operate and specific conditions that are particular to Curtis Bay Piers. The PTO's restrictions are aimed at ensuring the control of air emissions from coal dust, including visible emissions under COMAR 26.11.06.02C(2) (visible emissions standards from an installation or building) and particulate matter emissions under COMAR 26.11.06.03C (particulate matter emissions from unconfined sources) and 26.11.06.03D (particulate matter emissions from materials handling). To comply with the PTO, CSX must also follow the requirements of the Fugitive Dust Control Plan accompanying the PTO, which is subject to MDE review and approval.

MDE's draft permit is preempted because it functions as a preclearance requirement that is being used to impose operation limits on the Terminal's coal storage and prevent CSX from meeting its common carrier obligations. MDE is forcing CSX to build a 100-foot physical barrier that interferes with safe rail operations at the Terminal and, per our expert consultants, is not consistent with the dust control measures that would be selected through a typical top-down engineering analysis. This condition is an impermissible attempt by MDE to impose an operational limit on the Terminal because constructing a barrier that satisfies this permit condition will require CSX to decrease the coal storage area in both the short and long term. And even if CSX were to limit the size of the coal piles to build a shorter barrier, the condition would still impact and interfere with operations by limiting CSX's ability to serve customers. The draft condition would force CSX to embark on a facility-wide capital-improvement project resulting in a complete redesign and reconstruction, substantially interfering with the Terminal's operations and CSX's broader interstate transportation network.[182] MDE should not be able to require CSX to use a certain dust control measure in an operating permit, particularly one that interferes with operations and jeopardizes worker safety. Courts have found that similar attempts by state and local governments "unreasonably interfere[e] with rail operations."[183]

As discussed in the engineering feasibility memos prepared by Arcadis and HDR, constructing a physical barrier around the coal piles would severely disrupt CSX's operations, both during construction activities and during operations. There is no way to feasibly build a barrier

[180] *City of Alexandria*, 608 F.3d at 158 (applying ICCTA preemption to a transloading facility moving ethanol from rail onto trucks).
[181] *CSX Transp., Inc*., 924 F. 3d at 283.
[182] *See Dakota, Minn. & E. R.R. Corp. v. South Dakota*, 236 F. Supp. 2d 989, 1007 (D.S.D. 2002) (finding that a law requiring a railroad company to engage in in activity the company was not "able or even willing to obtain financing to cover the cost for" interfered with the railroad operations and was preempted by ICCTA); *see also City of Cayce v. Norfolk S. Ry. Co.*, 391 S.C. 395, 706 S.E.2d 6 (2011) (cost for railroads to comply with local bridge ordinance would expand exponentially if applied to every railroad bridge on railroad's 20,000 mile plus rail network).
[183] *See CSX Transp., Inc.*, 924 F.3d at 285 (holding that a city ordinance was preempted as-applied for numerous reasons, including because it "has the effect of prohibiting CSX from using the maintenance method it prefers and believes is the 'industry best practice,' and instead requires the use of a method that 'reduces train safety.'").

around the coal piles without removing tracks or decreasing the size of the coal storage area to accommodate the structural support needed for a 100+ foot barrier. Given the space constraints at the Terminal and the proximity of the railroad tracks to the coal storage area, construction of a physical barrier structure as described by the permit would result in the need for other significant modifications to the Terminal to accommodate the operational constraints and safety hazards created by these barriers. Taken together, draft permit conditions D(1)-(5) create an unreasonable burden on interstate commerce.

B. The permit conditions impermissibly discriminate against a rail operator.

The requirement for CSX to construct a 100+-foot physical barrier has not been included in any other state permits for material handling facilities, coal-fired power plants, or other transloading facilities in Maryland. There are a variety of ways to mitigate the impact of wind on coal short of building a 100+-foot impermeable barrier around the coal storage area or fully enclosing the Terminal. MDE has pointed to no precedent for imposing this type of enclosure requirement on another facility, railroad or non-railroad, and CSX is aware of none. Any requirement to enclose the coal storage piles at Curtis Bay Piers would be inconsistent with MDE's treatment of other material handling facilities. It is also inconsistent with MDE's treatment of non-rail carriers. Thus, any attempt to condition CSX's operation of the Terminal on the construction of an enclosed coal storage and conveyance system would violate ICCTA by discriminating against it as a rail carrier.[184]

VI. The Terminal's operations do not create a nuisance.

MDE states that one purpose of the draft permit's additional dust control requirements, including the construction of a partial or full enclosure, is to prevent nuisance. The draft permit subjects the Terminal to a state rule prohibiting nuisance or air pollution.[185] And as discussed above, MDE concludes based on the Collaborative Report that coal dust is present in Curtis Bay and "that operation of the terminal has created a nuisance.".[186] As discussed above, the Collaborative Report does not support this conclusion and its disputed findings cannot support permitting decisions. Further, any permit condition based on the non-federally enforceable nuisance rule that would interfere with the Terminal's operations—which Conditions D(1)-D(5) do—is preempted by ICCTA. Not only has MDE failed to show (both in the Collaborative Report and Aubourg Study) that the Terminal's operations create a nuisance, MDE reached the opposite conclusion when it found two years ago that coal dust from the Terminal is not a public health risk.

As discussed above, ICCTA gives the Surface Transportation Board broad and exclusive authority over "transportation by rail carriers" and "the construction, acquisition, operation, abandonment, or discontinuance" of tracks or "facilities."[187] ICCTA preempts "a wide range of

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[184] *N.Y. Susquehanna & W. Ry. Corp v. Jackson*, 500 F.3d 238, 253 (3d Cir. 2007) (finding a state law that as applied "discriminate[s] against railroad operations" to be preempted); *see also City of Alexandria*, 608 F.3d at 160 ("Although the Ordinance and Permit commendably seek to enhance public safety, they unreasonably burden rail carriage and thus cannot escape ICCTA preemption . . . .").

[185] COMAR 26.11.06.08 says: "An installation or premises may not be operated or maintained in such a manner that a nuisance or air pollution is created."

[186] Draft PTO Fact Sheet at 6.

[187] 49 U.S.C. § 10501(b).

state and local regulation of rail activity," including state environmental regulations not approved by EPA to implement federal environmental law that would "unreasonably burden railroad activity."[188] ICCTA also preempts the application of generally applicable state nuisance laws to rail carriers when those laws "intrude upon the [Surface Transportation Board's] exclusive jurisdiction."[189] The nuisance prohibition at COMAR 26.11.06.08 is not part of Maryland's Clean Air Act State Implementation Plan and is thus not an EPA-approved state regulation implementing federal law. And as applied here as the basis for dust control conditions that would substantially disrupt operations and prevent CSX from meeting its federal common carrier obligations, the rule would intrude on the Surface Transportation Board's broad and exclusive authority to regulate CSX and its facilities. ICCTA therefore preempts MDE's authority to impose these conditions.

In any event, Curtis Bay Piers' operations are neither a nuisance nor "air pollution" requiring the controls MDE has proposed. A nuisance is conduct that substantially and unreasonably interferes with a person's "reasonable and comfortable enjoyment" of their property.[190] The interference must cause "actual physical discomfort and annoyance to those of ordinary sensibilities, tastes and habits."[191] And the degree and unreasonableness of the interference depends on location: "In determining the question of nuisance from smoke or noxious vapor . . . reference must always be had to the locality, the nature of the trade, the character of the machinery, and the manner of using the property producing the annoyance and injury complained of."[192] Relying on the flawed Collaborative Report, MDE say that the Terminal is a nuisance because it causes the daily accumulation of visible dust that in the community. But as discussed above, the Collaborative Report fails to conclusively identify coal dust in the community at all, let alone at levels that would cause daily accumulation of visible dust. And while the Aubourg Study detected the "presence" of coal particles at two locations in the community, the concentrations detected do not create visible dust accumulation. As RJ Lee Group found, the concentrations of coal dust at ~13 coal particles/mm^2—the highest concentration detected—create no visible dust. RJ Lee also notes that a white building on the Terminal's western boundary shows no visible dust, and snow located at Curtis Bay Piers on a day MDE visited showed no visible dust.

These findings make clear that other sources are contributing to the rapid accumulation of visible dust that the community and MDE have pinned exclusively on the Terminal. By MDE's logic, any of the 70 stationary and dozens of mobile sources emitting in Curtis Bay that have caused even a single particle of dust to settle in the community is a nuisance. This outcome is not supported by MDE's treatment of the other emitters in Curtis Bay, basic legal principles, or common sense.

Nor are MDE's proposed measures necessary to address public health risks from the Terminal because, as MDE found two years ago and over a year of fenceline monitoring has confirmed, such risks do not exist. As discussed above, MDE concluded in 2022 that the Terminal complies with TAPs requirements and issued a PTC that the Department determined was protective of human health. Nothing about the Terminal's operations that could increase TAPs emissions and associated health risks has changed since then, and, MDE has issued no violations

[188] *Ass'n of Am. R.R. v. S. Coast Air Quality Mgmt. Dist.*, 622 F.3d 1094, 1097-98 (9th Cir. 2007).
[189] *R.R. Ventures, Inc. v. STB*, 299 F.3d 523, 561-63 (6th Cir. 2002).
[190] *Hoffman v. United Iron & Metal Co.*, 671 A.2d 55, 63 (Md. Ct. Spec. App. 1996).
[191] *Wash. Suburban Sanitary Comm'n v. CAE-Link Corp.*, 622 A.2d 745, 750, 759-61 (Md. 1993).
[192] *Fox v. Ewers*, 75 A.2d 357, 360 (Md. 1950).

to CSX for operating its coal handling and storage areas in a way that could harm public health. The fenceline monitoring data also show that particulate matter concentrations at the fenceline are below the primary and secondary 24-hour NAAQS, and based on the Air Quality Index, air quality surrounding the Terminal is satisfactory and air pollution poses little or no risk. Curtis Bay, like the rest of Baltimore City, is in attainment for PM_{10} and $PM_{2.5}$. Put simply, there is no nuisance-causing public health threat from the Terminal that a physical barrier and additional loaded railcar wetting could address.

In addition to not causing a nuisance, the Terminal does not cause "air pollution" that would violate COMAR 26.11.06.08. MDE defines "air pollution" as "the presence in the outdoor atmosphere of substances in quantities, having characteristics, and being of a duration which, from any single source or in combination with other sources, are, or may be predicted with reasonable certainty to be, injurious to human, plant, or animal life or to property, or which unreasonably interfere with the proper enjoyment of the property of others by reason of the emission of odors, solids, vapors, liquids, or gases, throughout the State and in such areas of the State that are affected by them."[193] In other words, air pollution is something more than any emission of a pollutant at any level. The trace amounts of coal particles detected in two locations in Curtis Bay cause no visible changes to property and no impacts to human health and are therefore not air pollution as defined in COMAR 26.11.01.01.

VII. MDE's permit renewal process has been arbitrary and capricious.

A. MDE improperly predetermined the outcome of the permitting process.

As already noted, MDE concludes in the Draft PTO Fact Sheet that the presence of coal dust in the community justifies the draft PTO's unprecedented enclosure and railcar watering conditions. This conclusion, purportedly evidence-based and made in 2024, was foregone. MDE had decided in 2022—long before the release of the disputed Collaborative Report or any other supporting evidence—that there was coal dust in the community coming from the Terminal. The MDE PTC Fact Sheet stated that "there is longstanding evidence that shows fugitive dust is leaving the facility's site. Also, recent off-site monitoring data and visual observations give further indication that dust is leaving the facility site." Yet as of September 2022, MDE was still collecting data for the Collaborative Report and had certainly not made any conclusions about the presence of coal dust. The Collaborative Report's conclusion that coal dust was detected in ambient air using non-regulatory-grade low-cost sensors is based on data collected from 2022 to 2023 that cannot differentiate coal dust from other sources of particulate matter.[194] Further, researchers did not conduct white tape sampling for the presence of coal dust in the community until May 2023, and did not conduct surface particulate lift sampling until August to October 2023.[195] The Collaborative Report acknowledges that its conclusion "that coal dust is [a] substantial contributor to settled dust from ambient air in the community" is based on "[m]ultiple field sampling campaigns of tape lifts [that] occurred in 2023."[196] At most, all MDE could say in September

[193] COMAR 26.11.01.01.
[194] *See* Collaborative Report at 55, 59-64.
[195] *Id.* at 24, 30-31.
[196] *Id.* at 43.

2022 that it was in the process of collecting data; MDE could not say with the certainty it did that there was coal dust present.

In short, MDE decided there was coal dust in Curtis Bay before completing the air monitoring and settled dust sampling described in the Collaborative Report and has proceeded on that path even when confronted with the flaws and limitations of the Collaborative Report. And disappointingly, MDE has not been transparent with the public about the Collaborative Report's shortcomings. As noted, CSX provided MDE an expert response to the Collaborative Report in February 2024.[197] The Draft PTO Fact Sheet does not acknowledge CSX's Expert Response, and MDE has not made it available to the public as part of this permitting process. It is understandable, if not inevitable, that the public would assume the Terminal is impacting air quality in Curtis Bay when all MDE has provided is the Collaborative Report.

Similarly, the Draft PTO Fact Sheet contains almost no information on the fenceline monitoring program—noting only that the MDE approved the fenceline monitoring plan and that it is an appendix to the draft permit. The Fact Sheet does not include any reference to the fact that the fenceline monitoring program has been fully operational for over a year and that real-time data from the fenceline monitoring system is posted to a public website. The Fact Sheet does not comment on the nine months of fenceline monitoring data and multiple quarterly fenceline monitoring reports submitted to MDE prior to issuance of the draft permit. And the Fact Sheet does not report the data showing that the Terminal complies with the PM_{10} and $PM_{2.5}$ 24-hour NAAQS. By not even acknowledging these data—let alone making the public aware of them—MDE has hampered the community's ability to review the draft PTO critically and make informed comments.[198] The omission of these facts from the Draft PTO Fact Sheet deprives the public of important and relevant information about particulate matter concentrations at the Terminal boundary and air quality in Curtis Bay.[199]

B. MDE has not followed COMAR or its own practices during this renewal process.

Over the course of this PTO renewal process, MDE has used procedures that neither exist in COMAR nor have been applied to other minor sources like CSX. Trinity has compared MDE's process for the Terminal's PTO renewal with COMAR, MDE guidance, and Trinity's own experience with minor source permit renewals and identified several deviations from COMAR requirements and ordinary practice.[200]

First, MDE has requested far more information from CSX than necessary to renew an operating permit. Trinity observes: "The review process for the CSXT PTO renewal has also resembled a PTC process, rather than a PTO renewal process. The PTO renewal application form

[197] Appendix 2; CSX Expert Response to Collaborative Report.

[198] The dedicated website that MDE created for the renewal of CSX's PTO contains an electronic form for the public to use in commenting on the draft permit. *See* https://mde.maryland.gov/programs/permits/AirManagementPermits/Pages/CSX-Transportation-Permit.aspx.

[199] The public website displays the measurement data as the Air Quality Index. EPA developed the Air Quality Index as a means of reporting air quality to the public in a nationally consistent and easy to understand manner. The Air Quality Index provides a color-coded scale designed to communicate whether current air quality is healthy or unhealthy for the public, including sensitive individuals.

[200] *See generally*, Appendix 1; Trinity PTO Process Assessment

is a single page and rarely contains more than a cover letter in addition to the form, whereas the PTC application includes more detailed data as has been requested and provided during the PTO renewal process MDE has used here." [201] Moreover, MDE's own guidance provides that the Department "reviews the application and inspects the company to determine compliance with all applicable operating conditions required by permits to construct or orders, and all applicable state and federal air pollution control regulations."[202] With the exception of visible dust generated during an unusual track maintenance event on one afternoon in September, the Terminal has been and remains in compliance with its PTO and all air quality regulations. Yet while "the permit should have been renewed with relatively few changes," [203] MDE has instead issued a draft permit imposing significant and unprecedented conditions. Trinity notes that "[t]he addition of emissions controls that themselves require permits is not typically required in a PTO." [204]

Second, the timing of this approval has far exceeded MDE's normal turnaround time for a permitted source of this size. Trinity explains: "For 2024, MDE established a turnaround time of four months for PTOs as described in the 'Maryland Department of the Environment FY24 Standard Application Turnaround Times'. As of the end of 2024, MDE's turnaround time for the PTO for CBP has exceeded 16 months and is expected to continue into 2025. The duration of this approval of a minor source operating permit renewal is approaching the turnaround time established by MDE for Title V permits associated with new major sources (*i.e.*, 18 months)." [205] Emissions of PM_{10} at CSX are nowhere near the amount emitted by a major source yet CSX has faced a turnaround time on par with one.

Third, MDE has subjected this PTO renewal to public comment and environmental justice screening procedures that do not apply to minor sources. COMAR says explicitly that state minor source permits like CSX's "are not subject to public notice, informational meetings, public hearings, or other public participation procedures which pertain to permits to construct and approvals subject to Regulations .11 and .12 of this chapter and to Part 70 permits."[206] MDE is supposed to base its renewal decisions on a review of the facility's compliance with air quality laws, not public comments or community studies. Further, Maryland environmental justice screening requirements explicitly do not apply to this permit; such screening is required only for permits listed in Env't Code § 1-601 or subject to public comment.[207] Minor source PTO renewals are not listed in Section 1-601 and as noted above are not subject to public comment. Not only has MDE required environmental justice screening here, MDE has required more than it would for permits actually subject to environmental justice screening requirements. This PTO renewal process has satisfied all environmental justice requirements. Trinity notes:

> Regardless of applicability, the process for the renewal of CSXT's PTO has followed all requirements of the [environmental justice] program as follows:

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[201] *Id.* at 5.
[202] MDE, 1.05 Air Quality State Permit to Operate Guidance, available at https://mde.maryland.gov/programs/permits/Documents/2008permitguide/ARMA/1.05.pdf
[203] Appendix 1; Trinity PTO Process Assessment at 5.
[204] *Id.*
[205] *Id.* at 4-5.
[206] COMAR 26.11.02.14E.
[207] Env't Code § 1-601.1(a).

- A screening analysis was conducted;
- CSXT has participated in public notice periods and meetings; and
- To ensure accessibility, the draft permit and fact sheet are provided in both English and Spanish on MDE's website.

> In addition, CSXT has demonstrated no disparate impacts through dispersion modeling to show compliance with TAPs requirements and the results of over a year of fenceline monitoring; mitigated fugitive dust through existing fugitive dust control measures; and provided environmental data through annual emissions certification reports and publishing fenceline monitoring data voluntarily on a public website in near real-time. CSXT has fulfilled and exceeded the requirements of the [environmental justice] program despite the program not applying to this permitting action. [208]

Finally, MDE has subjected CSX to a zero-emission standard that applies to no other source, has no regulatory basis, and is physically unattainable. As Trinity found, MDE has not even required major sources in nonattainment environmental justice areas to emit zero nonattainment criteria pollutants.[209] Trinity evaluated MDE's treatment of NOx and VOC sources in environmental justice communities within ozone nonattainment areas for comparison with the process MDE has used for CSX.[210] Trinity reviewed Title V permit renewals for major sources located in environmental justice communities in Baltimore City, Prince George's County, and Wicomico County. As explained by Trinity in Appendix 1, MDE renewed all three permits in 2024 without requiring the facilities to meet a zero-emissions NOx standard or imposing emission controls beyond what the regulations require. Two of these facilities have actual emissions above 100 tpy of NOx, and the facility located in Baltimore City is a major source of PM_{10} and permitted to emit over 100 tpy of PM_{10}. None of the fact sheets issued for these permits mention an environmental justice review. The discrepancy between MDE's treatment of these sources and MDE's treatment of CSX further illustrates the unreasonableness of the zero-emission standard MDE insists applies and the controls it insists are necessary to meet it. MDE's approach to the Terminal's permit renewal has not followed Maryland regulations or agency practice and has been arbitrary, capricious, and in violation of Maryland law.

VIII. Conclusion

Through a commitment to environmentally sound operations, a robust MDE-approved Fugitive Dust Control Plan, an MDE-approved fenceline monitoring plan, 15 months of quality-assured and validated meteorological and PM_{10} and $PM_{2.5}$ data that demonstrates compliance with the 24-hour NAAQS, and compliance with MDE's TAPs regulations, CSX has demonstrated that the preventative measures in place at Curtis Bay Piers are adequate to control fugitive dust emissions from the Terminal. Ordinarily, this would be more than enough to warrant renewal of the Terminal's PTO. Yet MDE has subject Curtis Bay Piers—a minor source of air emissions—to a level of scrutiny not even applied to the state's largest polluters and to a regulatory process that exists nowhere in Maryland law. The result is a permit with conditions that engineers and

[208] Appendix 1; Trinity PTO Process Assessment at 5.
[209] *Id.* at 5-6.
[210] Baltimore City is non-attainment for ozone and its precursors, NOx and VOCs.

experts agree are unprecedented, infeasible, cost-prohibitive, and unnecessary. MDE has repeatedly justified its actions during this process by referring to deeply flawed and limited community studies rather than validated data MDE said it would use, expert opinion, and common sense. This draft PTO is not just technically flawed, however. It intrudes on the federal government's broad authority to regulate the rail industry by imposing arbitrary and capricious conditions that would require the Terminal to either shut down or significantly reduce operations in violation of federal common carrier obligations. To correct these fatal technical and legal flaws, MDE must at minimum remove Conditions D(1)-(5) from the final permit and ensure that its final permitting decision is based on all available information and complies with Maryland law.

CSX appreciates MDE's consideration of these comments and expert technical reports and memos. We urge MDE to remove the Part D conditions and issue the final PTO for Curtis Bay Piers. CSX remains willing to implement enhancements to its dust control practices through a revision to the Terminal's Fugitive Dust Control Plan. CSX appreciates the collaborative relationship we have with MDE concerning the renewal of the PTO, and we are willing to meet to discuss the contents of these comments and the technical reports provided.

Sincerely,



Daniel E. Schmitt
Assistant General Counsel
CSXT Law Department

Enclosures

CC:
Chris Hoagland, Director, Air and Radiation Administration
Angelo Bianca, Deputy Director, Air and Radiation Administration
Steven Lang, Section Head, Compliance Assessment Section, Industrial Compliance Division, Air Quality Compliance Program
Michael Strande, Deputy Counsel
Doris Lange, Assistant Attorney General
Raghu Chatrathi, Senior Director, Public, Health, Safety & Environment, CSXT
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Brian Hammock, Director, State Relations, CSXT
Diana Krevor, Venable LLP

CSX Transportation, Inc. Comments on Renewal of State Permit to Operate No. 510-2263 for CSX Transportation Curtis Bay Piers

Appendix 1: *Memo from Trinity Consultants to CSX regarding CSX regarding "CSXT Curtis Bay Piers – Assessment of Permit to Operate Process" (Dec. 11, 2024)*

Trinity Consultants

MEMORANDUM

To: Raghu Chatrathi, CSXT Senior Director of Public Safety, Health and Environment

cc: Becky Hensley, CSXT Senior Manager Sustainability

From: David Simmons and Susan Barnes, Trinity Consultants

Date: December 11, 2024

RE: CSXT Curtis Bay Piers – Assessment of Permit to Operate Process

Background and Executive Summary

CSX Transportation, Inc. (CSXT) operates a coal terminal at Curtis Bay Piers (CBP) in Baltimore, Maryland. The terminal operates a variety of material handling equipment for the transfer of coal, ore, limestone, and other dry materials. Coal arrives by rail, is temporarily stored in outdoor storage piles, and is loaded into barges and vessels. The terminal does not contain any coal processing equipment.

CBP has not yet received approval from the Maryland Department of the Environment (MDE) for the renewal of their State Permit to Operate (PTO) No. 510-2263. The CBP facility currently operates under a permit shield and in accordance with the PTO that expired on September 30, 2023. CSXT submitted the PTO renewal application on July 11, 2023, the draft permit was issued on August 29, 2024, and MDE held a public hearing on the draft permit on October 10, 2024. The comment period for the permit expires on December 16, 2024, and a final decision on the permit is expected in 2025. Trinity has noted since the submission of the PTO renewal application that the MDE process has deviated from the regulatory requirements for minor sources of pollution like CBP, MDE's own PTO guidance, and Trinity's own experience with PTO approvals issued for other minor sources of air emissions. MDE has deviated from normal permitting processes with respect to the following elements of their PTO review process:

- **Determination of Inadequacy of the Fugitive Dust Control Plan** – MDE is relying on a single report – a community-led air monitoring project that measured air quality using non-regulatory grade monitors – in its determination that the facility's current fugitive dust control plan is inadequate and that additional dust controls are required. In reaching this conclusion, MDE has not acknowledged other data, including quality-assured fenceline monitoring data demonstrating that particulate matter (PM) concentrations at the facility's fenceline do not exceed 24-hour average National Ambient Air Quality Standards (NAAQS) and the results of an approved Toxic Air Pollutants (TAPs) analysis demonstrating that TAP emissions from the facility are at levels that are protective of public health.
- **Technology Review** – MDE has not conducted the "top-down" engineering analysis ordinarily used in assessing the feasibility of emission controls to evaluate whether building a physical barrier around the storage piles and wetting railcars as they enter the property is technologically and economically feasible. This Memorandum demonstrates that the controls proposed by MDE are infeasible and would in fact not even be considered Best Available Control Technology (BACT) for major sources of PM in the area.
- **Request for Fenceline Monitoring** – MDE's request for fenceline monitoring for PM is unprecedented for a minor source of PM in the state.
- **Approval Process and Timing** – MDE has extended the review time associated with the PTO well beyond the four-month expectation for a minor source.
- **Environmental Justice** – MDE has required CSXT to go well beyond the state's established requirements for environmental justice (EJ) even though EJ review was not required for this PTO renewal.

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- **Expectation of Zero Emissions** – MDE has established an expectation of zero emissions which is beyond the scope of the state's air quality regulations and an unrealistic standard for any air quality permit.

A summary of a comparison of the "expected" process for a minor source permit to operate renewal and the unprecedented approval process for CBP is provided in this Memorandum.

Comparison of "Expected" and CBP PTO Approval Processes

Trinity has noted that MDE has deviated from an "expected" PTO approval process as described below.

Determination of Inadequacy of the Fugitive Dust Control Plan

MDE has requested implementation of additional fugitive dust control measures at CBP based on the Agency's determination[1] that existing fugitive dust control measures as documented in CSXT's Fugitive Dust Control Plan are inadequate. The only source of information that MDE appears to have based this determination on is the *Collaborative Investigation of Coal Dust, Air Pollution, and Health Concerns in Curtis Bay, South Baltimore, Maryland, USA, 2022-2023* (Study). This Study was authored by a consortium of community groups, researchers affiliated with Johns Hopkins University and the University of Maryland, and MDE. This Study has been refuted by Trinity primarily due to its use of unreliable air monitoring data, inadequate quality assurance/quality control procedures, overreliance on one-minute data obtained from non-regulatory grade monitors, and inability to distinguish CSXT pollutant sources from other nearby industrial pollutant sources. The Study was also unable to detect coal particles that are less than five microns in size, which are of concern from a public health perspective because they can travel more deeply in the respiratory tract.

Rather than relying on this flawed Study, MDE should rely on their existing regulatory processes to make permitting decisions. For example, in issuing construction permits, MDE requires permittees to demonstrate compliance with Maryland's TAPs regulations, as codified in COMAR 26.11.15 and 16. CSXT is in compliance with Maryland's TAPs regulations as confirmed by MDE in 2022. As stated in the fact sheet issued by MDE for the 2022 Permit to Construct (PTC), "the modeling results show that emissions of coal dust and crystalline silica emissions are at levels that are protective of public health for areas within the public domain."[2] Notably, MDE made this determination based on air dispersion modeling which is known to be conservative. In addition, MDE compared these conservative modeling results to the ambient allowable limits which are set at 1% of established health and safety-based thresholds.[3] The facility's compliance with Maryland's TAP regulations using conservative modeling with these exceedingly low thresholds demonstrates that coal dust emissions from the facility do not pose a public health risk. MDE correctly came to this conclusion in 2022 and issued the PTC. There have been no changes in operations at the facility or changes to the health standards for coal dust since that analysis. This same regulatory methodology should be used in evaluating the need for additional fugitive dust controls in the PTO renewal.

As further evidence of the adequacy of the facility's existing fugitive dust controls, CSXT installed a fenceline monitoring system in 2023. Yet despite receiving quarterly reports containing hourly fenceline monitoring data in accordance with an MDE-approved quality assurance protection plan, fenceline monitoring data from the CSXT network has not been cited by MDE in the permit information provided publicly. This data, which

[1] MDE Factsheet and Tentative Determination CSX Transportation – Curtis Bay Piers Renewal of Air Quality State Permit to Operate

[2] https://mde.maryland.gov/programs/permits/AirManagementPermits/Documents/CSX%20Fact%20Sheet.pdf

[3] https://dsd.maryland.gov/regulations/Pages/26.11.16.03.aspx

CSXT voluntarily publishes to a public website in near real-time, indicates that PM concentrations at the facility's perimeter are consistent with the NAAQS.[4] CBP is also in compliance with the applicable visible emissions regulations in COMAR 26.11.06.02 and PM requirements in COMAR 26.11.06.03. This suggests PM control measures currently in place at the facility are adequate.

Both the fenceline data and the TAPs analysis would normally be sufficient information for MDE to approve the renewal of the PTO for CBP (i.e., site fugitive dust plan is adequate). MDE's reliance on the community-led, non-regulatory grade air monitoring investigation rather than the TAPs analysis and fenceline monitoring data demonstrates MDE is acting outside of the expected PTO review and approval process.

Technology Review

Minor sources (i.e., non-Title V and non-PSD sources)[5] can be required to install pollution control technology when prescribed in state or federal rules. Controls for fugitive dust are typically managed through fugitive dust control plans that include best practices that are typically a combination of operational controls, watering, chemical dust suppression, dust collectors and enclosures. When pollution controls are required by regulation or permit condition, the controls are typically reviewed for technical and economic feasibility. The "reasonable precautions" required to prevent fugitive dust at a minor source like CSXT are ordinarily evaluated in a similar way to control technologies required under the Clean Air Act's reasonably available control technology (RACT) and best available control technology (BACT) requirements for major sources in that they are case-specific and consider technical and economic feasibility although no formal evaluation is typically required. The process employed by engineers and air quality experts when determining RACT or BACT, and that would ordinarily be applied here, is a top-down methodology that includes the following steps: [6]

- Identify all control technologies;
- Eliminate technically infeasible control technologies;
- Rank remaining technologies;
- Evaluate cost effectiveness; and
- Select control technology.

As noted above, this methodology is used for selecting BACT in Prevention of Significant Deterioration (PSD) permitting of new major sources of criteria pollutants in attainment with the NAAQS.[7] This methodology is also used for determining RACT for existing emission units at major sources of nonattainment pollutants.[8] Based on Trinity's review, the controls proposed by MDE in the draft permit – including the construction of a physical barrier higher than the maximum height of the coal storage piles and surrounding the coal piles – would not be BACT for major PSD sources because they are technically and/or economically infeasible. CBP is an existing minor source in an area designated as attainment for PM_{10} and $PM_{2.5}$. It is therefore

[4] Refer to memorandum *CSXT Curtis Bay Piers – Fenceline Montioring Network Status*, Scott Adamson, Trinity Consultants, December 2024.

[5] Clean Air Act Title refers to an operating permit issued to all "major" stationary sources of air pollution.

[6] Methodology guidance is provided in a June 13, 1989 EPA memo from John Calcagni, Director of Air Quality Management Division titles "Transmittal of Background Statement on 'Top Down' Best Available Control Technology (BACT)" https://www.epa.gov/sites/default/files/2015-07/documents/topdawn.pdf

[7] The definition of BACT is provided in 40 CFR 51.165(a)(1)(xl) which is incorporated by reference into Maryland's permitting regulations in COMAR 26.11.06.14B(1) and specifies BACT is determined "taking into account energy, environmental, and economic impacts and other costs."

[8] Maryland has incorporated cost and technological feasbility into RACT exceptions under COMAR 26.11.06.06E(d) for VOC and alternative RACT limits for NO_X under COMAR 26.11.09.08B(3)(b)(iv).

unreasonable to require CSXT, a minor source of particulate matter, to install controls that would not be BACT for a major source in the same location.

Based on recent discussions with MDE regarding the draft PTO, a cost analysis will not be a determining factor in MDE's decision-making process as it pertains to the CSXT PTO approval. The fact sheet accompanying the permit also does not reference any type of technical feasibility analysis performed to support the draft permit conditions. CSXT has presented MDE information on the cost and technical feasibility of some of the proposed emissions controls showing that they are difficult if not impossible to implement and, even if feasible, would impose significant costs and operational disruptions.

By not following this well-established methodology for evaluating control technology feasibility under the Clean Air Act, MDE appears to be deviating from expected permitting processes. One extreme example of this deviation is condition D(4) of the draft permit requiring installation of a watering system that wets railcar loads as they enter the CBP property. These railcars have never been identified as a source of emissions by MDE or the rail industry (i.e., moving railcars are not generally known to be included in emissions inventories), and wetting them would present significant logistical challenges, including the need for a wastewater collection system. Furthermore, and as discussed in more detail below, discussions with MDE related to these draft permit conditions indicate that MDE appears to be asserting that the design of controls must ensure that no coal dust enters the community, which is not a regulatory emission standard.

Request for Ambient Air Monitoring System at the Fenceline

MDE requested and CSXT installed an ambient air monitoring network with ambient air monitors located at eight locations along the perimeter of the CBP operating areas in accordance with U.S. EPA site selection criteria. The system also included a meteorological tower that collects key weather data (e.g., wind speed/direction, precipitation). Although this request immediately followed the 2021 explosion at the property that was due to methane buildup, the monitoring system is designed to capture PM_{10} and $PM_{2.5}$ in ambient air for analysis.

A review of permits for 111 Title V sources in Maryland (i.e., largest sources in the state) indicates that perimeter monitoring systems are only present in landfill permits and only for methane which is required by Federal regulations. No perimeter monitoring is required for PM in any of the 111 permits for the largest sources in Maryland. A perimeter monitoring system for any pollutant that is not required by a Federal regulation at a Title V source, let alone a minor source like CBP, would be unprecedented in Maryland. Even though CSXT has complied with this unprecedented requirement and generated over a year's worth of monitoring data, MDE has not utilized this data in determining if existing fugitive dust controls are adequate. Additionally, the cost, effort, and quality assurance protocols associated with the fenceline monitoring system would typically be shared by MDE with the draft permit (e.g., discussed in the fact sheet and/or on the accompanying website). The installation of the system and MDE's lack of communication of the data suggests this requirement at CBP, a minor source, is well beyond MDE's normal permitting processes.

Approval Process and Timing

MDE establishes permit turnaround times each year. For 2024, MDE established a turnaround time of four months for PTOs as described in the "Maryland Department of the Environment FY24 Standard Application Turnaround Times".[9] As of the end of 2024, MDE's turnaround time for the PTO for CBP has exceeded 16 months and is expected to continue into 2025. The duration of this approval of a minor source operating

[9] https://mde.maryland.gov/programs/permits/Documents/FY24%20Standard%20Application%20Turnaround%20Times%20-%20Google%20Docs.pdf

permit renewal is approaching the turnaround time established by MDE for Title V permits associated with new major sources (i.e., 18 months).

The review process for the CSXT PTO renewal has also resembled a PTC process, rather than a PTO renewal process. The PTO renewal application form is a single page and rarely contains more than a cover letter in addition to the form, whereas the PTC application includes more detailed data as has been requested and provided during the PTO renewal process MDE has used here. Based on MDE's PTO fact sheet[10], MDE "reviews the application and inspects the company to determine compliance with all applicable operating conditions required by permits to construct or orders, and all applicable state and federal air pollution control regulations." CBP is in compliance with all applicable state and federal air pollution control regulations. As such, the permit should have been renewed with relatively few changes.

However, MDE has used this process to transform the existing permit conditions and add unprecedented emission controls that themselves will require separate PTCs and other approvals. The addition of emissions controls that themselves require permits is not typically required in a PTO.

Environmental Justice

The deviations from the typical PTO renewal process have largely been attributed to CBP being located in an EJ area. However, this application is not subject to Maryland's EJ program, and the requirements of the EJ program have been met and exceeded. EJ for permit applications is based on HB1200 and is required for a permit subject to public notice under Maryland Code §1-601. There are seven permit types listed in this section. The PTO renewal CSXT has applied for here is not listed and is therefore not subject to EJ screening. Furthermore, this application is not subject to any public participation requirements. Per COMAR 26.11.02.14E, PTOs "are not subject to public notice, informational meetings, public hearings, or other public participation procedures which pertain to permits to construct and approvals subject to Regulations .11 and .12 of this chapter and to Part 70 permits." MDE has deviated from the required PTO renewal process by requiring public notice and comment and subjecting the permit to EJ review.

Regardless of applicability, the process for the renewal of CSXT's PTO has followed all requirements of the EJ program as follows:

- A screening analysis was conducted;
- CSXT has participated in public notice periods and meetings; and
- To ensure accessibility, the draft permit and fact sheet are provided in both English and Spanish on MDE's website.

In addition, CSXT has demonstrated no disparate impacts through dispersion modeling to show compliance with TAPs requirements and the results of over a year of fenceline monitoring; mitigated fugitive dust through existing fugitive dust control measures; and provided environmental data through annual emissions certification reports and publishing fenceline monitoring data voluntarily on a public website in near real-time. CSXT has fulfilled and exceeded the requirements of the EJ program despite the program not applying to this permitting action.

Expectation of Zero Emissions

MDE has stated multiple times throughout this permitting process that CBP must have no emissions beyond their property line. This is an unreasonable limitation and not within the scope of any air permitting

[10] https://mde.maryland.gov/programs/permits/Documents/2008permitguide/ARMA/1.05.pdf

exercise. The correct regulatory standard is to take "reasonable precautions to prevent particulate matter from becoming airborne"[11] which is achieved by existing dust control practices in place at CBP.

The facility is a minor source of all pollutants without any restrictions on hours or throughput. In 2023, PM_{10} emissions from the facility were 20 tons per year (tpy). The major source threshold for PM_{10} emissions is 100 tpy for the Title V permitting program and 250 tpy for the PSD permitting program.[12] With emissions less than a quarter of the applicable Title V thresholds and less than one-tenth the PSD thresholds, CBP is clearly not a significant emission source. Like all other sources of air pollution, CSXT operates under a PTO that allows the facility to emit some amount of pollution when operating. There are no provisions in the PTO or PTC regulations stating that a source cannot emit at all, and such a requirement would be unrealistic.

Baltimore City is designated as a nonattainment area for ozone and its precursors NO_X and VOC.[13] Yet numerous facilities located in Baltimore are permitted to emit NO_X and VOC at levels far greater than the levels of PM – an attainment criteria pollutant in Baltimore – that CBP emits. MDE is basing this zero emissions requirement on the purported presence of coal dust in the area surrounding the facility. When this rationale is applied to NO_X, it is clearly unreasonable and is not the process that MDE is following for other, more significant sources in Maryland. To demonstrate this, three recently issued Title V permits from MDE's website were reviewed, Permit Nos. 24-510-0314, 24-033-2200, and 24-045-0287. These permits were all Title V renewals for facilities in EJ areas and were issued in 2024. Each of these facilities is located in an area that, like where CBP is located, is designated as nonattainment for ozone (where NO_X and VOC are regulated as precursors) and in attainment for PM_{10} and $PM_{2.5}$. Specifically, the facilities are in Baltimore City, Prince George's County, and Wicomico County, respectively. Although there was no community-specific study completed, there is undeniably NO_X present in the ambient air surrounding each of these facilities. However, all of the permits were renewed without a zero emissions standard for NO_x or even emissions controls above what is required by regulation. Two of these facilities have actual emissions above 100 tpy of NO_x. And the Baltimore City facility, which is the closest to CBP, is also a major source of PM_{10} and permitted to emit over 100 tpy PM_{10}, approximately five times the emissions rate of CBP. Despite the higher rate of emissions from these facilities, there are no noted changes to the permits requiring additional emissions controls, and notably, none of the fact sheets mention an EJ review.

MDE's approach to PM emissions from CBP is unreasonable and inconsistent with its treatment of other facilities in EJ areas that emit higher amounts of nonattainment pollutants.

Summary

As detailed above, MDE has deviated significantly from the standard PTO renewal process. MDE has relied on non-regulatory monitors and non-quality-assured data in making permitting decisions; failed to evaluate the technical and economic feasibility of controls; deviated from, and in some cases exceeded, applicable regulatory requirements; and imposed an unrealistic zero-emission threshold that even major sources of nonattainment criteria air pollutants in EJ areas are not subject to. CSXT has demonstrated and MDE has confirmed that coal dust and silica emissions from the CBP facility do not cause ambient air concentrations above health-based regulatory thresholds. The level of scrutiny and degree of departure from ordinary permit renewal procedures is far beyond what Trinity would expect for a PTO renewal of this type. CSXT has

[11] COMAR 26.11.06.03C and D.

[12] Coal handling and shipping is not on EPA's List of 28 facilities subject to a major source threshold of 100 tpy for PSD.

[13] This is due to ozone being a nonattainment pollutant in this area and is demonstrated by the lower major source thresholds for NO_X and VOC in COMAR 26.11.02.01C(1)(c)(i).

demonstrated through fenceline monitoring and air dispersion modeling that fugitive emissions from the facility are not a health concern and that no additional dust controls should be required.

CSX Transportation, Inc. Comments on Renewal of State Permit to Operate No. 510-2263 for CSX Transportation Curtis Bay Piers

Appendix 2: *CSX Response to the* Collaborative Investigation of Coal Dust, Air Pollution, and Health Concerns in Curtis Bay, South Baltimore, Maryland*, submitted to MDE on Feb. 16, 2024*



Raghu Chatrathi
Senior Director, PSHE

500 Water Street -J275
Jacksonville, Florida 32202
(904) 366-3858

February 16, 2024

Mr. Chris Hoagland
Director Air and Radiation Administration
Maryland Department of the Environment
1800 Washington Blvd.
Baltimore, MD 21230

RE: **CSX Transportation, Inc. (CSXT) Response to the *Collaborative Investigation of Coal Dust, Air Pollution, and Heath Concerns in Curtis Bay, South Baltimore, Maryland***

Dear Mr. Hoagland:

We appreciated the opportunity to meet with Maryland Department of the Environment (MDE) Air and Radiation Administration last month to present our preliminary conclusions in response to the report titled *Collaborative Investigation of Coal Dust, Air Pollution, and Health Concerns in Curtis Bay, South Baltimore Maryland* (Collaborative Report), which was prepared by a consortium of Curtis Bay community groups, MDE, and local universities. We take the concerns raised by the community seriously and are deeply committed to safe and environmentally sound operations at Curtis Bay Piers and throughout Maryland.

CSXT retained experts in particulate matter speciation, air quality monitoring, and toxicology to review and analyze the Collaborative Report and accompanying supplementary materials. The experts' formal responses (CSXT Expert Reports) are attached to this letter. The Collaborative Report is a novel attempt to identify sources of particulate matter in Curtis Bay, an effort that may warrant further study, but which, in its current form, is materially flawed and should not be used to inform regulatory decisions.[1] The Collaborative Report's preliminary findings are conclusory in nature and are not supported by the data presented in the Report. In short, the Collaborative Report (1) fails to present evidence showing that coal dust is present throughout the Curtis Bay community; (2) fails to show that particulate matter from coal handling operations at Curtis Bay Piers has a substantial impact on air quality in the Curtis Bay

[1] On December 14, 2023, MDE announced the release of the Collaborative Report. In the press release, Maryland Secretary of the Environment Serena McIlwain stated that MDE "will let the science and data identified in [the Collaborative Report] lead the way as we consider a new permit for the Curtis Bay coal terminal through the lens of environmental justice."

community; and (3) fails to present evidence demonstrating that the Curtis Bay community is overburdened by particulate matter air pollution as compared to other areas of Baltimore City.

CSXT therefore strongly objects to MDE using the Collaborative Report as a basis for the permitting of Curtis Bay Piers. As summarized below and demonstrated in the CSXT Expert Reports, the Collaborative Report relied on flawed approaches to draw unfounded conclusions about air quality and air pollution sources in Curtis Bay.[2] A permitting decision based on this Report would be arbitrary and capricious, and not in compliance with Maryland law.

Background on CSXT Curtis Bay Piers at the Port of Baltimore

CSXT owns and operates Curtis Bay Piers (Curtis Bay Piers or Terminal), a coal storage and transfer facility located at the Port of Baltimore. CSXT transports coal for customers by rail to the Terminal and loads the freight onto vessels in compliance with its federal common carrier obligations. CSXT does not combust or process coal at Curtis Bay Piers. The Terminal is located in a heavily industrialized area and surrounded by a variety of other permitted industries. As the Collaborative Report notes, there are approximately 70 MDE-regulated stationary sources of air pollution in the area including the Curtis Bay Energy medical waste incinerator, the BRESCO municipal solid waste incinerator, the Quarantine Road Landfill, the Patapsco Wastewater Treatment Plant, a coal-fired power plant, concrete crushing plants, asphalt manufacturing, chemical plants, and oil and gas terminals.[3] The Collaborative Report further states that heavy diesel truck traffic is a significant source of air pollution in Curtis Bay.[4]

Coal loading or unloading facilities are air emissions sources required to obtain a State Permit to Operate (State Permit) in accordance with COMAR 26.11.02.13A(38). Curtis Bay Piers is a minor source of particulate matter emissions and operates under a State Permit issued on October 1, 2018, which expired on September 30, 2023 and has been administratively extended.[5] CSXT's Air Quality Permit to Construct, issued in September 2022, contained reasonable precautions approved by MDE to prevent airborne particulate matter, including a Fenceline Monitoring Plan, a revised Fugitive Dust Plan, and improvements to the Terminal's dust suppression systems.[6] CSXT has worked diligently with MDE to implement a comprehensive fenceline monitoring program that goes above and beyond the requirements described in the Permit to Construct and to enhance the Terminal's Fugitive Dust Control Plan.

CSXT is committed to continuously improving operations at Curtis Bay Piers and has made significant investments over the last five years focused on advancing long-term operational safety, improving dust control, and collecting 100% of storm water for onsite reuse at the Terminal. We are sharing real time data from our fenceline monitoring system, installed to

[2] In addition, and as discussed in Attachment 4 to this letter, the Collaborative Report confuses visible soot emissions from a ship with coal dust from coal handling operations. The Collaborative Report mistakenly claims that a video of visible emissions from a ship docked at the Terminal is evidence that coal dust is lofted 100 to 300 meters above the surface.
[3] Collaborative Report, Sections 2 and Section 3.
[4] Collaborative Report, Section 2.
[5] CSXT submitted a timely and complete application for renewal of the State Permit on July 18, 2023, which is under review by MDE. The State Permit has been administratively extended per COMAR 26.11.02.08B which allows continued operation of a source pending final action on an application.
[6] Air Quality Permit to Construct, September 2022; *see also* MDE Fact Sheet Air Quality Permit to Construct for CSX Transportation – Curtis Bay Piers. MDE concluded that particulate matter emissions were likely to decrease as a result of the additional wet suppression systems and metal skirting required in the Permit to Construct.

continuously monitor particulate matter along the perimeter of the Terminal, on a publicly accessible website.

Overview of the CSXT Expert Reports

Attachment 1 contains an expert report prepared by Gary Casuccio and Keith Rickabaugh of RJ Lee Group, Inc, an industrial forensics analytical laboratory and scientific consulting firm. Mr. Casuccio is a senior scientist at RJ Lee Group and an expert in the characterization and speciation of particulate matter using electron microscopy techniques for environmental, industrial hygiene, and other applications. He also has significant expertise in source apportionment of particulate matter using receptor models and ambient air quality monitoring. Mr. Rickabaugh is the Technical Director of Materials and Analytical Services at RJ Lee Group and is an expert in sampling and laboratory analysis and industrial hygiene. RJ Lee Group conducted a scientific review of the information provided in the Collaborative Report as well as the monitoring data from the low-cost sensors, and concluded that the Collaborative Report's findings are incomplete, misleading, and flawed.

Attachment 2 contains an expert report prepared by Scott Adamson, a Managing Consultant and Certified Consulting Meteorologist at Trinity Consultants. Mr. Adamson is an expert in ambient air quality monitoring and air dispersion modeling. He specializes in the development and management of air quality and meteorological monitoring systems as well as data assurance and validation processes. Mr. Adamson is currently managing over 20 ambient air quality monitoring programs throughout the country, including the Cutis Bay Piers fenceline monitoring program. Mr. Adamson concluded that the Collaborative Report used unreliable data and flawed statistical methods to draw unfounded conclusions about air quality in Curtis Bay.

Attachment 3 contains an expert report prepared by Dr. Tamara House-Knight, Senior Toxicologist and Emerging Contaminant Technical Team Lead at GHD. Dr. House-Knight is an expert in human and environmental risk assessment. Her report focuses on the health effects of particulate matter air pollution. Dr. House-Knight's conclusions are based on her review of the Collaborative Report as well as the scientific literature on occupational exposure to coal dust. She concluded that exposure to coal dust does not equate to toxicity or development of adverse health effects and that there is insufficient evidence in the Collaborative Report to conclude that coal dust from the Terminal significantly contributes to overall $PM_{2.5}$ concentrations in Curtis Bay.

The conclusions presented in the CSXT Expert Reports are summarized below.

Executive Summary of the CSXT Expert Reports

A. The Collaborative Report Does Not Actually Measure Coal Dust

1. "Putative Coal Dust" is Not Coal Dust. A major flaw of the Collaborative Report is the researchers' assumption that "a combination of major contributions from PM_{10}, total suspended particles (TSP), and black carbon" are an indicator of coal dust.[7] The Collaborative Report labels this combination of common air pollutants as "putative coal dust." "Putative coal dust" is *not* coal dust. It is a term coined by the Collaborative Report researchers with no basis in public health or air quality research. The Collaborative Report's repeated use of this term

[7] Collaborative Report, Section 3 page 5.

creates the false impression that coal dust from Curtis Bay Piers is present in the community. In fact, none of the pollutants the Collaborative Report attributes to putative coal dust are unique to the storage and handling of coal.

a. PM_{10}, TSP, and black carbon are not pollutants specific to coal particles. The terms "PM_{10}" and "TSP" describe particulate matter with an aerodynamic size generally smaller than 10 micrometers (μm) (PM_{10}) and ~ 40 μm (TSP) that is not specific to any particular source of air pollution. Common natural and anthropogenic sources of PM_{10} and TSP include soil, pollen, wildfire smoke, fuel-burning, diesel exhaust, and construction sites.

b. Black carbon is not emitted as a result of coal storage and handling. The Environmental Protection Agency (EPA) describes black carbon as "sooty black material emitted from gas and diesel engines, coal-fired power plants, and other sources that *burn* fossil fuel"[8] Coal dust from the daily operations at Curtis Bay Piers is not combusted, and would not resemble black carbon from other urban sources in terms of composition, size or morphology of the particle. Moreover, because black carbon is ubiquitous in an urban environment,[9] it would be extremely difficult to isolate any one source of it.

2. <u>The Non-Negative Matrix Factorization Analysis Linking "Putative Coal Dust" to Curtis Bay Piers Is Unsupportable</u>. The Collaborative Report relied on a statistical model called non-negative matrix factorization (NMF) in an unsuccessful attempt to identify coal dust air pollution in Curtis Bay. This analysis relied on data from a limited group of common urban pollutants (PM_1, $PM_{2.5}$, PM_{10}, TSP, carbon monoxide, nitrogen oxide, nitrogen dioxide, and black carbon) in an attempt to isolate Curtis Bay Piers as the only source of coal particles in Curtis Bay. To achieve its intended result, the Collaborative Report postulated the existence of a "putative (or assumed) coal dust" factor consisting of "major contributions of PM_{10}, TSP, and black carbon." It then applied arbitrary and inconsistent interpretations of the results of the NMF analysis output to determine whether ambient particulate matter matched the putative coal dust profile *factor* as opposed to pollutant signatures associated with other common air pollution sources (such as dust, cars, local combustion, and regional). The Collaborative Report's use of NMF to apportion common air pollutants to coal dust in an urban environment was flawed for several reasons.

a. First, as discussed already, putative coal dust is not coal dust, and the pollutants the Collaborative Report attribute to coal dust (PM_{10}, TSP, and black carbon) are not a realistic profile for coal dust, which highlights a significant flaw in the Report's analysis. Moreover, black carbon is wholly unrelated to the storage and handling of coal. Thus measuring these pollutants individually or in combination is ineffective in identifying coal dust.

b. Second, the Collaborative Report relied on limited and non-specific air pollutants to develop source pollutant profiles. This limited the researchers' review of other potential sources of air pollution in the community.

[8] EPA Staff. Black Carbon Research and Future Strategies - Reducing emissions, improving human health and taking action on climate change. Washington D.C. : U.S. EPA, 2011 (emphasis added).
[9] Carbon black vs. black carbon and other airborne materials containing elemental carbon: Physical and chemical distinctions. Long, C.M., Nascarella, M.A., Valberg, P.A. 181, s.l. : Environmental Pollution, 2013.

c. Third, many of the source categories defined in the NMF analysis have the same pollutants. This can result in excessive collinearity among the source categories. The effectiveness of the NMF model is dependent on pollutants or pollutant relationships that are unique to each source to assist in the identification of a particular source or source type. Without unique pollutant profiles, the Collaborative Report researchers could not clearly distinguish among different source categories in their NMF analysis. In short, there is no evidence that the NMF results provide any insight on coal dust impact in the community.

d. Fourth, the putative coal dust factor was not defined consistently across the four locations examined in the NMF analysis. Notably, at Location 1, the Collaborative Report states there is a strong putative coal dust factor, but inexplicably included PM_1 and $PM_{2.5}$ in the putative coal dust factor, which is not consistent with the Collaborative Report's putative coal dust definition (i.e. a combination of major contributions from PM_{10}, TSP, and black carbon). The presence of PM_1 and $PM_{2.5}$ most likely indicates a significant contribution from other local and regional sources (including diesel and gasoline motor emissions) and not coal dust. This shows the NMF model lacks clarity because of source profile similarities.

e. Fifth, the interpretation of the NMF results was deficient because it did not identify a factor for diesel emissions, which are a recognized and significant source of black carbon emissions in the community. Polar plots presented in the Collaborative Report suggested impact from diesel vehicles, and black carbon data obtained from the mobile monitoring vehicle confirmed the presence of high concentrations of black carbon on Pennington Avenue, which was assumed to be related to diesel trucks emissions. Not considering a diesel emissions factor undermines the NMF evaluation by inaccurately attributing black carbon from diesel emissions to putative coal dust (which, as already noted, is not the same as coal dust because black carbon is not associated with coal storage and handling).

f. Sixth, the NMF evaluation used one-minute averaged monitoring data obtained from non-regulatory grade low-cost sensors, which are more prone to fluctuations compared to longer-averaged concentrations. Furthermore, measurement uncertainties have not been established for short-term one-minute averages.

Given these flaws, the NMF results cannot serve as the basis for any regulatory determination.

3. <u>The SEM/EDS Analysis of Passive Samplers and Tape Lift Samples was Inadequate and Flawed</u>. The Collaborative Report improperly relied on results from passive samplers and tape lift samples to support its conclusion that coal dust from Curtis Bay Piers is a substantial contributor to settled dust in the surrounding community. The results lack significance because of the small number of particles analyzed per sample. The SEM/EDS analysis results also do not support the Collaborative Report's finding that coal dust was found at all 8 monitoring sites and in 100 percent of the samples. Further, the SEM/EDS analysis did not follow the analytical protocols described in the Collaborative Report bringing into question whether any of the SEM/EDS data are of value.

Given the flaws in the SEM/EDS analysis, coal dust cannot be considered a 'substantial contributor' to air pollution in Curtis Bay. In fact, from a review of the limited SEM/EDS information provided for the limited number of particles presented in the Collaborative Report, it is not evident that all particles are even consistent with coal. The Collaborative Report itself recognized the limitations and issues associated with the small sample size and SEM/EDS analysis, noting: "*The strength of the systematic analysis is limited by the small sample size of 12 particles per PAPA [passive samplers] sample, as well as the findings of putative coal dust, causing some uncertainty to the identity of deposited particles*."[10]

4. The White Tape Collector Data is of No Value from a Coal Impact Perspective. The Collaborative Report also used white tape collectors in an attempt to demonstrate that coal dust was more prevalent near Curtis Bay Piers, and declined as the sample locations were located further away. Light microscopy was used to capture images of the particles and the color and morphology of the particles were compared to a control white tape collector with material from a bulk coal sample from the Terminal.

Limitations with the analysis included a lack of scale markers on the images making comparison of the images difficult; failure to include the images from Location B; and failure to perform speciation of the particles. Thus, no information on the presence or amount of coal on the samples was provided in the Collaborative Report.

Image analysis was also utilized to measure 'darkness' of each sample. However, this analysis is of no value because no particle speciation was performed. Further, darkness does not provide an indication of coal, as there are a variety of particles (naturally occurring and anthropogenic) that have a dark appearance. Therefore, this analysis provides no information on the presence or amount of coal on any of the samples. The Collaborative Report itself found that the darkness evaluation was misleading because of inconsistencies in the darkness scoring due to variable lighting environments ('…*not consistently reflected in the ImageJ darkness scoring*').

Given these issues, the SEM/EDS analysis and white tape collector results cannot serve as the basis for any regulatory determination.

B. The Air Quality Monitoring Network Described in the Collaborative Report Did Not Meet Standard Practices for Proper Quality Assurance or Quality Control

The Collaborative Report did not follow accepted methodologies or standard practices published by EPA for making defensible and representative air quality measurements. EPA's published guidance documents serve as best practices for developing quality environmental data collection programs for both regulatory-grade monitoring networks and non-regulatory grade networks that use low-cost sensors. The Collaborative Report's conclusions are based on particulate matter and gaseous pollutant monitoring data collected from an air quality monitoring network of ten low-cost air monitoring sensors placed in the community and in the industrially zoned area of Curtis Bay. Low-cost sensors are not used for regulatory monitoring and are not suitable for comparison or compliance demonstrations with the NAAQS. Further, some of the community monitors were not sited in accordance with EPA guidance resulting in biased measurements that are not representative of community exposure.

[10] Collaborative Report, Section 3, page 20.

Moreover, the community monitoring program failed to (1) develop a quality assurance project plan, (2) meet EPA criteria for collocation, and (3) include adequate quality controls. Quality assurance and quality controls procedures are critical for obtaining good quality, complete, and (most importantly) accurate data that can be used for making meaningful conclusions. The data validation process described in the Collaborative Report did not include EPA-published quality control checks such as expected range of the instrument, rate of change, data sticking, duplicate sensor comparison, buddy system, parameter-to-parameter checks, or corrective actions from collocation tests. Without these quality assurance and control protocols, data are susceptible to bias and error, resulting in less agreement between actual pollutant concentrations in the atmosphere and the concentrations reported by the sensor.

Of particular note, the low-cost sensors did not meet recommended performance metrics for PM_{10} when collocated with MDE's regulatory monitors. This failure should invalidate all PM_{10} data used in the Collaborative Report and all conclusions drawn based on that data.

C. One-minute Data Are Not a Reliable Indicator for Overall Air Quality

One-minute monitoring data should not be used to draw conclusions about air quality impacts from Curtis Bay Piers or overall air quality in Curtis Bay. There are no health-based standards for one-minute data and short-term averages are less precise than longer averaging periods. Pollutant concentrations can vary based on the time of day, week, or season and can often change rapidly due to influences from local emission sources and/or atmospheric conditions. One-minute averages are more susceptible to rapid fluctuation in the measurements, also known as noisy data signals, that are symptomatic of electrical interference, sensor precision, or rapid weather changes that can lead to low precision of the instrument and result in less agreement between the sensor's reported concentration and the true concentration in the atmosphere. It is unlikely that the low-cost sensor data relied on in the Collaborative Report produced stable one-minute data that could be used to identify pollution events.

D. The Collaborative Report Ignores a Multitude of Other $PM_{2.5}$ and PM_{10} Sources in the Community and in the Region

The Collaborative Report also fails to consider and analyze other known sources of particulate matter and black carbon in Curtis Bay and the Baltimore region.

1. Other Local Black Carbon Sources. The Collaborative Report's mobile testing van reported significantly higher black carbon results on Pennington Avenue than on Curtis Avenue. Because Pennington Avenue is further away from Curtis Bay Piers than Curtis Avenue, the Terminal could not have been the source of this marked increase. Rather, the Collaborative Report attributed the higher black carbon concentrations to diesel truck traffic.

Despite this known source of black carbon in the community, the NMF analysis discussed above failed to include diesel truck emissions. This failure, matched with the expansion of the putative coal dust definition to include smaller size particulates (PM_1 and $PM_{2.5}$), undermines the Collaborative Report's conclusions. As stated above, black carbon in the $PM_{2.5}$ range is produced from diesel and truck emissions, not from the mechanical handling of coal.

2. Failure to Account for Regional Sources of Particulate Matter. Moreover, the Collaborative Report ignores local and regional sources of particulate matter that potentially

impact the community. In the attached report, RJ Lee Group evaluated $PM_{2.5}$ and PM_{10} hourly concentrations reported by the low-cost sensors at several Curtis Bay community monitoring locations (Location 1, Location 4, Location 5, Location 9, and Location 10), and compared upwind/downwind concentrations.

The results indicate that, on average, the $PM_{2.5}$ concentrations are relatively consistent throughout the community monitoring network. In most instances, the upwind $PM_{2.5}$ concentrations, which indicates impact from background sources, were higher than the downwind concentrations, suggesting minimal or no impact on the community from the Terminal. The results suggest that there that is a significant source(s) of $PM_{2.5}$ southeast of Curtis Bay, which appears to correlate with the findings reported in the Collaborative Report. For example, polar plots included in the Collaborative Report indicated that the highest $PM_{2.5}$ concentrations were associated with background sources south of the Terminal.[11]

The results also show that the Terminal is not a significant source of PM_{10} in the community.

E. The Collaborative Report Does Not Indicate that Particulate Matter Concentrations in the Curtis Bay Community Exceed Applicable Air Quality Standards

The Collaborative Report states that both the World Health Organization (WHO) and the EPA have concluded "there is no safe level of $PM_{2.5}$ exposure."[12] This is an overstatement of what the agencies have concluded.

1. Applicable NAAQS Standards. The Clean Air Act tasks EPA with identifying certain air pollutants that cause or contribute to air pollution that is reasonably anticipated to endanger public health or welfare. EPA then proposes and promulgates "primary" and "secondary" national ambient air quality standards (NAAQS) based on the latest scientific knowledge "useful in indicating the kind and extent of all identifiable effects on public health or welfare, which may be expected from the presence of a pollutant in the ambient air." The primary standard is developed with the intent to protect the public health with an adequate margin of safety.

2. The Community Is in Attainment with NAAQS for $PM_{2.5}$ and PM_{10}. As discussed above, there are many sources of $PM_{2.5}$ in the community, including diesel truck emissions and dozens of other local and regional sources. The Collaborative Report does not, however, include sufficient data to support the finding that the Curtis Bay community is overburdened with $PM_{2.5}$ air pollution relative to other areas of Baltimore City.

Section Four of the Collaborative Report used data from the low-cost sensors collected between May 26, 2022, and July 16, 2023, to discuss the air pollution burden in the community. While there are flaws in the community monitoring data, even taken at face value, the data indicates that the particulate matter concentrations in the community meet annual and 24-hour NAAQS for $PM_{2.5}$ and are below the 24-hour NAAQS for PM_{10}.

The Collaborative Report presents $PM_{2.5}$ data from each low-cost sensor and concludes that "[f]ocusing on the first complete year of the entire dataset (5/26/22-5/25/23) of 24-hour

[11] Collaborative Report, Section 4, Figures 9 - 13, pages 7 and 8.
[12] Collaborative Report, Section 2, page 15.

average $PM_{2.5}$, including and excluding data from the smoke effect period, the annual mean $PM_{2.5}$ across all sensors is 8.6 µg/m³."[13] With respect to PM_{10}, data provided in the Collaboration Report indicates that the average 24-hour PM_{10} concentration across the community air monitoring network was 23.7 µg/m³.[14] The EPA does not have an annual PM_{10} standard; however there is a 24-hour PM_{10} standard of 150 µg/m³. The Collaborative Report indicated that, based on the low-cost sensor data, the Curtis Bay area appears to be in attainment for PM_{10}.

Although the Collaborative Report states that the community is in attainment with the NAAQS for $PM_{2.5}$ and PM_{10}, it postulates that the area is overburdened by air pollution. This statement ignores regional sources and is based only on the fact that $PM_{2.5}$ concentrations in Curtis Bay, as measured by the low-cost sensors, appear to be higher than those at MDE's Lake Montebello regulatory monitoring site by approximately 1-3 µg/m³.[15] But as the Collaborative Report itself noted "[i]ndependent evaluations by California's South Coast Air Quality Monitoring District (AQ-SPEC) have found the specific sensor type used in Curtis Bay measure $PM_{2.5}$ with a high bias compared to reference grade monitors by 1-3 µg/m³."[16] Thus, the $PM_{2.5}$ measurements are within the uncertainty of the sensors and do not support that Curtis Bay is overburdened by particulate matter air pollution as compared to other areas of Baltimore City.

We take the concerns raised by the community seriously and have carefully considered the data and conclusions presented in the Collaborative Report. We continue to invite members of the community to engage with us directly. We appreciate MDE's review and consideration of the enclosed CSXT Expert Reports and are available to meet to discuss the analyses presented therein. We look forward to our continued collaboration in finalizing the renewal of the State Permit to Operate for Curtis Bay Piers.

Sincerely,

Raghunath S. Chatrathi

Raghu Chatrathi

Cc Angelo Bianca, Deputy Director, Air and Radiation Administration, MDE
Steven Lang, Section Head, Compliance Assessment Section, Industrial Compliance Division, Air Quality Compliance Program, MDE
Diane Nelson, Director's Office - Air and Radiation Administration, MDE
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Ryan Auvil, Manager, Air Monitoring Program, MDE
Michael Strande, Deputy Counsel
Doris Weil, Assistant Attorney General

[13] Collaborative Report, Section 4, page 8.
[14] Collaborative Report, Section 4, page 9.
[15] Collaborative Report, Section 4, page 5.
[16] Collaborative Report, Section 4, page 16.

Attachments:

1. RJ Lee Group Report
2. Trinity Consultants Report
3. GHD Report
4. Misleading Photographs and Videos in the Collaborative Report

Attachment 1 -

RJ Lee Group Report

Response to Community Report Titled: *Collaborative Investigation of Coal Dust, Air Pollution, and Health Concerns in Curtis Bay, South Baltimore, Maryland, USA, 2022-2023*

Prepared at the request of CSX Transportation, Inc.

February 13, 2024

RJ Lee Group

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Executive Summary

In February 2022, a collaboration involving Curtis Bay residents, community organizations, the Maryland Department of the Environment (MDE), and academia initiated a study to investigate community concerns of dark dust found on homes assumed to be from the coal handling operations at CSXT Curtis Bay Terminal (Terminal) located in Curtis Bay. Results from the study were summarized in a report titled Collaborative Investigation of Coal Dust, Air Pollution, and Health Concerns in Curtis Bay, South Baltimore, Maryland, USA, 2022-2023 that became publicly available on December 14, 2023 (referred to in this report as the Collaborative Investigation report). The Collaborative Investigation report identified three preliminary findings:

- Coal dust is present throughout the community.
- Coal dust finds its way into the community on a day-to-day basis and is correlated with both activity at the coal terminal and wind direction.
- The Curtis Bay community is overburdened by air pollution, with the community sensor network measuring average particle pollution levels that are higher than at nearby MDE regulatory monitors.

RJ Lee Group has performed a critical review of the Collaborative Investigation report and concluded that the findings are incomplete, flawed, and misleading. The key takeaways from the critical review are as follows:

- There was no evidence presented in the Collaborative Investigation report to support the finding that coal dust is present throughout the community.
- There was no evidence in the Collaborative Investigation report to support the finding that coal particles from the Terminal have a substantial impact on air quality in the Curtis Bay community.
- There was no substantive evidence presented in the Collaborative Investigation report to support the finding that the community is overburdened by particulate matter (PM) air pollution as compared to other areas of Baltimore City. The Collaborative Investigation report indicates that the community is in attainment with the US Environmental Protection Agency (EPA) National Ambient Air Quality Standards (NAAQS) for $PM_{2.5}$ and PM_{10}.

1.0 Introduction

In February 2022, a collaboration[1] involving Curtis Bay community residents, non-profit organizations, MDE, and academia was formed to investigate concerns related to dark dust found on homes located near the Terminal in Curtis Bay. A study was conducted to evaluate air quality in the residential community as well as in industrially zoned areas in Curtis Bay. The study involved the following components: 1) collection and characterization of dust at several locations in the community; 2) continuous monitoring of PM in various size fractions and gaseous pollutants using low-cost sensors; and 3) episodic sampling of pollutants using a mobile monitoring vehicle. The measurement data were supplemented by photos, videos, experiences, and testimonials from residents.

Preliminary findings were summarized in the Collaborative Investigation report, which was made available for public review on December 14, 2023. The preliminary findings of the study are: 1) coal dust is present throughout the Curtis Bay community; 2) coal dust finds its way into the Curtis Bay community on a day-to-day basis and is correlated with both activity at the Terminal and wind direction; and 3) the Curtis Bay community is overburdened by air pollution, with the community sensor network measuring average particle pollution levels that are higher than at nearby MDE regulatory monitors.

Review of the Collaborative Investigation report indicates that the findings are incomplete, misleading, and flawed. In summary,

- There was no evidence presented in the Collaborative Investigation report to support the finding that coal dust is present throughout the community.
- There was no evidence in the Collaborative Investigation report to support the finding that coal particles from the Terminal have a substantial impact on air quality in the Curtis Bay community.
- There was no substantive evidence presented in the Collaborative Investigation report to support the finding that the community is overburdened by PM air pollution as compared to other areas of Baltimore City. The Collaborative Investigation report indicates that the community is in attainment with the NAAQS for $PM_{2.5}$ and PM_{10}.

The following sections provide a critical review of the Collaborative Investigation report.

2.0 Overview of Sources in the Curtis Bay Area

The Collaborative Investigation report states that the community of Curtis Bay bears the cumulative impacts of pollution from numerous sources, including: the Curtis Bay Energy medical waste incinerator, the BRESCO municipal solid waste incinerator, the Quarantine Road Landfill, the Terminal, the Patapsco Wastewater Treatment Plant, concrete crushing plants,

[1] The collaboration consists of MDE Air and Radiation Administration, the Community of Curtis Bay Association, the South Baltimore Community Land Trust, the CHARMED Center in the Department of Environmental Health and Engineering at the Johns Hopkins Bloomberg School of Public Health (BSPH), and the Department of Atmospheric and Oceanic Sciences at the University of Maryland (UMD).

asphalt manufacturing, chemical plants, and oil and gas terminals.[2] Further, the report states that hundreds of diesel trucks per day move materials along two diesel truck routes, Pennington and Curtis Avenues, through the heart of the residential community.[3] The number of sources potentially having an impact on the Curtis Bay community was also noted in a recent journal article that indicates there are around 70 MDE-regulated stationary sources of air pollution in the Curtis Bay area.[4] Figure 1 taken from the publication identifies the locations of sources of air pollution near the Curtis Bay community.

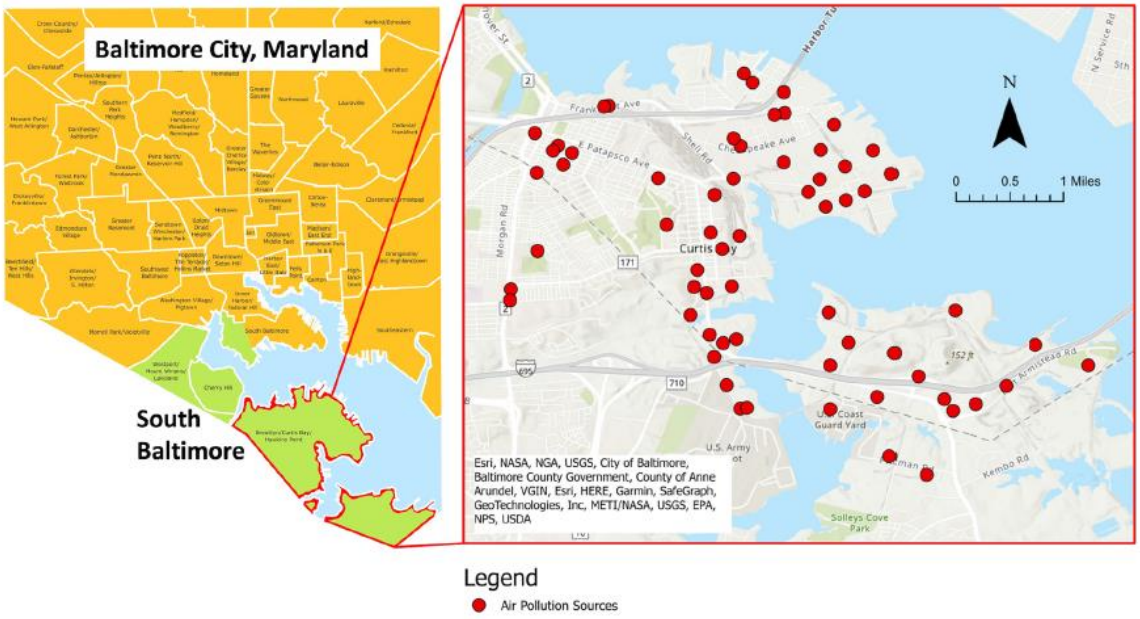


Figure 1. MDE-regulated stationary sources of air pollution in the Curtis Bay area.

In summary, there are a large number of other potential anthropogenic sources of air pollution in the Curtis Bay airshed, including: waste incineration, energy generation, oil/fuel processing and refinement, asphalt manufacturing, bulk material storage and transport, industrial animal agriculture, vehicular and rail transportation, other sources of coal including a coal-fired power plant, and natural sources such as soils, pollen and wildfires. However, the Collaborative Investigation report was primarily focused on the impact of coal dust from the Terminal.

[2] Collaborative Investigation report, Section 2.
[3] Collaborative Investigation report, Section 2. The Collaborative Investigation report's Executive Summary also states: "Heavy diesel truck traffic is a significant mobile source of pollution in Curtis Bay with levels of black carbon along Pennington and Curtis Avenues similar to levels on major Baltimore highways."
[4] Aubourg MA, Sawtell G, Deanes L, Fabricant N, Thomas M, Spicer K, Wagar C, Campbell S, Ulman A and Heaney CD (2023) Community driven research and capacity building to address environmental justice concerns with industrial air pollution in Curtis Bay, South Baltimore, Epidemiol. 3:1198321, at 04. doi: 10.3389/fepid.2023.1198321

3.0 Analysis of Passive Deposition and Tape Lift Samples Using Scanning Electron Microscopy

As part of the Collaborative Investigation report, an attempt was made to assess the impact of coal dust in the Curtis Bay community by collecting particulate samples using passive particulate sampling and surface particulate tape lift methods. The goal of this assessment was to evaluate whether dust settling in locations throughout the community included coal dust from the Terminal.[5] As discussed below, the sampling and analysis conducted for the Collaborative Investigation was flawed.

The samples were analyzed using scanning electron microscopy (SEM) and energy dispersive X-ray spectroscopy (EDS) techniques. A review of the SEM/EDS data provided in the Collaborative Investigation report indicates that the results are incomplete and misleading. The following sections provide an overview of the sample collection and analysis methodology, results obtained, and deficiencies.

3.1 Sample Collection and SEM/EDS Analysis of Passive Samplers

The passive particulate samplers used in the Collaborative Investigation report consisted of ~8 mm (wide) by ~25 to 38 mm (length) double-sided sticky conductive carbon tape. The passive samplers were deployed at five locations (two segments of the tape at each location) in the community to monitor particle deposition. The samplers were left exposed to the ambient air from October 26 to October 29, 2023 (three-day sampling period). The locations where passive samplers were used to collect settled PM are provided in Figure 2, which was taken from the Community Investigation report.[6] Location E is located near the Ben Franklin High School and serves as a background site within the Curtis Bay community, relative to the Terminal and other industrial facilities.[7]

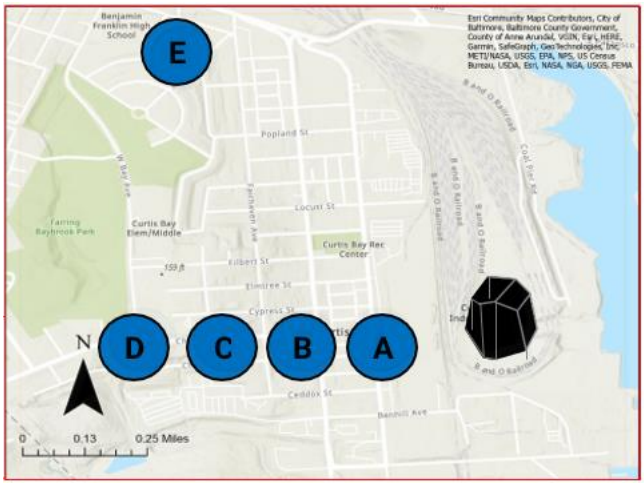


Figure 2. Passive sampler locations in Curtis Bay community. Sample collection was conducted over a three-day period (October 26, 2023 to October 29, 2023).

[5] Collaborative Investigation report, Section 3a, page 7.
[6] Collaborative Investigation report, Section 3a, page 8.
[7] Collaborative Investigation report, Section 3b, page 1.

After collection, the samples were prepared for the SEM/EDS analysis by taking a portion (~ 8 mm by ~8 mm) from each tape and mounting it on an SEM stub. The samples were analyzed at two laboratories[8] using what was described as a 'randomized, systematic' methodology to obtain 'semi-quantitative' data[9] related to the coal dust particle loading on each sample. The analytical process used by the UMD AIM lab analysts consisted of evaluating a 10-by-10 grid (100 grid areas total) that was superimposed on a low magnification (30-45x) image at the center of each mounted sample. The analyst then randomly selected 10 grid cells (10 percent of total grid area) and analyzed 5 to 10 particles between 5 and 100 µm in diameter from each cell using a field emission SEM equipped with an EDS system incorporating a silicon drift X-ray detector (SDD). Using this 'low magnification' analysis methodology, between 50 to 100 particles should have been imaged and analyzed using EDS techniques on each sample.[10]

The BSPH analysts also analyzed particles on the passive samplers using a field emission SEM equipped with an EDS system incorporating an SDD. The Collaborative Investigation report states that three grid cells were randomly selected at a magnification between 350x to 500x. Random sections of the three grid cells were then examined at a higher magnification (2500x) to characterize 3 to 5 particles between 500 nm to 50 µm in diameter[11] in the field of view.[12] Based on this 'high magnification' analysis protocol, 9 to 15 particles should have been analyzed per sample.

Thus, according to the analytical methodology described in the Collaborative Investigation report, between 59 and 115 particles were to be characterized on each passive sampler using the 'low' and 'high' magnification analysis.

Particles identified as 'coal' were based on comparisons with National Institute of Standards and Technology coal standards and samples of coal from the Terminal.[13]

SEM/EDS results for the passive samples for the 'systematic' analysis are summarized in Table 1. As Table 1 demonstrates, the number of particles actually analyzed does not conform to the number of particles that should have been analyzed based on the systematic analysis methodology described in the Collaborative Investigation report. Further, the analysis of only 12 particles is insufficient[14] to obtain semi-quantitative results related to the 'proportion of coal dust particles'[15] in the samples.

[8] The samples were analyzed at the UMD AIM Lab and at the BSPH; Collaborative Investigation report, Section 3a, page 10.
[9] Collaborative Investigation report, Section 3a, page 10.
[10] Collaborative Investigation report, Section 3a, page 10.
[11] The Collaborative Investigation report states that particles between 500 nm and 50 µm in diameter were analyzed during the higher magnification analysis, but it is assumed based on the higher magnification used that the actual size range was 500 nm to 5 µm.
[12] Collaborative Investigation report, Section 3a, page 10.
[13] Collaborative Investigation report, Section 3a, page 10.
[14] Guidelines for the Application of SEM/EDX Analytical Techniques to Particulate Matter Samples, Section 4.6.2, EPA # 600/R-02/070.
[15] Collaborative Investigation report, Section 3a, page 10.

Table 1. SEM/EDS results for passive samples using the Collaborative Investigation 'systematic analysis' protocol.

Location	# Particles Required in Systematic Protocol	# Protocol Particles Analyzed	# "Coal" Particles Identified	# Images of "Coal" Particles	# EDS spectra of "Coal" Particles
A	59-115	12	5	0	0
B	59-115	12	4	2	3
C	59-115	12	4	1	1
D	59-115	12	7	0	0
E	59-115	12	4	1	1

In addition to the analysis described above, the Collaborative Investigation report states that the BSPH analysts also conducted an initial 'exploratory analysis' of the passive samples to investigate particle types deposited on the samples.[16] However, no information was provided on the methodology.

As Table 1 shows, for two of the samples (Samples A and D) there is no documentation[17] that any coal particles were detected using the 'systematic analysis'. It is worth noting that the number of coal particles identified at the background location (Location E) was similar to the number of coal particles reported for the other sampling locations (and was in fact the same number reported at Location B and Location C). Also, note that Location D, which is further from the Terminal than Locations A, B and C, had the highest number of reported "coal" particles. The results suggest other sources of coal particles or particles resembling coal in the community.

For all these reasons, there is insufficient evidence provided in the Collaborative Investigation report to support the claim that coal dust was identified on each of the passive samples.

In summary, the data in the Collaborative Investigation report do not support the conclusion that coal dust was a substantial contributor to settled dust in the community.[18] Importantly, the authors of the Collaborative Investigation report were apparently aware of the limitations and flaws associated with the SEM/EDS analysis of the passive samples and noted these deficiencies in the report: '*…The strength of the systematic analysis is limited by the small sample size of 12 particles per PAPA [passive samplers] sample, as well as the findings of putative coal dust, causing some uncertainty to the identity of deposited particles*'.[19]

[16] Collaborative Investigation report, Section 3a, page 10.
[17] See summary information in two right columns in Table 1 highlighting that no images or EDS spectra were provided in Collaborative Investigation report.
[18] Collaborative Investigation report, Section 3a, page 20.
[19] Collaborative Investigation report, Section 3a, page 20.

3.2 Sample Collection and SEM/EDS Analysis of Tape Lift Samples

The tape lift sampling procedure used in the Collaborative Investigation report was described as being adapted from the American Society for Testing and Materials Standard Practice for Sampling for Particulate Contamination by Tape Lift (ASTM E1216-21),[20] which is focused on the collection and analysis of particles ≥5 µm from sampling surfaces. The samplers were described in the Collaborative Investigation report as consisting of double-sided sticky conductive carbon tape (~8 mm [wide] x ~25 to 38 mm [length]). In total, five tape lift samples were collected from three locations identified in Figure 3, taken from the Collaborative Investigation report.[21] Tape lift samples were collected at Locations 1 and 2 on August 22, 2023 and at Locations 1, 2, and 3 on September 25, 2023.[22] No background tape lift samples were collected.

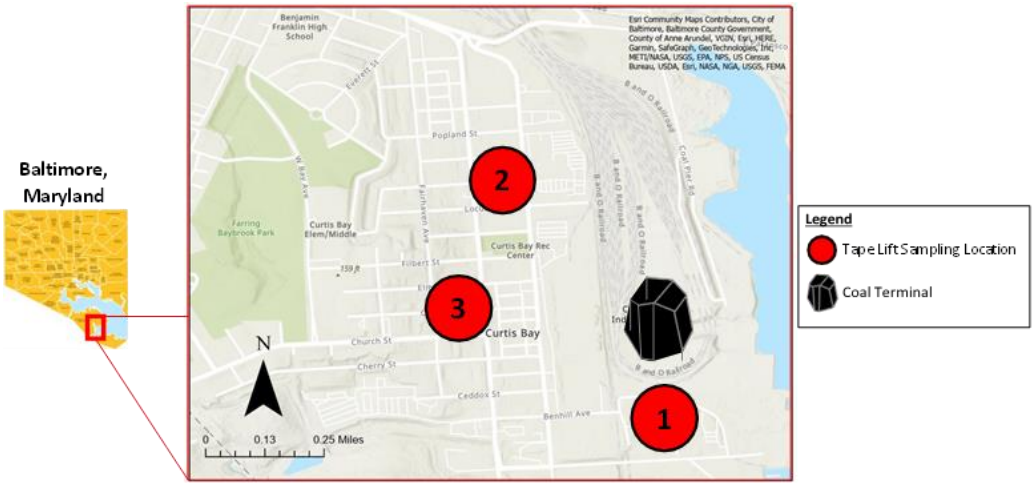


Figure 3. Tape lift sampling locations in Curtis Bay, MD.

The tape lift samples were described as being analyzed using the same 'randomized, systematic' analysis methodology used for passive samples, and as such, a minimum of 59 and up to 115 particles should have been analyzed during the 'low' and 'high' magnification SEM/EDS analyses. However, similar to the passive samples, the analytical methodology was not followed for the tape lift samples. Only 15 particles were analyzed from the Location 1 tape lift sample (August 22, 2023, sample), and only 14 particles were analyzed on the Location 2 tape lift sample (August 22, 2023, sample). The number of particles analyzed is insufficient[23] to obtain semi-quantitative results related to the 'proportion of coal dust particles'[24] in the samples.

Further, the tape lift sample from Location 3 (September 25, 2023, sample) was analyzed without the systemic analysis protocol using an 'exploratory analysis'; however, no information

[20] Collaborative Investigation report, Section 3a, page 9.
[21] Collaborative Investigation report, Section 3a, Figure 8, page 8.
[22] Collaborative Investigation report, Section 3a, pages 7-8.
[23] Guidelines for the Application of SEM/EDX Analytical Techniques to Particulate Matter Samples, Section 4.6.2, EPA # 600/R-02/070.
[24] Collaborative Investigation report, Section 3a, page 10.

was provided on the analytical methodology. SEM/EDS results provided for the tape lift samples are summarized in Table 2.

Table 2. SEM/EDS results for tape lift samples using the Collaborative Investigation 'systematic analysis' protocol.

Location	Sampling Date	# Particles Required in Systematic Protocol	# Protocol Particles Analyzed	# *"Coal"* Particles Identified	# Images of *"Coal"* Particles	# EDS Spectra of *"Coal"* Particles
1	Aug. 22, 2023	59-115	15	9	2	0
2	Aug. 22, 2023	59-115	14	6	4	1
1	Sept. 25, 2023	59-115	None Reported	None Reported	0	0
2	Sept. 25, 2023	59-115	None Reported	None Reported	0	0
3	Sept. 25, 2023	59-115	0	None Reported	0	0

In addition to the issues described above, this analysis also had other problems, including:

- There were no samples collected from a background location, which is a recommended practice to assist in the source impact in a study of this nature.[25, 26]
- There were no data discussed or provided for the tape lift samples collected from Locations 1 and 2 on September 25, 2023.

[25] Draft Guidance on Developing Background Concentrations for Use in Modeling Demonstrations, Section 2.1, EPA-454/P-23-001.
[26] Casuccio, G.S., et. al., The Use of CCSEM and Microimaging to Study Source/Receptor Relationships, Receptor Models in Air Resources Management, Air & Waste Management Association, 1989, ISBN 0-923204-01-6.

4.0 'White Tape Collectors' Used to Document Settled Dust Accumulation

Samplers described as 'white tape collectors' were deployed at four locations in Curtis Bay during the Collaborative Investigation. Figure 4, taken from the Community Investigation report,[27] shows the four sampling locations where the white tape collectors were deployed on May 3, 2023. At each location, five white tape collectors were used to collect settled dust over different durations: 3, 7, 13, 21, and 28 days.[28] The Collaborative Investigation report states that light microscopy was used to capture images of the particles, and the color and morphology of the particles were compared to a control white tape collector with material from a bulk coal sample obtained from the Terminal.[29]

Optical microscopy images of the control white tape collector, Location A, Location C, and Location D samples are presented in the Collaborative Investigation report.[30] There are no scale markers on the images, and the images appear to be collected at different magnifications, making comparison of the images difficult. An optical microscopy image from Location B was not included. The Collaborative Investigation report states that from a qualitative perspective, there were more black particles on the white tape collectors nearer to the Terminal, and it is implied that the black particles are related to coal dust from the Terminal.[31] However, it is important to note that the optical microscopy examination did not speciate particles and therefore, no information was provided related to the presence or amount of coal particles on these samples. It should also be emphasized that 'black particles' cannot be used to indicate

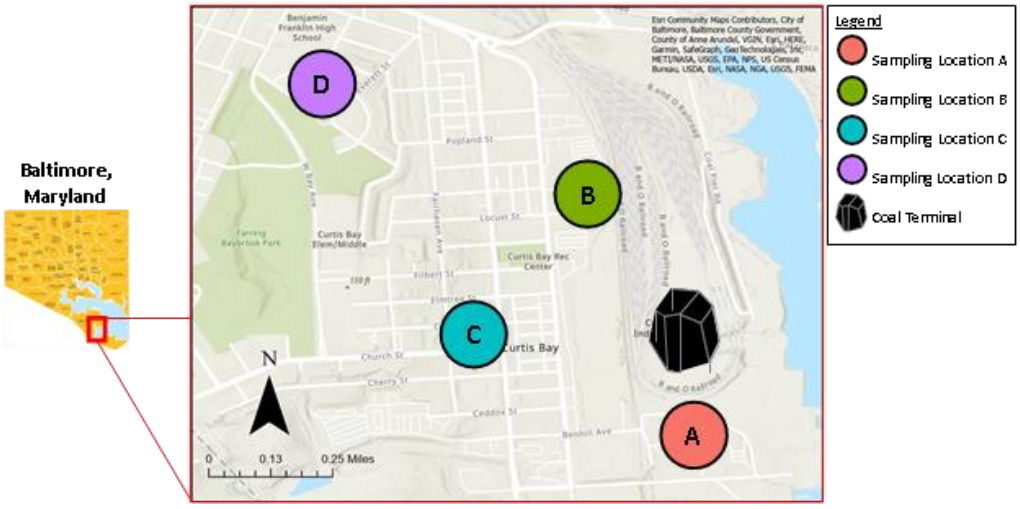


Figure 4. Approximate sampling locations of white tape collectors deployed to visibly accumulate settled dust over a 28-day period in the Curtis Bay community from May 3, 2023, to May 31, 2023.

[27] Collaborative Investigation report, Section 3a, Figure 1, page 1.
[28] Collaborative Investigation report, Section 3a, page 2.
[29] Collaborative Investigation report, Section 3a, page 4.
[30] Collaborative Investigation report, Section 3a, page 4.
[31] Collaborative Investigation report, Section 3a, page 7.

the presence of coal, as there are a variety of particles (both naturally occurring and anthropogenic) that have a dark appearance.[32,33]

In addition to light microscopy, the Collaborative Investigation researchers used image analysis techniques (ImageJ) to assign a darkness value to each of the tape strips in an attempt to compare dust accumulation between sampling locations and between exposure times.[34] However, this effort was of no value with respect to identifying coal dust because 'darkness' is not uniquely indicative of coal. Further, the Collaborative Investigation report noted the weaknesses of using the darkness scoring due to the variable lighting environment, stating '*the darkening of white tape strips by sampling location and time exposed is clearly evident, but not consistently reflected in the ImageJ darkness scoring*'.[35]

5.0 Use of Multi-Pollutant Air Sensor Network to Identify and Apportion Coal Dust and Other Sources of Air Pollution in Curtis Bay, South Baltimore, Maryland

Researchers involved in the Collaborative Investigation used what was described as an unsupervised classification technique referred to as non-negative matrix factorization (NMF) in an attempt to apportion specific pollutants to specific source types of air pollution in Curtis Bay. According to the report, NMF provides an objective way to assess whether a coal dust source profile (a term used to describe characteristics associated with a particular source's emissions) was present in the community as well as a systematic approach to understanding the frequency of coal dust in the data.

A significant flaw with the approach as implemented by Collaborative Investigation researchers is that they did not have a realistic profile for coal dust. Therefore, they developed the term ***Putative Coal Dust***, which was defined as 'a combination of major contributions from PM_{10}, total suspended particles (TSP), and black carbon.'[36] These descriptors are not unique to coal dust. PM_{10} contains fine and coarse particulate matter generally less than 10 µm in size and is composed of a multitude of naturally occurring and anthropogenic particles, including mineral particles found in soils (such as aluminum-silicates, calcium carbonate, and oxide); sulfur-containing particles such as ammonium sulfate and gypsum (calcium sulfate); organic and elemental carbon particles including vegetation; soot; coal; fly ash; metals, etc. TSP consists of PM_{10} and larger particles. Black carbon is described by the EPA as 'sooty black material emitted from gas and diesel engines, coal-fired power plants, and other sources that *burn* fossil fuel.'[37] Black carbon is ubiquitous in an urban environment, and is 'a collective term that describes a range of carbonaceous substances from partly charred plant residues to highly

[32] The Particle Atlas, Edition Two, Volume II, The Light Microscopy Atlas, Walter C. McCrone and John Gustav Delly, Ann Arbor Science Publishers Inc., Ann Arbor, Michigan, 1973.
[33] RJ Lee Group internal studies.
[34] Collaborative Investigation report, Section 3a, page 4.
[35] Collaborative Investigation report, Section 3a, page 7.
[36] Collaborative Investigation report, Section 3b, page 6.
[37] EPA science in ACTION: Black Carbon Research and Future Strategies - Reducing emissions, improving human health and taking action on climate change. Washington D.C.: U.S. EPA, October 2011.

graphitized soot that are generated as products of incomplete combustion.'[38] Coal dust from the daily operations at the Terminal is not combusted, and would not resemble black carbon from other urban sources in terms of composition, size, or morphology of the particle.

As discussed in the following sections, the NMF data provided in the Collaborative Investigation report have no merit because:

- The NMF input data sets were based on a limited number of 'pollutants,' which hindered the ability to gain a comprehensive understanding of the sources contributing to the airshed.
- PM_{10}, TSP, and black carbon are not specific to coal particles either individually or combined.
- Several of the source types have profiles (*factors*) based on the same pollutant(s), which can result in excessive collinearity (similarity with multiple source profiles).
- There was no *factor* provided for coal dust.
- The *factor* for '*Putative Coal Dust*' (i.e., assumed coal dust) is not specific to coal dust.
- The pollutant profile for what is referred to as '*Putative Coal Dust*' is not consistent.
- There was no *factor* provided for vehicular diesel emissions, which was identified in the Collaborative Investigation report as being a significant source of air pollution in the Curtis Bay area. Diesel emissions would be associated with black carbon and fine particulate matter.
- *Factor* intensities do not provide a clear indication of source impact. Apportioning source impacts in micrograms per cubic meter ($\mu g/m^3$) would be a more relevant indicator.

The following sections provide an overview of the NMF approach as well as the flaws with using this methodology to identify and apportion the potential impact of coal dust in the Curtis Bay community.

5.1 Description of the South Baltimore (Curtis Bay) Air Monitoring Network and NMF Approach

The South Baltimore Community Air Monitoring Network consisted of 10 locations, as highlighted in Figure 5, taken from the Collaborative Investigation report.[39] Monitoring locations are numbered from 1 to 10 based on their proximity to the Terminal, with Location 1 being the closest and Location 10 being the furthest away from the Terminal.[40] As previously noted, Location 8, located near Ben Franklin High School, serves as a community background site relative to the Terminal and other industrial facilities.[41] Location 9 was also located in the same

[38] Long, C.M., Nascarella, M.A., Valberg, P.A., Carbon black vs. black carbon and other airborne materials containing elemental carbon: Physical and chemical distinctions. Environmental Pollution, 181:271-86, 2013.
[39] Collaborative Investigation report, Section 3b, Figure 1, page 2.
[40] Collaborative Investigation report, Section 3b, page 1.
[41] Collaborative Investigation report, Section 3b, page 1.

general area as Location 8 and thus could also serve as a background site. Location 10 can be used as an additional background site because it is the farthest removed monitoring site and is located northeast of the Terminal, whereas the other monitors are located west and south of the Terminal.

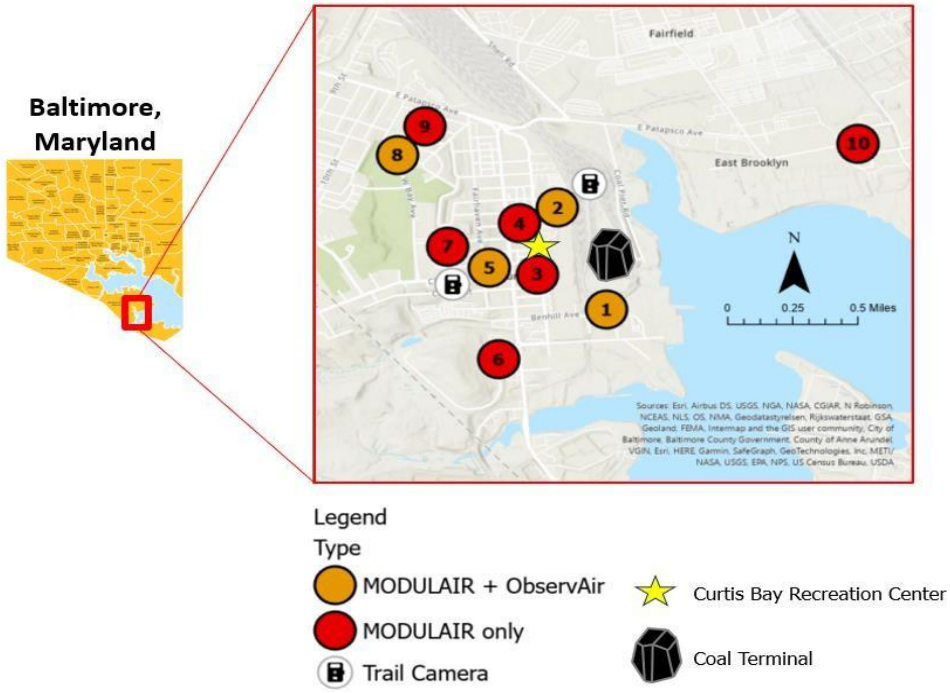


Figure 5. Locations of Curtis Bay air pollution monitors used in the South Baltimore Air Monitoring Network.

The dataset utilized with the Collaborative Investigation NMF approach included 8 pollutant categories measured by QuantAQ MODULAIRs and DSTech ObservAirs low-cost sensor monitors at 4 locations (Locations 1, 2, 5, and 8): PM_1, $PM_{2.5}$, PM_{10}, TSP, carbon monoxide (CO), nitrous oxide (NO), nitrogen dioxide (NO_2), and black carbon.

The NMF approach used in the study was briefly described in the report.[42] The process involved decomposing a matrix of pollutant-specific data, initially normalized from 0 to 1, into *factors*. The NMF pollution relationships (contributions of each pollutant to each *factor*) were produced for each of the four locations evaluated by settling on four *factors*, which was stated to be a 'satisfactory solution' after exploring three- to six-*factor* solutions. Based on the associations of pollutants, efforts were made to attribute the *factors* to specific source types based on the researchers' knowledge of the area.[43]

However, this approach was inadequate to identify the impact of coal particles in the Curtis Bay community. First and most importantly, '***Putative Coal Dust' is not coal dust***. As noted, the '*Putative Coal Dust' factor* was defined as consisting of *major* contributions of PM_{10}, TSP, and

[42] Collaborative Investigation report, Section 3b, page 5.
[43] Collaborative Investigation report, Section 3b, page 6.

black carbon[44]. This is not an appropriate profile for coal emissions and highlights a significant flaw in the analysis. The term '*Putative Coal Dust*' is a non-specific term that does not appear in the peer-reviewed literature. The Collaborative Investigation researchers also did not provide any justification for using black carbon as a major indicator of coal emissions from a coal handling facility. As discussed previously, black carbon is associated with incomplete combustion, not coal handling.

Other *factors* developed in the report included **Dust**, which was described as having *high* contributions from PM_{10} and TSP; **Regional**, which was described as being comprised of *relatively high* contributions from fine particulate matter such as PM_1, $PM_{2.5}$, and black carbon; **Local Combustion**, which was described as having a *relatively high* contribution of NO, but quickly oxidizing to NO_2, in addition to contributions from black carbon and fine particles;[45] **Cars**, which were defined as having a *presence* of fine particles and a *dominant* contribution of CO; and **Diurnal Combustion**, which was defined as having high contributions of NO_2 and followed a diurnal pattern. Defining the *factors* with qualitative terms such as 'major', 'high', 'relatively high', 'presence', and 'dominant' illustrates the lack of clarity with the NMF approach.

Of significant concern is that there was no *factor* for vehicular diesel emissions, which would also be associated with black carbon emissions. The lack of a diesel *factor* is a significant omission and oversight given that diesel emissions related to vehicular traffic were stated throughout the Collaborative Investigation report as being a significant source of black carbon in the Curtis Bay area.

With respect to collinearity, several of the *factors* developed in the Collaborative Investigation report have the same pollutant(s) as a component of their *factor*. For example, both the '*Putative Coal Dust*' and Dust *factors* are associated with PM_{10} and TSP. '*Putative Coal Dust*', Regional, and Local Combustion each have a black carbon component as part of their *factor*. Fine particulate matter (PM_1 and $PM_{2.5}$) was associated with the Regional, Local Combustion, and Cars *factors*. Apportioning the same pollutants with multiple *factors* will lead to uncertainties as pollutants could be attributed to more than one type of source.

The NMF approach used in the report produced relationships among the pollutants (*factors*) that were then interpreted and assigned by the researchers to a source type that was assumed to be representative of the source. This approach is prone to misinterpretations, especially given the collinearities in pollutants that exist among the source categories. Ideally, the interpretation of source *factors* would be conducted with reference to measured data on pollutants attributable to each source, which was not done in the Collaborative Investigation. Further, it appears that because the researchers were focused on coal particle impacts from the Terminal, they overlooked potential background confounding sources in the Curtis Bay area. This is a significant deficiency of the Collaborative Investigation report given the high density of sources in the Curtis Bay airshed.[3,4] Further, it is stated that the NMF approach was based on sampling 25% of the dataset, but the Collaborative Investigation report provides no details

[44] Collaborative Investigation report, Section 3b, page 6.
[45] Not defined but assumed to be PM_1 and $PM_{2.5}$.

regarding which data were included in this evaluation.[46] Finally, unlike similar source apportionment models such as Positive Matrix Factorization (PMF), NMF does not consider the uncertainties associated with pollutants, and neglecting uncertainties may impact the reliability of the results.[47,48]

5.2 Evaluation of NMF Results

The Collaborative Investigation report provides a summary of generated NMF *factors* for Locations 1, 2, 5, and 8 (see Figure 6 taken from the Curtis Bay Collaborative Investigation report[49]). As previously noted, the *factors* were defined by the Collaborative Investigation researchers as being representative of: 1) '*Putative Coal Dust*'; 2) Diurnal Combustion; 3) Local Combustion; 4) Regional; 5) Cars; 6) Dust; and 7) Residual.

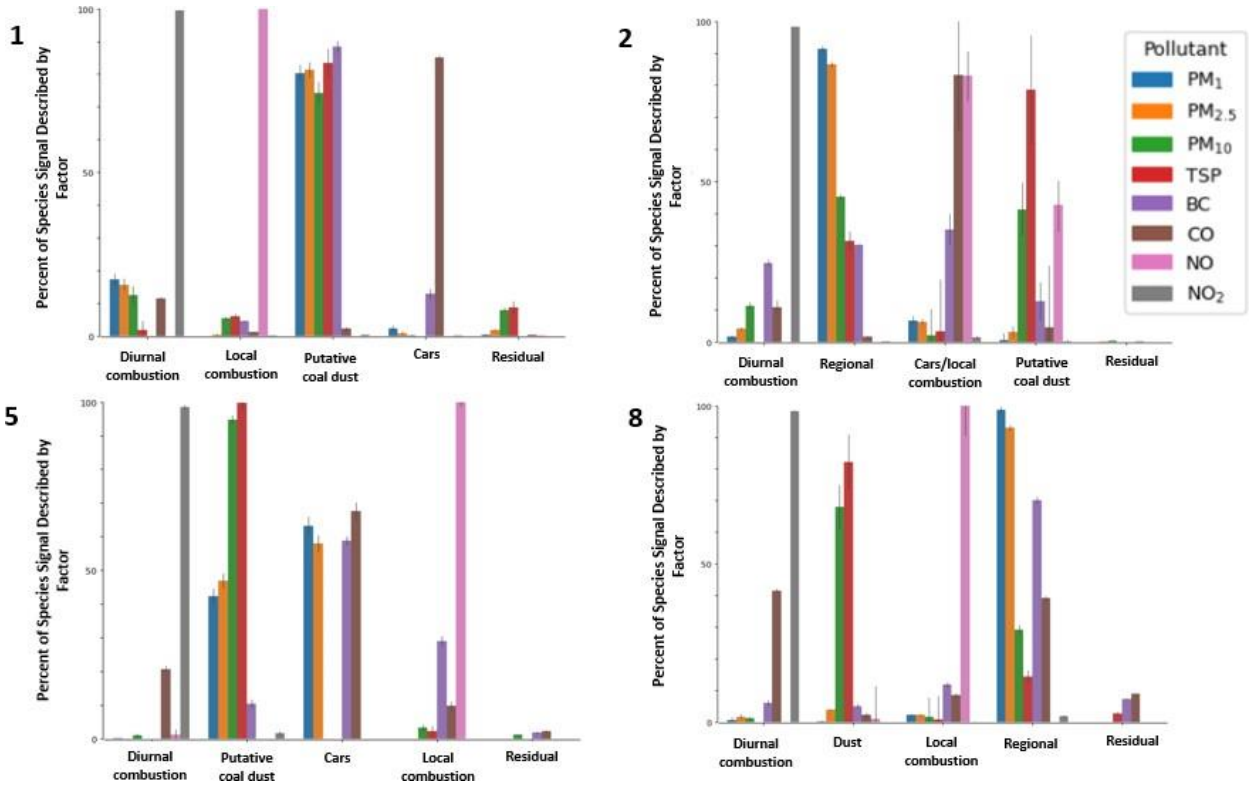


Figure 6. Non-negative matrix factorization (NMF) *factor* compositions at Locations 1, 2, 5, and 8 in the South Baltimore Air Monitoring Network. Taken from the Collaborative Investigation report.

[46] Collaborative Investigation report, Section 3b, page 5.
[47] Shi et al., Effect of Uncertainty on Source Contributions from the Positive Matrix Factorization Model for a Source Apportionment Study, Aerosol and Air Quality Research, 16: 1665–1674, 2016.
[48] Yang, L. H., et al., Investigating the Sources of Urban Air Pollution Using Low-Cost Air Quality Sensors at an Urban Atlanta Site, Environmental Science & Technology, Environmental Science & Technology 2022, 56 (11), 7063-7073, doi: 10.1021/acs.est.1c07005
[49] Collaborative Investigation report, Section 3b, Figure 5, page 6.

The NMF results provided in Figure 6 of the Collaborative Investigation report lack clarity for several reasons. The y-axis is described as 'Percent of Species Signal Described by Factor', not a specific quantity of pollutant. Providing NMF data based on normalized pollutant concentrations can be misleading. For instance, a high 'species percentage' may correspond to a small ambient concentration. The Collaborative Investigation report does not present concentrations in $\mu g/m^3$ for each pollutant in the source profiles or the profiles' contributions to the overall ambient air quality, which would allow comparison of actual pollutant concentration.

Additionally, source types were not consistently defined. For example, at Location 1, which is located in the industrial zoned area of Curtis Bay, the Collaborative Investigation report states that there is the presence of a strong '*Putative Coal Dust' factor*, consisting of PM_1, $PM_{2.5}$, PM_{10}, TSP, and black carbon contributing nearly 70% each to the total *factor*.[50] However, the '*Putative Coal Dust' factor* was previously defined as being comprised of a combination of major contributions from PM_{10}, TSP, and black carbon. The PM_1 and $PM_{2.5}$ components of this *factor* could indicate impacts from the *Regional factor*, which is not listed as a source at Location 1 and further illustrates the issue of collinearity discussed previously. Further, since no *factor* was developed for a vehicular diesel source, it is possible that the '*Putative Coal Dust' factor* at Location 1 may represent a combination of Regional, Dust, and vehicular diesel sources and illustrates that the interpretation of NMF data can be subjective.

At Location 2, which is also located in the industrial zoned area of Curtis Bay, the '*Putative Coal Dust' factor* is associated with a contribution from NO, which does not make sense. The Collaborative Investigation report notes this issue and states that it suggests the presence of nearby diesel emissions.[51] Given this acknowledgement that diesel emissions may have contributed to the '*Putative Coal Dust' factor*, it is inappropriate that the Collaborative Investigation researchers did not include a *factor* for diesel emissions. It was noted numerous times in the Collaborative Investigation report that diesel trucks are a significant component of vehicular activity in Curtis Bay.[52] Further, polar plots prepared by the Collaborative Investigation researchers at Location 3 suggest impacts from vehicles.[53] Also notable is that Location 2 has a *Regional factor* that includes black carbon, which as discussed with Location 1, suggests issues with collinearity at this site.

At Location 5, the '*Putative Coal Dust' factor* was associated with significantly less black carbon as compared to Location 1, but is similar to the amount observed at Location 2. However, unlike Location 2, there was no *Regional factor* listed at Location 5 even though there is a significant PM_1 and $PM_{2.5}$ contribution. Alternatively, the '*Putative Coal Dust' factor* could be interpreted as a combination of *Regional* and *Dust factors*. Further, the *Cars factor* at this location has a significant component of black carbon, which is not consistent with the definition of the *Cars factor* and may indicate diesel truck emissions impact.

[50] Collaborative Investigation report, Section 3b, page 7.
[51] Collaborative Investigation report, Section 3b, page 7.
[52] '*Hundreds of diesel trucks per day move materials along two diesel truck routes, Pennington and Curtis Avenues, through the heart of the residential community with homes, small businesses and a recreation center in between*.', Collaborative Investigation report, Section 2. See also Executive Summary and Section 4, page 22.
[53] Collaborative Investigation report, Section 4, page 6.

At Location 8, the Collaborative Investigation report states that the presence of a '*Putative Coal Dust' factor* is less clear due to significantly smaller contributions from black carbon and higher contributions from PM_{10} and TSP.[54] The Collaborative Investigation researchers try to rationalize this by stating that since this location was farthest from the Terminal, it was less likely to have a '*Putative Coal Dust'* profile because larger particles associated with PM_{10} and TSP would settle prior to arriving at the Location 8 monitor. This is an unconvincing explanation, as there was a significant contribution of PM_{10} and TSP with some black carbon, but that was assigned to the *Dust factor*. Further, the *Regional factor* contains a significant component of black carbon. The combination of fine particles (PM_1 and $PM_{2.5}$) with black carbon is most likely associated with vehicular diesel emissions.

To further illustrate how the NMF results can be misinterpreted, Figure 7, taken from the Collaborative Investigation report,[55] provides a plot of the time series of all NMF *factors* associated with pollutant concentrations during what is described as the 'terminal bulldozer event' that occurred from 12:00 pm to 3:00 pm on February 3, 2023. The plot shows that there were four distinct peaks observed in the '*Putative Coal Dust' factor* that occurred at approximately 12:00, 1:00, 1:15, and 2:00 pm. During all four of these time periods, the report indicated that the NMF results were associated with '*Putative Coal Dust'*. It was also stated that there were co-incident increases in the *Near Combustion factor* (which is a *factor* that was not identified previously in the Collaborative Investigation report).

However, review of the low-cost sensor data in Figure 8, taken from the Collaborative Investigation report,[56] suggest that the higher concentrations are correlated with other non-coal sources. For example, the '*Putative Coal Dust' factor* was defined as being comprised of a combination of major contributions from PM_{10}, TSP, and black carbon, and since there are no PM_{10} or TSP spikes in concentrations reported at 12:00 pm, it suggests a different source or combination of sources was the cause of this spike. Review of the data for the spikes that occurred at approximately 1:00, 1:15, and 2:00 pm, indicate that there is no or minimal black carbon, which again suggests other sources were responsible for this spike.

[54] Collaborative Investigation report, Section 3b, page 7.
[55] Collaborative Investigation report, Section 3b, Figure 11, page 14.
[56] Collaborative Investigation report, Section 3b, Figure 12, page 15.

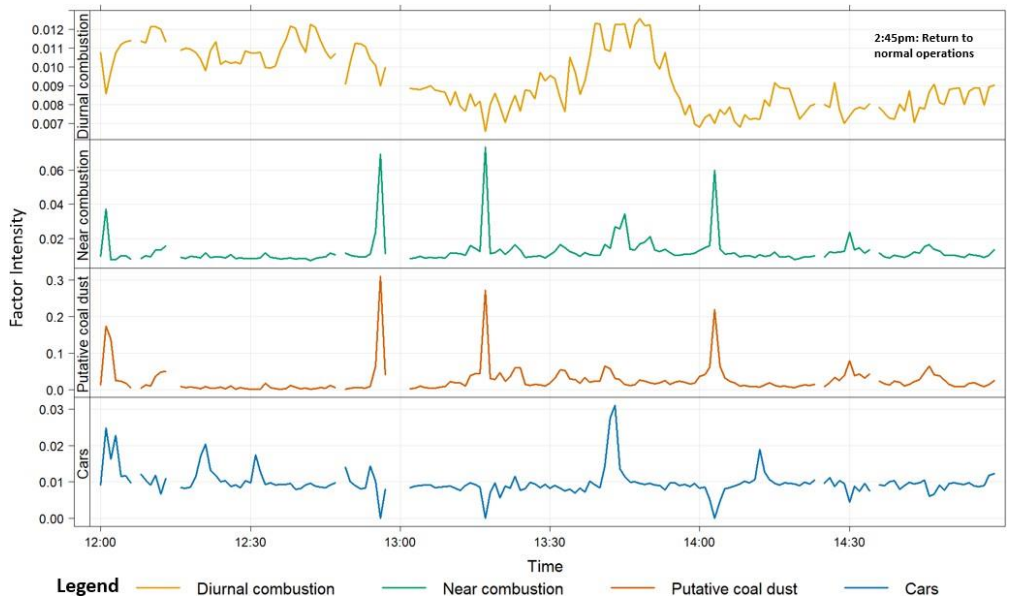


Figure 7. Time series of NMF *factors* (diurnal combustion, near combustion, *'Putative Coal Dust'*, and cars) during the terminal bulldozer event (12pm-3pm) at Location 1, February 3, 2023.

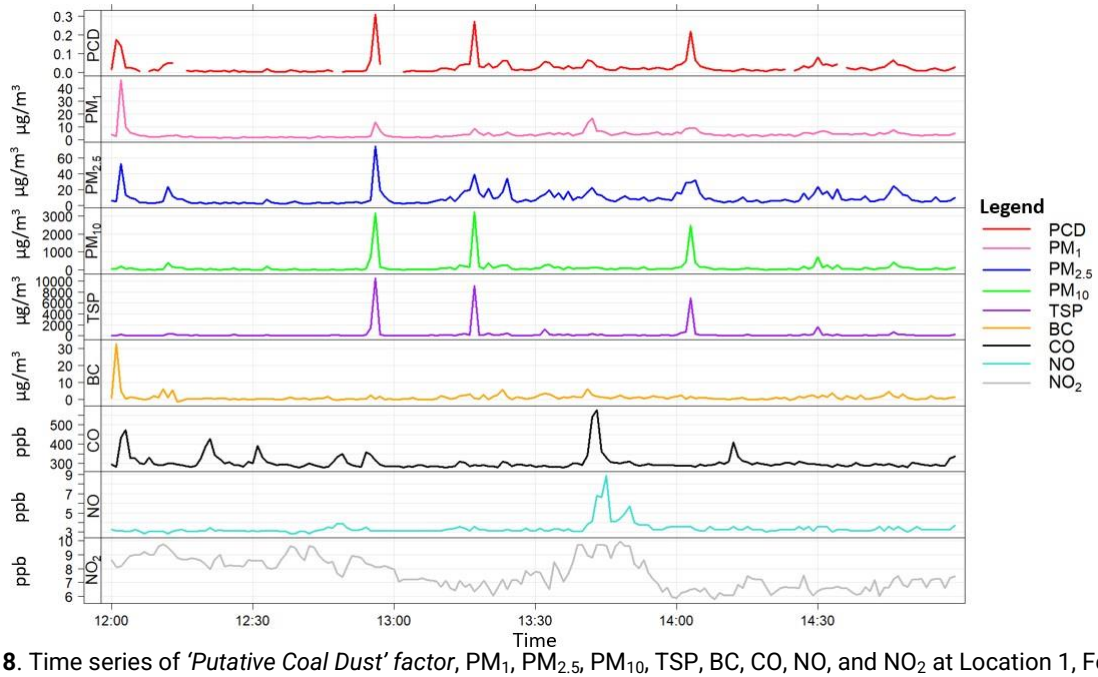


Figure 8. Time series of *'Putative Coal Dust' factor*, PM_1, $PM_{2.5}$, PM_{10}, TSP, BC, CO, NO, and NO_2 at Location 1, February 3, 2023 'terminal bulldozer event' (12pm - 3pm).

Thus, there appears to be no justification to conclude that the spikes that were observed were related to coal dust based on the Collaborative Investigation report criteria. This example illustrates the flaws surrounding the use of NMF in the Collaborative Investigation report.

In summary, the interpretation of the *factors* is inconsistent, highly interpretative, and not specific to coal dust. The fact that the Collaborative Investigation report did not consider vehicular diesel emissions further limits the validity of the NMF results.

5.3 Inconsistencies and Issues Associated with the NMF Approach

The definition for the '*Putative Coal Dust' factor* is not consistent throughout the Collaborative Investigation report. It was originally defined as being comprised of a combination of major contributions from PM_{10}, TSP, and black carbon; however, it was previously noted that Location 1 had a 'strong putative coal dust factor' consisting of PM_1, $PM_{2.5}$, PM_{10}, TSP, and black carbon. Additionally, in a recent publication related to the Collaborative Investigation, a different "framework" of probable source types was suggested to define "types of pollution events" as noted below.[4]

- Fugitive coal dust emission: elevated PM_{10} and/or TSP and black carbon
- Diesel combustion emissions: elevated PM_1 and/or $PM_{2.5}$, black carbon, CO, CO_2 and/or NO_x
- Non-combustion particulate matter: PM_1 and/or $PM_{2.5}$
- Road dust or other coarse-mode particulate matter: PM_{10} and/or TSP

To successfully use a mathematical approach to apportioning pollutants, the definitions of source profiles need to have characteristics or relationships unique to the source, and the definitions need to be consistent. Further, it is necessary to have speciation data (signature) to support the *factors* to minimize or eliminate confounders. For example, there is no documentation to support identifying coal dust as a combination of major amounts of PM_{10}, TSP and black carbon.

As noted previously, the lack of a diesel *factor* in the NMF analysis in the report is unacceptable given that it was noted several times that diesel traffic is a significant source in the community and indicates that the NMF approach is flawed.

It is also imperative when working with mathematical techniques to communicate and qualify the strengths and limitations of the techniques utilized. For example, the NMF evaluation was done using 1-minute monitoring data, which is more prone to fluctuations (i.e., noise) in the data as compared to longer-averaged concentrations.[57] With respect to the MODULAIR low-cost sensor(s) PM_1, $PM_{2.5}$ and PM_{10} data, the manufacturer does not provide specifications related to the accuracy of measurements at 1-minute intervals.[58,59]

Finally, when performing studies of this nature, it is important to evaluate data from a commonsense perspective. In this instance, it simply does not make sense that there would be no *Dust* or *Regional factors* at Locations 1, 2 and 5, as 'dust' is ubiquitous and regional influences are typical in an airshed, and in some instances is the result of national and

[57] Trinity Consultants report, Response to the Collaborative Investigation of Coal Dust, Air Pollution, and Health Concerns in Curtis Bay, South Baltimore, Maryland, USA, 2022-2023; Section 4.1.
[58] Trinity Consultants report, Response to the Collaborative Investigation of Coal Dust, Air Pollution, and Health Concerns in Curtis Bay, South Baltimore, Maryland, USA, 2022-2023; Section 2.3.1.
[59] MODULAIR Product Specification Sheet accessed Feb 05, 2024: https://assets.quant-aq.com/downloads/spec-sheets/modulair.latest.pdf

international transport of particles (e.g., the recent Canadian wildfire smoke affecting air quality throughout the Eastern United States).[60]

5.4 Evaluation of the *'Putative Coal Dust' Factor* with Respect to Wind Direction

As part of the Collaborative Investigation report, '*Putative Coal Dust' factor* intensities at Locations 1, 2, and 5 and *Dust* (*factor* assigned to background Location 8) were compared with wind directions "upwind" and "downwind" of the Terminal, with respect to bulldozer, ship, and train activity.[61] This analysis was flawed for several reasons.

First, any air quality sampling "downwind" of the Terminal also includes impacts to air quality from other sources that are "upwind" of the Terminal as well as sources between the monitor and the terminal. Relatedly, the downwind location sampling did not account for mobile sources, coal/fuel oil combustion, or vegetive burning, which in many urban environments can be the largest contributors to $PM_{2.5}$.[62]

Second, the results suggest that other background sources were responsible for measured dust. The results, illustrated as boxplots, showed that in most instances the background location (Location 8) *Dust factor* intensities were similar to or even higher than *Dust factor* intensities at Locations 1, 2 and 5 when 'reported winds' were from the direction of the Terminal, suggesting other background sources in the area.

Third, it is not stated what meteorological data were used in this evaluation. It is assumed that the wind data were obtained at the location of each monitor, which could lead to errors in the interpretation of the results.[63]

Finally, because the '*Putative Coal Dust' factor* was not validated as representative of coal dust emissions (as discussed in the prior section), any comparisons of source impact of coal dust with respect to wind direction are presumptive and potentially misleading. Notwithstanding, the issues with how the wind direction data were collected and analyzed, the collinearity issue related to the '*Putative Coal Dust' factor* with other sources makes it unreliable to attribute pollutants measured at the sampling locations to activities at the Terminal.

The potential impact of background sources is explored in more detail in Section 7.

6.0 Mobile Monitoring of Black Carbon in Curtis Bay

A mobile pollutant measurement platform developed jointly by the UMD and National Oceanic and Atmospheric Administration's Air Resources Laboratory was used to measure black carbon concentrations on heavily traveled roads in Curtis Bay (Pennington Avenue and Curtis Avenue)

[60] US EPA, Reconsideration of the National Ambient Air Quality Standards for Particulate Matter, Federal Register, Vol 88, No. 18, January 27, 2023: https://www.govinfo.gov/content/pkg/FR-2023-01-27/pdf/2023-00269.pdf
[61] Collaborative Investigation report, Section 3b, Figures 16, 17, 18, 19, pages 20, 21, 22, 23.
[62] United States Environmental Protection Agency. *Policy Assessment for the Reconsideration of the National Ambient Air Quality Standards for Particulate Matter, May 2022* (EPA-452/R-22-004).
[63] Trinity Consultants report, Response to the Collaborative Investigation of Coal Dust, Air Pollution, and Health Concerns in Curtis Bay, South Baltimore, Maryland, USA, 2022-2023, Section 2.3.3.

on April 27, 2023. The mobile vehicle can record black carbon measurements along with time-resolved GPS coordinates, which enables concentrations to be plotted with the location of the vehicle.

Results from the Collaborative Investigation report showed that black carbon concentrations were 'remarkably' higher and more variable on Pennington Avenue.[64] The Collaborative Investigation report noted that the high density of diesel trucks combined with stop-and-go traffic on Pennington Avenue appears to be the dominant cause.[65] The fact that the black carbon measurements are significantly higher on Pennington Avenue, which is further from the Terminal than Curtis Avenue, supports the conclusion that diesel trucks were the most likely source of the black carbon emissions.

The Collaborative Investigation report also states that black carbon levels above 1.63 µg/m^3 are a 'potential health threat',[66] but no information or citation is included to justify this statement. Furthermore, caution should be used when attempting to apply short-term measurements of concentrations to projecting health effect outcomes. Peak concentration instantaneous measurements do not put into context the frequency, duration, and level of the exposure.

Another complication with air sampling using a mobile monitoring vehicle is that measurements are only obtained where the vehicle has access to locations to monitor for pollutants. This limits the ability to obtain measurements on private properties and at other locations where the vehicle cannot reach to evaluate other potential sources, such as potential upwind black carbon sources like ships or other industrial facilities in South Baltimore.

Finally, the Collaborative Investigation report identifies 'coal dust, fires and diesel exhaust' as major sources of black carbon with no support for the claim.[67] This statement, with respect to coal, is not substantiated. In fact, it is inconsistent with the results obtained by the mobile monitoring vehicle discussed above, which do not support coal dust as a major source of black carbon.

7.0 Evaluation of the Community-wide Air Pollution 'Burden' in Curtis Bay, South Baltimore, Maryland and the Evaluation of 'Background'

The Collaborative Investigation reported $PM_{2.5}$ daily average concentrations across all monitor locations from 5/26/22 to 5/25/23 in the network excluding wildfire days. Results indicate an annual mean $PM_{2.5}$ concentration of 8.6 µg/m^3,[68] which is below current EPA primary and secondary annual NAAQS for $PM_{2.5}$. The report also states that the Curtis Bay community is in attainment for the 24-hour $PM_{2.5}$ NAAQS. In summary, the monitoring network results suggest that the area is in attainment for $PM_{2.5}$.

[64] Collaborative Investigation report, Section 4, page 20.
[65] Collaborative Investigation report, Section 4, page 22.
[66] Collaborative Investigation report, Section 4, page 20.
[67] Collaborative Investigation report, Section 4, page 18.
[68] Collaborative Investigation report, Section 4, page 8.

With respect to PM_{10}, the wildfire excluded days data collected throughout the community indicate that there were no days in exceedance of the 24-hour PM_{10} NAAQS.[69]

Even though Curtis Bay appears to be in attainment with the NAAQS for $PM_{2.5}$ and PM_{10}, one of the Collaborative Investigation report's preliminary findings is that the Curtis Bay community is overburdened by air pollution,[70] with the community sensor network measuring average $PM_{2.5}$ concentrations that are higher than at nearby MDE regulatory monitors. Comparing the average $PM_{2.5}$ concentration to the Baltimore area monitors averaged from 5/26/22 to 5/25/23 shows a higher concentration of $PM_{2.5}$ (see Table 3).

Table 3. Comparison of average $PM_{2.5}$ concentrations using low-cost monitors in Curtis Bay to Baltimore MDE regulatory monitors from 5/26/22 to 5/25/23.[71]

	$PM_{2.5}$ (µg/m³)	
	Baltimore Area Monitors	Curtis Bay Monitors
Wildfire Days Not Included	6.7	8.6

The presumption of the 'air pollution burden' was based on the fact that $PM_{2.5}$ concentrations in Curtis Bay appeared to be higher than those at nearby MDE monitoring sites by ~1-3 µg/m³.[72]

There are several issues with the 'air pollution burden' finding. First, low-cost sensor monitors are not as accurate as Federal Reference Method (FRM) and Federal Equivalent Method (FEM) monitors, which are used for regulatory purposes. Notwithstanding, the low-cost sensors have been evaluated with FRM and FEM monitors and, as stated in the Collaborative Investigation report, '*Independent evaluations by California's South Coast Air Quality Monitoring District (AQ-SPEC) have found the specific sensor type used in Curtis Bay measure $PM_{2.5}$ with a high bias compared to reference grade monitors by 1-3 µg/m³*.[73] Thus, the results from the MODULAIR low-cost monitors appear to be within the margin of error of the average concentrations determined from the MDE monitoring sites.[74]

Second, when investigating air pollution burden, it is important to consider all major sources in an airshed. The Collaborative Investigation report states that the pollution burden comes from many different pollution sources in the area, including diesel truck traffic, and that, although $PM_{2.5}$ is largely regarded as a regional pollutant, there may be local contributors as well. To investigate this hypothesis, the Collaborative Investigation report evaluated $PM_{2.5}$ concentrations when the wind direction was downwind versus upwind of the Terminal and found that the $PM_{2.5}$ mean concentrations were statistically significantly higher downwind at all sites, except Location 10 (Wagner's Point). However, this investigation was done based on

[69] Collaborative Investigation report, Section 4, page 10.
[70] Collaborative Investigation report, Section 1, Key Findings.
[71] The $PM_{2.5}$ concentration for the Baltimore area monitors in Table 3 was an average from the Edgewood, Essex, Howard County (near road), Lake Montebello, and Padonia monitor locations.
[72] Collaborative Investigation report, Section 4, page 5.
[73] Collaborative Investigation report, Section 4, page 16.
[74] Trinity Consultants report, Response to the Collaborative Investigation of Coal Dust, Air Pollution, and Health Concerns in Curtis Bay, South Baltimore, Maryland, USA, 2022-2023, Section 1.1.

different datasets. For example, $PM_{2.5}$ concentrations were available for 389 days at Location 5 but only 101 days at Location 7,[75] which may skew the results.

A better approach would be to evaluate the $PM_{2.5}$ concentrations over the same timeframe. To this end, hourly $PM_{2.5}$ and PM_{10} concentrations were evaluated by RJ Lee Group at several Curtis Bay community locations and compared upwind/downwind concentrations with respect to the Terminal. The data used in this evaluation were obtained with the Curtis Bay community low-cost sensor MODULAIR monitors.[76] The assessment was conducted with data collected from June 22, 2023, to August 7, 2023, which corresponds to the period when data were available from each of the community monitor locations at Location 1, Location 4, Location 5, Location 9, and Location 10. Meteorological data (wind direction and speed) were obtained from the Terminal 10-meter meteorological station.[77]

Table 4 provides a summary of $PM_{2.5}$ concentrations at the community monitor locations used in the evaluation. Hourly $PM_{2.5}$ data for each monitor in 16 wind arcs were averaged for the comparison. Results indicate that, on average, the $PM_{2.5}$ concentrations are relatively consistent throughout the network. In most instances, the 'upwind' $PM_{2.5}$ concentrations, which indicate impact from background sources, were lower than the 'downwind' concentrations, suggesting minimal or no impact from the Terminal, or sources between the Terminal and the monitors. Furthermore, the results suggest that there is a significant contributor of $PM_{2.5}$ southeast of the community. Additional supporting information is illustrated in pollution rose diagrams for $PM_{2.5}$ provided in Appendix A.

These findings appear to be consistent with some of the findings reported in the Collaborative Investigation report. For example, Location 6, which is located southeast of the Terminal near Pennington Avenue had the second highest mean $PM_{2.5}$ concentration in the Curtis Bay network.[78] The Collaborative Investigation report noted that, using polar plots, the highest $PM_{2.5}$ concentrations appear to be associated with high winds from the south of the monitor.[79]

[75] Collaborative Investigation report, Section 4, Table 4, Page 5.
[76] Data were obtained from the community monitors and the CSXT meteorological station.
[77] Trinity Consultants report, Response to the Collaborative Investigation of Coal Dust, Air Pollution, and Health Concerns in Curtis Bay, South Baltimore, Maryland, USA, 2022-2023, Section 2.3.3.
[78] Collaborative Investigation report, Section 4, Table 4, Page 5.
[79] Collaborative Investigation report, Section 4, page 7.

Table 4. $PM_{2.5}$ concentrations at Locations 1, 4, 5, 9 and 10 averaged by wind direction from June 22, 2023, to August 7, 2023. 'Monitor Impacted' is downwind from the Terminal based on wind direction.

Wind Direction (From)	Wind Arc (Degrees)	Monitor Impacted	South Gate Location 1 (µg/m3)	Rec Center Location 4 (µg/m3)	Cypress Location 5 (µg/m3)	Ben Franklin Location 9 (µg/m3)	Wagner's Point Location 10 (µg/m3)
North	349˚-11˚	1	9.1	9.0	8.6	9.7	9.0
North Northeast	12˚ -33˚	1	8.0	8.0	7.9	9.2	8.2
Northeast	34˚-56˚	None	6.7	6.7	6.8	6.4	7.0
East Northeast	57˚-78˚	5	5.6	5.7	6.0	6.8	6.0
East	79˚-101˚	5	4.5	4.2	4.3	5.1	5.3
East Southeast	102˚-123˚	5	14.5	14.1	14.4	13.4	13.8
Southeast	124˚-146˚	4,9	12.5	12.2	12.5	12.2	12.0
South Southeast	147˚-168˚	4,9	13.2	13.3	13.5	14.2	14.2
South	169˚-191˚	None	9.5	9.1	9.2	10.7	10.3
South Southwest	192˚-213˚	None	9.5	9.1	9.4	11.1	10.7
Southwest	214˚-236˚	None	12.2	13.1	12.8	14.2	13.0
West Southwest	237˚-258˚	10	10.5	10.3	10.5	11.9	11.4
West	259˚-281˚	10	13.9	13.2	13.1	14.3	14.6
West Northwest	282˚-303˚	10	10.7	10.7	10.3	12.0	11.5
Northwest	304˚-326˚	10	7.8	7.8	7.7	9.5	9.0
North Northwest	327˚-348˚	1	8.8	8.8	8.5	9.7	9.3

A similar 'upwind/downwind' evaluation was performed using PM_{10} data from the Curtis Bay network, and a summary of the average PM_{10} concentrations in 16 wind arcs is provided in Table 5.

Table 5. PM_{10} concentrations at Locations 1, 4, 5, 9 and 10 averaged by wind direction from June 22, 2023, to August 7, 2023. 'Monitor Impacted' is downwind from the Terminal based on wind direction.

Wind Direction (From)	Wind Arc (Degrees)	Monitor Impacted	South Gate Location 1 (µg/m3)	Rec Center Location 4 (µg/m3)	Cypress Location 5 (µg/m3)	Ben Franklin Location 9 (µg/m3)	Wagner's Point Location 10 (µg/m3)
North	349˚- 11˚	1	14.0	15.2	16.8	22.3	19.5
North Northeast	11˚ -33˚	1	14.4	16.3	19.6	24.7	23.8
Northeast	34˚-56˚	None	13.4	15.0	18.7	16.1	20.6
East Northeast	57˚-78˚	5	11.1	12.1	15.9	18.0	20.2
East	79˚-101˚	5	10.4	10.1	13.8	17.2	20.1
East Southeast	102˚-123˚	5	20.2	20.2	21.7	24.5	26.5
Southeast	124˚-146˚	4,9	17.4	17.0	18.7	21.4	20.9
South Southeast	147˚-168˚	4,9	17.9	18.8	20.2	24.7	24.0
South	169˚-191˚	None	14.2	15.2	17.1	22.2	21.4
South Southwest	192˚-213˚	None	15.2	17.0	19.4	26.7	26.1
Southwest	214˚-236˚	None	16.9	19.4	20.8	26.9	25.7
West Southwest	237˚-258˚	10	16.3	17.1	19.0	25.0	25.4
West	259˚-281˚	10	20.0	21.3	23.1	26.6	27.8
West Northwest	282˚-303˚	10	17.7	19.4	20.4	28.0	30.1
Northwest	304˚-326˚	10	14.0	16.6	18.5	25.6	25.3
North Northwest	327˚-348˚	1	14.4	15.7	17.1	22.8	20.2

Results of this evaluation suggest that the Terminal is not a significant source of PM_{10} in the Curtis Bay community. This finding also appears to correlate with some of the findings in the Collaborative Investigation report, where winds from the northwest were associated with the highest 1-minute PM_{10} concentrations at Location 6.[80] Additional supporting information related to the RJ Lee Group findings is provided in Appendix A.

[80] Collaborative Investigation report, Section 4, Figure 19, page 12.

8.0 Summary

The conclusion that the Terminal is a substantial contributor of coal dust in the Curtis Bay community is not supported by data provided in the Collaborative Investigation report. The SEM/EDS analysis results did not support the preliminary finding that coal dust was found at all eight monitoring sites and 100 percent of the samples. Further, the SEM/EDS analysis did not follow the analytical protocol described in the Collaborative Investigation report, bringing into question whether any of the SEM/EDS data are of value.

The use of the 'white tape collectors' were of no real value from a coal particle impact perspective because no particle speciation was performed. Therefore, there is no information on the amount of coal on any of the samples. Darkness does not provide an indication of coal, as there are a variety of particles (naturally occurring and anthropogenic) that have a dark appearance.

The NMF analysis also provides no support for the Collaborative Investigation report's conclusions because of major flaws with the approach including, but not limited to: 1) there was no *factor* provided for coal dust; 2) '*Putative Coal Dust*' is not coal dust but is instead a term developed by the Collaborative Investigation researchers; 3) *'Putative Coal Dust'* was defined as consisting of major contributions of PM_{10}, TSP and black carbon, which is not an appropriate profile for coal dust; 4) PM_{10} and TSP are not source-specific and contain particles from a variety of sources; 5) there was no *factor* identified for diesel emissions, which were identified in the Collaborative Investigation report as being a significant source of black carbon and $PM_{2.5}$ in the community; and 6) the analysis was based on the use of 1-minute average data, which are more prone to fluctuations in concentrations than longer averaged concentrations.

The Community Investigation report's 'air pollution burden' finding also lacks support. The conclusion was based on the perceived differences in $PM_{2.5}$ concentrations in the community compared to concentrations in the general Baltimore area. However, the community concentrations were based on low-cost monitors, whereas the Baltimore data were based on regulatory monitors. Accounting for measurement inaccuracy associated with the low-cost sensors, the results appear to be within the uncertainties of the monitors. Furthermore, the results indicate that the community is in attainment with current NAAQS for $PM_{2.5}$. Review of average $PM_{2.5}$ concentrations based on wind direction suggests that the air quality in the community is primarily affected by local and regional background (non-Terminal) sources. Furthermore, vehicular sources primarily associated with truck traffic are a significant source of particulate matter in air in the community but were largely ignored by the researchers.

Many of the conclusions included in the Collaborative Investigation report were presumptive in nature and not supported by data. Based on scientific review of the information provided in the Collaborative Investigation report and data from the low-cost monitors, the Terminal is not a substantial contributor to an air pollution burden to the Curtis Bay community.

Appendix A

Evaluation of Background $PM_{2.5}$ and PM_{10} Concentrations Using Pollution Rose Diagrams

February 13, 2024

RJ Lee Group

Evaluation and Interpretation of $PM_{2.5}$ and PM_{10} Concentrations Using Pollution Roses

RJ Lee Group evaluated potential background $PM_{2.5}$ and PM_{10} sources (non-Terminal sources) impacting the Curtis Bay community using pollution roses[81] incorporating data obtained from several of the community low-cost particulate monitors and wind direction/speed from Terminal 10-meter meteorological station.[82] The $PM_{2.5}$ and PM_{10} data used in the evaluation were based on 1-hour averages from the community monitors identified as Location 1 (South Gate), Location 4 (Rec Center), Location 5 (Cypress), Location 9 (Ben Franklin High School), and Location 10 (Wagner's Point). The monitor locations in relation to the Terminal are shown in Figure A1, taken from the Collaborative Investigation report.[83] The data evaluated were collected from June 22 to August 7, 2023, which corresponds to the time period when data from each of the five community monitors was available. Days impacted by the Canadian wildfires, as identified in the Collaborative Investigation report, were not included in the data evaluation (June 28-30 and July 11-13).[84]

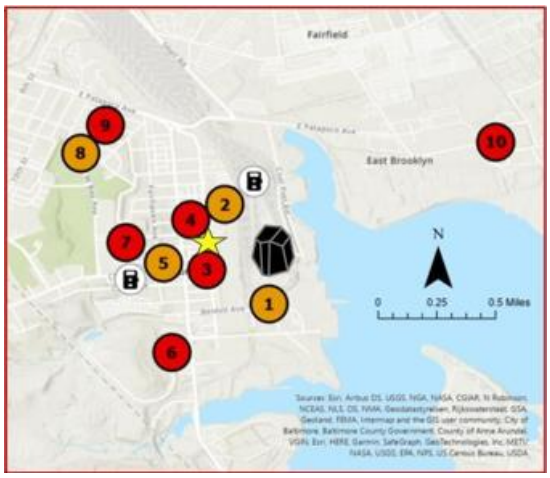


Figure A1. Locations of Curtis Bay air pollution monitors used in the South Baltimore Air Monitoring Network. $PM_{2.5}$ and PM_{10} data were obtained from monitors identified as Locations 1, 4, 5, 9 and 10.

The 1-hour averaged $PM_{2.5}$ and PM_{10} data were plotted with respect to wind direction using a modified pollution rose diagram. The pollution rose diagrams illustrate which wind directions correspond to the average $PM_{2.5}$ and PM_{10} concentrations in each wind sector. Plots of this nature are useful in identifying areas where higher levels of $PM_{2.5}$ and PM_{10} are occurring. Data that was collected with wind from the directions of the Terminal would indicate potential impact at the monitor from the Terminal as well as potential contributions from other upwind (background) sources. Data collected from a monitor with a wind direction that is not downwind of the Terminal would indicate impact from background sources.

[81] California Air Resources Board, https://ww2.arb.ca.gov/resources/fact-sheets/wind-rose-and-pollution-rose-diagrams.
[82] The 10-meter tower became fully operational at the CSX Terminal on March 22, 2023, Collaborative Investigation report, Section 2.
[83] Collaborative Investigation report, Section 3b, Figure 1, page 2.
[84] Collaborative Investigation report, Section 4, page 2.

Figure A2 presents examples of the pollution rose format used in this evaluation. This non-study data illustration represents particulate matter concentrations from a hypothetical location (Monitor A) and shows that higher concentrations are associated with three wind sectors: wind originating from East-Northeast (57°-78°), South (169°-191°), and West (259°-281°). The concentric rings in the chart represent air concentrations in micrograms per cubic meter (µg/m^3). In this example, the highest average concentration (12 µg/m^3) came from the East-Northeast direction and indicates that the higher concentrations are associated with sources East-Northeast of the monitor. Sources from the West (11 µg/m^3) and South (10 µg/m^3) of the monitor were also elevated as compared to the other wind directions. Although this pollution rose displays sources of higher particulate matter from the East-Northeast, West, and South, it is not clear whether the higher particulate concentrations are associated with the source of interest or background without knowing the location of the monitor in relation to the source of interest and data on other sources (background) that may be impacting Monitor A.

Insight on the impact of particulate emissions from the source of interest can be evaluated by comparing the relationships of concentrations in the wind sectors to 'background' monitor(s).[85] Comparing the concentrations to the Background Monitor in Figure A2, the East-Northeast and West concentrations are less than or equal to the concentrations measured at the Background Monitor, which indicates that the concentrations are related to background sources. Comparing the concentrations from the South direction suggests a minor impact from a source located to the south of Monitor A because the concentration is higher than the Background Monitor concentration in that wind sector.

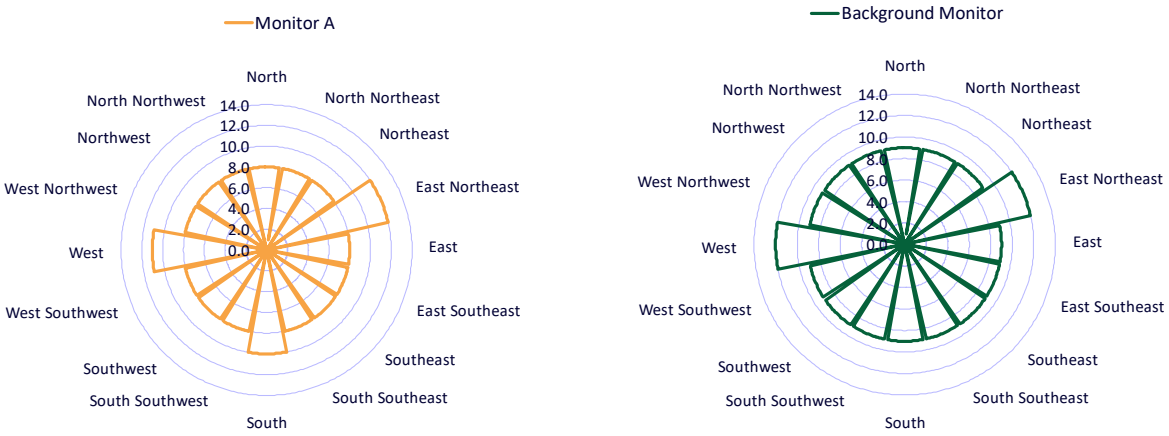


Figure A2. Example pollution rose diagrams showing relationships in average particle concentrations by wind direction at Monitor A (left) to the Background Monitor (right).

The following pollution roses provide insight on potential impact of $PM_{2.5}$ and PM_{10} emissions from the Terminal in the community. In this evaluation, Location 9 (Ben Franklin) and Location 10 (Wagner's Point) are used as 'background' monitors.

[85] A background monitor is used to collect data in a location where the source of interest is expected to have minimal or no impact.

Average $PM_{2.5}$ Concentrations by Wind Direction at Background Monitors

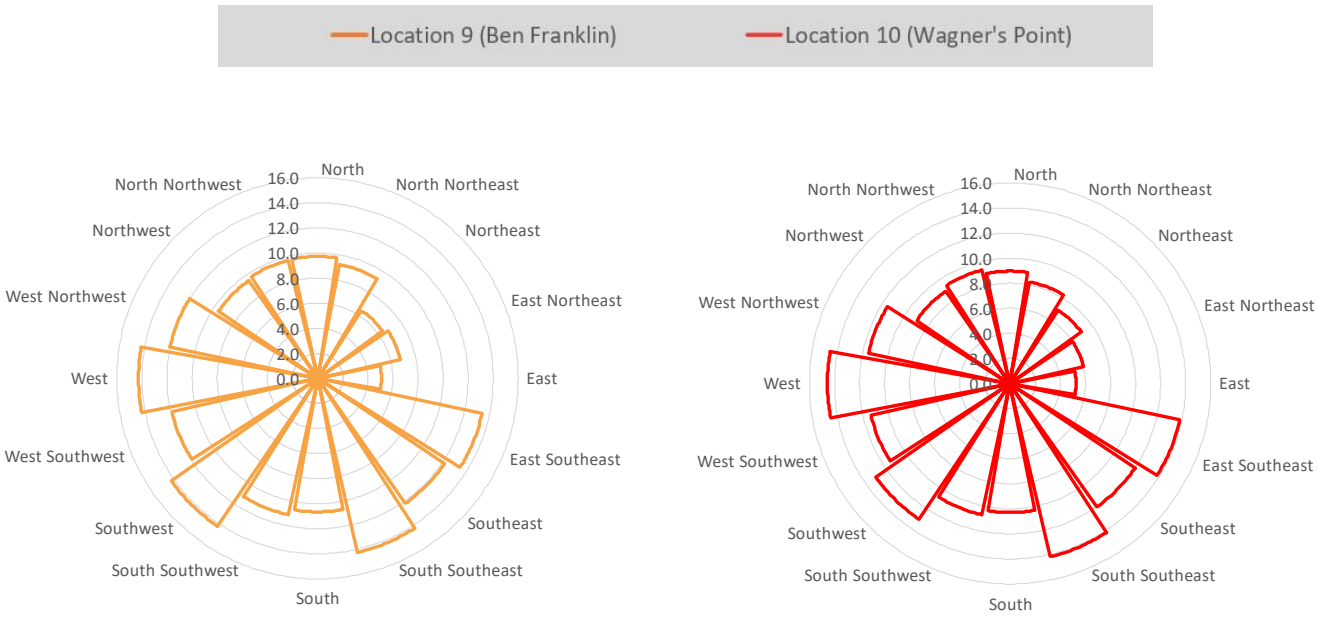


Figure A3. Pollution rose diagrams showing 1-hour average $PM_{2.5}$ (µg/m³) concentrations for background monitors Location 9 (Ben Franklin) and Location 10 (Wagner's Point). Data were from low-cost MODULAIR community monitors from June 22 to August 7, 2023.

The background monitors of Location 9 (Ben Franklin) and Location 10 (Wagner's Point) have similar pollution rose patterns for $PM_{2.5}$. Higher $PM_{2.5}$ concentrations are associated with winds originating from the southeasterly directions as well as from the westerly directions.

Impact from the Terminal at Location 9 would be from the Southeast and South-Southeast directions. However, the average $PM_{2.5}$ concentrations at Location 10 have a similar pattern as Location 9, suggesting minimal or no impact from the Terminal or other local sources between the Terminal and the monitor at Location 9. At Location 10, particulate impact from the Terminal would be from the Southwest and South-Southwest directions. In these wind sectors, Location 9 concentrations are higher than at Location 10, suggesting no impacts from the Terminal or other local sources between the Terminal and the monitor at Location 10.

Average PM_{10} Concentrations by Wind Directions at Background Monitors

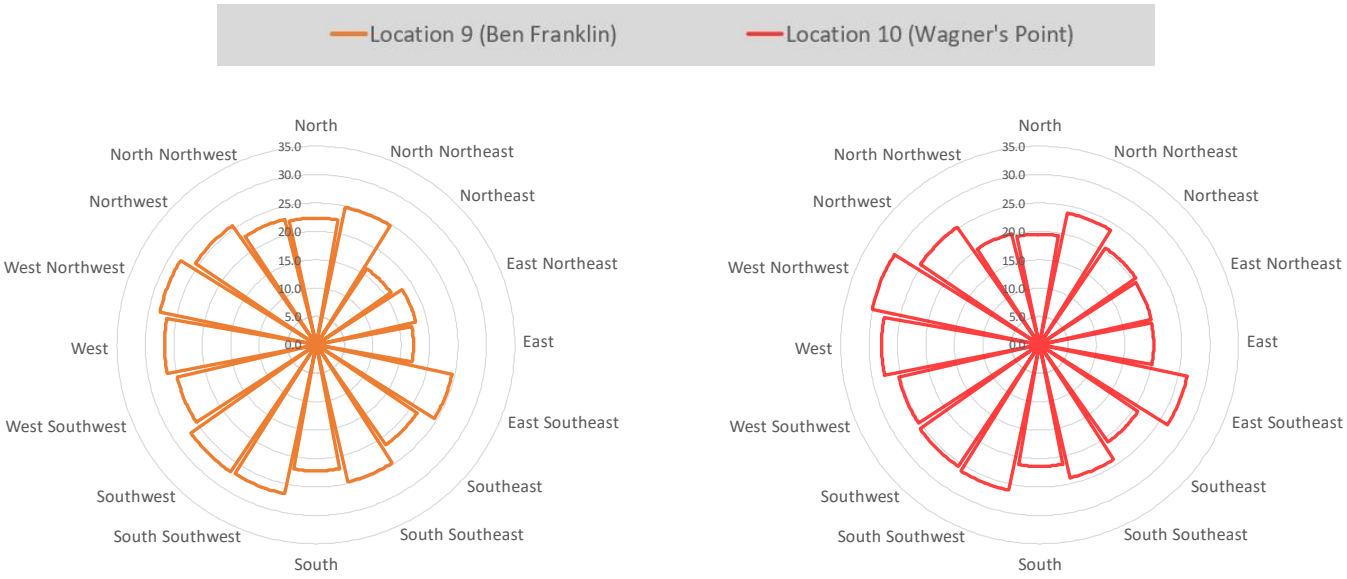


Figure A4. Pollution rose diagrams showing 1-hour average PM_{10} (µg/m³) concentrations for background monitors Location 9 (Ben Franklin) and Location 10 (Wagner's Point). Data were from low-cost MODULAIR community monitors from June 22 to August 7, 2023.

In Figure A4, the background PM_{10} concentrations are more consistent in the wind sectors as compared to the $PM_{2.5}$ data in Figure A3. The pollution rose diagrams suggest no significant impact from the Terminal or other local sources between the Terminal and the monitors at Location 9 and Location 10.

Average $PM_{2.5}$ Concentrations by Wind Direction at Location 1 (South Gate)

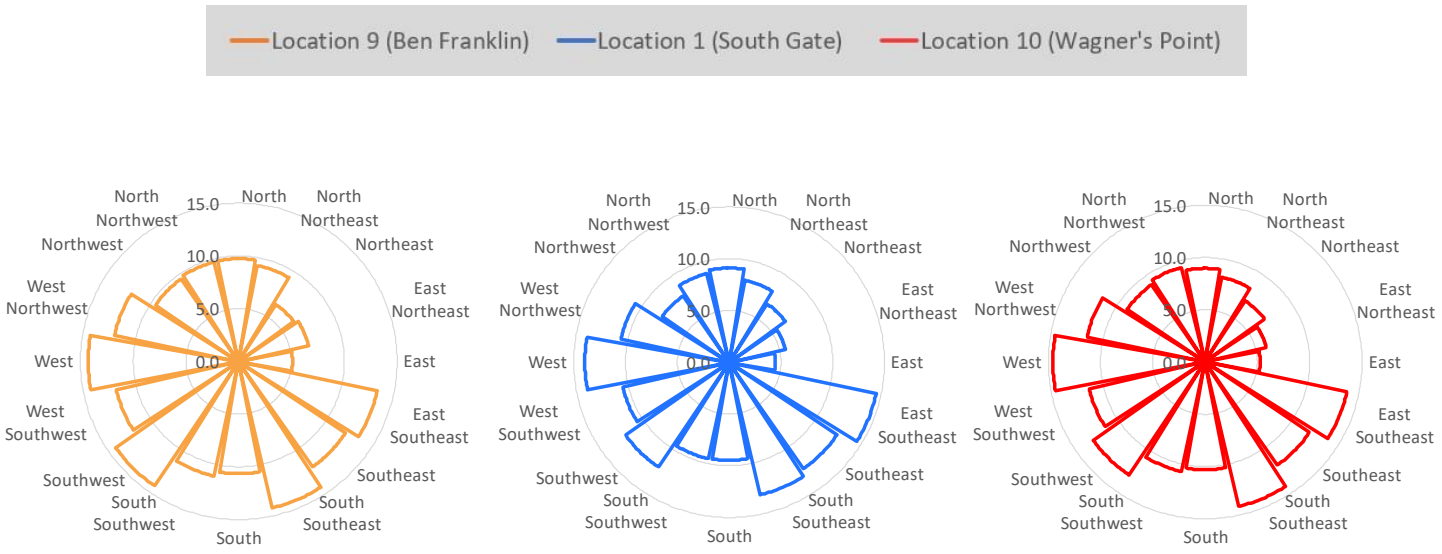


Figure A5. Pollution rose diagrams showing 1-hour average $PM_{2.5}$ (µg/m^3) concentrations for Location 1 (South Gate) and background monitors at Location 9 (Ben Franklin) and Location 10 (Wagner's Point). Data were from low-cost MODULAIR community monitors from June 22 to August 7, 2023.

Figure A5 shows pollution rose diagrams for Location 1 (South Gate) and background monitors at Location 9 (Ben Franklin) and Location 10 (Wagner's Point). The Location 1 (South Gate) monitor is the closest monitor to the Terminal. At Location 1, the Terminal would have a potential impact with winds originating from the northerly directions (North-Northwest, North, and North-Northeast). Review of the average $PM_{2.5}$ pollution rose indicates that concentrations from the northerly directions (8.7 µg/m^3) are the same or *less* than background concentrations at Location 9 (9.6 µg/m^3) and Location 10 (8.8 µg/m^3). Further, the $PM_{2.5}$ concentrations from the northerly directions (8.7 µg/m^3) are significantly lower than concentrations from the southeastern (13.4 µg/m^3), western (10.7 µg/m^3), and southwestern directions (12.2 µg/m^3), indicating impact from background local and/or regional sources at this monitor.

Average PM_{10} Concentrations by Wind Direction at Location 1 (South Gate)

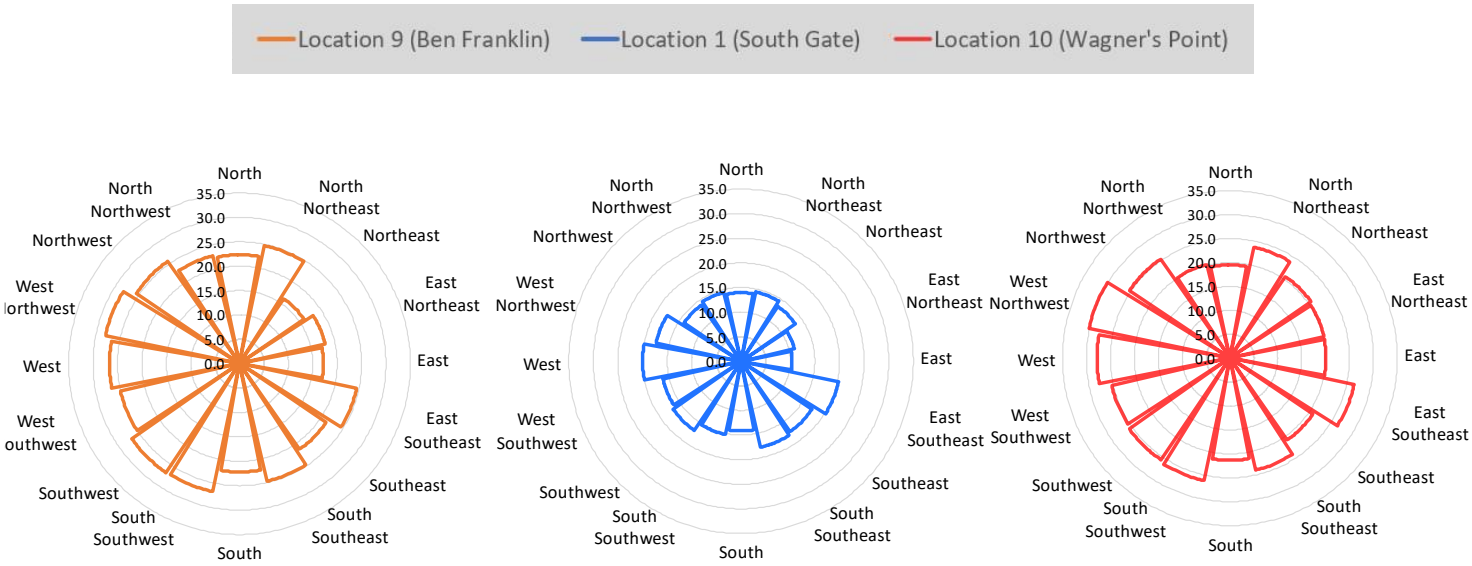


Figure A6. Pollution rose diagrams showing 1-hour average PM_{10} (µg/m^3) concentrations for Location 1 (South Gate) and background monitors at Location 9 (Ben Franklin) and Location 10 (Wagner's Point). Data were from low-cost MODULAIR community monitors from June 22 to August 7, 2023.

Figure A6 shows pollution rose diagrams for Location 1 (South Gate) and background monitors at Location 9 (Ben Franklin) and Location 10 (Wagner's Point). The Location 1 (South Gate) monitor is the closest monitor to the Terminal. At this location, the Terminal would have a potential impact with winds originating from the northerly directions (North-Northwest, North, and North-Northeast). Review of the average PM_{10} pollution rose indicates that concentrations from the northerly directions (15.3 µg/m^3) are the same or *less* than background concentrations at Location 9 (24.7 µg/m^3) and Location 10 (22.1 µg/m^3). Further, the PM_{10} concentrations from the northerly directions (15.3 µg/m^3) are lower than concentrations from the southeastern (18.5 µg/m^3), western (20.0 µg/m^3), and southwestern directions (16.1 µg/m^3), indicating impact from background local and/or regional sources at this monitor.

Average $PM_{2.5}$ Concentrations by Wind Direction at Location 4 (Rec Center)

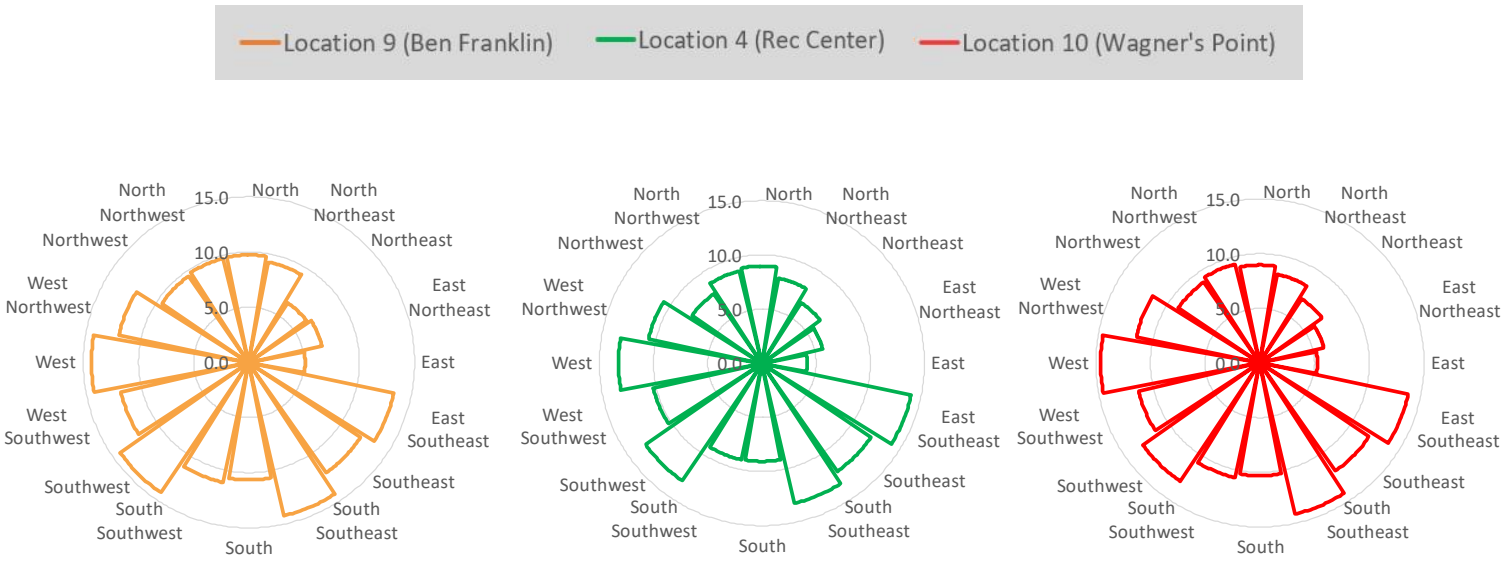


Figure A7. Pollution rose diagrams showing 1-hour average $PM_{2.5}$ (µg/m^3) concentrations for Location 4 (South Gate) and background monitors at Location 9 (Ben Franklin) and Location 10 (Wagner's Point). Data were from low-cost MODULAIR community monitors from June 22 to August 7, 2023.

Figure A7 shows pollution rose diagrams for Location 4 (Rec Center) and background monitors at Location 9 (Ben Franklin) and Location 10 (Wagner's Point). At the Location 4 (Rec Center) monitor, the Terminal would impact the monitor with winds originating primarily from the Southeast and South-Southeast directions. Review of the average $PM_{2.5}$ pollution rose indicates that concentrations from the Southeast and South-Southeast directions (12.7 µg/m^3) are *less* than background concentrations at Location 9 (13.2 µg/m^3) and Location 10 (13.1 µg/m^3). This indicates impact from background local and/or regional sources at this monitor.

Average PM_{10} Concentrations by Wind Direction at Location 4 (Rec Center)

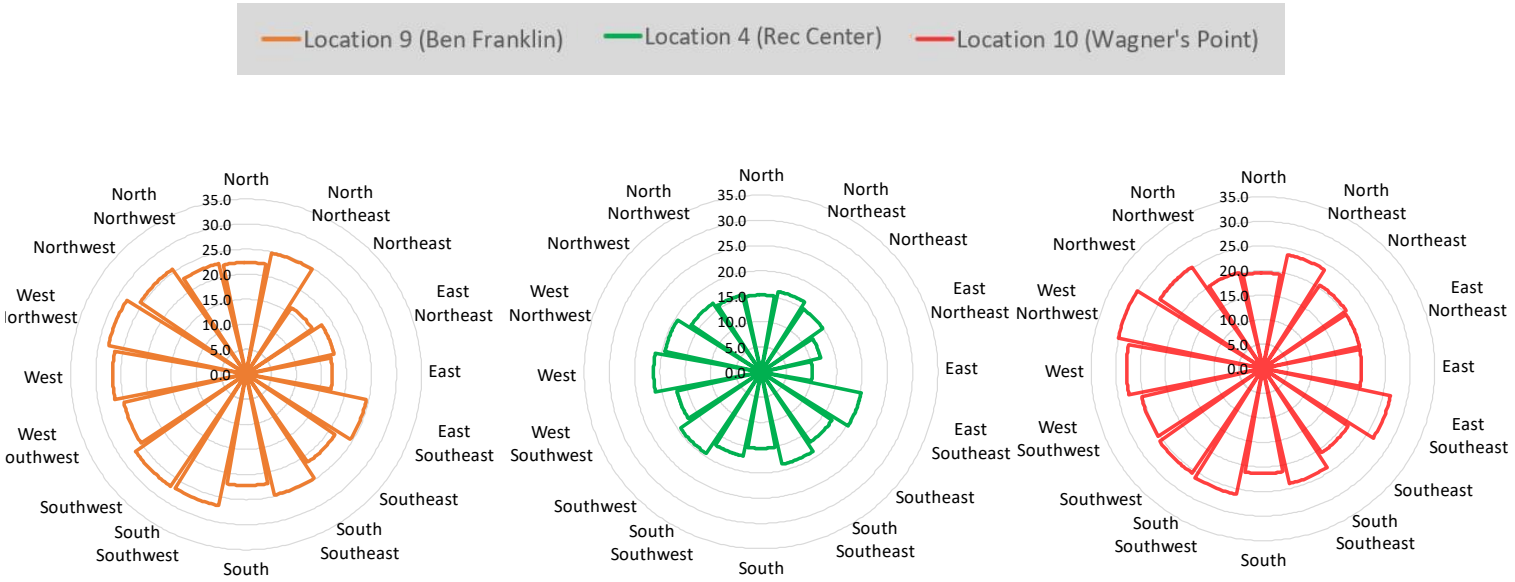


Figure A8. Pollution rose diagrams showing 1-hour average PM_{10} (µg/m^3) concentrations for Location 4 (Rec Center) and background monitors at Location 9 (Ben Franklin) and Location 10 (Wagner's Point). Data were from low-cost MODULAIR community monitors from June 22 to August 7, 2023.

Figure A8 shows pollution rose diagrams for Location 4 (Rec Center) and background monitors at Location 9 (Ben Franklin) and Location 10 (Wagner's Point). At the Location 4 (Rec Center) monitor, the Terminal would impact the monitor with winds originating primarily from the Southeast and South-Southeast directions. Review of the average PM_{10} pollution rose indicates that concentrations from the Southeast and South-Southeast directions (17.9 µg/m^3) are *less* than background concentrations at Location 9 (23.1 µg/m^3) and Location 10 (22.4 µg/m^3). This indicates impact from background local and/or regional sources at this monitor.

Average $PM_{2.5}$ Concentrations by Wind Direction at Location 5 (Cypress)

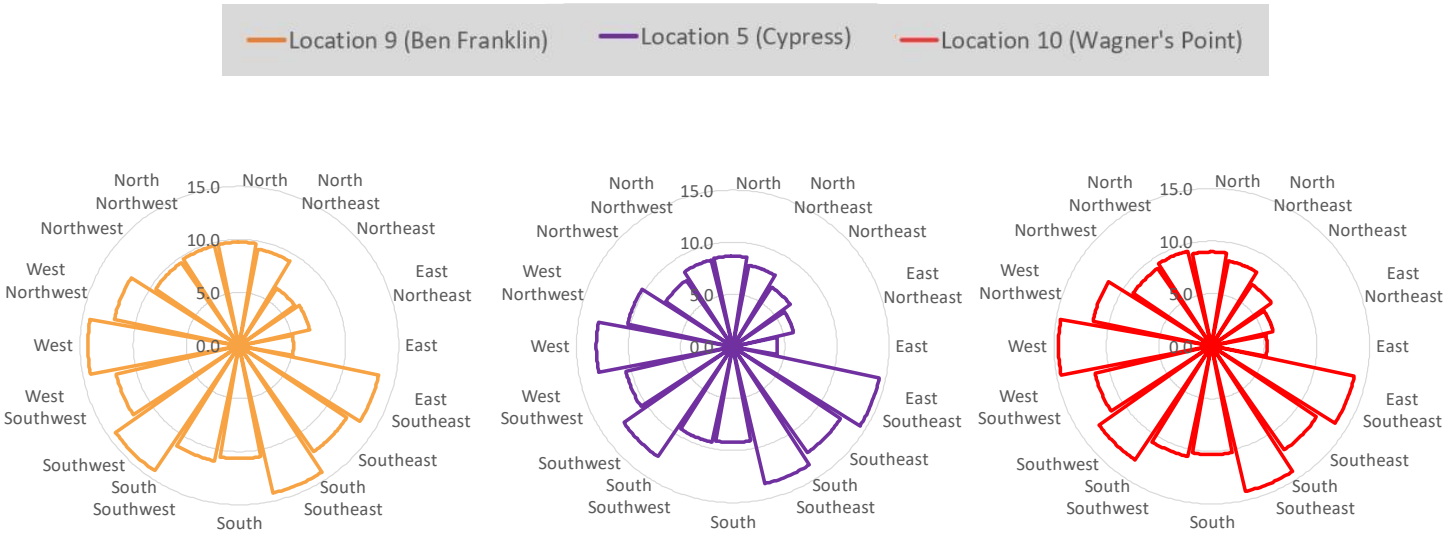


Figure A9. Pollution rose diagrams showing 1-hour average $PM_{2.5}$ (µg/m^3) concentrations for Location 5 (Cypress) and background monitors Location 9 (Ben Franklin) and Location 10 (Wagner's Point). Data were from low-cost MODULAIR community monitors from June 22 to August 7, 2023.

Figure A9 shows pollution rose diagrams for Location 5 (Cypress) and background monitors at Location 9 (Ben Franklin) and Location 10 (Wagner's Point). At the Location 5 (Cypress) monitor, the Terminal would impact the monitor with winds originating primarily from the East-Northeast, East, and East-Southeast directions. Review of the average $PM_{2.5}$ pollution rose indicates that concentrations from the East-Northeast (6.0 µg/m^3) and East (4.3 µg/m^3) are the same or *less* than background concentrations at Location 9 (6.8 µg/m^3 and 5.1 µg/m^3 respectively) and Location 10 (6.0 µg/m^3 and 5.3 µg/m^3 respectively). For $PM_{2.5}$, the concentrations in these wind sectors are less than background for East-Northeast and East.

Review of the average $PM_{2.5}$ pollution rose indicates that concentrations from the East-Southeast (14.4 µg/m^3) are slightly higher than background concentrations at Location 9 (13.4 µg/m^3) and Location 10 (13.8 µg/m^3). This suggests a possible impact from the Terminal and/or other sources between the Terminal and the monitor. However, if you compare the $PM_{2.5}$ concentrations at Location 1 (South Gate, see Figure A5) to Location 5 (Cypress), the concentrations are similar (14.5 µg/m^3 and 14.4 µg/m^3, respectively). This suggests another source southeast of the monitors at Location 1 and Location 5.

Average PM_{10} Concentrations by Wind Direction at Location 5 (Cypress)

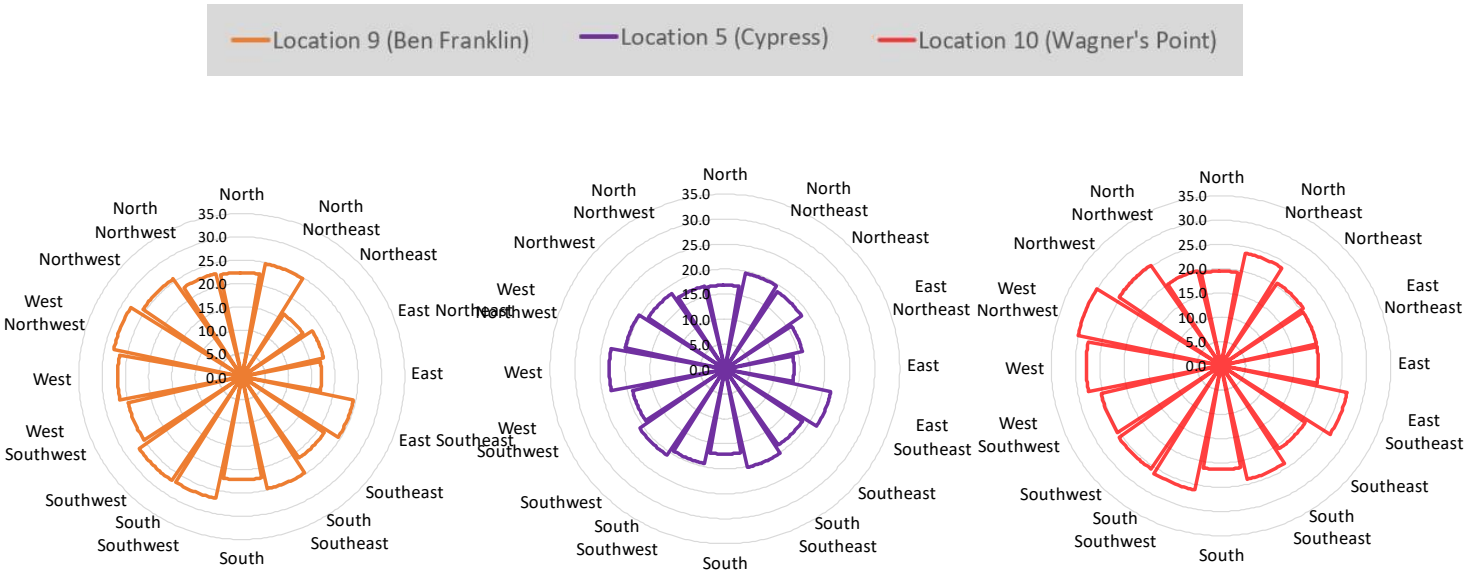


Figure A10. Pollution rose diagrams showing 1-hour average PM_{10} (µg/m^3) concentrations for Location 5 (Cypress) and background monitors at Location 9 (Ben Franklin) and Location 10 (Wagner's Point). Data were from low-cost MODULAIR community monitors from June 22 to August 7, 2023.

Figure A10 shows pollution rose diagrams for Location 5 (Cypress) and background monitors at Location 9 (Ben Franklin) and Location 10 (Wagner's Point). At the Location 5 (Cypress) monitor, the Terminal would impact the monitor with winds originating primarily from the easterly directions (East-Northeast, East, and East-Southeast). Review of the average PM_{10} pollution rose indicates that concentrations from the easterly directions (17.1 µg/m^3) are *less* than background concentrations at Location 9 (19.9 µg/m^3) and Location 10 (22.3 µg/m^3). This indicates impact from background local and/or regional sources at this monitor.

Summary of $PM_{2.5}$ and PM_{10} Pollution Rose Findings

Overall, the $PM_{2.5}$ concentrations from the pollution rose at Location 1 (South Gate), Location 4 (Rec Center), and Location 5 (Cypress) are all less than background (Location 9 and Location 10) when winds are coming from the Terminal. Furthermore, if you look at all wind directions, the concentrations are similar for each wind arc. This indicates that all three locations are impacted by background regional sources and not the terminal, see Figure A11.

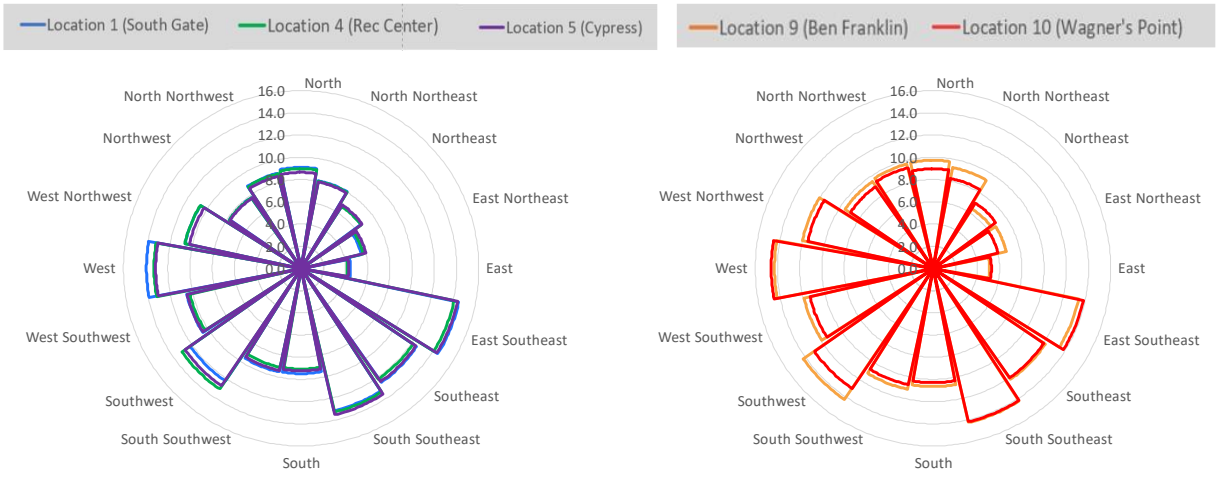


Figure A11. Pollution rose diagrams showing 1-hour average PM_{10} (µg/m^3) concentrations for Location 1 (South Gate), Location 4 (Rec Center) and Location 5 (Cypress) (left) and Background Locations 9 (Ben Franklin) and Location 10 (Wagner's Point) (right). Data were from low-cost MODULAIR community monitors from June 22 to August 7, 2023.

Overall, the PM_{10} concentrations from the pollution roses at Location 1 (South Gate), Location 4 (Rec Center), and Location 5 (Cypress) are all less than background (Location 9 and Location 10) when winds are coming from the Terminal. Furthermore, the average PM_{10} concentrations for all wind arcs at Location 1 (15.9 µg/m^3), Location 4 (17.1 µg/m^3), and Location 5 (18.9 µg/m^3) are significantly less than the background monitors at Location 9 (24.2 µg/m^3) and Location 10 (23.8 µg/m^3).

Appendix B

Bios of Gary S. Casuccio, MS and Keith Rickabaugh, CIH

February 13, 2024

RJ Lee Group

Gary S. Casuccio
RJ Lee Group
800 Presque Isle Dr.
Pittsburgh, PA 15239

Background

Mr. Casuccio has over 40 years' experience as a research scientist and project manager at the RJ Lee Group. He specializes in environmental studies focused on individual particle analysis/identification and apportionment, and has worked as a consultant and advisor to the to the EPA on particle analysis using scanning electron microscopic (SEM) techniques for over thirty years. He has conducted studies with NASA related to the analysis of particulate samples in the cabin area of the Space Shuttle and more recently in the various compartments of the International Space Station. He designed experimental procedures and conducted analyses on ambient samples collected during the aftermath of the Kuwait Desert Storm for the U.S. Army and was the PI for the microscopy analyses portion of an environmental assessment conducted by the U.S. Army in Iraq, Afghanistan, Kuwait and Saudi Arabia. He has worked closely with the EPA and the California Department of Public Health (CDPH) to advance the use of passive samplers combined with automated SEM techniques to speciate particulate matter and provide ambient concentrations of PM_{10}; $PM_{2.5}$ and $PM_{10\text{-}2.5}$. He was the PI for a study related to design of a test system to evaluate the release of ultrafine silver particles in water discharge from washing machines for a major consumer appliance manufacturer. Communicated with engineers and performed lab studies related to silver anode sanitization tests that were conducted to address critical questions asked by EPA. He also been a PI on air quality projects involving monitoring and evaluating SO_2, NO_x and H_2S concentrations in ambient air, and he is currently working with the researchers at the Center for Inhalation Toxicology at West Virginia University and with NIOSH to monitor and evaluate emissions generated from combustion from non-industrial sources from a toxicological perspective.

Mr. Casuccio holds a B.S. in Physics, a M.S. in Physics and Atmospheric Science. Mr. Casuccio has been an instructor of short courses on SEM, automated SEM and receptor modeling for the American Association for Aerosol Research (AAAR) and the EPA. He has published extensively in peer-reviewed literature and is a reviewer for several academic journals.

Areas of Expertise

Experimental design and project management
Development of methodologies for sampling and analysis of environmental samples
Ambient and indoor air quality monitoring
PM_{10}; $PM_{2.5}$; $PM_{10\text{-}2.5}$; PM_1; nuisance dust
Particle analysis/identification
Source apportionment using receptor models
Nanomaterials characterization
Chamber studies to monitor and evaluate emissions from combustion
Worker Exposure

Keith Rickabaugh, CIH
RJ Lee Group
800 Presque Isle Dr.
Pittsburgh, PA 15239

Background

Keith Rickabaugh is the Technical Director of Materials and Analytical Services at RJ Lee Group, Inc. He has over 25 years of experience in using applied sciences and instrumental analysis techniques. This experience includes the planning, implementation, and oversight of analytical and field sample protocols for high-profile environmental projects. He is experienced in working with Federal, State, and local regulatory authorities regarding numerous environmental issues. Mr. Rickabaugh has developed analytical procedures, broad testing programs and instrumental methods to characterize a wide variety of chemicals and particulates.

He has a B.S. in Materials Science and Engineering from Penn State University and an MBA from Robert Morris University. Keith is also a Certified Industrial Hygienist (CIH) in comprehensive practice by the American Board of Industrial Hygiene (ABIH).

Areas of Expertise

Sampling and laboratory analysis
Industrial Hygiene
Project management
Particle analysis/identification
Product stewardship
Nanomaterials characterization

Attachment 2 -

Trinity Consultants Report

REPORT OF TRINITY CONSULTANTS FOR

CSX Transportation

Response to the Collaborative Investigation of Coal Dust, Air Pollution, and Health Concerns in Curtis Bay, South Baltimore, Maryland, USA, 2022-2023

February 13, 2024

Scott Adamson, CCM

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LIST OF ABBREVIATIONS

BAM	Beta Attenuation Monitor
CCM	Certified Consulting Meteorologist
CFR	Code of Federal Regulations
CO	Carbon Monoxide
CO_2	Carbon Dioxide
CSXT	CSX Transportation
FEM	Federal Equivalent Method
FRM	Federal Reference Method
MBE	Mean Bias Error
MDE	Maryland Department of the Environment
NAAQS	National Ambient Air Quality Standards
NMF	Non-negative Matrix Factorization
NO	Nitrogen Oxide
NO_2	Nitrogen Dioxide
O_3	Ozone
PM	Particulate Matter
PM_1	Particulate Matter less than 1 micrometer
PM_{10}	Particulate Matter less than 10 micrometers
$PM_{2.5}$	Particulate Matter less than 2.5 micrometers
QA	Quality Assurance
QAPP	Quality Assurance Project Plan
QC	Quality Control
R^2	Coefficient of Determination
RMSE	Root Mean Square Error
SCAQMD	South Coast Air Quality Management District
SD	Standard Deviation
TSP	Total Suspended Particulate
US EPA	United States Environmental Protection Agency

1. SUMMARY OF OPINIONS

I have reviewed the report titled *Collaborative Investigation of Coal Dust, Air Pollution, and Health Concerns in Curtis Bay, South Baltimore, Maryland, USA, 2022-2023* (Community Investigation Report). It is my opinion that the Community Investigation Report uses unreliable data and flawed statistical methods to draw conclusions about air quality in Curtis Bay. My conclusions are based on my experience in air quality monitoring and regulation,[1] as well as my review of the Community Investigation Report, the accompanying supplementary materials (Supplemental Materials Document),[2] the article titled *Community-driven research and capacity building to address environmental justice concerns with industrial air pollution in Curtis Bay, South Baltimore* (Article),[3] and the transcript of the Curtis Bay community meeting held on December 14, 2023. My opinions are summarized below:

1.1 Summary of Opinion 1: The Air Monitoring Described in the Community Investigation Report Did Not Meet Standard Practices for Proper Quality Assurance or Quality Control

The Community Investigation Report did not follow accepted methodologies or standardized practices published by the United States Environmental Protection Agency (US EPA) for making defensible and representative air quality measurements. US EPA's published guidance documents serve as best practices[4] for developing quality environmental data collection programs for both regulatory-grade monitoring networks[5] and non-regulatory grade networks[6] that use low-cost sensor technology.

The data validation process did not include US EPA-published quality control checks such as expected range of the instrument, rate of change, data sticking, duplicate sensor comparison, buddy system, parameter-to-parameter checks, or corrective actions from collocation tests.[7] These quality controls checks are critical for obtaining good quality, complete, and (most importantly) accurate data that can be used for making meaningful conclusions. Without these quality control checks, data are susceptible to bias and error, resulting in less agreement between actual pollutant concentrations in the atmosphere and the concentrations reported by the sensor.[8]

To evaluate low-cost sensor performance and improve data accuracy, low-cost sensors should be collocated with a Federal Equivalent Method (FEM) monitor under real world conditions for a period of time.[9] Collocation tests were conducted for particulate matter (PM) less than 10 microns (PM_{10}), PM less than 2.5 microns ($PM_{2.5}$), and carbon monoxide (CO). No other gaseous pollutants were documented to have had

[1] My CV is provided in Appendix A.
[2] Supplementary Material: Community-driven research and capacity building to address environmental justice concerns with industrial air pollution in Curtis Bay, South Baltimore (September 12, 2023), Aubourg MA, Sawtell G, Deanes L, et al. https://www.frontiersin.org/articles/10.3389/fepid.2023.1198321/full#supplementary-material
[3] Community-driven research and capacity building to address environmental justice concerns with industrial air pollution in Curtis Bay, South Baltimore (September 12, 2023), Aubourg MA, Sawtell G, Deanes L, et al. https://www.frontiersin.org/articles/10.3389/fepid.2023.1198321/full
[4] Best Practices for Review and Validation of Ambient Air Monitoring Data (August 2021), US EPA. data-validation-guidance-document-final-august-2021.pdf (epa.gov)
[5] Quality Assurance Handbook for Air Pollution Measurement Systems Volume II (January 2017), US EPA [EPA-454/B-17-001].
[6] The Enhanced Air Sensor Guidebook (December 2022), US EPA [EPA/600/R-22/213]. https://www.epa.gov/air-sensor-toolbox/how-use-air-sensors-air-sensor-guidebook
[7] Section 3.7.2 Checks to Ensure Quality Assurance and Quality Control, The Enhanced Air Sensor Guidebook (December 2022), US EPA [EPA/600/R-22/213].
[8] Ibid (6).
[9] Ibid (6).

collocation tests. For PM_{10} in particular, the collocation tests indicated poor performance of the low-cost sensor as compared to the FEM monitor.[10] In fact, none of the US EPA-recommended or generally accepted performance metrics[11] [12] were met by the low-cost sensors when testing for PM_{10}. The Supplemental Materials Document acknowledges this failed collocation test,[13] but provides no discussion of corrective action or steps taken to address the issue. Because the PM_{10} data were collected using sensors that did not meet US EPA-recommended performance metrics,[14] all PM_{10} data should be considered invalid and not used to draw conclusions about pollutant concentrations in Curtis Bay.[15]

1.2 Summary of Opinion 2: Curtis Bay is in Compliance with the Annual and 24-hour NAAQS for $PM_{2.5}$ and the 24-hour NAAQS for PM_{10}

Section 4 of the Community Investigation Report compares PM data collected from low-cost sensors, to the annual and 24-hour PM_{10} and $PM_{2.5}$ National Ambient Air Quality Standards (NAAQS). As discussed in this report, the PM data collected from the low-cost sensors are flawed and do not reliably demonstrate PM levels in Curtis Bay.[16] [17] Yet, even taken at face value, the PM data provided in the Community Investigation Report demonstrate that PM concentrations[18] in Curtis Bay are below the annual and 24-hour $PM_{2.5}$ NAAQS and the 24-hour PM_{10} NAAQS.[19] Therefore, the PM data collected from the low-cost sensors do not support the Collaborative Investigation Report's finding that the Curtis Bay community is overburdened by particulate matter air pollution as compared to other areas of Baltimore City.[20]

1.3 Summary of Opinion 3: One-minute Data Are Not a Reliable Indicator for Overall Air Quality

One-minute data should not be used to draw conclusions about air quality impacts from Curtis Bay Piers. Pollutant concentrations can vary based on the time of day, week, or season and can often change rapidly due to influences from local emission sources and/or atmospheric conditions.[21]
Furthermore, one-minute averages are more susceptible to rapid fluctuation in the measurements, also known as noisy data signals, that are symptomatic of electrical interference, sensor precision, or rapid weather changes that can lead to low precision of the instrument resulting in less agreement between the sensor's reported concentration and the true concentration in the atmosphere. Higher-time resolution data (i.e., one-minute data) need to be used with caution, and US EPA recommends enhanced testing of instruments collecting one-minute data to demonstrate the stability and reliability of the measurements.[22] In

[10] 40 CFR Part 53 Ambient Air Monitoring Reference and Equivalent Methods.
[11] Performance Testing Protocols, Metrics, and Target Values for Fine Particulate Matter Air Sensors: Use in Ambient, Outdoor, Fixed Site, Non-Regulatory Supplemental and Informational Monitoring Applications (February 2021), US EPA [EPA/600/R-20/280]. https://cfpub.epa.gov/si/si_public_record_Report.cfm?dirEntryId=350785&Lab=CEMM
[12] American Society for Testing and Materials ASTM D8406-22
[13] See Section 3.1 of Supplemental Materials Document (September 2023), Aubourg MA, Sawtell G, Deanes L, et al.
[14] Ibid (5).
[15] Collocation tests were also not performed for nitrogen oxide (NO) or nitrogen dioxide (NO_2).
[16] See *infra* Section 3.2 Collocation Tests Do Not Meet US EPA Testing Criteria or Protocols.
[17] See *infra* Section 3.3 Quality Control Procedures are Inadequate for Monitoring Programs.
[18] On Page 15 of Section 4 of the Community Investigation Report, the annual mean PM_{10} and 99th-percentile of daily (24-hour) PM_{10} concentrations are compared to the World Health Organization's Air Quality Guideline values. These values are not regulatory air quality standards.
[19] Pages 2-5 of Section 4 of the Community Investigation Report.
[20] See page 2 of the Executive Summary of the Community Investigation Report finding that "The Curtis Bay community is overburdened by air pollution, with the community sensor network measuring average particle pollution levels that are higher than at nearby MDE regulatory monitors."
[21] Ibid (6).
[22] Ibid (11).

fact, FEM monitors often do not produce stable and reliable one-minute data.[23] It is therefore unlikely that the low-cost sensor data relied on in the Community Investigation Report—which, as discussed above, did not undergo proper quality assurance or control—produced stable one-minute data that could be used to identify pollution events.

Thus, one-minute data are not reliable for making meaningful conclusions and are not an indication of overall air quality for a community or region.

1.4 Summary of Opinion 4: Improper Use of Non-Negative Matrix Factorization (NMF)

The Community Investigation Report used a statistical model called non-negative matrix factorization (NMF) in an attempt to use air monitoring data collected in the community to quantify the contribution of selected pollution sources to air quality in Curtis Bay. The NMF model was used to identify six pollution source types based on a combination of pollutants believed to be attributed to each source type. NMF, like any statistical model, has limitations to the outcomes it produces since the model is dependent on the uniqueness of the pollutants (or pollutant species) that are used to identify a particular source or source type. Pollutants or species that are too available in a region or are characteristic of multiple emission source types will weaken the NMF analysis since there would be cross contamination from multiple sources in the sample measurement.

While NMF may be a useful tool for evaluating source contribution, its use in the Community Investigation Report was flawed. Notably, the combinations of pollutants attributed to each type of source are too similar to actually distinguish among each source (this could be attributed to the fact that the pollutants used to differentiate sources are prevalent in urban areas and are characteristic of the emissions from multiple types of sources in the region). Because the sources' fingerprints are so similar, an attempt to predict any one source's contribution to air quality becomes less reliable. Further, the NMF analysis ignored contributions from certain sources that contribute significantly to air pollution in the community, notably diesel combustion.

The Community Investigation Report is further flawed by using one-minute NMF data to establish a threshold that has no basis in public health principles. The term "exceedance"[24] is then misapplied throughout the report, quantifying instances where NMF values attributed to "putative coal dust" surpass this threshold. This threshold, a statistical measure commonly employed for outlier identification, does not equate to a public health standard. The NMF analysis is misapplied to support the Community Investigation Report's conclusions regarding the coal terminal's impact on community air quality.

[23] Ibid (11).
[24] The term "Exceedance" is used in air quality monitoring programs to define whether a measurement is above the level of an air quality standard. The definition for Exceedance can be found in 40 CFR Section 50.1(l).

2. OPINION #1: THE COMMUNITY AIR MONITORING PROGRAM DID NOT MEET STANDARD PRACTICES FOR PROPER QUALITY ASSURANCE OR QUALITY CONTROL

The Community Investigation Report describes a hyper-local network consisting of ten QuantAQ Modulair[25] (Modulair) sensors that make real-time measurements of PM with a diameter less than 1 micron (PM_1), $PM_{2.5}$, PM_{10}, as well as Total Suspended Particles (TSP). Additionally, Modulair sensors are capable of measuring carbon monoxide (CO), carbon dioxide (CO_2), nitrogen oxide (NO), nitrogen dioxide (NO_2), ozone (O_3), and meteorological conditions like temperature and relative humidity. Each Modulair sensor in the network was linked to a Davis Instruments sonic anemometer that recorded wind speed and direction. All parameter measurements were transmitted via cellular data connection to the QuantAQ Cloud at one-minute intervals.

Modulair air monitoring sensors are often referred to as low-cost sensors because of their lower cost compared to regulatory monitoring equipment.[26] Low-cost sensors are not used for regulatory monitoring and are not suitable for comparison or compliance demonstrations with the NAAQS.[27] [28] According to US EPA, *"Data from new air sensor instruments should not be used in a regulatory context at this time unless those instruments meet all applicable regulatory requirements."*[29] To make comparisons with the NAAQS, monitoring equipment needs to be designated as either Federal Reference Method (FRM) or Federal Equivalent Method (FEM).[30] The use of low-cost sensor technology is generally accepted for non-regulatory supplemental and informational monitoring and to engage the public in participatory science. [31] [32] [33]

US EPA has published guidance documents that serve as best practices for developing a quality environmental data collection program for both regulatory-grade monitoring networks[34] as well as non-regulatory grade networks that use low-cost sensor technology.[35] US EPA encourages community organizations that participate in the scientific process by collecting and analyzing air quality monitoring data and interpreting results to establish protocols and procedures for collecting quality data that can support meaningful conclusions.[36] The Community Investigation Report did not provide reference to any standards or guidance for the community sensor network nor does the report demonstrate that the researchers followed US EPA's best practices in developing the community sensor network. Notably, as discussed in the following sections, the community monitoring program failed to (1) develop a quality assurance project plan (QAPP), (2) meet US EPA criteria for collocation, and (3) include adequate quality controls. Because of these failures, I conclude that the quality of the community monitoring data cannot support the conclusions regarding air quality in the Community Investigation Report.

[25] QuantAQ Modulair https://www.quant-aq.com/products/modulair
[26] US EPA Air Sensor Toolbox. https://www.epa.gov/air-sensor-toolbox
[27] 40 CFR Part 50 Appendices.
[28] 40 CFR Section 50.1(g); see also Community Report at Section 4, page 16 stating that "regulatory decisions regarding the NAAQS are based on data collected by approved monitors – either Federal Reference Method or Federal Equivalency Method."
[29] Idsal, Anne L. (2020, June 22). *Air Sensors* [Memorandum]. US EPA. https://www.epa.gov/sites/default/files/2020-07/documents/air_sensors_memo_june_22.2020.pdf
[30] Ibid (10).
[31] See Section 1, Sensor Guidebook Ibid (6).
[32] US EPA Participatory Science for Environmental Protection https://www.US EPA.gov/participatory-science
[33] Ibid (29).
[34] Ibid (5).
[35] Ibid (6).
[36] Handbook for Citizen Science Quality Assurance and Documentation (March 2019), US EPA. https://www.epa.gov/sites/default/files/2019-03/documents/508_csqapphandbook_3_5_19_mmedits.pdf

2.1 Lack of a Quality Assurance Project Plan

The community air monitoring network, as described in the Community Investigation Report, did not reference a monitoring plan or quality assurance project plan (QAPP) that was reviewed or approved by MDE. A QAPP is a formal document describing Quality Assurance (QA), Quality Control (QC), and other technical activities that will be implemented to ensure that monitoring results satisfy stated performance criteria.[37] [38] A QAPP is a requirement under Appendix A to Part 58 of Title 40 of the Code of Federal Regulations (CFR), which details quality assurance obligations and contains Standard Operating Procedures for all monitoring and monitoring maintenance/calibration and audit activities performed in support of regulatory monitoring programs. According to US EPA, the QAPP provides sufficient detail to demonstrate that: [39] [40]

- The project's technical and quality objectives are identified and agreed upon;
- The intended measurements, data generation, or data acquisition methods are able to achieve the project objectives;[41]
- Assessment procedures are sufficient for confirming that data of the type and quality needed and expected are obtained;[42] and
- The limitations on the use of the data are identified and documented.

Federal and state agencies typically require preparation of a QAPP in developing an air monitoring program. For example, US EPA requires preparation of a QAPP for regulatory NAAQS compliance monitoring programs.[43]

US EPA also provides guidance for preparing QAPPs for non-regulatory air monitoring. The agency developed the *Enhanced Air Sensor Guidebook*[44] (Sensor Guidebook) to simplify the QAPP development process for non-regulatory grade air monitoring networks using low-cost sensors. Section 3.1 of the Sensor Guidebook provides a five-step roadmap for planning and conducting air monitoring using sensors:

1. Establish the question to be answered by the monitoring program.
2. Develop a detailed plan for the monitoring program.
3. Setup the monitoring network with an understanding of placement of the monitors to make representative measurements with minimal interference from the immediate surroundings.
4. Collect data while being proactive in ongoing quality control testing to ensure proper functionality as intended and designed.
5. Evaluate the data through an analysis approach that is objective and provides an accurate interpretation of the results.

[37] US EPA Guidance for Quality Assurance Project Plans (QA/G-5). https://www.epa.gov/sites/default/files/2015-06/documents/g5-final.pdf
[38] US EPA Guidance for the Preparation of Standard Operating Procedures for Quality-Related Documents (QA/G-6). https://www.epa.gov/sites/default/files/2015-06/documents/g6-final.pdf
[39] US EPA Guidance on Systematic Planning Using the Data Quality Objectives Process (QA/G-4). https://www.epa.gov/sites/default/files/2015-06/documents/g4-final.pdf
[40] US EPA Guidance for Data Quality Assessment: Practical Methods for Data Analysis (QA/G-9). https://www.epa.gov/sites/default/files/2015-06/documents/g9-final.pdf
[41] Ibid (39).
[42] Ibid (40).
[43] 40 CFR Part 58 Appendix A.
[44] Ibid (6).

MDE also requires the use of QAPPs in air monitoring. MDE states in their Quality Management Plan,[45] for example, that *"Organizations or individuals contracted by MDE to perform environmental data collection or assessment are required to follow specified QA/QC protocols. These requirements are specified in the agreement within the Scope of Work and should also be described in detail in the QAPP. Some contracts, memoranda of understanding (MOU) and grants may include QA/QC-specific language. In all instances, an approved QAPP includes data quality standards and specifications."* Notably, MDE required CSXT to submit a QAPP[46] in connection with Fenceline Monitoring Plan[47] required as a condition in the Permit to Operate.[48] [49]

The Community Investigation Report does not reference preparation of a QAPP for the community air monitoring program, and it is not clear that one exists. Failure to prepare a QAPP is not only inconsistent with US EPA and MDE best practices but is also inconsistent with the approach MDE has taken toward monitoring air quality in Curtis Bay in the past. Just as MDE required the QAPP prepared by CSXT for its fenceline monitoring program, the Agency should have required a QAPP for the community air monitoring program consistent with US EPA guidance.[50] [51] Without a QAPP, the quality of the community's data and thus the strength of the Community Investigation Report's conclusions cannot be verified.

2.2 Collocation Tests Do Not Meet US EPA Testing Criteria or Protocols

In addition to lacking an overall plan for ensuring data quality, the Community Investigation Report failed to follow other accepted data quality control practices. For example, monitoring organizations routinely conduct quality control and calibration verification tests to ensure equipment is operating properly and therefore capturing accurate measurements and producing high-quality data. Low-cost sensors cannot be calibrated or adjusted the same as FEM monitors but can be operated side-by-side (collocated) with FEM monitors to establish a relationship and determine if the sensor is producing comparable measurements to the regulatory monitor.

US EPA has developed recommended acceptable test protocols and criteria for $PM_{2.5}$ sensors being compared to FEM monitors in a guidance document titled *Performance Testing Protocols, Metrics, and Target Values for Fine Particulate Matter Air Sensors*.[52] The document describes protocols and procedures for setting up low-cost air sensors next to FEM monitors and how the measurement data from both the low-cost sensor and the FEM monitor should be used for determining the relationship between the two datasets. Section 2.1.3 of the guidance recommends installing three sensors of the same make, model, and firmware version for conducting a collocation test. Table 4-2 of the US EPA guidance document, presented below in Figure 1, provides the recommended target values for acceptable $PM_{2.5}$ sensor data.

[45] Quality Management Plan (September 2020) Maryland Department of the Environment. https://mde.maryland.gov/Documents/MDE%20QMP%20Mgmt%20Plan%20Signed.pdf
[46] Quality Assurance Project Plan for Continuous PM_{10}, $PM_{2.5}$, and Meteorological Measurements at CSXT Transportation, Inc. Curtis Bay Piers Facility, Revision 0 (November 2023)
[47] The Fenceline Monitoring Plan was submitted to MDE on November 7, 2022, for review and approval. On March 7, 2023, MDE provided a partial approval of the Fenceline Monitoring Plan for the proposed equipment to be used within the air monitoring network.
[48] The QAPP was submitted to MDE on November 9, 2023, for review and approval.
[49] State Permit to Operate No. 510-2263
[50] Ibid (37).
[51] Ibid (39).
[52] Ibid (11).

Figure 1 Recommended Performance Metrics and Target Values for $PM_{2.5}$ Air Sensors Used in Ambient, Outdoor, Fixed Site Applications

Performance Metric		Target Value		Associated Section Describing Calculation
		Base Testing	Enhanced Testing*	
Precision	Standard Deviation (SD)	≤ 5 µg/m³		3.1.3 and 3.2.3
	-OR-			
	Coefficient of Variation (CV)	≤ 30%		3.1.3 and 3.2.3
Bias	Slope	1.0 ± 0.35	No target values recommended; report results	3.1.4 and 3.2.4
	Intercept (b)	-5 ≤ b ≤ 5 µg/m³		3.1.4 and 3.2.4
Linearity	Coefficient of Determination (R^2)	≥ 0.70		3.1.4 and 3.2.4
Error	Root Mean Square Error (RMSE) or Normalized Root Mean Square Error (NRMSE)	RMSE ≤ 7 µg/m³ or NRMSE ≤ 30%†		3.1.5 and 3.2.5

*No specific target values are recommended due to limited feasibility, lack of consensus regarding testing protocols, and inconsistency in sensor evaluation results that can result due to the limited amount of data that will be collected and variation in the tester's choice of PM surrogate. See Appendix D for further discussion.
†A sensor will meet this target if either the RMSE or NRMSE meet this criterion. See Appendix D for further discussion.

Source: US EPA Performance Testing Protocols, Metrics, and Target Values for Fine Particulate Matter Air Sensors (February 2021)

US EPA has recognized that the protocols established, to date, for low-cost sensors have been tailored to $PM_{2.5}$ and O_3 and that no standardized approach has been explicitly established for other gaseous pollutants.[53] However, US EPA still recognizes that performance evaluation of low-cost sensors that measure pollutants besides or in addition to $PM_{2.5}$ and O_3 should be performed prior to deployment to meet the objectives of the monitoring program.[54] Furthermore, the American Society for Testing and Materials has also developed performance evaluation protocols for ambient air quality sensors for a variety of different pollutants. These protocols include field testing using the collocation method or delivering known concentrations to the sensors.[55]

Each of the performance metrics in Figure 1 is critical to determining if a sensor repeatedly and accurately measures data. A sensor that meets these metrics shows an acceptable level of agreement between the sensor's reported concentration and the true concentration in the atmosphere[56]. There are four general metrics that are tested during a collocation test: precision, bias, linearity, and error[57]. Each of these tests are important for understanding sensor performance but should not be a standalone test.

[53] Duvall, R.M. et al, Deliberating Performance Targets: Follow-on workshop discussing PM_{10}, NO_2, CO, and SO_2 air sensor targets (February 2021).
[54] Ibid (53).
[55] Ibid (12).
[56] Ibid (11).
[57] Ibid (11).

- **Precision** tests whether the sensor can make the same measurements consistently under the same conditions.
- **Linearity** tests whether the sensor can consistently make the same measurements over the sensor's range.
- **Bias** tests how close the sensor's measurements are to the truth.
- **Error** tests the sensor's overall accuracy.

Results of the collocation tests that were conducted as part of the Community Investigation Report are presented in an Appendix to the Report and in the Supplemental Materials Document. The Community Investigation Report collocated the QuantAQ Modulair low-cost sensors with FEM monitors at two MDE monitoring locations (Howard County Near Road and Pocomoke City). Section 2 of the Supplemental Materials Document indicates that "two low-cost sensors of the same type" were used in the collocation tests. It is unclear if the tests involved collocating two low-cost sensors at the same location as the FEM or collocated only one low-cost sensor with each FEM. In any case, three sensors of the same type were not collocated as US EPA recommends. Adherence to the protocols and recommendations set by US EPA in the Sensor Guidebook is critical for understanding the accuracy and limitations of the measurements made by the sensors. As further discussed in sections 2.2.1 and 2.2.2, US EPA collocation best practices were not followed,[58] therefore, the accuracy of the data collected by the low-cost sensors are suspect.

2.2.1 Howard County Near Road Collocation Results

The Howard County Near Road monitoring station is equipped with a Met One Model BAM-1020.[59] [60] Modulair $PM_{2.5}$ data from the community monitoring network appear to have been reduced to hourly averages to match the output reported by the BAM-1020. Results of the collocation test indicate the slope and intercept (which test bias) and the root mean square error (RMSE) (which tests error) were within US EPA's recommended acceptable test criteria for bias and error. However, the coefficient of determination (R^2) (which tests linearity) was 0.604, which is outside the recommended target value of ≥0.70. This shows poor linearity of the low-cost sensor compared to the BAM-1020 FEM monitor. Poor linearity indicates that the sensor cannot make consistent (or accurate) measurements as actual concentrations in the atmosphere increase or decrease across the measurement range. These values are not correctable through applying factors from linear regression.

Further, the collocation test scatter plot (Supplementary Figure 2 in the Supplemental Materials Document) shows what appear to be outliers in the data sequence that could use extra scrutiny to understand the conditions in which these outliers exist and how they would affect measurement data during the field campaign. Neither the Community Investigation Report, the Article, nor the Supplemental Materials Document address the low-cost sensor's failure to meet US EPA-recommended acceptance test criteria for linearity or discuss corrective actions taken to ensure data collected by the low-cost sensors meet the standards set by US EPA for making accurate measurements.

2.2.2 Pocomoke Collocation Results

The Pocomoke City monitoring station collocation test compared a Modulair low-cost sensor with a Teledyne-API T640X FEM monitor for PM_{10} and $PM_{2.5}$.[61] [62] [63]

[58] Ibid (11).
[59] Met One Beta Attenuation Mass (BAM) Monitor Model 1020 https://metone.com/products/bam-1020/
[60] Met One BAM 1020 FEM Designation: EQPM-0308-170
[61] Teledyne API Model T640 https://www.teledyne-api.com/products/particulate-instruments/t640
[62] Teledyne T640x PM_{10} Mass Monitor FEM Designation: EQPM-0516-239
[63] Teledyne T640x $PM_{2.5}$ Mass Monitor FEM Designation: EQPM-0516-238

For $PM_{2.5}$, one-minute data were used for the collocation test, and US EPA-recommended performance metrics were met. Review of the scatter plot in the Supplemental Materials Document (Supplementary Figure 3) shows that lower $PM_{2.5}$ concentrations are closer to the 1:1 line, indicating data from the low-cost sensor and FEM sensor were more correlated, while higher concentrations were less correlated. More specifically, there are periods in which the Modulair low-cost sensor had outliers when compared to the T640X measurements that were included in the dataset without explanation of why they occurred and what would be done to address them.

There is no indication in the Community Investigation Report about what conditions existed for these outliers and how the outliers would be addressed during the data collection phase of the project. If the conditions that produced these outliers existed during actual data collection, then data collected under those conditions introduce error into the analysis that would not exist if the outliers had either been removed from the data or addressed.

For PM_{10}, the collocation test indicated poor performance of the low-cost sensor compared to the FEM monitor, with none of the recommended performance metrics being met for the low-cost sensor (R^2 = 0.31, slope = 1.80, intercept = 12.3, RMSE = 31.5). The results show PM_{10} had a poor measurement relationship with the FEM monitor due to underperforming correlation and linearity and an average error of 31.5 $\mu g/m^3$. The failed collocation test is acknowledged in the Supplemental Materials Document, but with no discussion of corrective action or steps taken to address the test failure. Because no US EPA-recommended performance metrics were met and no corrective action was apparently taken, all PM_{10} data should be considered invalid. Further, PM_{10} was an indicator pollutant used in the NMF analysis for identifying sources of "putative coal dust" and "dust" to draw conclusions of source contribution within the Curtis Bay community. Invalid PM_{10} data would also invalidate those conclusions.

2.3 Quality Control Procedures are Inadequate for Monitoring Programs

In addition to ensuring sensors accurately measure real-world conditions, air monitoring sensors also need periodic quality control checks to ensure they are functioning correctly and generating high-quality data. The Sensor Guidebook provides guidance on quality control checks (see section 3.7.2 and Table 3-2) that should be regularly reviewed for consistency to determine validity of the data. The Community Investigation Report did not include descriptions or documentation of adequate quality control checks recommended by US EPA, such as expected range of the instrument, rate of change, data sticking, duplicate sensor comparison, buddy system, and parameter-to-parameter checks. These quality controls checks are critical for finding systematic issues with the sensors. Below is a brief description of each US EPA-recommended quality control check as provided in the guidance: [64]

- **Range.** This test checks a sensor-reported concentration with the known or expected concentration range to determine if a measurement is inconsistent with physical expectations.
- **Rate of change.** This test is critical for identifying erroneous spikes in the data or unexpected increases in concentration data.
- **Sticking data.** This quality control check looks at persistence of sensor-reported values to ensure the values have normal rates of change and are not being repeated due to internal data logging issues.

[64] Table 3-2, Sensor Guidebook. Ibid (6).

- **Duplicate sensor comparisons.** This check incorporates sensors with a dual channel measurement or collocates multiple sensors. The differences between the dual channels or sensors are used to identify systematic errors.
- **Buddy system.** These are external consistency checks in which data from a sensor or monitoring network are compared to other data sources or monitoring sites to determine if there are atypical behaviors in the sensor data.
- **Parameter to parameter.** These checks compare multiple air quality parameters and atmospheric parameters measured at the site for known or expected physical or chemical relationships.

Section 3b of the Community Investigation Report includes a subsection titled "Quality Assurance/Quality Control (QA/QC) of Air Monitoring Data" (see Page 3 of Section 3 in the Community Investigation Report) that describes how data were flagged and vetted before use in the final analysis dataset. As discussed below, these QA/QC procedures were insufficient to ensure the quality of the data.

2.3.1 TSP and PM_{10} Quality Control Checks are Insufficient.

The Community Investigation Report developed criteria for flagging and removing TSP and PM_{10} concentrations from the final data set when a combination of conditions existed simultaneously. These conditions included TSP concentrations above 500 µg/m^3, PM_{10} concentrations above 200 µg/m^3, and relative humidity above 80%.[65]

An issue with this approach is that data scanning and quality control are limited to periods in which relative humidity is only above 80% and do not take into consideration data spikes or outliers that exist when relative humidity is below 80%. For example, a condition could exist when an erroneous spike is detected when TSP is above 500 µg/m^3, PM_{10} is above 200 µg/m^3, and relative humidity is at 79%. This data point would not meet the criteria for flagging but could be just as invalid as the same condition existing at 80% relative humidity. Each of the five control checks US EPA describes in the Sensor Guidebook provide a different check to consider and flag data for inconsistencies that are reviewed for invalidation.[66]

The Community Investigation Report's approach also ignores guidance from the sensor's manufacturer for assessing data accuracy and error. The Modulair sensor specification sheet[67] includes measurement error statistics for 1-hour and 24-hour average PM_{10} and $PM_{2.5}$ measurements that were derived from collocation tests conducted by Quant-AQ, where the Modulair PM module was compared to Teledyne T640 and TSI Scanning Mobility Particle Sizer (SMPS™) spectrometers. By providing data for these specific particle sizes and time intervals, the manufacturer's measurement error statistics create a blueprint for assessing sensor accuracy and error that the Community Investigation Report failed to use without explanation.

In addition, the Community Investigation Report failed to exclude data that exceeded the sensor's range. The Modulair specification sheet has a published operating range of 0 to 2,000 µg/m^3 for PM_{10}, $PM_{2.5}$, and PM_1.[68] Although measurements from the device could be higher than 2,000 µg/m^3, the manufacturer's range should be considered in the data validation process as a basis for flagging measurements outside of this range for not being reliable. The Community Investigation Report did not appear to consider the sensor's range when reviewing and validating the data. For example, PM_{10} data in Figure 12 of the Community Investigation Report shows three data spikes above 2,000 µg/m^3.[69]

[65] Page 4 of Section 3b of the Community Investigation Report.
[66] Ibid (6).
[67] Quant-AQ, Product Specification Sheet Modulair-PM, (Accessed January 2024) https://assets.quant-aq.com/downloads/spec-sheets/modulair-pm.latest.pdf
[68] Ibid (67).
[69] See Figure 12 in Section 3b (Page 15) of the Community Investigation Report.

2.3.2 Black Carbon Quality Control Checks are Insufficient.

Black carbon concentrations were omitted from the final data set when internal relative humidity changed by more than 1% in a minute. Black carbon concentrations were also omitted when erratic values were observed after periods when the unit lost power (60 minutes of data were omitted after data gaps over 15-minutes; 15-minutes of data were omitted after 2.5-minute data gaps). The last documented quality control check included omitting black carbon data when the battery voltage was below 7.5 Volts and when the black carbon concentrations were equal to exactly -5 µg/m^3. These quality control checks are specific to power outages and atmospheric conditions that affect the monitor but are incomplete because there is no documentation as to quality control checks for sensor range, rate of change, or data sticking.

2.3.3 Site Selection

Placement of air monitors or sensors is an important consideration when designing and establishing an air monitoring network and for understanding how representative the measurements are to public exposure. US EPA has considerable guidance[70] [71] [72] [73] on the placement of monitors and sensors to prevent sampling bias. Sensor placement should consider height above ground, physical influences, and minor sources located near the sensor. Obstructions such as buildings or trees reduce the airflow around monitoring equipment and can result in the measurement of higher concentrations downwind of the obstructions.[74] This in turn could lead to erroneous measurements of wind direction (with errors of up to 180 degrees), wind speed, temperature, and relative humidity. Placing sensors too close to other unidentified emission sources (such as vehicles, barbeques, vents, smoke from cigarettes or campfires, and excavation activities) could also artificially influence monitoring equipment on a micro-scale localized basis.[75]

The Community Investigation Report also fails to include a station that represents a true background for the region. Background monitoring stations are typically placed away from the impact or influence of the source in question to obtain measurements representative of other nearby sources of air pollution such as industry, transportation, and area-wide pollution from homes and businesses. Having true background air monitoring data is essential for understanding a source's influence or contribution to air quality by adjusting for regional sources of pollution.

Site selection and documentation of sensor placement is not available in the Community Investigation Report or the Supplemental Materials Document. Placement of the sensors is key in understanding the representativeness of the sensors for the areas in which they are measuring air quality. Without detailed locations, pictures, or descriptions of sensor placement, it is difficult to know if the sensors were properly placed to make measurements representative of the Curtis Bay community or if the measurements are too subjective to a specific location.

Based on publicly available data obtained through the QuantAQ sensor map and data download portal,[76] I conducted a simplified site selection analysis of the community network monitoring program. In addition to pollutant concentrations, the data available from the portal included wind speed, wind direction, and latitude

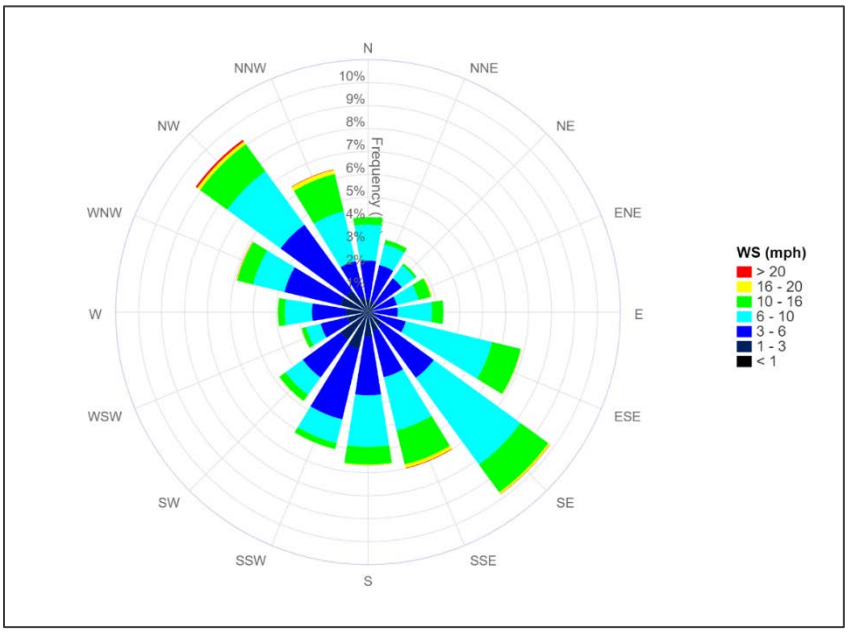
[70] See Section 3.5, Sensor Guidebook. Ibid (6).
[71] See Section 7.0, US EPA (January 2017) QA Handbook Volume II.
[72] 40 CFR Part 58, Appendix E
[73] Quality Assurance Handbook for Air Pollution Measurement Systems Volume IV (March 2008), US EPA [EPA-454/B-08-002]. https://www.epa.gov/sites/default/files/2020-10/documents/volume_iv_meteorological_measurements.pdf
[74] Ibid (71).
[75] Ibid (6).
[76] QuantAQ Map https://app.quant-aq.com/map

and longitude coordinates. The analysis was based on the locations provided in the data, though the coordinates were low resolution so precise locations were not identified for some of the sensors.

Wind data from each of the community network monitoring stations were also compared with data collected from the CSXT 10-meter meteorological tower between March 22, 2023 through July 31, 2023. The CSXT meteorological tower is located along the east side of the Curtis Bay Piers facility and was sited to meet US EPA siting and exposure criteria for meteorological sensors.[77] The wind data comparisons are depicted using wind rose plots. Wind rose plots (or wind rose) are a graphical tool to show the distribution of wind speed and wind direction around a compass. Wind directions represent the origin of the wind (the direction wind is blowing from).

Figure 2 presents the wind rose plot for the CSXT meteorological tower for the period of March 22 through July 31, 2023. This period was selected due to the overlap in data analyzed by the Community Investigation Report. The wind rose plot shows predominant wind flow from the northwest and southeast. Wind roses were generated for the community network sensors for the same period and are available in Appendix B. Siting of each low-cost sensor location used in the Community Investigation Report will be discussed in the following subsections.

Figure 2 CSXT Meteorological Station Wind Rose (March 22, 2023 through July 31, 2023)



2.3.3.1 Location 1 Site Selection

The closest community monitor to the CSXT Terminal is Location 1. Air monitoring equipment at Location 1 is on the rooftop of an auto performance and tuning shop adjacent to the CSXT Terminal. Figure 3 presents a map and the associated wind rose for Location 1.

The sensors are placed on a lower-tier rooftop with a higher-tier roof located immediately west of the sensors. This arrangement is problematic for two reasons. First, the sensors are not placed a sufficient distance from the higher-tier rooftop and would be in the wake of the building during westerly winds,

[77] See Section 1.0, US EPA (March 2008) QA Handbook Volume IV.

resulting in a cavity forming downwind of the tier. This can lead to potentially higher PM concentrations in the wake of the higher-tier building and skew wind measurements made at the site. This issue is depicted in Figure 4, which includes a map showing Location 1 with a wind rose overlaid onto the map. The wind rose shows much lower wind speeds than the CSXT meteorological tower and shows winds predominantly out of the west, south, and east. The lack of agreement with the CSXT meteorological tower suggests the Location 1 sensor is making hyper-local measurements affected by its placement in the building's wake. The sensor is likely not high enough above the roofline to be out of the wake of the building.

Second, the air monitoring sensor at Location 1 was placed on a building that services vehicles. The auto performance and tuning shop is therefore itself a source of particulate and gaseous pollutants similar to those being measured by the air monitoring sensor. It is therefore difficult to distinguish among measurements of pollutants from the auto performance and tuning shop building, the CSXT Terminal, the scrap metal recycling facility south of the monitor, or other nearby industrial sources.

Figure 3 Location 1 Map and Wind Rose

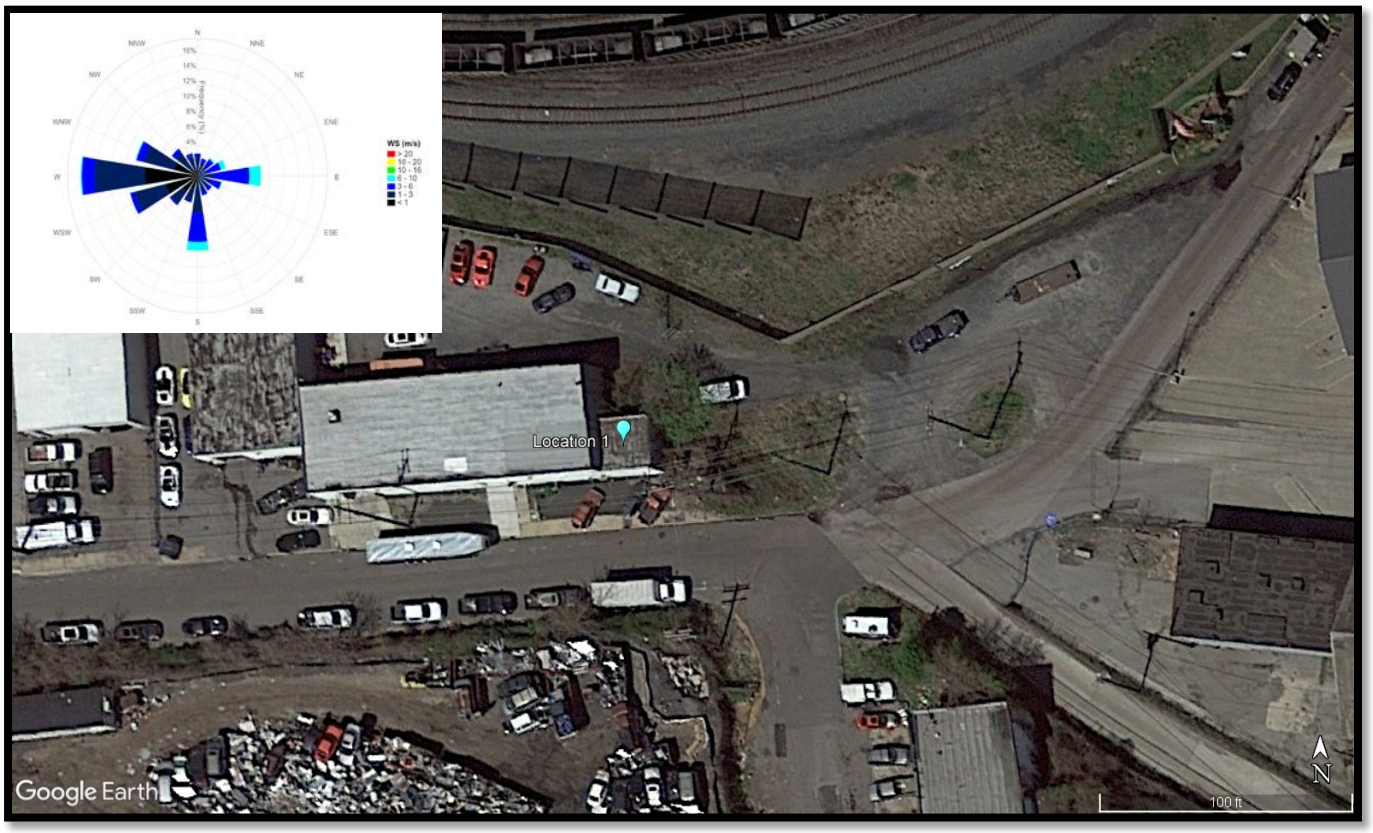
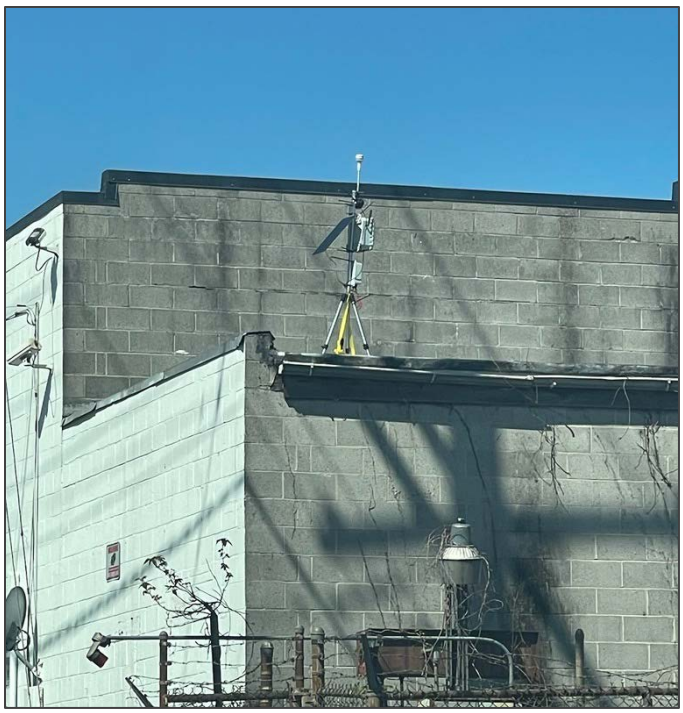


Figure 4 Picture of Location 1 Sensor Installation



2.3.3.2 Location 2 Site Selection

Air monitoring equipment at Location 2 is mounted to a fence on Locust Street just west of the CSXT Terminal. Figure 5 presents a map showing Location 2 with a wind rose overlaid onto the map. A photograph of the sensor location is presented in Figure 6.

The wind rose shows a predominant wind flow out of the south-southeast with over 35 percent of the winds coming from that direction. This is much higher than the regional air flow as measured by the CSXT meteorological tower and could indicate either a sensor issue or an obstruction channeling the air flow around the sensor. A sensor issue or obstruction could skew or bias air pollution measurements from this location.

Figure 5 Location 2 Map and Wind Rose



Figure 6 is a picture of the sensor installation at Location 2. The picture shows the instrument mounted on a chain linked fence that allows air flow around the sensor. The wind sensor is not pictured. Photographs of the installation from each of the cardinal directions would be useful for understanding what may be causing the channeling effect shown in the data.

Figure 6 Picture of Location 2 Sensor Installation



Source: Aubourg MA, Sawtell G, Deanes L, et al. (September 2023)

2.3.3.3 Location 3 Site Selection

Air monitoring equipment at Location 3 is mounted to a pole on Church Street west of the CSXT Terminal. Figure 7 presents a map showing Location 3 with a wind rose overlaid onto the map. Photographs of the sensor at Location 3 from the Community Investigation Report and Google Earth are presented in Figure 8. The picture shows the instrument mounted on a pole, which allows air flow around the sensor.

The wind rose shows predominant wind flows out of the east-southeast and west with a third predominant flow from the south. Other than the wind flow from the south, which could be caused by a sensor reporting issue, the wind pattern looks to be representative of wind directions at this location given that buildings north and south of the sensor are channeling the wind flow. However, concentration data at the location may be skewed by the adjacent air conditioning unit, which could act as a source of heat and PM. This site would likely be considered a microscale monitoring location as defined by US EPA for community monitoring. [78]

Figure 7 Location 3 Map and Wind Rose



[78] 40 CFR Part 58 Appendix D 1.2(b)(1).

Figure 8 Picture of Location 3 Sensor Installation



Source: Figure 2 in Section 3b of the Community Investigation Report

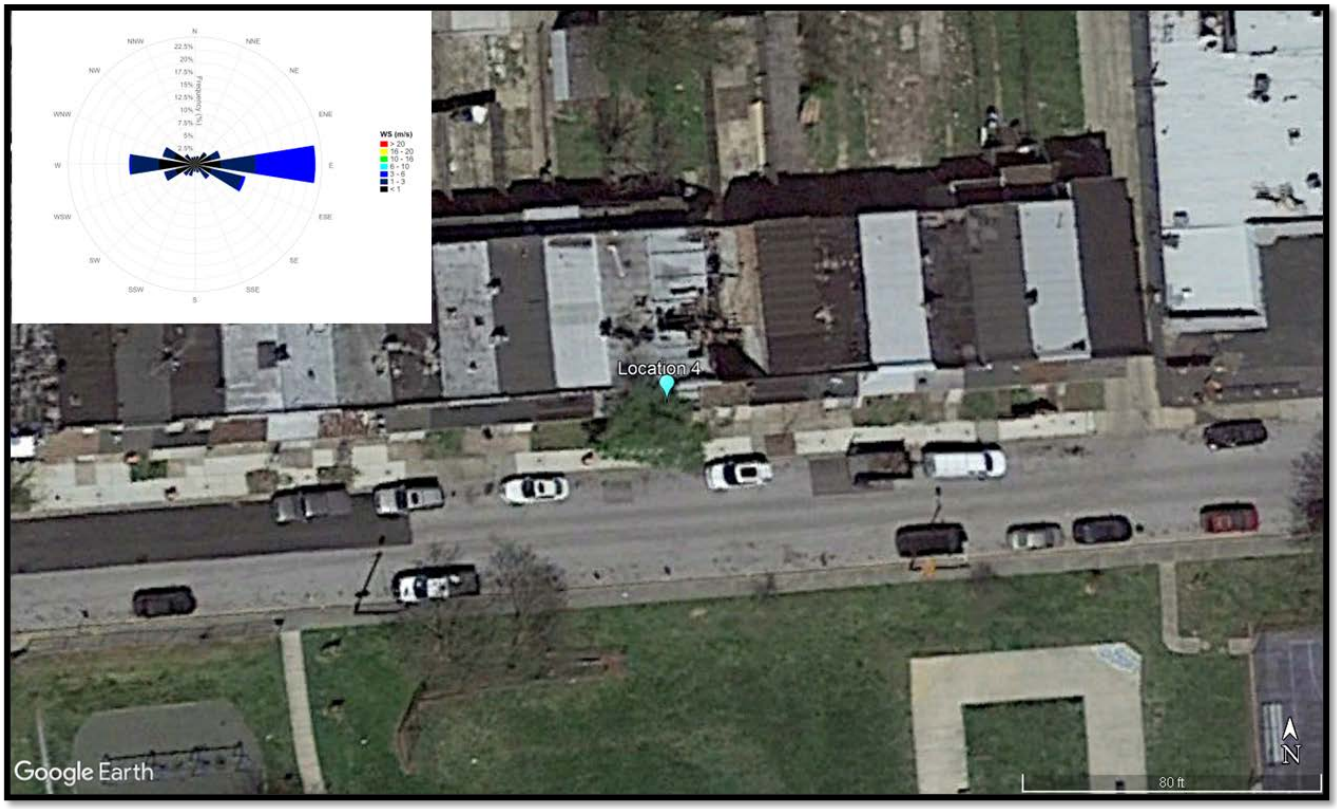


Source: Google Earth

2.3.3.4 Location 4 Site Selection

Location 4 is situated at a home on Hazel Street approximately a block and a half west of the CSXT Terminal. Figure 9 presents a map showing Location 3 with a wind rose overlaid onto the map. The wind rose shows predominant wind flows out of the east and west. There are no photographs or Google Images available of the installation, but based on the satellite image in Figure 9, it is possible that wind directions and speeds are skewed by the buildings located close by. The satellite image shows a park across the street that has enough open green space with limited obstructions to have winds that follow a more regional pattern as measured by the CSXT meteorological tower.

Figure 9 Location 4 Map and Wind Rose



2.3.3.5 Location 5 Site Selection

Air monitoring equipment at Location 5 is placed on the porch of a house located on Cypress Street and Fairhaven Avenue approximately a quarter of a mile west of the CSXT Terminal. Figure 10 presents a map showing Location 5 with a wind rose overlaid onto the map. The wind rose shows a predominant wind flow out of all eastern directions with no winds from the west. This pattern indicates an obstruction is influencing the wind sensor.

Figure 11 shows two pictures of the sensor installed at Location 5 from Google Earth Street View. The pictures show the instrument mounted on the porch of a house. There is an air conditioning unit located within 6 feet of the sensor and a grill located just under the sensor. As discussed above, air conditioning units can be sources of heat and PM, and grills can also emit pollutants. As a result, Location 5 is not conducive to making measurements representative of the surrounding area since it has both improper exposure to wind flow and is adjacent to minor sources of air pollution that can affect the measurements.

Figure 10 Location 5 Map and Wind Rose

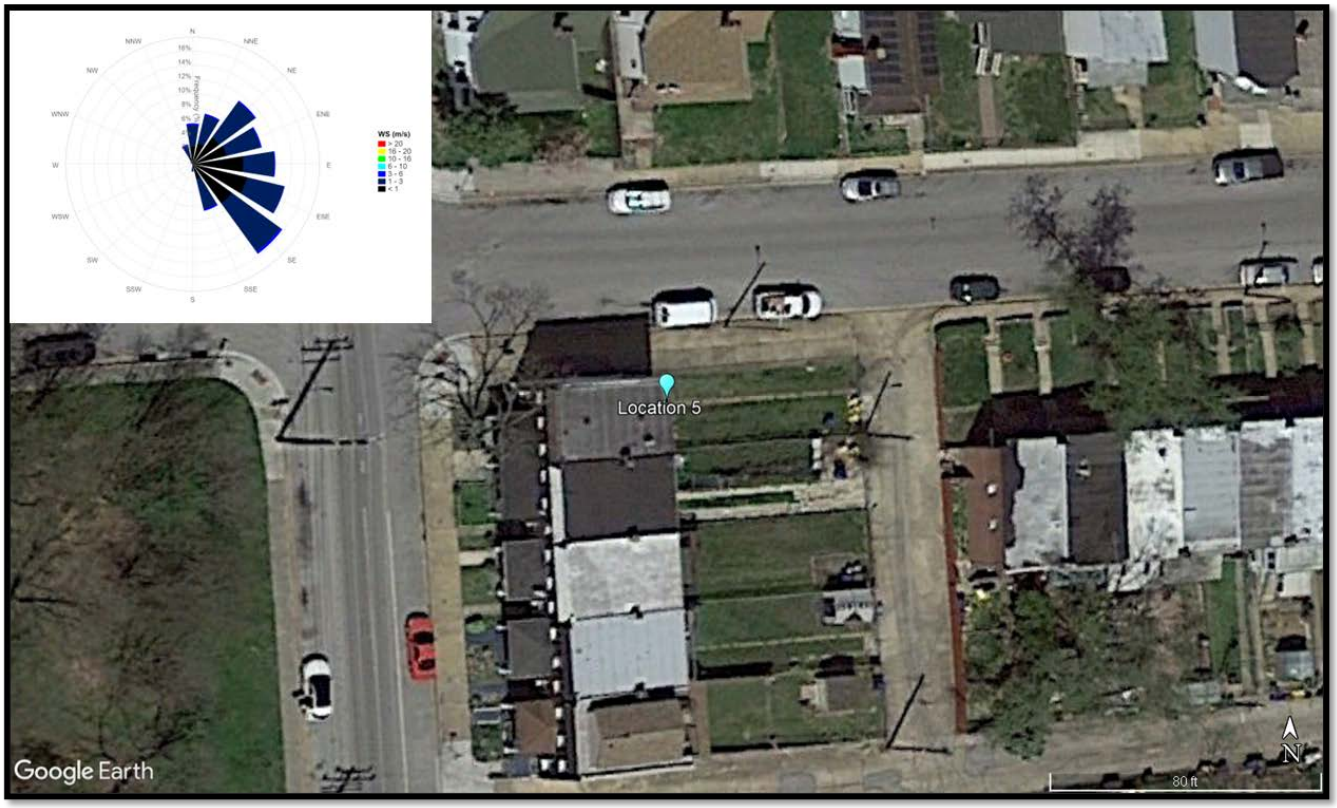


Figure 11 Pictures of Location 5 Sensor Installation



Source: Google Earth

Blue circles indicating location of sensors.

2.3.3.6 Location 6 Site Selection

Coordinates for Location 6 place the sensors in the middle of an excavation equipment rental company just over a third of a mile southwest of the CSXT Terminal. Figure 12 presents a map showing Location 6 with a wind rose overlaid onto the map. Although the location depicted in the map was the location obtained from the sensor data, I do not believe this is the actual placement of the sensor given it is located in the middle of what appears to be a driveway through the property.

The wind rose shows predominant wind flow out of the southeast and north. This wind rose has a similar shape to the CSXT wind rose but with much lower wind speeds likely due to the sensor's height above the ground. The map also shows that this location has unpaved roads. Given the use of heavy equipment at Location 6 and the lack of paved roads, concentration readings at this sensor are likely skewed by dust emissions.

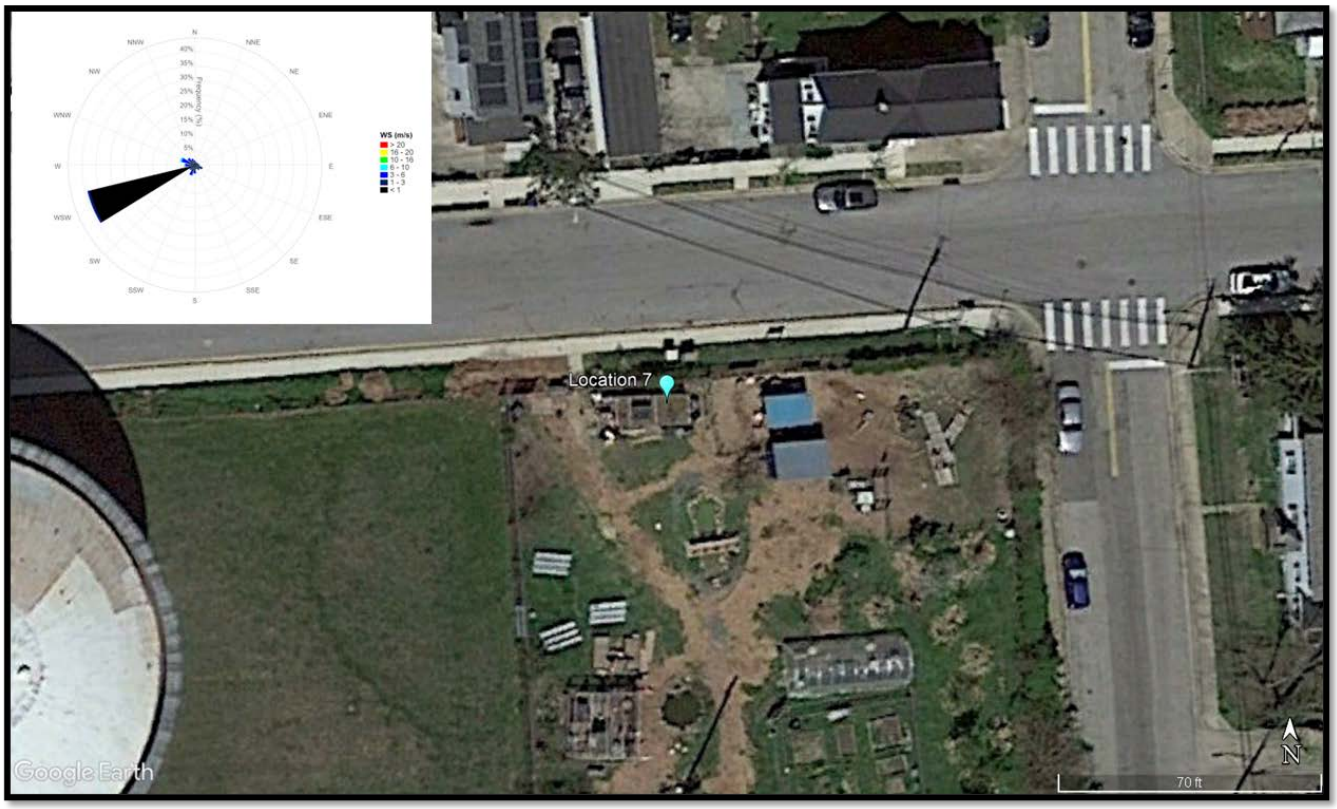
Figure 12 Location 6 Map and Wind Rose



2.3.3.7 Location 7 Site Selection

Coordinates for Location 7 place the sensors at the Filbert Street Garden on Filbert Street about four tenths of a mile west of the CSXT Terminal. Figure 13 presents a map showing Location 7 with a wind rose overlaid onto the map. The wind rose shows 40 percent of all winds measured at the site were out of the west-southwest. There are a few issues with this data. First, located approximately 50 yards west-southwest of the wind sensor is a large water tank that would act as an obstruction shadowing wind from that direction. Second, given the large percentage of winds from one direction and that the wind rose does not show predominant wind flow that follows regional wind patterns (as indicated by the CSXT meteorological tower), it can be concluded that this sensor is affected by channeling. The validity of the data sampled by this sensor location is in question since the winds do not exhibit a wind pattern reflective of regional conditions as measured by the CSXT meteorological tower.

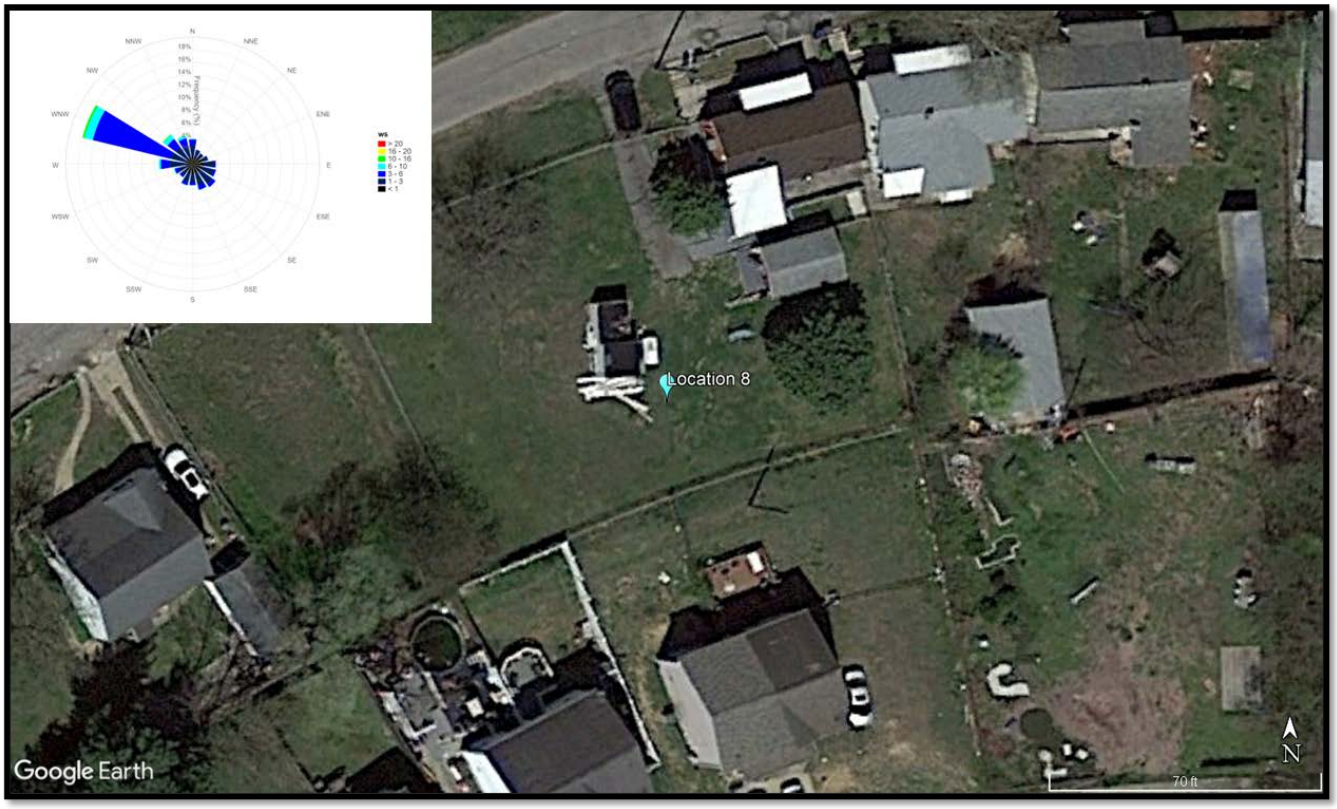
Figure 13 Location 7 Map and Wind Rose



2.3.3.8 Location 8 Site Selection

Coordinates for Location 8 place the sensors in the back yard of a residence on Monroe Circle near the Benjamin Franklin High School about three quarters of a mile northwest of the CSXT Terminal. Figure 14 presents a map showing Location 8 with a wind rose overlaid onto the map. The wind rose shows predominant wind flows out of the west-northwest. Although not exact, the pattern is reminiscent of the regional wind patterns as measured by the CSXT meteorological tower and could be representative of the location. However, additional pictures showing the installation and photographs of each of the cardinal directions from the sensor would help determine if there was proper wind exposure at the site.

Figure 14 Location 8 Map and Wind Rose



2.3.3.9 Location 9 Site Selection

Coordinates for Location 9 place the sensors at the Benjamin Franklin High School approximately three quarters of a mile northwest of the CSXT Terminal. Figure 15 presents a map showing Location 9 with a wind rose overlaid onto the map. The wind rose shows predominant wind flows out of the southwest and east-northeast. Due to the proximity of Location 8 and Location 9 to one another (about 150 yards from one another), the wind flow patterns between these two locations should be fairly consistent. However, while Location 8 shows predominant flows out of the northwest, Location 9 (with no structures or obstructions within 40 yards of the site) shows less than 2 percent of winds coming from the northwest. With proper site selection, the wind flow patterns between Location 8 and Location 9 should have similar wind flow patterns. Without photographs of the installation or calibration forms confirming proper installation of Location 8 or Location 9, it is difficult to know which of these sites are making improper measurements.

Figure 15 Location 9 Map and Wind Rose



2.3.3.10 Location 10 Site Selection

Coordinates for Location 10 place the sensors at approximately three quarters of a mile east of the CSXT Terminal. Figure 16 presents a map showing Location 10 with a wind rose overlaid onto the map. The wind rose shows predominant wind flows out of the west-northwest and east-southeast. This pattern is similar to the CSXT meteorological tower but with more of an east-west wind flow. The map shows a building approximately 60 feet to the north of the monitoring site but otherwise very few obstructions. Wind speeds are lower than what is measured at the CSXT meteorological tower, but that is to be expected because the sensor is not at the 10-meter height. This location appears to have been properly sited away from the influence of obstructions and may be considered representative of the location for which it made measurements.

Figure 16 Location 10 Map and Wind Rose



In summary, the site selection analysis (using location data available from the community sensor network) identified issues with site selection and sensor placement for several of the community monitoring stations (Location 1, Location 2, Location 4, Location 5, Location 6, Location 7, and Location 8 or 9 or both). Each of these locations has shortcomings with respect to sensor placement, which can lead to concentration data that are unduly influenced by obstructions and minor sources and that are not representative of community-wide exposure.

3. OPINION #2: CURTIS BAY IS IN ATTAINMENT WITH HEALTH-BASED STANDARDS FOR PM_{10} AND $PM_{2.5}$

US EPA states in its air quality regulations that comparisons to the PM NAAQS should be made using data collected over a calendar year with FEM monitoring equipment. [79] [80] To calculate design values,[81] data need to be reduced to hourly averages[82] and daily (24-hour, midnight to midnight) average concentrations in accordance with the definitions found in 40 CFR Part 50 Appendix N ($PM_{2.5}$) and Appendix K (PM_{10}).[83]

Section 4 of the Community Investigative Report did not follow US EPA regulations or guidance in comparing measured air quality in Curtis Bay to the PM NAAQS. The air quality measurements were collected using Modulair sensors rather than FEM monitors. Further, the comparisons were made using data that were collected over a 14-month period (data were collected between May 16, 2022 and July 16, 2023) rather than a calendar year.

Modulair sensors are non-regulatory air measurement devices that do not meet FEM standards. South Coast Air Quality Management District's (SCAQMD) Air Quality Sensor Performance Evaluation Center (AQ-SPEC) conducted a field evaluation of the Modulair sensor in 2021[84] (Field Evaluation). The results of the Field Evaluation show this particular model of sensor overestimated $PM_{2.5}$ concentrations with a mean bias error (MBE[85]) of 2.9 to 4.8 µg/m^3 for 24-hour concentrations and underestimated PM_{10} concentrations with an MBE of 13.0 to 22.1 µg/m^3 for 24-hour concentrations. The results of the Field Evaluation also showed PM_{10} had poor testing results for the sensor when compared to US EPA performance metrics[86].

Despite the fact that the low-cost sensors used in the community air monitoring network have an inherent bias to overestimate $PM_{2.5}$ concentrations and underestimate PM_{10} concentrations when compared with FEM monitors, the data demonstrated that PM concentrations in the Curtis Bay area are below the levels of the annual and 24-hour NAAQS for $PM_{2.5}$ and 24-hour NAAQS for PM_{10}.[87]

On February 7, 2024, US EPA finalized an update to the annual $PM_{2.5}$ NAAQS, reducing the NAAQS value to 9 µg/m^3.[88] The Community Investigation Report calculated a mean $PM_{2.5}$ concentration for the period May 26, 2022 through July 26, 2023 as 10.1 µg/m³ in Curtis Bay (daily averages across all network locations), which is above the updated primary annual $PM_{2.5}$ NAAQS. Yet when excluding data affected by smoke from Canadian wildfires,[89] the Community Investigation Report calculated an annual $PM_{2.5}$ design value of 9.0 µg/m³ for the same period. This calculation is incorrect as it uses 14 months of data but is still compliant with the updated NAAQS. Furthermore, the annual average $PM_{2.5}$ concentrations was also calculated for the

[79] 40 CFR Part 50, Appendix N
[80] 40 CFR Part 50, Appendix K
[81] A design value is the value that is compared to the level of the NAAQS for the particular pollutant and specific time averaging period to determine if an exceedance has occurred.
[82] US EPA (January 2017) QA Handbook Volume II, Section 6.0 recommends at least 45 minutes of data in any given hour to calculate an hourly average.
[83] US EPA, Air Quality Design Values. https://www.US EPA.gov/air-trends/air-quality-design-value
[84] Quant-AQ MODULAIR-PM – Field Evaluation (2021), South Coast Air Quality Management District Air Quality Sensor Performance Evaluation Center (SCAQMD AQ-SPEC). https://www.aqmd.gov/aq-spec/sensordetail/quantaq---modulair-pm
[85] *"Mean Bias Error (MBE): the difference between the sensors and the reference instruments. MBE indicates the tendency of the sensors to underestimate (negative MBE values) or overestimate (positive MBE values)."* (Ibid 11).
[86] Ibid (11).
[87] Community Investigation Report, Section 4 pages 3 through 5.
[88] https://www.epa.gov/newsreleases/epa-finalizes-stronger-standards-harmful-soot-pollution-significantly-increasing
[89] It is unclear whether the dates selected for wildfire exclusion in the Community Investigation Report were the dates MDE is evaluating as exceptional events.

period of May 26, 2023 through May 25, 2023 across all sensors, resulting in an annual concentration of 8.6 µg/m³. These data suggest the Curtis Bay area is currently attaining the health-based standard for $PM_{2.5}$.

NAAQS comparisons were also made for 24-hour $PM_{2.5}$ and PM_{10}. The 24-hour $PM_{2.5}$ NAAQS is attained when the 3-year average of the annual 98th percentile 24-hour concentration is less than or equal to 35 µg/m³, and the 24-hour PM_{10} NAAQS is attained when the 3-year average 24-hour PM_{10} concentration does not exceed 150 µg/m³. When excluding exceptional events from wildfires, the 98th percentile for daily concentrations was 26.8 µg/m³, which is below the current 24-hour $PM_{2.5}$ NAAQS. PM_{10} had a maximum of three exceedances of the PM_{10} 24-hour NAAQS during the monitoring period. This occurred at Location 6[90] in the community network, which is not the closest monitoring station to the CSXT Terminal. By contrast, Location 1 of the community network is situated between the CSXT Terminal and Location 6 and had no days above the 24-hour PM_{10} standard when exceptional event data from wildfire smoke was removed.

The Community Investigation Report also provides projections of future air quality results.[91] Each monitoring year is unique in the atmospheric conditions and emission sources that impact a monitoring network. Therefore, projections of future design values are not appropriate, nor is there an approved US EPA methodology for projecting future concentrations.

3.1.1 Curtis Bay Air Quality Burden

The Community Investigation Report also concludes that the Curtis Bay community is overburdened by air pollution.[92] Section 4 of the Community Investigation Report compares monitored data collected by the community sensor network to the MDE Lake Montebello FEM monitoring station for $PM_{2.5}$ and the MDE Glen Burnie monitoring station for PM_{10}. The comparisons show the community monitoring network had an annual average $PM_{2.5}$ concentration that was 1 to 3 µg/m³ higher than the Lake Montebello monitoring station. As discussed above, performance evaluation of the Modulair sensors performed by AQ-SPEC found that the sensors overestimate $PM_{2.5}$ with a MBE between 2.9 and 4.8 µg/m³.[93] Because the difference in measurements between the community network low-cost sensors and Lake Montebello FEM sensors is less than the known MBE for the low-cost sensors, the $PM_{2.5}$ concentrations measured by the community monitoring network are statistically the same as the Lake Montebello monitoring station concentrations.

For PM_{10}, comparing the known MBE for PM_{10} (13.0 to 22.1 µg/m³ for 24-hour concentrations, as measured by the AQ-SPEC[94]) to maximum 24-hour PM_{10} concentrations as measured by the community monitoring network (see Table 8 in the Community Investigation Report) would not increase the community network concentrations enough to result in additional exceedance days of the PM_{10} standard. In other words, if the low-cost sensors truly underestimated PM_{10} concentrations, adjusting for the error would still not increase the number of PM_{10} exceedance days from the low-cost sensors.

[90] See *Supra* Section 2.3.3.6 Location 6 had site selection issues.
[91] Section 4, Tables 1 & 2, Community Investigation Report.
[92] Key finding 3, Community Investigation Report.
[93] Ibid (2).
[94] Ibid (84).

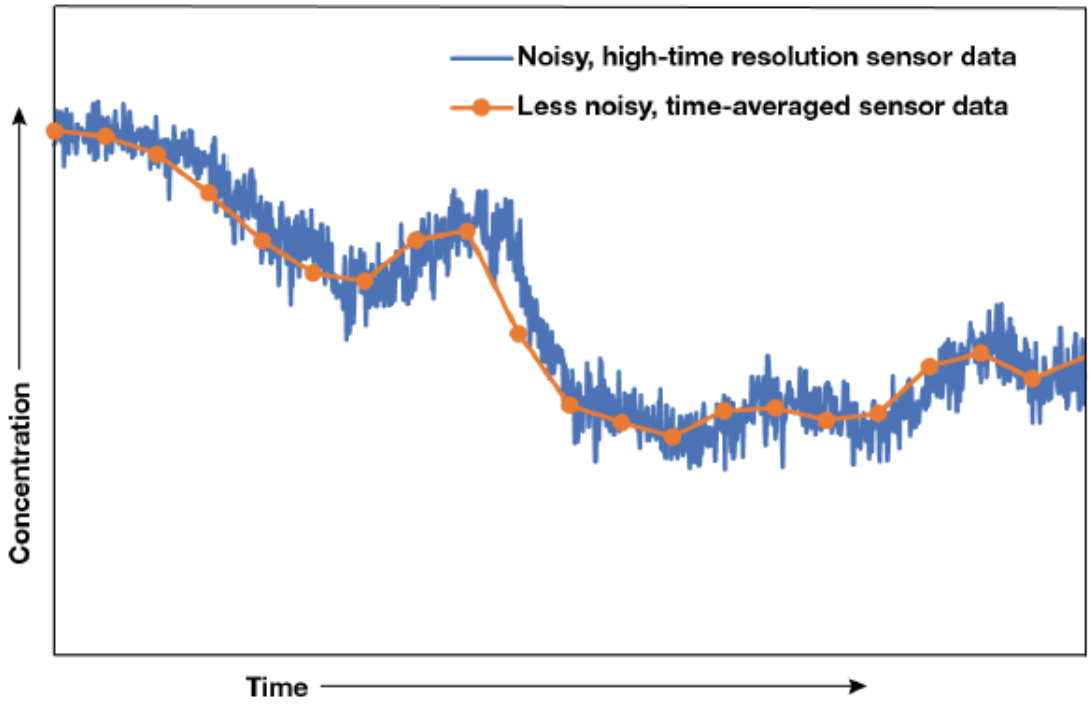
4. OPINION #3 ONE-MINUTE DATA ARE NOT A RELIABLE INDICATOR FOR OVERALL AIR QUALITY

Conclusions drawn from the ambient air quality monitoring data in the Community Investigation Report were based on one-minute data for which there are no health-based standards. Some of these conclusions are based on one-minute PM_{10} measurements already identified as not meeting the performance metrics recommended by US EPA.

4.1 Monitoring Data Noise

One-minute data are typically collected as raw data measurements for applying quality control tests for data validation purposes before data get averaged into the proper averaging interval.[95] One-minute data are often less precise and more susceptible to internal and external factors such as electrical interference and weather changes.[96] These factors interfere with the signal within the sensor, leading to rapid fluctuation in the measurement data and thus increasing the variability and reducing the confidence in the data. This variability in signal is referred to as instrument noise and can lead to erroneously high or low values[97] with rapidly changing values referred to as data spikes. Figure 17 presents an example of noisy measurement data as presented by the Sensor Guidebook.

Figure 17 Example of Noisy Measurement Data



Source: US EPA *Enhanced Air Sensor Guidebook* (2022)

[95] US EPA (January 2017). QA Handbook Vol II, Section 14.0, Rev 0.
[96] Ibid (6)
[97] Hagler, G.S., Yelverton, T.L., Vedantham, R., Hansen, A.D. and Turner, J.R. (2011). Post-processing Method to Reduce Noise while Preserving High Time Resolution in Aethalometer Real-time Black Carbon Data. Aerosol Air Qual. Res. 11: 539-546.

An example of noisy data within the Community Investigation Report is observed in Figure 9 (Figure 17 below) and Figure 10 (Figure 18 below) of Section 3. These two charts show the Dust Factor (defined as a factorization of PM_{10} and TSP) and Regional Factor (defined as a factorization of PM_1, $PM_{2.5}$, and black carbon) for the same period and same monitoring site. Other than black carbon, the remaining pollutants are variations in particle size for particulate matter.

Dust Factor data (Figure 17 below) show a frequent oscillation of data from value to value. The data also show numerous data spikes (or outliers) above the mean+3SD threshold line. This frequent oscillation of data is characteristic of the linearity and mean error issues shown in the collocation tests of the Modulair sensors. This indicates that the Dust Factor is erroneously including noisy data, and the Community Investigation Report is drawing conclusions based on the noisy data.

Figure 18 Dust Factor Time Series for Location 8

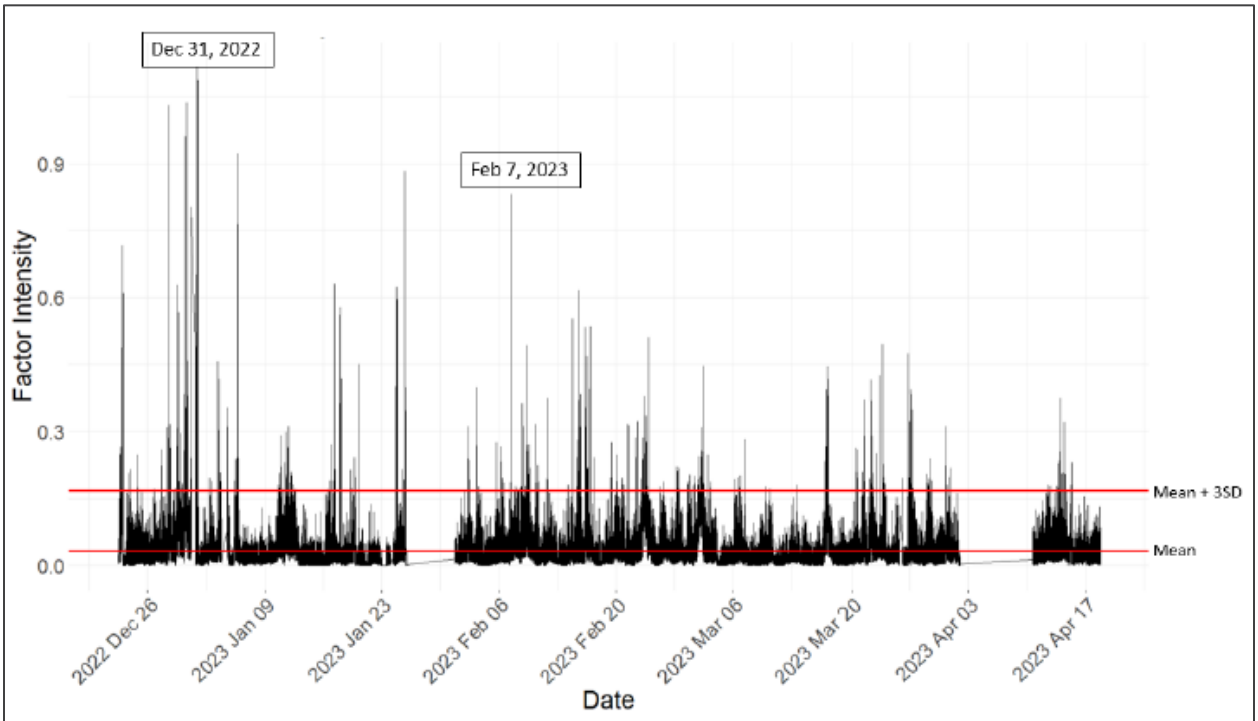


Figure 9. Time series of dust factor and threshold exceedances at Location 8, South Baltimore Air Monitoring Network, December 22, 2022-April 18, 2023 (n = 127,995 minutes). ***Note***. Mean, mean + 3 standard deviation thresholds are denoted with red horizontal lines. Dates of observed dust peaks annotated.

Source: Figure 9 in the Community Investigation Report

Regional Factor data (Figure 18) show a less frequent and lower magnitude of value-to-value oscillation in data, which is similar in the characteristic response of the Modulair sensors during the collocation tests. Although the NMF Factor data in Figures 17 and 18 are not concentration measurements made by the sensor, the instability of the one-minute data is a limitation of the sensors and introduces unreliability into the NMF Factor, thus calling the conclusions into question.

Figure 19 Regional Factor Time Series for Location 8

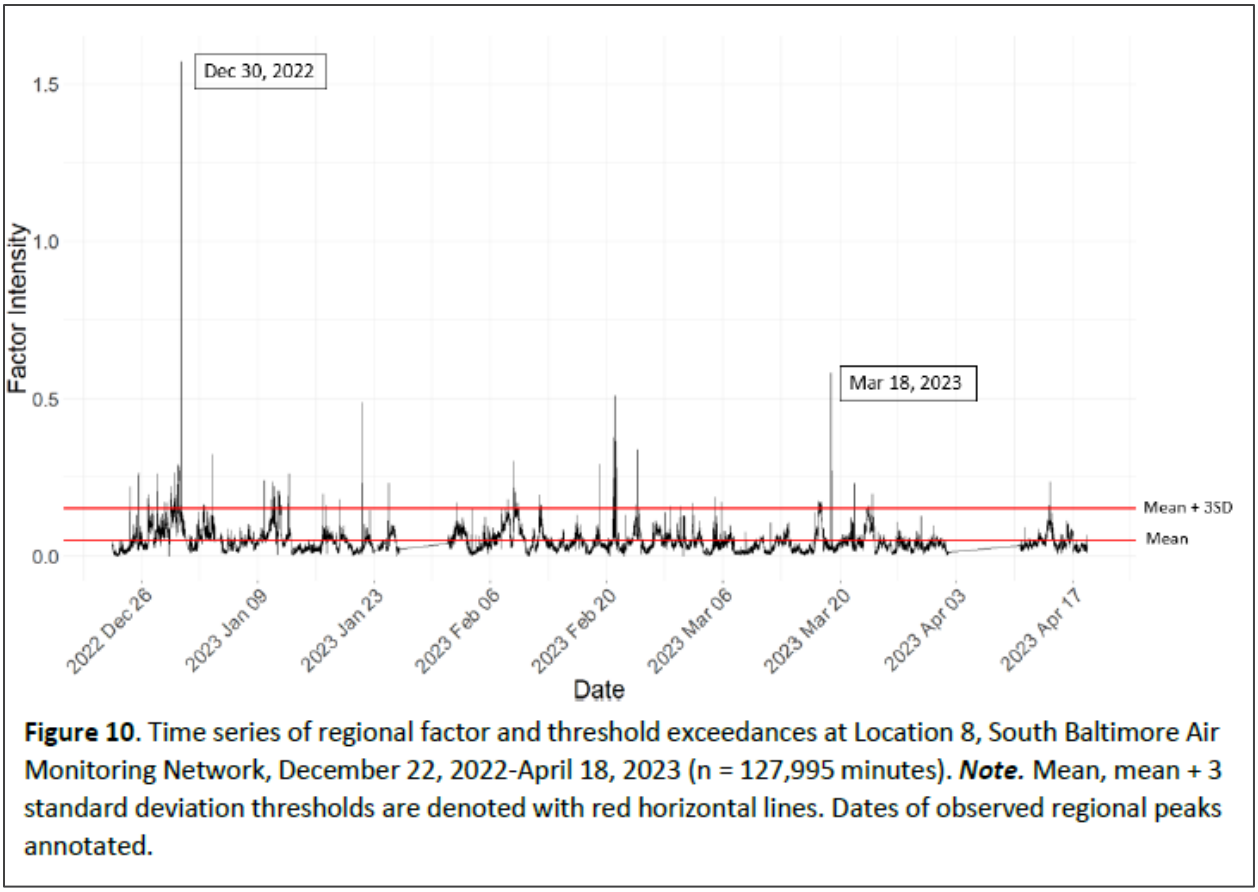


Figure 10. Time series of regional factor and threshold exceedances at Location 8, South Baltimore Air Monitoring Network, December 22, 2022-April 18, 2023 (n = 127,995 minutes). ***Note.*** Mean, mean + 3 standard deviation thresholds are denoted with red horizontal lines. Dates of observed regional peaks annotated.

Source: Figure 10 in the Community Investigation Report

Spikes in concentration data can be difficult to interpret, as the resulting concentration spikes could have contributions from emission sources, systematic errors, or a hyper-localized source such as vehicles, barbeques, vents, smoke from a cigarette or campfire, or excavation activities. These spikes are more difficult to identify and interpret when the sensors have poor stability in the measurements. Furthermore, short-term concentrations are not necessarily an indication of overall air quality for a neighborhood but rather a hyper-local or short-term condition that was captured by the sensor.[98]

[98] US EPA, A Guide to Siting and Installing Air Sensors (accessed January 2024) https://www.US EPA.gov/air-sensor-toolbox/guide-siting-and-installing-air-sensors

5. OPINION #4: IMPROPER USE OF NON-NEGATIVE MATRIX FACTORIZATION (NMF)

Ambient air quality monitoring equipment is not capable of differentiating among air pollutant sources. In other words, the sensors measure the targeted pollutant in the atmosphere and are unable to distinguish the contribution from sources of the pollutant. The Community Investigation Report used a statistical model called non-negative matrix factorization (NMF) in an attempt to quantify the contribution of pollution sources in Curtis Bay to air monitoring data collected by the community monitoring network.

The NMF model can be used to reduce a dataset containing several variables and reducing it into two categories: source types and source contributions. [99] The source type is defined by a unique composition of pollutants (otherwise described as a fingerprint) that can be used to identify a specific pollution source. The source contribution category attempts to determine how much a pollution source is contributing to a sample measurement. The usefulness of the NMF model in this context depends on the uniqueness of the pollutants (or species) used to identify a particular source or source type. Pollutants that are too available in a region or are characteristic of multiple emission source types will weaken the NMF analysis since there would be cross contamination from multiple sources in the sample measurement.

To illustrate this point, below are pollutants and the associated NMF source types used in the Community Investigative Report:

- **PM_{10}** – "Putative Coal Dust" and "Dust"
- **$PM_{2.5}$** – "Local Combustion", "Cars", and "Regional"
- **PM_1** – "Local Combustion", "Cars", and "Regional"
- **Total Suspended Particulate (TSP)** – "Putative Coal Dust" and Dust"
- **Black Carbon (BC)** – "Putative Coal Dust", "Local Combustion", and Regional"
- **Carbon Monoxide (CO)** – "Cars"
- **Nitrogen Oxide (NO)** – "Local Combustion"
- **Nitrogen Dioxide (NO_2)** – "Diurnal Combustion" and "Local Combustion".

As previously described, the utility of the NMF analysis in this context depends on the uniqueness of each source's pollutant fingerprint. Pollutant data measured by the community air monitoring network are not distinguishable or unique enough to differentiate among sources, reducing the effectiveness of their NMF analysis and calling into question the conclusions the researchers draw from it. Moreover, the source categories' fingerprints themselves are not defined consistently. For example, Figure 5 in the Community Investigation Report presents the composition of a variety of NMF Factors for monitoring stations 1, 2, 5, and 8. However, the compositions of the different factors do not seem to show a consistent composition or 'fingerprint' to the different source categories.

Moreover, the Community Investigation Report omits a NMF Factor for diesel trucks or diesel combustion, which the report identifies as being one of the "major sources" of pollution in the community.[100] [101]

[99] Zhang, Y.X.; Sheesley, R.J.; Bae, M.S.; Schauer, J.J. (2009). Sensitivity of a molecular marker based positive matrix factorization model to the number of receptor observations. Atmos. Environ., 43(32): 4951-4958.
[100] See Page 7 of Section 3b of the Community Investigation Report *"At Location 2, the putative coal dust factor appears to be diluted by a ~40% contribution from NO, suggesting nearby diesel emissions."*
[101] See Page 19 of Section 3b of the Community Investigation Report *"For bulldozer activity, the only statistically significant case is for black carbon. This is consistent with the fact that bulldozers are diesel-fueled, and diesel combustion emits black carbon and smaller size fraction particles."*

The Community Investigative Report fails to maintain clear distinctions among source categories in certain sections. For instance, while the Community Investigation Report outlines six source categories for the NMF analysis, it only presents four of the categories in the actual NMF analysis per monitoring site, introducing an additional "Residual" category instead. Similarly, at Location 2, the NMF analysis combines two source categories (cars and local combustion). These discrepancies underscore the inadequacy of the Community Investigation Report's NMF analysis in effectively discerning sources and drawing conclusions regarding any specific source's impact on air quality.

Moreover, based on my conclusion in Opinion 1 that the Community Investigative Report's PM_{10} data are invalid, the entire NMF analysis is invalid because it relies on this PM_{10} data to define multiple source categories. Per the Community Investigative Report, NMF Factors were based on a variety of different combinations of gaseous and PM measurements collected on a one-minute data resolution. Three of these NMF categories use PM_{10} data as an input, which was shown by the Community Investigation Report and the Supplemental Materials Document to have a poor linear relationship when compared to the FEM monitor with a coefficient of determination (R^2) of 0.31. Again, this is well below the US EPA-recommended performance metrics of ≥0.7 when compared with an FEM monitor. It is unclear whether concentration data from the sensors were accepted as reported by the device or if correction factors were applied in the processing of data. If data were accepted as reported by the device, none of the Factor data that utilize PM_{10} measurements should be considered for making conclusions based on the sensor not being able to meet US EPA-recommended performance metrics.

Furthermore, the Community Investigation Report erroneously attributes certain emission events to spikes in "putative coal dust" emissions. The Community Investigation Report describes an event on February 3, 2023, in which a bulldozer became stuck on the southern pile of the terminal. Figure 19 was extracted from the Community Investigation Report and provides a chart of one-minute data comparing the derived "Putative Coal Dust" Factor with corresponding pollutant concentration measurements of TSP, PM_{10}, $PM_{2.5}$, PM_1, black carbon, CO, NO, and NO_2 from noon (12:00) local time (LT) until approximately 15:00 LT on the date of the event. The "Putative Coal Dust" Factor spiked shortly after 12:00 on February 3, 2023, corresponding to a spike in black carbon, $PM_{2.5}$, PM_1, and CO. But the "Putative Coal Dust" Factor spike did not have a corresponding spike in TSP or PM_{10} concentrations, as would have been expected based on the putative coal dust definition developed by the researchers. Furthermore, spikes in the "Putative Coal Dust" Factor at approximately 12:50, 13:15 and 14:05 LT only have spikes in TSP, PM_{10}, and $PM_{2.5}$ without a corresponding black carbon spike, which would indicate the "Dust" Factor category would also have a spike rather than the PCD Factor.

This example raises questions as to the Community Investigation Report's vetting and interpretation of the data. From the NMF Factor definitions as provided in the Community Investigative Report, NMF categories such as Regional, Cars, or Local Combustion Factors would have been expected to spike rather than the "Putative Coal Dust" Factor.

Figure 20 Community Investigation Report Time Series from February 3, 2023, Event

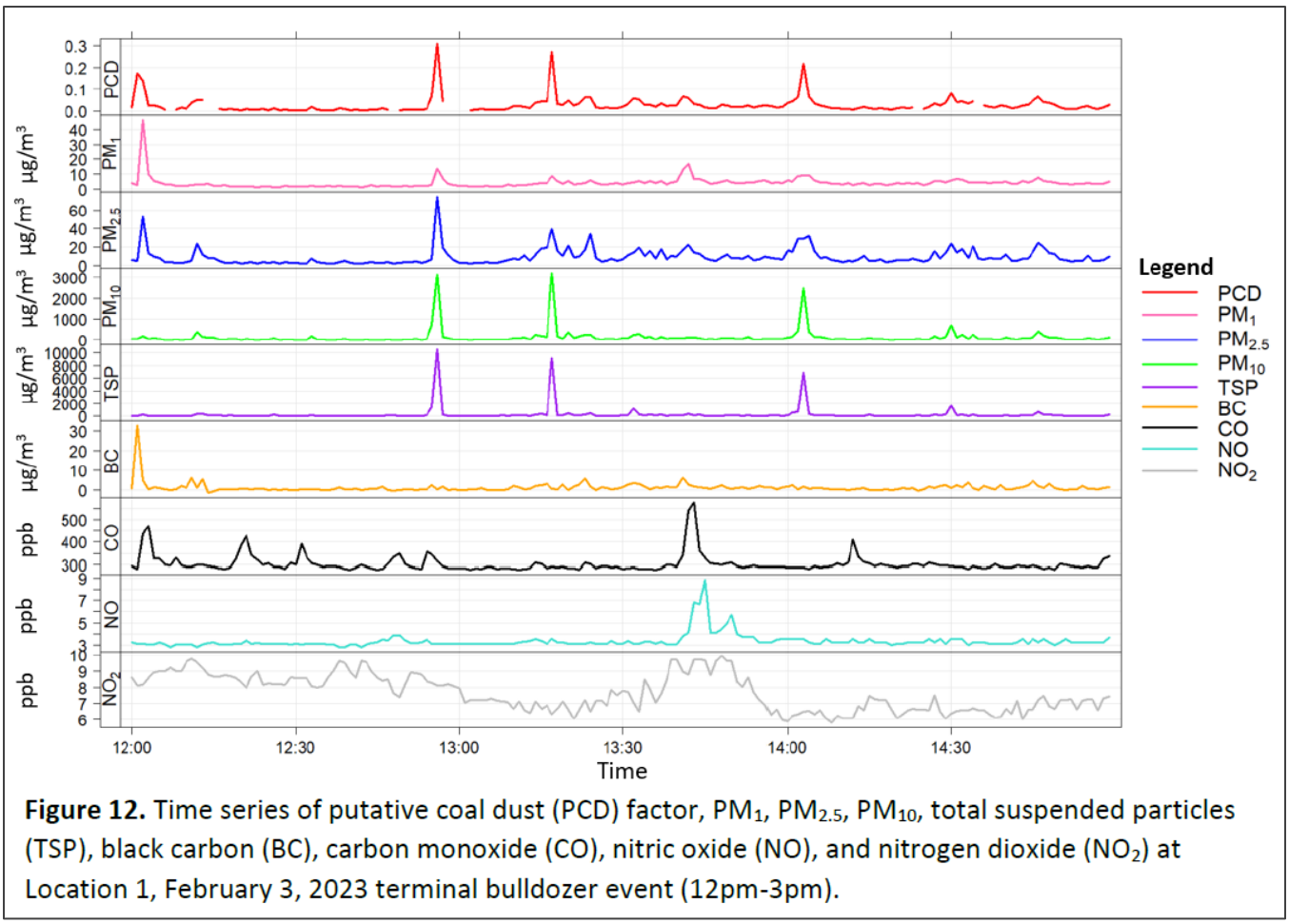


Figure 12. Time series of putative coal dust (PCD) factor, PM_1, $PM_{2.5}$, PM_{10}, total suspended particles (TSP), black carbon (BC), carbon monoxide (CO), nitric oxide (NO), and nitrogen dioxide (NO_2) at Location 1, February 3, 2023 terminal bulldozer event (12pm-3pm).

Source: Figure 12 in the Community Investigation Report

5.1 Improper Use of the Term "Exceedance"

The term "exceedance" in the air quality lexicon indicates an air pollution episode in which a verified measurement is greater than an air quality standard set by US EPA or other air quality agencies.[102] [103] The Community Investigation Report improperly uses this term and provides a count and duration of so-called 'exceedances' for their *Factor Index* terms.

An air quality report conveying a number of exceedances would indicate that there are episodes in which a verified measurement is greater than a predetermined regulatory standard and that the verified measurement matches the time averaging period set for the threshold. An example of a NAAQS exceedance would be if the 24-hour PM_{10} concentration were to go above 150 µg/m^3 or a 24-hour $PM_{2.5}$ concentration were to go above 35 µg/m^3. This does not indicate a violation of the standard but an exceedance of the standard. Concentration values measured on a one-minute or one-hour basis for PM_{10} or $PM_{2.5}$ may be above their respective 24-hour or annual levels of the air quality standard, but an exceedance does not exist since the averaging periods do not match. Furthermore, if a 24-hour or annual average is above the level of

[102] Sensor Guidebook, Appendix F: Glossary Ibid (6).
[103] 40 CFR Section 50.1(l)

the NAAQS, this is considered an exceedance and does not constitute a NAAQS violation. A NAAQS violation occurs when the design value[104] of the pollutant is in excess of the level of the NAAQS. The verified measurement also needs to match the time averaging period set for the standard.

The Community Investigation Report defines its own standard without any regulatory basis and compares one-minute NMF data to this standard to determine the number of "exceedances" measured in the Curtis Bay community. Their standard is defined as the mean plus three standard deviations (mean + 3SD), with any one-minute concentration data or *Factor* Indices above this threshold being considered as an "exceedance." The threshold used by the Community Investigation Report (mean + 3SD) is a statistical measure for identifying outliers[105], but in no way should be considered as a measure for defining a standard or an indicator of poor air quality, or inferred to be a health-based regulatory standard.

[104] Ibid (83).
[105] Study.com Determining Outliers Using Standard Deviation. https://study.com/skill/learn/determining-outliers-using-standard-deviation-explanation.html

6. CONCLUSION

It is my opinion that the conclusions in the Community Investigation Report are not supported by verified or reliable data. As discussed in Section 2 of my report, the community monitoring program was conducted in a manner that did not follow US EPA-recommended procedures or best practices for designing, installing, implementing, validating, and evaluating air quality data. The air monitoring program used low-cost sensors that are susceptible to moisture and electrical interferences leading to noisy data and were documented as not meeting US EPA-recommended performance testing metrics. The monitoring program also used flawed and misleading statistical analysis to interpret the data and draw unfounded conclusions about community air quality.

The Community Investigation Report misused NMF in an attempt to use air monitoring data collected in the community to quantify the contribution of some pollution sources in Curtis Bay. Furthermore, this NMF model was improperly used in conjunction with a statistical measure, typically used for identifying outliers, to create a standard of poor air quality. This standard was not based on public health, nor were any regulatory standards or health-based studies cited or referenced to justify the use of this standard.

Lastly, the Community Investigation Report did not cite a QAPP that was reviewed and accepted by an oversite agency that documents planning, implementation, and quality control procedures for the community air monitoring network. The procedures outlined in a QAPP and US EPA guidance are critical to ensure that the air monitoring data are usable, accurate, and technically sound for drawing conclusions and informing decisions made using a weight-of-evidence approach. To emphasize the importance of a QAPP, MDE requires the use of QAPPs in its Quality Management Plan for its environmental data operations before project implementation. Any air monitoring studies that draw conclusions or drive decisions should also be required to operate under an approved QAPP.

The data and conclusions drawn from the Community Investigation Report are inconclusive at best and do not follow established or accepted scientific methodology for collecting data that is reliable, accurate, or representative of air quality in the Curtis Bay community.

APPENDIX A. CV FOR SCOTT ADAMSON, CCM

Scott Adamson, CCM

Managing Consultant — **Salt Lake City**

AREAS OF SPECIALIZATION

- Meteorological Monitoring Systems
- SLAMS, SPM, and PSD Monitoring Regulations
- Exceptional Event Rule Analysis
- Emergent Pollutant Monitoring and Analysis
- Quality Assurance Project Plans
- Air Quality and Meteorological Monitoring Systems
- Data Quality Assurance and Validation
- Exceptional Event Technical Analyses
- Ambient Monitoring Network Assessments
- Software Solutions Development
- Database Development with Microsoft Access
- Toxics Regulation and Human Health Risk Analyses
- Atmospheric Dispersion Modeling Using the AERMOD, CALPUFF, and AESCREEN Dispersion Modeling Systems

SUMMARY OF EXPERIENCE

A Board-Certified Consulting Meteorologist (CCM) based in the Greater Salt Lake City, Utah area serving as a Managing Consultant within Trinity Consultants' Monitoring Services and Integration Department. Primary role over the past 15 years of experience has been to assist clients in a wide range of industries including utilities, aerospace, papermill, refineries, oil & gas, mineral products, and government agencies with the need to collect and analyze ambient meteorological and air quality data. Air monitoring experience includes network/station planning and design, agency negotiations, equipment procurement, station installations, equipment maintenance, performance auditing, and operator training.

EDUCATION

B.S., Meteorology, University of Utah

AFFILIATIONS

Air and Waste Management Association (A&WMA)
American Meteorological Society (AMS)

CERTIFICATION

AMS Board Certified Consulting Meteorologist (CCM) - #714

TECHNICAL EXPERTISE

Ambient Air Monitoring Network Management - Currently managing over 20 ambient air quality monitoring projects throughout the United States from Wyoming, Utah, New Mexico, Idaho, South Carolina, Illinois, and California. Mr. Adamson has extensive experience with SLAMS, PSD, and special purpose monitoring programs/studies. He acted as primary investigator for the annual Upper Green River Wyoming Ozone Study from 2010 through 2020. This studies focus is on the spatial and temporal distribution of ozone and precursor pollutants and how they relate to atmospheric conditions and snowfall within the Upper Green River Basin. Successfully negotiated regulatory agencies the use of lower-cost sensors for air quality analyses and compliance notifications for better understanding of impacts of industry on the Environmental Justics communities.

Permitting/Dispersion Modeling – Mr. Adamson has experience in the development, evaluation, application, and execution of dispersion models in support of PSD and NSR permit applications using the AERMOD and CALPUFF modeling systems. He has experience preparing minor source air quality permit applications incorporating process descriptions, emission inventories, regulatory review, regulatory applicability, and air quality impact analyses. In support of PSD permit applications, Mr. Adamson has recently completed Class II, Class I, and NAAQS dispersion modeling analyses for several refineries, a proposed 580MW combined-cycle electric generation facility, and a silicon manufacturing plant in Mississippi. Mr. Adamson is actively involved in several other AERMOD dispersion modeling projects associated with NSR permits to demonstrate compliance with the state or national ambient air quality standards (NAAQS) for proposed water pipeline pump stations, hydrotreating facilities, produced water evaporation pond facilities, a mineral company's solar evaporation facility, several sand and aggregate facilities, and a large chemical industrial complex in the Caribbean.

Computer Programming - Mr. Adamson has written software to graphically display and predict plume dispersion and particulate fallout during solid rocket booster tests. With respect to air dispersion modeling, he has written software to manipulate meteorological data into formats suitable for input into dispersion models. In addition, Mr. Adamson developed and implemented Trinity's Data Scanning and Alert System (DSAS), a software application which conducts live inspection of meteorological and air quality monitoring site data. The program is used as a tool to assist Trinity staff identify data outliers, problems with site equipment, and site communication issues.

Air Quality and Meteorological Instrumentation - Mr. Adamson is familiar with wind direction, wind speed, vertical wind speed, evaporation, temperature, relative humidity, precipitation, barometric pressure, snow depth, and solar and net radiation sensors as well as all types of ambient air quality analyzers including $NO/NO_2/NO_x/NO_y$, O_3, $PM_{2.5}/PM_{10}$, SO_2, CO, and CH_4/NMHC/THC.

Mr. Adamson provides technical expertise in the quality assurance and analysis of meteorological and air quality data. This includes successful justification for data exclusion of PM_{10} concentrations measured near a coal-fired power plant as part of an exceptional event demonstration. He has developed and maintained databases as part of large research projects including a regional ozone study.

EMPLOYMENT HISTORY

2007 – January 2022	Trinity Consultants
January 2022 – August 2022	Ramboll
August 2022 – present	Trinity Consultants

APPENDIX B. COMMUNITY MONITORING NETWORK WIND ROSES

Figure 21 Location 1 Windrose

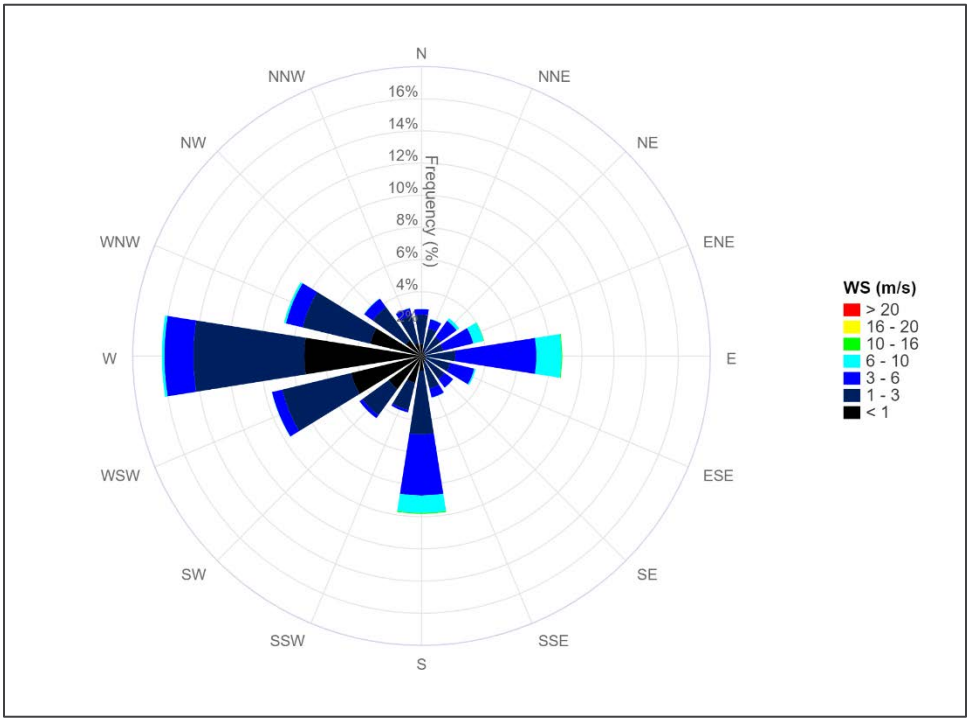


Figure 22 Location 2 Wind Rose

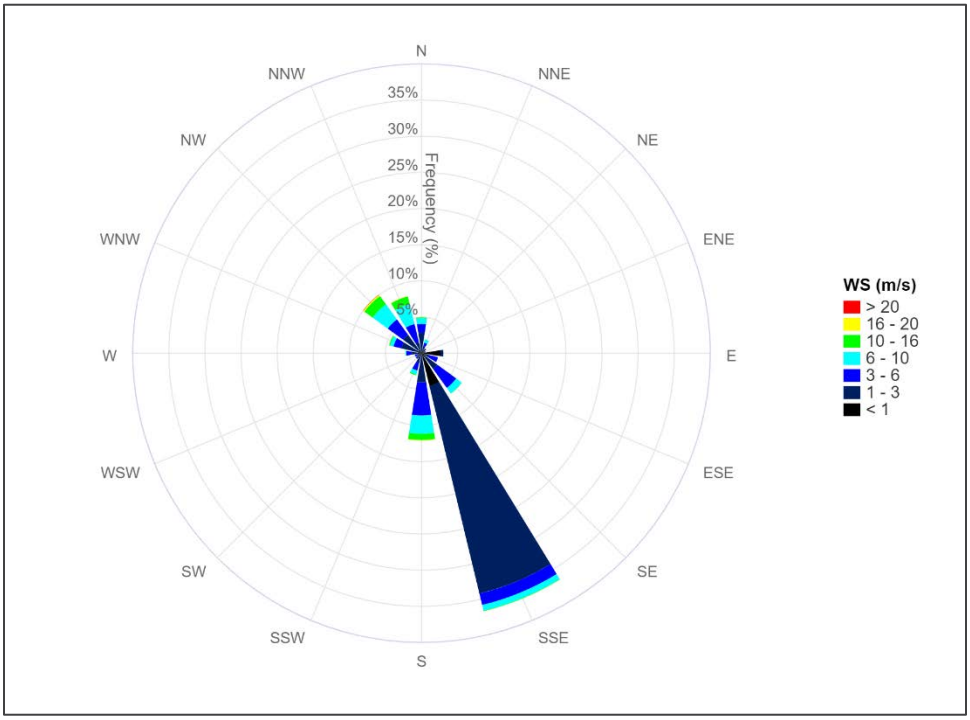


Figure 23 Location 3 Wind Rose

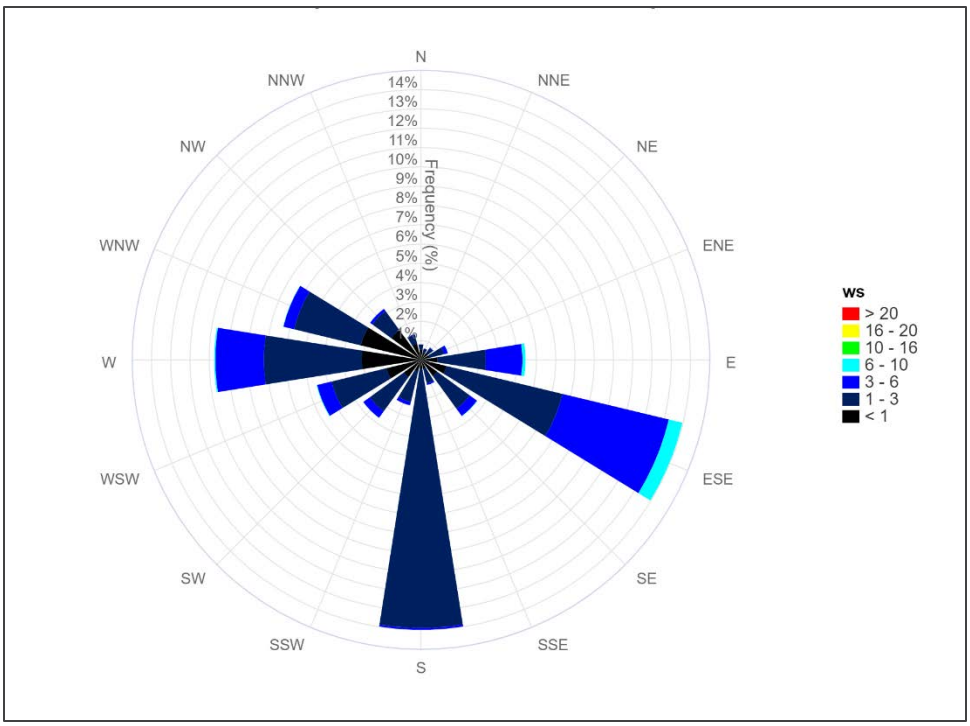


Figure 24 Location 4 Wind Rose

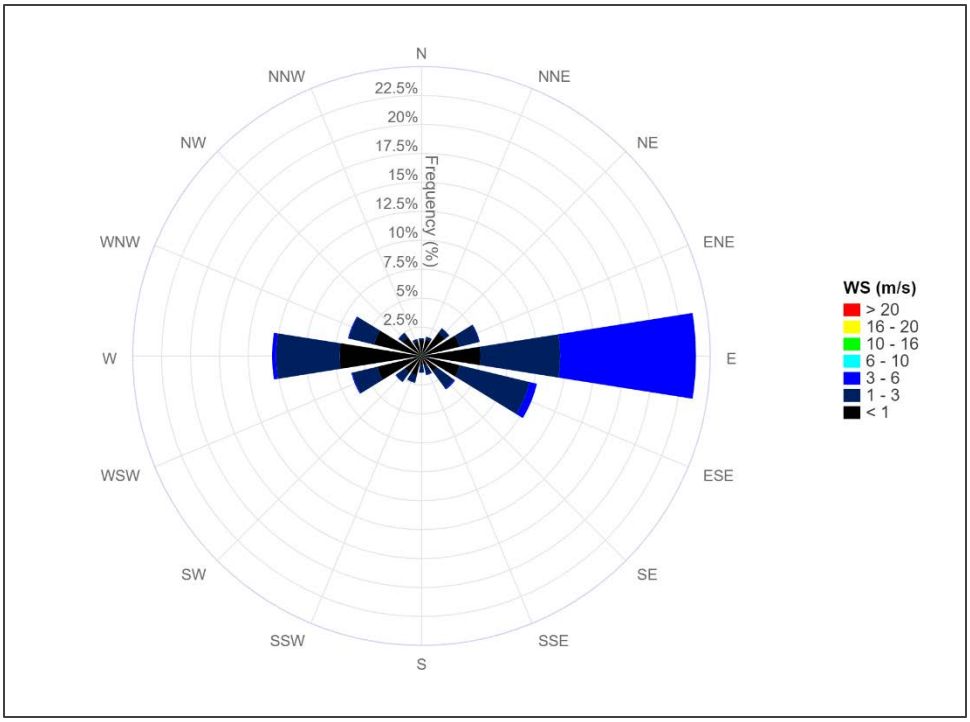


Figure 25 Location 5 Wind Rose

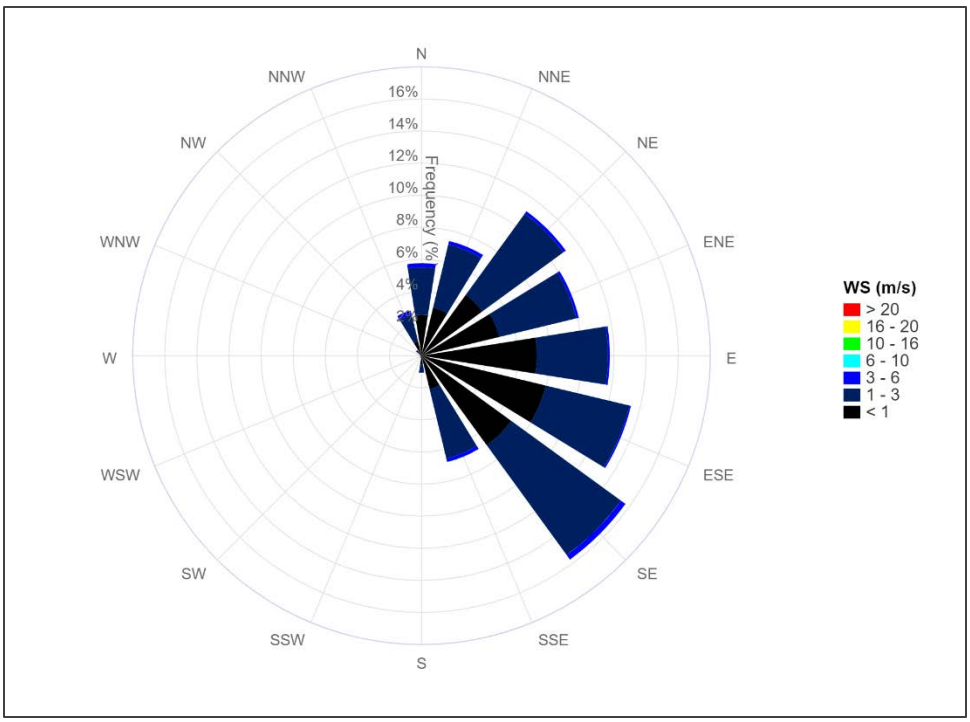


Figure 26 Location 6 Wind Rose

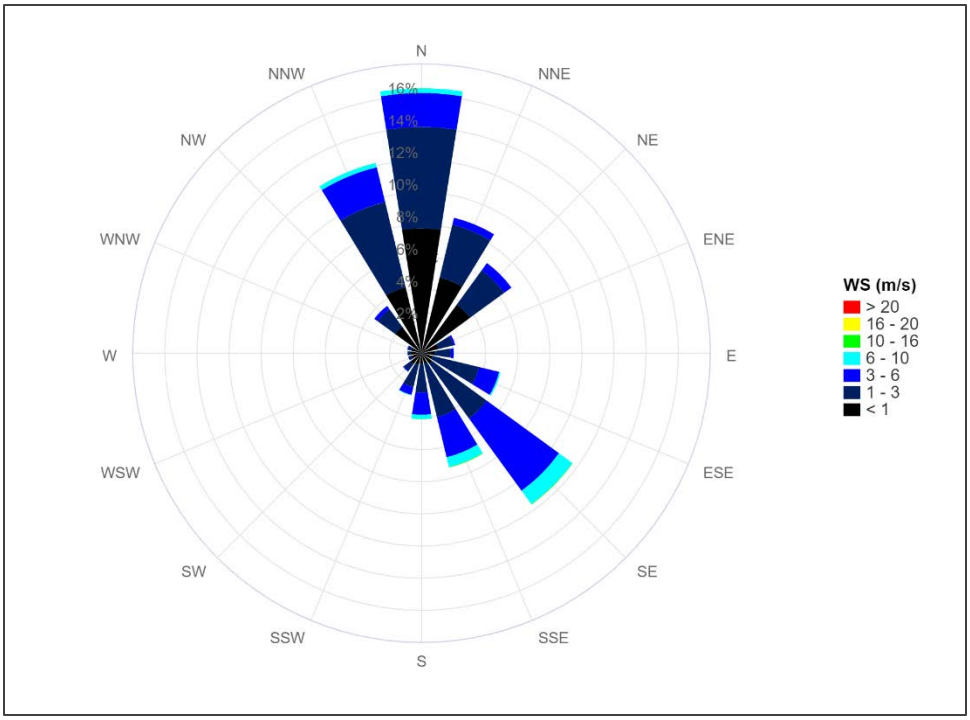


Figure 27 Location 7 Wind Rose

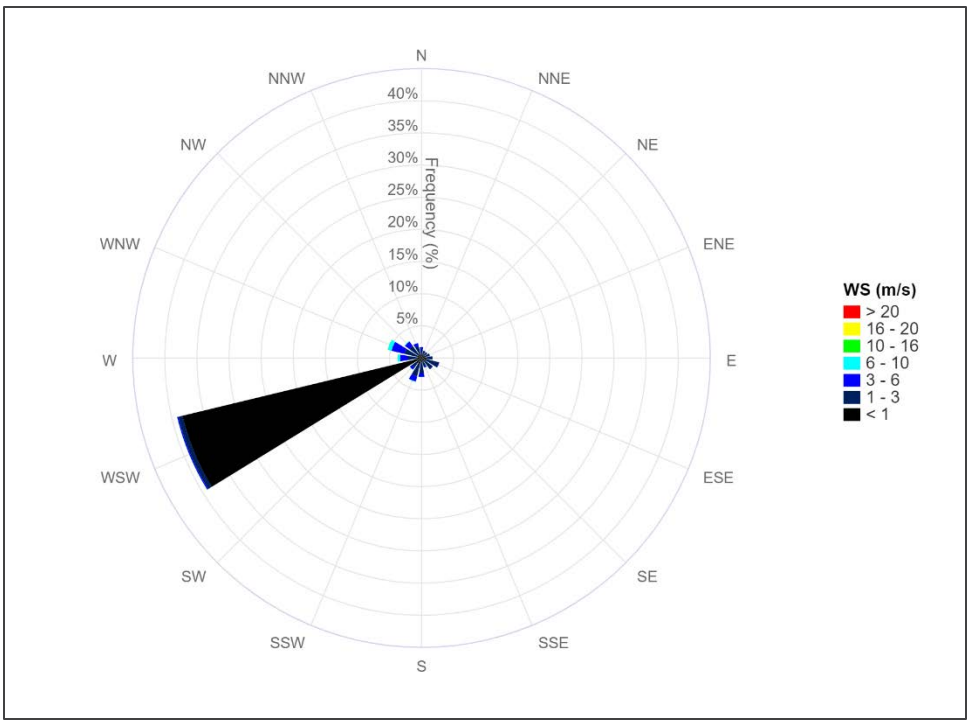


Figure 28 Location 8 Wind Rose

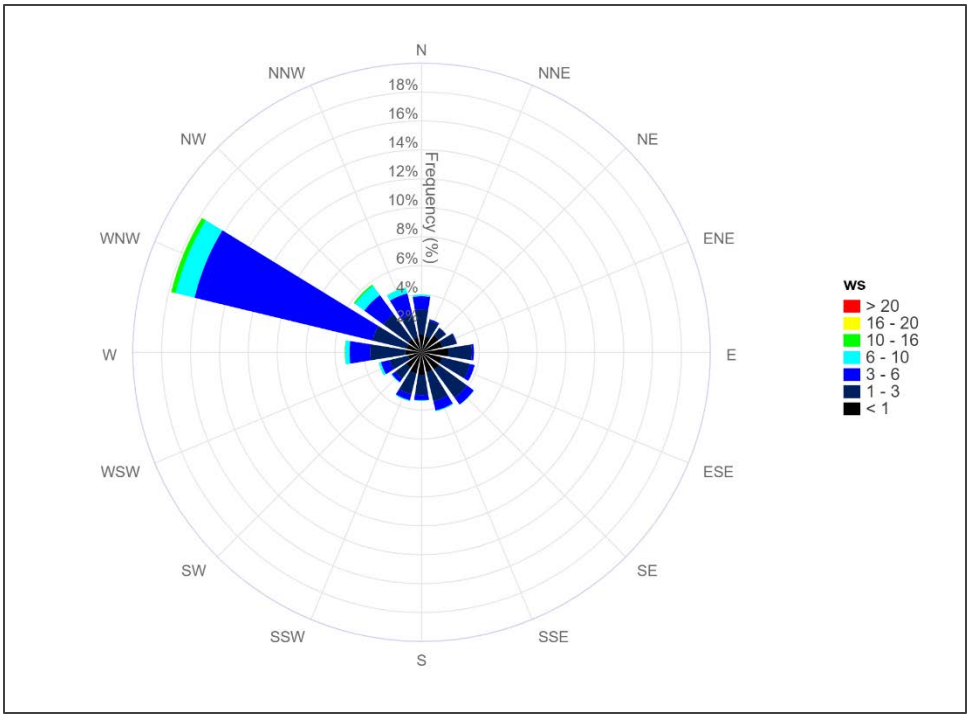


Figure 29 Location 9 Wind Rose

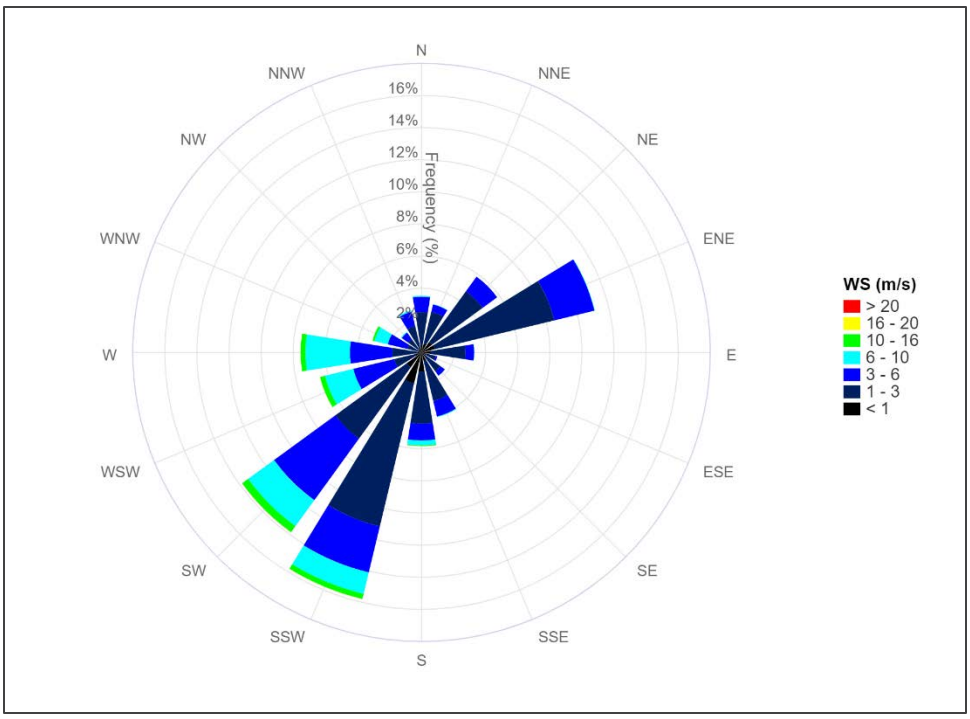
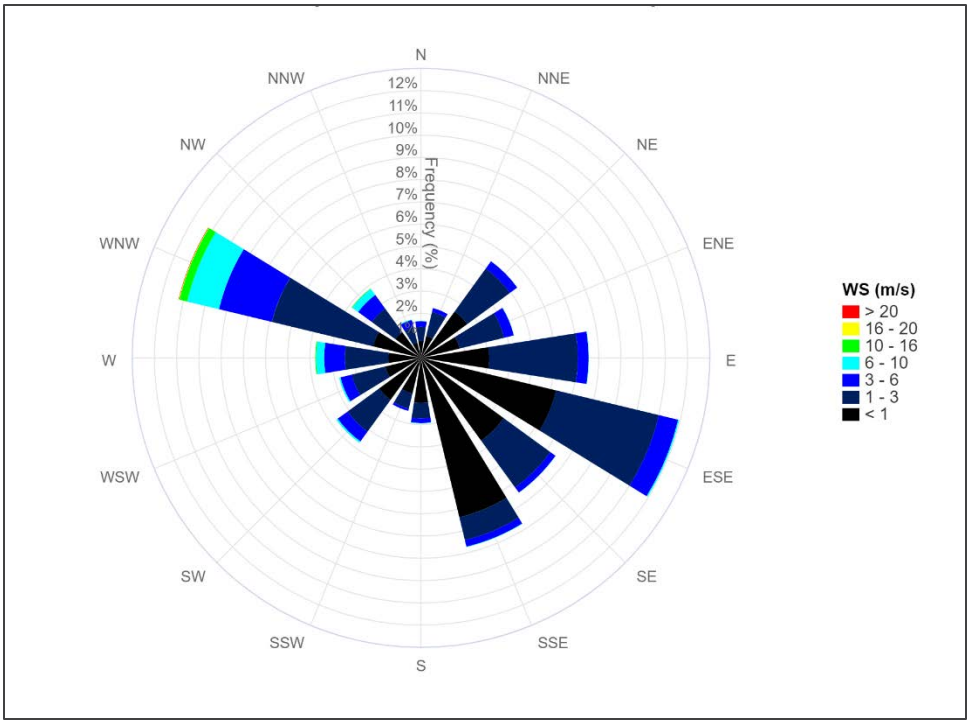


Figure 30 Location 10 Wind Rose



Attachment 3 -

GHD Report

Critical Review and Response

Collaborative Investigation of Coal Dust, Air Pollution, and Health Concerns in Curtis Bay, South Baltimore, Maryland, USA, 2022-2023

Prepared for CSX Transportation, Inc.

February 12, 2024

→ **The Power of Commitment**

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1. Introduction

GHD has reviewed the report titled *Collaborative Investigation of Coal Dust, Air Pollution, and Health Concerns in Curtis Bay, South Baltimore, Maryland, USA, 2022-2023* (Collaborative Report) (CBCR 2023).

In February 2022, a collaborative group was formed to investigate concerns raised by Curtis Bay residents about dark dust on homes and property that they attribute to the transport of coal via rail in South Baltimore and the coal handling operations at CSXT Curtis Bay Piers (Terminal). The group included members from the Community of Curtis Bay Association, the South Baltimore Community Land Trust, the Maryland Department of the Environment (MDE) Air and Radiation Administration, the CHARMED Center at the Department of Environmental Health and Engineering at the Johns Hopkins Bloomberg School of Public Health, and the Department of Atmospheric and Oceanic Sciences at the University of Maryland. The group collected and characterized dust from several locations in the community; deployed multipollutant low-cost air sensors to measure particulate matter and gaseous pollutants; collected data using a mobile air monitoring vehicle; and collected photos, videos, experiences, and testimonials from residents.

The group presented the following preliminary findings in the Collaborative Report:

- Coal dust is present throughout the community;
- Coal dust finds its way into the community on a day-to-day basis and is correlated with both activity at the Terminal and wind direction; and
- The Curtis Bay community is overburdened by air pollution; with the community sensor network measuring average particle pollution levels that are higher than at nearby MDE regulatory monitors.

The Collaborative Report also importantly identifies many other sources of air pollution in the Curtis Bay area, including the Curtis Bay Energy medical waste incinerator, the BRESCO municipal solid waste incinerator, Quarantine Road Landfill, Patapsco Wastewater Treatment Plant, a coal-fired power plant, concrete crushing plants, asphalt manufacturing, chemical plants, and oil and gas terminals. Moreover, the Collaborative Report emphasizes that heavy diesel truck traffic is a significant mobile source of pollution in Curtis Bay, with levels of black carbon along Pennington Avenue and Curtis Avenue similar to levels on major Baltimore highways. (CBCR 2023, Executive Summary and Section 2).

1.1 Purpose of this Report

GHD concludes based on its review of the Collaborative Report that statements regarding exposure to particulate matter (PM) and health effects are incomplete and misleading. This Report addresses the following concerns:

- the Collaborative Report overstates that no safe level of exposure to fine particulate matter ($PM_{2.5}$) exists; and
- The Collaborative Report does not distinguish between health effects associated with exposure to $PM_{2.5}$ and health effects associated with exposure to coal dust.

2. Scope and Limitations

This Report has been prepared by GHD for CSX Transportation and may only be used and relied on by CSX Transportation.

GHD otherwise disclaims responsibility to any person other than CSX Transportation arising in connection with this Report. GHD also excludes implied warranties and conditions, to the extent legally permissible.

The services undertaken by GHD in connection with preparing this Report were limited to those specifically detailed in the Report and are subject to the scope limitations set out in the Report.

The opinions, the conclusions, and any recommendations in this Report are based on conditions encountered and information reviewed at the date of preparation of the Report. GHD has no responsibility or obligation to update this Report to account for events or changes occurring subsequent to the date that the Report was prepared.

3. Summary of Critical Review

3.1 Recommended Air Quality Guidelines/Standards for PM Exposure

The Collaborative Report states that the World Health Organization (WHO) (WHO 2021) and the United States Environmental Protection Agency (EPA) (USEPA 2019; USEPA 2022) support that there is no safe level of $PM_{2.5}$ exposure (CBCR 2023, Section 2). This is an overstatement of what these agencies have concluded.

World Health Organization

The Collaborative Report references PM guidelines set by the WHO. The WHO publishes air quality guideline levels (AQG) for various common air pollutants for indoor and outdoor environments globally (WHO 2021, Executive Summary, page xiv). These values are not legally enforceable and are intended to be used as a global reference tool to aid governmental and non-governmental agencies around the world in setting standards and goals for air quality management (WHO 2021, Section 1.1, page 3). Nevertheless, the WHO guidelines are discussed below in order to respond to the Collaborative Report's use of these guidelines to assess air quality and draw conclusions.

WHO states that the "objective of these guidelines is to offer quantitative health-based recommendations" for air quality management to protect populations (including vulnerable and/or susceptible groups) from the adverse effects of air pollution (WHO 2021, Section 1.1, pages 3-4).

In 2021, WHO released updated AQG levels for several air pollutants, including $PM_{2.5}$ and PM_{10}, to incorporate new environmental data and scientific research since the previous update in 2005. Based on available information, WHO recommends an annual $PM_{2.5}$ ambient AQG level of 5 ug/m^3 and a short-term, 24-hour average $PM_{2.5}$ AQG level of 15 ug/m^3 (WHO 2021, Executive Summary, page xvii). For PM_{10}, the recommended annual AQG level is 15 ug/m^3, and the recommended short-term, 24-hour average AQG level is 45 ug/m^3 (WHO 2021, Executive Summary, page xvii). WHO defines a long-term AQG level as "the lowest exposure level of an air pollutant above which the guideline development group is confident that

there is an increase in adverse health effects" (WHO 2021, Executive Summary, page ix). A short-term AQG level is defined "as a high percentile of the distribution of daily values" (WHO 2021, Executive Summary, page ix). WHO explains that variations in long-term exposure to a pollutant often is typically associated with greater health effects than short-term exposure, so "long-term AQG levels for most health outcomes are more health protective than short-term AQG levels" (WHO 2021, Section 2.5.2, page 65). As a result, "the long-term AQG level is used to derive a short-term AQG level whenever the same health effect is considered (*e.g.* mortality) for both long- and short-term exposures" (WHO 2021, Section 2.5.2, page 65). WHO conservatively determined that evidence supports a positive association between short-term exposure to $PM_{2.5}$ and all-cause mortality and cardiovascular, respiratory, and cerebrovascular mortality at >5 ug/m^3 (WHO 2021, Section 3.2.2, page 77). Therefore, there is limited evidence to conclusively support that there are adverse health effects below this concentration level.

US Environmental Protection Agency

The Clean Air Act (CAA) (Section 108 (42 U.S.C. 7408)) requires EPA to identify "criteria air pollutants" that cause or contribute to air pollution and to issue air quality standards for those pollutants. The statute directs EPA to list those air pollutants that are reasonably "anticipated to endanger public health or welfare" and the "presence of which in the ambient air results from numerous or diverse mobile or stationary sources" (42 U.S.C 7408(a)(1)). Once these pollutants have been identified, Section 109 of the CAA directs EPA to promulgate "primary" (health-based) and "secondary" (welfare-based) National Ambient Air Quality Standards (NAAQS) based on the latest scientific knowledge "useful in indicating the kind and extent of all identifiable effects on public health or welfare, which may be expected from the presence of a pollutant in the ambient air" (42 U.S.C 7408(a)(2)). The primary standards for each air pollutant are developed with the intent to protect the public health with an adequate margin of safety. Secondary standards "provide public welfare protection, including protection against decreased visibility and damage to animals, crops, vegetation, and buildings" (USEPA 2024).

EPA has developed legally enforceable NAAQS values for $PM_{2.5}$ and PM_{10} (USEPA 2024c). The primary standard for each pollutant is developed to provide public health protection, including for protecting the health of sensitive populations such as people with asthma, children, and the elderly.

In 2019, EPA released the Integrated Science Assessment for Particulate Matter (ISA Report), which is "a comprehensive evaluation and synthesis of the policy-relevant science 'useful in indicating the kind and extent of identifiable effects on public health or welfare which may be expected from the presence of [a] pollutant in ambient air,' as described in Section 108 of the CAA" (USEPA 2019, Section P.2., page P-9). In its re-evaluation of health effects and risks associated with PM exposure, EPA concluded that epidemiological studies indicate a linear, no-threshold concentration-relationship between short-term $PM_{2.5}$ exposure and mortality at higher concentrations (USEPA 2019, Section 1.7.1.1.3, page 1-62). However, confidence in the shape of the curve decreases at concentrations below 8 ug/m^3, suggesting lack of consistent evidence of health effects at lower $PM_{2.5}$ exposures (USEPA 2019, Section 1.7.1.1.3, page 1-62).

Following the 2019 assessment of the NAAQS for PM (USEPA 2019), the primary and secondary NAAQS for PM were retained without revisions (USEPA 2020). On February 7, 2024, following an additional review of the NAAQS for PM that began in 2022, EPA announced that it was revising the level of the primary annual NAAQS for $PM_{2.5}$ (or soot) from 12.0 ug/m^3 to 9.0 ug/m^3 (USEPA 2024b). In finalizing the revised $PM_{2.5}$ standard, EPA announced that it evaluated and retained the annual secondary NAAQS for $PM_{2.5}$ of 15.0 ug/m^3 and the primary 24-hour $PM_{2.5}$ NAAQS of 35 ug/m^3 (USEPA 2024a). EPA also evaluated and

retained the primary and secondary 24-hour NAAQS for PM_{10}, concluding that it provides public health protection against exposures to coarse particles and that the current evidence does not call into question the adequacy of that standard (USEPA 2024a). The primary and secondary 24-hour NAAQS for PM_{10} is 150 ug/m^3 (USEPA 2024b).

The primary PM NAAQS are health-based standards set with vulnerable populations in mind and based on the latest scientific knowledge. Development of ambient air quality levels or standards suggest that there is a level of PM exposure that is expected to not result in adverse health effects in individuals in the general population, including those with pre-existing health conditions that make them more susceptible to $PM_{2.5}$-related effects (*e.g.*, asthma, heart disease, and lung disease) (USEPA 2019, Section P.1., page P-2). As stated in the May 2022 *Policy Assessment for the Reconsideration of the National Ambient Air Quality Standards for Particulate Matter* (USEPA 2022, Section 1.2, page 1-5), the CAA does not require primary NAAQS to be set at zero-risk level; however, the law requires that primary NAAQS values be based on the latest scientific knowledge and provide an adequate margin of safety to protect public health (Section 109(b)(1) of the CAA [42 U.S.C. 7409]).

The Collaborative Report reported that, averaging daily $PM_{2.5}$ concentrations from low-cost community sensors in the Curtis Bay network for the first complete year of reporting (5/26/22 to 5/25/23), 24-hour PM_{10} and annual and 24-hour $PM_{2.5}$ levels were all below the NAAQS. The 24-hour average $PM_{2.5}$ was 8.6 ug/m^3, which is below the newly revised primary $PM_{2.5}$ NAAQS as well as the secondary $PM_{2.5}$ NAAQS (CBCR 2023, Section 4, page 8). Similarly, excluding wildfire smoke affected data, the Collaborative Report concluded that there were no days that average 24-hour PM_{10} concentrations exceeded the PM_{10} NAAQS value (CBCR 2023, Section 4, page 9).[1]

3.2 Particulate Matter Air Pollution and Health

Interpretation of research findings on exposure to PM and associated risks is complicated by the complex nature of PM (WHO 2021, Section 3.2, page 74). PM is not a single pollutant (CARB 2024). In general, PM may be derived from different emission sources, resulting in a complex mixture of solids and aerosols with diverse chemical and physical characteristics (CARB 2024). PM may be defined as primary particles (directly emitted from sources) or secondary particles (formed in the atmosphere through chemical reactions of gases such as sulfur dioxide, nitrogen oxides, and other organic compounds from natural and anthropogenic sources) (CARB 2024). Natural sources of PM include trees and vegetation, while anthropogenic sources include industrial processes and motor vehicle exhaust (CARB 2024). PM is categorized based on aerodynamic diameter. EPA defines $PM_{2.5}$ as particles with aerodynamic diameters less than or equal to 2.5 micrometers (um) (USEPA 2019, Section 2.1, page 2-2). PM_{10} includes particles with aerodynamic diameters generally greater than 2.5 um and less than or equal to 10 um (USEPA 2019, Section 2.1, page 2-2).

$PM_{2.5}$

Extensive research has shown that exposure to PM, specifically $PM_{2.5}$, is associated with short- and long-term health effects. Strong evidence supports a relationship between $PM_{2.5}$ exposure and certain health effects, such as some respiratory effects, cardiovascular effects, and mortality (USEPA 2019, Section 1.7, page 1-60). However, these studies do not identify any particular $PM_{2.5}$ component that causes these effects. In the ISA report, EPA states:

[1] The reliability and validity of the data collected by the community air monitoring sensors are discussed in the Trinity Consultants report.

> *This evaluation found that many components and sources representative of combustion-related activities (e.g., motor vehicle emissions, coal combustion, oil burning, vegetative burning) are associated with a range of health effects. The 2009 PM ISA, therefore, concluded that "many [components] of PM can be linked with differing health effects and the evidence is not yet sufficient to allow differentiation of those components or sources that are more closely related to specific health outcomes."*
>
> *. . . Overall, recent studies continue to demonstrate that many PM2.5 components and sources are associated with health effects ranging from subclinical (e.g., changes in heart function, such as HRV, or circulating biomarkers) to the more overt (i.e., ED visits, hospital admissions, and mortality). The results of these studies confirm and further support the conclusion of the 2009 PM ISA that many $PM_{2.5}$ components and sources are associated with many health effects and that the evidence does not indicate that any one source or component is consistently more strongly related with health effects than $PM_{2.5}$ mass.*

(USEPA 2019, Section 1.5.4, page 1-50 to 1-51). As EPA has found, in a non-occupational setting, it is difficult to accurately link particular components of $PM_{2.5}$ with particular health outcomes.

PM_{10}

The experimental and epidemiological data provide inconsistent evidence of health effects as a result of PM_{10} exposure. The ISA Report concludes that for PM_{10}, the evidence for association of health effects and PM_{10} exposure was either *suggestive of, but not sufficient to infer, a causal relationship* or *inadequate to infer the presence* or *absence of a causal relationship* (USEPA 2019, Section 1.7.1.2, pages 1-63 to 1-64). In the 2020 and 2024 re-evaluations of PM NAAQS values, EPA concluded that the available scientific evidence and information did not call into question the adequacy of the primary PM_{10} standard and retained that standard without revision (USEPA 2024c, Section III, Page 341).

As discussed in the Collaborative Report, the Terminal handles unrefined coal that is transported by railcar and stored before being loaded on vessels. Coal dust at a coal handling facility is produced primarily from mechanical means, including unloading of rail cars, loading of vessels, shaping the coal into piles, and vibration while transporting via the conveyor system. These activities result in potential emission of larger coal particles from coal handling, but not products that would be released as a result of coal combustion, which are associated with smaller particulate sizes such as $PM_{2.5}$.

Occupational Exposure Studies

The predominant constituent of coal is carbon. Coal may also contain in varying proportions clays, carbonates, sulfide ores, oxide ores, quartz, phosphates, and heavy minerals (WHO 1997, Section 1.1.2, page 339). Numerous studies conducted on coal dust due to occupational exposures during coal mining as detailed by the National Institute for Occupational Safety and Health (CDC 2011 and WHO 1997) have shown that coal dust is not inherently toxic.

Observance of health effects as a result of exposure to any substance is dependent on both the potential hazard of that substance and the duration and intensity of exposure to that substance. Based on studies of high-level occupational exposure of coal miners working in mines, consistent repeated exposure to coal dust in excess of 2 milligrams per cubic meter (2 mg/m^3) for at least 10 years is associated with a specific spectrum of respiratory diseases, including pneumoconiosis, progressive massive fibrosis, emphysema, chronic bronchitis, and accelerated loss of lung function, and is highly correlated to estimates of cumulative dust exposure and dust or dust components remaining in the lung (CDC 2011). Occupational exposure

limits for coal dust that have been developed by different agencies to protect worker health (see OSHA Permissible Exposure Limits – Annotated Table Z-3) (OSHA 2024) range from a high of 10 mg/m^3 to a low of 0.1 mg/m^3 depending on silica content. These values consider up to 8 hours of continuous exposure to coal dust that would not be expected to result in adverse health effects.

The lowest permissible occupational exposure value of 0.1 mg/m^3 (100 ug/m^3) for coal dust is 11 times higher than the newly promulgated primary NAAQS for $PM_{2.5}$ of 9.0 ug/m^3. Therefore, it is not expected that coal dust concentrations in ambient air that meets the $PM_{2.5}$ NAAQS would result in increased health risks to individuals in the surrounding community.

WHO has also determined that there was no consistent evidence supporting an exposure-response relationship between coal dust and cancer and concluded that coal dust *cannot be classified as to its carcinogenicity to humans* (WHO 1997, Section 5.5, page 393).

4. Conclusion

After review of the Collaborative Report, it must be emphasized that exposure does not equate to toxicity or development of adverse health effects. Based on EPA and WHO air quality standards or levels, there are ambient air concentrations of $PM_{2.5}$ that are not expected to result in adverse health effects in the general population, including sensitive populations. As mentioned previously, the Collaborative Report identifies several sources of air particulate in the Curtis Bay area, including the Curtis Bay Energy medical waste incinerator, the BRESCO municipal solid waste incinerator, Quarantine Road Landfill, Patapsco Wastewater Treatment Plant, a coal-fired power plant, concrete crushing plants, asphalt manufacturing, chemical plants, and oil and gas terminals (CBCR 2023, Section 2). Based on my review of the Collaborative Report, there is insufficient evidence to conclude that coal dust from the Terminal significantly contributes to overall $PM_{2.5}$ concentrations or adverse health effects in Curtis Bay.

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Tamara R. House-Knight PHD; DABT

Senior Toxicologist/Risk Assessor



Location

North Little Rock, AR, USA

Experience

Over 15 years

Qualifications/Accreditations

– Diplomate of the American Board of Toxicology (DABT), 2016
– PhD, Interdisciplinary Toxicology, 2004
– BS, Biology, 1999

Key technical skills

– Crisis Communication

Other related areas of Interest

Certifications

– OSHA 40-hour HAZWOPER, Refresher, 2021

Memberships

– Society of Toxicology
  [Ethical, Legal, Forensics, and Societal Issues Specialty Section]
  [Toxicologists of African Origin Special Interest Group]
– ITRC Chemicals of Emerging Concern Team

Relevant experience summary

Dr. House-Knight specializes in human and environmental risk assessment. She has been involved in assessing human health risks for redevelopment projects and brownfield sites.

Dr. House-Knight has provided toxicological support following chemical exposures to client employees and health care workers and responding to hundreds of worker exposure incidents involving a wide variety of chemicals. She works with industrial and pharmaceutical clients to meet regulations in the U.S. (Toxic Substances Control Act and OSHA Hazard Communication Standard) and European Community (REACH). In addition, she has assisted with community relations/public participation following environmental releases.

Dr. House-Knight has provided toxicological support for litigation teams related to causation involving asbestos, petroleum products, VOC (benzene, trichloroethylene) and coal ash exposures.

Dr. House-Knight currently serves as the GHD lead of the Americas Emerging Contaminants Technical Team.

Project experience

Role: Toxicologist
Location: Kansas, USA

Worked with Kansas Department of Health and Environment (KDHE) in Region VII to develop environmental clean-up levels for orthochlorobenzyl chloride (OCBC) protective of human health after a train derailment.

Role: Toxicologist
Location: Various Corporations, USA

Assisted with litigation support involving mesothelioma and lung cancer claims due to asbestos exposure. This work included reading of depositions, preparation of trial exhibits, and frequent contact with multiple law firms.

Role: Toxicologist
Location: Various Corporations, USA

Assisted with litigation support involving benzene exposure. This work included reading of depositions, preparation of trial exhibits, and frequent contact with multiple law firms.

Role: Toxicologist
Location: Various Corporations, USA

Review of existing and preparation of new Safety Data Sheets (SDS) to meet Occupational Safety and Health Administration (OSHA) and Globally Harmonized System (GHS) requirements.

Role: Toxicologist/Risk Communication
Location: Billings, Montana

Provided toxicological information and explanation of environmental sampling data to local residents during an environmental oil release and subsequent clean-up activities.

Role: Risk Assessor
Location: Fort Smith, Arkansas

Prepared human health risk assessments evaluating potential risks associated with exposure to trichloroethylene in groundwater and indoor air and provided risk communication to affected residents and workers. Evaluated the potential for significant vapor intrusion, using multiple lines of evidence that incorporated sampling of multiple media and other relevant site information (e.g., geology) from a historic chlorinated VOC groundwater plume that extended off-site into a residential neighborhood. The work was performed with oversight from Arkansas Department of Environmental Quality.

Role: Toxicologist
Location: Jacksonville, Florida

Provided emergency toxicology service to answer questions regarding human health and ecological concerns resulting from accidental chemical releases to employees and emergency room personnel.

Role: Risk Assessor
Location: Decatur, Georgia

Assisted with data review and preparation of human health risk assessment related to historical release of PFAS in soil and groundwater. Identified available toxicity and physical/chemical data from literature sources to evaluate potential human health and food chain exposures to PFAS. The conceptual site model of potential exposures was focused primarily on residential and recreational exposures to outdoor media (soil, sediment, surface water), but also included human dietary exposures via fish.

Role: Risk Assessor
Location: Ontario, Canada

Provide product registry support services related to California Proposition 65 requirements for goods and/or products produced by an industrial client.

Role: Toxicologist
Location: USA

Assisted with review and evaluation of potential human health risks associated with exposure to potential hazardous chemicals in a company's product.

Role: Toxicologist
Location: USA

Assisted with review and evaluation of potential risks associated with exposure to cattle ingesting grasses and surface water after petroleum release and subsequent remediation.

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Career history

2021 - present	GHD, Senior Toxicologist/Risk Assessor
2012 - 2021	Ramboll US Corporation, Managing Consultant/Toxicologist
2005 - 2012	Center for Toxicology and Environmental Health (CTEH), Project Toxicologist
2004 - 2005	University of Kansas Medical Center (KUMC), Postdoctoral Fellow

Attachment 4 –

Misleading Photographs and Videos in the Collaborative Report

CSX

Appendix 4: Misleading Photographs and Videos Included in the Collaborative Report

1. Photograph of the Curtis Bay Recreation Center does not show the current view of the Terminal.

Figure 2 in the Executive Summary of the Collaborative Report is a photograph that purports to show the view of the Terminal from the playground at the Curtis Bay Recreation Center. No date is provided on the photograph in Figure 2. While the photograph in the Collaborative Report may represent an historic perspective, it does not accurately portray the current viewshed from the Curtis Bay Recreation Center. Below is a current photograph of the Terminal taken from the recreation center playground that shows the large warehouse located at 4501 Curtis Avenue that partially obscures the view of the Terminal.



Figure A1. Photograph of the Curtis Bay Recreation Center taken on Dec 21, 2023 showing warehouse in background.

2. Figure 4 in the Collaborative Report's Executive Summary is not a photograph of visible dust from coal handling operations at the Terminal. It is a photograph showing emissions from a ship docked at the Terminal.

The Collaborative Report's Executive Summary states that the report presents photographs and videos from residents describing their experience with coal dust from the Terminal. Figure 4 of the Executive Summary purports to show a "[p]lume of visible dust at coat terminal, June 1, 2021." This photograph does not show a plume of coal dust from the Terminal on June 1, 2021.

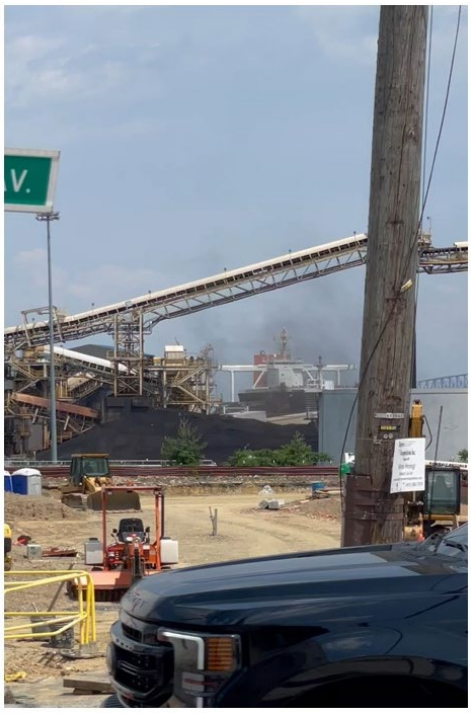


Figure 4. Plume of visible dust at the coal terminal, June 1, 2021.

There are multiple inaccuracies associated with the Collaborative Report's use of this photograph as "evidence" that coal dust is coming from the Terminal. First, the date provided in the Collaborative Report is incorrect. The photograph was taken on June 1, 2022, not June 1, 2021. Second, and more importantly, CSXT previously responded to an MDE inquiry regarding this photograph (and accompanying video) and confirmed that it shows exhaust from the ship docked at the Terminal, not coal dust. Specifically,

- On June 3, 2022 CSXT received an email from MDE requesting information about the source of the visible emissions at the Terminal on June 1, 2022. The email included a video taken by Dr. Christopher Heaney on June 1, 2022 purporting to show fugitive coal dust emissions coming from the Terminal. The video is available here: https://photos.app.goo.gl/copag7iZUqhygVCF7. MDE requested that CSXT provide an

explanation of the source of visible emissions shown in the video as well as a log of wet suppression operations on June 1, 2022.

- CSXT responded to MDE's email that the video shows exhaust from the ship docked at the Terminal and provided additional photograph evidence that the visible emissions were coming from the ship. CSXT also provided MDE with the dust suppression records for June 1, 2022 and a description of the activities taking place at the Terminal on that date.

Nonetheless, the video taken by Dr. Heaney is incorrectly referenced in the Collaborative Report as "evidence" of coal dust leaving the Terminal. Specifically, Section 3, page 6, of the Collaborative Report falsely claims that "Video evidence shows that coal dust is lofted to 100 to 300 m above the surface." The visible emissions in the video are emissions from the ship, but the Collaborative Report confuses these emissions with coal dust. The video was also referenced at the public meeting held on December 14, 2023. Repeated reference to this video in the report and at the public meeting demonstrates confusion around different types of air pollution sources: point sources, fugitive sources, and combustion sources.

3. Close-up photographs of "Dark Dust" on resident homes lack identifying information and are not conclusive of any coal contribution.

Figure 3 of the Executive Summary contains 15 close-up photographs of "dark dust on residents[']homes in Curtis Bay, taken between April and December 2023." The Collaborative Report does not provide any location information for these photographs nor the dates that these photographs were taken. The photographs of 'dark dust' are not conclusive of any coal contribution. It appears that at least one of the photographs was previously noted by the Curtis Bay Community Association to have been taken immediately following the 2021 explosion at Curtis Bay Piers. *See* photographs available at https://ilovecurtisbay.com/environmentaljustice/

CSX Transportation, Inc. Comments on Renewal of State Permit to Operate No. 510-2263 for CSX Transportation Curtis Bay Piers

Appendix 3: *Memo from Trinity Consultants to CSX regarding "CSXT Curtis Bay Piers – Fenceline Monitoring Network Status" (Dec. 10, 2024)*

Trinity Consultants

MEMORANDUM

To: Raghu Chatrathi, CSXT Senior Director of Public Safety, Health and Environment

cc: Becky Hensley, CSXT Senior Manager Sustainability

From: Scott Adamson, CCM, Trinity Consultants

Date: December 10, 2024

RE: CSXT Curtis Bay Piers – Fenceline Monitoring Network Status

Monitoring Program Background

CSXT Transportation, Inc. (CSXT) operates a coal terminal at Curtis Bay Piers (CBP) in Baltimore, Maryland. The terminal operates a variety of material handling equipment for the transfer of coal, ore, limestone, and other dry materials. Coal arrives by rail, is temporarily stored in outdoor storage piles, and is loaded into barges and vessels. Other products are allowed but not currently transferred at this terminal. The terminal does not contain any coal processing equipment.

CBP has not yet received approval from the Maryland Department of Environment (MDE) for the renewal of their State Permit to Operate (PTO) No. 510-2263. The CBP facility currently operates under a permit shield and in accordance with the PTO that expired on September 30, 2023. On September 7, 2022, MDE issued a permit to construct (PTC) for the installation of a replacement conveyor and other damaged equipment. The PTC required CSX to submit, for MDE's review and approval, a plan for the installation and operation of a network of PM_{10} and $PM_{2.5}$ monitors designed to monitor for fugitive dust. Per Part D(5) of the PTC, CSXT was required to submit a plan to install and operate:

- One (1) continuous federal equivalent method (FEM) monitor to measure particulate matter (PM) both with a diameter of 10 micrometers or less (PM_{10}) and a diameter of 2.5 micrometers or less ($PM_{2.5}$) and at least one collocated $PM_{2.5}/PM_{10}$ sensor;
- Multiple $PM_{2.5}/PM_{10}$ sensors around the CBP facility; and
- A 10-meter meteorological tower that meets all requirements of EPA's Quality Assurance Handbook for Air Pollution Measurement Systems – Volume IV: Meteorological Measurements.

CSX submitted a fenceline monitoring plan on November 6, 2022, which was approved by MDE on August 16, 2023.[1]

Monitoring Network Implementation and Quality Assurance Project Plan

On April 3, 2023, two FEM monitoring stations and the 10-meter meteorological tower were installed and calibrated. The low-cost sensors that make up the remainder of the fenceline monitoring network were installed in June 2023. To ensure the quality and accuracy of the data reported by the monitoring program, Trinity Consultants developed a Quality Assurance Project Plan (QAPP) dated November 2023 and submitted to MDE for review, approval, and signature on February 16, 2024.

The QAPP details the methodologies proposed to establish continuous and accurate PM_{10}, $PM_{2.5}$, and meteorological measurements at the CBP facility. The objective of the particulate and meteorological

[1] Although MDE's letter approving the Fenceline Monitoring Plan is dated June 26, 2023, it was not sent to CSX until August 16, 2023.

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monitoring at CBP is to obtain representative particulate and meteorological information that may be used for informational purposes, including community awareness and comparison with regional air quality.

The information collected for the fenceline monitoring program is intended to meet the requirements as found in the following EPA documents:

- *EPA's Quality Assurance Handbook for Air Pollution Measurement Systems, Volume II: Ambient Air Quality Monitoring Program*, EPA-454/B-08-003, January 2017,
- *U.S. EPA's Quality Assurance Handbook for Air Pollution Measurement Systems: Volume IV, Meteorological Measurements*, March 2008,
- *U.S. EPA's Meteorological Monitoring Guidance for Regulatory Modeling Applications*, EPA-454/R-99-005, February 2000,
- *Guidance for Quality Assurance Project Plans*, EPA QA/R-5, EPA/240/R/009, December 2002,
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- *Environmental Information Quality Policy*, Current Version of EPA CIO 2105.1,
- 40 CFR Part 50, Appendices J and L, and
- *U.S. EPA's The Enhanced Air Sensor Guidebook*, EPA/600/R-22/213, December 2022.

Monitoring Network Reports and Data Summary

Data from the CSXT fenceline monitoring network have been routinely validated and reported to MDE on a quarterly basis. The network became fully operational in the third quarter (July through September) of 2023. Quarterly summary reports, provided on a calendar quarter basis, include meteorological data, FEM continuous PM_{10} and $PM_{2.5}$ measurements, and data from ten (10) non-regulatory PM_{10} and $PM_{2.5}$ sensors distributed across the fenceline.

All data are validated following the procedures outlined in the QAPP, which adheres to EPA guidance for meteorological and air quality measurements. The fenceline monitoring system has been fully operational for 17 months, and 15 months of monitoring data have been provided to MDE. To date, five quarterly summary reports (Q3 2023, Q4 2023, Q1 2024, Q2 2024, and Q3 2024), along with the corresponding validated data files, have been submitted to MDE's air monitoring group.

The quarterly summary reports provide detailed information on the functionality and accuracy of data collected for each quarter. These reports include summaries of meteorological and pollutant data (such as maximum, minimum, and average measurements), data capture rates, and quality control activities. Documentation of the quality control activities includes test dates, significance tests (including bias, correlation, and coefficient of variation), field data sheets, a list of invalidated data periods with reasons for invalidation, corrective action forms, and certificates of traceability and calibration for all testing equipment. These reports are submitted to MDE in accordance with the procedures outlined in the QAPP.

Table 1 presents a summary of the data collected to date. While the eight (8) monitoring stations are located at the CSXT facility and do not represent ambient air, the measured concentrations show compliance with the 24-hour National Ambient Air Quality Standards (NAAQS) for PM_{10} and $PM_{2.5}$.

The PM_{10} standard is met if the 24-hour average PM_{10} concentration does not exceed 150 $\mu g/m^3$ more than once per year on average over a three-year period. To date, none of the monitoring stations at the site have measured a 24-hour PM_{10} concentration above 150 $\mu g/m^3$.

The $PM_{2.5}$ standard is met when the three-year average of annual 98th percentile of 24-hour $PM_{2.5}$ concentrations does not exceed 35 $\mu g/m^3$. The 24-hour $PM_{2.5}$ standard is a probabilistic standard, meaning a

certain percentage of exceedances are acceptable. Specifically, the annual 98th percentile results in the eighth highest concentration in a year. The average of the eighth-highest concentrations for the past three years is the value used for comparison to the standard. Table 1 below shows that none of the monitoring stations have had more than eight exceedances over the five quarters of data reported to date, meaning the average 98th percentile value does not exceed the NAAQS.

Although a standard exists for annual $PM_{2.5}$ concentrations, per 40 CFR 58.30, monitors that are not representative of area-wide air quality and are influenced by micro-scale or localized hot spot impacts are not eligible for annual NAAQS comparisons.

Table 1 CSXT Monitoring Station Data Summary

Monitor Location	$PM_{2.5}$				PM_{10}			
	Maximum 24-hour (µg/m³)	Minimum 24-hour (µg/m³)	Data Capture Rate (%) [b]	Number of Days Exceeding NAAQS [c,d]	Maximum 24-hour (µg/m³)	Minimum 24-hour (µg/m³)	Data Capture Rate (%) [b]	Number of Days Exceeding NAAQS [e]
AQ5	41.0	2.0	85%	3	64.9	4.0	85%	0
AQ8	38.6	1.8	60%	1	80.5	3.8	60%	0
AQ1 [a]	42.1	1.5	97%	3	69.7	3.7	95%	0
AQ2 [a]	35.3	1.6	70%	1	83.4	2.7	70%	0
AQ3 [a]	45.3	1.5	79%	4	75.0	4.9	79%	0
AQ4 [a]	44.4	1.4	91%	3	70.4	4.4	90%	0
AQ5A [a]	40.5	1.6	92%	2	72.4	4.0	91%	0
AQ5B [a]	37.6	1.7	77%	2	64.5	3.5	76%	0
AQ5C [a]	42.3	1.5	56%	2	72.2	3.8	56%	0
AQ6 [a]	39.4	2.0	80%	1	63.3	4.9	80%	0
AQ7 [a]	43.6	1.2	54%	2	70.5	2.6	53%	0
AQ8A [a]	39.5	1.3	92%	2	68.0	3.3	91%	0

[a] Non-regulatory sensor technology (QuantAQ Modulair).
[b] Based on five quarters of monitoring between July 1, 2023 and September 30, 2024 (458 days).
[c] $PM_{2.5}$ NAAQS is based on the 98th-percentile of the 24-hour concentrations (8th highest concentration for a year). The level of the 24-hour NAAQS is 35 µg/m³.
[d] Annual $PM_{2.5}$ NAAQS is not appropriate for comparison with fenceline monitoring stations per 40 CFR 58.30.
[e] PM_{10} NAAQS is not to be exceeded more than once per year on average for 24-hour concentrations. The level of the 24-hour NAAQS is 150 µg/m³.

Summary

In accordance with the PTC, CSXT has implemented a fenceline monitoring network at the CBP facility. The network configuration, instrumentation, and operational procedures have been reviewed and approved by MDE through a site-specific fenceline monitoring plan (required by the PTC) and a QAPP (which has been submitted to MDE for approval). The monitoring network has been fully operational since July 2023 and provides validated meteorological and particulate matter (PM_{10} and $PM_{2.5}$) data through a 10-meter meteorological tower, two FEM monitors, and ten low-cost sensors. All operational and data validation procedures adhere to the QAPP and EPA guidance. The data collected to date demonstrate compliance with the 24-hour NAAQS for both PM_{10} and $PM_{2.5}$.

CSX Transportation, Inc. Comments on Renewal of State Permit to Operate No. 510-2263 for CSX Transportation Curtis Bay Piers

Appendix 4: *RJ Lee Group, Response to Aubourg et. al. Science of the Total Environment Journal Article (2024) (Dec. 11, 2024)*

RJ Lee Group Response to Aubourg et. al. Science of the Total Environment Journal Article (2024)

Prepared at the request of CSX Transportation, Inc.

December 11, 2024

RJ Lee Group

Overview

On July 11, 2023, the Maryland Department of the Environment (MDE) received an application from CSX Transportation to renew the Curtis Bay Piers Air Quality State Permit to Operate. The permit was administratively extended per COMAR 26.11.02.08B, which allows continued operation of a source pending final action on an application for the renewal of an operating permit "if the source has submitted a timely and complete application and is in compliance with the prior State Permit to Operate."

The MDE extended the existing permit to give additional time to incorporate evidence from the Curtis Bay community air monitoring research study. The MDE has received input from the community groups on multiple occasions by attending meetings of the Community of Curtis Bay Association and collaborating with community scientists, the South Baltimore Community Land Trust, Johns Hopkins University and the University of Maryland ("Community researchers") on a study that purported to detect airborne coal dust in the community near the CSX Terminal. The preliminary findings of the study were documented in a December 2023 report titled, *Collaborative Investigation of Coal Dust, Air Pollution, and Health Concerns in Curtis Bay, South Baltimore, Maryland,* USA. Based on information obtained from the Collaborative Report , MDE included the following additional dust control measures in the draft renewal permit:[1]

- Construction of a physical barrier surrounding the coal storage areas to prevent coal dust from reaching the surrounding community from the coal storage piles on site.
- Installation of a water application system to apply water to rail cars loaded with coal at the property line when they enter the northern end of the facility.
- Enhancement of the existing water application system in the railcar unloading sheds inside the CSX Terminal facility by adding atomized spray nozzles to increase the overall dust control efficiency.

This report addresses concerns with the MDE requirements for additional protective measures in the Draft Permit. Our review of the underlying data relied on by the Community researchers and MDE indicates that coal dust is present at a trace level in the community and does not constitute nuisance. Further, the Community researchers have not provided data to support that coal particles from the CSX Terminal are a threat to public health in the Curtis Bay community.

Background

The Collaborative Report, released on December 16, 2023, stated among its preliminary findings that:

- Coal dust is present throughout the Curtis Bay community.
- Coal dust finds its way into the Curtis Bay community on a day-to-day basis and is correlated with both activity at the coal terminal and wind direction.

Both of these findings are cited in the fact sheet for the draft permit to operate as justification for requiring additional dust control conditions at Curtis Bay Piers.

On January 18, 2024, CSX and MDE met at the CSX Terminal to discuss CSX's concerns with the analytical methods and findings in the Collaborative Report. At that meeting, consultants for CSX, including RJ Lee Group, discussed issues with the Collaborative Report findings.

One of the key issues was that the scanning electron microscopy (SEM) and energy dispersive X-ray spectroscopy (EDS) analysis conducted to identify coal particles in settled dust did not follow the procedure described in the report and the results lacked significance because of the small number of particles analyzed per sample. As a result, the SEM/EDS analysis results did not support the Collaborative Report's finding that coal dust was found at all 8 monitoring sites and in 100 percent of the samples.[2]

On February 16, 2024, Raghu Chatrathi (CSX) sent Chris Hoagland (MDE Director Air and Radiation Administration) a letter summarizing issues related to the Collaborative Report's findings.[3] This letter included a comprehensive response to the Collaborative Report prepared by RJ Lee Group that included critical review of the SEM/EDS analysis conducted by the Community researchers. The RJ Lee Group response to the Collaborative Report is attached as Exhibit 1.

Based, at least in part, on the concerns related to the Collaborative Report identified by CSX, the Community researchers performed additional SEM analysis on two samples collected in October 2023 and originally reported in the Collaborative Report. The reanalysis of the samples (the "Aubourg study")[4] was done with a better-defined analysis protocol, but was only used to identify the 'presence' or 'absence' of coal particles for particles > 5 micrometers (μm) in size in the Curtis Bay community. The samples were collected near the interchange of Curtis Avenue and Church Street and near the Ben Franklin School, and were collected over a three-day sampling period to "*…reflect community members' decades-long observation of rapid black dust accumulation at their homes.*"[5] The results were reported as coal particles accounting for approximately 10 percent of the particles analyzed with a concentration of ~13 coal particles/mm^2 on the Curtis & Church sample and ~3 coal particles/mm^2 on the Ben Franklin school sample.[6]

The MDE Fact Sheet for the draft permit identifies the 'presence' of coal particles in settled dust in Curtis Bay in the Collaborative Report is the justification MDE relied on to conclude that CSX's current dust control measures are inadequate to prevent coal dust from reaching the community and that additional dust control measures are needed at the CSX Terminal. However, the data provided by the recent reanalysis in the Aubourg study actually indicate that coal dust > 5 μm is present only in trace concentrations in Curtis Bay from a darkening of surfaces perspective. Further, there was no information provided to substantiate that there is a health threat related to coal dust to residents in the community.

The Aubourg et.al. Science of the Total Environment Paper Does Not Indicate Nuisance Dust from the CSX Terminal

As noted, the analysis of the Curtis & Church and Ben Franklin School settled dust samples was performed using a modified protocol as compared to the method originally used and discussed

in the Community Report.[7] According to the Aubourg study,[8] the revised SEM analysis protocol was used to determine:

- "the presence-absence of coal dust particles in settled dust passively collected on conductive carbon tape";
- "the fraction of coal particles out of the total number of particles analyzed"; and
- "approximate loading of settled particles and/or coal particle per mm^2 analyzed on each sample".

Results from the Aubourg study SEM analysis of the Curtis & Church and Ben Franklin School samples are summarized Table 1.

Table 1. Aubourg Study SEM Results for Particles > 5 μm.

Location	Distance from CSXT (m)	# Fields	Area Analyzed (mm^2)	Total Particles Analyzed	Total Particle Loading (p/mm^2)	# Coal Particles > 5μm	% Coal	Coal Dust > 5μm Loading (p/mm^2)
Curtis & Church	345	8	0.53	82	155	7	9	13.2
Ben Franklin School	1,235	27	1.78	78	44	6	8	3.4

Contrary to the preliminary conclusions in the Collaborative Report, the Aubourg study results in Table 1 indicates that: 1) observation of dark dust is not attributed to rapid accumulation of coal dust, and 2) the amount of coal particles > 5 μm in the samples are not visible to the naked eye and do not indicate nuisance.

To put these results (specifically, ~13 particles/mm^2 in the Curtis & Church sample) into perspective in terms of the 'darkening' of surfaces, a laboratory study was performed. The study involved depositing coal obtained from the CSX Terminal onto a 0.2 μm polycarbonate (PC) filter using vacuum filtration techniques. Prior to vacuum filtration, the coal was sieved down to 400 mesh and material from the minus 400 mesh fraction (< 38 μm) was filtered onto the PC filter. The samples were analyzed for particles > 5 μm using a high-resolution reflective light microscope (Keyence 7100). A summary of the Keyence results for a sample that approximates the concentration reported in the Aubourg study on the Curtis & Church sample are provided in Table 2. The data presented in Table 2 represents three replicate analyses in separate areas of the filter.

Table 2. Data from Coal Particle Loading RJ Lee Group Laboratory Study.

RJLG Sample #	Size Fraction (μm)	Analysis ID	Particles Analyzed > 5μm	Area Analyzed (mm^2)	Coal Dust Particles/mm^2
3182949	< 38	Area 1	445	23.3	19
3182949	< 38	Area 2	500	23.3	21
3182949	< 38	Area 3	458	23.3	20

This laboratory study revealed that coal particles > 5 μm at a concentration of ~20 particles/mm^2 had no visible discoloration on the filter. When viewed by eye the sample cannot be distinguished from a blank filter as shown in Figure 1. These results indicate that coal dust

did not accumulate rapidly over the three day sampling period and suggests that additional dust mitigation at the CSX Terminal is not needed to prevent significant darkening of surfaces.

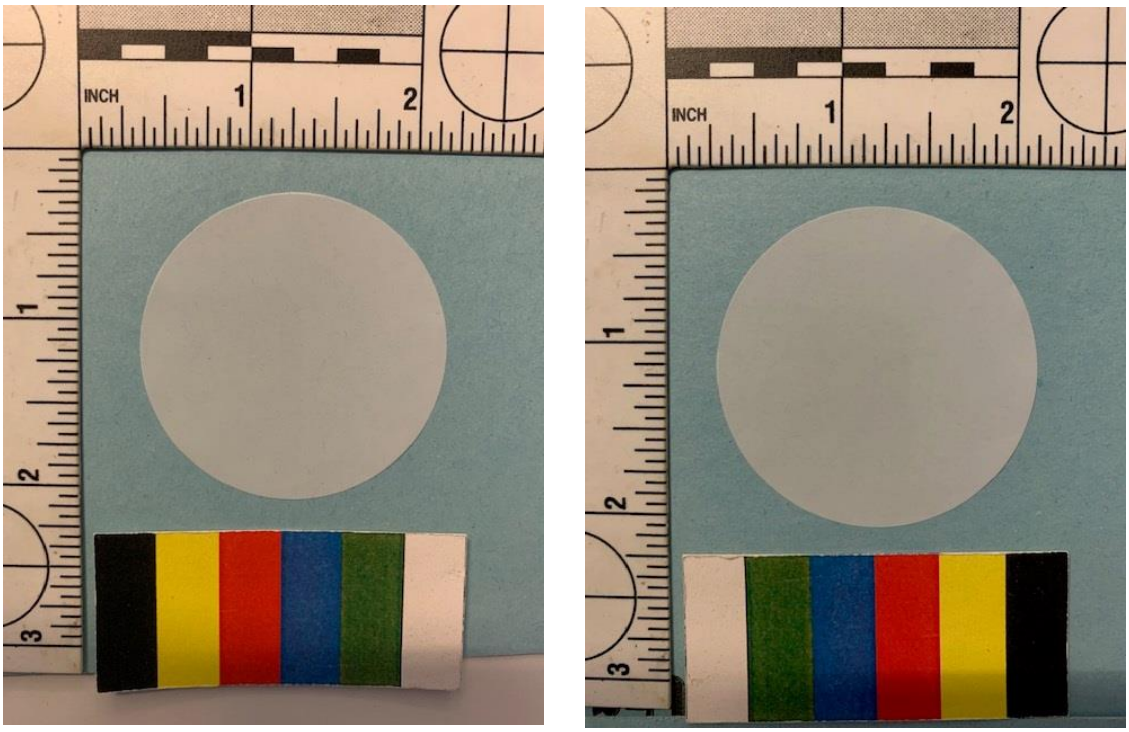


Figure 1. Photograph comparing a filter with a coal concentration of 20 particles/mm^2 (left) to a blank filter (right). The samples cannot be differentiated by eye.

Visual Observations Do Not Indicate Nuisance Dust from the CSX Terminal

The results of the laboratory study are supported by visual observations of buildings near the CSX Terminal. For example, the large warehouse building adjacent to the CSX Terminal as shown on the MDE website[9] does not show discoloration on the roof of the building (see Figure 2). Photographs taken recently from the side of this building facing the CSX Terminal also do not show indications of coal dust darkening the building's exterior walls (see Figure 3).



Figure 2. Satellite photo of the CSX Terminal as presented on the MDE website.[1] Note the roof of the buildings parallel to the Terminal do not show discoloration.

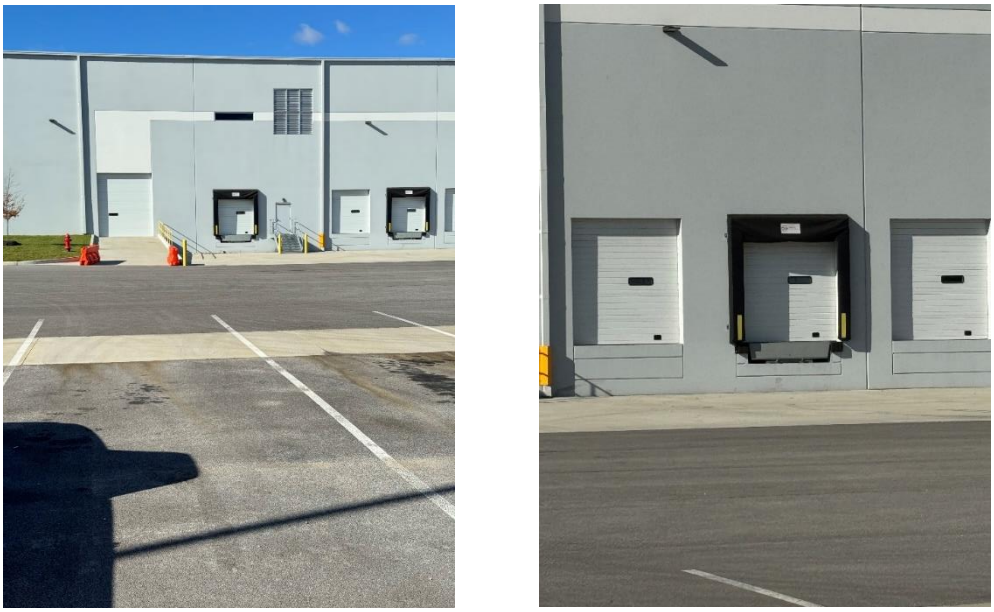


Figure 3. Photographs of the side of the building in Figure 2 facing the CSX Terminal. Note the lack of black discoloration on the building. Photographs taken on November 12, 2024.

In addition to the lack of discoloration on the large warehouse building located directly adjacent to the CSX Terminal, another example related to lack of darkening from coal dust deposition can be observed in photographs provided in Figure 4 taken at the CSX Terminal *itself* on January 18, 2024 (the day of a meeting with MDE). Based on weather data, there was snowfall accumulation on January 16, 2024. On January 18, snow was still present and showed no discoloration at the CSX Terminal. Figure 4 provides photos taken at the CSX Terminal on January 18, 2024.

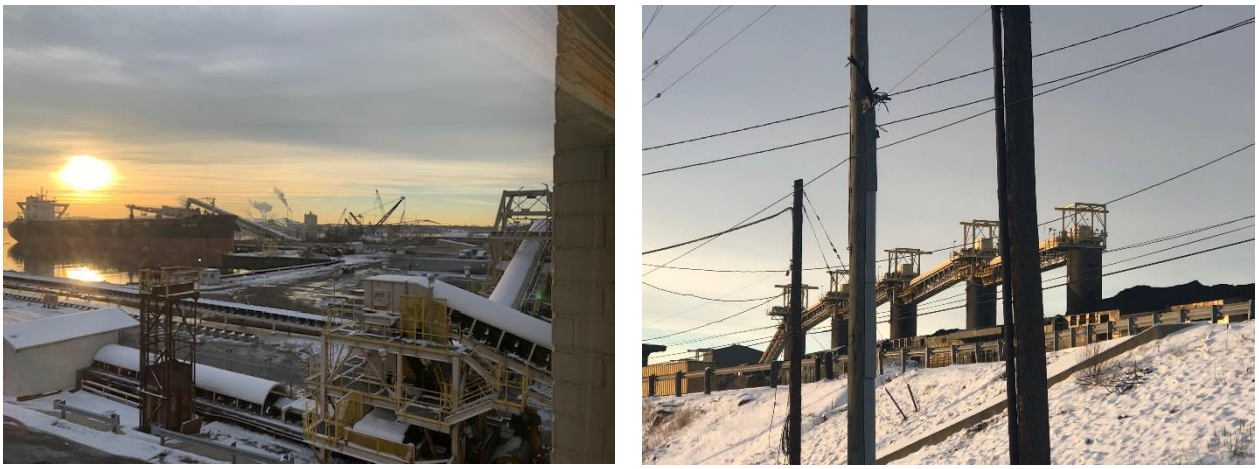


Figure 4. Photographs taken at the CSX Terminal two days after a snowfall event. Photographs taken on January 18, 2024. Note the lack of darkening of the snow.

If coal dust from the CSX Terminal was responsible for rapid dark dust accumulation at the residential locations in Curtis Bay, it would be expected that the light-colored warehouse building next to the Terminal in Figure 3 and the two day old snow in Figure 4 would have a significant black darkening.

Wind Rose Data Do Not Support Community Statements that Coal Dust Impacts the Community on a Daily Basis

Community concerns that coal dust from the CSX Terminal results in dark accumulation daily are also not supported by meteorological data. For example, wind direction and wind speed data are presented in the form of a 'wind rose' from the BWI Airport and the CSX Terminal meteorological tower from March 22, 2023 (date of initial CSX meteorological tower operation) to December 2, 2024 in Figure 5. A wind rose is a circular graph that shows the speed and direction of winds at a specific location over time. The wind arcs indicate the direction from which the wind is occurring.[10]

Figure 5 illustrates that the majority of winds come from directions where the CSX Terminal would have no impact on the community because the wind would need to come from the easterly directions for coal dust from the CSX Terminal to have an impact on the Curtis Bay community. Further, there are times when there are extended persistent winds from directions that would result in no dust impact to the community from the CSX Terminal. Figure 6, showing a wind rose from October 24 to October 28, 2024, is provided as an example. The

meteorological data provided in Figure 6 indicates that winds from the direction of the CSX Terminal accounted for less than 5 percent over the four day period. Thus, if dark dust rapidly accumulates on surfaces in the community on a daily basis, it indicates that there is another source(s) responsible for the particulate matter that is darkening surfaces.

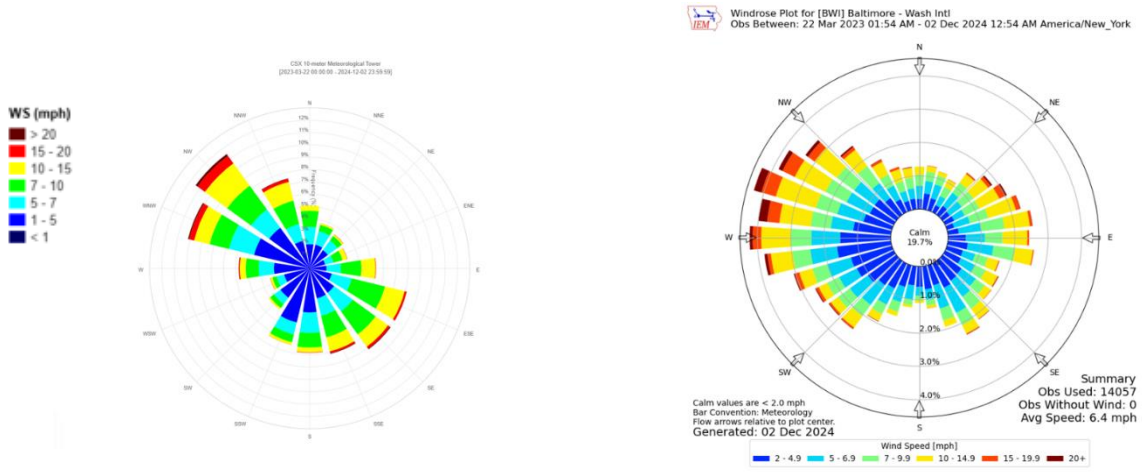


Figure 5. Wind Rose Data from March 22, 2023 to December 2, 2024.

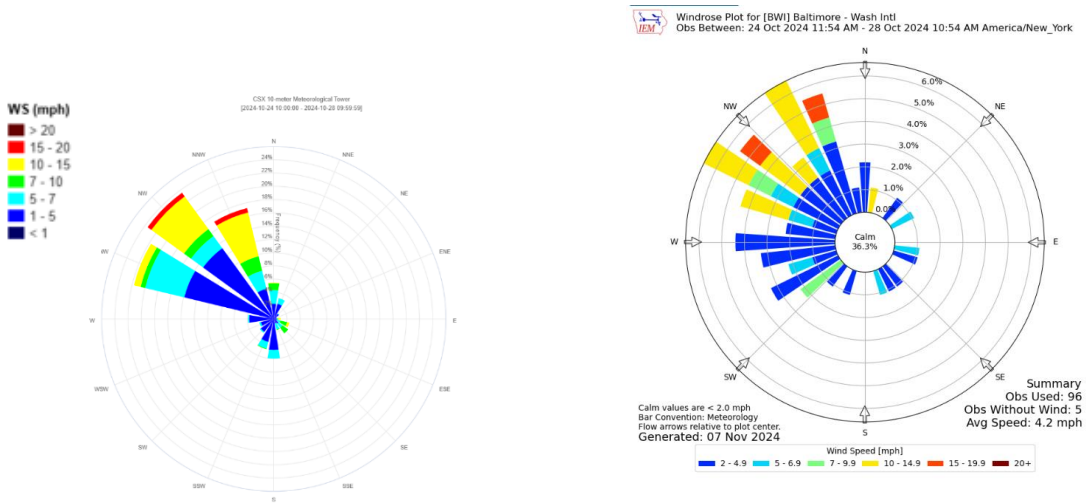


Figure 6. Wind Rose Data from October 24 to October 28, 2024.

SEM/EDS in Aubourg Study Supplementary Material is of Poor Quality and Questionable

As previously mentioned, the Aubourg study defined and followed a more complete SEM analysis protocol as compared to the 2023 Collaborative Report. RJ Lee also conducted a review of the Supplementary Material included with the Aubourg article. The Collaborative Report only analyzed a limited number of particles at each location, so the results should be only considered qualitative. Re-analysis of two of the samples in the Aubourg study in 2024 increased the total number of particles analyzed from 12 at each location to 82 particles at Location A and 78 particles at Location B (identified as Location E in the 2023 Collaborative Investigation). The 13 particles determined to be coal by the authors were documented in the final publication and Supplementary Material. This included secondary electron images and EDS elemental spectra. However, in several instances the data in the Supplementary Material was inconsistent and of poor quality, including:

- Poor and inconsistent image quality
    - Charging artifacts in some images.
    - High-magnification images are not provided for all the potential coal particles, so the morphology cannot be observed.
    - One image was collected at 5kV instead of 15kV as defined in the protocol.
    - Brightness and contrast are not consistent in all images.
- Poor and inconsistent EDS quality
    - Elements with low concentrations may not have been identified due to the low X-ray counts in some of the EDS spectra.
- No EDS spectra of the CSXT coal are provided. Therefore, it is not possible to compare the elemental composition of suspect coal particles to the CSXT coal source sample.
- An image of the CSXT coal reference sample was provided and the morphology of the particles was described in the main text as ‘angular and rough’. Review of the images shows that most of the particles appear to be angular and smooth.
- Not all the particles identified as coal on the Curtis & Church and Ben Franklin samples were consistent with the morphology and elemental composition of coal.
    - At Location A, 5 of the 7 particles appear to be consistent with coal.
    - At Location B, 1 of the 6 particles appear to be consistent with coal.
- There are errors with the Figure numbering in the text of the Supplementary Material.
    - On page 7, the text incorrectly states to see the main text Figure 3 for a coal particle image and corresponding elemental spectrum for Location A. The authors should have referenced Figure 7 of the main text.
    - On page 7, the text incorrectly states that the coal particle images and corresponding elemental spectra for Location A can be found in Supplementary Figures S10-S14. The authors should have listed Supplementary Figures S6-S10.
    - On page 10, the text incorrectly states to see the main text Figure 4 for a coal particle image and corresponding elemental spectrum for Location B. The authors should have referenced Figure 8 of the main text.

- On page 10, the text incorrectly states that the coal particle images and corresponding elemental spectra for Location B can be found in Figures S15-S19. The authors should have listed Supplementary Figures S11-S15.

No Evidence that Coal Dust from CSX Terminal is a Significant Health Threat

In the Introduction section of the Aubourg et. al. article[5] it is acknowledged that there is a lack of information regarding any environmental health impacts originating from coal handling and storage. However, the article also states that a 2024 publication by Ostro et al.[11] found that the transport of coal is associated with increased mortality and morbidity.

The "Health Impact Assessment" (HIA) article cited relies predominantly on prior work[12] from the same lead author, Dr. Bart Ostro, where $PM_{2.5}$ measurements were obtained along a rail line in the San Francisco Bay Area. It should be noted that the Aubourg et. al article only provided data on particles > 5 μm.

There are numerous foundational issues related to the scientific basis for health impact assessment (HIA) using the information provided including, but not limited to:

1) The measurements relied upon were obtained using direct-reading low-cost sensors to approximate $PM_{2.5}$ air concentrations (μg/m^3). Low-cost sensors are not appropriate for regulatory compliance monitoring.[13]
2) There was no information provided on the initial calibration or validation of the custom-built monitor used in the study that incorporates low-cost sensors.
3) There was no relevant upwind or background monitoring of $PM_{2.5}$ using similar monitoring equipment for direct comparisons during the time periods sampled.
4) The comparison of the low-cost sensor concentrations to the Federal Equivalent Method (FEM) monitor in the article is inconsistent with recommended EPA method protocols.[14] Notwithstanding and based on the equation presented, from comparison of readings to the San Pablo monitor (Air Quality System Site ID: 06–013-1004), the low-cost monitor did not meet y-intercept and R^2 recommended data quality criteria.
5) There is no substantive evidence to support the baseline assumption that the difference between $PM_{2.5}$ readings from presumed freight trains and coal trains **"is strictly due to the coal dust"**[15].
6) There was no speciation of the particulate to determine either the presence of or amount of coal dust at the location monitored.
7) Most of the models that Ostro applied to the estimated $PM_{2.5}$ concentrations reported from low-cost sensor readings had coefficients of determination for linearity (R^2) less than 0.2 which illustrates weak relationships for the variables evaluated.
8) There was no empirically supported justification for using short-term five-minute average concentrations to predict annual average $PM_{2.5}$ concentrations.
9) Ostro used a low-cost sensor monitor to estimate concentrations resulting from train emissions (monitor located ~22 meters from the train tracks). However, source-oriented monitors are not eligible for comparisons to the annual NAAQS for $PM_{2.5}$.[16]

10) The data set for artificial intelligence (AI)-identified "full coal" trains used for the analysis is limited with only 15 trains over six months out of the total of 2,832 trains identified. The other train classes include 14 empty coal trains, 568 freight trains and 2,235 passenger trains. It is estimated that the limited data set for sampling during coal train passings is on the order of 75 minutes total over a 6-month period (< 0.03 percent of the total time) based on the 5 minute average sampling periods described.
11) There was no assessment or evaluation of other factors (e.g., diesel emissions) contributing to possible differences in $PM_{2.5}$ readings measured by train type including:
    a. number of locomotives and locomotive positions,
    b. US emission Tier (0-4) standards of locomotives,
    c. locomotive fuel consumption,
    d. engine loading from uphill or downhill directions,
    e. weight of material transported on the trains,
    f. aerodynamic characteristics of different car types, or
    g. the use of dust suppressants in coal transport cars.
12) Further, the validity of using measurements from one location to estimate annual average $PM_{2.5}$ concentrations in a metropolitan area with a population of 262,000+ people using hypothetical models is questionable.
13) The HIA evaluation models use "what if" scenarios including the hypothesis "it is reasonable to assume a continuous chronic exposure to the train-generated $PM_{2.5}$". No concentration vs. time results were provided to justify this assumption.
14) The HIA evaluation assumes that fine-sized coal mineral dusts have similar toxicity as any other components of $PM_{2.5}$ (e.g., primarily combustion sources) which has not been substantiated.[17]

In summary, the implications of health impacts being identified from airborne coal minerals stated by Aubourg et. al. is highly questionable. The results may suggest that additional studies are needed to quantitatively assess the impact of coal dust emissions from trains, but they are not sufficient to be considered for purposes of prescribing dust control measures for coal handling and storage at the CSX Terminal.

Furthermore, the Collaborative Report's $PM_{2.5}$ data obtained with low-cost sensors suggests that the Curtis Bay community is in attainment with the NAAQS.[18] According to the US EPA, the $PM_{2.5}$ standard was designed to protect human health with an adequate margin of safety. [19]

REFERENCES

[1] https://mde.maryland.gov/programs/permits/AirManagementPermits/Pages/CSX-Transportation-Permit.aspx
[2] We note that the fact sheet for the draft permit relies on the Collaborative Report's finding that "coal particles were identified at all of 8 community sampling locations and in 100% of samples" as support for requiring CSX to construct additional dust controls.
[3] CSX Transportation, Inc. (CSXT) Response to the Collaborative Investigation of Coal Dust, Air Pollution, and Heath Concerns in Curtis Bay, South Baltimore, Maryland, Letter from Raghu Chatrathi (CSX) to Chris Hoagland (MDE), February 16, 2024.
[4] Aubourg, M.A., et al., 'Use of electron microscopy to determine presence of coal dust in a neighborhood bordering an open-air coal terminal in Curtis Bay, Baltimore, Maryland, USA', *Science of the Total Environment*, 957 (2024) 176842.
[5] Aubourg, M.A., et al., 'Use of electron microscopy to determine presence of coal dust in a neighborhood bordering an open-air coal terminal in Curtis Bay, Baltimore, Maryland, USA', *Science of the Total Environment*, 957 (2024) 176842, Section 2.2 Sample Collection.
[6] Aubourg, M.A., et al., 'Use of electron microscopy to determine presence of coal dust in a neighborhood bordering an open-air coal terminal in Curtis Bay, Baltimore, Maryland, USA', *Science of the Total Environment*, 957 (2024) 176842, Table 2.
[7] Collaborative Investigation of Coal Dust, Air Pollution, and Health Concerns in Curtis Bay, South Baltimore, Maryland, USA, 2022-2023, Surface particulate tape lift and passive ambient particle accumulation (PAPA) sampling, Settled Dust Imaging and Particle Characterization, December 16, 2023.
[8] Aubourg, M.A., et al., 'Use of electron microscopy to determine presence of coal dust in a neighborhood bordering an open-air coal terminal in Curtis Bay, Baltimore, Maryland, USA', *Science of the Total Environment*, Section 2.5 Data Analysis, 957 (2024) 176842.
[9] https://mde.maryland.gov/programs/permits/AirManagementPermits/Pages/CSX-Transportation-Permit.aspx
[10] https://www.epa.gov/sites/default/files/2019-01/documents/how_to_read_a_wind_rose.pdf
[11] Ostro B, Fang Y, Sospedra MC, Kuiper H, Ebisu K, Spada N. Health impact assessment of PM2.5 from uncovered coal trains in the San Francisco Bay Area: implications for global exposures. Environ. Res. 2024/07/01/ 2024;252:118787.
[12] Ostro, B., Spada, N., Kuiper, H., 2023a. The impact of coal trains on PM2.5 in the San Francisco Bay area. Air Quality, Atmosphere & Health. 16 (6), 1173–1183.
[13] List of Designated Reference and Equivalent Methods, June 15, 2024, United States Environmental Protection Agency Center for Environmental Measurements & Modeling Air Methods & Characterization Division (MD-D205-03) Research Triangle Park, NC 27711.
[14] R. Duvall, A. Clements, G. Hagler, A. Kamal, V. Kilaru, L. Goodman, S. Frederick, K. Barkjohn, I. VonWald, D. Greene, D., and T. Dye. Performance Testing Protocols, Metrics, and Target Values for Fine Particulate Matter Air Sensors Use in Ambient, Outdoor, Fixed Site, Non-Regulatory Supplemental and Informational Monitoring Applications, EPA/600-R-20/280, February 2021.
[15] Ostro B, Fang Y, Sospedra MC, Kuiper H, Ebisu K, Spada N. Health impact assessment of PM2.5 from uncovered coal trains in the San Francisco Bay Area: implications for global exposures. Environ. Res. 2024/07/01/ 2024;252:118787, Section 3.1, second paragraph.
[16] US EPA 40 CFR 58, Subpart D, 58.30 Special Considerations for Data Comparisons to the NAAQS., Ambient Air Quality Surveillance: "$PM_{2.5}$ measurement data from monitors that are not representative of area-wide air quality but rather of relatively unique micro-scale, or localized hot spot, or unique middle-scale impact sites are not eligible for comparison to the annual $PM_{2.5}$ NAAQS."
[17] Ostro B, Fang Y, Sospedra MC, Kuiper H, Ebisu K, Spada N. Health impact assessment of PM2.5 from uncovered coal trains in the San Francisco Bay Area: implications for global exposures. Environ. Res. 2024/07/01/ 2024;252:118787, page 6.

[18] Collaborative Investigation of Coal Dust, Air Pollution, and Health Concerns in Curtis Bay, South Baltimore, Maryland, USA, 2022-2023, Section 4 page 8, December 16, 2023.
[19] Section 109 [42 U.S.C. 7409] directs the Administrator to propose and promulgate "primary" and "secondary" NAAQS for pollutants for which air quality criteria are issued [42 U.S.C. 7409(a)]. Section 109(b)(1) defines primary standards as ones "the attainment and maintenance of which in the judgment of the Administrator, based on such criteria and allowing an adequate margin of safety, are requisite to protect the public health."

CSX Transportation, Inc. Comments on Renewal of State Permit to Operate No. 510-2263 for CSX Transportation Curtis Bay Piers

Appendix 5: *Memo from Trinity Consultants to CSX regarding "CSX Curtis Bay Piers – Environmental Feasibility of Barrier Proposed by MDE in Draft PTO" (Dec. 12, 2024)*

Trinity Consultants

MEMORANDUM

To: Raghu Chatrathi, CSX Senior Director of Public Safety, Health and Environment

cc: Becky Hensley, CSX Senior Manager Sustainability

From: David Simmons and Susan Barnes, Trinity Consultants

Date: December 12, 2024

RE: CSX Curtis Bay Piers – Environmental Feasibility of Barrier Proposed by MDE in Draft PTO

Background and Executive Summary

CSX Transportation, Inc. (CSX) operates a coal terminal at Curtis Bay Piers (CBP) in Baltimore, Maryland. The facility operates a variety of material handling equipment for the transfer of coal, ore, limestone, and other dry materials. Coal arrives at the facility by rail, is temporarily stored in outdoor storage piles, and is loaded onto barges and vessels. The facility does not contain any coal processing equipment.

CSX recently received a draft State Permit to Operate (PTO) No. 510-2263 for the CBP Facility from the Maryland Department of the Environment (MDE). Condition D(1) of the draft PTO requires CSX to construct a "physical barrier" that, at a minimum, surrounds all coal storage piles completely either individually or in a single enclosure within the facility's property boundary, except where openings are needed to allow vehicular access into and out of the interior of the structure or where necessary to allow for the movement of coal into or out of the partial enclosure via conveyors. Condition D(1) also specifies that if the barrier is open to the atmosphere from above, the maximum coal pile height shall be maintained at a level that is less than the height of the physical barrier at all times. CSX has requested the assistance of Trinity Consultants (Trinity) in evaluating this draft permit condition. As detailed in the remainder of this memo, Trinity has found no precedent for this type of requirement and is unable to find any guidance on the expected emissions control. As such, Trinity believes this requirement is unnecessary, is technically and economically infeasible, and should not be included in the final permit.

Regulatory Background

Per Condition B(2)(e)(2) of the draft PTO and COMAR 26.11.06.03D, "a person may not cause or permit any material to be handled, transported, or stored, or a building, its appurtenances, or a road to be used, constructed, altered, repaired, or demolished without taking reasonable precautions to prevent particulate matter from becoming airborne. These reasonable precautions shall include, but not be limited to, the following when appropriate as determined by the control officer:

> . . . (2) Application of asphalt, oil, water, or suitable chemicals on dirt roads, materials stockpiles, and other surfaces which can create airborne dusts."

As noted in the language above, the rule requires that reasonable precautions must be taken to prevent particulate matter (PM) from becoming airborne. The rule does not include specific emission standards or operational protocols (i.e., when precautions must be taken or how frequently they must be completed). Currently, the CBP facility waters and compacts coal to manage fugitive dust from the piles while minimizing drop heights onto the piles. The absence of visible fugitive dust from such operations and the perimeter air monitoring results indicate that measures taken on the piles are sufficient.

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Methodology

In reviewing the feasibility of the physical barrier required by draft PTO Condition D(1), Trinity followed the process employed when determining the feasibility of air pollution control technology associated with reasonably available control technology (RACT) and best available control technology (BACT) evaluations[1]. This process follows a top-down methodology as follows:

- Identify all control technologies;
- Eliminate technically infeasible control technologies;
- Rank remaining technologies;
- Evaluate cost effectiveness; and
- Select RACT/BACT.

By following this well-established methodology, Trinity believes that an enclosure such as the one proposed by MDE would not be considered RACT or BACT and would not pass this analysis during multiple steps in this process as discussed in detail below.

Step 1: Identify Available Control Technologies

To begin this evaluation, Trinity conducted a review of the United States Environmental Protection Agency (EPA) RACT/BACT/LAER Clearinghouse (RBLC) database[2] to determine what controls would be identified for a coal storage pile. The list of technologies developed from this review was then compared to Trinity's experience with fugitive dust control approaches to determine if other control technologies or approaches have been employed at similar sources and/or if publications that address fugitive dust control discuss these fugitive dust control approaches. The review of the RBLC was expanded to include slag stockpiles (i.e., in addition to coal/coke stockpiles) and resulted in the following list of control technologies for the control of fugitive dust:

- Wet suppression/watering
- Dust suppression lowering well and compaction
- 3-sided windscreen barrier
- Reduced drop heights
- Chemical stabilization
- Dust control plan
- Vehicle restrictions
- Negative pressure enclosure and baghouse
- Building enclosure (full or partial)
- Capture and exhausting through a fabric filter
- Liquid sprays which utilize foam
- Use of covers (such as a tarp)

[1] Methodology guidance is provided in a June 13, 1989 EPA memo from John Calcagni, Director of Air Quality Management Division titles "Transmittal of Background Statement on 'Top Down' Best Available Control Technology (BACT)" https://www.epa.gov/sites/default/files/2015-07/documents/topdawn.pdf

[2] EPA's Clean Air Technology Center (CATC) maintains a technology database called the RACT/BACT/LAER Clearinghouse, or RBLC. The RBLC provides data on prevention and control technology determinations made primarily by state and localitting agencies. The Clearinghouse database contains over 6,500 determinations that perrmit applicants and governmental agencies rely on to identify appropriate technologies to mitigate or treat most air pollutant emission streams. *See* US EPA, https://cfpub.epa.gov/RBLC/index.cfm?action=Home.Home&lang=en

The RBLC database research also revealed that more than one of the above technologies are typically employed as best available technology to reduce fugitive dust. CBP already employs three technologies listed above including wet suppression/watering, reduced drop heights, and a fugitive dust control plan. In addition, the facility employs a network of fenceline monitors, including two continuous federal equivalent method (FEM) monitors for both $PM_{2.5}$ and PM_{10} and eight $PM_{2.5}/PM_{10}$ sensors to measure PM at the facility's boundaries. The use of full enclosure on all sides and walls taller than the piles was not found in this review and would not be included in a control technology review using the top-down methodology.

Step 2: Technical Feasibility Evaluation

A full technical feasibility evaluation has not been completed on the tall physical barrier as proposed by MDE. However, concerns have been raised by CSXT, Trinity, Arcadis, and HDR about the feasibility of such a design. In particular, there is the potential for a mixing bowl effect or wind tunnels at the barrier openings both of which could result in emissions not being controlled to the degree MDE is expecting and safety concerns for workers on and in the vicinity of the piles. In addition, there are significant safety concerns due to limited ingress and egress created by a four-sided barrier. Further evaluation would be needed for Trinity to determine conclusively that the barrier is not technically feasible; however, these initial technical challenges and safety hazards indicate a high likelihood that the barrier as proposed in the permit condition is not technically feasible or effective for controlling fugitive dust emissions. It should also be noted that unproven technologies are eliminated in this step of the analysis, and the physical barrier could also be eliminated from consideration as no similar enclosure built for emissions control has been identified.

Step 3: Rank Control Technologies

In this step, the remaining control technologies are ranked from highest percent of emissions control to lowest. In the event that the barrier passed step 2 of the top-down analysis, this step would prove difficult. The degree of emissions control is uncertain. No documented instances of such a barrier were identified in the RBLC database or the literature (i.e., no published control efficiencies for a full enclosure with ingress/egress and no roof have been identified). As such, other control technologies would likely be ranked higher.

Step 4: Economic Feasibility Evaluation

In the unlikely event that the barrier reached step 4 of a top-down analysis, it would likely be determined to be economically infeasible. The cost per ton of PM controlled would be approximately $350,100.[3] This cost analysis uses a capital cost of $98.6 million for the proposed structure (estimated by HDR[4] for a 120-foot impermeable physical barrier[5]) and conservatively assumes full control of potential PM emissions could be achieved (estimated at 26.4 tons per year, which is based on potential to emit from the piles and 25% of material transfers[6]). This cost is significantly greater than cost thresholds used in typical RACT or BACT analyses (e.g., the California South Coast Air Quality Management District (SCAQMD) has established a

[3] Based on methodologies in EPA's Cost Control Manual with an interest rate of 8% and a 25-year life of control.

[4] Arcadis also provided a high level design cost estimate of $80 – $120 million for a100-foot steel frame wall structure that would completely surround the coal piles. Given that HDR's estimate is in the middle of this range, Trinitgy used HDR's $98.6 million estimate in the example economic feasibility evaluation.

[5] HDR also provided estimated costs for a 120-foot 50% permeable barrier, which results in a cost per ton controlled value of $596,312.

[6] Facility-wide PTE of PM is 72.8 tons, which results in a cost per ton controlled value of $126,822. Facility-wide PM emissions reported in 2023 were approximately 20 tons, which results in a cost per ton controlled of $460,393.

BACT cost effectiveness threshold of $9,212 per ton removed[7] for PM_{10}) and as such, the barrier would not be considered economically feasible.

Conclusion

In conclusion, Trinity does not believe that the physical barrier proposed as Condition D(1) of the draft PTO is a feasible technology to control fugitive dust emissions from the coal stockpiles. There is also no evidence that it would be an effective control technology; in fact, it has the potential to result in increased emissions due to the wind tunnel effect created by such a structure. Further, CBP is already implementing best practices with respect to fugitive dust control and has demonstrated compliance with COMAR 26.11.06.03C and COMAR 26.11.06.03D through the fenceline monitoring system data. Trinity believes this condition should be removed from the PTO as the proposed control is unwarranted, and technologically and economically infeasible.

[7] https://www.aqmd.gov/docs/default-source/bact/cost-effectiveness-values/2024q2_equipment_cost_index.pdf

CSX Transportation, Inc. Comments on Renewal of State Permit to Operate No. 510-2263 for CSX Transportation Curtis Bay Piers

Appendix 6: *Memo from Trinity Consultants to CSX regarding "CSXT Curtis Bay Piers – Rail Yard Boundary Fugitive Emissions Monitoring Study and Analysis" (Dec. 10, 2024)*

Trinity Consultants

MEMORANDUM

To: Raghu Chatrathi, CSXT Senior Director of Public Safety, Health and Environment

cc: Becky Hensley, CSXT Senior Manager Sustainability

From: Scott Adamson, CCM, Trinity Consultants

Date: December 10, 2024

RE: CSXT Curtis Bay Piers – Rail Yard Boundary Fugitive Emissions Monitoring Study and Analysis

Background and Executive Summary

CSXT Transportation, Inc. (CSXT) operates a coal terminal at Curtis Bay Piers (CBP) in Baltimore, Maryland. The terminal operates a variety of material handling equipment for the transfer of coal, ore, limestone, and other dry materials. Coal arrives by rail, is temporarily stored in outdoor storage piles, and is loaded into barges and vessels. The terminal does not contain any coal processing equipment.

CSXT recently received a draft State Permit to Operate (PTO) No. 510-2263 for CBP from the Maryland Department of Environment (MDE). Draft Conditions D(4) and D(5) would require the installation and operation of a system that applies water to railcars loaded with coal beginning at the point where railcars enter the boundary of the CBP property. As discussed in a Trinity Consultants memorandum dated August 7, 2024,[1] these draft conditions should be removed from the final PTO. The movement of railcars onto the CBP property at low speeds is not causing fugitive dust emissions beyond the Terminal's property line. To further demonstrate that draft conditions D(4) and D(5) are unwarranted, CSXT conducted an air monitoring study between October 29, 2024 and November 30, 2024 to measure particulate matter concentrations at the boundary where railcars enter the CBP property.

Rail Car Fugitive Emissions Air Monitoring

The railcar fugitive emissions air monitoring study was implemented to collect information on fugitive emissions from railcars as they enter the CBP property. Ambient air monitoring equipment was placed adjacent to a section of track at the CSX Rail Yard just north of Patapsco Avenue that is frequently used for railcars that are transporting coal to CBP. Fugitive particulate emission measurements were made using two MetOne BAM 1020 monitors, which are designated as Federal Equivalent Method (FEM) monitors by EPA, and capable of continuously measuring PM_{10} (EPA Equivalency: EQPM-0798-122) and $PM_{2.5}$ (EPA Equivalency: EQPM-0308-170). Pollutant monitors that are designated as FEM have gone through extensive testing and have demonstrated to meet the requirements of 40 CFR Part 53. The Clean Air Act specifies that monitors used for regulatory compliance must be formally designated as either Federal Reference Method or Federal Equivalent Method. The monitors were housed in a climate-controlled trailer and placed on the east side of the rail adjacent to where the loaded railcars come onto the CBP property. Figure 1 presents a map showing the location of the BAM trailer and the CSX fenceline monitoring network.

[1] Trinity Consultants, *CSX Curtis Bay Piers – Analysis of Fugitive Dust Emissions from Railcars On Site* (August 7, 2024)

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Figure 1 CSX CBP BAM Trailer & Monitoring Network



Air Monitoring Results

Data collected by the BAM Trailer was reviewed and validated for the period of October 30, 2024 through November 30, 2024. Figures 2 and 3 present time series of PM concentrations for the period and shows both PM_{10} and $PM_{2.5}$ were below the respective 24-hour National Ambient Air Quality Standards (NAAQS). Table 1 presents the ten highest 24-hour PM_{10} and $PM_{2.5}$ concentrations and the date of occurrence for measurements made during the railcar monitoring period. The highest PM_{10} concentration occurred on October 31, 2024 with a 24-hour concentration of 35.7 micrograms per cubic meter ($\mu g/m^3$). The second highest 24-hour PM_{10} concentration occurred on October 30, 2024 with a concentration of 34.6 $\mu g/m^3$. The highest 24-hour $PM_{2.5}$ for the period was 20.1 $\mu g/m^3$ occurring on November 11, 2024, and the second highest concentration was 14.8 $\mu g/m^3$ occurring on October 30, 2024.

Figure 2 Daily PM_{10} Concentrations - October 30 through November 30, 2024

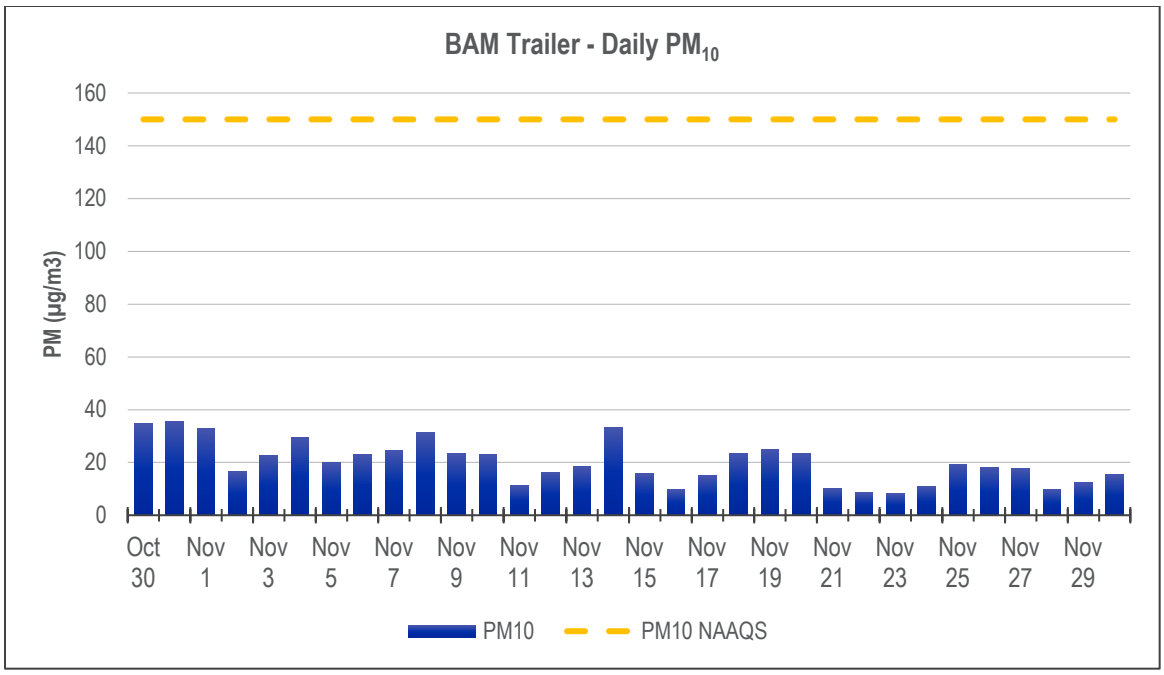


Figure 3 Daily $PM_{2.5}$ Concentrations - October 30 through November 30, 2024

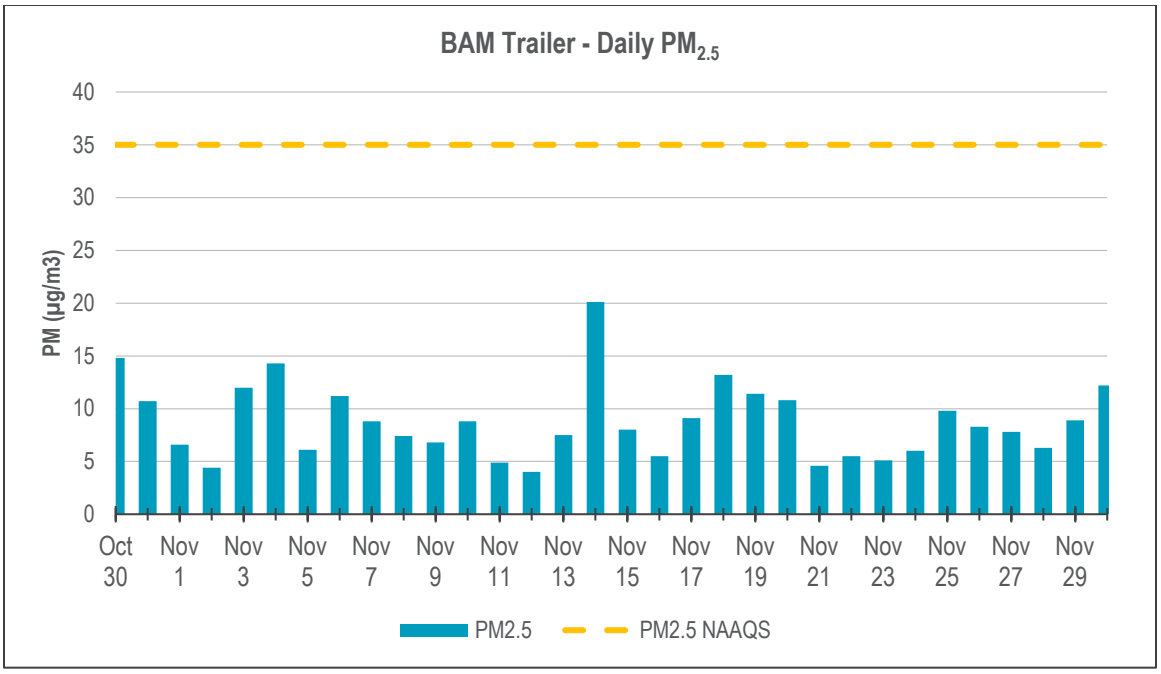


Table 1 High 10 PM Concentrations - BAM Trailer

Rank	PM_{10} $\mu g/m^3$	Date of Occurrence	$PM_{2.5}$ $\mu g/m^3$	Date of Occurrence
1	35.7	10/31/2024	20.1	11/14/2024
2	34.6	10/30/2024	14.8	10/30/2024
3	33.4	11/14/2024	14.3	11/4/2024
4	33.0	11/1/2024	13.2	11/18/2024
5	31.2	11/8/2024	12.2	11/30/2024
6	29.5	11/4/2024	12.0	11/3/2024
7	25.1	11/19/2024	11.4	11/19/2024
8	24.4	11/7/2024	11.2	11/6/2024
9	23.5	11/18/2024	10.8	11/20/2024
10	23.5	11/18/2024	10.7	10/31/2024

Table 2 presents the dates and number of incoming coal trains logged to be arriving at CBP for the month. The table shows 27 days over the monitoring period had a coal train arrive on site.

Table 2 Date and Number of Coal Trains Arriving at CBP Facility

Date of Arrival	Number of Trains
10/29/2024	1
10/31/2024	2
11/1/2024	2
11/2/2024	1
11/3/2024	2
11/4/2024	1
11/6/2024	2
11/7/2024	3
11/8/2024	1
11/9/2024	3
11/10/2024	1
11/11/2024	1
11/12/2024	1
11/13/2024	1
11/14/2024	1
11/15/2024	2
11/17/2024	1
11/18/2024	2
11/19/2024	1
11/21/2024	1
11/22/2024	1
11/23/2024	1
11/24/2024	1
11/25/2024	1
11/26/2024	2
11/27/2024	1
11/28/2024	1

Summary

To evaluate particulate emissions off railcars coming onto the CSXT CBP facility, two BAM 1020 monitors were installed on October 29, 2024 to sample for PM_{10} and $PM_{2.5}$ in ambient air, and data were evaluated for a one-month period from October 30 through November 30, 2024. Given the proximity of the monitoring station to the railcars and the dates during which rail cars were present, the results of the PM monitoring show railcars are not emitting fugitive coal dust that would result in an exceedance of the air quality standards.

CSX Transportation, Inc. Comments on Renewal of State Permit to Operate No. 510-2263 for CSX Transportation Curtis Bay Piers

Appendix 7: *Memo from Arcadis to CSX regarding "CSX Curtis Bay Coal Pier, Engineering Alternatives Evaluation for Draft Air Permit Requirements" (Dec. 10, 2024)*

ARCADIS **Memo**

SUBJECT
CSX Curtis Bay Coal Pier
Engineering Alternatives Evaluation for
Draft Air Permit Requirements

TO
Raghu Chatrathi, CSX

DATE
12/10/2024

OUR REF
30242954

FROM
Dave Diem
Jerry Friley III
Cynthia Buchanan
Jackie Grogan
Andy Pennington

COPIES
Rebecca Hensley, CSX
Matthew Williamson, CSX

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Introduction

Arcadis has prepared this memorandum to review options for compliance with the conditions in Part D of the draft permit to operate issued by the Maryland Department of the Environment ("MDE") for the CSX Curtis Bay Coal Pier ("the facility") in Baltimore, Maryland[1]. Arcadis is an international engineering firm

[1]The draft permit was issued for public comment in August 2024 during an administrative extension of the facility's existing operating permit. The draft permit is posted at: https://mde.maryland.gov/programs/permits/AirManagementPermits/Documents/DRAFT-2024RenewalSPTO-CSX.pdf.

consisting of over 36,000 employees, and actively supports projects in 70 countries. Within the U.S., Arcadis provides engineering and environmental support to each of the six North American Class I railroads, and has extensive in-house experience and subject matter expertise in facilities engineering, air permitting and permit compliance, and dust control and mitigation measures. Arcadis has supported industrial clients and facility owners with previous assessments and implementation of dust control options at bulk material handling facilities, and is familiar with the challenges of engineering design and construction within densely developed urban contexts and locations of significant infrastructure, including design and construction at active rail yards and rail facilities.

Permit Requirements

Draft Permit to Operate Requirements – Part D (1-3)

The MDE Draft Permit includes the following construction requirement and associated compliance timelines:

- "The permittee shall construct a physical barrier to prevent coal dust from being transported from any coal storage piles on the site into the surrounding community. The physical barrier must at a minimum surround all coal storage piles completely, either individually or in a single enclosure within the facility's property boundary, except where openings are needed to allow vehicular access into and out of the interior of the structure or where necessary to allow for the movement of coal into or out of the physical barrier via conveyors. If the barrier is open to the atmosphere from above, the maximum coal pile height shall be maintained at a level that is less than the height of the physical barrier at all times."
- "Within 120 days following the issuance date of this Permit to Operate, the Permittee shall send a notification to and seek approval from the Department on the type of physical barrier that it intends to use to satisfy the Part D(1) requirement of this Permit to Operate."
- "Within 18 months of the Department's approval of the Permittee's physical barrier system, the Permittee shall complete construction and place in operation the physical barrier required under the Part D (1) requirement of this Permit to Operate."

Design & Permitting Timeline

As noted above, the MDE Draft Permit requires the permittee to propose a physical barrier approach and technology to MDE within 120 days of permit issuance, and to complete construction and commissioning of the selected barrier within 18 months of MDE approval of the proposed barrier. Relative to typical engineering, design, and construction projects of similar scale, both the design and construction timelines required by the MDE Draft Permit are substantially compressed. Construction of a barrier around the facility is also likely to require permits and approvals from a range of local, state, and federal governmental bodies, many outside of MDE's jurisdiction (e.g., for structures, traffic routing/road closures, discharges to or construction within navigable waters, and potential impacts to ecological resources), and a design would typically not be finalized until permit processes are completed. These considerations are likely to make selection and conceptual design of a single detailed alternative difficult to achieve within 120 days, and make the 18-month construction timeframe infeasible.

The approximate timeline below details anticipated design and permitting steps that would be required for a physical barrier completely surrounding the coal storage piles or completely surrounding the facility. Based on the MDE Draft Permit language and fact sheet, it is unclear what level of design and detail MDE

Raghu Chatrathi
CSX Transportation

would require from CSX in order to approve the proposed barrier approach and proceed to construction. If MDE requires submittal of a complete design package (e.g., a set of drawings and specifications that could be issued for bid to contractors), then the full design timeline below must be completed. If MDE requires completion of both design and permitting prior to approval of the approach, then both the full design and permitting timelines below must be completed prior to submission. It is anticipated that under any scenario, a minimum of a 60% design package would be necessary to provide sufficient details to determine design components necessary for project completion and support regulatory concurrence and consensus on any proposed physical barrier structure. The 60% design package would include required geotechnical and other structural details that would be assembled following analyses and compilation of the results of the geotechnical, geophysical, and other required pre-design investigations.

Design

- Once a conceptual barrier approach is selected, general engineering design (e.g., civil, structural) and specialty design (e.g., material-specific structural evaluation) would begin. The design timeline would vary depending on the type of structure chosen. Given the structural height required by the MDE Draft Permit, any selected structure would require specialty design with involvement of suppliers and contractors.
- A typical accelerated design timeline would range from approximately 30 to 50 weeks (210 to 350 calendar days) and include the following:
    - Conceptual Design: This involves developing the initial structural concepts and rough sketches, along with extensive meetings and communications with all stakeholders to identify and resolve high-level questions around implementation and integration with operations. This phase would typically require 3-6 weeks.
    - Preliminary Design: Engineers would then proceed to create more detailed drawings and calculations, creating a deliverable often described as a 30% design. This phase would require 4-6 weeks.
    - Geotechnical Review and Analysis: This phase includes onsite visits, geotechnical and hydrogeologic analysis, soil sampling, and review of structural considerations associated with existing structures, utilities, and rails. This phase would typically require a minimum of 10 to 16 weeks, and would vary based on the types of subsurface structures and foundations involved in the selected approach. Significant city-owned and third-party utilities, including a City of Baltimore 42-inch sewer line, an 8-inch natural gas pipeline, and a stormwater line that discharges into Curtis Bay, are known to exist at the site, and potential effects to those utilities, along with mitigating measures or relocation, would be evaluated in detail at this stage.
    - Based on the geotechnical review and analyses, a 60% design drawing set would be developed. The 60% drawings would have sufficient detail to submit to MDE for review and approval. It is anticipated that approximately 4 to 8 weeks would be required for completion, CSX review, and upon CSX approval, submittal to MDE.
    - Final Design: Assuming MDE approves the physical barrier approach, this phase includes the creation of highly detailed structural drawings, specifications, and calculations, including details identified as necessary in the preliminary design. This design set would be the basis for development of the “Issued for Bid” (IFB) drawings that contractors would use when preparing their bids. This stage would typically require 4-8 weeks. If additional MDE review of the Final Design is required, or review from external stakeholders (e.g., third-party utility owners) is required, those reviews would extend the timeframe of this stage.
    - Construction Documents: The preparation of construction documents and a complete bid package to support effective procurement, including a finalized IFB drawing set, bid forms, contracting, and discussion of risk management, would typically require 2-4 weeks. Following completion of the bidding and award process, and incorporation of any design changes or improvements based on communications with bidders, an Issued-for-Construction (IFC) drawing set would be prepared.

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Permitting

- Depending on interagency involvement, it is expected that permitting for a physical barrier would take more than 4 months (i.e., more than the MDE Draft Permit's 120-day maximum timeframe for proposing an alternative), and it is likely that permitting may also extend to timeframes similar to or beyond the MDE Draft Permit's 18-month maximum timeframe for construction. In the construction timeline above, permitting work would typically be conducted on the following approximate schedule (noting that, like the construction schedule, this permitting schedule reflects expedited timeframes that would be associated with a high-priority project):
    - During the conceptual and preliminary design stages, permit requirements and associated agencies/jurisdictions would be identified. Permits may be required from local wastewater authorities for management of water produced during dewatering; municipal agencies for building permits, structural permits, and temporary structural permits (e.g., for laydown areas or cranes); and federal agencies (e.g., for floodplain impacts, ecological effects, or waterway-related effects). This identification of permits would require approximately 6 to 12 weeks concurrent with the conceptual design.
    - Conceptual discussions with permitting agencies would be initiated once the 30% design drawings are prepared. These discussions would identify changes that may be required as the design is progressed and finalized and would occur approximately 12 to 24 weeks after the start of design activities.
    - Most permitting agencies require drawings to be stamped by a licensed professional engineer prior to agency review, placing final permit submittals and reviews at or after the Final Design stage of the design process (i.e., roughly 25 to 45 weeks after the start of design activities). After submittal of stamped drawings, multiple rounds of permitting submission, reviews, and edits are often required. The timeframe for these reviews and revisions varies between jurisdictions and reviewers.

Construction Timeline

The MDE Draft Permit requires that within 18 months of the Department's approval of the Permittee's physical barrier system, the Permittee shall complete construction and place in operation the physical barrier. The approximate timeline below details some steps of the construction progress, common across the various alternatives considered, that would form key milestones in an overall construction schedule. It is likely that, even with efforts to accelerate the schedule, construction would require more time than the 18-month period prescribed in the MDE Draft Permit.

Construction Planning & Implementation

- *Subcontracting* could theoretically be started during the final stages of the permitting process, and could typically require 3 months or more, including the following steps:
    - Selection of CSX-approved contractors capable of meeting insurance requirements
    - Finalizing and conveying the IFB set of design drawings, specifications, and bid form to the contractors
    - Scheduling and conducting a site walk for approved bidders
    - Contractor preparation of bids, typically requiring three weeks after the site walk
    - Review of bids and selection of a contractor or team
    - Contracting, including legal review and contract negotiations, with the selected contractor(s)
- *Procurement* of materials will affect the construction timeline and will be dictated by availability of material, equipment, and access to the work zone. Material procurement timeframes and constraints vary for different barrier alternatives and are discussed in the alternative-specific sections below.

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CSX Transportation

- Materials, major components, and equipment (for example, fasteners and lighting) would be reviewed through a submittal review process involving all stakeholders, including engineers, architects, specialty contractors, and the project owner (CSX).

- *Construction* is anticipated to take a minimum of 12 to 18 months. The timeline will vary depending on the selected alternative, the availability and use of prefabricated structures, and field conditions.
  - Primary influences on the construction timeline include:
    - Accessibility of the facility and support areas, including during nights, weekends, and off hours
    - Limitations on working hours
    - Limitations on crew size due to available support facilities and work area
    - Limitations on facility downtime or operational impingement during construction efforts
    - Availability, size, and location of laydown areas for material storage and construction/assembly of large components
    - Limitations on working time near network-critical railroad tracks
    - Required separation distances between equipment/staging areas and track, per operating rules and railroad Roadway Worker Protection requirements

Height of Physical Structure

The MDE Draft Permit requires that the physical barrier, at a minimum, surround all coal storage piles completely, either individually or in a single enclosure within the facility's property boundary, except where openings are needed to allow vehicular access into and out of the interior of the structure or where necessary to allow for the movement of coal into or out of the physical barrier via conveyors.

If the barrier is open to the atmosphere from above, the MDE Draft Permit requires that the maximum coal pile height shall be maintained at a level that is less than the height of the physical barrier. The maximum coal pile height is estimated to be 100 - 110 feet above grade, meaning that a barrier open to the atmosphere must be at least 100 feet high and potentially even higher. The language of the MDE Draft Permit suggests that infrastructure with existing particulate mitigation and control measures, such as conveyors, may exceed the height of the physical barrier; however, the coal piles may not exceed the maximum height of the barrier. This height requirement presents a challenging scenario for evaluation of engineering options because of the rarity of comparable constructed barriers. Most of the alternatives evaluated have precedents for construction at much lower heights or smaller areas, but few precedents or direct comparable examples exist on the scale of what is contemplated in the MDE Draft Permit. Where comparable examples have been identified for an approach or alternative, they are noted in the individual sections below

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CSX Transportation

Potential Physical Barrier Evaluation

Arcadis identified physical barrier options and evaluated these options based on engineering feasibility, construction timeline, impact on facility operations, impact on the surrounding community, long-term maintenance requirements, and cost.

The options presented herein include:

- Steel Frame Wall
- Stacked Shipping Containers
- Tilt Up Structures
- Sheet Pile Wall
- Block and Steel Wall
- Geodesic-style structured domes
- Monolithic domes

Each option is reviewed in the following sections. Some options (e.g., block and steel wall) were included in the evaluation, but identified as infeasible in light of the basic height requirements of the MDE Draft Permit, and are discussed relatively briefly. Physical barrier options with the potential to meet the minimum 100-foot height requirement of the MDE Draft Permit are discussed in a greater level of detail below.

In addition to the above-listed options, our review of particulate control measures in operation at similar facilities identified several materials and construction approaches that involve permeable fencing or windbreaks. These include permeable woven fabric fences and perforated metal windbreak fencing panels intended to reduce wind velocity around bulk storage areas. Because these options would, by design, allow air flow through a barrier alignment, it is unclear whether they would satisfy the requirements contemplated in the MDE Draft Permit, and are therefore not evaluated in detail as part of this memorandum.

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Steel Frame Wall

Core Concept: A vertical frame constructed primarily from steel components, such as beams, columns, and plates, which are interconnected to create a load-bearing structure and covered in a metal sheathing or cladding. This style of vertical barrier can be constructed using foundation piles, prefabricated metal structures, and metal paneling.



Example of Steel Frame Wall Support Structure (left) and installed metal paneling (right), from product information provided by WalMax Fence/WMITC (aka Tianjin Weiming Industrial Trading Co.) – location unknown, likely in China. Note that metal paneling shown is perforated; paneling considered for the facility would be solid and opaque.

Material Procurement

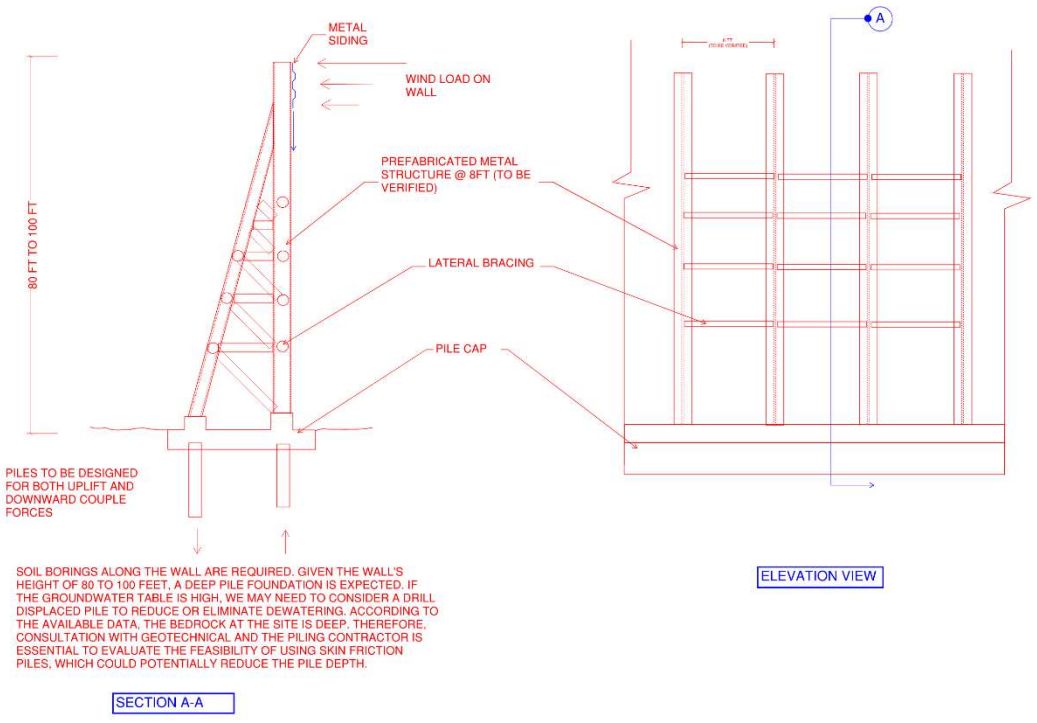
- Availability of materials
  - Availability is generally good. Engineer-designed structural steel components require off-site custom fabrication of metals. Several specialized methods are used to cut and shape the materials into the desired structural metal component, and off-site fabrication offers efficiency and flexibility. Metal fabricators are available nationally and internationally.
- Logistics
  - Material Origination and Transportation to Site
    - The materials used in construction of this type of barrier would typically require extensive truck traffic for delivery to the site. Rail or barge delivery may be possible for some components, but would involve greater potential for impact to facility operations.
  - Permitting Requirements for Material Delivery
    - Mobilization of installation equipment and select building materials (e.g., large prefabricated metal frame structures) will require oversize load coordination and permitting and/or additional coordination for rail or barge traffic.
  - Space Requirements for Material Laydown
    - A sufficient staging area is required for paneling construction, heavy duty equipment, and steel components. An approximate minimum of five acres onsite would be required to accommodate materials and equipment required for installation, and additional staging areas off-site may be required. Staging space constraints could directly affect construction pace and timeframe.

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- Maintenance Requirements & Weather Resistance
  - Exposures to ambient conditions and a near-shore saltwater environment would be expected to cause rust and weakening of the steel frame wall structure over time. Elimination of these risks through alternative materials is likely not feasible given the scale of the project and structural demands that would be placed on the materials; instead, maintenance and painting of steel structural components would be a preferred approach.
  - Vulnerability to wind, hail, and other severe weather could be controlled by selection of materials, including fastener strength and paneling thickness.
  - Regular inspection of barrier wall structure would be recommended. Painting and similar maintenance may be desirable periodically.

Additional data needs for design verification

- Structural and Geotechnical
  - To support a high vertical barrier of this scale, the foundation would likely consist of deep pile foundations, with pile cap of at least 10 feet in width. The size and terminal depth of driven or drilled shaft piles would be determined in the design phase.
  - Soil borings along the wall for geotechnical testing would be required to design the deep pile foundations and to establish that the foundation will provide necessary structural support.
  - According to available data, bedrock at the site is relatively deep (100 feet or more below grade). During conceptual design activities, consultation with geotechnical experts and piling contractors would be conducted to evaluate the feasibility of using skin friction piles, which could potentially reduce the pile depth.



Sketch: Steel Frame Paneled Wall

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- Geophysical Survey and Utility Engineering
    - A geophysical survey and utility survey would be required to map underground and above ground utilities and potential subsurface structures in the area (including underground tunnels and conveyors, and derelict or historical structures that may be present from past land use). Proximity of utilities to the work zone may require temporary or permanent relocation of the utilities.
- Hydrogeologic Assessment and Dewatering Design
    - Because groundwater is expected relatively close to ground surface, dewatering would be necessary for deep pile foundations using traditional installation methods. A hydrogeologic assessment would be required to identify likely water production rates for dewatering, assess potential impacts to other properties, and design an appropriate dewatering approach. Installation of a drill-displaced pile to reduce or eliminate dewatering may also be considered.
    - Dewatering operations would require additional space for staging containment tanks, secondary containment, generators, pumps, and hoses. Final disposition of water removed for construction purposes is likely to trigger additional space and coordination requirements. Advance preparation of the ground surface and understanding of subsurface soil strength is required prior to the construction of an onsite dewatering facility. Ideally, water can be discharged to an existing sewer under a municipal permit; off-site hauling of water involves significant additional logistical and traffic impacts, and discharge to a surface water body under a National Pollutant Discharge Elimination System (NPDES) permit likely involves additional treatment and testing equipment.

Regulatory Compliance

- Maryland Department of the Environment
    - Construction of a structure of this scale may require a biological impact assessment to identify sensitive ecological receptors and mitigate construction impacts. Depending on the findings of this assessment, controls for long-term biological and ecological impacts may be required.
    - Compliance with Maryland's stormwater management regulations will require installation of stormwater best management practices (BMPs) and implementation of Environmental Site Design (ESD) to the maximum extent practicable (MEP) in accordance with the Stormwater Management Act of 2007.
    - Dewatering permits would likely need to be obtained from MDE for foundation installation if dewatering is conducted.
- IBC Risk Categorization
    - The International Building Code (IBC) table 1604.5 defines Risk Category of Buildings and Other Structures, based on nature of occupancy. Depending on configuration, this structure would likely fall into a high-risk category (IBC Risk category III, or IV) which requires additional special inspections to confirm compliance with IBC table 1604.5.2 Importance Factors for snow, wind, & seismic activity.

Impacts to Community (Actual & Perceived)

- Geotechnical, Noise Monitoring, and Community Perception
    - Deep foundation installations typically involve significant noise and vibration which may be disruptive to nearby residential areas. Geotechnical and noise monitoring instruments would be employed during construction to collect data on displacement and decibel (dB) levels. Pre-construction data for noise and movement would typically be collected as a baseline.
    - Installation of this type of structure has the potential to impact the surrounding community. Delivery of building materials via truck would increase the traffic volume in the surrounding area. Efforts to complete the project on an accelerated schedule would entail a greater degree of traffic volume and community disruption.
    - Installation of a large vertical barrier of steel frame construction and rigid paneling would effectively obstruct the view of coal piles from the neighboring community perspective,

and would also limit overall views to the east (including views of the Patapsco River and the horizon) from adjacent areas.
- Because of the open-topped nature of the vertical barrier, it is possible that particulate matter in areas surrounding the facility could still be perceived by the community to be originating from the facility.

Construction Coordination Required

- Proximity to active rails and railroad operations would be a significant part of construction planning. Personnel training and appropriate track protection would be required, along with considerable safety communication and plans prior to daily work.
- Engineering and administrative controls (for example, closure of tracks in a work area and/or maintenance of appropriate clearances between tracks and work areas) would need to be employed to reduce risks associated with simultaneous operations at the facility, but implementation of these controls would have negative impacts on facility operations.

Examples at Other Bulk Storage Facilities

Our review did not identify any bulk storage facilities in the United States, or within North America, where solid-paneled steel-frame walls are used for dust mitigation. Steel frame walls with rigid, solid paneling at lower heights have been successfully installed at facilities in the US for noise suppression, but not primarily used for dust control. We identified one example of a steel frame wall used for dust suppression at the port of Almeria, Spain; however, this wall is approximately 50 feet high and supports permeable panels rather than solid panels. The highest comparable steel frame wall in the United States is 30 feet high and is not located at a bulk materials facility. **No examples of steel frame walls with solid metal sheeting at heights of 100 feet or greater were identified in our research.**

Discussion of Alternative

A potentially viable layout for a steel frame wall vertical barrier has been identified at a basic conceptual level and are shown in Figure 1 below. Structural and geotechnical investigation would be needed to further develop this concept.

A steel frame wall may be technically feasible to construct at the facility; however, the engineering aspects of a wall approaching or exceeding 100 feet in height entail significant uncertainty due to the lack of comparable structures present at any similar facilities. Scaling up existing structural concepts to larger-than-previously-achieved scales may also entail unexpected challenges or consequences and entails substantial risk. A potentially feasible or constructable scenario for a steel-frame wall would require the following assumptions related to site access, available space, and subsurface considerations.

Assumptions:

- Assumes a minimum of five acres of space within the facility available to accommodate construction support facilities and material laydown and staging areas. The “M” Pad area located east of Shell Road (see the figure above) is a potential location for such a staging area although we understand that using the M Pad as a material laydown and staging area would cause disruption to facility operations. There are also changes in elevation between the M Pad and the coal storage areas which would make bringing equipment from the M Pad to the storage areas difficult. Additional staging areas off site would need to be coordinated.
- Assumes that a temporary and/or partial facility closure can be accommodated during construction, with the degree of operational impact dependent on the amount of time and the extent of support/staging areas available for construction.
- Assumes finalized permit requirements do not mandate complete enclosure of coal piles but allow openings for rails, vehicle traffic, egress means, conveyors, utilities, and other infrastructure critical to facility operations.

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- Assumes coal piles can be temporarily relocated or reshaped as needed to allow for installation of structure and foundational components according to approved construction specifications.
- Assumes geotechnical analysis of soils proves subsurface conditions competent for deep foundation piles.
- Assumes sufficient and appropriately trained personnel are available to meet an accelerated and variable construction schedule, accounting for Federal Railway Administration (FRA) and Transportation Worker Identification Credential (TWIC) requirements.

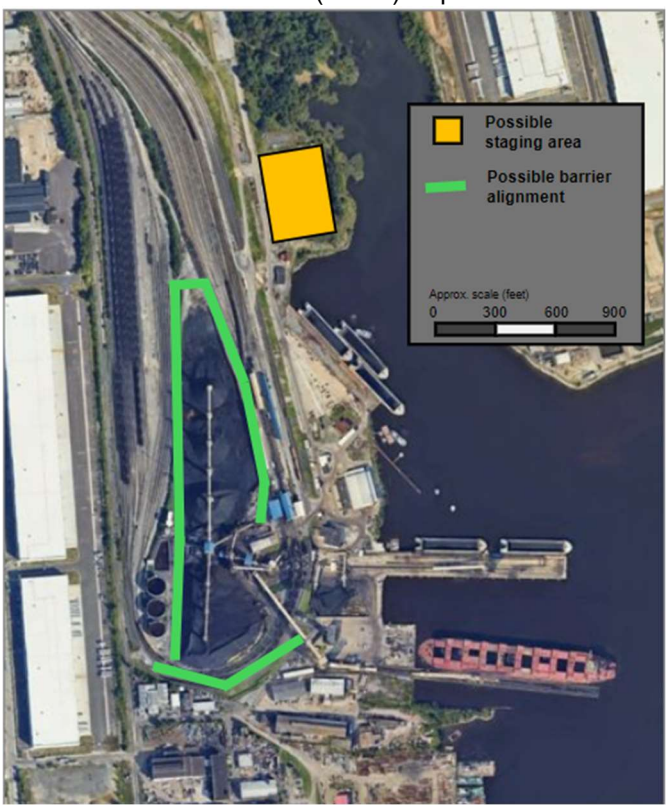


Figure 1. Potential Conceptual Layout of Steel Frame Wall

It is unclear if a steel frame wall would meet the physical barrier requirements of the MDE Draft Permit, Part D (1). The steel frame barrier option, as conceptually envisioned, would largely surround the coal storage piles, with openings for access and an opening for conveyors on the eastern side of the piles, and be located within the facility boundary (openings are not depicted in the conceptual diagram above).

Assuming the final permit prohibits the storage piles from exceeding the height of the barrier, the final height achieved by the barrier may impose limitations on operating pile height, in turn limiting the facility's coal storage capacity. As there are no steel frame barriers at heights greater than 50 feet, it is unknown whether a 100-foot barrier is achievable in practice.

The degree to which this alternative provides increased protection over the current dust control precautions in place at the facility with regards to potential offsite migration of particulates is unknown. There is no published information available about the dust control efficiency of open-top steel wall barriers.

The design, planning, and implementation are expected to take longer than the required 18 months listed in the MDE Draft Permit, Part D (3).

Estimating final costs for a steel frame wall with rigid paneling will be based upon the parameters dictated by the final design documents, and will be influenced by variables including, but not limited to, structural

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requirements of the foundation and vertical supporting structures, size and thickness of panels, the need for specialty heavy equipment to transport and install the structure, and amount of safety requirements (scaffolding, etc.) required to construct this structure. Depending on those variables, we estimate that design and construction of this structure could cost between $80 million and $120 million or more overall. Costs for considerations such as permitting, staging/laydown area setup, and ongoing maintenance would be additional to that overall cost.

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Stacked Shipping Containers

Core Concept: Stacked shipping containers are aligned along the facility perimeter to the desired height, with connectors or linkages providing structural strength and a wider base of containers providing lateral stability.

This alternative represents a relatively simple material concept. Shipping containers are widely used for barriers of much lower heights. The uniformity of shipping container construction and standardized connectors allow for efficient stacking of containers and simplifies material procurement. Steel construction is rigid and relatively weather resistant.

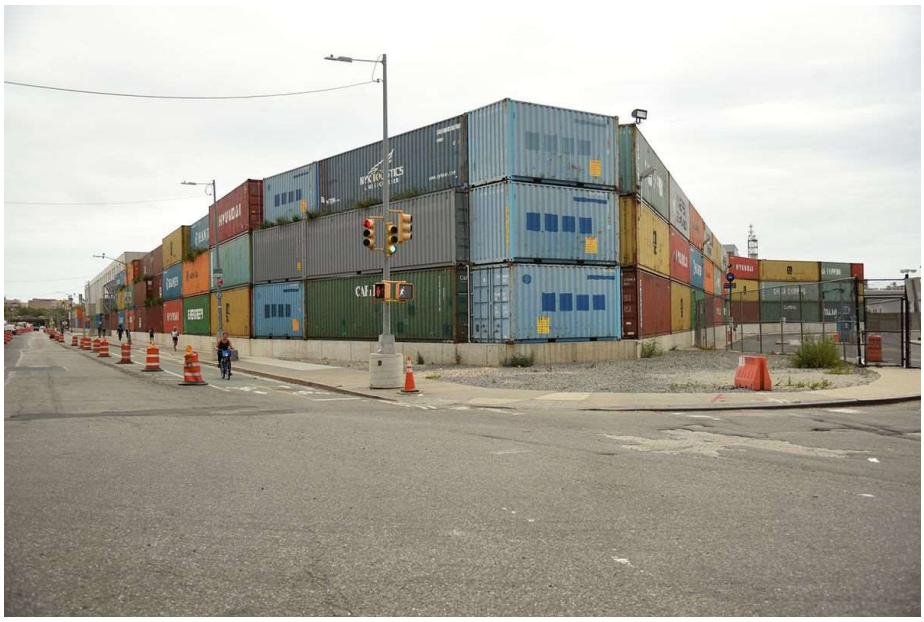


Photo: Stacked Shipping Container Wall (Brooklyn, NY)

Material Procurement

- Availability of materials
  - Materials are readily available.
    - A concrete or steel foundation would be placed for surface preparation and to provide a consistent surface for stacking. This foundation would require a large lateral footprint.
    - Shipping containers used in the construction of this type of barrier are readily available from a variety of vendors nationally.
- Logistics
  - Material Origination and Transportation to Site
    - The materials used in construction of this type of barrier will at a minimum require increased truck traffic to the site, and mobilization of installation equipment will require oversize load coordination and permitting. Alternative delivery methods such as barges or railcars may be employed for some of the building materials; however, these delivery methods require additional permitting and site planning.

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        - The expected quantity of containers needed for construction of this type of barrier will vary based on factors discussed below.
        - A standard container is 8.5’ in height, 8’ in width, and 20’-40’ in length.
    - Space Requirements
        - To achieve a height of 100+ feet, the footprint of the structure needs to be several containers in width. It is anticipated that the foundation width would be at least three times the width of a container (24 feet) and likely wider (perhaps up to 100 feet) depending on engineering evaluations of lateral stability.
        - At least one crane is required for installation. Crane capacity decreases when height, weight, and winds increase.
        - An approximate minimum ten or fifteen acres would be required to accommodate materials and equipment staging required for installation, and additional staging areas off site may be required. Staging space constraints could directly affect construction pace and timeframe.
- Maintenance Requirements & Weather Resistance
    - Requirements would be generally low, as significant deterioration or weathering of the containers is not expected. Regular inspection of the barrier wall is recommended. Painting and similar maintenance may be desirable periodically.
    - Shipping containers can withstand winds up to 180 mph without wavering, but damage and modifications to the containers can decrease the rigidity.

Impacts to Community (Actual & Perceived)

- Geotechnical, Noise Monitoring, and Community Perception
    - Geotechnical and noise monitoring needs for installation of this structure may be minimal compared to other options.
    - Installation of this type of structure has the potential to impact the surrounding community. Delivery of shipping containers via truck would increase traffic volume in the surrounding community.
    - Installation of a vertical barrier of stacked shipping would obstruct the view of coal piles from the neighboring community perspective and obstruct views of the Patapsco River and horizon.
    - Because of the open-topped nature of the vertical barrier, it is possible that particulate matter in the areas surrounding the facility could still be perceived by the community to be originating from the facility.

Construction Coordination Required

- Considerable staging areas for the building materials and installation equipment will be required. Installation would employ use of at least one crane. The current facility layout does not allow the space required for the installation of this type of barrier. Significant changes to the facility layout would be required as well as a shutdown of the facility for at least a portion of the installation.

Examples at Other Bulk Storage Facilities

Examples of barriers of this type in use at bulk storage facilities in the United States were not identified. Shipping containers are used commonly on land as security, privacy, and noise reduction barriers; these walls are typically 2-4 containers high. No barriers of this type were identified to exist for dust suppression. Container storage yards and ports achieve maximum stack heights of 12 containers (102’) outside of the United States, and customary operating heights of up to 9 containers (76.5’) in the United States; however, it should be noted the bases of these stacks of containers are multiple containers wide, and adjacent containers provide structural support.

Discussion of Alternative

A high vertical barrier of stacked shipping containers is not feasible to construct at the facility. The lack of precedent for permanent structures of similar height using shipping containers also suggests that extensive engineering evaluation (potentially including a highly conservative design with a larger lateral footprint) would be desirable to manage potential risks. Available space for the footprint of such a

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structure does not appear to exist within the site boundary considering current facility layout and the footprint that would likely be required.

Because it is unlikely that required heights could be reached within the current facility, this alternative is unlikely to satisfy the requirements of the MDE Draft Permit.

The design, planning, and implementation are expected to take longer than the required 18 months listed in the MDE Draft Permit, Part D (3). Structural reviews, calculations, and site-specific space review would need to be performed to determine a realistic timeframe for this alternative given the lack of precedent.

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Tilt-Up Structures

Core Concept: Tilt-up construction involves preparing and pouring large concrete panels in a horizontal position on-site and then tilting them upward to their final position. The panels would be held in place by a support structure or frame, likely a steel structure similar to that described above for the metal-clad steel frame wall.



Example of Tilt-Up Concrete Panels – provided by Korte Company, showing construction of building panels. Project location believed to be in Oklahoma.

Material Procurement

- Availability of materials
  - Material availability is good and not expected to be a limiting factor, as cement is widely produced and used in high volumes.
- Logistics
  - Material Origination and Transportation to Site
    - The materials used in construction of this type of barrier will, at a minimum. require increased truck traffic to the site.
    - Concrete panels are formed, poured, and set on site. Coordination for delivery of large amounts of mixed cement to the site, or use of a temporary on site batch plant, would be required.
  - Permitting Requirements for Material Delivery
    - Mobilization of installation equipment and select building materials will require oversize load coordination and permitting.
  - Space Requirements for Material Laydown
    - Extensive space (approximately ten to fifteen acres or more of level, prepared ground) would be required for casting concrete panels. A large footprint at the barrier alignment boundary would also be required for staging and laydown of panels prior to tilting. Additional space would be required for staging of steel frame components and equipment. For this approach, available space will have a strong impact on the attainable construction schedule.
    - Each panel movement may involve substantial traffic planning due to panel size. One or more large cranes for raising of panels would be required during construction. Facility operations are expected to be significantly impacted.
- Maintenance Requirements & Weather Resistance

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- Concrete is a durable building material and is relatively resilient. Concrete will weather to some degree with time, and regular inspections and periodic maintenance of the barrier would be recommended.

Additional data needs for design verification

- Structural
  - A delegated design from a specialty contractor would be required for a tilt-up structure. The availability of specialty contractors for the duration of this project needs to be evaluated.
  - The weight and height of these walls require a deep foundation system capable of withstanding both vertical loads and significant lateral forces.
    - The deep foundation system is required based on currently known soil conditions in the area.
    - A deep foundation system is a foundation system deeper than 10 feet below the ground surface (bgs). The depth of bedrock at this site is expected to be at least 100 feet bgs based on publicly available data.
  - Tilt-up walls require extensive lateral bracing to ensure stability against wind and seismic loads. Given the wall height, the lateral forces acting on the structure are considerably higher, necessitating a robust bracing system. This would result in a relatively wide footprint, similar to or slightly wider than that presented for the steel frame wall option.
- Geophysical Survey and Utility Engineering
  - A geophysical survey and utility survey would be required to map both underground and above ground utilities in the area. Proximity of utilities to the work zone may require temporary or permanent relocation of the utilities.

Regulatory Compliance

- IBC Risk Categorization
  - The International Building Code (IBC) table 1604.5 defines Risk Category of Buildings and Other Structures, based on nature of occupancy. Depending on configuration, this structure would likely fall into a high-risk category (IBC Risk category III, or IV) which requires special inspections to confirm compliance with IBC table 1604.5.2 Importance Factors for snow, wind, & seismic activity.

Impacts to Community (Actual & Perceived)

- Geotechnical, Noise Monitoring, and Community Perception
  - Deep foundation installations typically involve significant noise and vibration. Geotechnical and noise monitoring instruments would be employed during construction to collect data on displacement and decibel (dB) levels. Pre-construction data for noise and movement would typically be collected as a baseline.
  - Installation of this type of structure may impact the surrounding community. If the building materials are delivered via truck, the traffic volume in the surrounding community will increase. Efforts to complete the project on an accelerated schedule would entail a greater degree of community disruption.
  - Because of the open-topped nature of the vertical barrier, it is possible that particulate matter in areas surrounding the facility could be perceived by the community to still be originating from the facility.

Construction Coordination Required

- An onsite working area would be required for forming, rebar preparation, pouring, and curing of tilt-up concrete panels for this type of structure. There is no space available on site to accommodate this construction, and off site leasing of parcels or purchase of real estate in the area immediately adjacent to the site would therefore be required.
- Installation requires operation of multiple cranes, and panel size is limited by crane capabilities and crane clearances.

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- An accelerated schedule for a tilt-up project would be limited by space constraints, as the primary means of accelerating construction would be to prepare, pour, and cure multiple panels simultaneously in a larger work area.
- Proximity to active rails and railroad operations would be a significant part of construction planning. Personnel training and appropriate track protection would be required, along with considerable safety communication and plans prior to daily work. Engineering and administrative controls can be employed to reduce risks associated with simultaneous operations at the facility, but implementation of these controls would have negative impacts on facility operations.

Examples at Other Bulk Storage Facilities
No examples of this type of structure at other bulk storage facilities have been identified. Tilt-up construction at heights of approximately 100 feet has been employed for buildings in some cases; however, these examples are also rare, and the context is significantly different than a stand-alone vertical barrier. No examples of a tilt-up stand-alone vertical barrier (rather than a wall forming one side of a building) at heights approaching the target heights at the facility were found in our research.

Discussion of Alternative
A high vertical barrier constructed of tilt-up panels on a steel frame is not feasible to construct at the facility. Available space for installation of a high vertical barrier of this type does not exist within the facility's current layout. Installation requires extensive space to prepare and cure panels, as well as the use of cranes to lift panels into place, and the space requirements would likely be larger than could be reasonably accommodated in the area of the facility. In the event that sufficient space were made available, additional structural review, calculations, and consultation with specialty contractors would need to be performed to further evaluate feasibility.

It is unclear if a high vertical barrier constructed of tilt-up panels meets the requirements of the MDE Draft Permit, Part D (1). If adequate space were made available for installation and engineering calculations proved feasible, this barrier would be open to the atmosphere from above, requiring piles not to exceed the height of the barrier and limiting the facility's coal storage capacity. The degree to which this alternative provides increased dust control over the current conditions with regards to potential offsite migration of particulates is unknown.

The design, planning, and implementation are expected to take longer than the required 18 months listed in the MDE Draft Permit, Part D (3). Given that such a solution is unprecedented at a bulk storage facility, specialized design engineering and specialized trades would be needed.

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Sheet Pile Wall

Core Concept: Sheet piles are shaped steel segments with interlocking edges. The segments are interlocked during installation and provide a continuous structure with resistance to bending. Typically, sheet piling is used for temporary excavation support, retaining walls, and marine bulkheads.



Example of Sheet Pile Driven Wall – Typical image showing pile installation, provided by Hammer & Steel Global, LLC (supplier of pile-driving equipment and machinery).

Material Procurement and Logistics

- Availability of materials
  - Raw material availability is good, but materials at lengths required to meet site objectives are generally not available.
    - Sheet piles can be constructed from steel, vinyl, or wood. Steel piles are the only type of piles with rigidity to be effective as a vertical barrier. Steel sheet piles can be formed from steel upon ordering, and options for vendors of new and used sheet piles exist domestically and abroad.
    - Hot-rolled steel sheet piles are available in lengths up to 100 feet.
    - New and used hot-rolled sheet piles are available for purchase domestically.
- Logistics and Construction Considerations
  - Engineering and installing a stable sheet pile wall would require embedment of substantial portions of the piles into the subsurface, which introduces limitations on overall wall height. If custom-prepared sheet piles of greater length (for example, 150 feet) were prepared to allow for necessary embedment, material handling areas and transportation logistics for delivery and installation would become dramatically larger and more complex. An approximate minimum ten or fifteen acres would be required to accommodate materials and equipment required for installation, and additional staging areas off site may be required.
  - Overall, it appears unrealistic that steel sheet piling would be viable as a material for a 100-foot-high vertical barrier, and the material is poorly suited to the design objectives being evaluated.

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Discussion of Alternative

A high vertical barrier constructed from interlocking steel sheet piles with lateral bracing is not feasible to construct at the facility. Available space for installation of a high vertical barrier of this type does not exist within the site boundary considering current facility layout and surroundings. Steel sheet piles require extensive space at the installation location for heavy equipment, a laydown area, and staging areas for panel alignment. Generally, the material of steel sheet piling is poorly suited to meet the design objectives of enclosing an above-ground facility, and material constraints would limit feasible barrier height.

It is not expected that this alternative would meet the requirements of the MDE Draft Permit, Part D (1). While sheets are readily available in length up to 100', a portion of the sheet must remain in the ground for support, and therefore would not achieve the required height to conceal the existing coal piles. Significantly longer piles would entail increasingly complex engineering challenges, are largely without precedent, and would generally be poorly suited for the design goals of the barrier.

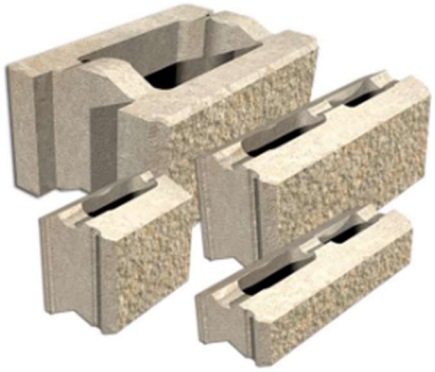
No examples of sheet pile walls at heights of 100 feet above ground surface or greater were identified in our research.

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Block and Steel Wall

Core Concept: Courses of engineered stacked blocks and horizontal and vertical steel bars are used to construct a masonry fence system. This type of wall is often used as a noise barrier along highways and creates an appearance similar to traditional masonry.





Example of Engineered Block & Steel Wall – AB Sound Wall, Teterboro, NJ

Material Procurement and Logistics

- Availability of materials
  - Raw material availability is good.
    - Materials used in the construction of this type of barrier are engineered masonry blocks, steel cages, and caissons. Material used to construct steel cages and caissons are available domestically.
    - Allen Blocks are available from suppliers in the US and can be custom ordered to meet project specifications.
- Logistics and Construction Considerations
  - Delegated design from a specialty contractor would be required. The tallest existing wall using interlocking AB blocks and steel we found in our research achieved 30 feet in height.
  - Additional footing and lateral supports that may be required to achieve a maximum height of 100 feet have not been explored.
  - Engineering and installing a masonry block and steel wall would require masonry block stacking to 100', scaffolding and platform lifts would need to be erected on a flat and level surface at the perimeter of the wall. Working from these heights poses many limitations. Shutdown of active tracks within 100' of the scaffolding is expected during construction.
  - Concrete blocks will weather with time, based on exposure to extreme weather conditions. Regular inspections and periodic maintenance of the barrier wall would be recommended.
  - Overall, it appears unrealistic that a masonry block and steel wall would be viable at the facility due to the unprecedented height and impact to facility operations.

Discussion of Alternative

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A high vertical barrier constructed of block and steel wall that meets necessary height requirements is not feasible to construct at the facility..

Therefore, it is not expected that this alternative would meet the requirements of the MDE Draft Permit, Part D (1). Wall heights approaching the requirements discussed in this memo would entail increasingly complex engineering challenges, are largely without precedent, and the materials would generally be poorly suited for the design goals of the barrier.

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Geodesic-style structured domes

Core Concept: Geodesic domes are made of triangular or polygonal panels that are connected to distribute weight evenly across the dome's surface. The frame panels can be made of metal, and the frames can be clad in a variety of materials. A concrete ring foundation is built, and the structures can be assembled in place and erected using a variety of lift methods.



Construction of Geodesic-Style Structured Dome, Tarapacá, Chile

Material Procurement and Logistics

- Availability of materials
  - Raw material availability is good.
  - The framing for this type of enclosed structure is typically metal, and there are multiple options for external cladding.
  - Materials are readily available, though framing components are typically supplied by specialty contractors or fabricators as part of engineered systems.
- Logistics and Construction Considerations
  - Space Requirements for Material Laydown
    - An approximate minimum fifteen acres would be required to accommodate materials and equipment required for installation, onsite staging is required, and additional staging areas offsite may also be required. Staging space constraints could directly affect construction pace and timeframe.
  - Permitting Requirements for Material Delivery
    - Mobilization of installation equipment and select building materials will require oversize load coordination and permitting. Alternative delivery methods such as barges or railcars would incur additional costs for site preparations and permitting.
  - Construction and Facility Impacts
    - Extensive space for heavy equipment will be required both for storage and during construction. The facility may need to be partially shut down and/or operations reduced during construction in certain areas.
    - During construction of ring foundations, each coal storage pile would need to berelocated, and activity related to adjacent piles may be restricted.

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        - During construction of structures over a coal pile area, access to the pile would be limited. Construction activities could be coordinated with facility maintenance/turnaround or similar activities to reduce operational impact; however, negative impact to operations is likely due to the nature and location of the construction.
- Maintenance Requirements & Weather Resistance
    - Weather resistance would generally be dependent on the type of framing and cladding materials selected. Steel cladding and framing can be coated with polymers to protect from corrosion.
    - Lighter-weight materials such as structural fabric cladding may have increased vulnerability to severe weather such as wind and hail.
    - Unlike a vertical barrier, snow and ice loading would be a critical part of structural considerations and engineering design. Loading calculations would be prepared as part of design and permitting, and risk and uncertainty would be involved in forecasting the severity of future weather events.

Additional data needs for design verification

- Structural
    - A concrete ring foundation is required for the geodesic style enclosure.
    - Specialty engineering design specific to the facility from a geodesic dome contractor is required.
- Geotechnical Needs (assessments)
    - The foundation system for a geodesic structure is dependent upon results of a geotechnical analysis and final configuration of structure selected. According to available data, bedrock at the site is relatively deep (100 feet or more below grade).
- Geophysical Survey and Utility Engineering
    - A geophysical survey and utility survey would be required to map underground and above ground utilities and potential subsurface structures in the area (including derelict or historical structures that may be present from past land use). Proximity of utilities to the work zone may require temporary or permanent relocation of the utilities.
- Hydrogeologic Assessment and Dewatering Design
    - Because groundwater is expected relatively close to ground surface, dewatering may be necessary for foundation installation using traditional installation methods. A hydrogeologic assessment would be required to identify likely water production rates for dewatering, assess potential impacts to other properties, and design an appropriate dewatering approach. Installation of a drill-displaced pile to reduce or eliminate dewatering may also be considered.
    - Dewatering operations would require additional space for staging containment tanks, secondary containment, generators, pumps, and hoses. Final disposition of water removed for construction purposes may trigger additional space and coordination requirements. Advance preparation of the ground surface and understanding of subsurface soil strength is required prior to the construction of an onsite dewatering facility. Ideally, water can be discharged to an existing sewer under a municipal permit; off-site hauling of water involves additional logistical and traffic impacts, and discharge to a surface water body under a NPDES permit likely involves additional treatment and testing equipment.

Regulatory Compliance

- Maryland Department of the Environment
    - Construction of a structure of this scale may require a biological impact assessment to identify sensitive ecological receptors and mitigate construction impacts. Dependent on the findings of this assessment, controls for long-term biological and ecological impacts may be required.

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  - Compliance with Maryland's stormwater management regulations will require installation of stormwater BMPs and implementation of ESD to the MEP in accordance with the Stormwater Management Act of 2007.
  - Dewatering permits would likely need to be obtained from MDE for foundation installation if dewatering is conducted.
- IBC Risk Categorization
  - The International Building Code (IBC) table 1604.5 defines Risk Category of Buildings and Other Structures, based on nature of occupancy. Depending on configuration, this structure would likely fall into a high-risk category (IBC Risk category III, or IV) which requires additional special inspections to confirm compliance with IBC table 1604.5.2 Importance Factors for snow, wind, & seismic activity.
- National Fire Protection Association
  - National Fire Protection Association (NFPA) standards 120 and 850 provide requirements for storage and handling of coal; these standards would apply to an enclosed structure, and would need to be incorporated into the design. Air handling, ventilation, and similar measures to prevent hazardous atmosphere formation and combustion/explosion risk would be included in the design for a domed or enclosed structure.

Impacts to Community (Actual & Perceived)

- Geotechnical, Noise Monitoring, and Community Perception
  - Geotechnical and noise monitoring instruments would be employed during construction to collect data on displacement and decibel (dB) levels. Pre-construction data for noise and movement would typically be collected as a baseline.
  - Installation of this type of structure may impact the surrounding community. If the building materials are delivered via truck, the traffic volume in the surrounding community will increase. Efforts to complete the project on an accelerated schedule would entail a greater degree of community disruption.
  - Installation of domed structures would limit overall views to the east (including views of the Patapsco River and the horizon) from adjacent areas.

Examples at Other Bulk Storage Facilities

In Jacksonville, Florida, two 400' diameter domes are currently used at a power generating station for petroleum coke storage. However, interior heights of these completed structures in the United States are lower than the heights that would be needed to completely enclose the existing facility operations. Geodesic style domes have been constructed for coal storage at coal-fired power plants in Chile, Mexico, Tunisa, Taiwan, Indonesia, and the Philippines. This option, if constructed, would likely represent the highest structure or structures of its type in the United States; other structures up to 115' in height have been constructed in the United States as part of an aviation museum (the "Spruce Goose Dome" in Long Beach, CA). There are no examples of geodesic-style structured domes at any coal transloading facilities, which typically entail higher coal throughput volumes and more material management activity than power generating stations.

Discussion of Alternative

A potentially viable layout for geodesic-style dome enclosures have been identified at a basic conceptual level and are shown in Figure 2 below. Enclosures consisting of multiple geodesic domes may be technically feasible to construct at the facility given the following assumptions related to site access, available space, and subsurface considerations.

- Assumes a combined minimum of fifteen acres of space within or nearby the facility available to accommodate construction support facilities and material laydown and staging areas. At least five acres of staging are required on site, and additional staging areas off site will be required.
- Assumes that a partial or full facility closure can be accommodated during construction, with the degree of operational impact dependent on the amount of time and the extent of support/staging areas available for construction. This alternative generally has a high degree of potential impact

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on facility operations and would likely require permanent or long-term changes to facility capacity and layout.

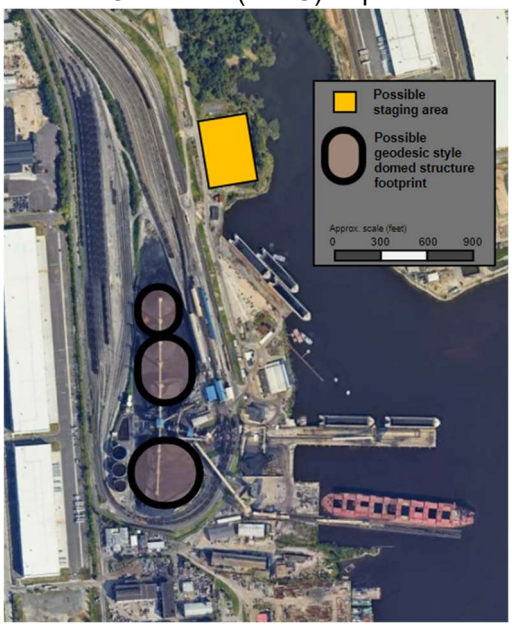
- Assumes finalized permit requirements allow openings for rails, vehicle traffic, egress means, conveyors, utilities, and other infrastructure critical to facility operations.
- Assumes coal piles can be temporarily relocated or reshaped as needed to allow for installation of structure and foundational components according to approved construction specifications. Depending on the final design and layout, the facility footprint and operational approach may require modification – for example, construction of the enclosure may require greater separation of individual coal piles and/or a reduction in the overall storage capacity of the facility.
- Assumes geotechnical analysis of soils proves subsurface conditions competent for required foundation.
- Assumes sufficient and appropriately trained personnel are available to meet an accelerated and variable construction schedule, accounting for Federal Railway Administration (FRA) and Transportation Worker Identification Credential (TWIC) requirements.
- 

Figure 2. Potential Conceptual Layout of Geodesic Dome Structures

Installation of geodesic domes is expected to meet the requirements of the MDE Draft Permit, Part D (1), as full enclosure of the coal piles (excluding openings for access and traffic) could potentially be achieved within the site boundary. As noted above, this alternative entails significant temporary and permanent impacts on facility operations. Multiple geodesic style domes or intersecting dome structures would need to be erected to enclose all piles and related infrastructure. Related infrastructure, including conveyors, would likely need to be redesigned and relocated to accommodate multiple geodesic style domes.

The design, planning, and implementation are expected to take longer than the required 18 months listed in the MDE Draft Permit, Part D (3). Construction of this alternative would entail extensive engineering and permitting and would require significantly more design and construction planning than vertical barrier options. Additional uncertainty is also present in the construction schedule due to the rarity of comparable example structures. While preparation of an order-of-magnitude cost estimate for a geodesic dome approach would require more information than is currently available, the likely cost of such an alternative is expected to be well over $100 million.

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Monolithic Domes

Core Concept: A concrete ring foundation is built, and a membrane is inflated over it. Polyurethane foam is sprayed on the inside of the membrane and then steel rebar is attached. Finally, shotcrete, a dense, sprayable concrete, is applied to the interior.



Photo: Example of a Monolithic Dome under Construction at a Cogeneration Plant, Clinton, Iowa; provided by Dome Technology

Material Procurement and Logistics

- Availability of materials
  - Materials are readily available; polyurethane foam, steel rebar, and shotcrete are available and widely used in construction.
- Logistics and Construction Considerations
  - Installation of a monolithic dome over coal storage at the facility would require significant changes to the current facility layout and removal of existing infrastructure.
  - Removal and relocation of piles during construction would be required.
  - Partial or whole facility shutdown would be required for installation duration.
  - The monolithic dome has relatively shallow foundation requirements compared to other barrier alternatives. A concrete ring foundation is sufficient to support this type of structure. However, a ring foundation or series of ring foundations capable of supporting the necessary height would not be viable at the facility given the current layout.

Examples at Other Bulk Storage Facilities

Monolithic domes are used at some similar material storage facilities but are typically built during the initial construction of the facility or facility expansion, and coordinated with design and installation of the other systems (such as conveyors) at the facility. The largest monolithic domes used for bulk storage of combustible materials are located in St. Croix, US Virgin Islands, where a 254′ diameter monolithic dome is present and used for petroleum coke storage.

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Discussion of Alternative

A monolithic dome is not feasible to construct at the facility, given the current facility layout. Structural constraints require that the footprint of the structure maintain a circular shape with little to no options for penetrations. A monolithic dome would require stacking tubes and conveyors to be relocated or significantly reconfigured. In addition, there would be significantly more foundational space required to maintain the required circular footprint, and construction would likely require reconfiguration/relocation of one or more existing rail lines as well as stacking towers, coal piles, and potentially buildings.

Because construction within the facility footprint is not feasible, a monolithic dome is currently considered unlikely to meet the requirements of the MDE Draft Permit, Part D (1).

Summary Table

The summary table as shown in **Appendix A** outlines and compares the conceptual evaluations of each alternative discussed in this text. The criteria are organized in a matrix format to support comparative evaluation of the alternatives. Of the alternatives discussed above, a steel frame wall and a geodesic dome approach have been identified as potentially feasible for construction at the facility, though significant uncertainty would be present in design and implementation of either alternative, and neither would likely be implementable within the time constraints proposed in the MDE Draft Permit.

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Appendix A – Summary Table

Table 1. Evaluation of Potential Physical Barrier Alternatives
CSX Curtis Bay Coal Pier

Barrier / Enclosure Options	Photo	Conceptual Description	Likely Feasible to Construct at Facility?	Likely to Satisfy Draft Permit Conditions?	Likely Constructable in 18 Months or Less?	Comparable Examples Present at a Bulk Storage Facility?		Maximum Height of Comparable Example Structures located in USA (in feet)	Deep Foundation Supports Required?	Dewatering Likely Required for Construction?	Degree of Impact on Facility Operations (H,M,L)	On-Site Space Needs- Construction and Staging (H,M,L)	Space Required - As-Constructed Footprint (H,M,L)	International Building Code Requirements Apply?	National Fire Protection Association Requirements Apply?	Geophysical/Utility Survey, Geotechnical Analysis, Biological Impact Assessment, and Stormwater BMPs Required?
						Type of Barrier Employed at Bulk Storage Facility ?	Structure Present in USA ?									
Steel Frame Wall		A vertical frame constructed primarily from steel components, such as beams, columns, and plates, which are interconnected to create a load-bearing structure and covered in a metal sheathing or cladding. This style of vertical barrier can be constructed using foundation piles, prefabricated metal structures, and metal paneling.	Yes	Unclear	No	No	No	30	Yes	Yes	M	M	H	Yes	No	Yes
Stacked Shipping Containers		Stacked shipping containers are aligned along the facility perimeter to the desired height, with connectors or linkages providing structural strength and a wider base of containers providing lateral stability.	No	Unclear	No	No	No	76.5 *	No	No	H	H	H	Yes	No	Yes
Tilt Up Structures		Tilt-up construction involves preparing and pouring large concrete panels in a horizontal position on-site and then tilting them upward to their final position. The panels would be held in place by a support structure or frame, likely a steel structure similar to that described for the metal-clad steel frame wall above.	No	Unclear	No	No	No	NA	Yes	Yes	H	H	H	Yes	No	Yes
Sheet Pile Wall		Sheet piles are shaped steel segments with interlocking edges. The segments are interlocked during installation and provide a continuous structure with resistance to bending. Typically sheet piling is used for temporary excavation support, retaining walls and marine bulkheads.	No	No	No	No	No	10	Yes	Yes	M	H	H	No	No	Yes
Block & Steel Wall		Courses of engineered stacked blocks, horizontal and vertical steel bars are used to construct a masonry fence system. This type of wall is often used as a noise barrier along highways and creates an appearance similar to traditional masonry.	No	Unclear	No	No	No	30	Yes	Yes	Unknown	M	L	No	No	Yes
Geodesic-Style Structured Dome		Geodesic domes are assembled from a large number of triangular or polygonal panels that are connected to distribute weight evenly across the dome's surface. The panels are made of metal, and the frames can be clad in a variety of materials.	Yes	Yes	No	Yes	Yes	115 **	No	Yes	H	H	M	Yes	Yes	Yes
Monolithic Dome		A concrete ring foundation is built, and a membrane is inflated over it. Polyurethane foam is sprayed on the inside of the membrane and then steel rebar is attached. A layer of dense, sprayable concrete is applied to the interior.	No	Yes	No	Yes	No	85	Yes	Yes	H	H	M	Yes	Yes	Yes

NOTES:
H = High
M = Medium
L = low
Permit Conditions = draft air permit issued by Maryland Department of the Environment for the CSX Curtis Bay Coal Pier in Baltimore, Maryland.
Column "Comparable Example Structures" refers to maximum height achieved by structure type in United States. Intended use of the example structure varies and should not be assumed as a dust mitigation solution.
Column "Deep Foundation Supports" required at 10' below ground surface or greater.
Column "Impact to Facility Operations": H = Shutdown of entire facility required for all or a portion of the installation; M = Partial facility shutdown required for duration of construction; L = Partial facility shutdowns may be required periodically during installation.

Column "On-Site Space Needs - Construction & Staging": H = Materials need to be staged at on-site staging pad and along final barrier alignment for installation. Facility layout to be manipulated to accommodate construction. M= On-site staging minimum of 5 acres is required, as well as off-site staging of at least 10 acres. An additional 10+ acres of off-site staging areas must be easily accessible from facility. L= All materials can be staged on-site, 5 acres required.

Column "Space Required - As-Constructed Footprint": H = Lateral Bracing required, space around lateral bracing unusable after construction is complete; M = Usable space within footprint after construction is complete; L = no lateral bracing required, minimal footprint.
*: Maximum height of typical shipping container stacks at U.S. shipping facilities is 9 containers/76.5 feet, supported by adjacent stacked containers. This height does not represent an example of a constructed barrier.
** The 115-foot-high example listed is part of an aviation museum and not a bulk storage facility.

Red	Alternative is not viable or feasible
Yellow	Alternative may be viable, but is relatively less favorable (i.e., entails additional requirements or risks)
Green	Alternative is relatively favorable

CSX Transportation, Inc. Comments on Renewal of State Permit to Operate No. 510-2263 for CSX Transportation Curtis Bay Piers

Appendix 8: *Technical Memo from HDR to CSX regarding "Physical Barrier Engineering Feasibility Analysis" (Dec. 5, 2024)*

Technical Memo

Date:	Thursday, December 05, 2024
Project:	CSX Curtis Bay Piers Air Quality State Permit Renewal
To:	Mr. Raghu Chatrathi, CSX Ms. Rebecca Hensley, CSX
From:	Mr. Nabil Hamadani, HDR
Subject:	Physical Barrier Engineering Feasibility Analysis

EXECUTIVE SUMMARY

On August 29, 2024, the Maryland Department of the Environment released a draft permit for the CSX Curtis Bay Piers facility that included the following conditions requiring the design and construction of a physical barrier wall surrounding the coal storage area:

> Part D – Physical Barrier and Dust Control Requirements
>
> (1) The Permittee shall construct a physical barrier to prevent coal dust from being transported from any coal storage piles on the site into the surrounding community. The physical barrier must at a minimum surround all coal storage piles completely, either individually or in a single enclosure within the facility's property boundary, except where openings are needed to allow vehicular access into and out of the interior of the structure or where necessary to allow for the movement of coal into or out of the physical barrier via conveyors. If the barrier is open to the atmosphere from above, the maximum coal pile height shall be maintained at a level that is less than the height of the physical barrier at all times.
>
> (2) Within 120 days following the issuance date of this Permit to Operate, the Permittee shall send a notification to and seek approval from the Department on the type of physical barrier that it intends to use to satisfy the Part D(1) requirement of this Permit to Operate. The application shall include revisions to the Fugitive Dust Plan applicable when the physical barrier system chosen to satisfy the Part D(1) requirement is in operation. Once approved by the Department the revisions will be incorporated into the Permit to Operate.
>
> (3) Within 18 months of the Department's approval of the Permittee's physical barrier system, the Permittee shall complete construction and place in operation the physical barrier required under the Part D(1) requirement of this Permit to Operate.

HDR Engineering Inc. (HDR) has evaluated the feasibility of designing, constructing, and safely operating a physical barrier that satisfies the draft permit conditions. For the reasons presented in this memo, HDR has concluded that construction of an impermeable open-top physical barrier as tall as the coal piles and immediately surrounding the North and South coal storage areas is not feasible at the CSX Curtis Bay Piers facility. The reasons driving this conclusion are documented through the body of this memo.

The draft permit language does not appear to allow the construction of a permeable structure designed to reduce wind speeds. Draft condition D1 requires "a physical barrier *to prevent coal dust* from being transported from any coal storage piles on the site into the surrounding community." (emphasis added). Therefore, it is unclear if a permeable physical barrier would satisfy the language of the draft permit condition. For completeness, HDR also evaluated the feasibility of installing a 50% permeable physical barrier that would satisfy the height and location requirements of draft condition D(1) (i.e., barrier must be as tall as the coal storage piles and completely surrounds all coal storage piles completely, either individually or in a single enclosure). The engineering and construction feasibility as well as a cost estimate for installing a 50% permeable physical barrier structure is discussed in Part II of this Technical Memo.

CSX CURTIS BAY PIERS FACILITY LAYOUT

CSX Curtis Bay Piers ("Curtis Bay Piers" or "Terminal") is within the confines of an active rail yard. The coal storage on property is estimated to cover an area of about 533,030 square feet between the northern and southern storage piles.[1] A complicated and dense network of conveyors and transfer infrastructure are within the rail loop surrounding the coal storage piles. This transloading network drives the material handling, with the transfer of coal from the railcars to the storage areas and to the ship loading piers. Figure 1 shows the layout of the Terminal, including the storage areas and network of conveyors and transfer buildings. Both the rail yard and the ship loading activities occur 24 hours per day, 7 days per week. The railroad support system is equipped with multiple tracks to accommodate various trains simultaneously. The rail cars carrying coal are unloaded at a designated area within the terminal. This area is equipped with dedicated machinery such as rotary dumpers or car dumpers that can tip or invert the rail cars to unload the coal.

Once unloaded, the coal is transported from the unloading area to storage using an underground and aboveground conveyor system. This system consists of a series of conveyor belts and other mechanisms. The Terminal includes stockpiles to hold the coal before it is loaded via a conveyor system onto ships.

The system was designed to maximize efficiency by minimizing the distance coal moves from rail car to storage pile and from storage pile to ship. The design philosophy results in a facility with very little open or free space. The supporting railroad tracks are immediately adjacent on all sides to the coal storage areas with the conveyor systems tightly packed within the railroad as well. Due to the operating configuration of the Terminal, any large-scale construction activities involving the

[1] This analysis does not include SP1 storage area which is approximately one acre. Per the draft permit conditions, SP1 would also need to be surrounding by a physical barrier.

materials and equipment described below would require a full shutdown of significant areas of operations for the majority of the construction schedule.

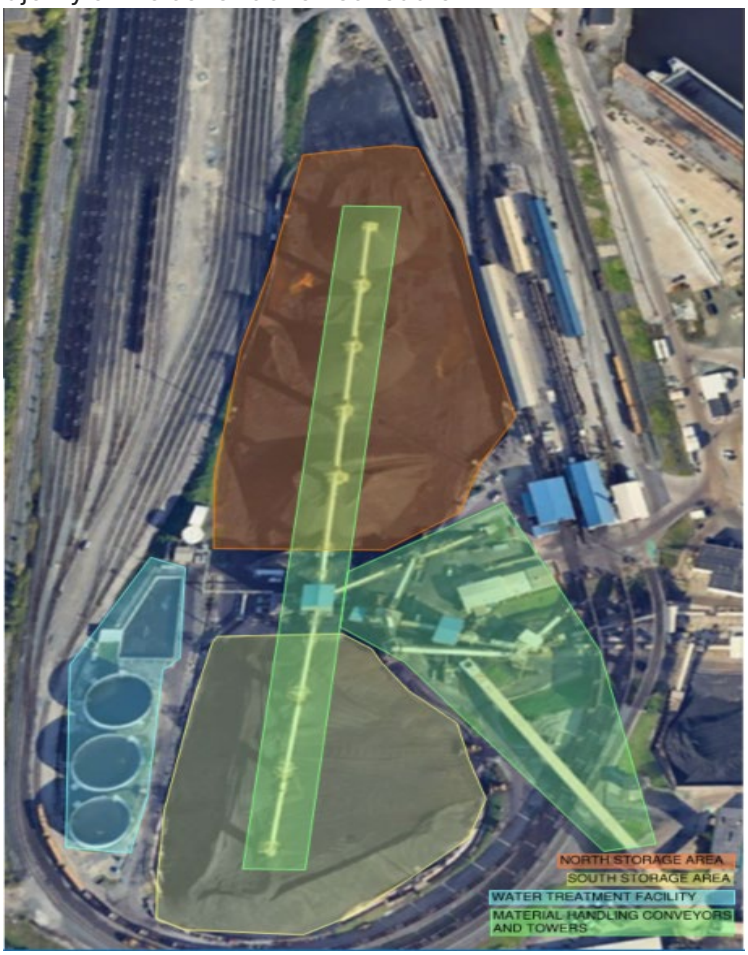


Figure 1 CSX Curtis Bay Piers Facility General Layout

CHALLENGES OF CONSTRUCTING AN IMPERMEABLE PHYSICAL BARRIER TO PREVENT COAL DUST FROM LEAVING THE CBP PROPERTY

As shown below, the construction of any impermeable partial enclosure structure around the coal piles would be costly and technically challenging. As noted above, the draft permit language does not appear to allow the construction of a wind fence or other permeable structure designed to reduce wind speeds. Therefore, HDR first evaluated the feasibility of constructing an impermeable physical barrier around the north and south storage areas at the height of the existing coal piles.

HDR has performed internal research with our Power practice group. This group performs many and varied services for the power industry, including site management, operation, and redevelopment and demolition of coal fired plants throughout the country. The Power practice group conducted an internal review of facilities that have incorporated barrier designs for coal dust suppression. Our Subject Matter Experts (SMEs) were unable to identify any facilities with an open-top impermeable physical barrier fashioned for fugitive dust suppression.

STRUCTURAL DESIGN AND CONSTRUCTABILITY CONSIDERATIONS

A conceptual containment structure layout around the north and south storage areas is shown in the figures below.



Figure 2 Containment structure layout at South Storage Area

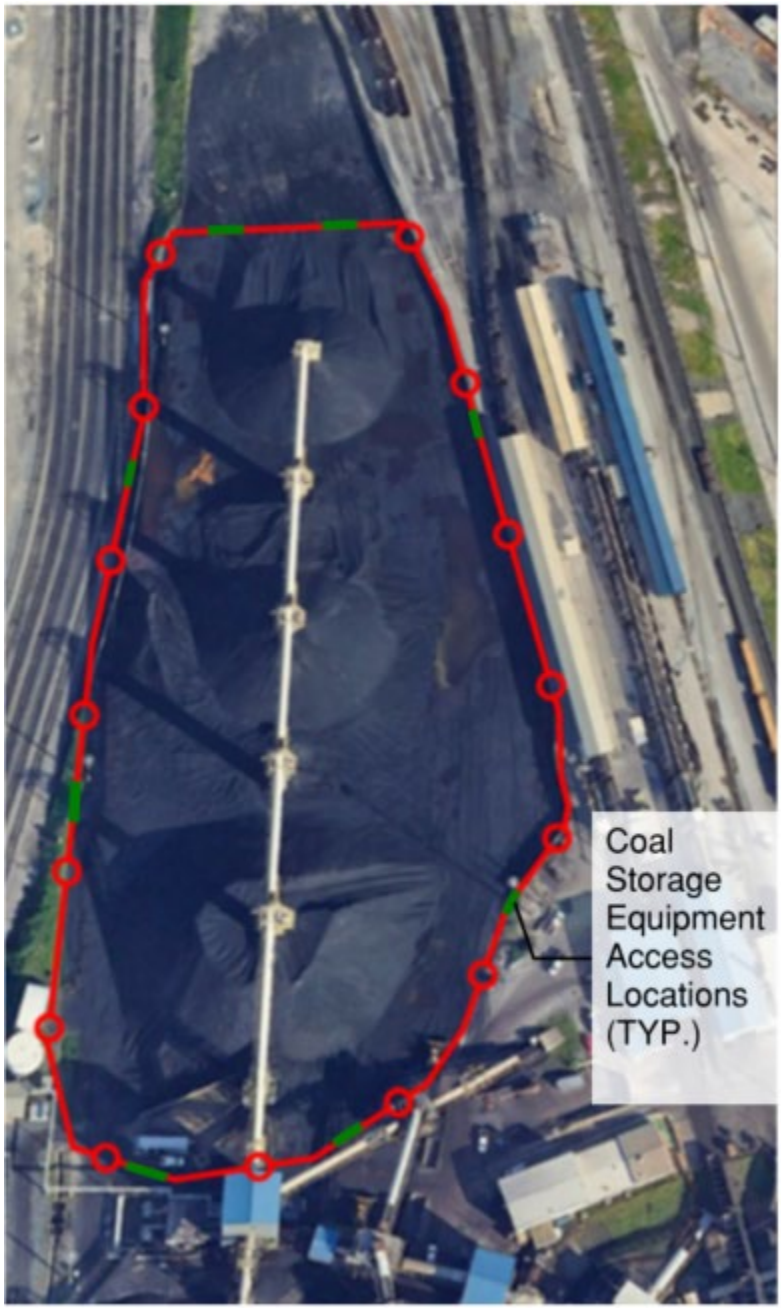


Figure 3 Containment structure layout at North Storage Area

1. Containment Footprint: The North and South coal stockpiles encompass an area of approximately 11.20 acres, requiring a containment fence approximately 4200 linear feet in length.
2. Foundation Design: Building a tall containment wall requires a strong and stable foundation to support the weight and withstand various external forces as outlined in the structural design considerations. The design and construction of a suitable foundation becomes more complex as the height of the structure increases. With coal stockpiles reaching maximum heights of 100-110 feet above existing grade, a (1) cantilever king pile and sheet pile wall, or (2) a combi-wall containment wall would need to be built to heights of approximately 110 –

120 feet above grade. Such a height would require extensive foundation depths – potentially as deep as 240 feet. Installation of piles this deep could present driving difficulties due to potential refusal in dense to very dense sand deposits. Structural sections would be comprised of steel pipe sections between 5'-15' feet in diameter and range between 160'-360' in length. Steel sections of these lengths would not be safe nor physically able to be handled as singular elements. Installation would be in shorter lengths, requiring time to fully weld sections together as the wall is constructed vertically. Soil inside the pipe sections for the combi-wall would likely require excavation to some depth below grade for concrete placement, which could present a safety hazard and would be difficult to construct. Conceptual plan views of the king pile and sheet pile wall (Figure 4) and combi-wall (Figure 5) options are presented below. Both options are shown next to an image of MDE's Montgomery Park office building for comparison.

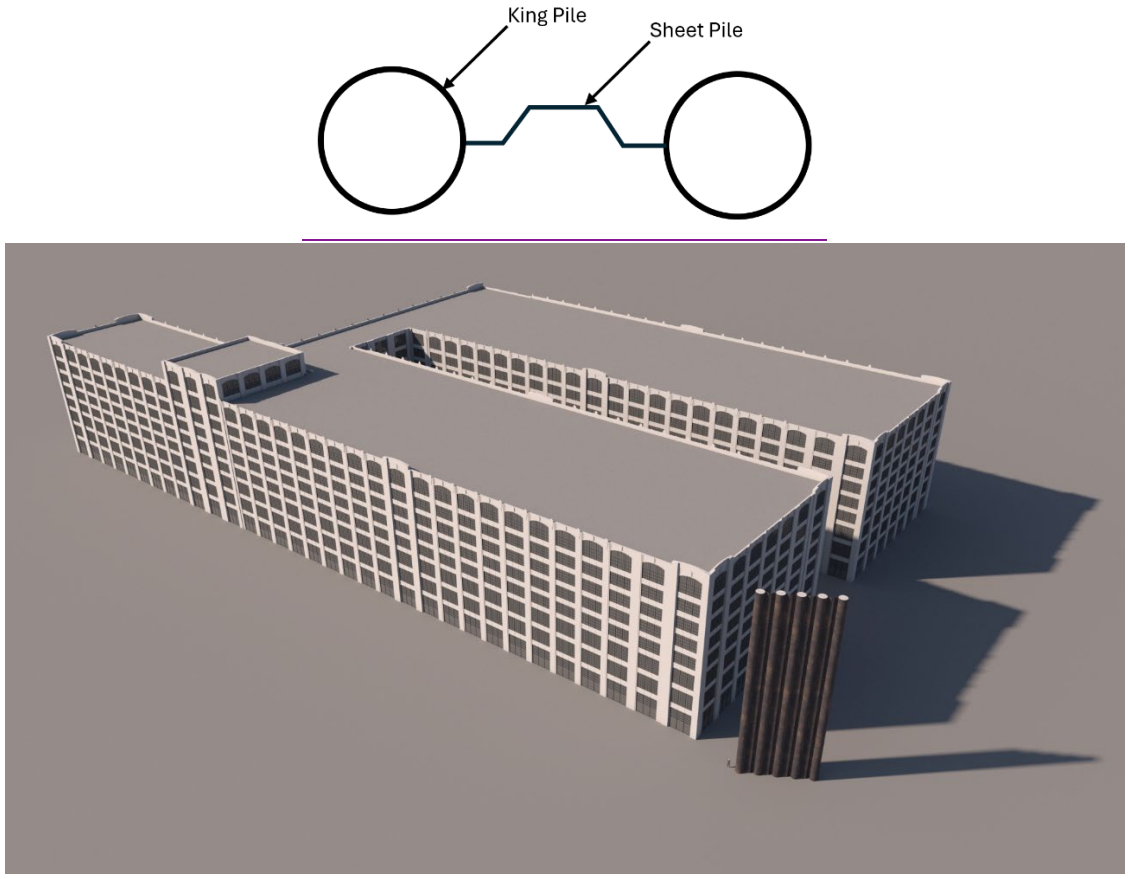


Figure 4 King Pile and Sheet Pile Wall Conceptual Layout – MDE's Montgomery Park office building is shown in the image next to the king pile and sheet pile wall for comparison.

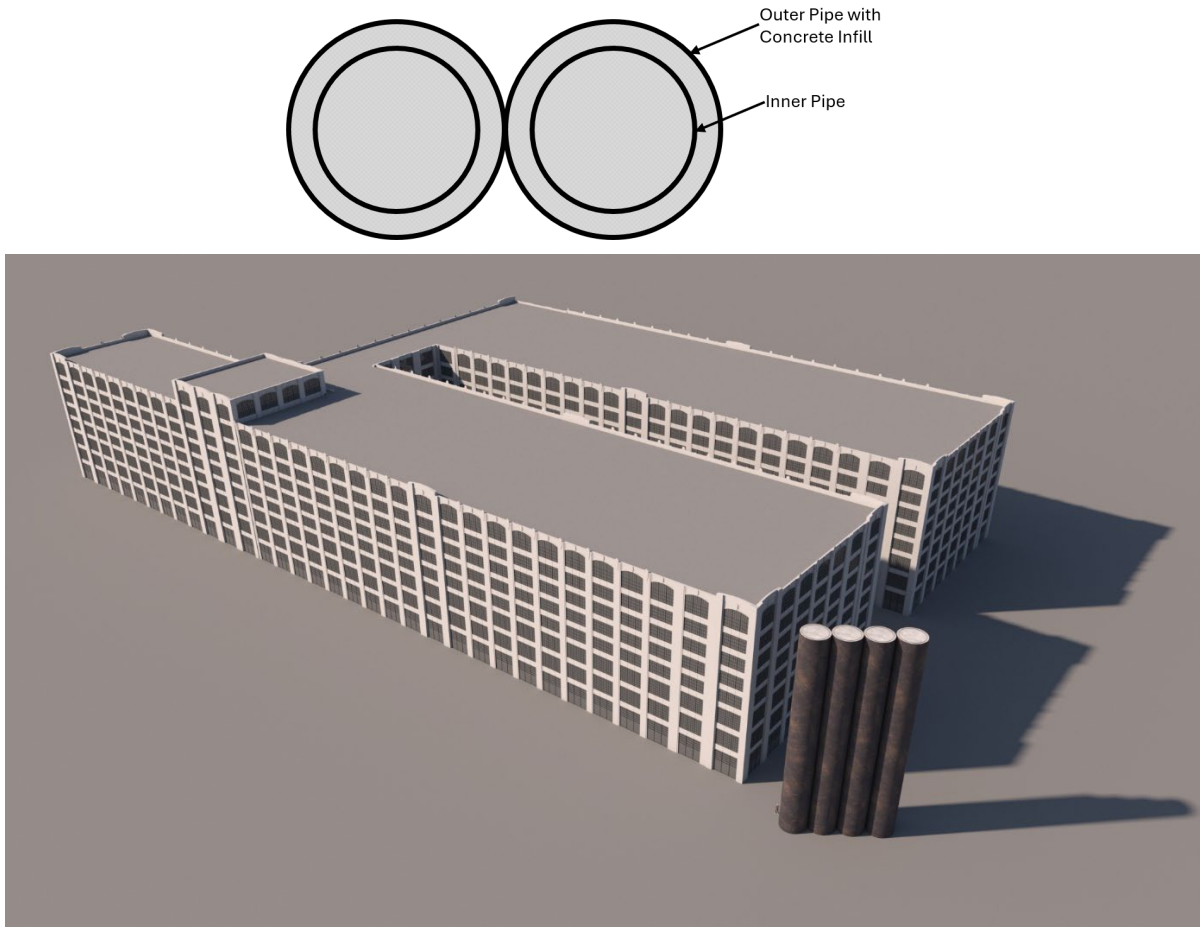


Figure 5 Combi-Wall Conceptual Layout - MDE's Montgomery Park office building is shown in the image next to the combi-wall for comparison

3. Structural Integrity: As the height of the structural wall increases, the structural integrity becomes a critical concern. The wall will need be designed to resist lateral loads, originating from either high winds or active earth pressures from the coal stockpile, to ensure stability and prevent collapse. Historically, Baltimore has experienced storm related wind gusts up to 78kts (90mph). (NOAA - National Centers for Environmental Information). The wall will need to be constructed with the appropriate elements to withstand such forces. A sheet pile wall on its own is not feasible. It may be possible to engineer it *in combination* with a king pile wall. A traditional design for such reinforced cantilever structures is a king pile design – heavy steel pipe piles laterally connected by pairs of sheet piles. That said, such a structure may not provide adequate foundation and bending strength while minimizing the sail area constructed by sheet piling. The coal stockpile loading would likely require tangent pile sections forming the combi-wall, likely multiple large-diameter pipe sections nested together and filled with concrete. Excavation of the soils to the depth required for concrete installation presents safety concerns and constructability difficulties. The sizes of pipes required may also be larger than are regularly available and difficult to obtain.

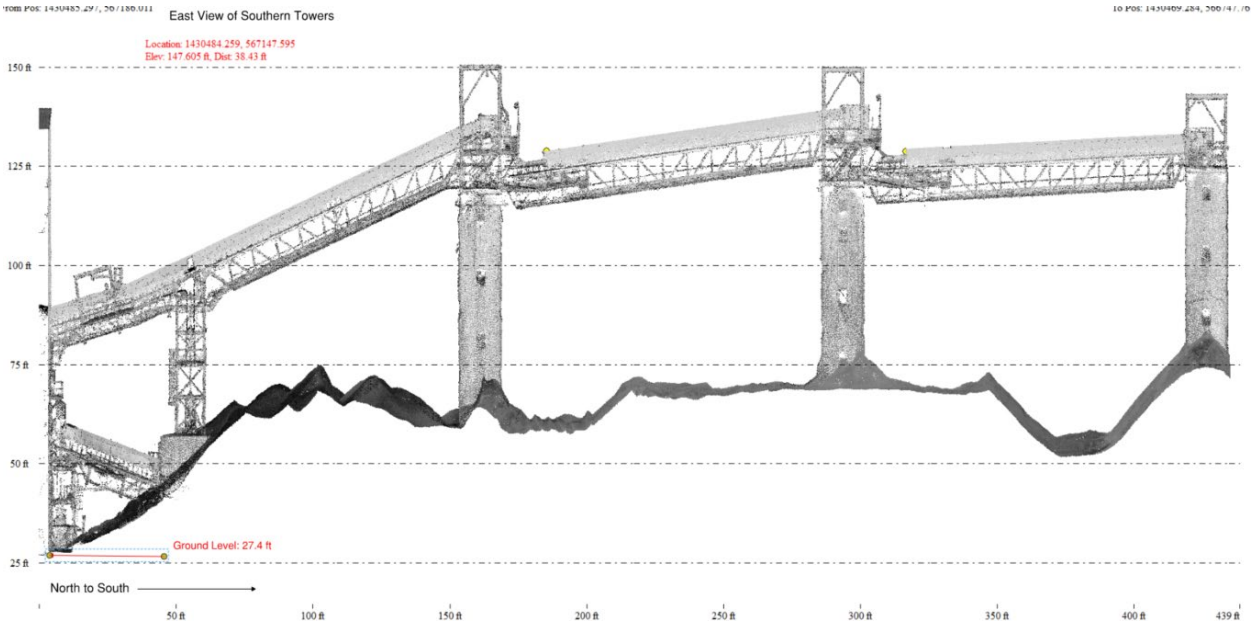


Figure 6 LiDAR scan showing the height of stacking tubes/coal pile

Construction Material Impacts: To construct such a containment structure, using the combi-wall or king pile and sheet wall option, would require a massive amount of steel – potentially greater than 350,000 tons. Procurement lead times could extend beyond 1-2 years. An appropriate storage area will be required to hold materials prior to and during construction. Storage area for this volume of steel would require a flat open area of at least 5 acres. A storage and laydown area will need to be leased close to the facility to store material and equipment.

4. Curtis Bay cannot provide the storage and laydown area required for construction. The M Pad area of the Terminal has been considered for storage and laydown, however there are logistical challenges with using this space. The area is located on the northeast corner of the Terminal and there is a lack of feasible access road connecting the laydown to the construction areas. Transporting material will require moving through some heavily trafficked operation areas that will be a logistical challenge and also present significant safety concerns to facility staff operating in these areas.
5. Concrete infill for the combi-wall generally requires ambient air temperatures of at least 40 degrees to properly cure. This would require temperature control, no concrete placement to occur during the winter months (December – March), or other special arrangements to be made with concrete suppliers in the area. It is anticipated this would contribute to extending the construction time beyond the 18 months required by the permit.
6. Construction Equipment: The construction process becomes more challenging as the height of the wall increases. Specialized equipment and techniques will be required to access and work at these higher elevations. To install piling as described here, large cranes will be required – potentially up to or exceeding 400-ton capacity. Cranes of this size require a large working area to handle and install the steel elements. As an example, a 400-ton Manitowoc M16000 Crane requires a minimum 50’ diameter operating circle – exclusive of any additional room for personnel or equipment. In addition, equipment and material weights – the crane boom will be required to stay in a very elevated position – requiring materials to be brought close to the crane for handling. These requirements will require a

significant safe working area and path to and from the working area for access and material handling. In addition, all work areas would be required to be flat and stable to ensure safe working conditions. The pile driving hammers required to drive piles that large are likely to produce impact noise and vibrations. The noise of pile driving may reach members of the public. Vibrations have the potential to cause damage to nearby structures, particularly settlement due to soil disturbance.

7. Construction Time and Operational Impacts: Under normal operating conditions, with steel lengths less than 100', where access and operation are not impeded, and installation does not require connecting pile elements to reach design lengths, a competent construction crew can install 8-15 linear feet of wall per day. The project described here would be subject to extraordinary limitations resulting in severely limited production rates, potentially less than 2'-3' per day. At a production rate of 3' per day, a single crane would require approximately 5 years to complete the installation, once materials were on site, absent any delay impacts.
8. Operational safety: To ensure safety of site personnel, a controlled access zone is established around the installation, driving, and hoisting areas to prevent access by persons not directly involved in such operations. The radius of such a work area is barricaded/flagged off to prevent personnel from entering. The minimum radius of such an area is established based on the length of the pile and/or height of the leads/boom. To construct the full height of the containment wall will require a boom length of minimally 250'. This would dictate a controlled access zone of approximately 500' diameter.
9. Cost Considerations: Below is a summary of costs associated with the construction of the containment structure, a detailed breakdown of the cost estimate is attached as an appendix to this memo.
    a. King Pile and Sheet Pile Wall: $98.6 million ($23,477/ft of wall)
    b. Combi-Wall: cost estimate not provided as costs determined to be greater than the $300-$400 million cost estimate for fully enclosing the Terminal.

CSX FACILITY OPERATIONAL CONSIDERATIONS

The construction of a containment structure around the coal piles in the North and South storage areas will have significant operational impacts on the coal storage and handling operations at Curtis Bay. The proximity of the conveyors and rail tracks to the footprint for the containment structure as well as the construction staging areas will result in large portions of the operations to be shut down for significant periods of time. For example, the need for large laydown areas and the use of a large crane for barrier wall construction in close proximity to tracks will require shutting down or relocating the tracks for long periods of time. Below is the approximate clearance distance available from the proposed location of the physical containment structure to the nearest track for the North and South storage areas.



Figure 7 South storage area - Available track clearance to Containment Structure

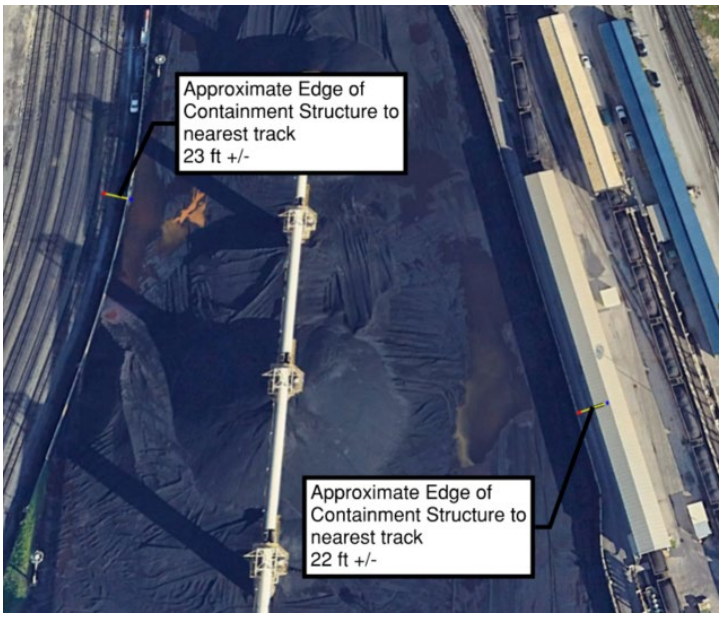


Figure 8 North storage area - Available track clearance to Containment Structure

Figures 7 and 8 above show the limited clearances around the storage areas. Adequate space is not available for staging of equipment and material necessary for constructing the containment structure. Any construction effort around the north and south storage areas would require significant long-term impacts to the facility operations.

Additionally, the operations on the coal piles in the storage areas require entry and egress of large Caterpillar D10 dozers with a max width of 148”. This will require a significant opening to the containment structure at numerous location and this makes the structural design more difficult to meet design parameters.

HEALTH AND SAFETY CONCERNS

Of particular concern to construction and operation of a tall physical barrier for coal pile dust suppression is the potential for heat buildup within the barrier and the potential for ignition of the coal pile. In stockpiles, coal is exposed to air and oxidized slowly. During low-temperature oxidation, less than 100° C, coal reacts with oxygen in the air, initiating a series of complex chemical reactions. These reactions generate heat which can gradually increase the temperature of the coal, potentially leading to spontaneous combustion. Moreover, the presence of moisture, oxygen, and minerals can accelerate the oxidation process. As temperatures increase, the oxidation process becomes more rapid and intense, which can result in self-ignition and combustion of coal.

To mitigate heat buildup within the physical barrier several factors must be considered including:

- Wind direction and velocity
- Proximity of single or dual physical barriers to the coal pile
- The dynamics of the coal pile (changes in volume or dimension of the pile)
- Water dust suppression, cooling systems and/or other engineering controls employed to reduce or mitigate heat buildup.

In a report by Kim and Sohn 2016, the effects of wind barrier design were numerically considered.

Effects of wind barrier design and closed coal storage on spontaneous ignition of coal stockpiles - ScienceDirect

A wind barrier changes the air flow pattern around a stockpile and affects heat buildup within the pile and the ability of a coal pile to potentially ignite. The distance of the wind barriers to the coal pile changes the models and heat scenarios within the stockpile.

The coal storage piles at the facility are not static and the dimensions anywhere along the piles shift in height or in area depending on the volume of coal being stored at any one time. Effective wind barriers for the storage areas would have to be maneuverable to minimize heat buildup in the storage areas to account for wind direction, wind velocity, and the dimensions of the coal pile to minimize the potential for ignition. Ignition of one or more areas of the coal pile could cause contaminant and smoke downwind of the coal pile that would be counterproductive to the goals of the barrier to minimize particulates to residential communities. Considerable barrier manipulation to meet the requirements of weather conditions and stockpile configuration for the volume of the existing stockpile are not feasible to minimize the chances for ignition.

SUMMARY

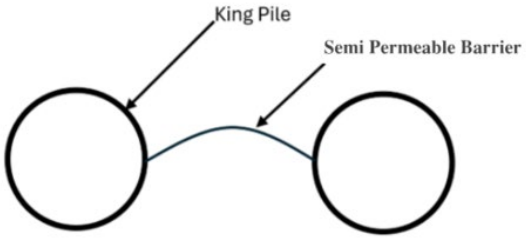
In summary the area that would require containment as requested by MDE would require much study and consideration for feasibility including assessment of prevailing wind, stockpile chemistry and temperature, barrier design and implementation on a facility with very limited installation space available. Other necessary studies include, operational studies, particulate studies, and additional engineering, physical and chemical parameter studies.

SEMI PERMEABLE PHYSICAL BARRIER

A semi permeable (40-50%) physical barrier was also considered and evaluated for design and construction feasibility. Similar challenges as highlighted above are also applicable to a 100+ foot semi- permeable physical barrier surrounding the existing coal piles. Construction of a 40-50% permeable barrier also requires a king pile wall given the structure integrity challenges associated with a barrier of the height required by the draft conditions.

Considering the reduced loading on the semi permeable physical barrier, due to the reduction in wind forces acting on such a structure, the foundation depth would be reduced as compared to an impermeable barrier. However, given the height required for the structure a significant depth would still be required.

The construction constraints for the foundations and supporting elements of the wall would also have significant impacts on CSX operations at the Terminal. Figure 9 shows the King Pile and Semi-Permeable Barrier Wall Conceptual Layout as compared to MDE's Montgomery Park office building and Figure 10 shows two types of steel materials that can be used for semi-permeable barrier walls.



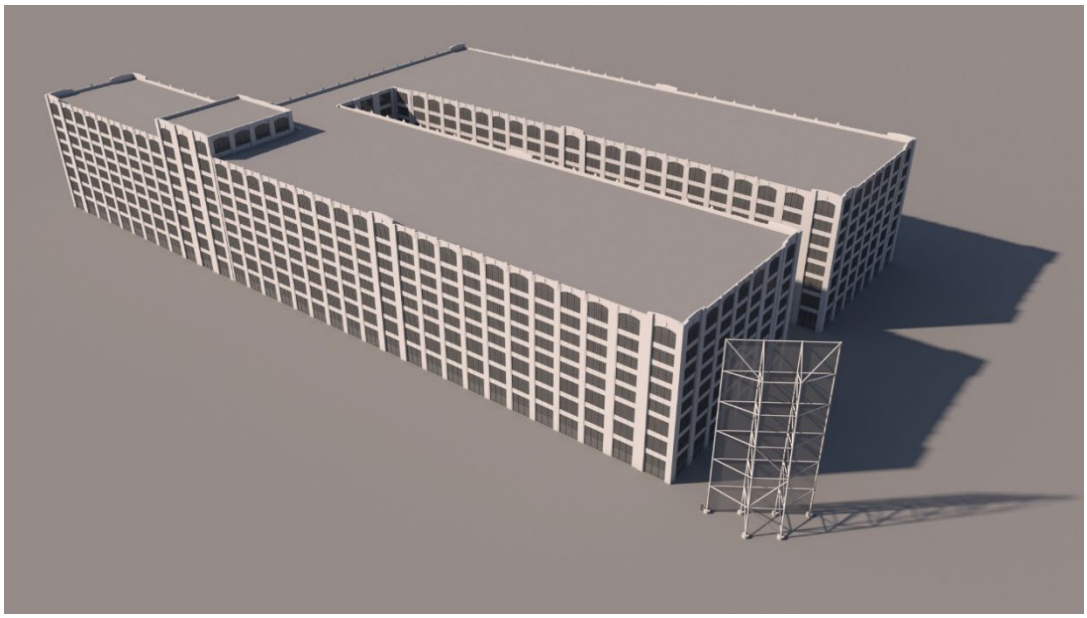


Figure 9 King Pile and Semi-Permeable Barrier Wall Conceptual Layout - MDE's Montgomery Park office building is shown in the image next to the king pile and semi-permeable wall for comparison.

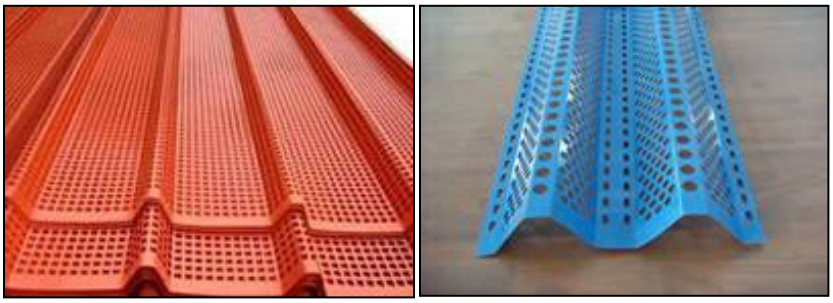


Figure 10: Barrier Wall Material Options

Below are examples of pole types that can be considered for a 50% permeable barrier wall.

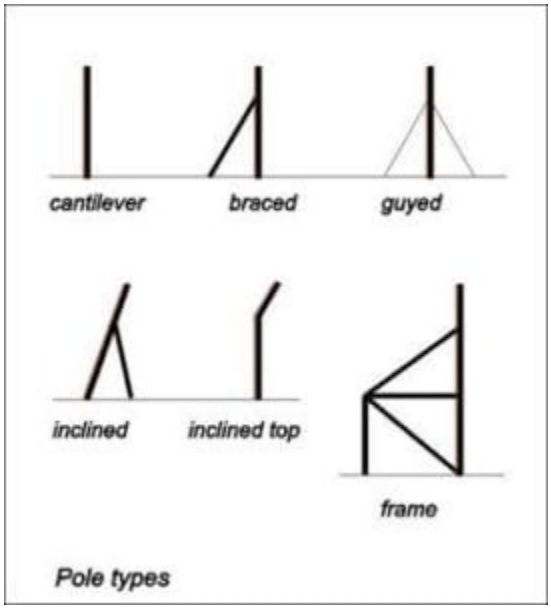


Figure 11: *50% Permeable Physical Barrier Wall Solutions*

A detailed breakdown of the cost estimate for a 50% semi-permeable barrier wall is attached as Appendix A to this memo. The cost of a 50% permeable king pile wall is estimated to be $83.9 million.

PROPOSAL FOR COAL PILE CONTAINMENT SHELL STRUCTURE



Figure 102 Shell Type Structure Enclosures for Coal Storage Areas

An additional solution using a cell structure around the coal piles was also considered. A rendering of the solution is provided above for reference.

As detailed in the preceding sections pertaining to the impermeable and 50% permeable physical barrier structures, construction and installation of the shell structure and foundations would require significant impacts to the facility operations both in the short-term and in the long-term. A full facility shut down will be necessary to allow for the construction and installation of this structure. The potential cost to construct such a structure and the safety features that will be required to allow for the safe operation of the facility make this solution cost prohibitive and not feasible.

Further analysis and design of the shell structure would be necessary to evaluate the magnitude of impacts to operations at the Terminal and the cost of construction.

APPENDIX A – CONCEPTUAL COST ESTIMATES

Curtis Bay 120 ft King Pile and Sheet Pile Coal Containment Wall

Impermeable Wind Barrier Estimated Cost Evaluation

Cost Description	Items/Totals	Assumptions			
Approximate Length of Wall (ft.)	4200	Lengths of Piles			
Steel (Pipe Section)	60" Dia.x0.875"				
Wt per Foot (lbs./ft.)	553	Cantilever Height =	120	ft.	
Length of Pile (ft.)	170	Pile Bottom Depth =	50	ft.	
C-to-C Spacing (ft.)	10	Pile Driven Length =	50	ft./pile	*Length below grade*
Number of Piles	420	Total Pile Length =	170	ft./pile	
Steel (Sheet Pile Section)	NZ 14				
Wt per Foot (lbs./ft.)	55	Sheet Pile Length =	123	ft.	
Length of Pile (ft.)	123	Width of Sheet Pile =	2.53	ft.	
Width of Pile (ft.)	2.53	Sheet Pile Surface Area =	1.2	$ft.^2/ft.^2$	
Number of Sheet Pile Sections per King Pile	2				
Number of Sheet Pile Sections	840				
Pile Installation		**Pile Installation**			
Daily Crew Cost ($/day)	$18,000	10-12 man crew, including welders			
Progress Per Day (ft.)	2.5	275-300ton crane; 250-300ft boom			
Work Duration (days)	1680	pup trucks for moving piles			
Pile Installation Sub-Total	$30,240,000	diesel hammer; vibro hammer			
		2 front end loaders			
		templates			
Steel					
Amount of Steel (lbs./pipe)	94010	splice operation - cant move that size pile around the work site			
Amount of Steel (lbs./sheet pile)	6765	Need to weld stiffeners on the z-sheets			
Amount of Steel (lbs./wall)	45166800				
Amount of Steel (cwt./wall)	451668	Approx. $18,000/day for the crew and equipment			
Cost of Steel ($/cwt.)	$71.00	Material costs			
Steel Sub-Total	$32,068,428	Assume 2-3 linear feet of wall per day			
		4-5 year job			
Other					
Construction Layout Stakes and Surveying	$250,000	**Unit Cost of Steel**	$71.00	/cwt.	Nucor-Yamata Steel Pricing as of 3/27/2024, based on highest listed unit cost for W30/W33/W36 sections
Mobilization/Demobilization	$800,000				(cwt. = hundred pounds of weight)
Other Sub-Total	$1,050,000				
		Construction Layout/Surveying	$250,000.00	/lump sum	Assumed
Labor and Materials Sub-Total	$63,358,428				
		Mobilization	$400,000.00	/each (1-way)	Assumed
			2	each	
Fees					
Design (10%)	$6,335,843	**Design**	10%	of Labor and Materials	
Construction Management (7.5%)	$4,751,882	**Construction Management**	7.5%	of Labor and Materials	
Construction Engineering and Inspection (7%)	$4,435,090				
Fees Sub-Total	$15,522,815	**Construction Engineering and Inspection**	7%	of Labor and Materials	
		Contingency	25%	of Labor, Materials, and Fees	
Contingency (25%)	$19,720,311				
TOTAL	**$98,601,554**				
Unit Cost ($/ft. wall)	**$23,477**				

Increased due to current volatility in steel pricing, as well as cement and labor shortages.

Curtis Bay 120 ft King Pile Coal Containment Wall

50% Permeable Wind Barrier Estimated Cost Evaluation

Cost Description	Items/Totals
Approximate Length of Wall (ft.)	4200
Steel (Pipe Section)	48" Dia.x0.875"
Wt per Foot (lbs./ft.)	440.8
Length of Pile (ft.)	170
C-to-C Spacing (ft.)	10
Number of Piles	420
Width of Wind Barrier Per King Pile (ft.)	6.00
Area of Wind Barrier per King Pile (sq. ft.)	720
Pile Installation	
Daily Crew Cost ($/day)	$18,000
Progress Per Day (ft.)	2.5
Work Duration (days)	1680
Pile Installation Sub-Total	**$30,240,000**
Steel	
Amount of Steel (lbs./pipe)	74936
Amount of Steel (lbs./wall)	31473120
Amount of Steel (cwt./wall)	314731.2
Cost of Steel ($/cwt.)	$71.00
Steel Sub-Total	**$22,345,915**
Wind Barrier	
Area of Wind Barrier per King Pile (sq. ft.)	720
Area of Wind Barrier (sq. ft./wall)	302400
Cost of Wind Barrier ($/sq. ft.)	$1.07
Wind Barrier Sub-Total	**$324,513**
Other	
Construction Layout Stakes and Surveying	$250,000
Mobilization/Demobilization	$800,000
Other Sub-Total	**$1,050,000**
Labor and Materials Sub-Total	**$53,960,428**
Fees	
Design (10%)	$5,396,043
Construction Management (7.5%)	$4,047,032
Construction Engineering and Inspection (7%)	$3,777,230
Fees Sub-Total	**$13,220,305**
Contingency (25%)	$16,795,183
TOTAL	**$83,975,916**
Unit Cost ($/ft. wall)	**$19,994**

Assumptions

Lengths of Piles

Cantilever Height =	120	ft.
Pile Bottom Depth =	50	ft.
Pile Driven Length =	50	ft./pile
Total Pile Length =	170	ft./pile

Length below grade

Pile Installation

10-12 man crew, including welders
275-300ton crane; 250-300ft boom
pup trucks for moving piles
diesel hammer; vibro hammer
2 front end loaders
templates
splice operation - cant move that size pile around the work site
Need to weld stiffeners on the z-sheets

Approx. $18,000/day for the crew and equipment
Material costs
Assume 2-3 linear feet of wall per day
4-5 year job

Unit Cost of Steel

$71.00 /cwt. Nucor-Yamata Steel Pricing as of 3/27/2024, based on highest listed unit cost for W30/W33/W36 sections (cwt. = hundred pounds of weight)

Unit Cost of Wind Barrier

$1.07 /sq. ft. Unit Cost of https://www.grainger.com/product/Fence-Screen-Green-48NW08

Construction Layout/Surveying

$250,000.00 /lump sum Assumed

Mobilization

$400,000.00 /each (1-way) Assumed
2 each

Design

10% of Labor and Materials

Construction Management

7.5% of Labor and Materials

Construction Engineering and Inspection

7% of Labor and Materials

Contingency

25% of Labor, Materials, and Fees

Increased due to current volatility in steel pricing, as well as cement and labor shortages.

CSX Transportation, Inc. Comments on Renewal of State Permit to Operate No. 510-2263 for CSX Transportation Curtis Bay Piers

Appendix 9: *CSX Letter and Kimley Horn Full Enclosure Evaluation (June 17, 2024)*



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DANIEL E. SCHMITT
ASSISTANT GENERAL COUNSEL

Admitted in DC – Not Admitted in FL
FL Authorized House Counsel

June 17, 2024

Via Email
Chris Hoagland
Director, Air and Radiation Administration
1800 Washington Blvd.
Baltimore, MD 21230
chris.hoagland@maryland.gov

Re: CSXT Curtis Bay Piers

Please note that this letter and its attachments contain commercial and financial information that is privileged and confidential. This information is exempt from public disclosure under the Maryland Public Information Act (Md. Code Ann., General Provisions §§ 4-301, 4-335).

Dear Mr. Hoagland,

This letter provides an overview of dust control enhancements and operational controls implemented at CSXT Curtis Bay Piers ("Curtis Bay Piers" or "Terminal") over the last 18 months as well as other dust control measures evaluated during that period and determined not to be necessary or appropriate. CSX Transportation, Inc. ("CSXT") is committed to safe and environmentally sound operations at Curtis Bay Piers and throughout Maryland. We engage in an iterative process to review and update the Terminal's fugitive dust control practices to minimize sources of fugitive dust and implement appropriate precautions to prevent particulate matter from becoming airborne.

CSXT is in compliance with its Operating Permit, MDE-approved Fugitive Dust Plan, and the additional operating and monitoring conditions in the September 2022 Permit to Construct. Fugitive dust emissions at Curtis Bay Piers are well-controlled by the facility's existing dust control measures. Data from the facility's fenceline monitoring system shows that the particulate matter concentrations at the facility's fenceline do not exceed any primary or secondary ambient air quality standards. There have been no notices of violation or enforcement actions related to the facility's regular storage and handling operations over the last five years.

Enhancements to the Fugitive Dust Control Plan

In meetings with the Maryland Department of the Environment ("MDE" or the "Department") in 2023 and 2024, CSXT committed to several enhancements to the Terminal's Fugitive Dust Control Plan. Some of these enhancements were included in the May 2023 Fugitive Dust Control Plan and others will be reflected in the next iteration of the Fugitive Dust Control Plan. These enhancements include:

Lower wind speed trigger point: CSXT maintains a robust dust suppression system designed to control fugitive particulate matter emissions associated with the handling, transferring, and storage of coal. The dust suppression system utilizes a network of water sprays located throughout the Terminal. CSXT agreed, consistent with the Department's request, to lower the wind velocity set point for automatically activating the dust suppression system from 12 mph to 8 mph. The facility's updated Fugitive Dust Control Plan will reflect the lower trigger point.

Street sweeping and water truck usage: CSXT minimizes dust on unpaved and paved roadways and parking areas throughout the Terminal by keeping the roadways clean and free of any debris, restricting vehicle speeds, and regularly watering roadway surfaces. Over the last 18 months, CSXT has enhanced its record keeping practices around street sweeping and water truck usage. A map of the water truck route is now a part of the Fugitive Dust Control Plan. A summary of water truck activity (water spray dates, times, and movement) is maintained at the Terminal.

Installation of atomized water mist dust suppression at the railcar dumper buildings: There are three partially enclosed railcar dumper buildings at the Terminal designed to minimize potential fugitive dust emissions by blocking wind during railcar unloading. The railcar dumper buildings are open at both ends to allow the railcars to enter and exist. As requested by the Department, CSXT evaluated the feasibility of using flaps or sliding doors to close off the openings of the railcar unloading buildings. The CSXT facilities team concluded that installing flaps or other temporary closure devices on the railcar dumper buildings would create employee safety and operational risks because railcars are continuously moving in and out of the buildings. After evaluating the existing water sprays in the railcar dumper buildings, the facilities team concluded that installing an atomized water mist dust suppression system would enhance the existing dust control measures and further limit the potential for fugitive dust during railcar unloading. CSXT has completed installation of an atomized water mist dust suppression system at the exit of each feeder and over the dumper cars. Atomized water mist systems produce fine particle spray that reduces the slipstream effect, allowing the mist to suppress finer dust particles more effectively than enclosure flaps.

Additional wind fence: The Terminal has a thirty-foot high DustTamer Wind Fence along the south side of the property to reduce wind speeds and minimize potential fugitive dust. CSXT will install a second DustTamer Wind Fence at the gap between the warehouses along the western property boundary. As requested by the Department, CSXT evaluated installing vegetative wind breaks, specifically shrubs and tree planting along the western fenceline, in additional to a wind fence or other physical barrier. Given space constraints and railroad safety regulations regarding the need to maintain a buffer between vegetation and railroad tracks, CSXT has decided to install

a thirty-foot high wind fence, similar to the wind fence along the south side of the property, at the gap between the warehouses to further reduce wind action on the Terminal property and to address the community's concerns regarding the visual impact of the facility along Church Street.

Additional Evaluations Performed at the Department's Request

As discussed at our May 14, 2024 meeting, and as previously requested by the Department, CSXT has evaluated the feasibility of additional dust control measures at the Terminal including (1) enclosure of the coal storage areas and conveyance system; (2) closing off the ends of the railcar unloading buildings, and (3) installation of a screening or vegetative barriers along the western property boundary where there is a gap in the warehouse. As described above, CSX has already installed additional dust controls at the railcar unloading buildings and has committed to installing a wind fence to address the gap between the warehouses at the western property line.

CSXT completed an evaluation into enclosing the coal storage piles and summarized the results in a letter to the Department dated May 6, 2024. To assist in that evaluation, CSXT hired a national engineering planning and design firm to perform a conceptual design and cost analysis for enclosure of the coal storage area and associated conveyance system. CSXT is voluntarily providing a copy of a presentation and memorandum summarizing the enclosure analysis performed by the outside engineering firm. The engineering firm evaluated covered storage methods and structures used in material handling operations. It concluded only fully enclosed storage silos would satisfy the Terminal's operational safety requirements while maintaining sufficient on-site storage capacity to meet customer needs. Constructing large-scale storage silos in place of the current outdoor coal storage area is akin to a full-scale rebuild of the Terminal and would require a multi-year phased construction project. The cost of such a project would be hundreds of millions of dollars—roughly equal to the cost of building an entirely new coal transloading facility. In addition, this concept is unproven in the handling of coal from the coal regions/basins CSXT serves. As discussed in more detail in our May 6 letter, a condition in the Operating Permit that would seek to force CSXT to redesign and reconstruct the Terminal to enclose the coal storage areas is not a necessary or reasonable precaution to control dust at the Terminal and is also clearly preempted by the Interstate Commerce Commission Termination Act. The documents provided contain commercial and financial information that is privileged and confidential. This information is exempt from public disclosure under the Maryland Public Information Act (Md. Code Ann., General Provisions §§ 4-301, 4-335).

Dust Control Measures Evaluated and Determined Not to be Reasonable or Effective

CSXT has also evaluated other dust control practices as directed by the Department, including (1) use of dust suppression chemicals on the coal storage piles; and (2) limitations on pile height when coal is stockpiled for an extended period. Use of chemical dust suppressants was determined not to be an effective method for controlling fugitive dust at the facility because these products reduce dust by creating a hard crust on the piles. The benefits of this crust in suppressing dust are negated when the coal is frequently moved, which is the case during normal operations. Further, the fenceline monitoring data collected over the past nine months confirms that the sophisticated network of water sprays in place at the facility is effective in controlling fugitive dust emissions from coal storage and handling.

CSXT also considered limitations on coal storage pile height when coal is stockpiled for an extended period. It is important to emphasize that the Terminal specializes in a "just-in-time" transfer of coal into water vessels, wherein depending on cargo volume, coal quality, and origination point, a large percentage of coal arriving at Curtis Bay Piers is transferred directly from rail cars to oceangoing vessels or coastal barges. This has the benefit of reducing the length of time coal is stored on the ground at the facility. Due to the Key Bridge collapse, the facility stored more coal than usual for a longer period. Again, the fenceline monitoring program showed that the wet suppression system adequately controlled fugitive dust emissions when coal pile heights were temporarily higher than usual. Therefore, limitations on coal pile height during periods of extended storage are unwarranted.

Other Environmental Initiatives at Curtis Bay Piers - Battery Electric Locomotives:

As you know, CSXT has made significant investments at Curtis Bay Piers over the last five years to advance long-term operational safety, improve the facility's dust suppression system, and collect 100% of stormwater for onsite reuse. We are currently evaluating source opportunities for biodiesel blends (B20) for our on-site locomotives that would result in both carbon-intensity and PM reductions.

CSXT, in partnership with the Maryland Department of Transportation, has also launched a pilot program to bring three zero-emissions battery electric locomotives and a battery charging station to the Curtis Bay Piers facility. CSXT's battery electric locomotives will be the first battery electric locomotive at the Port of Baltimore and in the state of Maryland. The locomotives are expected to be delivered in 2025 and will result in the reductions in CO2, NOx, and PM2.5. Annually, this project would result in the following emissions savings: 1,530 metric tons of CO2, 71 metric tons of NOx, and 3.43 metric tons of PM2.5. Additionally, the locomotive noise will be reduced by 70%. Phase 1 of this project is valued at $20 million for three 6-axle battery electric switcher locomotives and one charging station.

CSXT appreciates the collaborative relationship we have with MDE concerning the renewal of the State Permit to Operate for Curtis Bay Piers. We are available to meet to further discuss the contents of this letter or the additional information provided.



Daniel E. Schmitt
Assistant General Counsel
CSXT Law Department

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CC:

Raghu Chatrathi, Senior Director, Public, Health, Safety & Environment, CSXT
Rebecca Hensley, Manager, Environmental Programs, CSXT
Diana Krevor, Venable LLP

Attachment 1:

Kimley Horn Memorandum – Covered Storage Diligence Summary

Please note that this memorandum contains commercial and/or financial information that is privileged and confidential.
This information is exempt from public disclosure under the Maryland Public Information Act (Md. Code Ann., State Gov't. §§ 4-301 et seq.).

Kimley»Horn

CONFIDENTIAL

MEMORANDUM

To: Raghu Chatrathi, Sr. Director, PSHE

CSX Transportation, Inc.
500 Water Street, J275, Jacksonville, FL 32202

From: Tom Prosser, Associate

Kimley-Horn and Associates, Inc.
3904 Boston Street, Suite 202, Baltimore, MD 21224

Date: May 2024

Subject: CSXT Curtis Bay Piers – Covered Storage Diligence Summary

---

This memorandum contains a high-level analysis of the covered coal storage options investigated at the Curtis Bay Terminal.

Research was conducted by CSXT and Kimley-Horn on various bulk material enclosure structures. Options were selected for evaluation based on their ability to cover the stockpiles of coal, and the applicability of each option to the existing site. The Curtis Bay Terminal differs from other coal export terminals in that the total land area of the terminal is small in comparison to similar facilities. Total existing stockpile area at the terminal is less than 15 acres in size. Due to the compact size of the terminal's stockpile area, conventional covered storage options that may be feasible at other terminals are not feasible at this location. Because of this, it is recommended that any covered storage option considered for this site optimizes the existing area available.

The following enclosure options were investigated as part of the feasibility study:

- Stockpile tarping (Tarping Option)
- Retrofit existing stockpiles with fabric or light weight canopies (Fabric Canopy Retrofit Option)
- Rebuild stockpiles as linear portal scraper style stacker/reclaimers enclosed within long warehouse style buildings (Linear Stockpile Option)
- Rebuild stockpiles as large dome style structures (Dome Stockpile Option)
- Rebuild stockpiles as large vertical silo style structures with automated stacking and reclaiming capability (Eurosilo option)

Concerns regarding modifications to the terminal for covered bulk storage of coal included the following main factors: operational safety, methane gas/dust management, efficiency of space utilization and disruptions to existing operations during construction.

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1. Operational Safety: The handling and stockpiling of coal presents operational safety requirements that are specific to this bulk product. All covered storage options must consider operational safety requirements that minimize the chance of fire, but also have the ability to extinguish a fire should one occur. Like other organic based bulk material products, coal stockpiles can produce heat through degradation. Uncovered stockpiles of coal allow the stockpiles to breathe and vent naturally, nearly eliminating the risk of hotspots and stockpile fires. When covering the stockpiles, however, systems must be in place to identify and manage hotspots, as these hotspots are more likely in the covered stockpile arrangement.

   Eurosilos automate both the stacking and reclaiming of coal from the enclosed stockpile. This storage option provides multiple levels of fire prevention and protection. Eurosilos include nitrogen purging systems which allow operators to purge the coal stockpile from the bottom up. When nitrogen purging the coal stockpiles, operators remove oxygen from the stockpile reducing the potential for hotspots or combustion. If a hotspot occurs, carbon monoxide monitors will alert operators that a hot spot is present so water can be applied to extinguish. Automated foam systems are provided for the unlikely event of a large-scale fire.

   Significantly, other options considered in this comparison do not have the fire prevention and automation ability of the Eurosilo option. Nitrogen purging is key to the operational safety of the enclosed coal stockpile arrangements. The other options investigated do not offer nitrogen purging systems and only provide fire protection, not fire prevention.

2. Methane Gas/Dust Management: When stockpiling coal, methane gas and dust management are considered to be one of the most important factors to be considered. Methane is the gas of concern as coal naturally emits methane when it is handled. Methane is lighter than air, so it rises up and collects under structures covering coal. When methane is collected and not allowed to vent freely, methane concentration levels can rise to the hazardous level causing an explosion hazard. Covered coal storage options should allow methane gas and dust to be managed properly within the enclosure. These hazard conditions should not extend outside of the covered storage facility and should be contained within the enclosures.

   Eurosilos are specifically designed to mitigate potential hazards related to methane gas. Advanced ventilation systems are implemented to control the airflow within the silo, ensuring the preservation of nitrogen purge gas. The ventilation system is designed to vent methane gas if detected in the silo.

3. Efficiency of Space Utilization: Efficiency of space utilization is a major factor when exploring covered storage options. As previously mentioned, the Curtis Bay Terminal is exceedingly small in comparison to similar coal export terminals. Due to this space constraint, options should be explored to store the coal in a more vertical arrangement. Similar to building skyscrapers in a big city, the covered coal storage at this site should use vertical space as much as possible to both reduce the impact of the Eurosilo construction to existing operations and provide efficient use of the space.

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Eurosilos offer an advantage over all other options investigated, in terms of storage volume per square foot. Their vertical design allows for maximum storage capacity, making them ideal for areas with limited land availability like the Curtis Bay Terminal. When comparing to the other options presented in this summary, Eurosilo is the only option that allows for truly vertical storage of coal. The alternative options stockpile the coal in conventional stockpiles, which are limited by the angle of repose of the coal. Figure 1 below shows the comparison of vertical storage vs stockpile storage. The conventionally stockpiled coal options only provide a fraction of the storage volume per square foot of land when compared to vertical storage. Conventional stockpile options like the linear warehouse, dome and fabric/tarping options do not provide efficient use of the land area available and are not considered viable options due to space constraints.

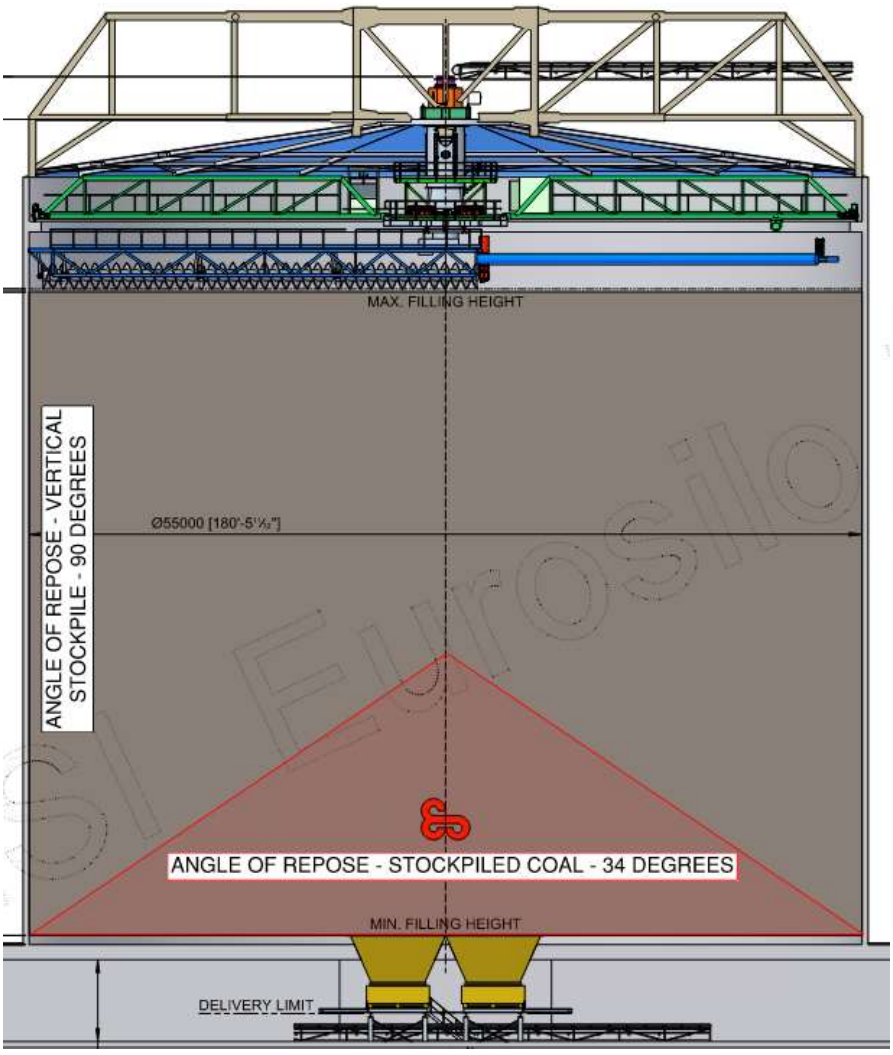


Figure 1: Stockpiled vs Vertical Storage Volume Comparison

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4. Disruptions to Existing Operations During Construction: As with all improvement projects, disruption to existing operations should be expected with the implementation of any of the options presented. All of the covered storage options investigated include some level of impact on existing operations, in that a coordinated install approach is required along with planned shut down of various areas of the terminal. All the options investigated require some level of capital expense and operational disruption.

A comparison of the options versus the main design factors was performed. Non attainable gas and dust management, and/or efficiency of space utilization, ruled out all of the options except for the Eurosilo option.

Considering the analysis, Eurosilos emerge as the only suitable option for covered stockpile storage at the Curtis Bay Terminal. The tarping and fabric canopy retrofit options explored do not meet the criteria for fire prevention and operational safety. The cost to construct these silos varies widely depending on number of silos to be constructed in one phase, crew availability and contractor means and methods. Additionally, equipment modifications to the terminal are required for the ability to convey coal into and out of the silos. Previously, the cost to construct 4 silos in a single phase was budgeted at $120 million. Current 2024 costs should be inflated by 10% to reflect the increase in construction costs – this yields $132 million. Further investigation is required if more accurate updated budget costs are desired.

The construction of Eurosilos at the Terminal would require a multi-year phased construction approach. For purposes of this analysis, we would propose that Eurosilo construction be divided into two separate phases – existing south and north stockpile areas. The figure below shows this arrangement. The south stockpile area is considered Phase 1 of the potential covered storage project and includes four 100,000-ton silos for a total storage capacity of 400,000 tons. The north stockpile area is considered Phase 2 of the potential covered storage project and includes five 100,000-ton silos for a total storage capacity of 500,000 tons. If both phases were implemented on this site, a total of 900,000 tons of covered coal storage should be expected. The 900,000 tons of covered storage is budgeted to cost in the range of $250 million to $300 million.

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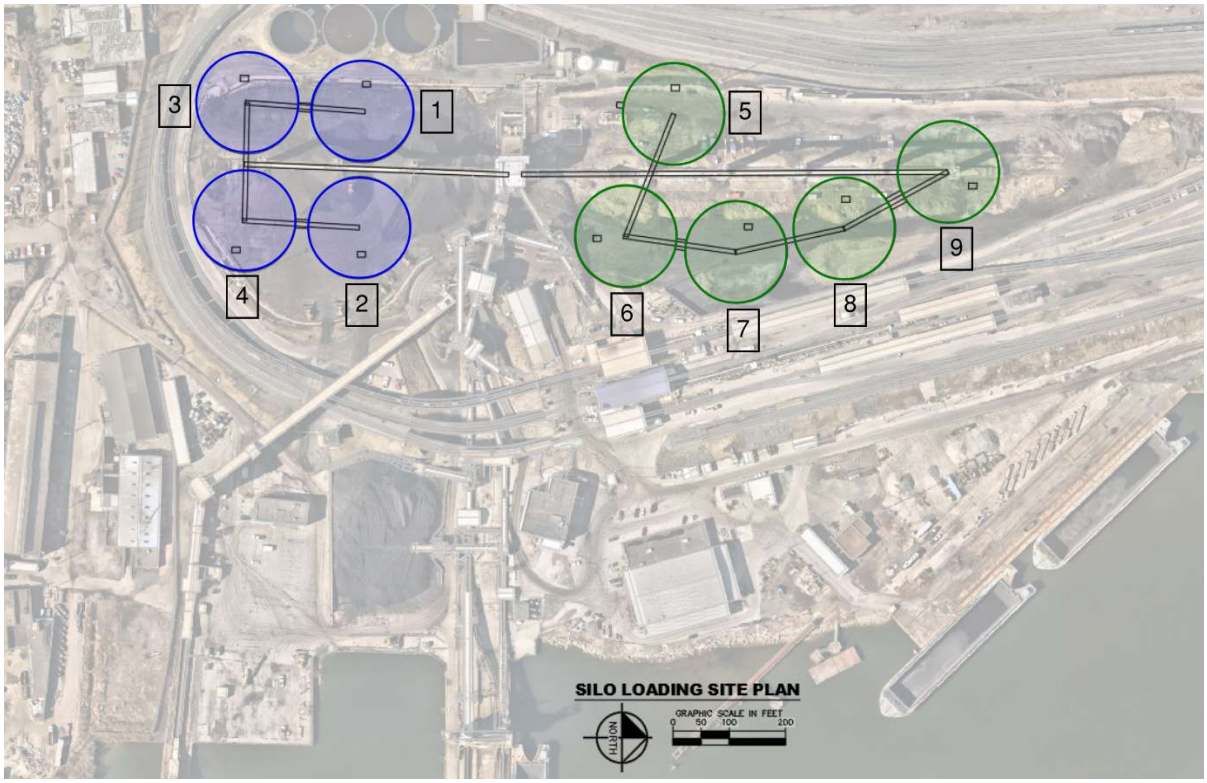


Figure 2: Eurosilo Site Layout

Please do not hesitate to reach out if you have any additional questions or require more detailed information regarding our investigation of covered coal storage options at the Curtis Bay Terminal. We look forward to collaborating with you to ensure the success of the Curtis Bay terminal facility.

Attachment 2:

Eurosilo Presentation – Curtis Bay Covered Storage

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This information is exempt from public disclosure under the Maryland Public Information Act (Md. Code Ann., General Provisions §§4-310, 4-335).

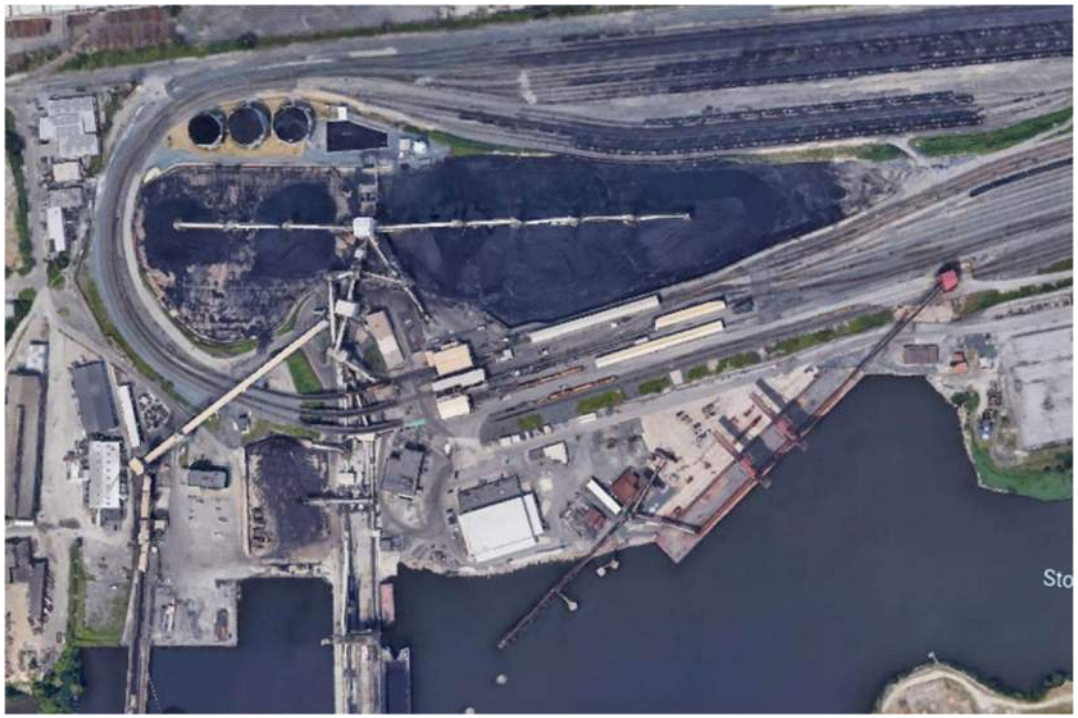
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CURTIS BAY COVERED STORAGE

Plan Overview – Existing and Proposed Conditions
Budget Costs – Phase 1 and 2
Due Diligence

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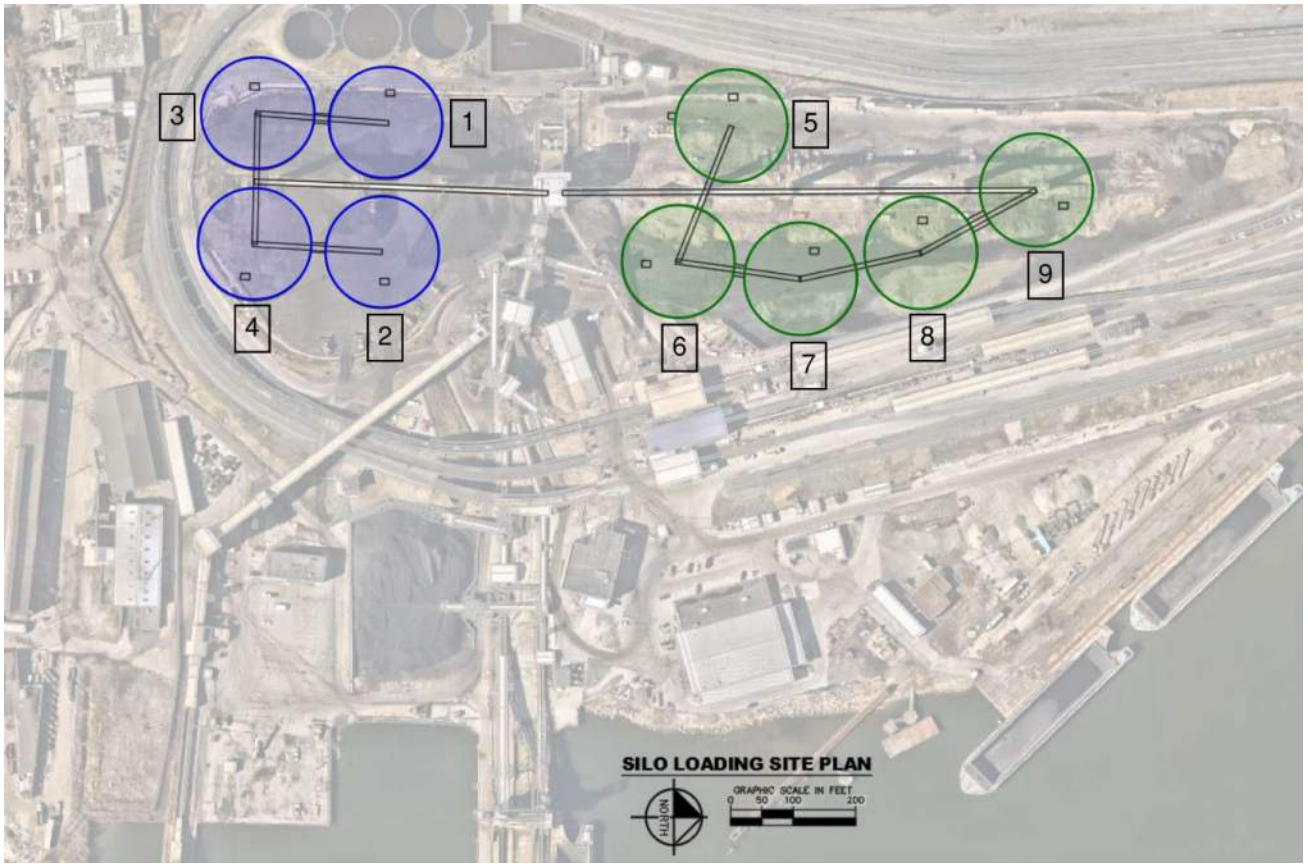
EXISTING CONDITIONS – COAL STOCKPILING



- Existing Storage Capacity – Approx. 550K tons
  - 515K tons in North/South Storage Pads
  - 33K tons on SP1
- Limited to max 6 separate piles (5 towers and SP1)
- Manual process for stacking and reclaiming of coal stockpiles
- Open air storage of coal with sophisticated water collection, treatment and reuse system for dust suppression
- Average vessel loading rate of 2000 tph

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EUROSILO OPTION



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EUROSILO OPTION

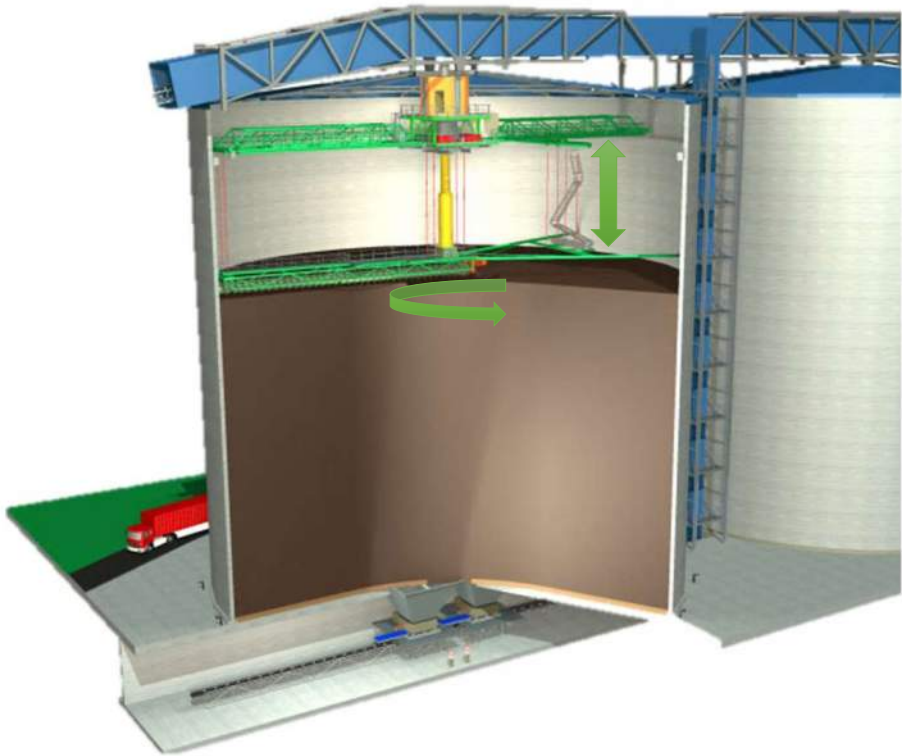




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EUROSILO QUICK OVERVIEW

- Specifications
  - 100K Tons Capacity
  - 180’ Diameter x 210’ Height with upper conveyors
  - 6000 tph input and output
- Load out and Reclaim
  - Utilizes elevated auger system that evenly distributes and reclaims coal from silo
  - Final design will include 2 or 3 feeders per silo
- Automated and consistent flow rates
- Precision Blending on Conveyor Belt
- Safety Mechanisms
  - Gas and thermal monitoring
  - Nitrogen purging
  - Ventilation
  - Fire suppression system



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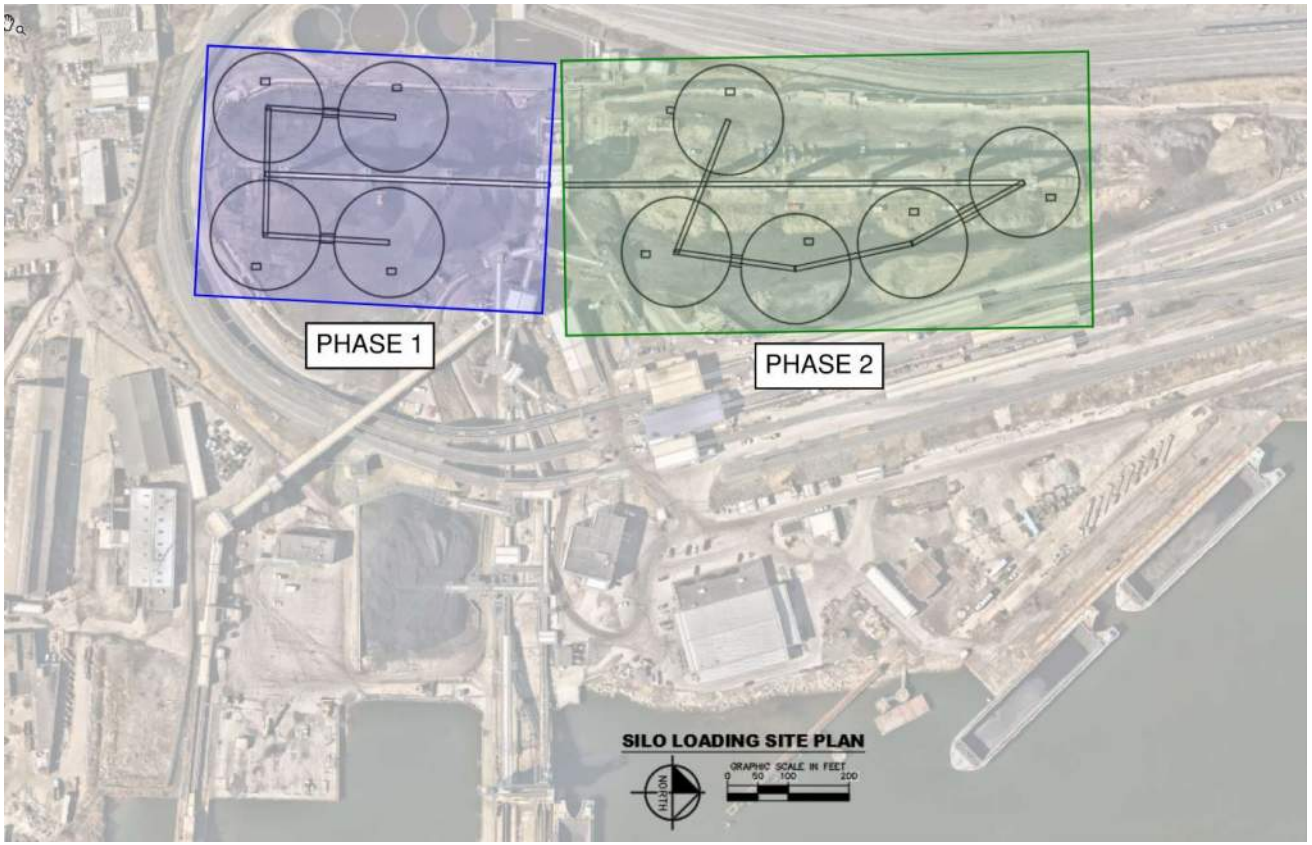
EUROSILO OPTION



- Phase 1 and Phase 2 – up to 900K tons of storage
- Capacity for 9 separated piles at 100K tons each
- Fully automated load out and reclaim
- Fully enclosed coal stockpiles, with automated fire protection
- Estimated average rate of loading up to 6000 tph

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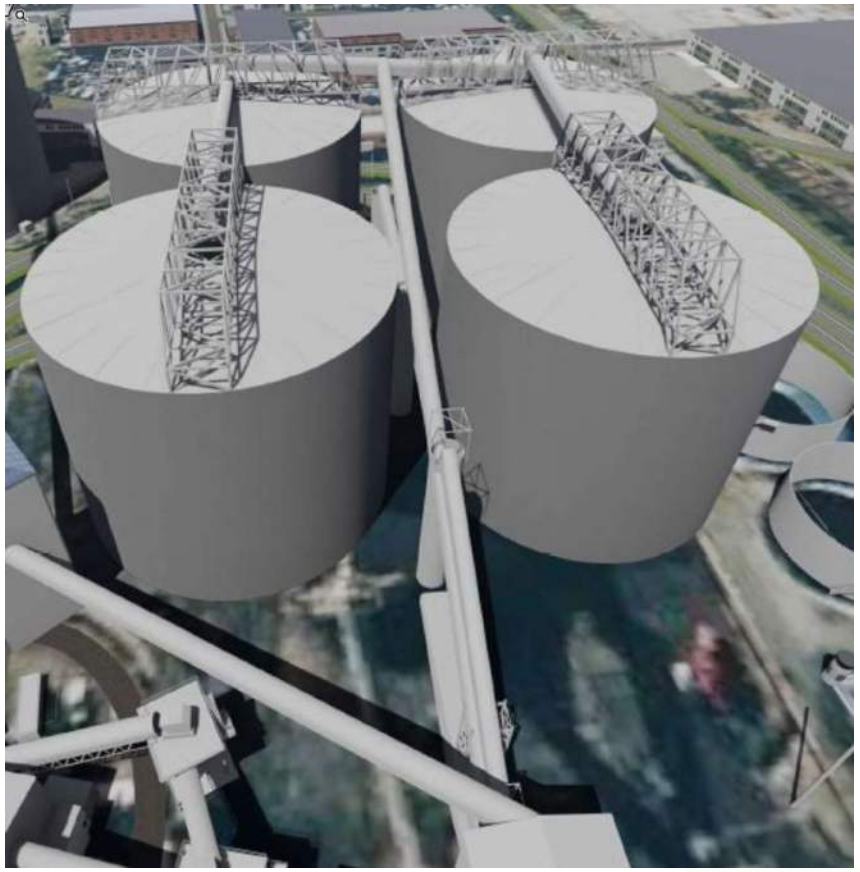
EUROSILO PHASES



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PHASE 1 - $132 MILLION

- 4 silos in the existing south storage area
- New reclaim tunnels under silos that feed to existing reclaim tunnel
- Reutilize some existing infrastructure for reclaim and load out support
- 9 new conveyor systems
  - Load out coal to new silos
  - Reclaim coal from new silos



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PHASE 2 - $165 MILLION



- 5 silos in the existing south storage area
- New reclaim tunnels under silos that feed to existing reclaim tunnel
- Reutilize some existing infrastructure for reclaim and load out support
- 10 new conveyor systems
  - Load out coal to new silos
  - Reclaim coal from new silos

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DUE DILIGENCE – EXISTING CONDITIONS

- **PERMITTING REQUIRED**
  - Critical Area Commission – 1000' Impacts
  - Baltimore City Building Permit – Planning and Zoning Approval
  - Maryland Department of Environment
- **SITE CONDITIONS**
  - Large scale construction project on a small site
  - Deep foundations required
  - Construction will cause reduction in storage capacity and throughput while in progress

CSX Transportation, Inc. Comments on Renewal of State Permit to Operate No. 510-2263 for CSX Transportation Curtis Bay Piers

Appendix 10: *Memo from Trinity Consultants to CSX regarding "CSX Curtis Bay Piers – Analysis of Fugitive Dust Emissions from Railcars On Site" (Aug. 21, 2024)*

Trinity Consultants

MEMORANDUM

To: Becky Hensley, CSX Senior Manager Sustainability

cc: Raghu Chatrathi, CSX Senior Director of Public Safety, Health and Environment

From: David Simmons and Susan Barnes, Trinity Consultants

Date: August 7, 2024

RE: CSX Curtis Bay Piers – Analysis of Fugitive Dust Emissions from Railcars On Site

CONFIDENTIAL SETTLEMENT COMMUNICATION SUBJECT TO MD. R. EVID. 5-408 / SUBMITTED WITHOUT PREJUDICE – FOR DISCUSSION PURPOSES ONLY

Background and Executive Summary

CSX Transportation, Inc. (CSX) operates a coal terminal at Curtis Bay Piers (CBP) in Baltimore, Maryland. The terminal operates a variety of material handling equipment for the transfer of coal, ore, limestone, and other dry materials. Coal arrives by rail, is temporarily stored in outdoor storage piles, and is loaded into barges and vessels. Other products are allowed but not currently transferred at this terminal. The terminal does not contain any coal processing equipment (e.g., crushing or screening operations).

CSX recently received a draft State Permit to Operate (PTO) No. 510-2263 for the CBP Terminal from the Maryland Department of Environment (MDE). Draft Conditions D(4) and D(5) would require the installation and operation of a system that applies water to railcars loaded with coal beginning at the point where railcars enter the boundary of the CBP property. Trinity has reviewed the proposed permit conditions and concludes that these conditions should be removed from the PTO as emissions from loaded railcars are considered de minimis (or zero) and coal freight shippers must mitigate for coal dust and apply 'in-transit dust suppressant' or 'effectively mitigate for coal dust under all weather conditions'. [1] Further, the movement of railcars onto the CBP property at low speeds is not causing fugitive dust emissions beyond the terminal's boundary. As detailed in this memorandum, the installation of a water spray system at the property boundary is unnecessary, would create operational challenges, additional environmental consequences, and would result in little to no decrease in fugitive dust emissions at a significant expense.

Regulatory Background

Per Condition B(2)(e)(4) of the draft PTO and COMAR 26.11.06.03D, a person may not cause or permit any material to be handled, transported, or stored, or a building, its appurtenances, or a road to be used, constructed, altered, repaired, or demolished without taking reasonable precautions to prevent particulate matter from becoming airborne. These reasonable precautions shall include, but not be limited to, the following when appropriate as determined by the control officer:

(4) Covering, at all times when in motion, open-bodied vehicles transporting materials likely to create air pollution. Alternate means may be employed to achieve the same results as would covering the vehicles.

[1] Operators partner with the CBP Terminal and CSX in accordance with Publication CSXT 8200 (Terms and Conditions of Service & Prices for Accessorial Services & Common Carrier Line-Haul of Coal, Coke & Iron Ore). Excerpts related to coal dust mitigation are provided as an attachment to this memorandum.

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As noted in the language above, the rule requires that reasonable precautions must be taken to prevent particulate matter from becoming airborne. The rule does not dictate at what point these precautions must be taken or how frequently they must be completed. The absence of visible fugitive dust when railcars cross the terminal's property boundary is typically used as an indicator that measures taken are sufficient.

Discussion

The railcars are transported to the CBP Terminal from mines where the material is sourced. The CSX customers shipping materials via CSX railroad must comply with loading conditions as published in CSX Transportation Publication CSXT 8200 Terms and Conditions of Service & Prices for Accessorial Services & Common Carrier Line-Haul of Coal, Coke, & Iron Ore ("Tariff 8200"). Conditions include the application of in-transit dust suppressants to the tops of the railcars prior to shipment of the material or an alternative method that effectively mitigates coal dust under all weather conditions, In addition, the tariff requires that customers load coal into railcars in accordance with the CSX Coal Load Profiling Requirement (Section 4.2.2 of Tariff 8200) which is designed to minimize wind erosion during transit. The material travels long distances at high speeds en route to the CBP Terminal and the combination of the chemical dust suppressant and coal load profile minimizes fugitive dust from the railcars during transit. Once the railcars reach the CSX serving yard, located outside the boundaries of the Terminal they travel a minimal distance at low speeds (less than 5 miles per hour). Railcars wait outside the Terminal property boundary (i.e., in the serving yard) until requested for movement by CBP. The dust suppressant remains on the coal when the railcars enter CBP, continuing to minimize fugitive dust emissions. Put simply, the railcars are also not causing visible fugitive dust beyond the fenceline. Therefore, the addition of water to the coal at the property boundary would not provide meaningful reductions in particulate emissions. In addition, CSX operates ambient monitors for particulate matter around the CBP Terminal. These monitors show that the particulate matter concentration at the Terminal's fenceline are consistent with the National Ambient Air Quality Standards (NAAQS).

The proposed condition also introduces other operational challenges in terms of water management and additional environmental challenges (e.g., stormwater management requirements under general permit 20-SW). Specifically, any spray system installed at the property boundary would result in excess water that will contact railcars and require management of the residual liquids and solids. Solid material (e.g., filtered solids) in the collected water would need to be managed in accordance with solid waste management regulations and the resultant wastewater would need to be managed in accordance with local and state regulatory requirements (i.e., either as recycled water or for disposal).

In conclusion, Trinity does not consider the railcars as emission sources and recognizes that MDE has never included railcars containing raw material as emission sources at the CBP Terminal. As such, wet suppression is not needed to control emissions from the railcars as they enter the CBP property. The railcars are in compliance with COMAR 26.11.06.03D, the coal is already treated with a dust suppressant resulting in minimal fugitive dust and no visible emissions beyond CSX's property boundary, and fenceline monitoring demonstrates that particulate matter concentrations at the terminal's fenceline are consistent with NAAQS. As such, the use of wet suppression is not necessary. Trinity believes this condition should be removed from the PTO as emissions from this activity are considered de minimis and the installation of this system would provide little or no decrease in emissions.

ATTACHMENT 1: EXCERPTS FROM TARIFF 8200

SECTION 4,

LOADING CONDITIONS

Each customer, on behalf of itself and its agent(s), acknowledges that the nature of most of the damage caused to railcars by excessive heating, including, without limitation, metal fatigue, frequently cannot be identified by visual inspection and may not be identified in the ordinary course of business.

Further, each customer, on behalf of itself and its agent(s), acknowledges that the damage may be cumulative over a number of overheating incidents over time.

Each customer, therefore, waives any defenses to claims based upon CSXT or another railroad's failure to identify such damage during the inspection of railcars upon their release by the customer, customer's agent(s), or a third party.

COAL DUST MITIGATION (4.2)

REQUIREMENTS FOR LOADING METALLURGICAL AND PCI COAL (4.2.1)

1. This section applies to coals that qualify under Standard Transportation Commodity Codes (STCC) 1121210 (metallurgical coal) and 1121211 (pulverized coal injection) transported by CSXT in open-top hopper coal railcars or gondola coal railcars originating from a CSXT origin or CSXT service area.

2. Freight payers shall, or shall cause, coals identified in paragraph 1 to be loaded employing (a) the load profile described in Section 4.2.2 and, (b) a suitable topical, in-transit dust suppressant described in Section 4.2.3. A topical, in-transit dust suppressant is not required from November 1 through March 31 so long as an appropriate freeze conditioning agent has been applied pursuant to the requirements set forth in Section 4.2.3.

3. Freight payers and/or origin operators may seek approval of alternative methodologies to that described in Section 4.2.3 ("Alternative Methodology") by submitting a detailed description of the alternative to the Office of Coal Development, at smcoaldev@csx.com or 859-231-9027.

   The submission must include supporting materials that adequately demonstrate that the proposed Alternative Methodology effectively mitigates coal dust under all weather conditions. Freight payers and/or origin operators must also provide additional supporting materials to CSXT upon reasonable request.

   In the event that CSXT determines that laboratory testing is required to adequately assess the effectiveness of an Alternative Methodology, CSXT will arrange for such testing by a qualified testing organization, such as Simpson Weather Associates, at a cost to the proposing freight payer and/or origin operator of $2,550.

   CSXT will respond within 60 days of its receipt of the original submission, or requested additional supporting materials. No Alternative Methodology shall qualify under this paragraph 3 unless and until accepted by CSXT.

SECTION 4.

LOADING CONDITIONS

4. Freight payers are responsible for having the name of the topical, in-transit dust suppressant and the quantity applied per railcar included on the electronic bill of lading in ShipCSX (field for Special Handling and Comments) or in Electronic Data Interchange (H3 segment, 2nd Data Element). This applies to each shipment of affected coals under this Section 4.2.

5. Freight payers shall be responsible for payment of any fines, penalties, fees, costs, or claims resulting from the failure to comply with Section 4.2.2, and either:
   (i) Section 4.2.3; or
   (ii) an Alternative Methodology under paragraph 3

6. Origin operators may certify compliance with this Section 4.2 by providing notice of their conformity with the profile requirement, of the topical, in-transit dust suppressant, and of the amount to be applied, to the Office of Coal Development, at smcoaldev@csx.com or 859-231-9027.

   CSXT will include properly certified origins on its public list of complying origins ("Compliance List"), which can be found by following the instructions found at www.csx.com/index.cfm/customers/commodities/coal/origins/

   - Click on the "CSX Coal Origin Directory" spreadsheet
   - Click on the tab titled "CSX Coal Loading Facilities"
   - Scroll to column "L"

7. Freight payers must either confirm that a coal origin is on the Compliance List, or cause the coal origin operator to certify compliance with this Section 4.2, as described in paragraph 6, prior to requesting service from that origin.

8. CSXT reserves the right, upon reasonable notice, to later reject a previously accepted Alternative Methodology, or modify this Section 4.2, in the event the Alternative Methodology or provisions of this Section 4.2 prove insufficiently effective.

SECTION 4,

LOADING CONDITIONS

COAL LOAD PROFILE (4.2.2)

Affected coal must be loaded in accordance with the CSXT Coal Load Profiling Requirement in FIGURE 1. Using the "bread loaf profile" reduces the sharp edges and angle of repose of the coal profile, which minimizes wind erosion during transit.

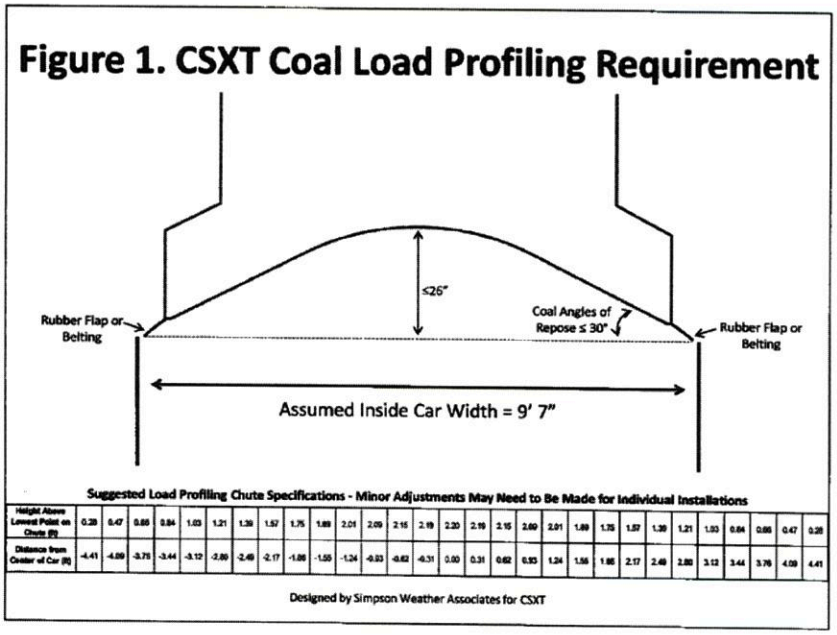


FIGURE 1

ACCEPTABLE COAL DUST SUPPRESSANT AND APPLICATION METHOD (4.2.3)

Freight payer shall, or shall cause, a latex-based chemical dust suppressant to be applied in sufficient quantity and in accordance with the manufacturer's specifications to the entire surface of the loaded railcar using a properly operating topical dust suppressant spraying system.

- The topical dust suppressant spraying system must include overlapping and conical spray diameters sufficient to cover the loaded coal.
- Spraying systems must be operated and perform in a manner that does not create a safety hazard or cause damage to the rail equipment or track and track support.
- Freeze conditioning agents, applied to comply with the provisions of subsection 4.2.1. paragraph 2, must come from CSXT's approved list, and must be applied to the affected coal in sufficient quantity and in accordance with the manufacturer's specifications. CSXT's approved list of freeze conditioning agents may be viewed at: http://csx.com/index.cfm/customers/commodities/coal/resources/

CSX Transportation, Inc. Comments on Renewal of State Permit to Operate No. 510-2263 for CSX Transportation Curtis Bay Piers

Appendix 11: *Memo from Trinity Consultants to CSX regarding "CSX Curtis Bay Piers – Analysis of Upgraded Water Spray System in Railcar Dumper Sheds" (Aug. 20, 2024)*

Trinity Consultants

MEMORANDUM

To: Becky Hensley, CSX Senior Manager Sustainability

cc: Raghu Chatrathi, CSX Senior Director of Public Safety, Health and Environment

From: David Simmons and Susan Barnes, Trinity Consultants

Date: August 20, 2024

RE: CSX Curtis Bay Piers – Analysis of Upgraded Water Spray System in Railcar Dumper Sheds

CONFIDENTIAL SETTLEMENT COMMUNICATION SUBJECT TO MD. R. EVID. 5-408 / SUBMITTED WITHOUT PREJUDICE – FOR DISCUSSION PURPOSES ONLY

Background and Executive Summary

CSX Transportation, Inc. (CSX) operates a coal terminal at Curtis Bay Piers (CBP) in Baltimore, Maryland. The terminal operates a variety of material handling equipment for the transfer of coal, ore, limestone, and other dry materials. Coal arrives by rail, is temporarily stored in outdoor storage piles, and is loaded into barges and vessels. Other products are allowed but not currently transferred at this terminal. The terminal does not contain any coal processing equipment.

CSX recently received a draft State Permit to Operate (PTO) No. 510-2263 for the CBP Terminal from the Maryland Department of Environment (MDE) requiring CBP to install and operate enclosures at the openings of the railcar unloader sheds, including the stipulation that the ends of the structures shall have overlapping flaps, sliding doors or other equally effective devices, which shall remain closed except to allow the railcars to enter and leave [Draft Permit Condition D(6)]. Trinity has reviewed the draft permit condition and concludes that the on-going upgrades to the existing water spray system at each dumper shed will reduce emissions from the railcar dumping process as well as or more effectively than the enclosures described in the draft permit condition. Trinity recommends the removal of draft permit condition D(6) and a modification to the existing Fugitive Dust Control Plan to include the upgraded water spray system installed in the dumper sheds.

Regulatory Background

Per Condition B(2)(e)(4) of the draft PTO and COMAR 26.11.06.03D, a person may not cause or permit any material to be handled, transported, or stored, or a building, its appurtenances, or a road to be used, constructed, altered, repaired, or demolished without taking reasonable precautions to prevent particulate matter from becoming airborne. These reasonable precautions shall include, but not be limited to, the following when appropriate as determined by the control officer:

(2) Application of asphalt, oil, water, or suitable chemicals on dirt roads, materials stockpiles, and other surfaces which can create airborne dusts.
(3) Installation and use of hoods, fans, and dust collectors to enclose and vent the handling of dusty materials. Adequate containment methods shall be employed during sandblasting of buildings or other similar operations.

As noted in the language above, the rule requires that reasonable precautions must be taken to prevent particulate matter from becoming airborne. The rule does not dictate at what point these precautions must

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be taken or how frequently they must be completed. The absence of visible fugitive dust from such operations crossing the terminal's property boundary is typically used as an indicator that measures taken are sufficient.

Discussion

Loaded railcars enter the terminal and proceed to one of three railcar dumper sheds that tip railcar loads onto an underground conveyor that transports the coal to either a storage pile or directly to a marine vessel for transport. The partial enclosure of the existing dumper sheds provides fugitive dust control and CBP uses a published control efficiency of 70 percent[1] for such controls. Additionally, CBP has an existing water spray system that is activated during railcar dumping to prevent fugitive dust from becoming airborne. CBP is currently upgrading the spray technology from a traditional water spray to an atomized spray system, which controls fugitive dust more efficiently (i.e., lower water usage and increased percent reduction in fugitive dust).

Fugitive dust control efficiency for traditional water spray systems is typically estimated at 50 to 85 percent. As discussed previously, CBP is in the process of improving the water spray system by replacing the existing spray nozzles with atomized spray nozzles. The water spray system consists of approximately 160 nozzles and about half of which have been replaced to date. Atomizing water spray systems are typically estimated to provide 65 to 95 percent fugitive dust control efficiency.[2] As such, atomizing spray systems inside the railcar dumper sheds will increase water spray control efficiency by about 15 percent. The combination of the atomized sprays and partial enclosure provides approximately 90 percent control of particulate emissions from the railcar dumper sheds. The addition of enclosures at the ends of the dumper sheds would provide minimal additional control and may negatively impact operations.

In conclusion, Trinity believes the current control systems and precautions employed at the railcar dumper sheds (i.e., use of partial enclosure and water sprays) demonstrate effective compliance with COMAR 26.11.06.03D. No visible fugitive dust from the railcar unloading sheds has been observed leaving the property boundaries. The fenceline monitoring system continues to demonstrate that particulate matter concentrations at the terminal's fenceline do not exceed the National Ambient Air Quality Standards (NAAQS) for PM10 and PM2.5. As such, Trinity believes that adding the water spray system or similar effective controls to the Fugitive Dust Control Plan is equivalent to or more effective than the requirement of minor enclosure improvements.

[1] Table 2.1.3-3 of Ohio Office of Air Pollution Control (OAPC) Reasonably Available Control Measures for Fugitive Dust Sources (September 1980).

[2] A Comparative Assessment of On-Site Application Effects of Mine Dust Prevention and Control Technology; Journal of Geoscience and Environment Protection, Vol.10 No.9, September 2022

CSX Transportation, Inc. Comments on Renewal of State Permit to Operate No. 510-2263 for CSX Transportation Curtis Bay Piers

Appendix 12: *Declaration of Aleek Young, Terminal Manager, Curtis Bay Piers regarding Operational Impact of Draft Permit Conditions*

DECLARATION OF ALEEK YOUNG

1. My name is Aleek Young and I currently serve as the General Manager Coal and Ore Terminals at CSX Transportation, Inc (CSX). I am based in Baltimore, Maryland and manage terminal operations at Curtis Bay Piers in Baltimore, Maryland and Toledo Docks in Toledo, Ohio. I have been employed at Curtis Bay Piers since 2019 and became General Manager in 2021. I oversee approximately 120 employees. I previously served as Terminal Trainmaster, Line of Road Trainmaster, Assistant Superintendent, Terminal Manager Superintendent, Terminal Manager of Coal, and General Manager of Coal and Ore and have been with CSX Transportation for 24 years. As General Manager Coal and Ore Terminals, I have significant experience with all aspects of CSX's operations, from managing the freight network that brings coal into the facility through loading the coal onto outgoing vessels. I am also knowledgeable regarding the aboveground and underground infrastructure at Curtis Bay Piers.

2. CSX is a Class I rail carrier and operates railroad transportation facilities across 26 states including Maryland. CSX serves more than 70 ocean, river, and lake ports in the United States and Canada, including multiple locations in the Port of Baltimore.

3. CSX owns and operates two terminals to support coal and iron ore movements, including Curtis Bay Piers ("Curtis Bay Piers" or the "Terminal"). Curtis Bay Piers is a dry materials storage, transfer, and shipment terminal that has been located in Curtis Bay, Baltimore since 1900 and has operated continuously for the last 124 years.

4. CSX employs approximately 918 Marylanders and supports an overall port system of nearly 140,000 local jobs, including family-owned businesses in Curtis Bay that work on our piers.

5. The facility plays a vital role in the national and international supply chain by removing coal—mined primarily from the northern Appalachian—from the trains that bring it, and transferring it to ships and barges that deliver the coal locally and to ports throughout the world.

6. This declaration will address (A) an overview of coal handling and storage operations at Curtis Bay Piers, (B) CSX's common carrier obligations to its customers, (C) the impact of constructing a physical barrier on short-term and long-term facility operations, (D) safety hazards associated with construction of a physical barrier, and (E) the impact of a partial or complete facility shutdown on the Terminal, the CSX network, and the global supply chain.

A. Overview of Operations at Curtis Bay Piers

7. Curtis Bay Piers specializes in "just-in-time" transfer of coal into water vessels. Depending on the cargo volume size, coal quality and origination point, a large percentage of coal arriving at Curtis Bay Piers can go directly from the rail cars to an ocean-going vessel or coastal barge, reducing the need to store coal on the ground for any significant length of time.

8. Coal arrives at Curtis Bay Piers via rail car and is offloaded using three rail car dumpers. These dumpers are housed in partially enclosed railcar dumper buildings designed to minimize potential fugitive dust emissions by blocking wind during railcar unloading. Inside the dumper buildings, the coal is sprayed with atomized water mist for dust suppression while hopper cars are rotated to drop coal onto an underground conveyor.

9. Coal moves from the dumpers around the facility using a network of conveyors, and is delivered directly to an outbound marine vessel at the pier or to one of 9 temporary material storage areas before it is loaded into ships or barges. Separate inventory piles are maintained for customer and product variability. A sophisticated network of water sprays around the facility keeps coal dust from becoming airborne during temporary storage.

10. Curtis Bay Piers uses a variety of proven dust control measures, including the wet suppression system described above, to minimize fugitive dust during coal loading and storage operations. These dust control measures are described in the facility's MDE-approved Fugitive Dust Control Plan.

11. CSX regularly reviews and updates the facility's fugitive dust control measures. In the last two years, for example, we upgraded the water suppression system to include atomized mist technology, enhanced our water truck usage on facility roadways, and added metal skirting within the conveyance system. We also installed and began operating Maryland's first fenceline monitoring system for particulate matter. Data from the fenceline monitoring system is posted in near real-time on a public website so that community members have real time access to information about air quality conditions surrounding the Curtis Bay Piers facility. The real-time fenceline monitoring data is available at https://www.csxcurtisbayfacts.com/monitoring/

12. The Terminal does not include any coal processing equipment and does not combust coal.

B. CSX's Common Carrier Obligation

13. CSX is a common carrier and obligated under federal law to meet the needs of its shippers. As a freight railroad, CSX is obligated to ship coal from mines located on our rail lines to domestic and international markets. When a mine on our rail line requests that we transport their coal, we are obligated to meet their needs.

14. CSX cannot simply choose to ship a different commodity through Curtis Bay Piers or lower the height of its coal storage piles (and thus limit the amount of coal it can store on site) and still meet the needs of its customers.

C. The Impact of Constructing a Physical Barrier on Short-Term and Long-Term Operations

15. I have reviewed the draft permit to operate provided by the Maryland Department of the Environment (MDE), including the requirement in Part D to "construct a physical barrier to prevent coal dust from being transported from any storage piles on the site into the surrounding community." This draft condition requires that the physical barrier "must at a minimum surround all coal storage piles completely" and provides that "if the barrier is

open to the atmosphere from above, the maximum coal pile height shall be maintained at a level that is less than the height of the physical barrier at all times."

16. During operations, the coal storage piles at Curtis Bay Piers can be a maximum height between 100-110 feet. Draft permit condition (D)(1) would therefore require CSX to either fully enclose the coal storage areas, or to build an approximately 100 to 110-foot wall around the coal storage areas with openings to allow the movement of coal in and out of the physical barrier via the existing conveyor system. Fully or partially enclosing the coal storage area would result in severe disruption to facility operations. Both structures types also present significant engineering challenges given the extremely limited available space at the Terminal for such a massive structure, the location of existing tracks, and the lack of available space for access roads.

Disruption to existing coal storage and handling operations during construction

17. As requested by MDE, CSX previously evaluated the feasibility of fully enclosing the coal storage areas and conveyance system and that evaluation was provided to MDE in May and June 2024.

18. CSX's ability to partially or fully enclose the Terminal is constrained by the Terminal's existing aboveground and underground infrastructure. Building a physical barrier would require relocation of aboveground conveyors and other infrastructure. Terminal infrastructure also includes a network of underground utilities (including electrical equipment and critical communication infrastructure for CSX), underground tunnels and conveyors associated with coal handling operations, and underground piping associated with the water conveyance system used for dust suppression. Other critical non-CSX infrastructure runs underneath the Terminal including one of Baltimore City's 42-inch sewer lines, a stormwater line that discharges into Curtis Bay, and an 8-inch gas pipeline.

19. CSX's ability to partially or fully enclose the Terminal is also constrained by the Terminal's lack of available space. The Terminal occupies a much smaller footprint than other coal terminals around the country. The total existing coal storage area at the terminal is less than 13 acres in size. Due to the compact size of the terminal's coal storage areas, conventional enclosed storage options are simply not feasible at Curtis Bay Piers.

20. Another significant constraint on any large-scale barrier wall construction project is the lack of space available for a laydown yard and construction staging area. To build a 100+ ft structure, CSX would need, at minimum, a 5-10 acre staging area with access to the coal storage area. There is no available on-site location for equipment staging during construction of a physical barrier. The only possible staging/laydown area is the approximately 5-acre M Pad and it is not large enough to meet the staging needs. The M Pad is also used for other purposes and not available as a laydown yard without disrupting other aspects of the facility's operations. Given the dense network of rail tracks running through the facility as well as the variability in terrain, a sufficient laydown and staging area to support construction of a 100+ ft physical barrier simply does not exist on-site.

21. Fully enclosing the facility's coal storage areas would have significant impacts on the Terminal's operations and the CSX rail network. Constructing large-scale enclosures in place of the current outdoor coal storage area is akin to a full-scale rebuild of the Terminal and would require a multi-year phased construction project. The coal storage areas, adjacent tracks, and the coal piers themselves, would need to be shutdown for months or years, leaving CSX unable to satisfy its obligations to customers under preexisting contracts. The cost of such a project was estimated by design and engineering professionals to be hundreds of millions of dollars—roughly equal to the cost of building an entirely new coal transloading facility.

22. There are two piers at Curtis Bay Piers, the Bayside Pier and the B&O Pier,. The Bayside Pier is 14.48m deep and can accommodate our customer's largest vessels (140,000 net tons of loading capacity). The construction of a full enclosure or an open-top physical structure around the coal storage areas will prevent CSX from loading vessel at Bayside Pier during construction. This is because construction of a large-scale barrier will require the removal of the Bayside Pier conveyor/shiploader (BC-14 and 14A) while installing the physical structure. The Bayside Pier is used to fully loadout vessels. Instead, CSX would have to load vessels from the B&O Pier during the construction. This would most likely require an additional air construction permit. The B&O Pier is depth restricted to 12.8m. Approximately 80% of the vessels that serve Curtis Bay Piers have loading that exceeds the 12.8m draft of the B&O Pier. Therefore, limiting loading to the B&O Pier would likely limit the end markets CSX customers can serve due to loading smaller vessels resulting from B&O draft restrictions, or cause them to pay substantial dead freight fees on their vessels.

23. Using temporary conveyors (additional air permitting would be required) to load smaller vessels at the B&O Pier will mean that ships have to stay at the terminal longer and incur overage fees. Our shipping customers will also be forced to incur additional costs because they will be unable to fit all of their regular shipments of coal into one vessel.

24. A construction project that prevents CSX from loading vessels at the Bayside Pier doesn't just severely disrupt CSX's ability to meet customer's needs. It would also cripple the shipping capabilities of our mining customers and their end users. There is no doubt that the disruption caused by this construction would increase the costs to bring coal through Curtis Bay Piers. As shipping costs increase, it may become uneconomical for customers to use the Port of Baltimore. Increased shipping costs may force customers to move business through other ports and bypass the Port of Baltimore entirely, which would have negative economic impacts on the Port of Baltimore. In addition, there is not sufficient throughput capacity at other existing terminals to support shifting this coal to other East Coast terminals.

25. If CSX is unable to store coal at the facility during construction of the physical barrier, then CSX may need to stage trains outside of the facility and wait to unload them until the coal can be directly loaded into vessels. The fully loaded coal trains (which can reach lengths of 10,000 ft) would need to be held in other yards until they can directly loaded to

vessels. This process would create impacts beyond Curtis Bay as staging coal trains along the CSX network would delay non-coal train traffic from reaching other destinations. It affects the total network because it creates congestion along the entire network coming from west to east, which would also increase costs for CSX and CSX customers.

26. If the facility's storage capacity is reduced due to the construction of the physical barrier, CSX would be forced to modify its operations in ways that are detrimental to its customers and prevent it from fulfilling its common carrier obligations.

Long-term operational impacts of building a barrier wall around the coal storage area

27. Construction of a physical barrier would permanently impact the volume of coal that can be moved through the Terminal. Construction of a physical barrier around the coal piles would necessitate reducing the overall size of the coal storage area to safely accommodate the barrier foundations as well as to create adequate clearance between the barrier and the coal piles to ensure operational and employee safety.

28. There is no room to construct a physical barrier without removing portions of the adjacent railroad track which would disrupt operations at the Terminal and throughout the CSX network. Any construction close to the western boundary will impact the Marley Neck track that services local customers south of the Terminal and would impact their ability to receive products needed for their manufacturing processes. If our customers are not able to receive their products by rail, those customers will need to receive their products by truck, leading to increased truck traffic in the area and increased shipping costs for those customers. It is not operationally or financially feasible to relocate track in order to build a physical barrier.

29. The permanent reduction in storage capacity would leave CSX unable to meet the needs of its shippers.

D. Impact of an Open-Top Physical Barrier on Operational Safety

30. CSX is committed to safe operations in Curtis Bay and we prioritize the safety and health of our employees, customers and our neighbors in all aspects of our operations.

31. Construction of an open-top wall structure around the coal storage area would create significant safety hazards for workers at the Terminal. The coal piles cannot be stacked against a wall structure. Allowing coal to be placed up against the structure creates a hazard for the bulldozers acting on the coal. Without appropriate clearance areas between the coal piles and the structure, bulldozers and other equipment could become trapped between the wall and the coal. Designing the structure in such a way that creates a sufficient clearance zone between the edge of the pile and the wall will further reduce the diameter of the coal storage area and result in a substantial reduction in facility throughput. For example, for Tower #1, we would need to reduce its footprint by about 30,000 tons to ensure safety of the dozer operators.

32. Constructing an open-top solid wall around the coal storage area also risks creating more wind inside the structure. Impermeable materials are known to deflect wind rather than

reduce it and the openings for equipment access risk funneling high pressure air into the interior of the structure. This could result in increased wind velocity within the structure and increased particulates in the air.

33. Any wall structure would create extra safety hazards for employees and contractors driving around the site. It would limit the field of vision and create additional work hazards for the bulldozer operators operating around the coal storage piles.

E. Impact of Temporary Shutdowns and Permanent Reductions in Throughput Capacity on the CSX Network and Global Supply Chain

34. An interruption of our service has a global effect. A smaller footprint or a facility shutdown for multiple months would impact the ability of our customers to get their product to the global market due to insufficient capacity on the East Coast to absorb volume intended for Curtis Bay Piers. This could impact the financial solvency of customers and also cause our customers to not meet contractual obligations they have with their own customers. Curtis Bay Piers supplies coal to customers across the world that produce steel and other critical manufacturing components. A reduction in service at Curtis Bay would negatively impact the local, state, and national economy.

Executed on 12/12/2024.

/s/

Aleek Young

CSX Transportation, Inc. Comments on Renewal of State Permit to Operate No. 510-2263 for CSX Transportation Curtis Bay Piers

Appendix 13: *MDE, Fact Sheet, Air Quality Permit to Construct for CSX Transportation Curtis Bay Piers (Sep. 2022)*

MARYLAND DEPARTMENT OF ENVIRONMENT
AIR AND RADIATION ADMINISTRATION (ARA)

FACT SHEET
AIR QUALITY PERMIT TO CONSTRUCT
FOR
CSX TRANSPORTATION – CURTIS BAY PIERS

I. INTRODUCTION

The Maryland Department of the Environment (the "Department") received an application from received a permit-to-construct application from CSX Transportation on May 22, 2022 (with revisions received July 6, July 29, August 12, and August 25, 2022) for the installation of a replacement conveyor and additional wet suppression and tunnel modifications in the North Area of their Curtis Bay Piers facility located at 1910 Benhill Avenue, Curtis Bay, Maryland 21226.

The Department has reviewed the application and has made a determination that the proposed facility is expected to comply with all applicable air quality regulations.

II. BACKGROUND

On December 30, 2021, there was an explosion incident at CSX Transportation – Curtis Bay Piers (CSX) that resulted in irreparable damage to the North Reclaim Tunnel and associated equipment at the coal terminal. To continue operations on the north side of the facility, CSX submitted a request for a permit determination and permit to construct application on May 22, 2022 (and amended on July 6, 2022, July 26, 2022, July 29, 2022, August 12, 2022, and August 25, 2022 for the installation of the following equipment:

(1) A continuous conveyor belt (BC-7) to replace the damaged conveyor in the existing North Reclaim Tunnel.
(2) Associated equipment repairs to the tunnel roof, BC-7 head chute, the A/B drives, the BC-7 tensioner, replacement of the BC-7 truss, and installation of the steel support frame for the BC-2 tensioner.
(3) Improved tunnel airflow through the North Reclaim Tunnel beyond a level prior to the December 30, 2021 incident, which shall be maintained at a minimum of 300 feet per minute (fpm). In accordance with OSHA regulations, the Permittee shall also install and operate a fixed gas detection system inside the tunnel to monitor for methane. The Permittee will implement preventative measures, including metal skirting panels around the conveyor and water sprays within tunnel, which will be incorporated into the facility's Fugitive Dust Plan to ensure safe working conditions and minimize fugitive dust inside the tunnel.

III. PERMIT AND PUBLIC PARTICIPATION DETERMINATION

The replacement equipment and addition of new wet suppression systems and metal skirting are considered installations (and not routine maintenance or repair) and are modifications capable of generating, causing, or reducing emissions and could cause a change in the quantity, nature, or characteristics of emissions from the source. The wet suppression system additions and the skirting is being installed to control dust emissions within the tunnel system. Although doing so is linked to preventing a subsequent explosion, the fact is that these additions also constitute pollution control measures. On the basis of these considerations, ARA has concluded that a permit to construct is required.

Permit to construct applications for certain sources are subject to public participation requirements as specified in §2-404 of the Environment Article of the Annotated Code of Maryland and COMAR 26.11.02.11. Coal loading or unloading installations are listed State Permit to Operate sources per COMAR 26.11.02.13A(38). In accordance with COMAR 26.11.02.11A(1)(a), public participation is required for a permit to construct application for which a State Permit to Operate is required if the installation is a new source, reconstruction, or modification with a significant net increase in emissions.

The proposed replacement conveyor equipment and addition of new wet suppression systems and metal skirting are not new sources. The "source" is the existing permitted coal storage and transloading facility. In addition, the proposed installations do not constitute a reconstruction of the facility. The capital cost associated with the change is approximately $50,000,000 and will not exceed 50% of the cost of installing an entirely new coal storage and transloading facility (approximately $400,000,000), nor will it exceed 50% of the cost of replacing only the North Area of the coal storage and transloading facility (approximately $369,000,000). Overall coal storage and throughput will not change as a result of these installations. Emissions will likely decrease due to the addition of new wet suppression systems and metal skirting. The proposed installations are considered a modification to the existing source with no significant increase in emissions. Therefore, public participation under the Environment Article is not required for this permit to construct application.

IV. APPLICABLE REGULATIONS

CSX Transportation – Curtis Bay Piers is subject to the following federally enforceable State air quality emission standards: COMAR 26.11.06.02C(2) prohibiting visible emissions, COMAR 26.11.06.03B(2)(a) limiting particulate matter emissions from confined sources, COMAR 26.11.06.03D limiting fugitive particulate matter from materials handling, COMAR 26.11.06.08 and COMAR 26.11.06.09 prohibiting nuisance and odors, and COMAR 26.11.15.06 limiting emissions of toxic air pollutants. The facility uses a combination of wet suppression, telescoping chutes, partial enclosures and other dust control measures to comply with these requirements.

The facility is not subject to the federal NSPS for Coal Preparation and Processing Plants because the facility only stores and transloads coal and does not include any coal processing equipment.

V. EMISSIONS METHODOLOGY AND SUMMARY

Particulate matter emissions (as total PM, PM-10, and PM2.5) were estimated using EPA AP-42 and other industry-specific emissions factors for transfer points, drop points, and stockpile wind erosion for aggregate handling and storage piles. Control efficiencies for water sprays, telescoping chutes, and partial enclosures were factored into the emissions calculations wherever those methods would be used. With added wet suppression and other techniques, overall particulate matter emissions are expected to decrease slightly from past actual emissions from the facility.

Total premises wide potential particulate matter emissions based on a maximum annual throughput of 25 million tons of coal per year are summarized below:

Total PM (tons/year)	Total PM-10 (tons/year)	Total PM2.5 (tons/year)
6.6	3.5	0.8

CSX is a true minor source of particulate matter emissions, inherently limited by the design capacity of the plant (25 million tons/year). Actual throughput in 2021 was 8.65 million tons per year.

VI. AIR TOXICS COMPLIANCE DEMONSTRATION

CSX is an existing source of toxic air pollutant (TAP) emissions and the proposed modification does not affect the existing source status for the facility. Although overall particulate matter emissions are expected to remain unchanged, CSX was asked to quantify premises wide TAP emissions for potential TAP constituents in the coal handled by the facility and demonstrate compliance with current screening levels designed to protect public health. This was done to provide assurance to the public that emissions from toxic air pollutants were evaluated in a more rigorous manner than other sources regulated by the Department and the evaluation's conclusions (see text immediately below) show that public health is not threatened using the standard analytical methods available to the Department.

Emissions for chromium, cadmium, arsenic, mercury, nickel, copper, selenium, beryllium, cobalt, manganese, antimony, and barium were based on the weighted average composition from sample analytical data for coal referenced in a detailed study of trace metals in coal samples from various regions throughout the United States. Emissions for arsenic, beryllium, and total coal dust were based on the respirable fraction of estimated particulate matter emissions. Crystalline

silica emissions were based on the weighted average composition of silica in the ash percentage of actual coal samples from CSX. With the exception of coal dust and crystalline silica, emissions of all other TAP (chromium, cadmium, arsenic, mercury, nickel, copper, selenium, beryllium, cobalt, manganese, antimony and barium) did not exceed the allowable emission rate for each TAP based on its conservative screening level.

For coal dust and crystalline silica emissions, an additional TAP modeling analysis was conducted. CSX submitted a TAP Modeling Protocol to ARA for review and approval on July 26, 2022. The final modeling results report was received on August 12, 2022 and amended on August 25, 2022. The modeling results did show slightly elevated concentrations of coal dust and crystalline silica at the eastern edge of the dock on CSX's property. The elevated concentrations occurred only three times on one specific day during the winter where public access is restricted using worst-case emissions conditions. In addition, the screening levels for coal dust and crystalline silica include a 1 in 100 safety factor. Based on these conditions, the modeling results show that emissions of coal dust and crystalline silica emissions are at levels that are protective of public health for areas within the public domain.

Although not a regulated toxic air pollutant, methane emissions recently became known as a potential emissions source, and with respect to the explosion incident, was determined to be a potential causal factor. ARA defers to the federal Occupational Safety and Health Administration (OSHA) and other agencies with expertise and authority over workplace safety for addressing the methane build up in the tunnel. Nonetheless, ARA is using its authority to regulate air pollution to impose limited conditions on CSX through the permit to construct to help reduce the potential for future explosions. Methane off-gassing from coal storage piles and railcars and above-ground conveyors is not currently regulated by ARA but is under consideration for future action.

VII. ENHANCED FUGITIVE DUST PLAN AND FENCE LINE MONITORING PLAN

CSX currently operates under a State Permit to Operate issued on October 1, 2018 that expires on September 30, 2023. The State Permit to Operate includes a Fugitive Dust Plan to ensure that CSX complies with the requirements of COMAR 26.11.06.03D which require CSX to use reasonable precautions to prevent particulate matter from becoming airborne. There is longstanding evidence that shows fugitive dust is leaving the facility's site. Also, recent off-site monitoring data and visual observations give further indication that dust is leaving the facility site. In order to reduce the potential for fugitive dust emissions and to avoid another explosion or other events that would result in particulate matter leaving the facility, an enhanced fugitive dust plan will be required.

CSX will be required to submit a revised Fugitive Dust Plan to ARA for review and approval within 60 days of the issue date of the permit. At a minimum, the revised plan must include the following: (1) a detailed description of each potential source of emissions, the fugitive dust mitigation measures used, and the parameters monitored (e.g., wind speed set point, minimum pile heights, visible observations) that would trigger the use of water sprays; (2) a diagram showing the location of each water spray nozzle system at the premises labeled for quick identification; (3) a log of

actions implemented to mitigate fugitive dust for each source of fugitive emissions that includes the date, time, and action taken; and (4) an evaluation of measures that could be utilized to further ensure dust is controlled.

CSX will be required to submit a Fence Line Monitoring Plan to ARA for review and approval within 60 days of the issue date of the permit. The Fence Line Monitoring Plan must include equipment types designated by the Department to measure particulate pollution leaving the site and shall include equipment to measure applicable meteorological conditions.

This permit to construct authorizing the modification to CSX Transportation – Curtis Bay Piers incorporates all existing valid permit conditions for the facility and supersedes all previous permits to construct issued to ARA Premises No. 510-2263.

CSX Transportation, Inc. Comments on Renewal of State Permit to Operate No. 510-2263 for CSX Transportation Curtis Bay Piers

Appendix 14: *MDE, Response to Comments Regarding Air Quality Permit to Construct for CSX Transportation – Curtis Bay Piers (Sep. 6, 2022)*

MARYLAND DEPARTMENT OF ENVIRONMENT
AIR AND RADIATION ADMINISTRATION (ARA)

RESPONSE TO COMMENTS REGARDING AN AIR QUALITY PERMIT TO CONSTRUCT FOR CSX TRANSPORTATION – CURTIS BAY PIERS

I. INTRODUCTION

The Maryland Department of the Environment ("MDE") received a Permit to Construct application from CSX Transportation ("CSX") on May 22, 2022 (with revisions received July 6, July 29, August 12, and August 25, 2022) for the installation of a replacement conveyor and additional wet suppression and tunnel modifications in the North Area of their Curtis Bay Piers facility located at 1910 Benhill Avenue, Curtis Bay, Maryland 21226.

MDE has reviewed the application and has made a determination that the proposed facility is expected to comply with all applicable state and federal air quality regulatory requirements.

This document provides MDE responses to public comments received on September 6, 2022 from the South Baltimore Community Land Trust, the Community of Curtis Bay Association, and the Environmental Integrity Project ("commenters") regarding the Permit to Construct application and permit review process.

II. PUBLIC COMMENTS AND MDE RESPONSES

Comments:

1. Emissions from subsurface tunnels are not fugitive emissions.
2. The Applicant must comply with COMAR 26.11.01.04.
3. MDE may not issue the permit because the application lacks required information.
4. MDE must revise the permit to identify certain conditions as federally enforceable.
5. Public review is required.
6. Environmental Justice concerns

MDE Response Regarding Environmental Justice Concerns:
MDE is mindful of the fact that the community of Curtis Bay is in an area with environmental justice concerns based on the demographics of the area and the nature and extent of various industries and other environmental stressors surrounding the community. We have committed significant resources since the December 2021 explosion to enhancing our compliance oversight of neighboring facilities and have invested a significant amount of time in assisting the University of Maryland and the Johns Hopkins School of Public Health to build a monitoring network to measure pollutant levels at a very local level and, moving forward, to then determine the source or sources

of such pollutants. MDE has also applied for a federal grant for additional monitoring equipment and scientific support from academia. Some of those grant funds, if MDE is awarded the grant, will be dedicated to further monitoring efforts in Curtis Bay.

MDE took enforcement action against CSX for air pollution violations resulting from the December 2021 explosion at the facility, complementing the Occupational Safety and Health Administration's action for safety violations at the facility. The decision by MDE to take an aggressive enforcement action for the violations of air pollution permit and regulatory requirements is in furtherance of our commitment to address environmental issues in the Curtis Bay area. The commitment of resources and enhanced focus on all regulatory fronts will continue into the foreseeable future.

As for this permit and it being issued for a project in an area with environmental justice concerns, we consider the permit being issued as one that provides meaningful public health protection benefits to the community. The requirements for fence line monitoring and enhanced dust control are two such provisions. The former will help gather data for policy makers to decide whether any future provisions regarding dust control will be needed and the latter will help over a shorter timeframe to reduce the potential for dust leaving CSX's property. The permit also locks in requirements to ensure gas and coal dust levels in the underground tunnels will be monitored so they will not reach a point where they can cause another explosion.

Beyond this permit, there will be the need to reevaluate the provisions of the existing 5-year operating permit starting next summer. That reevaluation will be an opportunity to impose on CSX any needed provisions relating to monitoring, reporting and recordkeeping based on how the facility is performing with respect to regulatory requirements at that time.

MDE Response Regarding Potential Emissions of Harmful Gases:
The following responses are related to the contention that harmful gases including volatile organic compounds (VOC), carbon monoxide (CO), hazardous air pollutants (HAP) and methane emitted from the CSX facility should be regulated under an air quality Permit to Construct.

When a Permit to Construct application is reviewed to determine compliance with applicable air quality requirements and regulations, all potential regulated air pollutant emissions from stationary sources are evaluated. The evaluation includes a review of the information included in the permit application and a review of other technical data such as published and verified emissions data from the existing source and other similar sources, and air permits issued by other states for similar sources.

As stated previously in MDE's Supplemental Fact Sheet, methane is not regulated as a pollutant affecting local air quality under the Clean Air Act because methane is not harmful to breathe at levels that occur in the ambient air; its risks come from its combustibility and its effect on climate change.

MDE has engaged with researchers to understand the scale of methane emissions from the CSX site. It will take time to gather long-term data, but initial, short-term measurements from the University of Maryland found methane levels in the ambient air immediately next to and downwind from the facility as high as 4 parts per million, compared to background levels of roughly 2 parts per million.

The National Institute for Occupational Safety and Health's (NIOSH) maximum recommended safe methane concentration for workers during an 8-hour period is 1,000 parts per million. This level is set so breathability is not adversely impacted. The concentration at which methane poses an explosive risk is 50,000 parts per million.

The reasonably expectable levels of methane concentration in the ambient air due to this facility are hundreds or thousands of times lower than the levels that would threaten local public health or safety.

The Permit to Construct applies relevant provisions for regulated pollutants at the facility. For methane, in which there are no air pollution regulations that apply to the facility, the permit nonetheless requires measures to address explosion risk, consistent with OSHA regulations.

As evidence of VOC emissions being present, the commenters refer to an Air Pollutant Emission Notice (APEN) submitted to the Colorado Department of Public Health and Environment for the Mountain Coal Company, LLC's West Elk mine in Somerset, showing actual VOC emissions of approximately 130 tons per year and actual hexane emissions of approximately 4.7 tons per year from exhauster pumps from the mine and ventilation boreholes.

Methane and other gaseous pollutants are emitted from coal mining operations, as the geological processes of coal formation do produce pollutants, primarily methane, which are present in some coal seams. These gases remain trapped in the coal seam until the coal is exposed and broken during mining. These liberated gases are vented to the atmosphere for mine safety reasons, so the expectation is that vented emissions will contain pollutants, the type and amount is dependent upon the geologic formation from which the coal is being extracted.

Admittedly, not all pollutants are fully released from coal during the process of coal breakage during mining. Coal normally continues to emit pollutants, primarily methane, even after it has been mined, although more slowly than during the coal breakage stage. While coal mines may be a source of VOC emissions, the CSX terminal is not a coal mine, it is a storage and handling facility. And there is little evidence demonstrating that any remaining VOC, hydrogen sulfide, or CO that was not vented during the coal extraction process remains in the coal in an amount that mandates regulatory oversight. A review of air permits issued to coal terminals in other states, such as Ohio and Virginia, consistently show there are no VOC, hydrogen sulfide, or CO requirements or regulations applicable to coal storage or transfer because these operations are not generally considered sources of these emissions.

The CSX facility uses diesel locomotives to transport coal to and from the facility. Mobile sources of emissions at facilities are not directly regulated by MDE; engine standards for mobile sources are set by the Federal government. The only sources of VOC emissions at CSX's Curtis Bay Piers facility are attributed to small natural gas heaters used in the winter that emit less than 0.002 tons of VOC a year and diesel combustion from mobile equipment operating at the site.

Also, with respect to VOC, and with the added context of hydrogen sulfide, and CO, the commenters cite that CSX's continuous monitoring of VOC, hydrogen sulfide and CO in the South Reclaim Tunnel demonstrates that these gases are likely present in the tunnel. Intermittent operations such as portable welding and other maintenance activities that take place in the tunnel may generate small quantities of VOC, hydrogen sulfide, or CO not normally associated with coal handling operations. Because of this, OSHA requires the monitoring of these gases, in addition to oxygen, inside enclosed spaces as an overall worker safety practice to minimize explosive risk and to ensure oxygen levels are adequately high, but it does not imply that coal handling operations through the tunnel result in measurable emissions of VOC, hydrogen sulfide, or CO subject to air quality regulations and requirements. Moreover, measurements from the South Reclaim Tunnel support this conclusion, as the measured values for CO, VOC and hydrogen sulfide do not show detectable levels of these pollutants, except during times when the mentioned maintenance operations are being conducted on the equipment in the tunnel.

CSX's tunnels are not enclosed sources of gaseous regulated air pollutants and therefore CSX was not required to include gaseous emissions in their permit application, and CSX is not required to install sampling ports in accordance with COMAR 26.11.01.04A(4) to enable the collection of gaseous samples. The subsurface tunnels, including new water sprays and metal panels inside the tunnel, are methods to prevent particulate matter, the source of air pollution from coal handling operations, from being discharged to the atmosphere.

Based on the information available to MDE, our conclusion is that CSX, including the North Area rebuild project, is not a major source of any regulated New Source Review (NSR) pollutant. Thus, the public participation requirements prescribed in COMAR 26.11.02.12 for major NSR sources and greenhouse gas emissions at major NSR sources are not applicable to the review of this Permit to Construct application or the issuance of the Permit to Construct, regardless of the level of greenhouse gas emissions from the facility.

MDE also concludes that CSX's North Area rebuild project is not a major source of federal hazardous air pollutants (HAP) that would be subject to case-by-case MACT requirements and public participation requirements under COMAR 26.11.02.12.

Lastly, as a minor source of regulated NSR pollutants, CSX's North Area rebuild project would not result in a violation Maryland's State Implementation Plan (SIP) or cause interference with attainment or maintenance of a national standard. The public participation requirements of 40 CFR §51.161 which govern Maryland's SIP provisions are not applicable to the review of this Permit to Construct application or the issuance of the Permit to Construct.

Despite the lack of a regulatory mandate, a virtual community informational meeting was held on September 1, 2022 to provide the public an opportunity to discuss the application and the draft permit with CSX and MDE and to solicit comments.

CSX Transportation, Inc. Comments on Renewal of State Permit to Operate No. 510-2263 for CSX Transportation Curtis Bay Piers

Appendix 15: *Montrose Environmental, Toxic Air Pollutant Modeling & Impact Assessment Report, CSX Transportation, Inc. Curtis Bay Piers (Aug. 12, 2022, rev'd Aug. 25, 2022)*

August 12, 2022
Revised August 25, 2022

Prepared for:
CSX Transportation, Inc. (CSXT)
1910 Benhill Avenue
Baltimore, Maryland

TOXICS AIR POLLUTANT MODELING & IMPACT ASSESSMENT REPORT

CSX Transportation, Inc.
Curtis Bay Piers
Baltimore, Maryland

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TOXICS AIR POLLUTANTS MODELING & IMPACT ASSESSMENT REPORT

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August 12, 2022
Revised August 25, 2022

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1 EXECUTIVE SUMMARY

1.1 Overview

CSXT is submitting this revised[1] toxic air pollution modeling and impact analysis report in response to the revised emission rate for wind erosion from the nine (9) coal storage piles as was requested from Maryland Department of the Environment ("MDE") Air and Radiation Management Administration. CSX Transportation, Inc. (CSXT), Curtis Bay Piers operates a coal, ore, limestone, and other dry material storage, transfer and shipment terminal at 1910 Benhill Avenue in Baltimore, MD. Curtis Bay Piers operates under Permit to Operate No. 510-2263 issued by the Maryland Department of the Environment (MDE). On December 30, 2021 an onsite incident occurred that caused structural damage to transfer equipment on the north side of the facility.

CSXT has been coordinating with MDE since the incident in compliance with the Permit to Operate and COMAR 26.11.01.07C. On May 22, 2022, CSXT submitted an Air Quality Permit Determination Request to MDE regarding the like-replacement of damaged conveyor BC-7.[2] As discussed in the Air Quality Permit to Construct Determination Request, there are no proposed

[1] The annual Emissions Certification Report (ECR) for Curtis Bay Piers has historically utilized the Air & Waste Management Association (AWMA) Air Pollution Engineering Manual (1992) for calculating wind erosion from storage piles. This calculation methodology was applied to actual emission estimates since it was conservative and consistent with previous years reporting. However, the permit determination request package (submitted May 2022 and revised August 12, 2022) applies the EPA AP-42 Section 13.2.5, Industrial Wind Erosion (November 2006) methodology for calculating emissions due to wind erosion from the coal storage piles. To provide consistency with the annual ECR, CSX reevaluated the potential emission rates from wind erosion applying the AWMA methodology per the request of MDE. By applying the emission rate as calculated by the AWMA methodology, the hourly and annual emissions increased for the nine (9) storage piles and an evaluation of the Toxic Air Pollutants (TAP) was reassessed and the results of that TAPs reevaluation are provided herein. The air dispersion modeling was also reevaluated based on the higher emission rates for all storage piles. Moving forward, CSX will revise emission calculations on the annual ECR reports to utilize the AP-42 emission calculations. This revised toxic air pollution modeling and impact analysis report addresses the following:

- Revised Section 2.3, Emissions Data and Methodology, to reflect the AWMA stockpile wind erosion equation that was utilized.
- Revised Section 2.4, Modeled Emission Rates, to reflect the higher AWMA emissions rate for each coal storage pile.
- Revised Section 3.8, MGLC Calculations and Compliance Evaluation, with the air dispersion model concentrations that resulted from applying the higher AWMA emission rates for the coal storage piles.

[2] As stated in the Air Quality Permit Determination Request, CSXT does not interpret the applicable laws or regulations to require an air permit to construct permit. CSXT reserves the right to assert that a permit to construct is not required for the repair and replacement of conveyor BC-7 damaged during the incident.

changes to the facility's design capacity, process rate, materials handled, or potential estimated emissions.

The Air Quality Permit to Construct Determination Request also contained a complete construction permit application in order to provide MDE with the information that would be provided in a scenario where the permit would be applicable, and to facilitate MDE's review on a timeline consistent with CSXT's stated operational timeline. The application package included a Class I and Class II Toxic Air Pollutants (TAP) analysis for existing sources in compliance with COMAR 26.11.15.

In discussions with CSXT, MDE had also requested a facility-wide air toxics compliance evaluation of all TAPs included in the Department's Revised Toxics Air Pollutant Screening Levels (April 2012) document.[3] When CSXT performed the screening analysis for the applicable TAPs listed in the 2012 Revised Toxic Air Pollutant Screening Levels spreadsheet, two TAPs, silica (i.e., crystalline quartz) and coal dust, exceeded the allowable emission rate (AER). Therefore, a Toxics Air Pollutant Modeling & Impact Assessment, herein referred to as the "Assessment," was completed for the Curtis Bay Piers facility. The Assessment was conducted for the entire facility as it relates to the handling and storage of coal. The Assessment involved the modeling of the predicted ambient impact, and the comparison of the modeled results with the toxic air pollutant Acceptable Ambient Level (AAL). The Assessment was performed on the toxic air pollutants that exceeded the AER.

Since the facility only handles bituminous coal, coal dust was reviewed for bituminous coal dust only. Silica and coal dust are emitted as a fugitive source as a result from the handling and storage of coal. Please refer to Section 2.3 for a description of the estimated emissions. The other toxic air pollutant emissions are considerably less than the corresponding AER.

The Assessment was performed in accordance with COMAR 26.11.16. The AERMOD (v 21112) refined dispersion model was used to predict the Maximum Ground Level Concentration (MGLC) of each toxic air pollutant.

[3] The TAPs evaluation included in CSXT's Air Quality Permit Determination Request/Construction Permit Application demonstrated full compliance with the toxic air pollutant regulations for existing sources. As such, no further air toxics analysis is required by COMAR. CSXT is providing this Toxic Air Pollutant Impact Modeling & Impact Assessment Report on a voluntary basis in cooperation with the Department's request, without waiving any right to later assert that the more expansive modeling requested by the Department was not required under COMAR.

2 MODELING ASSESSMENT

2.1 Facility Location

The Curtis Bay Piers facility is located in the southern portion of the City of Baltimore, just west of the Curtis Bay. Figure 2-1 illustrates the approximate location of the Project within the state of Maryland. Figure 2-2 provides an aerial photograph showing the facility layout.

2.2 Facility Description

Curtis Bay Piers receives bulk coal shipments via railcars and loads coal to outbound marine vessels. Figure 2-2 shows the facility layout. Table 2-1 provides a breakdown of the possible operating scenarios that will be evaluated in the air dispersion model analysis. Figure 2-3 provides a visual representation for the modeled scenarios presented in Table 2-1.

Coal moves through Curtis Bay following a few key processes:

- Inbound Receipt of Coal – Inbound shipments of coal are offloaded using three railcar dumpers. Inside the enclosed dumper buildings, hopper railcars rotate to drop coal onto a covered conveyor. Coal moves from the dumpers across the facility, using a network of covered conveyors, to storage piles or onto an outbound marine vessel.
- Coal Movement to Storage – The facility has three separate storage areas: northern piles via 5 stacking towers (1-5); southern piles via 3 stacking towers (6-8); and limestone, iron ore, coal storage area (RP-1). The conveyor network has the flexibility to direct coal to any stacking tower and corresponding pile. Separate inventory piles are maintained for customer and product variability. Each stacking tower has a series of load-out windows that allows coal to flow out and create a pile from the bottom up.
- Storage Pile to Ship Load-Out – Coal is reclaimed from storage for vessel loading. Material from either the northern, southern, or RP-1 storage piles is pushed towards the centerline above the reclaim tunnels. Feeder tubes in the roof of the reclaim tunnel allow coal to drop down to conveyors below that run the length of the reclaim tunnels. From the reclaim tunnels, the coal moves via a series of covered conveyors to the marine vessel or barge loading docks.

Figure 2-1: General Site Location Map



Figure 2-2: Aerial Photograph of Site and Vicinity



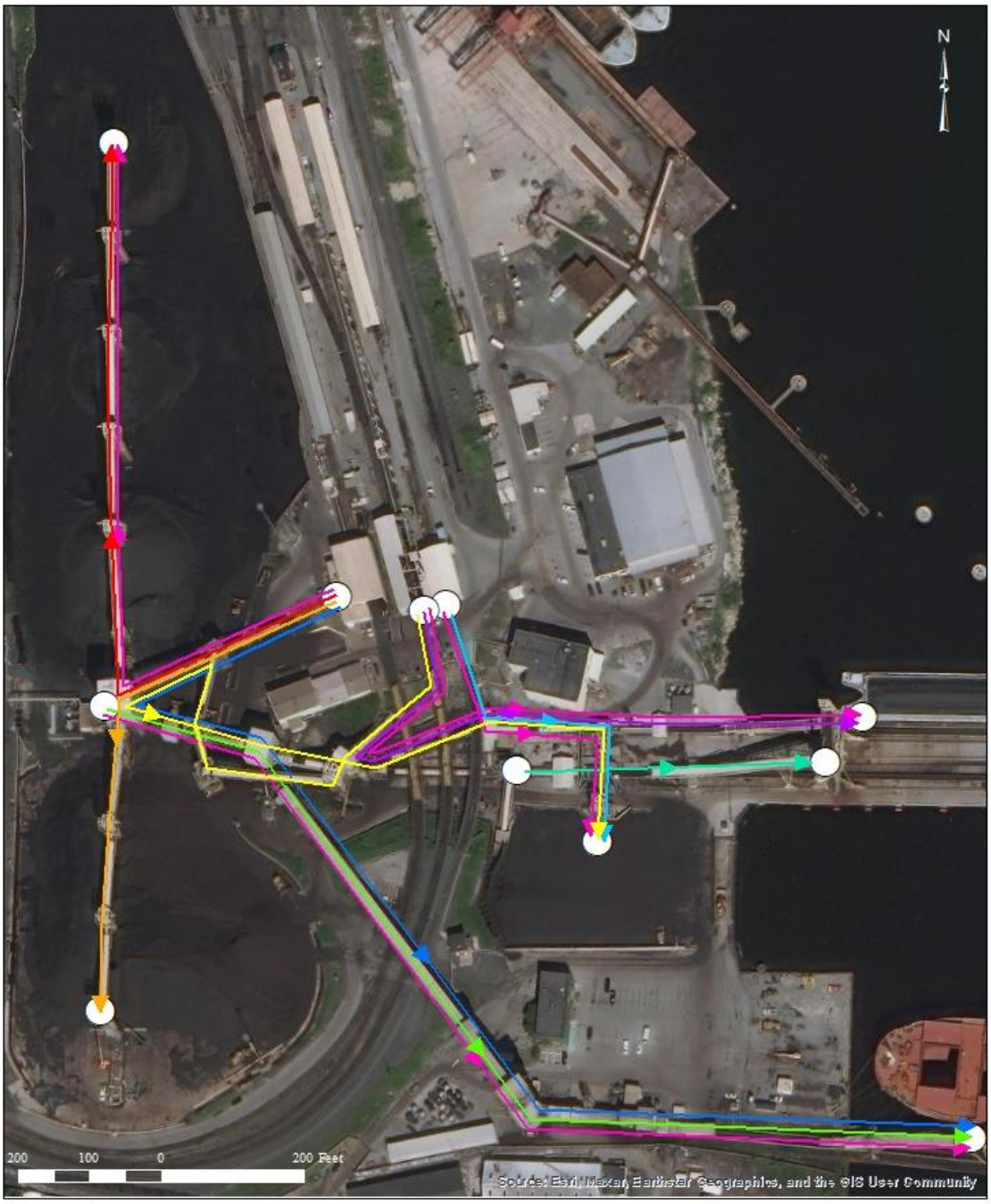
Table 2-1
Possible Coal Handling Operating Scenarios at Curtis Bay Piers

Operating Scenarios[1]	Description
Scenario 1	Coal is unloaded at Dumper #3 then travels to the northern most storage pile, Pile #1.
Scenario 2	Coal is unloaded at Dumper #3 then travels to the southernmost storage pile, Pile #8.
Scenario 3	Coal is unloaded at Dumper #2 then travels to RP-1.
Scenario 4	Coal is reclaimed from either the northern or southern storage piles and then loaded onto a vessel.
Scenario 5	Coal is unloaded at Dumper #1 then travels to RP-1.
Scenario 6	Coal is unloaded at Dumper #3 then directly loaded onto a vessel.
Scenario 7	Coal is unloaded at Dumper #2 and then loaded onto a barge.
Scenario 8	Encompasses Scenarios 1, 4, 5 and 7 operating at the same time.
Scenario 9	Coal is reclaimed from RP-1 and then loaded onto a vessel.

Notes:

1. All operating scenarios include all nine (9) storage piles.

Figure 2-3: Possible Coal Handling Operating Scenarios Figure



2.3 Emissions Data and Methodology

Both silica and coal dust are emitted as a fugitive source as a result of handling or storing coal. Typical operations at the facility encompass railcar unloading, transferring coal from one conveyor belt to another, loading of a vessel or barge and wind erosion from the coal storage piles.

The coal dust emissions were based on Particulate Matter less than 4 microns of aerodynamic diameter (PM_4), as this size threshold is the respirable fraction for silica. Silica is the limiting air toxic pollutant. It was assumed that the size for the respirable fraction for silica crystalline quartz also applies to coal dust. Appendix A provides the State of Wisconsin, Department of Health Services, Division of Public Health document that supports respirable crystalline silica referring to particulate matter less than 4 microns in size.

PM_4 emission factors are not provided in U.S. Environmental Protection Agency (EPA) AP-42, however, values for other particle sizes are provided. These available data for other particle sizes are used to estimate the PM_4 emission factors, as discussed below.

The emission factors in AP-42 Sections 13.2.4, Aggregate Handling and Storage Piles, and 13.2.5, Industrial Wind Erosion, are equation based, using site specific inputs. The particle size figures into the emission factor as an aerodynamic particle size multiplier, which is referred to as a "k" value. The "k" value is provided for various particle sizes (PM_{30}, PM_{15}, PM_{10}, PM_5, and $PM_{2.5}$).

A conservative approach was to use the provided "k" values for PM_{30}, PM_{15}, PM_{10}, and PM_5 and develop a best fit second order polynomial regression equation to calculate a "k" value for PM_4. The provided "k" value for $PM_{2.5}$ was from a different source than those of the PM_{30}, PM_{15}, PM_{10}, and PM_5 and therefore it was excluded from the best fit second order polynomial regression equation, resulting in a higher coefficient of determination (R^2) value and a slightly greater (more conservative) "k" value for PM_4 as compared to when $PM_{2.5}$ was included in the equation.

Appendix B Table B-7 provides a summary of the methodology and equations used to derive the PM_4 "k" value for AP-42 Section 13.2.4. Following the derivation of the PM_4 "k" value, Equation 1 as outlined in EPA AP-42, Section 13.2.4 was followed to estimate an hourly emission rate (lb/hr) for each transfer point.

This same methodology was applied to the wind erosion to derive a PM_4 'k" value from the provided "k" values for PM_{30}, PM_{15} and PM_{10} in EPA AP-42 Section 13.2.5. Since the "k" value from $PM_{2.5}$ was also from another source it was not included in the final best fit second order polynomial regression equation. To estimate emissions from the storage piles the Air & Waste Management Association (AWMA) Air Pollution Engineering Manual (1992) stockpile wind erosion calculation was utilized. This conservative approach was in response to MDE's request to revise storage pile emissions to be consistent with previous annual Emissions Certification Report (ECR). Appendix B Table B-9 provides a summary of the methodology and equations used to derive the PM_4 "k" value. Following the derivation of the PM_4 "k" value, the AWMA Air Pollution Engineering Manual stockpile wind erosion equation (pages 136-137), was followed to calculate the total annual emissions. To obtain a total hourly emission rate (lb/hr) for all nine storage piles, the annual emissions (tons per year) were divided by 8,760 hours per year.

The silica (crystalline quartz) emissions were estimated from coal dust emissions using the fraction of coal that is silica. The following approach is used to determine the fraction of coal that is silica.

ASTM analytical testing data for recent coal handled at Curtis Bay Piers was provided to CSXT by coal suppliers.

These analytical data included the percentage of ash in the coal (ASTM D3174 Standard Test Method for Ash in the Analysis Sample of Coal and Coke from Coal), and the percentage of silicon dioxide in the ash (ASTM D349 Mineral Analysis of Ash). The percent silica in coal was estimated as the product of the ash percentage and the silica percent in ash, as silica is contained in what is considered the ash portion of the coal.

A volume weighted average percent silica in coal was then estimated based on the total weight (tons) for each of the coal suppliers where analytical data were provided. This approach results in a weighted average silica composition of 3.4% of the coal.

An hourly emission rate for respirable silica is then estimated by multiplying the 3.4% value by the hourly emission rate of total PM_4 (coal dust).

This same general methodology was applied to the other TAPs that were analyzed in the ash and compared to the applicable AER. However, these other TAPs are conservatively estimated based on total PM (i.e., PM_{30}) as opposed to PM_4. These TAP emissions are considerably less than the associated AER for each TAP, as presented in Appendix B Table B-1.

Other TAPs were reported as a weight percent of total coal, on a dry basis. The measured TAP concentration reported on the analytical reports were corrected to an as received basis (i.e., wet basis) using the measured moisture content of the coal sample. Appendix B Table B-3 provides a summary of moisture content for the coal samples in addition to the corrected concentrations for those TAP concentrations reported on a weight percent of total coal on a dry basis.

For TAPs that had analytical data for more than 1 sample, a weighted average concentration was estimated based on the total weight (tons) for each of the coal suppliers where analytical data were provided. This approach applies to two TAPs, mercury and arsenic. The same methodology that was applied to silica to calculate a volume weighted percent was also applied to mercury and arsenic.

The following approach was taken for each material other than coal dust, silica, arsenic, and mercury. There are two sets of values, literature values, and site-specific analytical values. The greatest concentration was used wherever values for both literature and analytical concentrations were available. For example, chromium has both literature and analytical values as follows:

- Literature[4] = 11.48 ppm (or 0.0011%)
- Analytical = 12.72 ppm, corrected to account for moisture (or 0.0013%)

[4] Mercury and Other Trace Metals in Coal, Prepared for Electric Power Research Institute (EPRI); Samuel S. Baker, Jr., Ralph L. Roberson, P.E., January 1997

Therefore, the analytical value for chromium was used because it is greater than the literature value and represents a conservative approach. These TAP emissions are less than the AER, as presented in Appendix B Table B-1.

The screenings for beryllium and arsenic are performed in a slightly different fashion than the remainder of the materials. In these cases, the beryllium and arsenic emissions and screening information is based on the respirable fraction of coal dust emissions (i.e., PM_4). This approach provides a more representative approximation based on the respiration fraction and is in line with the methodology used for silica emissions.

Appendices B and C provide a summary of the facility-wide TAP emissions and supporting derivation equations discussed in this section

2.4 Modeled Emission Rates

Emissions for both silica and bituminous coal dust over an 8-hour period are based on the maximum tons of coal that could be handled in an 8-hour period at the facility, which equates to 17,250 tons in an 8-hour period. This throughput value is estimated based on the facility being able to handle 150 railcars within an 8-hour period and each railcar containing approximately 115 tons of coal.

Hourly emission rates, in units of pounds per hour for input into the model, are estimated by averaging the total emissions in an 8-hour period. The Assessment includes hourly emissions from all transfer points that are not entirely enclosed or underground. These transfer points include; the railcar unloading operations, the transfer of coal from one conveyor to another, the loading out of coal to a storage pile, and the loading of coal to a vessel. The hourly emission rate for the nine storage piles were estimated by conservatively applying the AWMA Air Pollution Engineering Manual stockpile wind erosion calculation methodology and dividing the total tons per year by 8,760 hours per year and then dividing by 9 to estimate the PM_4 emissions from each storage pile. Modeled emission rates are presented in Table 2-2 and detailed emission estimates are provided in Appendix B Table B-4.

Table 2-2: Modeled Emission Rates for Silica and Coal Dust

Source Description	Max Coal Handled in an 8-hour Period (tons)	PM_4 Emission Factor (lb PM_4/ton coal)	PM_4 Emission Factor (lb PM_4/day/acre)	Control Efficiency (%)[1]	PM_4 Emissions (lb/ 8-hr)	PM_4 Emissions (lb/hr)	Coal Dust Emission Rate (lb/hr)	Silica Emission Rate (lb/hr)[2]
Transfer Point (each)	17,250	1.17E-05	N/A	70	0.06	0.00756	0.00756	0.000257
Ship Loadout (each)	17,250	1.17E-05	N/A	75	0.05	0.0063	0.0063	0.000214
Storage Piles (each)[3,4]	N/A	N/A	2.3	50	0.21	0.0265	0.0265	0.000901

Notes:

1. Control efficiency of 70% was applied to partial enclosures, 75% was applied to telescoping chute and 50% for water sprays (the water control efficiency is factored into the emission factor).
2. Silica emissions are based on 3.4% of PM_4 see Table B-4 and B-5 for detailed emission calculations.
3. There is a total of nine (9) storage piles, the total PM_4 emission estimates was divided by 9 to calculate emissions from each storage pile. See Table B-8 for wind erosion emission estimates.
4. The total storage pile area of 5 acres is a conservative assumption based on what was previously assessed in the annual ECR reports.

2.5 Modeling Guidelines

The modeling and impact assessment was performed in accordance with COMAR 26.11.16.02, Demonstrating Compliance with COMAR 26.11.15.06 and the EPA's Guideline for Air Quality Models (GAQM) (EPA, Revised, January 17, 2017). The GAQM is codified in Appendix W of Chapter 40, Part 51, Code of Federal Regulations (CFR), herein referred to as the "Appendix W". The process of performing an impact assessment is described within COMAR 26.11.16.02 and the process of modeling is described in detail in Appendix W. A summary of this approach is described as follows:

- Compare the facility-wide pollutant emission rate (lb/hr or lb/yr) to the AER;
- Identify the Acceptable Ambient Level (AAL) for the pollutant(s) that exceeded the AER;
- Conduct an impact assessment using AERMOD (v 21112) refined dispersion model to predict the Maximum Ground Level Concentration (MGLC); and
- Compare the predicted MGLC's to the AAL's.

AERMOD model set-up is described in Section 3.0.

2.6 Acceptable Ambient Level Concentrations

An Acceptable Ambient Level Concentration (AAL) must be developed for each toxic air pollutant and applicable averaging time. The AAL is based on current pollutant toxicity data adjusted for operating hours and risk factors, and is expressed as a $\mu g/m^3$ limit. The AAL's established in MDE's Revised Toxics Air Pollutant Screening Levels (April 2012) are provided on MDE's Toxic Air Pollutant Regulations Assistance webpage.

3 AERMOD MODELING

3.1 Model Selection

The AERMOD model (v. 21112) was used, with the regulatory default model option. AERMOD (American Meteorological Society (AMS)/EPA Regulatory Model) is the EPA's preferred near-field air dispersion modeling system. The North American Datum of 1983 (NAD83) was used to specify receptors, building, and source locations. The latest version of AERMAP (v. 18081) was used to extract terrain elevations from the 1/3-arc second National Elevation Dataset (NED) data obtained from the U.S. Geological Survey (USGS) National Map server.

3.2 Receptor Grid

Receptors were placed along the ambient air boundary at 50 meter (m) spacing. A Cartesian grid extending 5,000 meters away from the center of the site in all directions was used with receptor spacing of 100 m out to a distance of 2,500 m and 500 m from 2,500 m to 5,000 m.

According to the December 2, 2019 memorandum from Andrew R. Wheeler to the Regional Administrators, titled, *Revised Policy on Exclusions from "Ambient Air"*, the EPA's revised ambient air policy is that the atmosphere over land owned or controlled by the stationary source may be excluded from ambient air where the source employs measures, which may include physical barriers, that are effective in precluding access to the land by the general public.

The memorandum further explains that EPA recognizes that a fence or other physical barrier is not the only type of measure that may be used to establish that the general public does not "have access." And that the determination by an air agency of whether access to any particular property is precluded is fact-based and facility-specific.

Most of the property is fully fenced except for the east side of the property that borders the waterway. However, these unfenced areas are not accessible to the general public: security guards monitor access at two gates 24 hrs/day; dock access is gated and additionally restricted during vessel loading; and security cameras are used to monitor all site access and operations. Note, this facility is governed by the Transportation Security Administration, and a Transportation Worker Identification Credential (TWIC) is required by the Maritime Transportation Security Act for workers who need access to the secured areas and the docks. Figure 3-1 shows the location of the fence in addition to the portion of the property that borders the water.

Figure 3-1: Proposed Ambient Air Boundary



Discrete receptors were also placed on eight (8) sensitive areas. The following locations were included as sensitive receptors:

- Curtis Bay Park;
- Curtis Bay Recreation Center;
- William J Myers Pavilion;
- Curtis Bay Middle School;
- Filbert Street Garden;
- Curtis Bay Athletic Club;
- Benjamin Franklin High School; and
- Bay Brook Elementary School.

The locations of these sensitive receptors are shown on Figure 3-2.

Figure 3-2: Sensitive Receptors Locations



3.3 Meteorological Data

Five years of meteorological data (i.e., from 2017 through 2021) with the ADJ_U* option were provided by MDE with the surface/upper air station pairing for the BWI Airport (WBAN No. 93721)/Sterling, VA (WBAN No. 93734). A profile base elevation of 47.5 m was specified in the model.[5] ADJ_U* is a regulatory default option that improves model performance during periods of stable, low-wind speed conditions by adjusting the surface friction velocity (u*) in the meteorological processor AERMET.

The facility operates equipment with the capability to measure wind speed, wind direction, and precipitation. These measured meteorological parameters are tied into the wet suppression system for the sole purpose of optimizing the operation of the wet suppression system and thus better mitigating fugitive dust emissions. The data gathered from this equipment would not be sufficient or adequate for use in this Assessment, based on the location and the lack of calibration of the equipment on a regular basis. In addition, this meteorological equipment is located approximately 140 feet (42.67 meter) above the ground and sits on top of the Stacking Tower 8. Based on EPA guidance[6] it is recommended that sensors for wind speed and wind direction be located over level, open terrain at a height of 10 meters above ground level. The EPA guidance document also advises routine system calibrations of meteorological equipment, to date the facility has not performed any calibrations on the wind speed and wind direction sensors that would meet the requirement for

[5] Zhuang, Lian. (May 4, 2022). MET Data request Email Received by Christine Schaub.
[6] Meteorological Monitoring Guidance for Regulatory Modeling Applications (EPA-454/R-99-005, February 2000)

meteorological monitoring. Therefore, based on the height and calibration of the meteorological equipment, the measured data from the on-site meteorological equipment was deemed inappropriate for use in the Assessment.

3.4 Land Use Classification

The selection of rural or urban dispersion coefficients should follow one of the two procedures detailed in Appendix W. These procedures include the land use classification procedure and the population density procedure to determine whether the area is primarily rural or urban.

The land use procedure is considered more definitive than the population density procedure. As specified in Section 7.2.1.1.b.i of Appendix W, the land use within the total area circumscribed by a 3 km radius circle about the facility was classified using the meteorological land use typing scheme proposed by Auer.[7] If land use types I1 (Heavy Industrial), I2 (Light Industrial), C1 (Commercial), R2 (Residential; Small Lot Single Family & Duplex), and R3 (Residential; Multi-Family) account for 50 percent or more of the circumscribed area, urban dispersion coefficients should be used; otherwise, rural dispersion coefficients are appropriate.

The most recent version of AERSURFACE (v. 20060), a surface characteristic tool, was used to process the 2016 NLCD data. The results of the land use analysis are presented in Table 3-1. Although 57.9% of the area is rural, over a quarter of this area is open water, as shown by Figure 3-3. EPA guidance cautions against applying the Land Use Procedure on a source-by-source basis, especially for those sources located close to a large body of water, and suggests that the potential for urban heat island influences across the full modeling domain be considered.[8]

The population density was calculated for the census tracks located within 3 km of the site.[9] The population density was estimated to be 830 people per square kilometer.[10] As specified in Section 7.2.1.1.b.ii of Appendix W, if the population density is greater than 750 people per square kilometer, urban dispersion coefficients should be used.

The primary purpose of this model is to determine the impact on the nearby community, and for which the land use is primarily considered as developed. Hence, urban dispersion coefficients are selected as these coefficients are believed to be the most appropriate for demonstrating impacts on the nearby community.

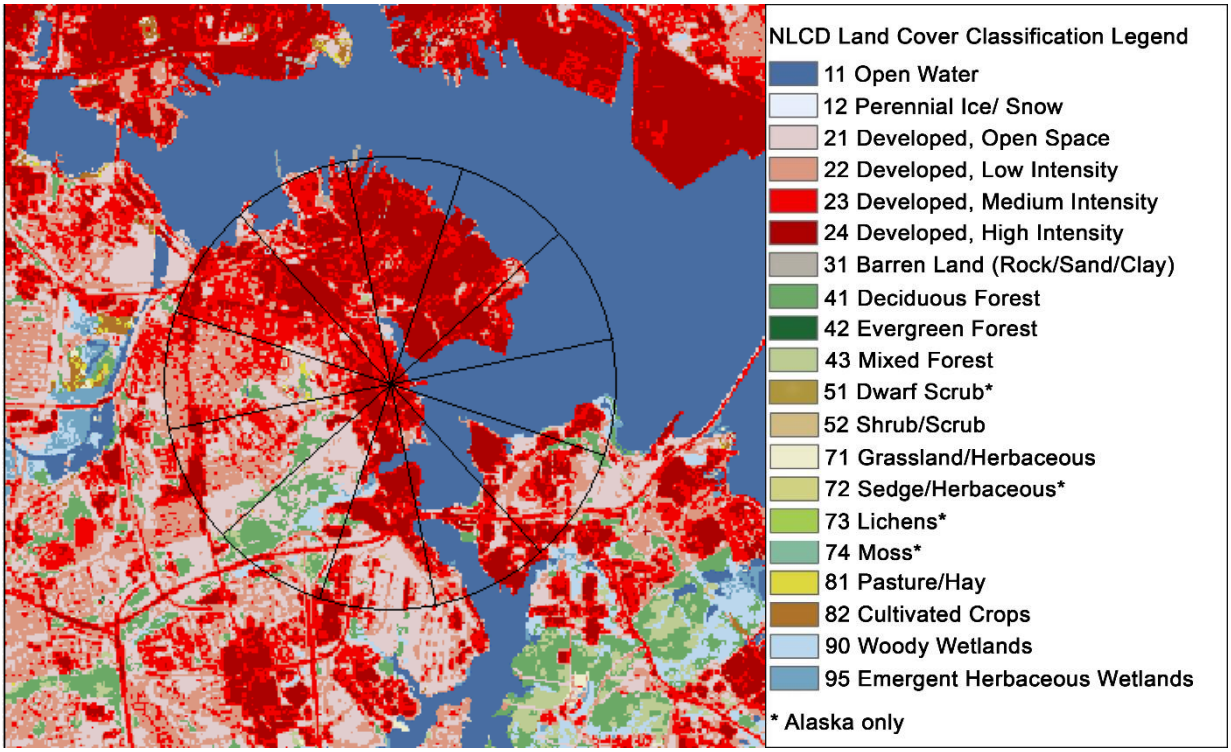
Using an urban dispersion coefficient requires the input of population data into the model. The proposed population used in this assessment corresponds to the county the facility resides in, as well as the five surrounding counties[11]. 2020 Census Data, from the U.S. Census Bureau, was used

[7] Auer, August. "Correlation of Land Use and Cover with Meteorological Anomalies." Journal of Applied Meteorology, vol. 17, no. 5, 1978.
[8] https://gaftp.epa.gov/Air/aqmg/SCRAM/models/preferred/aermod/aermod_implementation_guide.pdf
[9] Census tracts downloaded as KMZ file from https://www.census.gov/geographies/mapping-files/time-series/geo/cartographic-boundary.2020.html
[10] https://mtgis-portal.geo.census.gov/arcgis/apps/MapSeries/index.html?appid=2566121a73de463995ed2b2fd7ff6eb7
[11] The following counties were used for the population calculation: Baltimore City, Baltimore, Anne Arundel, Howard, Hartford, and Carroll.

to obtain a population of 2,794,636.[12] A single urban area is proposed. The default value of 1 meter for urban surface roughness length was selected.

The AERSURFACE input and output files are included in Appendix D of this report.

Figure 3-2: Land Use Classification - NLCD 2016 (3 km)



[12] https://www.census.gov/data/datasets/time-series/demo/popest/2020s-counties-total.html

Table 3-1
AERSURFACE Results and Land Use Classification

NLCD Land Class	Land Description	Count	Auer Land Class	Rural/ Urban	Land Area
11	Open Water:	7,961	A5	Rural	25.34%
12	Perennial Ice/Snow:	0	A5	Rural	0.00%
21	Developed, Open Space:	3,872	R1	Rural	12.32%
22	Developed, Low Intensity:	4,712	R1	Rural	15.00%
23	Developed, Medium Intensity:	6,318	R2	Urban	20.11%
24	Developed, High Intensity:	6,921	R3, I1, I2, & C1	Urban	22.03%
31	Barren Land (Rock/Sand/Clay):	65	A3	Rural	0.21%
32	Unconsolidated Shore:	0	A4	Rural	0.00%
41	Deciduous Forest:	1,039	A4	Rural	3.31%
42	Evergreen Forest:	0	A4	Rural	0.00%
43	Mixed Forest:	129	A4	Rural	0.41%
51	Dwarf Scrub:	0	A3	Rural	0.00%
52	Shrub/Scrub:	15	A3	Rural	0.05%
71	Grasslands/Herbaceous:	33	A3	Rural	0.11%
72	Sedge/Herbaceous:	0	A3	Rural	0.00%
73	Lichens:	0	A3	Rural	0.00%
74	Moss:	0	A3	Rural	0.00%
81	Pasture/Hay:	36	A2	Rural	0.11%
82	Cultivated Crops:	10	A2	Rural	0.03%
90	Woody Wetlands:	249	A4	Rural	0.79%
91	Palustrine Forested Wetland:	0	A4	Rural	0.00%
92	Palustrine Scrub/Shrub Wetland:	0	A4	Rural	0.00%
93	Estuarine Forested Wetland:	0	A4	Rural	0.00%
94	Estuarine Scrub/Shrub Wetland:	0	A4	Rural	0.00%
95	Emergent Herbaceous Wetland:	59	A4	Rural	0.19%
96	Palustrine Emergent Wetland (Pe:	0	A4	Rural	0.00%
97	Estuarine Emergent Wetland:	0	A4	Rural	0.00%
98	Palustrine Aquatic Bed:	0	A4	Rural	0.00%
99	Estuarine Aquatic Bed:	0	A4	Rural	0.00%
	Total:	31,419			
				Rural	**57.86%**
				Urban	**42.14%**

3.5 GEP Stack Height Analysis and Building Downwash

Good Engineering Practice (GEP) stack height analysis is required to be conducted for all structures within 5 times the lesser dimension (i.e., height or width of nearby structures) from each stack. This analysis is used to identify critical building dimensions to be used in the modeling analysis.

GEP and building downwash calculations were conducted using USEPA's Building Profile Input Program for PRIME (BPIPPRM, v. 04274). The output of BPIPPRM was included as input in the AERMOD input file. The BPIPPRM input and output files will be provided electronically to MDE.

3.6 Source Type Determination

Two types of sources are used in the modeling process. The facility contains nine (9) open air coal piles. These piles are modeled as area sources.

The facility operates a series of conveyor belts to transfer coal between coal piles, barges, and railcars. These conveyor belts are enclosed, and the transfer points are located within enclosures. These enclosures around the transfer points are not completely sealed, e.g., the transfer tower has open air windows. Due to this configuration, these portions of the enclosure that are open are modeled as horizontal point sources with a gas exit velocity of 0.001 m/s.

3.7 AERMOD Modeling Parameters

The modeling parameters are presented in Appendix D.

3.8 MGLC Calculations and Compliance Evaluation

The maximum ground level concentration (MGLC) for each pollutant modeled based on the five-year modeling data is obtained for an 8-hr time period.

The calculated MGLCs are then compared to the AAL's for determining acceptability. The scenario with the largest calculated MGLC compared to the AAL is presented in Table 3-2. A copy of the AERMOD input parameters are provided in Appendix D Table D1-1, D1-2 and D1-3. A comparison of the MGLC's to the calculated AAL's is shown in Appendix D Table D3-1 and D3-2.

Table 3-2
Comparison of MGLCs to AAL's

Maximum Concentration ($\mu g/m^3$)	Silica, Crystalline - Quartz Screening Level ($\mu g/m^3$)	Acceptability of Ambient Impact
0.28	0.25	Exceedance
Maximum Concentration ($\mu g/m^3$)	**Coal dust, Bituminous Screening Level ($\mu g/m^3$)**	**Acceptability of Ambient Impact**
8.13	9	Acceptable

Note:
1. Maximum concentrations shown on the table represent the maximum of all scenarios. For both silica and coal dust this is scenario three (3).

The results indicate that the MGLC for coal dust – bituminous is below the AAL, while the Silica (crystalline quartz) exceeds the AAL. There were 3 exceedances for silica when operating scenarios 3 and 8 were evaluated. These exceedances are presented in Table 3-3.

Table 3-2
Silica Model Exceedances, Dates, and Locations

Source Group	Date	Time	Receptor UTM Easting (m)[1]	Receptor UTM Northing (m)[1]	Elevation (m)[2]	Average Concentration ($\mu g/m^3$)[3]	Silica, Crystalline - Quartz Screening Level ($\mu g/m^3$)[4]
Scenario 3	2/28/2017	0800	363614.36	4342677.73	0.23	0.2767	0.25
Scenario 8	2/28/2017	0800	363614.34	4342707.00	0.77	0.25984	
Scenario 8	2/28/2017	0800	363614.36	4342677.73	0.23	0.27208	

Notes
1) NAD83, Zone 18
2) Base elevation obtained through AERMAP (v. 18081)
4) Concentration values were generated through AERMOD modeling using an 8-hour averaging period
3) Toxic Air Pollutant Screening Levels were obtained from Maryland Department of Environmental

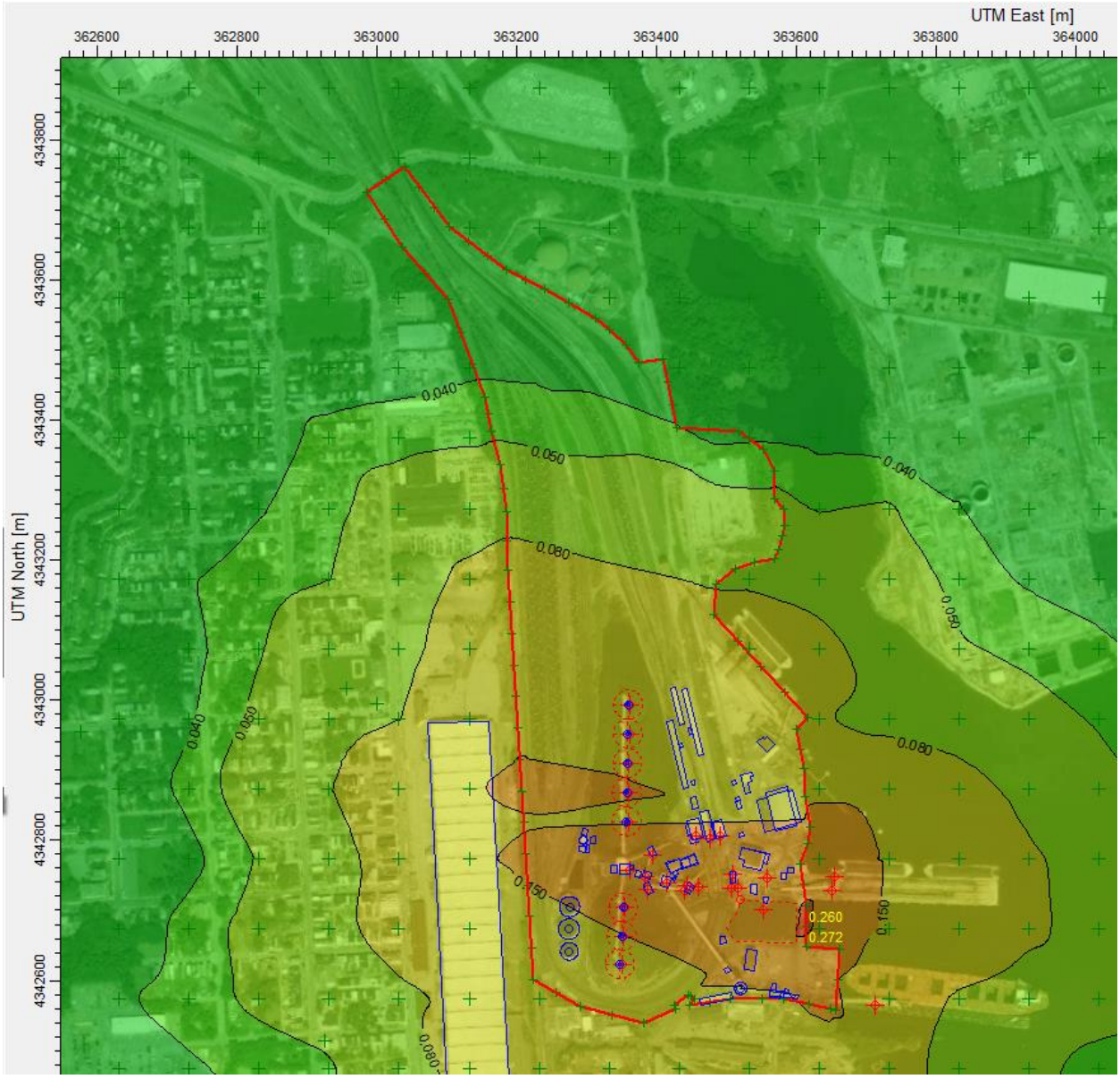
In all instances, these exceedances were located on the east side of the property along the property line that borders the waterway. A discussion on the ambient air boundary can be found in Section 3.2 of this report. These exceedances mainly occur in the winter, when the public is unlikely to be in any portion of the bay. The revised emission calculations for the storage pile utilized the AWMA methodology resulted in a very conservative emission estimates.

Figure 3-1 in Section 3.2 of this report shows the location of the fence in addition to the portion of the property that borders the water. Figures 3-3 and 3-4 show the exceedances related to the silica model.

Figure 3-3: Silica Model Exceedances for Operating Scenario 3



Figure 3-4: Silica Model Exceedances for Operating Scenario 8



APPENDIX A

PM_4 Reference; State of Wisconsin, Department of Health Services, Division of Public Health

Respirable Crystalline Silica from Sand Mining

Sand Mining in Wisconsin

Sand mining is not a new practice in Wisconsin. The recent demand for high-quality quartz sand for a natural gas drilling process called hydraulic fracturing (also known as "*fracking*" or "*fracing*"), however, has greatly increased this activity – especially in Western Wisconsin. While Wisconsin has deposits of sand that are used for the hydraulic fracturing process, the drilling occurs in shale deposits containing oil and natural gas that are found in other states, such as Texas, North Dakota and Pennsylvania. Sand mining operations designed to mine and export 'frac sand' are often much larger in acreage than the smaller, more traditional Wisconsin sand mines that serve mainly local needs for sand. The sand is desirable for fracing and some other uses due to its size, shape, and crystalline silica properties and because the deposits are usually close to the surface and easy to mine. An increase in the number of new requests for mining and processing plant permits has led several communities to raise questions about the possibility for respirable crystalline silica (RCS) to be generated at mine sites, and how RCS might impact the health of nearby residents.

What is respirable crystalline silica (RCS)?

Dust can be made up of visible (larger) and microscopic (smaller) particles. Particulate matter is defined as airborne material (solid or liquid) that is smaller than 100 microns (millionths of a meter) in size. For comparison, human hair is typically between 70 to 100 microns in diameter. The size of the particulate matter affects how long the particles can stay airborne and how far particles can travel before settling out onto surfaces. Smaller particles stay airborne longer and thus can travel further than larger particles.

Respirable crystalline silica (RCS) refers to particles of crystalline silica less than four microns in size, or particulate matter 4 (PM4). PM4-sized particles can penetrate deep into the lungs, where the most critical effects of RCS– silicosis and cancer – are thought to occur.

What are the health effects of RCS exposure?

Inhaled RCS damages lung tissue and can cause a variety of health problems, including silicosis, increased risk of lung infections, obstructive lung disease, and lung cancer. These types of lung problems, especially silicosis, are among the oldest, best documented, and most understood of occupational diseases. Lung damage progresses over time from breathing dust released when rocks are crushed or cut. Silicosis is a chronic, progressive, and inflammatory disease that causes scarring of the lung.

Almost all of the information about the health effects of RCS exposure comes from studies of workers who were exposed to high levels of RCS at work for many years. In certain cases, there have been non-occupational exposures. A 2009 study found high levels of airborne silica (measured as quartz dust) in a village in India from uncontrolled rock cutting and grinding operations in pencil manufacturing facilities. A few published studies have also implicated chronic exposure to windblown desert dust in cases of non-occupational lung disease.

What are the potential sources of RCS during sand mining?

In Wisconsin, most sand is mined by excavating sandstone formations that are near the surface or by dredging deposits of sand. After the sand is mined, it is washed, sorted by particle size, and stored until it is transported off-site. Some sand is also coated with polymers or otherwise treated to improve its properties for hydraulic fracturing applications. If specific dust-reduction controls are not in place at the mines and processing plants as well as during transport, there is the possibility for silica dust and RCS to be released into the air during each of these processes.

Regulations and best management practices are in place in Wisconsin to protect workers, as well as the public, from any dust created during the mining, processing, and transport of sand. Some of those existing control measures are discussed below.

What control measures exist to reduce RCS exposures around mining operations?
The U.S. Mine Safety and Health Administration (MSHA) requires sand mine operators to control and manage worker exposure to silica dust and RCS. The Wisconsin Department of Natural Resources requires a fugitive dust control plan under Wisconsin Administrative Code, Section NR 415.075(2) before the facility begins operation. Although DNR does not specifically regulate RCS, the fugitive dust control plan outlines how a facility will reduce or eliminate all sizes of dust emissions.

Dust control measures that comply with MSHA or DNR requirements might include indoor storage of sand; the use of tarps, covered trucks and rail cars; the application of water or other dust suppressing sprays; and other mechanical control devices. These measures help reduce emissions of silica into the ambient air and limit exposure of workers and the public to RCS.

What other concerns are raised by communities near sand mining operations?
In addition to silica dust and RCS, the transportation of sand may raise other concerns among residents of communities near sand mining operations. New mines are likely to increase truck and rail traffic, and may increase diesel emissions, noise, road congestion and accidents, and road maintenance needs. Water resources and reclamation of the site can also be areas of public interest. Effective communication and cooperative planning between mining companies and local communities is essential.

What can communities do to protect residents' health?
By incorporating best practices into the mine's daily operations on and off-site, mine operators and communities can work together to create a mining operation that is economically viable and protective of the health of workers and the surrounding community. Local agencies have an opportunity to influence sand mining operations primarily through zoning and direct negotiation with mine developers to use best management practices appropriate for the specific location.

For more information:
- To find out more about proposed mine sites and zoning laws in your area, contact your local planning and development department.
- To learn more about dust and particulate matter: http://dnr.wi.gov/topic/AirQuality/Particles.html
- To learn about state regulations of mine sites or to contact the DNR: http://dnr.wi.gov/topic/Mines/silica.html
- To report problems with blowing dust or sand from a sand mine near your home, contact the local mine or your Regional DNR Office: http://dnr.wi.gov/Contact/OfficeLocations.html
- For more information about crystalline silica from the Occupational Safety and Health Administration: http://www.osha.gov/OshDoc/data_General_Facts/crystalline-factsheet.pdf

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APPENDIX B
Emission Calculations

Table B-1. CSXT Curtis Bay Piers - Toxic Air Pollutant Potential Emissions Summary based on the MDE 2012 Revised TAP List, Revised August 2022

Toxic Air Pollutant (TAP)	TAP Percentage (%) in the Coal[1]	Hourly PM (lb/hr)[3]	Annual PM (lb/yr)[4]	1-hr TAP Emission (lb TAP/hr)	Annual TAP Emission (lb TAP/yr)	1-hr SL (ug/m^3)[5]	1-hr AER (lb/hr)[6,7]	% of AER	8-hr SL (ug/m3)[5]	8-hr AER (lb/hr)[6,7]	% of AER	Annual SL (ug/m^3)[5]	Annual AER (lb/yr)[6,7]	% of AER
Coal Dust, Bituminous[8]	-	2.44	13,269.58	2.44E+00	13269.58				9	0.0322	7563.0%			
Silica (crystalline quartz)[1]	3.40%	2.44	13,269.58	8.29E-02	451.17				0.25	0.0009	9257.1%			
Iron Oxide (Fe_2O_3)[1]	1.20%	2.44	13,269.58	2.92E-02	159.23				50	0.1790	16.3%			
Calcium Oxide (CaO)[1]	0.33%	2.44	13,269.58	8.04E-03	43.79				20	0.0716	11.2%			
Magnesium Oxide (MgO)[1]	0.07%	2.44	13,269.58	1.71E-03	9.29				100	0.3580	0.5%			
Titanium Dioxide (TiO_2)[1]	0.10%	2.44	13,269.58	2.44E-03	13.27				100	0.3580	0.7%			
Manganese Oxide (MnO_2)[1]	0.002%	2.44	13,269.58	4.87E-05	0.27				2	0.0072	0.7%			
Barium Oxide (BaO)[1]	0.01%	2.44	13,269.58	1.71E-04	0.93				5	0.0179	1.0%			
Mercury (Hg)[1]	0.00001%	2.44	13,269.58	2.44E-07	1.33E-03	0.30	0.001074	0.02%	0.1	0.0004	0.1%			
Arsenic (As)[1,9]	0.0006%	0.85	3,829.13	5.54E-06	2.49E-02				0.1	0.0004	1.5%	2.00E-04	0.073	34.04%
Boron (B)[2]	0.0010%	2.44	13,269.58	2.53E-05	1.38E-01				6.2	0.0222	0.1%			
Bromine (Br)[2]	0.0046%	2.44	13,269.58	1.12E-04	6.10E-01	13.07	0.0467906	0.24%	6.54	0.0234	0.5%			
Fluorine (F)[2]	0.0069%	2.44	13,269.58	1.68E-04	9.16E-01	31.08	0.1112664	0.15%	15.54	0.0556	0.3%			
Fluoride (F^-)[2]	0.0047%	2.44	13,269.58	1.15E-04	6.24E-01				250	0.8950	0.0%			
Lead (Pb)[2]	0.0006%	2.44	13,269.58	1.47E-05	7.99E-02				0.5	0.0018	0.8%			
Molybdenum (Mo)[2]	0.0000%	2.44	13,269.58	1.71E-07	9.29E-04				5	0.0179	0.001%			
Silver (Ag)[2]	0.0000%	2.44	13,269.58	7.31E-08	3.98E-04				0.1	0.0004	0.02%			
Tin (Sn)[2]	0.0000%	2.44	13,269.58	2.44E-08	1.33E-04				20	0.0716	0.00003%			
Thallium (Tl)[2]	0.0000%	2.44	13,269.58	1.95E-07	1.06E-03				0.2	0.0007	0.03%			
Uranium (U)[2]	0.0001%	2.44	13,269.58	2.19E-06	1.19E-02	6	0.02148	0.010%	2	0.0072	0.03%			
Vanadium (V)[2]	0.0026%	2.44	13,269.58	6.41E-05	3.49E-01				0.5	0.0018	3.6%			
Zirconium (Zr)[2]	0.0017%	2.44	13,269.58	4.09E-05	2.23E-01	100	0.358	0.011%	50	0.1790	0.023%			
Zinc (Zn)[2]	0.0010%	2.44	13,269.58	2.44E-05	1.33E-01	1000	3.58	0.0007%	500	1.7900	0.0014%			
Chromium (Cr)[2]	0.0013%	2.44	13,269.58	3.10E-05	1.69E-01				5	0.0179	0.2%			
Cadmium (Cd)[2]	0.00001%	2.44	13,269.58	2.92E-07	1.59E-03				0.02	0.0001	0.4%	6.00E-04	0.22	0.73%
Nickel (Ni)[2]	0.0012%	2.44	13,269.58	2.95E-05	1.60E-01				1	0.0036	0.8%			
Copper (Cu)[2]	0.0012%	2.44	13,269.58	2.90E-05	1.58E-01				2	0.0072	0.4%			
Selenium (Se)[2]	0.0002%	2.44	13,269.58	5.85E-06	3.18E-02				2	0.0072	0.1%			
Beryllium (Be)[2,9]	0.00019%	0.85	3,829.13	1.62E-06	7.28E-03				0.0005	0.000002	90.6%	4.00E-04	0.15	4.98%
Cobalt (Co)[2]	0.0005%	2.44	13,269.58	1.10E-05	5.97E-02				0.2	0.0007	1.5%			
Manganese (Mn)[2]	0.0051%	2.44	13,269.58	1.24E-04	6.74E-01				2	0.0072	1.7%			
Antimony (Sb)[2]	0.0001%	2.44	13,269.58	2.44E-06	1.33E-02				5	0.0179	0.0%			
Barium (Ba)[2]	0.0266%	2.44	13,269.58	6.48E-04	3.53				5	0.0179	3.6%			

Notes:

1. A percentage of TAP from the coal was estimated by developing a weighted average composition of each TAP provided from a variety of ASTM analytical data for ash and associated coal throughput, see Appendix C for reference calculations.
2. A maximum concentration from either literature or provided analytical values were selected as a conservative assumption, see Table B-2 for reference.
3. Hourly Particulate Matter (PM) was calculated based on a maximum rate of 6,000 tons of coal per hour (see Table B-5).
4. Annual Particulate Matter (PM) was calculated based on a maximum rate of 25,000,000 tons of coal per year (see Table B-5).
5. SL = Screening Level from 2012 Revised TAP Screening Levels
6. AER = Allowable Emission Rate
7. Demonstrating Compliance with the Ambient Impact Requirement under the Toxic Air Pollutant (TAP) Regulations (COMAR 26.11.15.06) [March 2016] Formulas:
   Annual AER = 365 x SL
   1-hr and 8-hr AER = 0.00358 x SL
8. Per the guidance of Jonathan Healy, CSX Sr. Sales Manager- Export Coal, the facility only handles bituminous coal.
9. Beryllium and Arsenic emissions are based on respirable fraction of coal dust emissions (i.e., PM4). The screening analysis for the remaining materials is conservatively based on total PM emissions (i.e., PM30).



Table B-2. CSXT Curtis Bay Piers - Toxic Air Pollutant Maximum Concentration Evaluation

Toxic Air Pollutant (TAP)	Literature References ppm (avg)	Analytical Sample #1 ug/g (ppm)[3]	Analytical Sample #2 ug/g (ppm)[3]	Maximum Concentration ppm	Maximum Concentration (%)
Chromium (Cr)[1]	11.48	12.72		12.72	0.0013%
Cadmium (Cd)[1]	0.12	0.01		0.12	0.0000%
Nickel (Ni)[1]	12.09	10.42		12.09	0.0012%
Copper (Cu)[1]	11.92	5.97		11.92	0.0012%
Selenium (Se)[2]	2.4	1.36		2.4	0.0002%
Beryllium (Be)[2]	1.9	0.94		1.9	0.00019%
Colbat (Co)[2]	4.5	2.92		4.5	0.0005%
Manganese (Mn)[2]	50.8	3.68		50.8	0.0051%
Antimony (Sb)[2]	1	0.08		1	0.0001%
Barium (Ba)[2]	266	22.49		266	0.0266%
Boron (B)		9.59		9.58568	0.0010%
Bromine (Br)		42.40		42.3982	0.0042%
Fluorine (F)		63.60		63.5973	0.0064%
Fluoride (F^-)			42.77	42.77	0.0043%
Lead (Pb)[1]	6.02	1.75		6.02	0.0006%
Molybdenum (Mo)		0.06		0.064519	0.0000%
Silver (Ag)		0.03		0.027651	0.0000%
Tin (Sn)		0.01		0.009217	0.0000%
Thallium (Tl)		0.07		0.073736	0.0000%
Uranium (U)		0.83		0.82953	0.0001%
Vanadium (V)		24.24		24.24071	0.0024%
Zirconium (Zr)		15.48		15.48456	0.0015%
Zinc (Zn)		9.22		9.217	0.0009%

Notes:

1. Mercury and Other Trace Metals in Coal Prepared for Electric Power Research Institute (EPRI); Samuel S. Baker, Jr., Ralph L. Roberson, P.E., January 1997

2. Evaluation of Trace Elements in U.S. Coals Using the USGS COALQUAL Database Version 3.0. Part II: Non-REY Critical Elements; U.S. Department of Energy, National Energy Technology Laboratory;Ronghong Lin , Yee Soong and Evan J. Granite, 2018

3. Analyatical Data Calculations provided in Table B-3

Table B-3. CSXT Curtis Bay Piers - Toxic Air Pollutant Moisture Content Correct to as Received

This worksheet compiles recent analytical data coal analyses for the purpose of obtaining various TAPs composition of coal, as received, since the analytical results are provided on a dry basis
Various analytical data are available from recent shipments as provided by John Healy, CSXT Sr. Sales Manager - Export Coal.

The following data are obtained from various analytical samples for recent coal handled at Curtis Bay Piers

Sample ID	Vessel/Description	Coal Supplier	Date(s)	Moisture Content of Coal (%)
Sample #1	LE	A	1st Quarter 2022	7.83%
Sample #2	CR	C	April 13, 2021	9.00%

Toxic Air Pollutants	Sample #1		Sample #2	
	TAPs Concentration, Dry Basis (ug/g)	TAPs Concentration, as Received (corrected) (ug/g)	TAPs Concentration, Dry Basis (ug/g)	TAPs Concentration, as Received (corrected) (ug/g)
Chromium (Cr)	13.8	12.72		
Cadmium (Cd)	0.01	0.01		
Arsenic (As)	2.89	2.66	14.00	12.74
Mercury (Hg)	0.055	0.05	0.29	0.26
Nickel (Ni)	11.3	10.42		
Copper (Cu)	6.48	5.97		
Selenium (Se)	1.48	1.36		
Beryllium (Be)	1.02	0.94		
Colbat (Co)	3.17	2.92		
Manganese (Mn)	3.99	3.68		
Antimony (Sb)	0.09	0.08		
Barium (Ba)	24.4	22.49		
Boron (B)	10.4	9.59		
Bromine (Br)	46	42.40		
Fluorine (F)	69	63.60		
Fluoride (F^-)			47.00	42.77
Lead (Pb)	1.9	1.75		
Molybdenum (Mo)	0.07	0.06		
Silver (Ag)	0.03	0.03		
Tin (Sn)	0.01	0.01		
Thallium (Tl)	0.08	0.07		
Uranium (U)	0.9	0.83		
Vanadium (V)	26.3	24.24		
Zirconium (Zr)	16.8	15.48		
Zinc (Zn)	10	9.22		

Table B-4. CSXT Curtis Bay Piers -Modeled Hourly Emissions Rates

Source Description	PM_4 Emission (lb/8-hr)	Control Efficiency[1] (%)	Averaged PM_4 Emission (lb/hr)	Coal Dust TAP Perentage (%) in the PM_4	1-hr TAP Emission for Coal Dust (lb/hr)	Silica TAP Perentage (%) in the PM_4[2]	1-hr TAP Emission for Silica (lb/hr)
Transfer Point (each)	0.06	70	0.00756	100%	0.00756	3.4%	0.000257
Ship Loadout (each)	0.05	75	0.0063	100%	0.0063	3.4%	0.000214
Storage Piles (each)[3]	0.21	50	0.0265	100%	0.0265	3.4%	0.000901

Notes:

1. Hourly emissions were averaged based on emissions estimated over an 8-hour period. Control Efficiency of 70% was applied to Partial Enclosure, 75% was applied to Telescoping Chute, and 50% was applied to Water Sprays, see Table B-5 for reference.

2. A percentage of TAP from the coal was estimated by developing a weighted average compition for Silica provided from a variety of ASTM analytical data for ash and associated coal throughput, see Appendix C for reference calculations.

3. There are a total of 9 storage piles. Therefore the total PM_4 emissions estimate was divided by 9 to approximate emissions from each stoarge pile.

Table B-5. CSXT Curtis Bay Piers - Potential PM Emissions Summary

												PM						PM_4					
												Uncontrolled			Controlled			Uncontrolled			Controlled		
Source Description	**Emission Points**	**Max Hourly (ton/hour)**	**Max 8-hr[1] (tons/8-hr)**	**Max Annual (tpy)**	**PM Emission Factor[2]**	**PM_{10} Emission Factor[2]**	**PM_4 Emission Factor[2]**	**$PM_{2.5}$ Emission Factor[2]**	**Emission Factor Units**	**Control Method[3]**	**Control Efficiency[4] (%)**	**Max Hourly (lb/hr)**	**Max 8-hr (lb/8-hr)**	**Max Annual (tpy)**	**Max Hourly (lb/hr)**	**Max 8-hr (lb/8-hr)**	**Max Annual (tpy)**	**Max Hourly (lb/hr)**	**Max 8-hr (lb/8-hr)**	**Max Annual (tpy)**	**Max Hourly (lb/hr)**	**Max 8-hr (lb/8-hr)**	**Max Annual (tpy)**
Coal																							
Rotary Railcar Dumper	1	6,000	17,250	25,000,000	5.16E-05	2.44E-05	1.17E-05	3.70E-06	lb/ton	PE	70	0.31	0.89	0.65	0.09	0.27	0.19	7.01E-02	0.20	0.15	0.02	0.06	0.04
13 Transfer Points[5]	13	6,000	17,250	25,000,000	5.16E-05	2.44E-05	1.17E-05	3.70E-06	lb/ton	PE	70	4.03	11.57	8.39	1.21	3.47	2.52	9.12E-01	2.62	1.90	0.27	0.79	0.57
Storage Piles[6]										WS	50				0.59	4.75	2.60				0.24	1.91	1.05
5 Transfer Points[5]	5	6,000	17,250	25,000,000	5.16E-05	2.44E-05	1.17E-05	3.70E-06	lb/ton	PE	70	1.55	5.34	3.87	0.46	1.60	1.16	1.01	1.01	0.73	0.30	0.30	0.22
Ship Loadout	1	6,000	17,250	25,000,000	5.16E-05	2.44E-05	1.17E-05	3.70E-06	lb/ton	TC	75	0.31	0.89	0.65	0.08	0.22	0.16	0.07	0.20	0.15	0.02	0.05	0.04
Total (for coal handling to loadout)															**2.44**		**6.6**				**0.85**		**1.91**

NOTES:
1. Maximum 8-hr is based on a 150 railcars in any consecutive 8-hr period, with each railcar containing approximately 115 tons of coal.
2. See Table C-4 for emission factors from AP-42 Chapter 13.2.4 Equation 1.
3. Control Methods: WS = Water Spray, PE = Partial Enclosure, TC = Telescoping Chute
4. Reference: Air Pollution Engineering Manual, Air & Waste Management Association, 1992.
5. There are multiple pathways material can travel, the path that contains the most amount of transfer points was selected for a conservative emissions estimate.
6. Storage Pile emissions represent the total emissions of all nine storage piles. See Table C-6 for emissions from wind erosion of coal piles.

Table B-6. Emission Calculations for the Drop Operations - Coal

Based on AP-42 Section 13.2.4, Aggregate Handling and Storage Piles (11/06)

Drop Operations for Sources Protected from the Wind

$EF = k \times (0.0032) \times (U/5)^{1.3}/(M/2)^{1.4}$

EF = emission factor (lb/ton)
k = dimensionless constant
U = mean wind speed (mph)
M = material moisture content (%)

Assume:	U^1 =	1	mph
	M^2 =	6.9	%
	for PM, k =	0.74	
	for PM_{10}, k =	0.35	
	for PM_4, k^3 =	0.1676	
	for $PM_{2.5}$, k =	0.053	

PM	EF =	5.16148E-05	lb/ton
PM_{10}	EF =	2.44124E-05	lb/ton
PM_4	EF =	1.169E-05	lb/ton
$PM_{2.5}$	EF =	3.69673E-06	lb/ton

Notes:
1. A nominal wind speed of 1 mph is assumed for sources protected from the wind.
2. Moisture content is mean moisture content for coal (as-received); AP-42 Table 13.2.4-1.
3. "k" value derivated from AP-42 Chapter 13.2.4, see Table B-7 for derivation summary

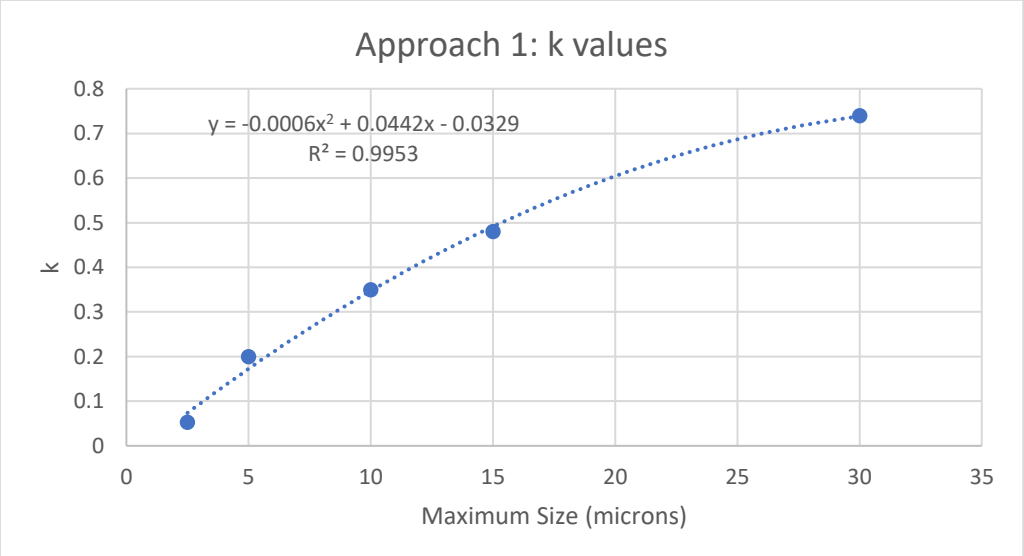
Table B-7. Particle Size Multipliers "k" Derivation - AP-42 Section 13.2.4

The purpose of this worksheet is to obtain the aerodynamic particle size multiplier (k) for PM_4.
PM_4 is used for the respirable fraction of coal and silica.

The following data are listed for particle size multipliers for Equation 1 (AP-42, Page 13.2.4-4, 11/2006 edition):

Size (less than)	k (dimensionless)
30	0.74
15	0.48
10	0.35
5	0.2
2.5	0.053

Approach 1: Use All Available Data



The best fit second order polynomial regression equation is

$k = -0.0006\ s^2 + 0.0442s - 0.0329$, where s = the maximum particle size

Using the above equation:

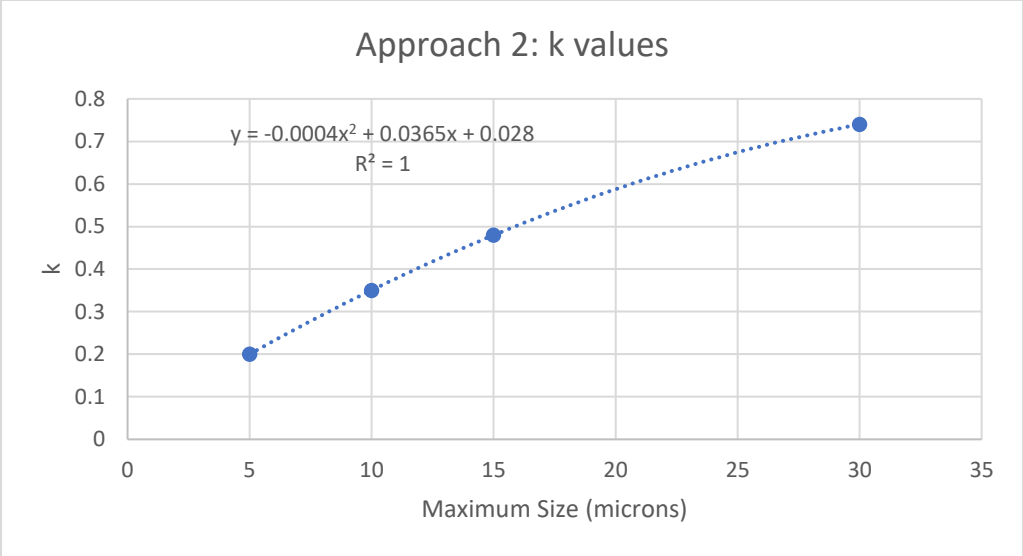
Size (less than)	k (given)	k (equation)	Difference (percent)

30	0.74	0.7531	1.77%
15	0.48	0.4951	3.15%
10	0.35	0.3491	0.26%
5	0.2	0.1731	13.45%
4	n/a	0.1343	n/a
2.5	0.053	0.07385	39.34%

Approach 2: Use Data for PM5 through PM30

The data for PM2.5 is from a different reference than the balance of the data.

The goal is to see if we get a better fit with excluding the PM2.5 value



The best fit second order polynomial regression equation is

$k = -0.0004\ s^2 + 0.0365s + 0.028$, where s = the maximum particle size

Using the above equation:

Size (less than)	k (given)	k (equation)	Difference (percent)
30	0.74	0.763	3.11%
15	0.48	0.4855	1.15%
10	0.35	0.353	0.86%
5	0.2	0.2005	0.25%
4	n/a	0.1676	n/a
2.5	0.053	0.11675	120.28%

Note that since the PM2.5 point is not included in this regression, and the value is from a different data set, the error on the PM2.5 value is not unexpected.

Comparison of k Values for PM4

Approach Number	k	% of PM5 value
1	0.1343	67%
2	0.1676	84%

Recommended value to use is from Approach 2.
Is the greater value (more conservative), and based on a single data set.



Table B-8. Stockpile Wind Erosion (Air Pollution Engineering Manual, AWMA):

Calculate PM Emission Factor using Air Pollution Engineering Manual, AWMA, Storage-Pile Wind Erosion (Page 136-137)

E=1.7(s/1.5)((365-p)/235)(f/15) [lb/acre/day]

s	6.2	%, Silt Content for Coal from AP-42, Table 13.2.4-1
p	114	# of days with greater than or equal to 0.01" rainfall, NOAA Met Data -BWI
f	11.4	% of the time the wind is >12mph at the mean pile height, NOAA Met Data - BWI

E (PM) 5.7038593 lb PM/acre/day (coal)

Derive Emission Factors for PM_{10} and $PM_{2.5}$

Parameter	Units	EPA AP-42, Section 13.2.5 Value	Percent of PM^2	AWMA Value	Percent of PM^2
Threshold friction velocity (ut*) - uncrusted coal pile	m/s	1.12			
Frequency of disturbance, N	day/yr	365			
Frequency of wind events resulting in wind erosion	day/mo	2			
Particle size multiplier (k), particle size <30 µm	-	1		1	
Particle size multiplier (k), particle size <10 µm	-	0.5	50%	0.5	50%
Particle size multiplier (k), particle size <4 µm [1]	-	0.4016	40%		
Particle size multiplier (k), particle size <2.5 µm	-	0.075	8%	0.2	20%

Notes:

1. Particle size multiplier (k) for PM_4 was derived from "k" values provided for PM_{30}, PM_{15} and PM_{10} in AP-42 Section 13.2.5; See Table C-7 for reference
2. The higher percentage value of PM (AP-42 or AWMA) was selected for PM_{10} and $PM_{2.5}$ however PM_4 was derived based on AP-42 Section 13.2.5

Stockpile Wind Erosion:

Days Operating	365	days	
Emission Factor PM	5.7	lb/day/acre	Air Pollution Engineering Manual
Emission Factor PM_{10}:	2.9	lb/day/acre	50% of the PM Emission Factor
Emission Factor PM_4:	2.3	lb/day/acre	40% of the PM Emission Factor
Emission Factor $PM_{2.5}$:	1.1	lb/day/acre	20% of the PM Emission Factor
Number of Acres[3]:	5.00	acres	Total Area
Control Efficiency:	50	%	Water Spray
Fugitive PM Emissions:	**2.60**	**Tons/yr**	
Fugitive PM_{10} Emissions:	**1.30**	**Tons/yr**	
Fugitive PM_4 Emissions:	**1.05**	**Tons/yr**	
Fugitive $PM_{2.5}$ Emissions:	**0.52**	**Tons/yr**	

Notes:

3. The total area of 5 acres is a conservative assumption based on what was previously assessed in the annual ECR reports.

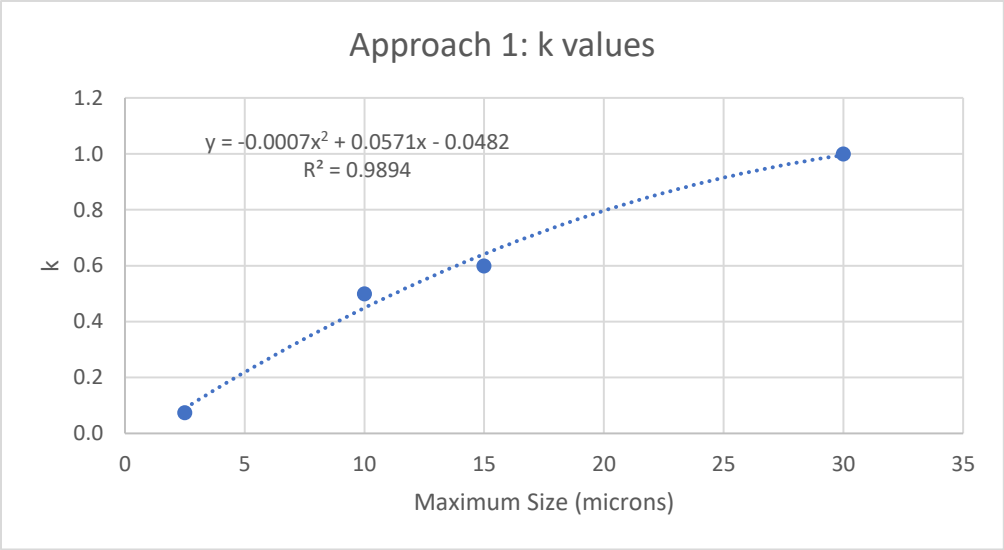
Table B-9. Particle Size Multipliers "k" Derivation - AP-42 Section 13.2.5

The purpose of this worksheet is to obtain the aerodynamic particle size multiplier (k) for PM_4.
PM_4 is used for the respirable fraction of coal and silica.

The following data are listed for particle size multipliers for Equation 1 (AP-42, Page 13.2.5-3, 11/2006 edition):

Size (less than) microns	k (dimensionless)
30	1.0
15	0.6
10	0.5
2.5	0.075

Approach 1: Use All Available Data



The best fit second order polynomial regression equation is

$k = -0.0007\ s^2 + 0.0571s - 0.0482$, where s = the maximum particle size

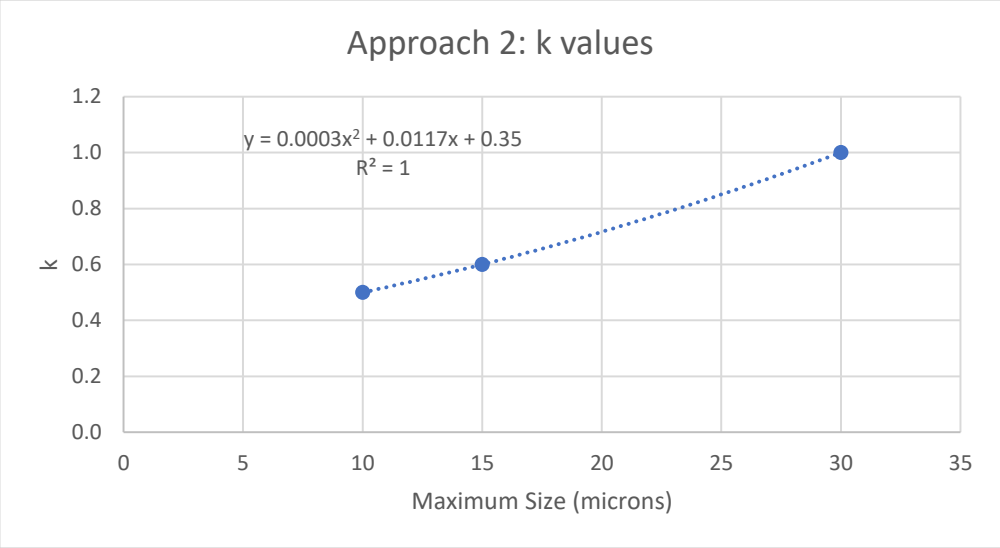
Using the above equation:

Size (less than) microns	k (given)	k (equation)	Difference (percent)
30	1.0	1.03	3.48%

15	0.6	0.65	8.47%
10	0.5	0.45	9.44%
4	n/a	0.17	n/a
2.5	0.075	0.09	20.23%

Approach 2: Use Data for PM5 through PM30

The data for PM2.5 is from a different reference than the balance of the data.
The goal is to see if we get a better fit with excluding the PM2.5 value



The best fit second order polynomial regression equation is

$k = 0.0003s^2 + 0.0117s + 0.35$, where s = the maximum particle size

Using the above equation:

Size (less than)	k (given)	k (equation)	Difference (percent)
30	1.0	0.97	2.90%
15	0.6	0.59	1.17%
10	0.5	0.50	0.60%
4	n/a	0.40	n/a
2.5	0.075	0.38	408.17%

Note that since the PM2.5 point is not included in this regression, and the value is from a different data set, the error on the PM2.5 value is not unexpected.

Comparison of k Values for PM4

Approach Number	k	% of PM10 value
1	0.1690	34%

2	0.4016	80%

Recommended value to use is from Approach 2.
Is the greater value (more conservative), and based on a single data set.

Appendix C
Volume Weighted Average Percentage of TAPs in Coal

Table C-1. CSXT Curtis Bay Piers - Toxic Air Pollutant - Silica Content in Coal

This worksheet compiles recent analytical data coal analyses for the purpose of obtaining the silica (SiO_2) composition of coal.
Various analytical data are available from recent shipments as provided by John Healy, CSXT Sr. Sales Manager - Export Coal.

This analysis follows the approach provided by Mr. Tyler Hall, P.E., Manager of Engineering, Warrior Met Coal in his e-mail dated June 13, 2022.
The silica is contained in the ash portion of the coal.
The percent silica in coal is estimated from the ASTM analytical data as the product of percent ash and percent silica in the ash.

The following data are obtained from various analytical samples for recent coal handled at Curtis Bay Piers
These data are provided in generic form - not specifically identifying the names of suppliers or vessels.

Vessel/ Description	Coal Supplier	Date(s)	Percent Ash, As Received (%)	Percent Silica in Ash (%)	Percent Silica in Coal (%)	Certificate or Sample No
LE	A	1st Quarter 2022	6.74%	48.63%	3.28%	2022-03457
AH	B	Oct 21 - 25, 2021	7.98%	39.91%	3.18%	21110209EF
NF	B	Nov 20 - 24, 2021	8.75%	42.80%	3.75%	21120709FC
NG	B	Sep 29 - Oct 3, 2021	8.40%	40.28%	3.38%	2110120945
PA	B	Oct 14 - 17, 2021	8.12%	40.69%	3.30%	2110250B46
TN	B	Dec 10 - 13, 2021	9.12%	41.64%	3.80%	211223099B
TO	B	Nov 6 - 9, 2021	8.11%	40.27%	3.27%	21111809B7
UL	B	Nov 1 - 4, 2021	7.78%	38.67%	3.01%	231-2100834
CR	C	April 13, 2021	7.82%	54.23%	4.24%	2160575
BE	C	April 16, 2022	8.14%	52.11%	4.24%	2204220B4E
FB	C	Dec 1 - 3, 2021	7.39%	50.42%	3.73%	2112090BE4
NA	C	Dec 28 - 29, 2021	7.47%	49.64%	3.71%	2201060B17
NI	C	March 4 - 11, 2022	7.93%	50.99%	4.04%	2203170B0E

Statistics for Percent Silica in Coal (above data) Per Supplier

Coal Supplier	Mean Value (%)	N (sample size)	Range	1/2 Range as % of Mean Value
A	3.28%	1	n/a	n/a
B	3.38%	7	0.79%	11.66%
C	3.99%	5	0.53%	6.68%

The total weight (tons) for each of the coal companies listed above is used to create a volume weighted average.
Material throughput data for CY 2021 and 2022 (January through June) are used.
Data for companies with throughput without corresponding analytical data are excluded.

Coal Suppliers with Analytical Data Provided

	Throughput			
Coal Supplier	**2021 Tons**	**2022 Tons**	**Total Tons**	**Percent of Total**
A	2,859,907	1,307,405	4,167,312	39.68%
B	4,261,875	1,074,709	5,336,584	50.82%
C	714,423	283,574	997,997	9.50%
Total (3 above)	**7,836,205**	**2,665,688**	**10,501,893**	**100.00%**

Other Suppliers Not Having Analytical Data Provided

	Throughput			
Coal Supplier	**2021 Tons**	**2022 Tons**	**Total Tons**	**Percent of Total**
D	87,986	0	87,986	2.79%
E	2,859,907	200,649	3,060,556	97.21%
Total (2 above)	**2,947,893**	**200,649**	**3,148,542**	**100.00%**

Next, determine what percentage of the total throughput for 2021 and 2022 that we have analytical data for

Supplier Type	Total 2021 & 2022 Throughput (tons)	2021 & 2022 Percent of Total	2022 (only) Throughput (tons)	2022 (only) Percent of Total
Have Analytical Data	10,501,893	77%	2,665,688	93%
Missing Analytical Data	3,148,542	23%	200,649	7%
Total	**13,650,435**	**100%**	**2,866,337**	**100%**

Next, develop a volume weighted average silica composition based on the above data for the 3 suppliers

Supplier	Percent of Total Throughput	Percent Silica	Product of % Total Throughput and % Silica
A	39.68%	3.28%	1.30%
B	50.82%	3.38%	1.72%
C	9.50%	3.99%	0.38%
Total/Volume Weighted Average	**100.00%**	n/a	**3.40%**

Summary Information

Volume weighted average silica composition	**3.40%**	Percent of coal
Arithmetic average silica composition	3.61%	Based on number of analytical samples
Percent of facilty throughput for which we have analytical data	77%	
Percent of facilty throughput for missing analytical data	23%	

Table C-2. CSXT Curtis Bay Piers - Toxic Air Pollutant - Iron Oxide Content in Coal

This worksheet compiles recent analytical data coal analyses for the purpose of obtaining the Iron Oxide (Fe2O3) composition of coal.
Various analytical data are available from recent shipments as provided by John Healy, CSXT Sr. Sales Manager - Export Coal.

This analysis follows the approach provided by Mr. Tyler Hall, P.E., Manager of Engineering, Warrior Met Coal in his e-mail dated June 13, 2022.
The iron oxide is contained in the ash portion of the coal.
The percent iron oxide in coal is estimated from the ASTM analytical data as the product of percent ash and percent iron oxide in the ash.

The following data are obtained from various analytical samples for recent coal handled at Curtis Bay Piers

Vessel/ Description	Coal Supplier	Date(s)	Percent Ash, As Received (%)	Percent Iron Oxide (Fe_2O_3) in Ash (%)	Percent Iron Oxide in Coal (%)	Certificate or Sample No
LE	A	1st Quarter 2022	6.74%	7.48%	0.50%	2022-03457
AH	B	Oct 21 - 25, 2021	7.98%	23.15%	1.85%	21110209EF
NF	B	Nov 20 - 24, 2021	8.75%	19.82%	1.73%	21120709FC
NG	B	Sep 29 - Oct 3, 2021	8.40%	22.78%	1.91%	2110120945
PA	B	Oct 14 - 17, 2021	8.12%	22.03%	1.79%	2110250B46
TN	B	Dec 10 - 13, 2021	9.12%	21.88%	2.00%	211223099B
TO	B	Nov 6 - 9, 2021	8.11%	21.59%	1.75%	21111809B7
UL	B	Nov 1 - 4, 2021	7.78%	23.54%	1.83%	231-2100834
CR	C	April 13, 2021	7.82%	8.72%	0.68%	2160575
BE	C	April 16, 2022	8.14%	8.30%	0.68%	2204220B4E
FB	C	Dec 1 - 3, 2021	7.39%	9.69%	0.72%	2112090BE4
NA	C	Dec 28 - 29, 2021	7.47%	10.27%	0.77%	2201060B17
NI	C	March 4 - 11, 2022	7.93%	9.09%	0.72%	2203170B0E

Statistics for Percent Iron Oxide in Coal (above data) Per Supplier

Coal Supplier	Mean Value (%)	N (sample size)	Range	1/2 Range as % of Mean Value
A	0.50%	1	n/a	n/a
B	1.84%	7	0.26%	7.11%
C	0.71%	5	0.09%	6.43%

The total weight (tons) for each of the coal companies listed above is used to create a volume weighted average.
Material throughput data for CY 2021 and 2022 (January through June) are used.
Data for companies with throughput without corresponding analytical data are excluded.

Coal Suppliers with Analytical Data Provided

	Throughput			
Coal Supplier	**2021 Tons**	**2022 Tons**	**Total Tons**	**Percent of Total**
A	2,859,907	1,307,405	4,167,312	39.68%
B	4,261,875	1,074,709	5,336,584	50.82%
C	714,423	283,574	997,997	9.50%
Total (3 above)	**7,836,205**	**2,665,688**	**10,501,893**	**100.00%**

Other Suppliers Not Having Analytical Data Provided

	Throughput			
Coal Supplier	**2021 Tons**	**2022 Tons**	**Total Tons**	**Percent of Total**
D	87,986	0	87,986	2.79%
E	2,859,907	200,649	3,060,556	97.21%
Total (2 above)	**2,947,893**	**200,649**	**3,148,542**	**100.00%**

Next, determine what percentage of the total throughput for 2021 and 2022 that we have analytical data for

Supplier Type	Total 2021 & 2022 Throughput (tons)	Percent of Total
Have Analytical Data	10,501,893	77%
Missing Analytical Data	3,148,542	23%
Total	**13,650,435**	**100%**

Next, develop a volume weighted average Iron Oxide composition based on the above data

Supplier	Percent of Total Throughput	Percent Iron Oxide	Product of % Total Throughput and % Iron Oxide
A	39.68%	0.50%	0.20%
B	50.82%	1.84%	0.93%
C	9.50%	0.71%	0.07%
Total/Volume Weighted Average	**100.00%**	n/a	**1.20%**

Summary Information

Volume weighted average Iron Oxide composition	**1.20%**	Percent of coal
Arithmetic average calcium oxide composition	1.30%	Based on number of analytical samples
Percent of facilty throughput for which we have analytical data	77%	
Percent of facilty throughput for missing analytical data	23%	

Table C-3. CSXT Curtis Bay Piers - Toxic Air Pollutant - Calcium Oxide Content in Coal

This worksheet compiles recent analytical data coal analyses for the purpose of obtaining the Calcium Oxide (CaO) composition of coal.
Various analytical data are available from recent shipments as provided by John Healy, CSXT Sr. Sales Manager - Export Coal.

This analysis follows the approach provided by Mr. Tyler Hall, P.E., Manager of Engineering, Warrior Met Coal in his e-mail dated June 13, 2022.
The calcium oxide is contained in the ash portion of the coal.
The percent calcium oxide in coal is estimated from the ASTM analytical data as the product of percent ash and percent calcium oxide in the ash.

The following data are obtained from various analytical samples for recent coal handled at Curtis Bay Piers

Vessel/ Description	Coal Supplier	Date(s)	Percent Ash, As Received (%)	Percent Calcium Oxide (CaO) in Ash (%)	Percent Calcium Oxide in Coal (%)	Certificate or Sample No
LE	A	1st Quarter 2022	6.74%	2.84%	0.19%	2022-03457
AH	B	Oct 21 - 25, 2021	7.98%	5.36%	0.43%	21110209EF
NF	B	Nov 20 - 24, 2021	8.75%	6.10%	0.53%	21120709FC
NG	B	Sep 29 - Oct 3, 2021	8.40%	5.46%	0.46%	2110120945
PA	B	Oct 14 - 17, 2021	8.12%	5.59%	0.45%	2110250B46
TN	B	Dec 10 - 13, 2021	9.12%	5.60%	0.51%	211223099B
TO	B	Nov 6 - 9, 2021	8.11%	6.32%	0.51%	21111809B7
UL	B	Nov 1 - 4, 2021	7.78%	6.04%	0.47%	231-2100834
CR	C	April 13, 2021	7.82%	1.22%	0.10%	2160575
BE	C	April 16, 2022	8.14%	1.33%	0.11%	2204220B4E
FB	C	Dec 1 - 3, 2021	7.39%	1.60%	0.12%	2112090BE4
NA	C	Dec 28 - 29, 2021	7.47%	1.91%	0.14%	2201060B17
NI	C	March 4 - 11, 2022	7.93%	1.58%	0.13%	2203170B0E

Statistics for Percent Calcium Oxide in Coal (above data) Per Supplier

Coal Supplier	Mean Value (%)	N (sample size)	Range	1/2 Range as % of Mean Value
A	0.19%	1	n/a	n/a
B	0.48%	7	0.11%	11.02%
C	0.12%	5	0.05%	20.04%

The total weight (tons) for each of the coal companies listed above is used to create a volume weighted average.
Material throughput data for CY 2021 and 2022 (January through June) are used.
Data for companies with throughput without corresponding analytical data are excluded.

Coal Suppliers with Analytical Data Provided

	Throughput			
Coal Supplier	**2021 Tons**	**2022 Tons**	**Total Tons**	**Percent of Total**
A	2,859,907	1,307,405	4,167,312	39.68%
B	4,261,875	1,074,709	5,336,584	50.82%
C	714,423	283,574	997,997	9.50%
Total (3 above)	**7,836,205**	**2,665,688**	**10,501,893**	**100.00%**

Other Suppliers Not Having Analytical Data Provided

	Throughput			
Coal Supplier	**2021 Tons**	**2022 Tons**	**Total Tons**	**Percent of Total**
D	87,986	0	87,986	2.79%
E	2,859,907	200,649	3,060,556	97.21%
Total (2 above)	**2,947,893**	**200,649**	**3,148,542**	**100.00%**

Next, determine what percentage of the total throughput for 2021 and 2022 that we have analytical data for

Supplier Type	Total 2021 & 2022 Throughput (tons)	Percent of Total
Have Analytical Data	10,501,893	77%
Missing Analytical Data	3,148,542	23%
Total	**13,650,435**	**100%**

Next, develop a volume weighted average calcium oxide composition based on the above data

Supplier	Percent of Total Throughput	Percent Calcium Oxide	Product of % Total Throughput and % Calcium Oxide
A	39.68%	0.19%	0.08%
B	50.82%	0.48%	0.24%
C	9.50%	0.12%	0.01%
Total/Volume Weighted Average	**100.00%**	n/a	**0.33%**

Summary Information

Volume weighted average calcium oxide composition	**0.33%**	Percent of coal
Arithmetic average calcium oxide composition	0.32%	Based on number of analytical samples
Percent of facilty throughput for which we have analytical data	77%	
Percent of facilty throughput for missing analytical data	23%	

Table C-4. CSXT Curtis Bay Piers - Toxic Air Pollutant - Magnesium Oxide Content in Coal

This worksheet compiles recent analytical data coal analyses for the purpose of obtaining the Magnesium Oxide (MgO) composition of coal.
Various analytical data are available from recent shipments as provided by John Healy, CSXT Sr. Sales Manager - Export Coal.

This analysis follows the approach provided by Mr. Tyler Hall, P.E., Manager of Engineering, Warrior Met Coal in his e-mail dated June 13, 2022.
The Magnesium Oxide is contained in the ash portion of the coal.
The percent Magnesium Oxide in coal is estimated from the ASTM analytical data as the product of percent ash and percent Magnesium Oxide in the ash.

The following data are obtained from various analytical samples for recent coal handled at Curtis Bay Piers

Vessel/ Description	Coal Supplier	Date(s)	Percent Ash, As Received (%)	Percent Magnesium Oxide (MgO) in Ash (%)	Percent Magnesium Oxide in Coal (%)	Certificate or Sample No
LE	A	1st Quarter 2022	6.74%	0.51%	0.03%	2022-03457
AH	B	Oct 21 - 25, 2021	7.98%	1.22%	0.10%	21110209EF
NF	B	Nov 20 - 24, 2021	8.75%	1.21%	0.11%	21120709FC
NG	B	Sep 29 - Oct 3, 2021	8.40%	1.16%	0.10%	2110120945
PA	B	Oct 14 - 17, 2021	8.12%	1.28%	0.10%	2110250B46
TN	B	Dec 10 - 13, 2021	9.12%	1.27%	0.12%	211223099B
TO	B	Nov 6 - 9, 2021	8.11%	1.24%	0.10%	21111809B7
UL	B	Nov 1 - 4, 2021	7.78%	1.26%	0.10%	231-2100834
CR	C	April 13, 2021	7.82%	0.92%	0.07%	2160575
BE	C	April 16, 2022	8.14%	0.95%	0.08%	2204220B4E
FB	C	Dec 1 - 3, 2021	7.39%	1.02%	0.08%	2112090BE4
NA	C	Dec 28 - 29, 2021	7.47%	1.06%	0.08%	2201060B17
NI	C	March 4 - 11, 2022	7.93%	1.02%	0.08%	2203170B0E

Statistics for Percent Magnesium Oxide in Coal (above data) Per Supplier

Coal Supplier	Mean Value (%)	N (sample size)	Range	1/2 Range as % of Mean Value
A	0.03%	1	n/a	n/a
B	0.10%	7	0.02%	8.99%
C	0.08%	5	0.01%	5.81%

The total weight (tons) for each of the coal companies listed above is used to create a volume weighted average.
Material throughput data for CY 2021 and 2022 (January through June) are used.
Data for companies with throughput without corresponding analytical data are excluded.

Coal Suppliers with Analytical Data Provided

	Throughput			
Coal Supplier	**2021 Tons**	**2022 Tons**	**Total Tons**	**Percent of Total**
A	2,859,907	1,307,405	4,167,312	39.68%
B	4,261,875	1,074,709	5,336,584	50.82%
C	714,423	283,574	997,997	9.50%
Total (3 above)	**7,836,205**	**2,665,688**	**10,501,893**	**100.00%**

Other Suppliers Not Having Analytical Data Provided

	Throughput			
Coal Supplier	**2021 Tons**	**2022 Tons**	**Total Tons**	**Percent of Total**
D	87,986	0	87,986	2.79%
E	2,859,907	200,649	3,060,556	97.21%
Total (2 above)	**2,947,893**	**200,649**	**3,148,542**	**100.00%**

Next, determine what percentage of the total throughput for 2021 and 2022 that we have analytical data for

Supplier Type	Total 2021 & 2022 Throughput (tons)	Percent of Total
Have Analytical Data	10,501,893	77%
Missing Analytical Data	3,148,542	23%
Total	**13,650,435**	**100%**

Next, develop a volume weighted average Magnesium Oxide composition based on the above data

Supplier	Percent of Total Throughput	Percent Magnesium Oxide	Product of % Total Throughput and % Magnesium Oxide
A	39.68%	0.03%	0.01%
B	50.82%	0.10%	0.05%
C	9.50%	0.08%	0.01%
Total/Volume Weighted Average	**100.00%**	n/a	**0.07%**

Summary Information

Volume weighted average Magnesium Oxide composition	**0.07%**	Percent of coal
Arithmetic average Magnesium Oxide composition	0.09%	Based on number of analytical samples
Percent of facilty throughput for which we have analytical data	77%	
Percent of facilty throughput for missing analytical data	23%	

Table C-5. CSXT Curtis Bay Piers - Toxic Air Pollutant - Titanium Dioxide Content in Coal

This worksheet compiles recent analytical data coal analyses for the purpose of obtaining the Titanium dioxide (TiO2) composition of coal.
Various analytical data are available from recent shipments as provided by John Healy, CSXT Sr. Sales Manager - Export Coal.

This analysis follows the approach provided by Mr. Tyler Hall, P.E., Manager of Engineering, Warrior Met Coal in his e-mail dated June 13, 2022.
The Titanium Dioxide is contained in the ash portion of the coal.
The percent Titanium Dioxide in coal is estimated from the ASTM analytical data as the product of percent ash and percent Titanium Dioxide in the ash.

The following data are obtained from various analytical samples for recent coal handled at Curtis Bay Piers

Vessel/ Description	Coal Supplier	Date(s)	Percent Ash, As Received (%)	Percent Titanium Dioxide (TiO2) in Ash (%)	Percent Titanium Oxide in Coal (%)	Certificate or Sample No
LE	A	1st Quarter 2022	6.74%	1.92%	0.13%	2022-03457
AH	B	Oct 21 - 25, 2021	7.98%	1.01%	0.08%	21110209EF
NF	B	Nov 20 - 24, 2021	8.75%	1.02%	0.09%	21120709FC
NG	B	Sep 29 - Oct 3, 2021	8.40%	0.98%	0.08%	2110120945
PA	B	Oct 14 - 17, 2021	8.12%	1.01%	0.08%	2110250B46
TN	B	Dec 10 - 13, 2021	9.12%	0.95%	0.09%	211223099B
TO	B	Nov 6 - 9, 2021	8.11%	1.02%	0.08%	21111809B7
UL	B	Nov 1 - 4, 2021	7.78%	0.99%	0.08%	231-2100834
CR	C	April 13, 2021	7.82%	1.55%	0.12%	2160575
BE	C	April 16, 2022	8.14%	1.54%	0.13%	2204220B4E
FB	C	Dec 1 - 3, 2021	7.39%	1.54%	0.11%	2112090BE4
NA	C	Dec 28 - 29, 2021	7.47%	1.57%	0.12%	2201060B17
NI	C	March 4 - 11, 2022	7.93%	1.51%	0.12%	2203170B0E

Statistics for Percent Titanium Dioxide in Coal (above data) Per Supplier

Coal Supplier	Mean Value (%)	N (sample size)	Range	1/2 Range as % of Mean Value
A	0.13%	1	n/a	n/a
B	0.08%	7	0.01%	7.37%
C	0.12%	5	0.01%	4.83%

The total weight (tons) for each of the coal companies listed above is used to create a volume weighted average.
Material throughput data for CY 2021 and 2022 (January through June) are used.
Data for companies with throughput without corresponding analytical data are excluded.

Coal Suppliers with Analytical Data Provided

	Throughput			
Coal Supplier	**2021 Tons**	**2022 Tons**	**Total Tons**	**Percent of Total**
A	2,859,907	1,307,405	4,167,312	39.68%
B	4,261,875	1,074,709	5,336,584	50.82%
C	714,423	283,574	997,997	9.50%
Total (3 above)	**7,836,205**	**2,665,688**	**10,501,893**	**100.00%**

Other Suppliers Not Having Analytical Data Provided

	Throughput			
Coal Supplier	**2021 Tons**	**2022 Tons**	**Total Tons**	**Percent of Total**
D	87,986	0	87,986	2.79%
E	2,859,907	200,649	3,060,556	97.21%
Total (2 above)	**2,947,893**	**200,649**	**3,148,542**	**100.00%**

Next, determine what percentage of the total throughput for 2021 and 2022 that we have analytical data for

Supplier Type	**Total 2021 & 2022 Throughput (tons)**	**Percent of Total**
Have Analytical Data	10,501,893	77%
Missing Analytical Data	3,148,542	23%
Total	**13,650,435**	**100%**

Next, develop a volume weighted average Titanium Dioxide composition based on the above data

Supplier	Percent of Total Throughput	Percent Titanium Dioxide	Product of % Total Throughput and % Titanium Dioxide
A	39.68%	0.13%	0.05%
B	50.82%	0.08%	0.04%
C	9.50%	0.12%	0.01%
Total/Volume Weighted Average	**100.00%**	n/a	**0.10%**

Summary Information

Volume weighted average Titanium Dioxide composition	**0.10%**	Percent of coal
Arithmetic average Titanium Oxide composition	0.10%	Based on number of analytical samples
Percent of facilty throughput for which we have analytical data	77%	
Percent of facilty throughput for missing analytical data	23%	

Table C-6. CSXT Curtis Bay Piers - Toxic Air Pollutant - Manganese Oxide Content in Coal

This worksheet compiles recent analytical data coal analyses for the purpose of obtaining the Manganese Oxide (MnO2) composition of coal.
Various analytical data are available from recent shipments as provided by John Healy, CSXT Sr. Sales Manager - Export Coal.

This analysis follows the approach provided by Mr. Tyler Hall, P.E., Manager of Engineering, Warrior Met Coal in his e-mail dated June 13, 2022.
The Manganese Oxide is contained in the ash portion of the coal.
The percent Manganese Oxide in coal is estimated from the ASTM analytical data as the product of percent ash and percent Manganese Oxide in the ash.

The following data are obtained from various analytical samples for recent coal handled at Curtis Bay Piers

Vessel/ Description	Coal Supplier	Date(s)	Percent Ash, As Received (%)	Percent Titanium Oxide (MnO2) in Ash (%)	Percent Manganese Oxide in Coal (%)	Certificate or Sample No
LE	A	1st Quarter 2022	6.74%	0.01%	0.0007%	2022-03457
AH	B	Oct 21 - 25, 2021	7.98%	0.04%	0.0032%	21110209EF
NF	B	Nov 20 - 24, 2021	8.75%	0.04%	0.0035%	21120709FC
NG	B	Sep 29 - Oct 3, 2021	8.40%	0.05%	0.0042%	2110120945
PA	B	Oct 14 - 17, 2021	8.12%	0.04%	0.0032%	2110250B46
TN	B	Dec 10 - 13, 2021	9.12%	0.04%	0.0036%	211223099B
TO	B	Nov 6 - 9, 2021	8.11%	0.04%	0.0032%	21111809B7
UL	B	Nov 1 - 4, 2021	7.78%	0.04%	0.0031%	231-2100834
CR	C	April 13, 2021	7.82%	0.01%	0.0008%	2160575
BE	C	April 16, 2022	8.14%	0.01%	0.0008%	2204220B4E
FB	C	Dec 1 - 3, 2021	7.39%	0.01%	0.0007%	2112090BE4
NA	C	Dec 28 - 29, 2021	7.47%	0.01%	0.0007%	2201060B17
NI	C	March 4 - 11, 2022	7.93%	0.02%	0.0016%	2203170B0E

Statistics for Percent Manganese Oxide in Coal (above data) Per Supplier

Coal Supplier	Mean Value (%)	N (sample size)	Range	1/2 Range as % of Mean Value
A	0.0007%	1	n/a	n/a
B	0.0034%	7	0.0011%	15.77%
C	0.0009%	5	0.0008%	45.36%

The total weight (tons) for each of the coal companies listed above is used to create a volume weighted average.
Material throughput data for CY 2021 and 2022 (January through June) are used.
Data for companies with throughput without corresponding analytical data are excluded.

Coal Suppliers with Analytical Data Provided

	Throughput			
Coal Supplier	**2021 Tons**	**2022 Tons**	**Total Tons**	**Percent of Total**
A	2,859,907	1,307,405	4,167,312	39.68%
B	4,261,875	1,074,709	5,336,584	50.82%
C	714,423	283,574	997,997	9.50%
Total (3 above)	**7,836,205**	**2,665,688**	**10,501,893**	**100.00%**

Other Suppliers Not Having Analytical Data Provided

	Throughput			
Coal Supplier	**2021 Tons**	**2022 Tons**	**Total Tons**	**Percent of Total**
D	87,986	0	87,986	2.79%
E	2,859,907	200,649	3,060,556	97.21%
Total (2 above)	**2,947,893**	**200,649**	**3,148,542**	**100.00%**

Next, determine what percentage of the total throughput for 2021 and 2022 that we have analytical data for

Supplier Type	**Total 2021 & 2022 Throughput (tons)**	**Percent of Total**
Have Analytical Data	10,501,893	77%
Missing Analytical Data	3,148,542	23%
Total	**13,650,435**	**100%**

Next, develop a volume weighted average Manganese Oxide composition based on the above data

Supplier	**Percent of Total Throughput**	**Percent Manganese Oxide**	**Product of % Total Throughput and % Manganese Oxide**
A	39.68%	0.0007%	0.0003%
B	50.82%	0.0034%	0.0018%
C	9.50%	0.0009%	0.0001%
Total/Volume Weighted Average	**100.00%**	n/a	**0.0021%**

Summary Information

Volume weighted average Manganese Oxide composition	**0.0021%**	Percent of coal
Arithmetic average Manganese Oxide composition	0.0023%	Based on number of analytical samples
Percent of facilty throughput for which we have analytical data	77%	
Percent of facilty throughput for missing analytical data	23%	

Table C-7. CSXT Curtis Bay Piers - Toxic Air Pollutant - Barium Oxide Content in Coal

This worksheet compiles recent analytical data coal analyses for the purpose of obtaining the Barium Oxide (BaO) composition of coal.
Various analytical data are available from recent shipments as provided by John Healy, CSXT Sr. Sales Manager - Export Coal.

This analysis follows the approach provided by Mr. Tyler Hall, P.E., Manager of Engineering, Warrior Met Coal in his e-mail dated June 13, 2022.
The Barium Oxide is contained in the ash portion of the coal.
The percent Barium Oxide in coal is estimated from the ASTM analytical data as the product of percent ash and percent Barium Oxide in the ash.

The following data are obtained from various analytical samples for recent coal handled at Curtis Bay Piers

Vessel/ Description	Coal Supplier	Date(s)	Percent Ash, As Received (%)	Percent Titanium Oxide (MnO2) in Ash (%)	Percent Barium Oxide in Coal (%)	Certificate or Sample No
AH	B	Oct 21 - 25, 2021	7.98%	0.14%	0.01%	21110209EF
NF	B	Nov 20 - 24, 2021	8.75%	0.13%	0.01%	21120709FC
NG	B	Sep 29 - Oct 3, 2021	8.40%	0.14%	0.01%	2110120945
PA	B	Oct 14 - 17, 2021	8.12%	0.15%	0.01%	2110250B46
TN	B	Dec 10 - 13, 2021	9.12%	0.15%	0.01%	211223099B
TO	B	Nov 6 - 9, 2021	8.11%	0.14%	0.01%	21111809B7
UL	B	Nov 1 - 4, 2021	7.78%	0.16%	0.01%	231-2100834
CR	C	April 13, 2021	7.82%	0.07%	0.01%	2160575
BE	C	April 16, 2022	8.14%	0.06%	0.00%	2204220B4E
FB	C	Dec 1 - 3, 2021	7.39%	0.07%	0.01%	2112090BE4
NA	C	Dec 28 - 29, 2021	7.47%	0.07%	0.01%	2201060B17
NI	C	March 4 - 11, 2022	7.93%	0.07%	0.01%	2203170B0E

Statistics for Percent Barium Oxide in Coal (above data) Per Supplier

Coal Supplier	Mean Value (%)	N (sample size)	Range	1/2 Range as % of Mean Value
B	0.01%	7	0.00%	10.45%
C	0.01%	5	0.00%	6.34%

The total weight (tons) for each of the coal companies listed above is used to create a volume weighted average.
Material throughput data for CY 2021 and 2022 (January through June) are used.
Data for companies with throughput without corresponding analytical data are excluded.

Coal Suppliers with Analytical Data Provided

	Throughput			
Coal Supplier	**2021 Tons**	**2022 Tons**	**Total Tons**	**Percent of Total**
B	4,261,875	1,074,709	5,336,584	84.25%
C	714,423	283,574	997,997	15.75%
Total (2 above)	**4,976,298**	**1,358,283**	**6,334,581**	**100.00%**

Other Suppliers Not Having Analytical Data Provided

	Throughput			
Coal Supplier	**2021 Tons**	**2022 Tons**	**Total Tons**	**Percent of Total**
A	2,859,907	1,307,405	4,167,312	56.96%
D	87,986	0	87,986	1.20%
E	2,859,907	200,649	3,060,556	41.83%
Total (3 above)	**2,947,893**	**200,649**	**7,315,854**	**100.00%**

Next, determine what percentage of the total throughput for 2021 and 2022 that we have analytical data for

Supplier Type	Total 2021 & 2022 Throughput (tons)	Percent of Total
Have Analytical Data	6,334,581	46%
Missing Analytical Data	7,315,854	54%
Total	**13,650,435**	**100%**

Next, develop a volume weighted average Barium Oxide composition based on the above data

Supplier	Percent of Total Throughput	Percent Barium Oxide	Product of % Total Throughput and % Barium Oxide
B	84.25%	0.01%	0.01%
C	15.75%	0.01%	0.001%
Total/Volume Weighted Average	**100.00%**	n/a	**0.011%**

Summary Information

Volume weighted average Barium Oxide composition	**0.011%**	Percent of coal
Arithmetic average Barium Oxide composition	0.01%	Based on number of analytical samples
Percent of facilty throughput for which we have analytical data	46%	
Percent of facilty throughput for missing analytical data	54%	

Table C-8. CSXT Curtis Bay Piers - Toxic Air Pollutant - Arsenic Content in Coal

This worksheet compiles recent analytical data coal analyses for the purpose of obtaining the Arsenic (As) composition of coal.
Various analytical data are available from recent shipments as provided by John Healy, CSXT Sr. Sales Manager - Export Coal.

The following data are obtained from various analytical samples for recent coal handled at Curtis Bay Piers

Vessel/ Description	Coal Supplier	Date(s)	Concentration of Arsenic in the coal (ug/g)	Percent Arsenic in Coal (%)	Certificate or Sample No
LE	A	1st Quarter 2022	2.66	0.00027%	2022-03457
CR	C	April 13, 2021	12.74	0.0013%	2160575

Statistics for Percent Arsenic in Coal (above data) Per Supplier

Coal Supplier	Mean Value (%)	N (sample size)	Range	1/2 Range as % of Mean Value
A	0.00%	1	n/a	n/a
C	0.00%	1	n/a	n/a

The total weight (tons) for each of the coal companies listed above is used to create a volume weighted average.
Material throughput data for CY 2021 and 2022 (January through June) are used.
Data for companies with throughput without corresponding analytical data are excluded.

Coal Suppliers with Analytical Data Provided

	Throughput			
Coal Supplier	**2021 Tons**	**2022 Tons**	**Total Tons**	**Percent of Total**
A	2,859,907	1,307,405	4,167,312	80.68%
C	714,423	283,574	997,997	19.32%
Total (2 above)	**3,574,330**	**1,590,979**	**5,165,309**	**100.00%**

Other Suppliers Not Having Analytical Data Provided

	Throughput			
Coal Supplier	**2021 Tons**	**2022 Tons**	**Total Tons**	**Percent of Total**
B	4,261,875	1,074,709	5,336,584	62.89%
D	87,986	0	87,986	1.04%
E	2,859,907	200,649	3,060,556	36.07%
Total (3 above)	**2,947,893**	**200,649**	**8,485,126**	**100.00%**

Next, determine what percentage of the total throughput for 2021 and 2022 that we have analytical data for

Supplier Type	**Total 2021 & 2022 Throughput (tons)**	**Percent of Total**
Have Analytical Data	5,165,309	38%
Missing Analytical Data	8,485,126	62%
Total	**13,650,435**	**100%**

Next, develop a volume weighted average Arsenic composition based on the above data

Supplier	**Percent of Total Throughput**	**Percent Arsenic**	**Product of % Total Throughput and % Arsenic**
A	80.68%	0.0003%	0.0002%
C	19.32%	0.0013%	0.0002%
Total/Volume Weighted Average	**100.00%**	n/a	**0.0005%**

Summary Information

Volume weighted average Arsenic composition	**0.00046%**	Percent of coal
Arithmetic average Arsenic composition	0.00%	Based on number of analytical samples
Percent of facilty throughput for which we have analytical data	38%	
Percent of facilty throughput for missing analytical data	62%	

Table C-9. CSXT Curtis Bay Piers - Toxic Air Pollutant - Mercury Content in Coal

This worksheet compiles recent analytical data coal analyses for the purpose of obtaining the Mercury (Hg) composition of coal.
Various analytical data are available from recent shipments as provided by John Healy, CSXT Sr. Sales Manager - Export Coal.

The following data are obtained from various analytical samples for recent coal handled at Curtis Bay Piers

Vessel/ Description	Coal Supplier	Date(s)	Concentration of Mercury in the coal (ug/g)	Percent Mercury in Coal (%)	Certificate or Sample No
LE	A	1st Quarter 2022	0.055	0.00001%	2022-03457
CR	C	April 13, 2021	0.26	0.00003%	2160575

Statistics for Percent Mercury in Coal (above data) Per Supplier

Coal Supplier	Mean Value (%)	N (sample size)	Range	1/2 Range as % of Mean Value
A	0.00001%	1	n/a	n/a
C	0.00003%	1	n/a	n/a

The total weight (tons) for each of the coal companies listed above is used to create a volume weighted average.
Material throughput data for CY 2021 and 2022 (January through June) are used.
Data for companies with throughput without corresponding analytical data are excluded.

Coal Suppliers with Analytical Data Provided

	Throughput			
Coal Supplier	**2021 Tons**	**2022 Tons**	**Total Tons**	**Percent of Total**
A	2,859,907	1,307,405	4,167,312	80.68%
C	714,423	283,574	997,997	19.32%
Total (2 above)	**3,574,330**	**1,590,979**	**5,165,309**	**100.00%**

Other Suppliers Not Having Analytical Data Provided

	Throughput			
Coal Supplier	**2021 Tons**	**2022 Tons**	**Total Tons**	**Percent of Total**
B	4,261,875	1,074,709	5,336,584	62.89%
D	87,986	0	87,986	1.04%
E	2,859,907	200,649	3,060,556	36.07%
Total (3 above)	**7,209,768**	**1,275,358**	**8,485,126**	**100.00%**

Next, determine what percentage of the total throughput for 2021 and 2022 that we have analytical data for

Supplier Type	**Total 2021 & 2022 Throughput (tons)**	**Percent of Total**
Have Analytical Data	5,165,309	38%
Missing Analytical Data	8,485,126	62%
Total	**13,650,435**	**100%**

Next, develop a volume weighted average Mercury composition based on the above data

Supplier	**Percent of Total Throughput**	**Percent Mercury**	**Product of % Total Throughput and % Mercury**
A	80.68%	0.0000%	0.000004%
C	19.32%	0.0000%	0.000005%
Total/Volume Weighted Average	**100.00%**	n/a	**0.00001%**

Summary Information

Volume weighted average Mercury composition	**0.00001%**	Percent of coal
Arithmetic average Mercury composition	0.00002%	Based on number of analytical samples
Percent of facilty throughput for which we have analytical data	38%	
Percent of facilty throughput for missing analytical data	62%	

Table C-10. CSXT Curtis Bay Piers - Toxic Air Pollutant - Mercury and Arsenic, Corrected to Account for Moisture

This worksheet compiles recent analytical data coal analyses for the purpose of obtaining the Mercury (Hg) and Arsenic (As) composition of coal as received, since the analytical results are provided on a dry basis
Various analytical data are available from recent shipments as provided by John Healy, CSXT Sr. Sales Manager - Export Coal.

The following data are obtained from various analytical samples for recent coal handled at Curtis Bay Piers

Vessel/ Description	Coal Supplier	Date(s)	Moisture Content of Coal (%)	As Concentration, Dry Basis (ug/g)	As Concentration, as Received (ug/g)	Certificate or Sample No
LE	A	1st Quarter 2022	7.83%	2.89	2.66	2022-03457
CR	C	April 13, 2021	9.00%	14.00	12.74	2160575

Vessel/ Description	Coal Supplier	Date(s)	Moisture Content of Coal (%)	Hg Concentration, Dry Basis (ug/g)	Hg Concentration, as Received (ug/g)	Certificate or Sample No
LE	A	1st Quarter 2022	7.83%	0.06	0.055	2022-03457
CR	C	April 13, 2021	9.00%	0.29	0.26	2160575

Appendix D
Modeled Parameters and Inputs

Table D1-1. CSXT Curtis Bay Piers - Point Source Parameters

Source ID	Source Description	Source Type[1]	UTM Easting (m)[2]	UTM Northing (m)[2]	Elevation (m)[3]	Silica Emissions (lb/hr)[4]	Coal Dust Emissions (lb/hr)[5]	Stack Height (m)[6,7]	Velocity (ft/s)[8]	Diameter (m)[9]	Temperature (K)[10]
EP1	Facility EP1	POINTHOR	363,360.88	4,342,756.52	8.54	2.57E-04	7.56E-03	15.9	0.003	1.34	0
EP24	Facility EP24	POINTHOR	363,360.88	4,342,756.52	8.54	2.57E-04	7.56E-03	15.9	0.003	1.34	0
EP2	Facility EP2	POINTHOR	363,359.38	4,342,826.97	8.96	2.57E-04	7.56E-03	14.7	0.003	1.37	0
EP3	Facility EP3	POINTHOR	363,359.72	4,342,868.73	9.15	2.57E-04	7.56E-03	14.7	0.003	1.37	0
EP4	Facility EP4	POINTHOR	363,360.52	4,342,910.45	8.44	2.57E-04	7.56E-03	14.7	0.003	1.37	0
EP5	Facility EP5	POINTHOR	363,361.36	4,342,952.30	8.14	2.57E-04	7.56E-03	14.7	0.003	1.37	0
EP6	Facility EP6	POINTHOR	363,361.99	4,342,993.81	8.35	2.57E-04	7.56E-03	14.7	0.003	1.37	0
EP8	Facility EP8	POINTHOR	363,354.82	4,342,703.80	10.89	2.57E-04	7.56E-03	14.7	0.003	1.37	0
EP9	Facility EP9	POINTHOR	363,352.69	4,342,663.53	8.62	2.57E-04	7.56E-03	14.7	0.003	1.37	0
EP10	Facility EP10	POINTHOR	363,350.12	4,342,623.27	8.38	2.48E-04	7.56E-03	14.7	0.003	1.37	0
EP12_19	Facility EP12/19	POINTHOR	363,444.16	4,342,735.63	2.17	2.57E-04	7.56E-03	13.7	0.003	1.30	0
EP13	Facility EP13	POINTHOR	363,440.30	4,342,727.52	2.13	2.57E-04	7.56E-03	15.5	0.003	5.37	0
EP14	Facility EP14	POINTHOR	363,386.52	4,342,729.45	8.11	2.57E-04	7.56E-03	11.0	0.003	6.33	0
EP15	Facility EP15	POINTHOR	363,383.97	4,342,747.80	7.53	2.57E-04	7.56E-03	12.8	0.003	7.50	0
EP16	Facility EP16	POINTHOR	363,395.01	4,342,779.84	7.92	2.57E-04	7.56E-03	12.8	0.003	3.73	0
EP18_25	Facility EP18/25	POINTHOR	363,413.60	4,342,739.52	7.34	2.57E-04	7.56E-03	10.0	0.003	1.81	0
EP20	Facility EP20	POINTHOR	363,459.91	4,342,733.39	2.19	2.57E-04	7.56E-03	3.4	0.003	0.95	0
EP21	Facility EP21	POINTHOR	363,508.63	4,342,751.43	2.40	2.57E-04	7.56E-03	4.0	0.003	7.40	0
EP22	Facility EP22	POINTHOR	363,558.09	4,342,746.48	2.38	2.57E-04	7.56E-03	3.7	0.003	2.57	0
EP23	Facility EP23	POINTHOR	363,552.16	4,342,701.80	1.94	2.57E-04	7.56E-03	10.7	0.003	2.08	0
EP29	Shiploader EP29	POINTHOR	363,712.50	4,342,564.80	0.00	2.14E-04	6.30E-03	18.0	0.003	2.68	0
EP30	Facility EP30	POINTHOR	363,507.14	4,342,732.24	2.03	2.57E-04	7.56E-03	3.0	0.003	3.85	0
EP31	Facility EP31	POINTHOR	363,516.86	4,342,731.51	2.12	2.57E-04	7.56E-03	6.7	0.003	5.40	0
EP32	Shiploader EP32	POINTHOR	363,655.11	4,342,747.76	1.22	2.14E-04	6.30E-03	18.0	0.003	2.68	0
EP33	Shiploader EP33	POINTHOR	363,650.41	4,342,727.42	1.97	2.14E-04	6.30E-03	13.7	0.003	2.42	0
EP34	Facility EP34	POINTHOR	363,455.73	4,342,805.53	11.58	2.57E-04	7.56E-03	3.7	0.003	8.54	0
EP35	Facility EP35	POINTHOR	363,476.19	4,342,803.07	11.70	2.57E-04	7.56E-03	2.7	0.003	6.13	0
EP36	Facility EP36	POINTHOR	363,490.40	4,342,805.98	11.59	2.57E-04	7.56E-03	2.7	0.003	6.13	0

Table D1-2: CSXT Curtis Bay Piers - Circular Area Source Parameters

Source ID	Source Description	Source Type	UTM Easting (m)[2]	UTM Northing (m)[2]	Elevation (m)[3]	Silica Emissions (lb/hr)[4]	Coal Dust Emissions (lb/hr)[5]	Silica Emissions (lb/hr-ft^2)[4]	Coal Dust Emissions (lb/hr-ft^2)[5]	Release Height (ft)[11]	Radius of Circular Area (ft)	No. Vertices (or Sides)[12]	Area (ft^2)
CAREA1	AREA CIRCLE 1	AREA_CIRC	363,359.50	4,342,993.80	8.32	9.01E-04	2.65E-02	6.26E-08	1.84E-06	40.0	67.68	20	14,391.91
CAREA2	AREA CIRCLE 2	AREA_CIRC	363,358.89	4,342,952.30	8.14	9.01E-04	2.65E-02	6.26E-08	1.84E-06	40.0	67.68	20	14,391.91
CAREA3	AREA CIRCLE 3	AREA_CIRC	363,358.03	4,342,910.44	8.44	9.01E-04	2.65E-02	6.26E-08	1.84E-06	40.0	67.68	20	14,391.91
CAREA4	AREA CIRCLE 4	AREA_CIRC	363,357.28	4,342,868.73	9.14	9.01E-04	2.65E-02	6.26E-08	1.84E-06	40.0	67.68	20	14,391.91
CAREA5	AREA CIRCLE 5	AREA_CIRC	363,356.79	4,342,826.95	9.01	9.01E-04	2.65E-02	6.26E-08	1.84E-06	40.0	67.68	20	14,391.91
CAREA6	AREA CIRCLE 6	AREA_CIRC	363,352.34	4,342,703.80	10.91	9.01E-04	2.65E-02	6.26E-08	1.84E-06	40.0	67.68	20	14,391.91
CAREA7	AREA CIRCLE 7	AREA_CIRC	363,350.15	4,342,663.52	8.61	9.01E-04	2.65E-02	6.26E-08	1.84E-06	40.0	67.68	20	14,391.91
CAREA8	AREA CIRCLE 8	AREA_CIRC	363,347.54	4,342,623.29	8.37	9.01E-04	2.65E-02	6.26E-08	1.84E-06	40.0	67.68	20	14,391.91

Table D1-3: CSXT Curtis Bay Piers - Polygon Area Source Parameters

Source ID	Source Description	Source Type	UTM Easting (m)[2]	UTM Northing (m)[2]	Elevation (m)[3]	Silica Emissions (lb/hr)[4]	Coal Dust Emissions (lb/hr)[5]	Silica Emissions (lb/hr-ft^2)[4]	Coal Dust Emissions (lb/hr-ft^2)[5]	Release Height (ft)[11]	No. Vertices (or Sides)	Area (ft^2)
SP1	SP1 Area Poly	AREA_POLY	363,519.18	4,342,715.96	2.17	9.01E-04	2.65E-02	1.61E-08	4.72E-07	20.0	10	56,122.10

Notes

1) POINTHOR = Point Source with a Horizontal Release Type
2) NAD83, Zone 18
3) Base elevation obtained through AERMAP (v. 18081)
4) For silica emission rate estimates, see Appendix B, Table B-4 for supporting calculations.
5) For coal dust-bituminous emission rate estimates, see Appendix B, Table B-4 for supporting calculations.
6) Stack height of structures with multiple openings were calculated using the average height of openings from one side (EP1, EP24, and EP18_25).
7) Stack height of the stacking towers was calculated using the average height of the windows of three towers, which was then averaged and taken as representative (EP2, EP3, EP4, EP5, EP6, EP8, EP9, and EP10).
8) Exit velocity conservatively set to 0.001 m/s (0.003 ft/s).
9) Diameter calculated using the equivalent diameter of openings.
10) Setting the temperature to 0 Kelvin triggers AERMOD to use the actual temperatures from the meteorological data input files which is used for ambient discharges.
11) Release height taken as half of the average pile height.
12) The AERMOD default value was chosen.



Table D2: CSXT Curtis Bay Piers - Emission Point Grouping in Various Scenarios

Source Group[1]	Emission Points Included
Scenario 1	EP34, EP1, EP2, EP3, EP4, EP5, and EP6
Scenario 2	EP34, EP1, EP8, EP9, EP10
Scenario 3	EP35, EP12, EP13, EP14, EP15, EP16, EP1, EP18, EP19, EP20, EP21, EP22, and EP23
Scenario 4	EP24, EP25, and EP29
Scenario 5	EP36, EP21, EP22, and EP23
Scenario 6	EP34, EP1, EP25, and EP29
Scenario 7	EP35, EP11, EP12, EP20, EP21, and EP32
Scenario 8	EP34, EP1, EP2, EP3, EP4, EP5, and EP6 (Scenario 1); EP24, EP25, and EP29 (Scenario 4); EP36, EP21, EP22, and EP23 (Scenario 5); EP35, EP11, EP12, EP20, EP21, and EP32 (Scenario 7); CAREA1, CAREA2, CAREA3, CAREA4, CAREA5, CAREA6, CAREA7, CAREA8 (8 main storage piles); SP1 (storage pile closest to the piers)
Scenario 9	EP31 and EP33

Table D3-1: CSXT Curtis Bay Piers - Silica Model Results

Source Group[1]	Maximum Concentration ($\mu g/m^3$)[2]	Silica, Crystalline - Quartz Screening Level ($\mu g/m^3$)[3]	Acceptability of Ambient Impact[4]
Scenario 1	0.21653	0.25	Acceptable
Scenario 2	0.21704		Acceptable
Scenario 3	0.27670		Exceedance
Scenario 4	0.21079		Acceptable
Scenario 5	0.23746		Acceptable
Scenario 6	0.21609		Acceptable
Scenario 7	0.23019		Acceptable
Scenario 8	0.27208		Exceedance
Scenario 9	0.20840		Acceptable

Table D3-2: CSXT Curtis Bay Piers - Coal Dust Model Results

Source Group[1]	Maximum Concentration ($\mu g/m^3$)[2]	Coal dust, Bituminous Screening Level ($\mu g/m^3$)[3]	Acceptability of Ambient Impact
Scenario 1	6.36525	9	Acceptable
Scenario 2	6.38023		Acceptable
Scenario 3	8.13484		Acceptable
Scenario 4	6.19637		Acceptable
Scenario 5	6.98083		Acceptable
Scenario 6	6.35227		Acceptable
Scenario 7	6.76693		Acceptable
Scenario 8	7.99906		Acceptable
Scenario 9	6.12621		Acceptable

Notes

1) Source groups represents all the possible scenarios in which emission points can operate simultaneously.
2) Maximum concentration values were generated through AERMOD modeling.
3) Toxic Air Pollutant Screening Levels were obtained from Maryland Department of Environmental.
4) All exceedances are located on the east side of property boundary on the water between the two piers. The locations of the exceedances are not accessible to members of the public. See section 3.8 of the Modeling Report for more information.

```
** AERSURFACE Log File, Version 20060                              05/02/22 **
**                                                                 14:42:40 **


 ***************************

 TIFF File Opened: ..\NLCD2016_LC_N39W075.tif

 Data Type: NLCD  2016

 Attempting to read TIFF file header: ..\NLCD2016_LC_N39W075.tif

 Byte order: Little Endian
 IFD Offset (bytes):              8

 Attempting to read TIFF tags: ..\NLCD2016_LC_N39W075.tif

 Data Columns:   10875
 Data Rows:      12309

 WARNING: TIFF tag   274 (Orientation) was not found - default value used: NLCD
          Orientation = 1; row-major with (0,0) = NW corner

 Spatial Res. X:    30.00000000 (meters)
 Spatial Res. Y:    30.00000000 (meters)
 TIFF Data Organization: Strips
 Model Type:  Projected
 GT Raster Type = Pixel Is Area
 Model Tie Point (NW corner) adjusted to midpoint of pixel.
      X Tie Point:      1466460.00 (meters)
      Y Tie Point:      2295510.00 (meters)

 Horizontal Datum: WGS84

 ***************************

 TIFF File Opened: ..\NLCD2016_IMP_N39W075.tif

 Data Type: MPRV  2016

 Attempting to read TIFF file header: ..\NLCD2016_IMP_N39W075.tif

 Byte order: Little Endian
 IFD Offset (bytes):              8

 Attempting to read TIFF tags: ..\NLCD2016_IMP_N39W075.tif

 Data Columns:   10875
 Data Rows:      12309
```

```
WARNING: TIFF tag   274 (Orientation) was not found - default value used: MPRV
         Orientation = 1; row-major with (0,0) = NW corner

Spatial Res. X:    30.00000000 (meters)
Spatial Res. Y:    30.00000000 (meters)
TIFF Data Organization: Strips
Model Type:  Projected
GT Raster Type = Pixel Is Area
Model Tie Point (NW corner) adjusted to midpoint of pixel.
     X Tie Point:      1466460.00 (meters)
     Y Tie Point:      2295510.00 (meters)

Horizontal Datum: WGS84

**************************

TIFF File Opened: ..\NLCD2016_CAN_N39W075.tif

Data Type: CNPY  2016

Attempting to read TIFF file header: ..\NLCD2016_CAN_N39W075.tif

Byte order: Little Endian
IFD Offset (bytes):              8

Attempting to read TIFF tags: ..\NLCD2016_CAN_N39W075.tif

Data Columns:   10875
Data Rows:      12309

WARNING: TIFF tag   274 (Orientation) was not found - default value used: CNPY
         Orientation = 1; row-major with (0,0) = NW corner

Spatial Res. X:    30.00000000 (meters)
Spatial Res. Y:    30.00000000 (meters)
TIFF Data Organization: Strips
Model Type:  Projected
GT Raster Type = Pixel Is Area
Model Tie Point (NW corner) adjusted to midpoint of pixel.
     X Tie Point:      1466460.00 (meters)
     Y Tie Point:      2295510.00 (meters)

Horizontal Datum: NAD83

**************************

Getting grid information for NLCD: ..\NLCD2016_LC_N39W075.tif
Based on the following input coordinates, converted if needed to LATLON/NAD83:
   Latitude:     39.223840
   Longitude:   -76.582961
```

```
 The study center is located at
    Albers projection X-coordinate:   1649361.
    Albers projection Y-coordinate:   1969084.
    Row in data file:      10882
    Column in data file:    6098

 Rotation of Albers grid to true North (deg):  -11.70659

 **************************

 Getting grid information for MPRV: ..\NLCD2016_IMP_N39W075.tif
 Based on the following input coordinates, converted if needed to LATLON/NAD83:
    Latitude:     39.223840
    Longitude:   -76.582961

 The study center is located at
    Albers projection X-coordinate:   1649361.
    Albers projection Y-coordinate:   1969084.
    Row in data file:      10882
    Column in data file:    6098

 Rotation of Albers grid to true North (deg):  -11.70659

 **************************

 Getting grid information for CNPY: ..\NLCD2016_CAN_N39W075.tif
 Based on the following input coordinates, converted if needed to LATLON/NAD83:
    Latitude:     39.223840
    Longitude:   -76.582961

 The study center is located at
    Albers projection X-coordinate:   1649361.
    Albers projection Y-coordinate:   1969084.
    Row in data file:      10882
    Column in data file:    6098

 Rotation of Albers grid to true North (deg):  -11.70659

**************************

 Land Cover Counts: Surface Roughness (Within 3000m Radius)

                              SECTOR:        1       2       3       4       5
6       7       8       9      10      11      12
Cat              Starting Direction:      0.0    30.0    60.0    90.0   120.0
150.0   180.0   210.0   240.0   270.0   300.0   330.0
-----------------------------------
  0 Missing, Out-of-Bounds, or Unde:        0       0       0       0       0
0       0       0       0       0       0       0
```

```
 11                     Open Water:      569    1099    1913    2145     600
1126      73       0       0       3     103     330
 12              Perennial Ice/Snow:        0       0       0       0       0
0       0       0       0       0       0       0
 21           Developed, Open Space:       54      18      21      53     351
185     735     996     767     415     123     154
 22        Developed, Low Intensity:      125      68      86      63     510
277     407     338     911    1169     450     308
 23     Developed, Medium Intensity:      545     302     211     110     515
498     574     236     512     747    1239     829
 24       Developed, High Intensity:     1292    1134     385     113     587
472     726     158     274     124     687     969
 31    Barren Land (Rock/Sand/Clay):       16       0       2       0       0
2       1       1       2      28       0      13
 32            Unconsolidated Shore:        0       0       0       0       0
0       0       0       0       0       0       0
 41                Deciduous Forest:        0       0       0      64      39
37      42     649     132      74       2       0
 42                Evergreen Forest:        0       0       0       0       0
0       0       0       0       0       0       0
 43                    Mixed Forest:        0       0       0      13       2
6       2      70      15      10       0      11
 51                     Dwarf Scrub:        0       0       0       0       0
0       0       0       0       0       0       0
 52                     Shrub/Scrub:        0       0       0       0       1
1       6       6       0       0       0       1
 71           Grasslands/Herbaceous:        0       0       0       0       0
1       0       0       0      20       9       3
 72                Sedge/Herbaceous:        0       0       0       0       0
0       0       0       0       0       0       0
 73                         Lichens:        0       0       0       0       0
0       0       0       0       0       0       0
 74                            Moss:        0       0       0       0       0
0       0       0       0       0       0       0
 81                     Pasture/Hay:        0       0       0       0       0
0       0       1       6      29       0       0
 82                Cultivated Crops:        3       0       0       1       0
1       0       3       0       1       1       0
 90                  Woody Wetlands:        7       0       0      47       7
0      24     159       0       0       5       0
 91     Palustrine Forested Wetland:        0       0       0       0       0
0       0       0       0       0       0       0
 92  Palustrine Scrub/Shrub Wetland:        0       0       0       0       0
0       0       0       0       0       0       0
 93      Estuarine Forested Wetland:        0       0       0       0       0
0       0       0       0       0       0       0
 94   Estuarine Scrub/Shrub Wetland:        0       0       0       0       0
0       0       0       0       0       0       0
 95     Emergent Herbaceous Wetland:        7       0       0       9       4
13      21       4       0       0       0       1
```

```
 96 Palustrine Emergent Wetland (Pe:        0       0       0       0       0
0       0       0       0       0       0       0
 97      Estuarine Emergent Wetland:        0       0       0       0       0
0       0       0       0       0       0       0
 98          Palustrine Aquatic Bed:        0       0       0       0       0
0       0       0       0       0       0       0
 99           Estuarine Aquatic Bed:        0       0       0       0       0
0       0       0       0       0       0       0
-----------------------------------
                              Total:     2618    2621    2618    2618    2616
2619    2611    2621    2619    2620    2619    2619

 Land Cover Counts: Bowen Ratio and Albedo (10km X 10km Domain)

  0 Missing, Out-of-Bounds, or Unde:        0
 11                      Open Water:    33197
 12                Perennial Ice/Snow:        0
 21             Developed, Open Space:    13979
 22          Developed, Low Intensity:    17896
 23       Developed, Medium Intensity:    18350
 24         Developed, High Intensity:    19110
 31      Barren Land (Rock/Sand/Clay):      247
 32              Unconsolidated Shore:        0
 41                  Deciduous Forest:     4973
 42                  Evergreen Forest:       17
 43                      Mixed Forest:     1585
 51                       Dwarf Scrub:        0
 52                       Shrub/Scrub:       67
 71             Grasslands/Herbaceous:      190
 72                  Sedge/Herbaceous:        0
 73                           Lichens:        0
 74                              Moss:        0
 81                       Pasture/Hay:      146
 82                  Cultivated Crops:      500
 90                    Woody Wetlands:     2421
 91       Palustrine Forested Wetland:        0
 92    Palustrine Scrub/Shrub Wetland:        0
 93        Estuarine Forested Wetland:        0
 94     Estuarine Scrub/Shrub Wetland:        0
 95       Emergent Herbaceous Wetland:      891
 96 Palustrine Emergent Wetland (Pe:        0
 97      Estuarine Emergent Wetland:        0
 98          Palustrine Aquatic Bed:        0
 99           Estuarine Aquatic Bed:        0
-----------------------------------
                              Total:   113569

** Non-Airport Sector IDs: All

 Roughness (m) by Month and Sector
```

```
------------------------------------------------------------------------------
----------------------------------
       Start                                                    Month
Sector  Dir       1        2        3        4        5        6        7        8
     9       10       11       12
   1     0.0    0.111    0.111    0.120    0.120    0.120    0.127    0.127    0.127
   0.120    0.120    0.120    0.111
   2    30.0    0.067    0.067    0.070    0.070    0.070    0.072    0.072    0.072
   0.070    0.070    0.070    0.067
   3    60.0    0.008    0.008    0.008    0.008    0.008    0.009    0.009    0.009
   0.008    0.008    0.008    0.008
   4    90.0    0.003    0.003    0.003    0.003    0.003    0.003    0.003    0.003
   0.003    0.003    0.003    0.003
   5   120.0    0.037    0.037    0.041    0.041    0.041    0.044    0.044    0.044
   0.041    0.041    0.041    0.037
   6   150.0    0.025    0.025    0.027    0.027    0.027    0.029    0.029    0.029
   0.027    0.027    0.027    0.025
   7   180.0    0.145    0.145    0.168    0.168    0.168    0.186    0.186    0.186
   0.170    0.170    0.170    0.145
   8   210.0    0.201    0.201    0.259    0.259    0.259    0.306    0.306    0.306
   0.281    0.281    0.281    0.201
   9   240.0    0.111    0.111    0.139    0.139    0.139    0.163    0.163    0.163
   0.144    0.144    0.144    0.111
  10   270.0    0.107    0.107    0.133    0.133    0.133    0.158    0.158    0.158
   0.140    0.140    0.140    0.107
  11   300.0    0.163    0.163    0.188    0.188    0.188    0.207    0.207    0.207
   0.189    0.189    0.189    0.163
  12   330.0    0.147    0.147    0.165    0.165    0.165    0.179    0.179    0.179
   0.165    0.165    0.165    0.147
------------------------------------------------------------------------------
----------------------------------


 Roughness Fetch (m) by Month and Sector
------------------------------------------------------------------------------
----------------------------------
       Start                                                    Month
Sector  Dir       1        2        3        4        5        6        7        8
     9       10       11       12
   1     0.0   3000.0   3000.0   3000.0   3000.0   3000.0   3000.0   3000.0   3000.0
  3000.0   3000.0   3000.0   3000.0
   2    30.0   3000.0   3000.0   3000.0   3000.0   3000.0   3000.0   3000.0   3000.0
  3000.0   3000.0   3000.0   3000.0
   3    60.0   3000.0   3000.0   3000.0   3000.0   3000.0   3000.0   3000.0   3000.0
  3000.0   3000.0   3000.0   3000.0
   4    90.0   3000.0   3000.0   3000.0   3000.0   3000.0   3000.0   3000.0   3000.0
  3000.0   3000.0   3000.0   3000.0
   5   120.0   3000.0   3000.0   3000.0   3000.0   3000.0   3000.0   3000.0   3000.0
  3000.0   3000.0   3000.0   3000.0
   6   150.0   3000.0   3000.0   3000.0   3000.0   3000.0   3000.0   3000.0   3000.0
```

```
  3000.0   3000.0   3000.0   3000.0
   7   180.0   3000.0   3000.0   3000.0   3000.0   3000.0   3000.0   3000.0   3000.0
  3000.0   3000.0   3000.0   3000.0
   8   210.0   3000.0   3000.0   3000.0   3000.0   3000.0   3000.0   3000.0   3000.0
  3000.0   3000.0   3000.0   3000.0
   9   240.0   3000.0   3000.0   3000.0   3000.0   3000.0   3000.0   3000.0   3000.0
  3000.0   3000.0   3000.0   3000.0
  10   270.0   3000.0   3000.0   3000.0   3000.0   3000.0   3000.0   3000.0   3000.0
  3000.0   3000.0   3000.0   3000.0
  11   300.0   3000.0   3000.0   3000.0   3000.0   3000.0   3000.0   3000.0   3000.0
  3000.0   3000.0   3000.0   3000.0
  12   330.0   3000.0   3000.0   3000.0   3000.0   3000.0   3000.0   3000.0   3000.0
  3000.0   3000.0   3000.0   3000.0
-------------------------------------------------------------------------------------
-----------------------------------

 Average Roughness Fetch (m) =   3000.0
```

```
** AERSURFACE Output File, Version 20060                          05/02/22 **
**                                                                14:42:40 **

CO STARTING

   TITLEONE  CSX_CB_(2022 0522).AMF AERSURFACE

   OPTIONS   PRIMARY  ZORAD
   DEBUGOPT  GRID
   CENTERXY  363358.04  4342810.62  18  NAD83

   DATAFILE  NLCD2016  "..\NLCD2016_LC_N39W075.tif"
   DATAFILE  CNPY2016  "..\NLCD2016_CAN_N39W075.tif"
   DATAFILE  MPRV2016  "..\NLCD2016_IMP_N39W075.tif"

   ZORADIUS  3.00
   CLIMATE   AVERAGE  NOSNOW  NONARID

   FREQ_SECT ANNUAL  12  NONAP
   SECTOR    1    0   30
   SECTOR    2   30   60
   SECTOR    3   60   90
   SECTOR    4   90  120
   SECTOR    5  120  150
   SECTOR    6  150  180
   SECTOR    7  180  210
   SECTOR    8  210  240
   SECTOR    9  240  270
   SECTOR   10  270  300
   SECTOR   11  300  330
   SECTOR   12  330    0

   RUNORNOT RUN

CO FINISHED

OU STARTING

   SFCCHAR  "CSX_CB_(2022 0522)_sfc.TXT"

   NLCDGRID landcover_debug.txt
   MPRVGRID impervious_debug.txt
   CNPYGRID canopy_debug.txt

OU FINISHED

*****************************************
*** AERSURFACE SETUP Finished Successfully ***
*****************************************
```

```
**************************************************
*** AERSURFACE Processing Finished Successfully ***
**************************************************
```

```
** Generated by AERSURFACE, Version 20060                          05/02/22 **
**                                                                 14:42:40 **

** Title 1:  CSX_CB_(2022 0522).AMF AERSURFACE
** Primary Site (Zo):
**   Center UTM Easting  (meters):   363358.0
**   Center UTM Northing (meters):  4342810.6
**   UTM Zone:  18  Datum: NAD83
** NLCD Version:  2016
** NLCD DataFile: ..\NLCD2016_LC_N39W075.tif
** MPRV Version:  2016
** MPRV DataFile: ..\NLCD2016_IMP_N39W075.tif
** CNPY Version:  2016
** CNPY DataFile: ..\NLCD2016_CAN_N39W075.tif
** Non-Airport Sector IDs: All
** Zo Method: ZORAD
** Zo Radius (m):   3000.0
** Continuous snow cover: N
** Surface moisture: Average;  Arid: N
** Month/Season assignments: Default
** Late autumn after frost and harvest, or winter with no snow: 1  2 12
** Winter with continuous snow on the ground:
** Transitional spring (partial green coverage, short annuals): 3  4  5
** Midsummer with lush vegetation: 6  7  8
** Autumn with unharvested cropland: 9 10 11


   FREQ_SECT  ANNUAL 12
   SECTOR   1    0.00   30.00
   SECTOR   2   30.00   60.00
   SECTOR   3   60.00   90.00
   SECTOR   4   90.00  120.00
   SECTOR   5  120.00  150.00
   SECTOR   6  150.00  180.00
   SECTOR   7  180.00  210.00
   SECTOR   8  210.00  240.00
   SECTOR   9  240.00  270.00
   SECTOR  10  270.00  300.00
   SECTOR  11  300.00  330.00
   SECTOR  12  330.00  360.00

**                     Sect    Alb      Bo        Zo
   SITE_CHAR    1       1     0.15     0.47     0.120
   SITE_CHAR    1       2     0.15     0.47     0.070
   SITE_CHAR    1       3     0.15     0.47     0.008
   SITE_CHAR    1       4     0.15     0.47     0.003
   SITE_CHAR    1       5     0.15     0.47     0.041
   SITE_CHAR    1       6     0.15     0.47     0.027
   SITE_CHAR    1       7     0.15     0.47     0.167
   SITE_CHAR    1       8     0.15     0.47     0.262
```

```
SITE_CHAR    1       9     0.15     0.47     0.140
SITE_CHAR    1      10     0.15     0.47     0.134
SITE_CHAR    1      11     0.15     0.47     0.187
SITE_CHAR    1      12     0.15     0.47     0.164
```

CSX Transportation, Inc. Comments on Renewal of State Permit to Operate No. 510-2263 for CSX Transportation Curtis Bay Piers

Appendix 16: *Trinity Consultants, Quality Assurance Project plan for Continuous PM_{10}, $PM_{2.5}$, and Meteorological Measurements at CSX Transportation, Inc., Curtis Bay Piers Facility, Revision 0 (Nov. 2023)*

QUALITY ASSURANCE PROJECT PLAN FOR CONTINUOUS PM_{10}, $PM_{2.5}$, AND METEOROLOGICAL MEASUREMENTS AT CSXT TRANSPORTATION, INC. CURTIS BAY PIERS FACILITY

REVISION 0

CSXT Transportation, Inc.

TRINITY CONSULTANTS

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November 2023

Project 234501.0038

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Date:

Maryland Department of Environment
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Date: 02/15/2024

Trinity Consultants
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Date: 02/15/2024

Trinity Consultants
Quality Assurance Director, Linda Conger

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Acronyms/Abbreviations

°F – Degrees Fahrenheit
A2LA - American Association for Lab Accreditation
AC – Alternating current
AQI – Air Quality Index
CAR - Corrective Action Report
Cfa – Humid Subtropical Climate (Köppen-Geiger-Pohl Climate Classification)
CFR – Code of Federal Regulations
CSI – Campbell Scientific Inc.
CV – Coefficient of Variation
DAS – Data Acquisition System
dB – decibel
DSAS – Data Scanning and Alert System
DQO - Data Quality Objective
E-Logbook – Electronic Logbook
EPA - Environmental Protection Agency
FEM – Federal Equivalent Method
GPS – Global Positioning System
LED – Light Emitting Diode
lpm – Liter per Minute (flow measurement)
mb – Millibar (pressure measurement)
MDE – Maryland Department of the Environment
mm/Hg – millimeters of mercury (pressure measurement)
mm/hr – millimeters per hour (rainfall measurement)
mph – Miles per Hour
m/s – Meters per Second
MQO - Measurement Quality Objective
$\mu g/m^3$ – micrograms per cubic meter
µSD – micro secure digital (removable data card)
NAAQS - National Ambient Air Quality Standards
NIST - National Institute of Standards and Technology
PDF – Portable Document Format
PM – Particulate Matter
PM_{10} – Particulate matter 10 microns in size or less
$PM_{2.5}$ - Particulate matter 2.5 microns in size or less
PMT – Photomultiplier tube
PQAO – Primary Quality Assurance Organization
PTFE – Polytetrafluoroethylene
QA - Quality Assurance
QC - Quality Control
QM – Quality Management
QA/QC - Quality Assurance/Quality Control
QAPP - Quality Assurance Project Plan
RH – Relative Humidity
SOP - Standard Operating Procedure
SPM – Special Purpose Monitor
U.S. EPA - United States Environmental Protection Agency

Revision History

Revision Number	Date	Responsible Party	Description of Change
0	11/06/2023	CSXT, Trinity	Initial QAPP
1			
2			
3			

A.3 Distribution List

The individuals listed in Table A-1 have been provided with an electronic copy of this Quality Assurance Project Plan (QAPP). The QAPP will be electronically stored on a CSXT Transportation, Inc. (CSXT) server and will be accessible at the CSXT Curtis Bay Piers Facility.

Table A-1 Distribution List for QAPP

Personnel	Organization	Email Address	Telephone Number
Rebecca Hensley Senior Manager Environmental Programs	CSXT	Rebecca_Hensley@cssx.com	904-359-4833
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Linda Conger Trinity QA Director	Trinity Consultants	lconger@trinityconsultants.com	(801) 272-3000 Ext. 305

A.4 Project/Task Organization

CSX Transportation, Inc. (CSXT) and Trinity Consultants (Trinity), as a contractor for CSXT, have important roles in developing and implementing this monitoring program to establish continuous and accurate PM_{10}, $PM_{2.5}$, and meteorological measurements at and around the CSXT Curtis Bay Piers Facility. CSXT is committed to quality and the implementation of the procedures and practices found in this Quality Assurance Project Plan (QAPP). CSXT is the Primary Quality Assurance Organization (PQAO) for the ambient air monitoring being conducted around the Curtis Bay Piers Facility.

Quality Assurance (QA) is an integrated system of management activities involving planning, implementation, assessment, reporting, and quality improvement to assure that a process, item, or service is of the type and quality needed, and expected. Quality Control (QC) is the overall system of technical activities that measures the attributes and performance of a process, item, or service against defined standards to verify that they meet the stated requirements established by the customer. The QC system includes the operational techniques and activities that are used to fulfill requirements for quality.

Quality assurance and quality control are largely implemented through the QA Program Plan. Each monitoring program has unique requirements, statutory guidelines, rules, and policies that must be followed. The QAPP incorporates unique qualities that are specific to each monitoring program.

As PQAO, CSXT is ultimately responsible for the implementation of a quality assurance program that provides enough information to assess the quality of the monitoring data. CSXT will be responsible for the quality of this project and will provide oversight of the QAPP including audits of the system.

The following sub-sections describe the project participants and the roles and responsibilities of each participant.

A.4.1 CSXT Senior Manager for Environmental Programs

The CSXT Senior Manager for Environmental Programs is responsible for compliance with applicable regulations and air permit requirements at the Curtis Bay Piers Facility. The CSXT Senior Manager for Environmental Programs is responsible for implementing a quality program that provides information to assess the quality of the monitoring data. The CSXT Senior Manager for Environmental Programs will review the QAPP, maintain the approved QAPP, and will oversee the monitoring program. In addition, the CSXT QA Senior Manager for Environmental Programs will review the QAPP annually.

A.4.2 MDE Lead Regulator and Compliance Engineer

The MDE Lead Regulator and Compliance Engineer will act as the MDE Project Manager coordinating the review and approval of the QAPP, responsible for assuring that this QAPP is established and effectively implemented.

A.4.3 MDE Manager Air Monitoring Program

The MDE Manager of the air monitoring program will review ambient data, QA/QC results, and ambient data reports. The MDE manager also identifies potential quality problems related to the monitoring and will review the corrective actions taken that result in the close-out of the issue.

A.4.4 Trinity Project Manager

CSXT's chosen monitoring contractor, Trinity, is responsible for routine site operations. The Trinity Project Manager has overall responsibility for work performed by Trinity for the project, including client liaison, planning document preparation, technical quality of work performed, data acquisition, report preparation, and schedule management. The Trinity Project Manager will be responsible for determining that the Trinity staff assigned to the project understand and comply with the QC procedures that apply to their activities. The Trinity Project Manager will be responsible for overseeing the day-to-day operation, routine and preventive maintenance, data collection, and data validation activities. The Project Manager will communicate with the CSXT Senior Manager for Environmental Programs for feedback and ensure that project deliverables and activities meet project requirements. The Project Manager will respond to corrective action requests and ensure that deficiencies are promptly corrected. The Trinity Project Manager will also coordinate with the Trinity QA Director on implementing the QAPP designed for this monitoring program.

The Trinity Project Manager is the primary link between Trinity and the CSXT Senior Manager for Environmental Programs and is responsible for furnishing a service that meets the functional, technical, and schedule requirements of the project. As part of this service, the Trinity Project Manager will be responsible for training of field and data staff. Documentation of the training will be maintained in the individual's personnel file that is kept by Trinity. The training includes hands-on equipment operation teaching, both in the field and laboratory, and periodic reassessment of instrumentation staff skills. If additional training is needed, the Trinity Project Manager will be responsible for ensuring that monitoring personnel obtain appropriate training, whether it be through Trinity or from an outside vendor.

The Trinity Project Manager will be assisted by Trinity instrumentation specialists who will perform routine maintenance, monthly PM_{10} and $PM_{2.5}$ flow/leak checks, quarterly PM_{10} and $PM_{2.5}$ monitor calibrations, and semi-annual meteorological sensor calibrations. The instrumentation specialists assigned to this monitoring project will have the requisite background and training needed to perform their assigned tasks.

A.4.5 Trinity Quality Assurance Director

Trinity's QA Director manages the contractor's QA Program and is responsible for the technical quality of the monitoring and associated work products, and the development and maintenance of a sufficient level of technical resources to support the company's objectives. The Trinity QA Director is independent of the unit responsible for data generation. The QA Director has the authority to halt the transmittal of any work product that is in their opinion not consistent with quality standards.

The Trinity QA Director's primary duties include:

- Providing a central point of responsibility for assessing company-wide technical strengths, needs, and direction to maintain a consistent quality of work that meets or exceeds the current standard of practice.
- Developing the project-specific QA policy.
- Coordinate training.
- Providing guidance to the QC reviewers in carrying out QC-related functions.
- Informing project personnel of QA policies, procedures, and other guidance documents.
- Preparing the QA Project Plan.
- Monitoring general compliance with QA policy.
- Advising Project Managers of deficiencies on peer reviews and identify corrective action needs.
- Maintaining QA files.

The Trinity QA Director will prepare the draft QAPP and Standard Operating Procedures (SOPs) for review by the CSXT Senior Manager for Environmental Programs Manager for subsequent submittal by the CSXT Senior Manager for Environmental Programs to MDE for approval. Upon approval, the QAPP will be distributed to the appropriate personnel. The CSXT Senior Manager for Environmental Programs will maintain the officially-approved QAPP. At least once per year, or when considerable changes are made to the monitoring equipment or methodologies utilized, the QAPP and SOPs will be reviewed by the CSXT Senior Manager for Environmental Programs and, with assistance from the Trinity QA Director, will revise the QAPP for ultimate review and approval by MDE to assure compliance with the project goals. The appropriate personnel in the organizations performing or reviewing work covered by the scope of the QA project plan will be notified through email, meeting, or via telephone of changes to the Trinity quality program so they are informed of current requirements.

A.4.6 Trinity Monitoring Instrumentation Specialists

Trinity Monitoring Instrumentation Specialists will perform routine maintenance, monthly PM_{10} and $PM_{2.5}$ flow/leak checks, quarterly PM_{10} and $PM_{2.5}$ calibrations, and semi-annual meteorological equipment calibrations. Trinity Monitoring Instrumentation Specialists report to the Trinity Project Manager.

A.4.7 Trinity Data Management

A Trinity Data Manager will be responsible for ensuring timely data collection and data review, posting data, performing data verification activities including flagging data, data management, data validation, and preparation of data summaries for reports. Final data validation is the responsibility of the Trinity Data Manager with concurrence by the Trinity Project Manager and the QA Director.

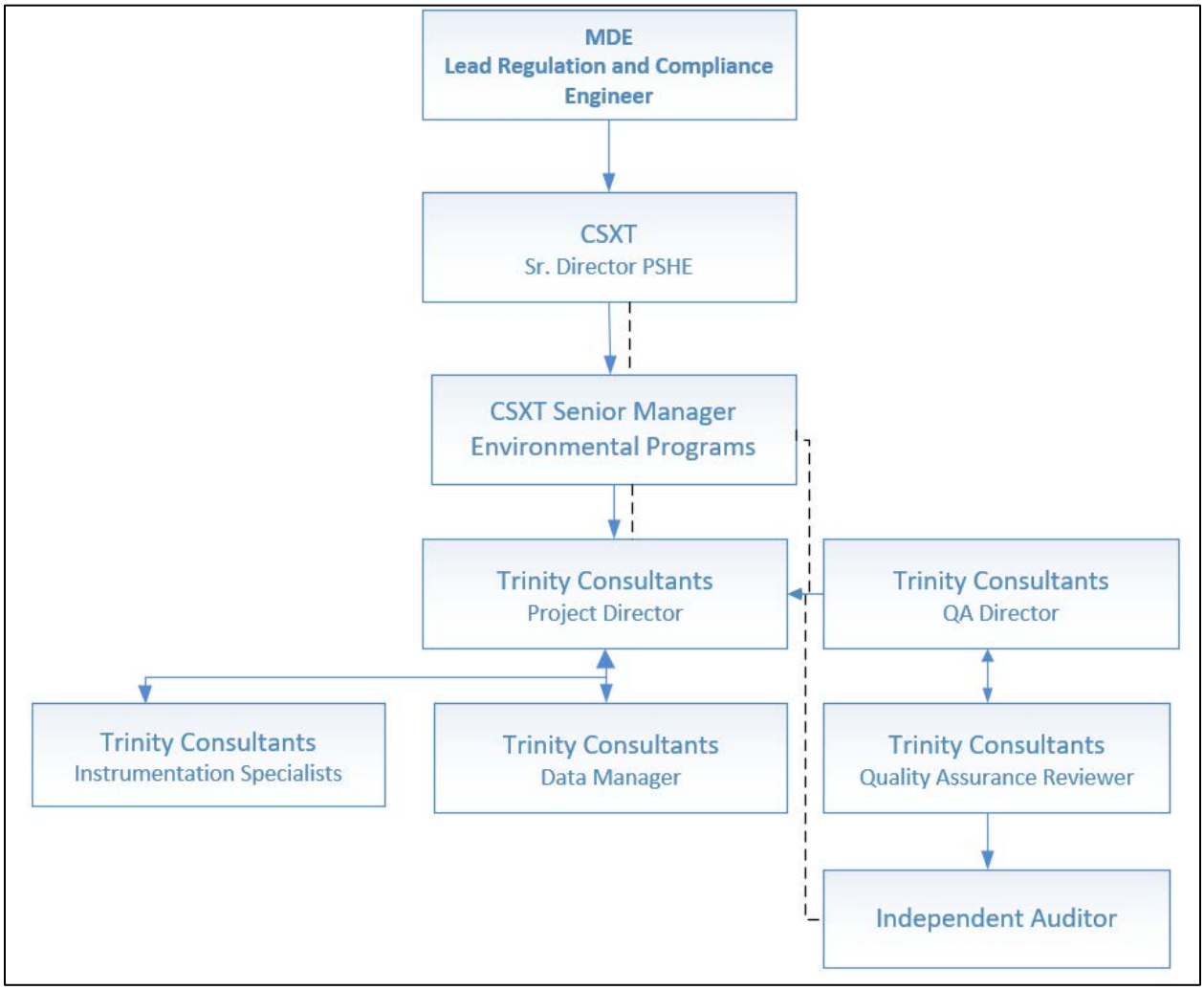
A.4.8 Quality Assurance Audits

The Independent Auditor, who is independent of data generation, will conduct the quality assurance performance audits of the continuous PM_{10} and $PM_{2.5}$ monitors and meteorological sensors. The CSXT Senior Manager for Environmental Programs may be present during each performance audit. The Independent Auditor will report initial audit findings and provide a formal audit report to the CSXT Senior Manager for Environmental Programs as well as the Trinity Project Manager and QA Director. The CSXT Senior Manager for Environmental Programs will present the findings to the MDE. The auditor will have the requisite background and training needed to perform the independent quality assurance audits.

Since CSXT is responsible for the quality program review, the quality assurance project plan will be reviewed annually by the CSXT Senior Manager for Environmental Programs. The CSXT Senior Manager for Environmental Programs will prepare the annual QA report that will be submitted to MDE. The annual QA report will include a summary of QA activities over the past year and a documented review of the QAPP. If the annual QAPP review yields changes that are not substantive, they will be noted in the report. Figure A.1 presents the organizational chart that shows the lines of responsibility and information flow for activities under this project.

Title: Continuous PM_{10}, $PM_{2.5}$, and Meteorological Monitoring QAPP – CSXT Curtis Bay Piers Facility
Revision Number: 0
Revision Date: November 6, 2023
Effective Period: After the Date of Maryland Department of Environment Approval

Figure A-1 Organizational Chart



Title: Continuous PM_{10}, $PM_{2.5}$, and Meteorological Monitoring QAPP – CSXT Curtis Bay Piers Facility
Revision Number: 0
Revision Date: November 6, 2023
Effective Period: After the Date of Maryland Department of Environment Approval

A.5 Problem Definition/Background

CSXT, Curtis Bay Piers operates a coal, ore, limestone, and other dry material storage, transfer, and shipment terminal located at 1910 Benhill Avenue, Baltimore, Maryland (Curtis Bay Piers Facility) pursuant to State Permit to Operate No. 510-2263. Potential fugitive air emissions sources at Curtis Bay Piers result from the following:

- Railcar unloading,
- Material transfer via covered conveyors,
- Coal stacking tubes,
- Material storage piles,
- Ship/barge loading,
- Vehicle parking, and
- Paved and unpaved roadways.

CSXT utilizes various operational controls and water sprays to prevent and control fugitive dust emissions. Water used for dust suppression is supplied from an onsite stormwater reclaim and collection system, with backup water supply from city sources.

To meet the requirements of the Permit to Construct 510-2263 issued on September 7, 2022, CSXT was required to submit a fenceline monitoring plan to the MDE describing the installation, operation, and maintenance of a network of PM_{10} and $PM_{2.5}$ monitors and a weather station. Per the Permit to Construct, CSXT is required to install one federal equivalent method (FEM) monitor to measure both PM_{10} and $PM_{2.5}$, install multiple sensors capable of measuring PM_{10} and $PM_{2.5}$, and operate a 10-meter meteorological tower that meets current U.S. EPA protocols and guidance. Meteorological measurements consist of wind speed and wind direction at 10-meters, temperature at two-meters, relative humidity at two-meters, barometric pressure at five feet, and precipitation at four feet.

This quality assurance project plan is prepared on behalf of CSXT. This QAPP details the methodologies proposed to establish continuous and accurate PM_{10}, $PM_{2.5}$, and meteorological measurements at the Curtis Bay Piers Facility. The objective of the particulate and meteorological monitoring is to obtain representative particulate and meteorological information for the Curtis Bay Piers Facility that may be used for informational purposes, including community awareness and comparison with regional air quality.

Revisions to the QAPP are made, as necessary, to reflect changes to the regulations or goals of the monitoring project. As a minimum, the QAPP is reviewed annually, and revisions are made as necessary.

The information collected for this monitoring program are intended to meet the requirements as found in the following documents:

- EPA's Quality Assurance Handbook for Air Pollution Measurement Systems, Volume II: Ambient Air Quality Monitoring Program, EPA-454/B-08-003, January 2017,
- U.S. EPA's Quality Assurance Handbook for Air Pollution Measurement Systems: Volume IV, Meteorological Measurements, March 2008,
- U.S. EPA's Meteorological Monitoring Guidance for Regulatory Modeling Applications, EPA-454/R-99-005, February 2000,
- Guidance for Quality Assurance Project Plans, EPA QA/R-5, EPA/240/R/009, December 2002,
- EPA Requirements for Quality Assurance Project Plans, EPA QA/R-5, EPA/240/B-01/003, March 2001,
- *Environmental Information Quality Policy*, Current Version of EPA CIO 2105.1, and
- 40 CFR Part 50, Appendices J and L.

The guidance to be followed for this monitoring program is intended to assure that data and technical information that are measured are documented and are of appropriate quality and usability.

A.5.1 Area Climate and Topography

The area's climate and topography are discussed below.

A.5.1.1 Climate

According to the modified Köppen Classification[1], Baltimore, Maryland is classified as humid subtropical climate (Cfa) with mild to warm summers and cool winters. The average daily high temperature in the summer is 86 degrees Fahrenheit (°F) while the average daily low temperature in the winter is 34°F. Rainfall is moderate throughout the year with an average of approximately 42 inches annually. Snowfall in Baltimore can reach 21 inches of snow per year. On average, there are 213 sunny days per year in Baltimore. The warmest month is typically July; the coldest month is typically January.

Table A-3 presents the monthly climatic summary, based on meteorological data from January 1, 1871, through May 31, 1999, for the Baltimore Customs House, Maryland.

[1] Köppen-Geiger-Pohl Climate Classification, https://koeppen-geiger.vu-wien.ac.at

Table A-2 Monthly Climatic Summary for Baltimore, Maryland

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann.
Avg. Max. Temp. (°F)	42.5	44.1	53.5	64.5	74.8	83.2	87.4	85.3	78.9	67.9	56.1	45.4	65.3
Avg. Min. Temp. (°F)	28.7	29.4	37.0	46.5	56.8	65.8	70.7	68.9	62.3	50.9	40.9	32.0	49.2
Avg. Total Prec. (in)	3.23	3.05	3.68	3.44	3.71	3.50	4.07	4.42	3.55	2.99	2.98	3.34	41.97
Avg. Total Snow (in)	6.3	6.4	4.1	0	0	0	0	0	0	0	0.5	4.0	21.3

Source of Data: Baltimore Customs House, Maryland Western Region Climatic Center
https://wrcc.dri.edu/cgi-bin/cliMAIN.pl?md0470 assessed on August 9, 2023.

A.5.1.2 Topography

The air quality monitoring stations are located in an industrial area, at approximately sea level, next to Curtis Bay which is part of Patapsco River.

A.6 Project/Task Description

Continuous PM_{10}, $PM_{2.5}$, and meteorological measurements are collected at the CSXT monitoring stations. A combination and co-location of federal equivalent PM_{10}/$PM_{2.5}$ monitors and multiple low-cost sensors at eight (8) locations around the Curtis Bay Piers Facility will allow for data correlation, data analysis, objective quality assurance and control, and site evaluation. Monitor locations were determined using EPA guidance and facility dispersion modeling results. Monitoring locations were reviewed and approved by MDE.

Two FEM samplers installed at the two monitoring sites are Teledyne-API Model T640X PM_{10}/$PM_{2.5}$ samplers. Ten low-cost sensors installed at each of the fenceline monitoring sites are QuantAQ MODULAIR™ PM Monitors. There are only eight fenceline monitoring locations within the network, the additional low-cost sensors are collocated with the FEM samplers. The PM_{10}, $PM_{2.5}$ samplers, and meteorological sensors bracket the range of expected PM_{10}/$PM_{2.5}$ concentrations and meteorological conditions at the monitoring sites.

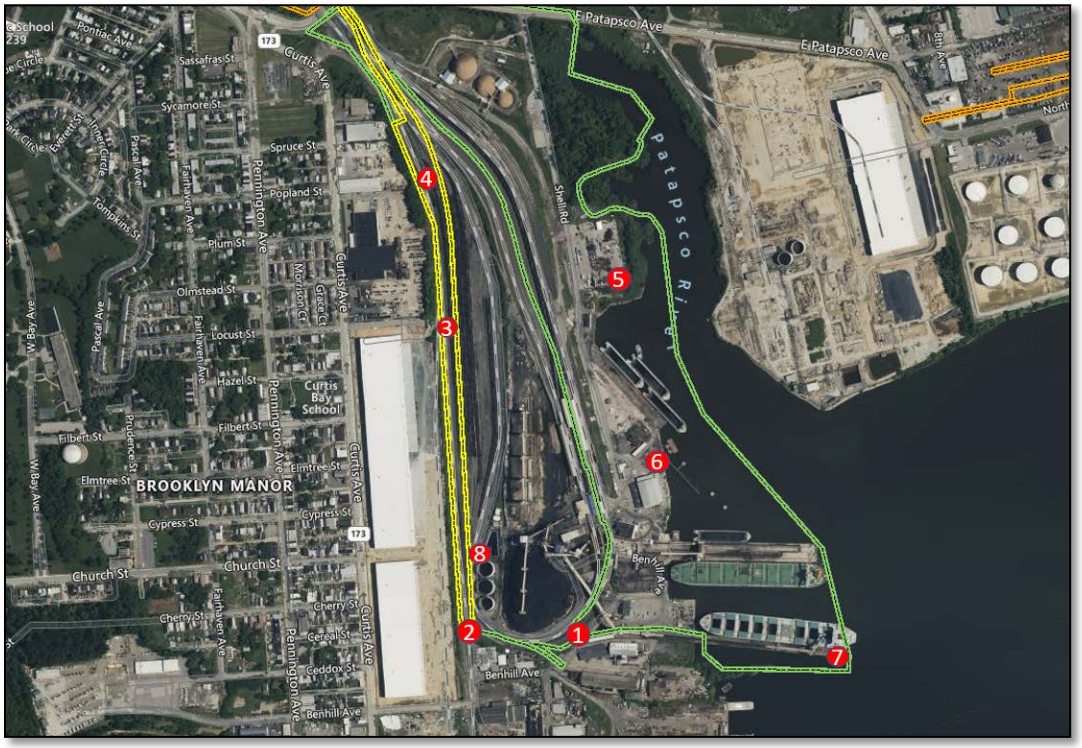
Title: Continuous PM_{10}, $PM_{2.5}$, and Meteorological Monitoring QAPP – CSXT Curtis Bay Piers Facility
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Trinity assures us that adequate resources are available for the operation of the network and that operational activities are completed within time constraints. The CSXT Senior Manager for Environmental Programs is the person responsible for the allocation of resources on behalf of CSXT to assure compliance with the QAPP. The various time constraints for individual QA/QC activities and reporting are discussed in later sections of the QAPP.

A.6.1 CSXT Particulate and Meteorological Monitoring Stations

Continuous Teledyne-API T640X $PM_{10}/PM_{2.5}$ samplers are utilized at two locations and these samplers will be housed in climate-controlled enclosures. The QuantAQ MODULAIR™ PM Monitors are attached to steel poles at a height of approximately three meters. Meteorological measurements from the 10-meter tower consist of wind speed and wind direction at 10-meters, temperature at two-meters, relative humidity at two-meters, barometric pressure at five-feet, and precipitation at four-feet. The meteorological data will be used, as necessary, to understand the transport of PM_{10} and $PM_{2.5}$ to the monitoring sites and assist in data validation. Figure A.2 presents the approximate locations of the monitoring stations. Table A-3 presents the latitude and longitude coordinates for the Curtis Bay Piers Facility monitoring stations. A summary of the particulate and meteorological instrumentation to be installed at the monitoring stations is presented in A-4.

Figure A-2 CSXT Curtis Bay Piers Facility Monitoring Locations



Title: Continuous PM_{10}, $PM_{2.5}$, and Meteorological Monitoring QAPP – CSXT Curtis Bay Piers Facility
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Table A-3 Latitude/Longitude Coordinates for the CSXT Curtis Bay Piers Facility Monitoring Stations

Site ID	Latitude (Decimal degrees)	Longitude (Decimal degrees)
AQ1	39.22169	-76.58194
AQ2	39.22169	-76.58455
AQ3	39.22710	-76.58483
AQ4	39.22968	-76.58538
AQ5	39.22773	-76.58096
AQ6	39.22485	-76.58015
AQ7	39.22147	-76.57630
AQ8	39.22320	-76.58400

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Table A-4 Particulate and Meteorological Instrumentation at CSXT Monitoring Stations

Site ID	Parameter	Equipment Manufacturer	Model Number	Serial Number
AQ1	PM_{10}, $PM_{2.5}$	QuantAQ MODULAIR	MODULAIR-PM	Rotating[a]
	Wind speed/Wind direction	Davis Instruments	6415	n/a
AQ2	PM_{10}, $PM_{2.5}$	QuantAQ MODULAIR	MODULAIR-PM	Rotating[a]
	Wind speed/Wind direction	Davis Instruments	6415	n/a
AQ3	PM_{10}, $PM_{2.5}$	QuantAQ MODULAIR	MODULAIR-PM	Rotating[a]
	Wind speed/Wind direction	Davis instruments	6415	n/a
AQ4	PM_{10}, $PM_{2.5}$	QuantAQ MODULAIR	MODULAIR-PM	Rotating[a]
	Wind speed/Wind direction	Davis Instruments	6415	n/a
AQ5	PM_{10}, $PM_{2.5}$	QuantAQ MODULAIR	MODULAIR-PM	Rotating[a]
	Wind speed/Wind direction	Davis Instruments	6415	n/a
	PM_{10}, $PM_{2.5}$	QuantAQ MODULAIR	MODULAIR-PM	Rotating[a]
	Wind speed/Wind direction	Davis Instruments	6415	n/a
	PM_{10}, $PM_{2.5}$	QuantAQ MODULAIR	MODULAIR-PM	Rotating[a]
	Wind speed/Wind direction	Davis Instruments	6415	n/a
	PM_{10}, $PM_{2.5}$	Teledyne-API	T640X	1690
	Wind Direction	Met One	020D	C21028
	Wind Speed	Met One	010C	C21557
	Temperature	Campbell Scientific Inc.	HygroVUE10	E4240
	Relative Humidity	Campbell Scientific Inc.	HygroVUE10	E4240
	Barometric Pressure	Campbell Scientific Inc.	BaroVUE10	1808
	Precipitation	Texas Electronics	TR-525U	93490-1222
	Data Acquisition System	Campbell Scientific Inc.	CR1000X	45777
AQ6	PM_{10}, $PM_{2.5}$	QuantAQ MODULAIR	MODULAIR-PM	Rotating[a]
	Wind speed/Wind direction	Davis Instruments	6415	n/a
AQ7	PM_{10}, $PM_{2.5}$	QuantAQ MODULAIR	MODULAIR-PM	Rotating[a]
	Wind speed/Wind direction	Davis Instruments	6415	n/a
AQ8	PM_{10}, $PM_{2.5}$	QuantAQ MODULAIR	MODULAIR-PM	Rotating[a]
	Wind speed/Wind direction	Davis Instruments	6415	n/a
	PM_{10}, $PM_{2.5}$	Teledyne-API	T640X	1689
	Data Acquisition System	Campbell Scientific Inc.	CR310	n/a

a. QuantAQ MODULAIR PM sensors will be routinely rotated throughout the network to conform with periodic calibration testing procedures.

A locked waterproof and dust-proof enclosure is mounted at the base of the meteorological tower. This enclosure houses the data acquisition system (DAS), battery backup equipment, interface board, barometric pressure sensor, and phone modem. The precipitation gauge is also installed near the base of the tower.

Figure A-3 presents a photograph taken from the AQ5 air quality shelter looking in each cardinal direction. Figure A-4 shows site photographs of the AQ5 and AQ8 air quality shelters. Figure A-3 Directional Photographs for AQ5 Monitoring Station



Figure A-4 Photographs of AQ5 and AQ8 Monitoring Stations

AQ5 FEM & Met Monitoring Station	AQ8 FEM Monitoring Station
	

A.6.2 Sampling Frequency

Data from the Teledyne-API Model T640X analyzers and meteorological sensors at AQ5 listed in Table A-4 are collected and stored by Campbell Scientific Inc. (CSI) Model CR1000x (AQ5) and CR310 (AQ8) DASs. These DASs use one-second data values to compute and store one-minute averages and hourly averages of PM_{10}, $PM_{2.5}$, temperature, wind speed, wind direction, barometric pressure, and precipitation. Data from the QuantAQ MODULAIR samplers are sampled every minute and stored on internal data loggers that send data to a cloud server.

A.6.3 Project Schedule

Personnel working on this project will be appropriately qualified, trained, and capable of performing their assigned duties. Work schedules include daily data review, semi-annual meteorological equipment calibrations, quarterly continuous PM_{10} and $PM_{2.5}$ sampler calibrations, monthly PM_{10} and $PM_{2.5}$ flow and leak checks, quarterly data summaries within 45 days of quarter completion, and maintenance and corrective action, as needed. Table A-5 presents the project schedule. PM_{10}, $PM_{2.5}$, and meteorological data collection officially began at CSXT's monitoring sites on March 24, 2023, at 00:00 Eastern Time. Table A-5 presents the project schedule.

Table A-5 Project Schedule

Time	Task
Start of Project	Fenceline Monitoring Plan Development QAPP Development
Monthly	Flow Checks on FEM Equipment Monitoring Location Inspections
Quarterly	**Monitoring Operations** Calibrations on FEM PM_{10} & $PM_{2.5}$ Equipment **Quality Assurance** Performance Audits on FEM PM_{10} & $PM_{2.5}$ Equipment **Reporting** Quarterly Performance Audit and Data Summary Reports
Semi-Annual	**Monitoring Operations** Calibrations on Meteorological Sensors Collocate PM_{10} & $PM_{2.5}$ Sensors. **Quality Assurance** Performance Audit on Meteorological Sensors
Annual	QAPP update review

A.6.4 Project Reports

Table A-6 presents the reports that will be produced as part of this project. Records produced for this project are identifiable, legible, and available upon request.

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Table A-6 Project Reports

Reports	Frequency	Content	Responsible Position	Distribution
Performance Audit Reports	Quarterly (particulate) Semi-annual (meteorological)	Accuracy assessment summary	CSXT Senior Manager for Environmental Programs, Trinity QA Director Independent Auditor	MDE
Quarterly Data Summaries (Includes accuracy and precision)	May 15, August 15, November 15, February 15	Summarize data following EPA guidelines. Electronic Portable Document Format (PDF) within 45 days of quarter end. CSXT Senior Manager for Environmental Programs to review and approve electronic reports	Trinity Data Manager, Trinity Project Manager, CSXT Senior Manager for Environmental Programs,	MDE
Corrective Action Reports	As Needed	Summarizes corrective actions taken to return the monitoring station to compliant status	Trinity Project Manager, Monitoring Instrumentation Specialists, Data Manager	CSXT Senior Manager for Environmental Programs, Trinity QA Director
Response to Corrective Action Reports	As Needed	Reports the results of the corrective actions taken. Corrective action reports are included in the quarterly data reports.	Trinity Project Manager	CSXT Senior Manager for Environmental Programs, Trinity QA Director
QAPP	Annual	Letter to MDE identifying annual review completion	CSXT QA Manager/Program Manager	MDE

A.7 Quality Objectives and Criteria for Measurement of Data

The objective of the PM_{10}, $PM_{2.5}$, and meteorological monitoring project is to obtain continuous and accurate PM and meteorological data around the Curtis Bay Piers Facility. Data will be used for community awareness purposes and comparison with regional air quality.

A.7.1 Data Quality Objectives

The EPA has developed a Data Quality Objective (DQO) seven-step process for use in environmental measurement projects. Table A-7 summarizes this process. The benefits of the DQO process are that it prompts a statement of the problem, identifies the decisions to be made and the inputs needed to make the decisions, and specifies a decision rule.

Table A-7 Data Quality Objectives Process for CSXT Monitoring Project

Step 1	Define the Problem	CSXT will collect PM_{1o}, $PM_{2.5}$, and meteorological fenceline data to understand conditions at the facility fenceline with respect to regional air quality and within the neighboring community.
Step 2	Identify the Goal of the Study	CSX will implement fenceline monitoring in accordance with the Maryland Department of the Environment (MDE) Permit to Construct for Premises Number 510-2263 issued September 7, 2022.
Step 3	Identify Information Inputs	Particulate and meteorological measurements will be made at MDE approved monitoring sites
Step 4	Define the Study Boundaries	Sampling frequencies are discussed in Section A.6.3; sampling locations are presented in Section A.6.1.
Step 5	Develop the Analytical Approach	The measured ambient concentrations and meteorological data will be used to aid in understanding of local air quality in comparison to U.S. EPA Air Quality Index (AQI) for 24-hour PM_{10} and $PM_{2.5}$.
Step 6	Specify the Limits of the Decision	The site operator will demonstrate that the instrument system is capable of measuring air quality parameters with an accuracy that is consistent with the DQOs of the true value on a regular basis. Results of the flow checks are documented and presented in the quarterly reports.
Step 7	Develop the Plan for Obtaining Data	If the system does not conform to the required QA/QC protocols identified in this document, the site

	operator will initiate corrective action to bring it into conformance.

A.7.2 Measurement Quality Objectives

Presented in this section are the Measurement Quality Objectives (MQOs) for the PM_{10}, $PM_{2.5}$, and meteorological measurements. MQOs are designed to evaluate and control various phases (sampling, preparation, and analysis) of the measurement process to assure that total measurement uncertainty is within the range prescribed by the data quality objectives. MQOs can be defined in terms of the following data quality indicators:

- Precision
- Bias
- Accuracy
- Representativeness
- Detectability
- Completeness
- Comparability

Monitoring results are assessed against these objectives to demonstrate the quality of the measurement data.

Precision is a measure of agreement among repeated measurements of the same property under identical, or substantially similar, conditions. This item is the random component of error. Precision is estimated by various statistical techniques typically using some parameter based on the standard deviation of the mean.

Bias is the systematic or persistent distortion of a measurement process which causes error in one direction. Bias will be determined by estimating the positive and negative deviation from the true value as a percentage of the true value. Bias is determined at the end of the quarter based on the results of the monthly flow rate verifications for the PM_{10} monitor.

Accuracy is a measure of the overall agreement of a measurement to a known value and includes a combination of random error (precision) and systematic error (bias) components of both sampling and analytical operations.

Representativeness refers to the degree to which data accurately and precisely represent a characteristic of a population, a parameter variation at a sampling point, a process condition, or a condition.

Detectability is the lowest concentration or amount of the target analyte that can be determined to be different from zero by a single measurement at a stated level of probability.

Completeness describes the amount of valid data obtained from a measurement system compared to the amount that was expected to be obtained under correct, normal conditions.

Comparability is a measure of the confidence with which one data set or method can be compared to another, considering the units of measurement and applicability to standard statistical techniques. Comparability of datasets is critical to evaluating their measurement uncertainty and usefulness.

The data recovery goal for the PM_{10} and $PM_{2.5}$ monitoring is 75% per quarter. For meteorological monitoring, the data recovery goal is 90% per calendar quarter. Higher data recovery rates are anticipated. The calculation of percent valid is based on the number of valid measurements as compared to the number of possible measurements.

The quality control data assessment statistics are calculated during the final data validation step. Concentration data are not corrected based on the results of the data assessment statistics.

Key criteria such as precision, accuracy, and completeness enable the project team to measure progress and success in attaining the quality goals for the monitoring effort. Representativeness and comparability are also used to evaluate quality. Representativeness is assured through site selection including sample probe and meteorological tower siting evaluations. Comparability is accomplished using standard measurement methods approved by the U.S. EPA and by reporting measurement data in common units to facilitate comparison with other data sets generated by regulatory and private concerns.

For the monitoring project, MQOs for PM_{10} and $PM_{2.5}$ are presented in Table A-8; the performance metric for the QuantAQ MODULAIR samplers is presented in Table A-9. The meteorological MQOs are presented in Table A-10. The accuracy criteria for PM and meteorological measurements are presented in Tables A-11 and A-12, respectively.

PM_{10}, $PM_{2.5}$, and meteorological measurements recorded will be subject to and consistent with the quality assurance requirements as found in 40 CFR Part 58, Appendix A, and the U.S. EPA's *Quality Assurance Handbook for Air Pollution Measurement Systems, Volume II and Volume IV*, respectively. Measurements that do not meet the MQOs in Tables A-8 through A-10 may be invalidated unless justification can be identified for not doing so. In addition, data may be invalidated if a particulate sampler or sensor fails a performance audit and further investigation confirms the audit results. Data may be invalidated back to the last acceptable check or calibration of the equipment.

Calibrations of the PM_{10} and $PM_{2.5}$ samplers are performed quarterly or more frequently if equipment issues are identified. Calibration and monthly flow rate documentation are included in the quarterly data reports. Trinity will also notify the CSXT Senior Manager for Environmental Programs within three days of a failed flow check, and will provide to CSXT an explanation of the issue and the corrective action being performed to remedy the issue.

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Calibrations of the meteorological sensors are performed at installation, semi-annually, and when issues are noted. Calibration documentation is included in the quarterly data reports. The required accuracy, resolution, data completeness, and acceptance criteria are based on EPA's Special Purpose Monitoring (SPM) guidance as found in EPA's QA *Handbook for meteorological measurements, Volume IV.*

FEM sampler PM_{10} and $PM_{2.5}$ measurements recorded will be subject to and consistent with the quality assurance requirements as found in 40 CFR Part 58, Appendix A, EPA's *Quality Assurance Handbook Volume II*, and 40 CFR Part 50 Appendices J and L. The quality assurance requirements listed in Volume II include monthly flow checks on the PM_{10} sampler to verify that flows are within <±7.1% of the National Institute of Standards and Technology (NIST) traceable reference standard. For monthly flow checks of $PM_{2.5}$, flows are within <±4.1% of the transfer standard and<±5.1% of the flow rate design value. The temperature and pressure sensors for each FEM PM sampler will be verified to be within <±2.1°C and <±10.1 mm Hg.

The FEM samplers will be used for correlation and calibration of the QuantAQ MODULAIR units to verify $PM_{2.5}$ and PM_{10} data. During the project start-up phase, the FEM will be established and co-located with the QuantAQ MODULAIR units at a single location for a minimum of one week. Data reported for the FEM and the QuantAQ MODULAIR monitors will be compared using the FEM as the baseline. Any co-located QuantAQ MODULAIR unit with a deviation of more than 20 percent from the FEM in a comparison of 24-hour averages will be inspected and repaired, and possibly returned to the manufacturer for replacement. This 20 percent value is based on QuantAQ MODULAIR manufacturer input.

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Table A-8 Continuous FEM PM_{10} and $PM_{2.5}$ Measurement Objectives

Parameter (Manufacturer / Model)	Requirement	Frequency	Acceptance Criteria	Reference	Data Completeness
Continuous PM_{10} and $PM_{2.5}$ Teledyne-API Model T640X	Average PM_{10} flow rate	Every 24 hours of operation	Average within <±5.1% of design	Recommendation	75%
	Temperature	Monthly	<±2.1 °C	40 CFR Part 50, App. L Sec. 9.3	
	Pressure	Monthly	<±10.1 mm Hg	40 CFR Part 58 App. A, Section 3.1	
	Calibration (PM_{10})	Quarterly	3 of 4 calibration points within <±10.1% of design	40 CFR Part 50, App. J, Section 8.0	
	One-point PM_{10} Flow rate verification	Every 30 days	<±7.1% of transfer standard	40 CFR Part 58, App. A, Section 3.3	
	Average $PM_{2.5}$ flow rate	Every 24 hours of operation	Average of 5% of 16.67 LPM	40 CFR Part 50 App. L, Sec. 7.4.3.1	
	$PM_{2.5}$ Calibration	Once per quarter	<±2.1% of transfer standard	40 CFR Part 50 App. L, Sec. 9.2	
	One-point $PM_{2.5}$ Flow rate verification	Every 30 days	<±4.1% of transfer standard <±5.1% of flow rate design value	40 CFR Part 50 App. L, Sec. 9.2.5	
	PM_{10} and $PM_{2.5}$ Variability in Flow Rate	Every 24 hours of operation	Coefficient of Variation (CV) <± 2%	40 CFR Part 50 App. L, Section 9.2.5	

Table A-9 Performance Metrics and Target Values for QuantAQ MODULAIR Samplers

Performance Metric		Target Value
Precision	Standard Deviation	≤5 µg/m3 ≤ 30%
Bias	Slope Intercept	1.0 ±0.35 $-5 \leq b \leq 5$ µg/m^3
Linearity	Coefficient of Determination	≥0.70
Error	Root Mean Square Error (RSME) or Normalized Root Mean Square Error (NRMSE)	RMSE ≤7 µg/m3 or NRMSE ≤30%

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Table A-10 Meteorological Measurement Objectives

Parameter (Manufacturer / Model)	Specified Accuracy	Required Accuracy	Sensor Resolution in System	Required Resolution	Data Completeness
Wind Speed Met One Model 010C	1% or 0.15 mph (0.07 m/s)	±0.25 ≤5 m/s; 5% > 2 m/s not to exceed 2.5 m/s	0.01 m/s	0.1 m/s	90%
Wind Direction Met One Model 020D	±3 degrees	±5 degrees including orientation error	0.01	1.0	90%
Temperature CSI HygroVUE 10	±0.2°C (over the -40°C to 70°C range)	±0.5°C	0.01°C	0.1°C	90%
Relative Humidity CSI HygroVUE 10	±2% (at 25˚C, over the range 80-100% RH) ± 1.5% (at 25˚C, over the range 0-80% RH)	±10% RH	0.1%	0.5%	90%
Barometric Pressure CSI BaroVUE 10	±0.5 mb (at -40°C to +60°C)	±3 mb	0.001 mb	0.05 mb	90%
Precipitation Texas Electronics TR-525	1.0% up to 2 in/hour (50 mm/hr)	±10% of input volume	±0.01 in.	0.01 in.	90%

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Table A-11 Continuous PM_{10} and $PM_{2.5}$ Calibration and Accuracy Criteria

Parameter (Manufacturer / Model)	Requirement	Frequency	Acceptance Criteria
Continuous PM_{10} and $PM_{2.5}$ Teledyne-API Model T640X	Flow rate verification with flow standard	Within 60 days of startup and three-month intervals	<±10.1% of transfer standard (PM_{10}) <±4.1% of audit standard ($PM_{2.5}$) <±5.1% of design flow rate ($PM_{2.5}$)
	Temperature	Monthly	<±2.1 °C
	Pressure	Monthly	<±10.1 mm Hg

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Table A-12 Meteorological Measurement Calibration and Accuracy Criteria

Parameter	Calibration			Accuracy		
	Type	Acceptance Criteria	Frequency	Type	Acceptance Criteria	Frequency
Wind Speed	NIST-traceable synchronous motor	±0.25 ≤5 m/s; 5% > 2 m/s not to exceed 2.5 m/s	6-month intervals	NIST-traceable synchronous motor	±0.25 ≤5 m/s; 5% > 2 m/s not to exceed 2.5 m/s	Within 60 days of startup and 6-month intervals
Wind Direction	Compass System Orientation plus linearity	±5°	6-month intervals	Compass System Orientation plus linearity	±5°	Within 60 days of startup and 6-month intervals
Temperature	3 pt. water bath with NIST-traceable thermometer	±1.0°C	6-month intervals	3 pt. water bath with NIST-traceable thermometer	±1.0°C	Within 60 days of startup and 6-month intervals
Relative Humidity	Collocated NIST- certified RH sensor	±10%RH	6-month intervals	NIST- certified RH sensor	±10% RH	Within 60 days of startup and 6-month intervals
Barometric Pressure	NIST-traceable reference barometer	±3 mb	6-month intervals	NIST-traceable reference barometer	±3 mb	Within 60 days of startup and 6-month intervals
Precipitation	Separatory funnel and graduated cylinder	±10% of input volume	6-month intervals	Separatory funnel and graduated cylinder	±10% of input volume	Within 60 days of startup and 6-month intervals

A.7.3 Representativeness of the Particulate and Meteorological Measurements

Site selection and probe placement will follow guidelines presented in the following U.S. EPA documents to assure that measurements are representative of particulate and meteorological monitoring conditions near the Curtis Bay Piers Facility:

- EPA's Quality Assurance Handbook for Air Pollution Measurement Systems, Volume I: Principles, Volume II: Ambient Air Specific Method,
- EPA's Quality Assurance Handbook for Air Pollution Measurement Systems Volume IV, Meteorological Measurements, March 2008,
- EPA's Quality Assurance Handbook for Air Pollution Measurement Systems, Volume II: Ambient Air Quality Monitoring Program, EPA-454/B-17-001, January 2017,
- EPA's Meteorological Monitoring Guidance for Regulatory Modeling Applications, EPA 454/R-99-005, February 2000,
- 40 CFR 58, Appendices A and E, and,
- 40 CFR Part 50, Appendices J and L.

A.7.4 Data Quality Indicators

Data quality indicators provide the structure for ensuring that the project data are quality data and meet the data quality objectives presented in Section B of this QAPP. Data quality indicators are also the DQOs as defined in Part 58, Appendix B, Section 2.3. These indicators include precision, accuracy, bias, completeness, and comparability of the measurements. The calculations used to determine quality control data assessment statistics (precision, accuracy, and bias) are presented in B.5.9. Bias, the systematic or persistent distortion of a measurement process which causes errors in one direction, is determined based on the results of the monthly flow rate verifications for the PM_{10}.

The particulate and meteorological data recovery goal for the monitoring project is 75% and 90%, respectively, per calendar quarter. Higher data recovery rates are anticipated. The calculation of percent valid is based on the number of valid measurements as compared to the number of possible measurements.

The Curtis Bay Piers Facility monitoring sites were determined based on wind rose data, air dispersion modeling results, and EPA guidance. Placement of monitors considered local interferences, distance to structures, trees, and roadways, and height of probe above ground. The station was set up in accordance with EPA-defined meteorological and air quality siting criteria.

For comparability purposes, siting, equipment specifications, monitoring methods, and data validation and reporting procedures will be in accordance with EPA guidelines.

A.8 Special Training/Certifications

CSXT and Trinity personnel assigned to particulate and meteorological monitoring activities will be trained by Trinity's Project Manager or designated senior Trinity Monitoring Instrumentation Specialists in the proper operation, calibration, and maintenance of the equipment to assure continued collection of valid, representative data. Training typically consists of "hands-on" training overseen by the Project Manager or a supervisor proficient in the equipment or data collection and validation activities. Training resources for CSXT and Trinity personnel may also be procured from outside vendors. CSXT staff members are encouraged to seek additional training that is relevant to their work. As new quality assurance requirements arise, additional training will be provided by the Project Manager to affected CSXT and Trinity personnel involved with the monitoring activities. SOPs which are relevant to the monitoring being conducted at the Curtis Bay Piers Facility will be reviewed by the CSXT Senior Manager for Environmental Programs, and Trinity personnel annually. Ultimately, the CSXT Senior Manager for Environmental Programs will be responsible for providing training for CSXT personnel.

The Trinity Project Manager will document the type of training conducted and when the training was performed. Copies of the training will be provided to the CSXT Senior Manager for Environmental Programs. This documentation is kept in Trinity's personnel file by employee and by the CSXT Senior Manager for Environmental Programs, and will be available for review, upon request. These personnel have met the educational, work experience, responsibility, and training requirements for their position.

Trinity personnel with several years of experience will have responsibility for conducting quality control and quality assurance activities on site. Should a change in quality assurance requirements be identified, the Trinity QA Director will schedule a meeting with the project staff and will review the proposed QA changes to be made. The Trinity Project Manager will be responsible for overseeing the implementation of any QA-related changes. If additional training is required, the Trinity Project Manager or his designee will perform the training or will authorize project participants to obtain the training from an outside vendor, if needed. In these meetings, an agenda will be prepared and will include the QA requirement changes, differences between current practices, and a discussion on the QA requirement implementation. All QA-related training will be documented, implemented, and communicated to all team members as changes are made.

CSXT personnel assure that monitoring is performed according to regulatory requirements by contractors that are experienced and knowledgeable. CSXT Senior Manager for Environmental Programs review deliverables, observe the performance audits, and ensure that the QAPP requirements are followed.

A.9 Documents and Records

The PM_{10}, $PM_{2.5}$, and meteorological monitoring program is committed to fully documenting all activities related to data collection, analysis, validation, and reporting.

Primary data collection for the FEM PM_{10} and $PM_{2.5}$ samplers, and 10-meter tower meteorological monitoring equipment will be accomplished using CSI CR1000x and CR310 data loggers. PM_{10}, $PM_{2.5}$, and meteorological data will be stored in the data logger memory as 1-minute and hourly averages. Data from the QuantAQ MODULAIR samplers are stored by an internal data logger that sends data to a cloud server. Data management will be accomplished by Trinity remotely interrogating each monitoring site daily to maximize data recovery and identify problems in a timely manner.

Table A-12 contains a list of the records to be maintained by the air monitoring program. An electronic logbook (E-logbook) will be used for this monitoring program. Electronic records will be stored at CSXT and on Trinity's redundant network file system and archived in a mirrored data center. Access to the electronic logbook entries will be provided to CSXT Senior Manager for Environmental Programs and Trinity personnel through a web portal. An electronic copy of an e-logbook can also be provided, if requested.

Table A-12 Records and Reports

Category	Record/Document Types	Recipient	Archive Location	Retention Period
Management and Organization	Personnel qual. and training Training certifications Support contracts	CSXT Senior Manager for Environmental Programs, Trinity	Curtis Bay Piers Facility Trinity SLC and Dallas Offices Servers	> 5 years
Site Information	Site Description Site Maps Site Pictures	CSXT Senior Manager for Environmental Programs Trinity	Curtis Bay Piers Facility Trinity SLC and Dallas Offices Servers	> 5 years
Data Operations	QA Project Plan Standard Operating Procedures Electronic Logbook (One-Note) Email Records Related to Data Collection	CSXT Senior Manager for Environmental Programs, Trinity	Curtis Bay Piers Facility Trinity SLC and Dallas Offices Servers	> 5 years
Raw Data	Routine and QC Data Data spreadsheets	Trinity	Trinity SLC and Dallas Offices	> 5 years
Data Reporting	Quarterly summary Data Reports: • quarterly data summaries, • quarterly equipment calibrations and flow/leak checks, • description of equipment and monitoring issues encountered, • description of monitoring issue resolution and corrective action taken, • list of invalid data and reasons for invalidation, and • copies of quarterly audit reports. Reports and copies of the electronic hourly QA'd monthly data are submitted by the CSXT Senior Manager for Environmental Programs	CSXT Senior Manager for Environmental Programs, Trinity, MDE	Curtis Bay Piers Facility Trinity SLC and Dallas Offices Servers MDE	> 5 years
Data Management	Data Archiving Equipment Repair Records (E-Logbook) Data Validation Notes	CSXT Senior Manager for Environmental Programs Trinity	Curtis Bay Piers Facility Trinity SLC and Dallas Offices Servers	> 5 years
Quality Assurance	Performance Audit Reports Corrective Action Reports	CSXT Senior Manager for Environmental Programs Trinity, MDE	Curtis Bay Piers Facility Trinity SLC and Dallas Offices Servers MDE	> 5 years

A.9.1 Data Reports

Quarterly, data report packages will be prepared and internally reviewed by Trinity QA personnel and by CSXT Senior Manager for Environmental Programs within 45 days of the end of the quarter. Each data submittal includes a PDF of the data report. Electronic format report items are in a form that will allow data to be imported into a data management system.

The electronic copy of the report will contain the following information:

- Monitoring network description and monitoring equipment,
- PM_{10}, $PM_{2.5}$, and meteorological data summaries including monthly and quarterly wind roses, joint frequency distribution, monthly mean, maximum, minimum, daily maximum/minimum for meteorological data, maximum and second highest hourly and 24-hour PM_{10} concentrations by month and quarter, and top 10 PM_{10} and $PM_{2.5}$ concentrations for monitoring period,
- QA/QC results including corrective action,
- Calibration documentation including equipment certifications,
- Measurement quality assessment results including completeness, precision, and accuracy assessment results, and
- Audit results.

Corrective actions will be documented by the Trinity Project Manager and will be provided to the CSXT Senior Manager for Environmental Programs. Each corrective action will be assigned to Trinity Monitoring Instrumentation Specialists and verified satisfactorily completed by the CSXT Senior Manager for Environmental Programs, and Trinity Project and QA Directors. Corrective action may be taken in response to an audit finding, a quality control check that does not meet a project acceptance criterion, or any other obvious malfunction in hardware or software. Documentation of any corrective action will show the nature of the deficiency, actions taken, and evidence gathered to verify resolution of the deficiency. Corrective actions and their resolutions are documented in the quarterly reports.

A.9.2 Quality Assurance Project Plan

The QAPP is a key component of the quality program developed for a project. The QAPP is intended to assure that the data CSXT uses in its decision-making process has known and documented quality. The QAPP is a plan that CSXT personnel use to integrate all technical and quality aspects of a project, including planning, implementation, and assessment. The purpose of the QAPP is to document planning results for environmental information operations and to provide a project-specific "blueprint" for obtaining the type and quality of environmental information needed for a specific decision or use. The QAPP documents how quality assurance (QA) and quality control (QC) are applied to an environmental information operation to assure that the results obtained are of the type and quality needed and expected.

The QA Project Plan and standard operating procedures (SOPs) prepared and submitted with the plan are reviewed and updated annually or when substantial changes are made to the monitoring equipment or methodologies by the CSXT Senior Manager for Environmental Programs. The current QA Project Plan and SOPs, as evidenced by the revision number and date of each document, will be reviewed, and updated. Each original document will be maintained by CSXT Senior Manager for Environmental Programs; revised versions will be updated with the next sequential revision number and current date. Current and archived versions of the QA Project Plan and SOPs will also be kept by Trinity under Trinity's retention policy.

CSXT Senior Manager for Environmental Programs will review and approve contract deliverables. This review ensures that the contract technical and quality goals are met.

The QAPP is signed by the CSXT Senior Manager for Environmental Programs, Trinity Project and QA Directors, and the MDE Manager of Air Monitoring Program. QAPP and SOP revisions will be forwarded to the individuals on the distribution list in electronic format. Monitoring data, reports and project documentation will be retained by CSXT and Trinity for a minimum of five (5) years.

B. MEASUREMENT AND DATA ACQUISITION

This section describes the project design and implementation of the CSXT monitoring project, including sampling methods, sample collection, data handling and analysis, quality control requirements, equipment testing, inspection, calibration, maintenance, and managing and validating the data. CSXT will oversee the work processes implemented by its contractor, to assure data collected are of the expected quality for the desired use. CSXT assures that monitoring is performed according to regulatory requirements by contracting with experienced and knowledgeable contractors, reviewing the deliverables from the contractor, observing the audits, and ensuring the QAPP is followed.

B.1 Sampling Process Design

The sampling process design is based on facility dispersion modeling results and EPA and MDE guidance. The purpose of the PM monitoring is to evaluate PM_{10} and $PM_{2.5}$ concentrations on an on-going basis to characterize CSXT's PM_{10} and $PM_{2.5}$ impacts at the fenceline. Meteorological measurements will be collected to supplement the PM_{10} and $PM_{2.5}$ monitoring to identify the meteorological conditions that may lead to elevated PM_{10} and $PM_{2.5}$ measurements.

Probe siting information for the PM_{10} and $PM_{2.}$monitoring will follow 40 CFR Part 58, Appendix E. Each analyzer produces a signal transmitted to the data acquisition system where it is digitized and converted to engineering units and stored in electronic memory. The site selection criteria, as found in EPA's *Quality Assurance Handbook for Air Pollution Measurement Systems Volume IV: Meteorological Measurements Version 2.0* and *Meteorological Monitoring Guidance for Regulatory Modeling Applications* will be followed in considering placement of the tower. The tower will be installed at a distance beyond the influence of obstructions, such as buildings and trees. Accessibility and site security will also be considered in the placement of the tower.

The data recovery goals of 75% per month for PM_{10} and $PM_{2.5}$ concentration measurements and 90% per month for meteorological measurements assure that variability produced through equipment failure, operator error, or inclement weather does not adversely affect the data quality.

B.2 Monitoring Equipment and Methods Description

This section summarizes the proposed equipment to be used for the CSXT monitoring program. The operating range of the samplers and sensors bracket the range of environmental conditions expected at the site. The equipment manufacturer, model, and sensor height for each piece of equipment installed on the meteorological tower and at the PM_{10} and $PM_{2.5}$ sampling locations are presented in Table A-4. The standard operating procedures to be followed to calibrate and operate the equipment in Table A-4 are presented in Table B-2.

CSXT personnel rely on the skills and expertise of its contractor to design a monitoring program that meets the objectives and requirements of the monitoring program. System design and proposed monitoring equipment as well as the approach to conducting the monitoring were previously provided to CSXT.

At the AQ5 and AQ8 monitoring stations, CSI CR1000x and CR310 data acquisition systems, respectively, collect the ambient PM and meteorological measurement data.

B.2.1 Particulate and Meteorological Equipment Description

Brief descriptions of the PM_{10} and $PM_{2.5}$ samplers, and meteorological sensors that are utilized at the CSXT monitoring stations are discussed in this section. Full specifications for each piece of equipment can be found in Appendix A.

B.2.1.1 Continuous PM_{10} and $PM_{2.5}$ Monitors

Teledyne-API Model T640X continuous PM_{10}/$PM_{2.5}$ monitors will be utilized at the AQ5 and AQ8 monitoring sites to measure particulate matter less than or equal to 10 microns and less than 2.5 microns. The T640X uses broadband spectroscopy combining advanced Light Emitting Diode (LED) technology with well-understood light scattering theory to obtain PM_{10} and $PM_{2.5}$ measurements. An innovative and robust algorithm produces accurate mass concentration data. The T640 is completely self-contained and includes an internal 5 liter per minute (lpm) vacuum pump, aerosol sample conditioner, and sample flow controller. The T640X is U.S. EPA-approved PM_{10} and $PM_{2.5}$ Federal Equivalent Methods (EQPM-0516-239 and EQPM-0516-238). The T640X operates at 16.7 lpm and will use an U.S. EPA approved PM_{10} inlet for PM_{10} measurements. Each continuous Teledyne-API T640X PM_{10}/$PM_{2.5}$ sampler is housed in climate-controlled enclosures.

B.2.1.2 QuantAQ MODULAIR

The QuantAQ MODULAIR-PM provides real time estimates of particulate matter concentrations (PM_1, $PM_{2.5}$, PM_{10}) and particle size distribution using a novel combination of multiple light scattering-based particle sensors. Each unit is internet connected and paired with the QuantAQ Cloud to provide real-time data visualization and data access. The MODULAIR-PM has a range of 0 to 2,000 µg/m^3. The measurement error R^2 for $PM_{2.5}$ and PM_{10} are 0.936 and 0.810, respectively for a one-hour time interval. For a 24-hour time interval, the measurement error R^2 for $PM_{2.5}$ and PM_{10} are 0.967 and 0.874, respectively.

B.2.1.3 Data Acquisition Systems

A Campbell Scientific CR1000x DAS is used to store data from T-API Model 640X sampler and the meteorological sensors at AQ5. These DAS uses one-second data values to compute and store one-minute averages and hourly averages of PM_{10}, $PM_{2.5}$, temperature, delta-temperature, wind speed, wind direction, barometric pressure, and precipitation. A CR310 DAS at AQ8 uses one-second data values to compute and store one-minute averages and hourly averages of PM_{10} and $PM_{2.5}$ concentration data.

The CR1000x and CR310 are versatile data acquisition systems which offer the following features: 1) user programmable options; 2) built in data instruction set; 3) large internal data storage; 4) solid state data memory modules; 5) Ethernet interface; 6) PC compatibility; 7) built-in surge protection; and 8) ability to control external devices. Each DAS is capable of being polled locally through an RS232 connector or remotely via an internet connection.

B.2.1.4 Telecommunications

A Sierra Wireless model RV50X cellular modem is used for high-speed remote communication to the site datalogger. The RV50X is assigned a static IP address, has sophisticated security protection from unauthorized access, and employs rigorous fault tolerant algorithms for reliable performance in harsh environments. A 15 decibel (dB) gain Yagi-Uda type directional antenna is connected to the modem and installed on the tower at a height and orientation allowing for optimal signal strength.

B.2.1.5 Wind Speed and Wind Direction

At the 10-meter tower, Met One 020D wind direction and Met One 0101C wind speed sensors are installed at 10-meters. The Met One Model 020D wind direction sensor provides azimuth data by using a lightweight airfoil vane directly coupled to a single precision potentiometer. This sensor has a built-in electronic field surge protection that greatly reduces problems associated with static fields, near-miss lightning hits, and poor grounding systems. This sensor also includes an internal heater. The starting threshold of the sensor is 0.5 mph or 0.22 m/s. The operating range of the sensor is 0-360 degrees.

The Met One Model 010C wind speed sensor provides accurate and detailed information on horizontal wind speed. The sensor uses a lightweight three-cup anemometer with a fast response and a low starting threshold of 0.5 mph or 0.22 m/s. The sensor has an operating range of 0-135 mph or 0-60 m/s.

B.2.1.6 Temperature/Relative Humidity

The HygroVUE™10 offers a combined temperature and relative humidity element in an advanced digital sensor that is ideal for weather networks. A hydrophobic sintered filter prevents dirt and water from entering the cap. The filter is designed to be resistant to wind-driven rain. A secondary polytetrafluoroethylene (PTFE) membrane filter is bonded to the surface of the sensor element to prevent finer dust and mold from directly influencing the measurements.

The HygroVUE™10 utilizes a latest-generation, Swiss-made, combined relative humidity and temperature element based on CMOSens® technology that offers reliable, accurate, and stable measurements. Each element of the HygroVUE™10 is individually calibrated with the calibration corrections stored on the chip.

The temperature sensor has a measurement range from -40°C to +70°C. The temperature sensor has an accuracy of ±0.2°C over the measurement range of the sensor. The relative humidity sensor has an accuracy of ±2% at 25˚C, over the range of 80 to 100% RH and ±1.5% at 25˚C, over the range of 0 to 80% RH.

B.2.1.7 Barometric Pressure

The Campbell Scientific BaroVUE 10 barometric pressure sensor is used to measure barometric pressure over a 500 to 1100 mb range. The accuracy of the sensor is ±0.3 mb @ +20°C with a long-term stability of ±0.1 mb/yr. The calibration acceptance criterion is ±3 mb.

B.2.1.8 Precipitation

The Texas Electronics Model TR-525U tipping bucket rain gauge uses a proven tipping bucket mechanism for simple and effective rainfall measurement. Precipitation is funneled into a bucket mechanism that tips when filled to a calibrated level. A magnet attached to the tipping mechanism actuates a switch as the bucket tips. The momentary switch closure is counted by the pulse-counting circuitry of Campbell Scientific dataloggers. The accuracy of the gauge is 1.0% up to 2 in/hour (50 mm/hr).

B.2.1.9 10-Meter Aluminum Tower

The meteorological sensors at AQ5 are secured to a 10-meter guyed aluminum tower. This lightweight tower can be lowered by an attached winch control adjacent to the tower for servicing instrumentation. Lightning protection is mounted to the tower. This lightweight tower can easily be lowered to the ground by 'walking the tower down' or can have a winch attached to assist in this process. Once down, instruments can safely be serviced with no work being performed at unsafe heights.

B.2.1.10 Davis Instruments 6415 Sonic Anemometer

At each monitoring location, a Davis Instruments Model 6415 sonic anemometer is installed. The sonic anemometer is designed to measure wind related conditions without moving parts. Pairs of electro-acoustic transducers in the anemometer send sonic pulses back and forth, which measure the time it takes for a pulse to travel from one to the other. This time is affected by the movement of the air, which allows the anemometer to calculate wind speed and direction, calibrated by temperature measurements. The sonic anemometer has its own solar panel, so no external power is required.

Table B-1 presents the equipment specifications and the SPM criteria for meteorological sensors.

Table B-1 Meteorological Equipment Response Characteristics

Parameter	Measurement Method	Sensor Response Characteristic	EPA-Required Response Characteristics
Wind Speed – Met One Model 010C	3 cup anemometer rotation produces alternating current (AC) signal with frequency output proportional to wind speed	Starting Threshold = 0.5m/s Distance Constant <1.5m	Starting Threshold = ≤0.5m/s Distance Const. ≤5m
Wind Direction – Met One Model 020D	Single precision potentiometer	Starting Threshold = 0.5 mph (0.22 m/s) Delay Distance <3 ft Damping Ratio = 0.6	Starting Threshold ≤0.5m/s Delay Distance ≤5m Damping Ratio=0.4 to 0.7
Temperature - CSI HygroVUE 10	SHT35 modified by Campbell Scientific	Response Time with filter <130 sec	Time Constant: <1 min.
Relative Humidity CSI HygroVUE 10	SHT35 modified by Campbell Scientific	Response Time with filter < 20 sec	≤30 minutes
Barometric Pressure CSI BaroVUE10	Sensor card	NA	NA
Precipitation Texas Electronics TR-525	Tipping bucket	4.73 ml/tip	Time Constant - 5 min

B.2.2 Standard Operating Procedures

Standard Operating Procedures (SOPs) have been developed to provide instructions to the site operator regarding routine operation of the particulate sampling and meteorological measurement equipment. These SOPs range from inventory of equipment, equipment inspection and acceptance testing, visual inspections, preventive maintenance, and calibrations. Table B-2 presents the SOPs used for this program.

Conditions adverse to quality will be identified promptly by the Trinity Data Manager or instrumentation specialist, and CSXT Senior Manager for Environmental Programs will be notified. Once an issue that is averse to quality has been identified, Trinity Monitoring Instrumentation Specialists will troubleshoot the issue to identify the cause and the issue will be corrected as soon as possible. A Corrective Action Report Form will be completed for each incident. Appendix B contains a blank form which includes the date and time when the problem was identified, the proposed corrective action to resolve the issue, and the date and time of the results of the proposed action will be initiated. A copy of the Corrective Action Report will be provided to the CSXT Senior Manager for Environmental Programs

when the issue has been rectified. Corrective action will also be noted in the electronic logbook utilized for this project. Table B-2 presents the SOPs used for this program. Copies of these SOPs are presented in Appendix C.

Table B-2 Standard Operating Procedures

SOP No.	Revision No. and Date	SOP Title	Regulatory Citation
SOP 69	Rev 5. 07/28/2022	Calibration and Audit Equipment Certification	1,2
SOP 106	Rev. 3. 12/07/2020	In-House Calibration of Test Equipment	1.2
SOP 107	Rev. 2. 12/07/2020	Equipment Inventory Procedure	NA
SOP 109	Rev. 2 08/18/2022	Personnel Training	NA
SOP 117	Rev. 4 10/26/2020	Computer Program Validation	NA
SOP 218	Rev. 0 10/27/2020	Teledyne-API Model T640 Continuous PM Mass Monitor Operation	2,3,4,5
SOP 220	Rev. 1 04/15/2021	Level 1 Data Validation	1, 2
SOP 225	Rev. 0 08/23/2023	QuantAQ MODULAIR-OM Operation	NA
SOP M11	Rev. 0 10/27/2020	Wind Direction and Wind Speed Sensor Operation	1
SOP M13	Rev. 0 10/27/2020	Temperature Sensor Operation	1
SOP M14	Rev. 0 10/27/2020	Precipitation Gauge Operation	1
SOP M15	Rev. 0 10/27/2020	Relative Humidity Sensor Operation	1
SOP M17	Rev. 0 10/27/2020	Barometric Pressure Sensor Operation	1

[1] *Quality Assurance Handbook for Air Pollution Measurement Systems, Vol. IV: Meteorological Measurements Version 2.*

[2] *Quality Assurance Handbook for Air Pollution Measurement Systems, Vol. II: Ambient Air Quality Monitoring Program.*

[3] 40 CFR Part 58, Appendix A *Quality Assurance Requirements for Monitors used in Evaluations of National Ambient Air Quality Standards.*

[4] 40 CFR Part 50, Appendix J.

[5] 40 CFR Part 50, Appendix L.

Routine maintenance will be performed on the PM and meteorological monitoring equipment to assure that the equipment is operating properly, and data are accurate. The type and frequency of the maintenance to be performed will be in accordance with manufacturer recommendations. Spare parts will be retained and stored in a secure area or at a Trinity office.

Typical maintenance on the T640X includes checking pump performance, cleaning inlet, cleaning PM_{10} well, and check/adjusting the photomultiplier tube (PMT) with SpanDust. See Table B-7 for routine maintenance activities. The T-API Model T640X analyzers are housed in climate-controlled enclosures.

B.3 Sample Handling and Custody

There are no manual sample handling or custody requirements for the continuous PM_{10} and $PM_{2.5}$ data samplers. No sample containers or PM_{10} or $PM_{2.5}$ filter-based samplers are used for this monitoring project.

B.4 Analytical Methods

As described in Section B.2, the continuous PM_{10}/$PM_{2.5}$ T640 monitors are U.S. EPA equivalent methods EQPM-0516-239 for PM_{10} and EQPM-0516-238 for $PM_{2.5}$. Meteorological parameters are also collected continuously, and measurements are stored by the site data acquisition system as one minute and hourly averages using a variety of sensors which are described in Section B.2.1.

The monitoring network measures PM_{10}, $PM_{2.5}$, and meteorological data continuously. The Teledyne-API Model T640X is a continuous particulate matter (PM) mass monitor that uses scattered light spectrometry for measurement. The T-API T640X option measures $PM_{2.5}$, PM_{10}, and coarse PM.

B.5 Quality Control Requirements

This section describes the routine quality control procedures to be used for the CSXT Curtis Bay Piers Facility particulate and meteorological monitoring program. These procedures are specifically designed to provide the appropriate quality control and assure that valid data recovery meets or exceeds EPA's data recovery requirements of 75% for air quality parameters and 90% for meteorological monthly measurements.

The air quality monitoring program will follow the quality control guidelines as stated in the following documents:

- 40 CFR 58, Appendix A,
- 40 CFR Part 50, Appendices J and L,
- EPA's Quality Assurance Handbook for Air Pollution Measurement Systems, Volume I: Principles, and,
- EPA's Quality Assurance Handbook for Air Pollution Measurement Systems Volume II: Ambient Air Specific Methods, January 2017.

The meteorological monitoring program will follow the quality control guidelines as stated in the following documents:

- Quality Assurance Handbook for Air Pollution Measurement Systems, Volume IV: Meteorological Measurements, March 2008; and
- Meteorological Monitoring Guidance for Regulatory Modeling Applications, 2000.

Table B-3 presents quality control procedures and frequency.

Table B-3 Quality Control Procedures

Procedure	Frequency	Requirement
1. Visual Inspection of Equipment	Routine or Emergency Site Visits; Routine every month (particulate); semi-annual (meteorological)	Meets MQOs
2. Remote interrogation of monitoring stations and inspection of data	Daily	QC Checks for data screening (Section B.10)
3. Routine calibration	Semi-Annual – meteorological Quarterly – PM_{10} and $PM_{2.5}$	Meets MQOs
4. Calibration reference standard certification	Annually	NIST-traceable or A2LA if applicable
5. Equipment Maintenance	Annually or as needed	Section B.6.3
6. Flow/Leak Checks	Monthly	Meets MQO
7. Personnel Training	On-going	SOP 109
8. Temperature-controlled Monitoring Enclosure	Daily	≤±2˚C SD over 24 hours
9. Data validation	Daily and monthly Quarterly	Electronic data screening Time/Parameter Plot visual check Data processing calculation check Missing data confirmed Off-line periods confirmed Data validation checklist
10. Performance Audits	Semi-Annual and Quarterly	Section C.1

B.5.1 Visual Inspection of Equipment

A Trinity instrumentation specialist will visit each climate-controlled enclosure, monthly or more frequently, if needed, to check that the PM_{10}/$PM_{2.5}$ analyzers are operational and recording concentrations typical for the environment. Visual inspection of the meteorological tower will also be performed when the daily review of data indicates a potential issue or at a minimum semi-annually. A site check form, presented in Appendix D, will be completed during each site visit.

B.5.2 Remote Interrogation of Monitoring Station and Inspection of Data

The DASs at the CSXT AQ5 and AQ8 monitoring stations will be interrogated daily via modem to download and process the data. Data from the QuantAQ MODULAIR are sent to a cloud server Computerized inspection and visual inspection of data will be performed daily using an outlier program. Values that fall outside of prescribed limits will be evaluated by the Trinity Data Manager and corrective actions will be initiated and documented. Abnormal data values or problems will be reported as soon as possible to the CSXT Senior Manager for Environmental Programs, and it will be determined if a special site visit is required.

Abnormal data values or problems will be reported as soon as possible to the Trinity QA Director and Trinity Project Manager who will initiate corrective action and determine if a special site visit is required. Trinity has an internal "ticket" system that alerts the Trinity Monitoring Instrumentation Specialists when issues are identified which need to be attended to. Should corrective action be necessary, the Trinity Project Manager will initiate the process by preparing a Corrective Action Form to document the issue, time of discovery, the affected measured parameters, and the recommended course of action. The Trinity Project Manager will notify the CSXT Senior Manager for Environmental Programs and/or Environmental Field Services staff, via email or telephone of any planned corrective action that cannot be immediately resolved and may result in data loss.

The CSXT QA Manager/Program Manager will ultimately be responsible for verifying that corrective actions are appropriate and were performed correctly and in a timely manner. The CSXT Senior Manager for Environmental Programs is responsible for maintaining and tracking the Corrective Action Form to document the completion of work. Final Corrective Actions Forms will be signed by the Trinity Project Manager once the work is completed. The Trinity QA Director and CSXT Senior Manager for Environmental Programs will review these forms to ensure corrective action was satisfactorily completed. Copies of the completed Corrective Action Forms will be included in the quarterly data summaries.

B.5.3 Equipment Calibration

The purpose of a calibration is to establish a relationship between the ambient conditions and an instrument's response. The term "calibration" means an adjustment and typically consists of a zero/span adjustment followed by a multi-point verification. Multi-point verifications are considered a check at different levels with no adjustment and are used to assure the instruments are within their respective calibration tolerances. Generally, as long as the instrument is within its established calibration tolerances, adjustments do not need to be made.

The T-640X PM_{10}/$PM_{2.5}$ samplers will be calibrated after installation, when changes are made to the analyzer, after substantial maintenance, moving of monitor, failed QC checks, failed performance audits, and quarterly by a Trinity Monitoring Instrument Specialist.

Meteorological equipment calibrations will be performed when problems are noted and semi-annually. Sensors which do not meet calibration specifications or fail performance audits will be repaired and recalibrated.

B.5.4 Calibration Reference Standard Certification

All calibration equipment will be traceable to NIST standards and will be certified annually. Equipment calibration data are provided in the quarterly data reports. See Section B.7 for calibration procedures.

Calibration certificates are on file at Trinity and are included with each calibration report. Copies of the calibration certificates will be kept by the CSXT Senior Manager for Environmental Programs. Reference standards will be certified over the ambient measurement range expected at the CSXT Curtis Bay Piers Facility monitoring stations.

B.5.5 PM_{10} and $PM_{2.5}$ Sampler Flow and Leak Checks

Flow and leak checks will be performed monthly on the PM_{10}/$PM_{2.5}$ monitors. Agreement between the measured flow rate of the instrument must be within ±4.1% of the NIST-traceable flow standard or ±5.1% of the designed flow rate value to meet continuous $PM_{2.5}$ criteria. Similarly, agreement between the flow rate of the instrument must be within ±7.1% of the NIST-traceable flow standard to meet continuous PM_{10} acceptance criteria. Should these tests not meet the designated criteria, the Trinity site technician will notify the Trinity Project Manager and corrective action will be taken to either flag or invalidate the data. The monitor will be recalibrated and put back into service. Flow and leak check procedures are presented in Appendix C.

B.5.6 Equipment Maintenance

Manufacturer's recommendations for maintenance and maintenance schedules for the PM_{10}/$PM_{2.5}$ samplers and meteorological sensors will be followed. (See Section B.6.3 below). Maintenance activities are documented in the electronic logbook and on the comment section of the calibration field data sheets. Instrument instruction manuals will be available at the site for reference of preventive and remedial maintenance procedures. Preventive and corrective maintenance will be documented on the calibration forms completed immediately after any maintenance.

B.5.7 Personnel Training

Personnel operating the PM_{10}/$PM_{2.5}$ and meteorological monitoring equipment will be thoroughly trained in the proper operation, calibration, and maintenance of the equipment to assure the continued collection of valid, representative data.

B.5.8 Temperature-Controlled Monitoring Enclosure

The T-API T640X enclosure's role in quality control is to provide a temperature-controlled environment in which the gaseous monitoring equipment can operate at optimum performance. Enclosure interior temperature will be monitored by the data loggers and will be reported daily along with air quality and meteorological measurements. Daily shelter fluctuation ≥± 2°C standard deviation (SD) over 24 hours indicates a need to adjust the temperature control system.

B.5.9 Data Validation

Data validation criteria are based on the critical, operational, and systematic templates that are found in EPA's *Quality Assurance Handbook for Air Pollution Measurement Systems, Volume II*, dated January 2017. Table B-4 outlines the criteria deemed critical for continuous PM_{10} and $PM_{2.5}$ monitoring. Data that do not meet each criterion on the critical table should be invalidated unless a compelling reason or justification exists for not doing so. The samples for which one or more of these criteria are not met are invalid unless proven otherwise. The cause of not operating within the acceptable range for each violated criterion will be investigated, and corrective action taken to remedy the problem such that additional data will be invalidated. Action limits below the acceptance criteria are not used for this program.

The Trinity Project Manager will be alerted by the Trinity Data Manager or instrumentation specialist when critical criteria are exceeded. The Trinity Project Manager will notify the CSXT Senior Manager for Environmental Programs when critical criteria are exceeded causing data to be invalidated.

Tables B-5 and B-6 present the criteria that are important for maintaining and evaluating the quality of the data collection system. Violation of a criterion or several criteria may be a reason to invalidate data. The decision to invalidate should consider other control information that may or may not indicate that these data are acceptable. The data for which one or more of these criteria are not met is suspect unless other quality control information demonstrates otherwise. The Trinity Project Manager will be alerted by the Trinity Data Manager or Trinity Monitoring Instrumentation Specialists when the operation criteria are not being met and the issue will be investigated, mitigated, or justified.

Table B-7 presents systematic issues that are important for the correct interpretation of the data. These issues, however, usually do not impact the validity of the data. See Section D of this QAPP has specifics on the data validation procedures.

Documentation, such as NIST traceable calibration equipment certifications showing expiration dates, for critical and operational criteria elements such as monthly flow checks and quarterly calibrations are provided in the quarterly data reports. Performance audit documentation and NIST reference standard certifications with expiration dates are provided in each audit report; maintenance items are documented in the electronic logbook and on the comment section of the calibration field data sheets. Completeness requirements, as indicated in Table B-7, are found in the data recovery tables by parameter that are provided in each quarterly report.

Table B-4 Critical Criteria for Continuous PM_{10} and $PM_{2.5}$

Requirement	Frequency	Accept. Criteria	Reference	Action
PM_{10} and $PM_{2.5}$ Variability in Flow Rate	Every 24 hours of operation	CV≤2%	Part 50 App. L Section 7.4.3.2	Invalidate data to last acceptable check.
PM_{10} and $PM_{2.5}$ One-point flow rate verification	1/month	<±4.1% of transfer standard ($PM_{2.5}$) <±5.1% of flow rate design ($PM_{2.5}$) <±7.1% of transfer standard (PM_{10})	40 CFR Part 50, App. L Section 9.2.5	Invalidate data to last acceptable check.
PM_{10} and $PM_{2.5}$ Design Flow Rate Adjustment	After multi-point calibration	<±2.1% of design flow rate	40 CFR Part 50, App. L Section 9.2.6	Invalidate data to last acceptable check.
Sampling Period (Continuous PM_{10})	All samples	1440 minutes ±60 minutes midnight to midnight	40 CFR Part 50 App. J, Section 7.1.5	Invalidate data to last acceptable check.
Individual Flow Rates	Every 24 hours of operation	No flow rate excursions > ±5% for > 5 minutes	40 CFR Part 50, App. L Section 7.4.3.1	Invalidate data to last acceptable check.
Filter Temp. Sensor	Every 24 hours of operation	No excursions >5˚C for > 30 minutes	40 CFR Part 50, App. L Section 7.4.11.4	Invalidate data to last acceptable check.
External Leak Check	Before each flow rate verification and before and after $PM_{2.5}$ separator maintenance	<80.1 mL/min	Part 50 App. L, Section 7.4.6.1	Invalidate data to last acceptable check.
Internal Leak Check	If failure of external leak check	<80.1 mL/min	Part 50 App. L, Section 7.4.6.2	Invalidate data to last acceptable check.
Continuous PM_{10} Average Flow Rate	Every 24 hours of operation	Average within <±5.1% of design	Recommendation	Invalidate data to last acceptable check.
$PM_{2.5}$ Average Flow Rate	Every 24 hours of operation	Average within 5% of 16.67 LPM	Part 50 App. L Section 7.4.3.1	Invalidate data to last acceptable check.
PM_{10} One-point flow rate verification	1/month	<±7.1% of transfer standard	40 CFR Part 58, App. A Sec. 3.3	Invalidate data to last acceptable check.

Table B-4 (Continued) Critical Criteria for Continuous PM_{10} and $PM_{2.5}$

Requirement	Frequency	Accept. Criteria	Reference	Action
$PM_{2.5}$ Local Conditions	NA	Meets FEM/FEM/ARM Requirements	40 CFR Part 58 App. C	-----
Firmware	At setup	Firmware set for flowrate at local cond.	40 CFR Part 50 App. N	----
PM_{10} Inlet	At setup	Must be louvered PM_{10} size selective inlet	40 CFR Part 50 App. L	----
$PM_{2.5}$ 2nd stage separator	At Setup	VSCC or equivalent	Not appl. For T640	----
Average Flow Rate	Every 24 hours of op.	Avg. within 5% of 16.67 LPM at local conditions	Part 50 App L Sec. 7.4.3.1	

Table B-5 Operational Criteria for PM_{10} and $PM_{2.5}$

Requirement	Frequency	Acceptance Criteria	Reference	Action
Verification/ Calibration	Upon receipt, adjustment, repair, installation or Quarterly	Continuous PM_{10}: 3 of 4 points within <±10.1% of design Continuous $PM_{2.5}$: <±2.1% of transfer standard Press:<±10.1 mm Hg Temperature: <±2.1˚C	40 CFR Part 50, App. J., Section 8 40 CFR Part 50, App. L, Sec. 9.2 40 CFR part 50 App. L, Sec. 9.3	Points outside acceptance criteria are repeated. If still outside, consult manufacturer's manual and invalidate back to last acceptable multi-point calibration or zero/span check.
One-point temperature verification	Every 30 days	Continuous $PM_{2.5}$: <±2.1˚C	40 CFR Part 50 App. L, Section 9.3	Recalibrate
Pressure Verification	Every 30 days	Continuous $PM_{2.5}$: <±10.1 mmHg	40 CFR Part 50 App. L, Section 9.3	Recalibrate
Accuracy Temperature Pressure	Quarterly	 <±2.1˚C <±10.1 mm Hg	Method 2.12 Sec. 11.2.2	Recalibrate
Flow Rate Audit	Quarterly	$PM_{2.5}$: <±4.1% of audit standard $PM_{2.5}$: <±5.1% of audit standard	Part 58 App. A Sec. 3.2.2	Recalibrate
Inlet/Separator/ Fan Cleaning (PM_{10} and $PM_{2.5}$)	Every 30 Days	Cleaned	Method 2.12	----
Downtube Cleaning (PM_{10} and $PM_{2.5}$)	Every 90 Days	Cleaned	Method 2.12	----

Table B-6 Systematic Criteria for PM_{10} and $PM_{2.5}$

Requirement	Frequency	Acceptance Criteria	Reference	Action
Siting	1/year	Meets siting criteria	40 CFR Part 58 App. E, Sec. 2-6	----
Completeness	24-hour (PM_{10})	≥75%	40 CFR Part 50 App. N Sec. 4.1 & 4.2	-----
	24-hour ($PM_{2.5}$)	≥75% of scheduled sampling days	40 CFR Part 50 App. N Sec. 4.1 & 4.2	-----
	Annual ($PM_{2.5}$)	≥75% of scheduled sampling days	40 CFR Part 50 App. S, Section 3.1	-----
Precision	Every 90 days	CV<10.1% for values ≥ 3.0 $\mu g/m^3$	40 CFR Part 58, App. A, Sec. 4.2.1	-----
Standard Recertification	Annual		40 CFR Part 50. App. L	-----
Flow Trans. Std.		<±2.1% of NIST standard		
Thermometer		±0.1°C resolution; 0.5°C accuracy		
Barometer		±1 mmHg resolution; ±5 mm Hg accuracy		
Clock/timer Ver.	Every 30 days	1 min/month	Method 2.12	-----
Reporting	All filters and data	$PM_{2.5}$ – ambient /actual conditions PM_{10} – standard temperature and pressure	40 CFR Part 50 App N Sec. 3.0 ($PM_{2.5}$) 40 CFR Part 50 App. K (PM_{10})	----

B.5.9.1 Particulate Monitor Precision and Bias

Based on the formulas as found in 40 CFR 58, for the particulate monitors, the Trinity Data Manager will calculate monthly precision and bias from the monthly flow checks conducted. For each precision check, the percent difference (d_i) will be calculated according to the following:

$$d_i = \frac{Y_i - X_i}{X_i} \times 100$$

Where: X_i is the concentration of the reference flow rate standard
Y_i is the flow rate measured by PM monitors.

The bias estimate is calculated using monthly flow checks for the particulate monitors. Bias will be calculated using the following formula:

$$|bias| = AB + t_{0.95,\ n-1} \times \frac{AS}{\sqrt{n}}$$

Where: n is the number of monthly flow checks
$t_{0.95,\ n-1}$ is the 95th quantile of a t-distribution with n-1 degrees of freedom.

AB = Mean of absolute values of the d_i's (below)

AB is calculated with the following equation:

$$\mathrm{AB} = \frac{1}{n}\sum_{i=1}^{n} \left| d_i \right|$$

The quantity AS or standard deviation of the absolute values of the d_i's is calculated as:

$$AS = \sqrt{\frac{n\ x\ \sum_{i=1}^{n} |d_i|^2\ - \left(\sum_{i=1}^{n} |d_i|\right)^2}{n\ (n-1)}}$$

B.6 Instrument/Equipment Testing, Inspection and Maintenance

A description of the equipment testing, integration, inspection, and maintenance performed at the monitoring site is presented below.

B.6.1 Acceptance Testing of Instrumentation and Equipment Integration

Prior to installation, equipment will be visually inspected to assure there is no physical damage and will be calibrated before use. Acceptance testing of instrumentation will be performed to verify that the instruments meet the required U.S. EPA performance specifications as found in 40 CFR Part 50, Appendices J and L, EPA's QA Handbooks, Volumes II and IV, and anytime the instrument undergoes maintenance, repair, or any type of movement. Equipment that fails to meet specifications will be returned to the manufacturer. After installation, the continuous PM_{10}/$PM_{2.5}$ samplers and meteorological sensors are calibrated according to the procedures presented in each respective manufacturer's operating manual.

Calibrations are documented and provided in the quarterly data reports. To assure that the continuous PM_{10}/$PM_{2.5}$ equipment continues to operate properly during monitoring, monthly flow checks of the PM_{10}/$PM_{2.5}$ samplers will be conducted and documented during each site visit. The meteorological station will be inspected monthly.

Preventive maintenance and quality assurance procedures will be conducted on a routine basis. Acceptance testing procedures will be documented on the appropriate calibration forms. To assure that the sensors and PM_{10}/$PM_{2.5}$ samplers are operating properly, periodic performance audits are conducted by the Independent Auditor.

B.6.2 Site Surveillance and System Check Procedures

At least monthly or as needed, a Trinity instrumentation specialist will visit the monitoring station to inspect the T640X monitoring enclosures and climate control systems, meteorological tower and sensors, and MODULAIR PM sensors. The Trinity instrumentation specialist will conduct monthly flow checks and perform any required maintenance. The Trinity instrumentation specialist will verify the proper operation of the data acquisition system. During each site visit, entries will be made in the project electronic logbook documenting

site activities conducted. These entries will include the date of the visit, the reason for the visit, and the maintenance or calibration activities performed.

If changes are made to the equipment or configuration of the system, these changes will also be entered in the electronic logbook. Entries will be made when there is a change or modification in the way a sample is obtained, or the station configuration altered. Entries will be made when: (1) sensors are replaced, (2) tubing is re-routed or new fittings or other components are added or removed, (3) the relative position of the analyzers' sample ports on the manifold or tubing is changed, (4) the location of a sampling inlet or port is moved, or (5) any similar change in the air monitoring station's configuration. If the Trinity instrumentation specialist encounters a problem which cannot be rectified, the Trinity Project Manager will be contacted. The Trinity Project Manager will initiate a plan for corrective action and will employ appropriate resources to rectify the situation. The Trinity Project Manager will notify the CSXT Senior Manager for Environmental Programs of the issue being investigated and the course of action to be taken to resolve the issue.

B.6.3 Site and Equipment Maintenance

The manufacturer's recommendations for maintenance of the PM and meteorological monitoring equipment will be followed. Instrument instruction manuals are available for reference of preventative and remedial maintenance procedures. Preventive and corrective maintenance will be documented on the calibration forms completed immediately after maintenance and in the electronic logbook.

The maintenance activities that will be performed at the CSXT Curtis Bay Piers Facility PM_{10}/$PM_{2.5}$ and meteorological monitoring sites are presented in Table B-7. Appendix C contains the maintenance procedures for the Met One BAM PM_{10} sampler. Maintenance will be performed prior to calibrations, audits, and equipment repair.

Table B-7 Monitoring Equipment Maintenance Activities per Manufacturer Operation Manuals

Maintenance Activity	Frequency
Wind Speed/Wind Direction	
Wind Speed Bearings Replacement	Semiannual or as needed
Wind Direction Bearings Replacement	Semiannual or as needed
Wind Direction Potentiometer Replacement	As Needed
Relative Humidity	
Particulate Filter & Cap Cleaning or Replacement	As Needed
Motor Aspirated Temperature	
Blower Motor Replacement	As needed
Teledyne-API Model T640X PM_{10} and $PM_{2.5}$ Monitor	
Clean Inlet	Monthly
Check/Adjust PMT with SpanDust™	Monthly or as needed
Check Pump Performance	Monthly
Check Volume Flow using NIST Standard	Quarterly
Check for Leaks	Quarterly or as needed
Inspect and Clean Optical Chamber and RH/T Sensor	Every six months or as needed
Change Disposable Filter Unit (DFU) for 5-LPM flow	Annually or when pump PWN value exceeds 80%
Inspect Sampling Line	Annually or as needed
QuantAQ MODULAIR-PM	
There are no consumable or replaceable components to the MODULAIR-PM	
Davis 6415 Sonic Anemometer	
Anemometer and Solar Panel Cleaning	Monthly

B.6.4 Spare Parts

Spare parts will be retained and stored by Trinity in a secure area. These spare parts include, but are not limited to, pump re-build kits, bearings, cups, propellers, and potentiometers, glass orifices, and various o-rings. Most of these parts are available to be delivered via overnight air express, if needed.

B.7 Instrument/Equipment Calibration and Frequency

Quality control checks to be performed on the PM_{10}/$PM_{2.5}$ samplers include monthly flow/leak checks and calibrations. All checks are documented on the appropriate forms and provided in the quarterly data reports. Multi-point calibration and maintenance will be performed on the PM_{10}/$PM_{2.5}$ samplers whenever the following conditions occur:

1. PM_{10} one-point flow rate verification is greater than ±7.1% of transfer standard,
2. $PM_{2.5}$ one-point flow rate verification is greater than ±4.1% of transfer standard and ±5.1% of flow rate design value,

3. PM_{10} and $PM_{2.5}$ (continuous) temperature difference is <±2.1°C,
4. PM_{10} and $PM_{2.5}$ (continuous) pressure difference is <±10 mmHg,
5. After installation, moving, repair, or substantial maintenance activities on the samplers, and,
6. Every three months.

Calibration of the $PM_{10}/PM_{2.5}$ T640X samplers will be performed in accordance with 40 CFR Part 50 Appendices J and L and 40 CFR Part 58, Appendix A. Manufacturer calibration procedures will also be followed. $PM_{10}/PM_{2.5}$ monitor calibrations will be performed using a Streamline Pro or Delta Cal meter to verify sample flow. The ambient temperature and pressure probes will be calibrated with certified flow reference or certified reference sensors.

Meteorological instrument calibrations will be performed, with equipment that is in current calibration and is traceable to NIST or A2LA standards, at installation once sensors are interfaced with the data acquisition system, semi-annually and whenever an instrument exceeds specified control limits or undergoes major maintenance or repair. If a sensor fails a performance audit, a calibration will be documented and then it will be replaced or repaired. If possible, an as found calibration check will be documented and then an after-maintenance calibration check will follow. Sensors which do not meet calibration specifications or fail performance audits will be repaired and re-calibrated or retired from service.

Calibration certifications and records remain on file at Trinity's Salt Lake City office. Calibration equipment will be certified to NIST or A2LA standards annually. Certified reference standards used to calibrate and check instruments are separate and distinct from those used to perform audits.

B.7.1 $PM_{10}/PM_{2.5}$ Calibration Procedures

Quarterly calibration of the continuous $PM_{10}/PM_{2.5}$ T-API 640X samplers consists of several procedures which include measuring the flow with a certified flow transfer standard and calculating the deviations from the inlet design and the set point flowrates. In addition to the flow check, a leak test is also performed. The T-API 640X ambient temperature and pressure sensors are compared to calibrated reference sensors during calibration. The T-API 640X calibration procedures are found in Appendix C.

B.7.2 Meteorological Equipment

The meteorological parameters presented below will be calibrated in accordance with guidance found in EPA's *Quality Assurance Handbook for Air Pollution Measurement Systems, Volume IV: Meteorological Measurements Version 2.0 (Final)*. Meteorological equipment calibrations will be performed at installation and semi-annually. Sensors which do not meet calibration specifications or fail semi-annual audits will be repaired and re-calibrated or replaced. Calibration equipment will be traceable to NIST standards. Certification of calibration standards will include the measurement range expected at the monitoring site. Calibration procedures for the meteorological sensors are presented below. Meteorological equipment SOPs are presented in Appendix C.

B.7.2.1 Wind Direction

The cross-arm orientation will be checked using a professional compass. The wind vane will be aligned with the cross arm and set to true north. True north is distinguished from magnetic north by reading a magnetic compass and applying a correction factor for the magnetic declination. The declination will be determined from a declination calculation computer program. If the overall wind direction error (orientation plus linearity) exceeds ±5 degrees from true North, the sensor will be re-calibrated.

The wind direction sensor starting threshold will be checked using a torque gauge. The torque gauge is placed on the sensor shaft and the torque is measured. If the sensor starting threshold is greater than 0.5 meters per second (m/s), the bearings will be replaced, and the sensor will be re-calibrated.

The wind direction linearity will be checked using a direction template. The sensor response will be checked at a minimum at 30-degree increments in both clockwise and counterclockwise rotations and compared with the DAS readings. If the indicated wind direction linearity plus orientation error exceeds ±5 degrees, the sensor will be repaired and re-calibrated.

B.7.2.2 Wind Speed

Horizontal wind speed response checks will be performed using a synchronous motor. Sensor readings taken from the DAS will be compared to calibration values obtained from transfer functions provided in the sensor manufacturer's specifications. If the wind speed error exceeds ±0.2 m/s, then the instrument will be recalibrated.

The horizontal wind speed sensor starting threshold will be checked using a torque gauge or a torque disc. The torque device is placed on the sensor shaft and the torque is measured. If the measured torque exceeds the manufacturer's tolerance specifications for wind speed sensor starting threshold of 0.5 m/s, then the bearings will be replaced, and the instrument will be recalibrated.

B.7.2.3 Temperature

Temperature sensor calibration will be verified by direct comparison of sensor outputs to a collocated calibrated reference standard thermometer encompassing the measurement range expected at the site. If the sensor output is more than 0.5 degrees Centigrade (°C) different from the reference, the sensor will be repaired and re-calibrated.

B.7.2.4 Relative Humidity

The relative humidity sensor calibration will be verified by comparison of station sensor outputs with a relative humidity reference sensor collocated at ambient conditions. If the site sensor output differs by more than ±7 percent relative humidity from the reference, the sensor will be recalibrated.

B.7.2.5 Barometric Pressure

The barometric pressure sensor calibration will be verified by collocation of a certified reference barometer and comparing the reference output with sensor outputs recorded on the data acquisition system. If the site sensor output differs from the reference by more than ±3 mb, the sensor will be re-calibrated.

B.7.2.6 Precipitation

Precipitation sensor output will be verified using a standard graduated burette to add water to the gauge simulating rainfall. The volume of water required to produce ten tips will be recorded for each of three runs. This volume will be divided by the area of the gauge opening to determine the calculated amount of simulated rainfall. This amount will be compared with amounts reported by the station data logger. If the sensor differs by more than ±10% from the reference input, the sensor will be recalibrated. During calibration verification, the technician will confirm that both sides of the tip bucket have similar sensitivity and provide similar, balance results.

B.7.2.7 Calibration Equipment

The typical equipment used to perform meteorological sensor calibrations are listed in Table B-8.

Table B-8 Meteorological Calibration Equipment

Parameter	Manufacturer and Model
Wind Direction	Brunton Model 5008 Pocket Transit Waters Torque Watch Model 366-1M Met One Direction 40 Template
Wind Speed	RM Young Model 18802 Anemometer Drive Waters Torque Watch Model 366-3M RM Young Prop Torque Disc Model 18310
Temperature	Brooklyn Digital Model 6661
Barometric Pressure	Vaisala Model PTB101B
Precipitation	PolyLab 100ml burette
Relative Humidity	Vaisala HMP45AC

B.7.3 Calibration Frequency

For PM_{10}, when a monthly flow rate verification is greater than ±7.1% of transfer standard, the sampler will be recalibrated. For $PM_{2.5}$, when a monthly flow rate verification is greater than ±4.1% of transfer standard and ±5.1% of the flow rate design value, the sampler will be recalibrated. In addition, calibrations will be performed after each sampler undergoes major maintenance or repair that would affect the sampler's response, and quarterly. If possible, for each particulate sampler, an "as found" calibration check will be documented and then an "after maintenance" calibration check will follow.

Meteorological instrument calibrations will be performed at installation once sensors are interfaced with the data acquisition system, semi-annually and whenever an instrument exceeds specified control limits or undergoes major maintenance or repair. If a sensor fails a performance audit, calibration verification will be documented and then it will be replaced or repaired and re-calibrated. If possible, an "as found" calibration check will be documented and then an "after maintenance" calibration check will follow.

B.7.4 Calibration Forms

PM sampler and meteorological sensor calibration forms are included in Appendices E and F.

B.8 Inspection/Acceptance of Supplies and Consumables

Field equipment supplies and consumables will be obtained either directly from the original equipment vendor, or from a scientific equipment/ materials vendor whose products are determined to be equivalent in quality by Trinity. CSXT Senior Manager for Environmental Programs has oversight of its contractor including review of items and consumables. As items are received, they will be inspected by Trinity Monitoring Instrumentation Specialists for shipping damage upon receipt. If the shipping container is visibly damaged, it will be opened, and the contents inspected for damage prior to accepting delivery.

Each consumable or item will be visually inspected for integrity by a Trinity instrumentation specialist upon receipt. Damaged items will be returned to the supplier for replacement or repair. Spare parts will be kept in the monitoring shelter and at Trinity's ambient laboratory for use when needed. The use of spare parts will be documented on calibration forms. The spare parts include silicone o-ring grease, pump rebuild kit, in-line filters, cups, propellers, and wind sensor bearings. NIST traceable certificates are retained before placing items into service. Consumables for this program meet criteria specific for the application and meet the requirements of the Federal Equivalent Method (FEM). The use of spare parts will be documented on calibration forms. The use of spare parts will aid in meeting the data collection goals of 75% or 18 out of 24 hours for hourly 24-hour measurements for PM and 90% for meteorological measurements.

B.9 Non-direct Measurements

This section addresses data not obtained by direct measurement for sampling. This includes sources for outside data and historical monitoring data. The use of information that fails to meet the necessary DQOs for this monitoring program can lead to erroneous reports and regulatory decision errors.

To assure the accuracy of the measurements, measuring and test equipment will be calibrated against verified instruments having known relationships to nationally recognized standards. For example, reference standards used for the calibration of meteorological instrumentation will be traceable to NIST standards. Barometric pressure sensors may be verified against location National Weather Service reference aneroid barometers. $PM_{10}/PM_{2.5}$ monitor, and meteorological sensor operation will be obtained from manufacturer literature. $PM_{10}/PM_{2.5}$ monitor operating manuals and sensor user manuals provide numerical information and equations that pertain to specific equipment. Historical meteorological data from nearby monitoring sites may be used to identify trends or verify the accuracy of collected data. For example, precipitation amounts, and extreme temperatures may be compared for reasonableness or identifying storms which may have impacted the monitoring network.

The site location will be verified with a Global Positioning System (GPS). Topographic or Google Earth maps may be used as a reference for locating stations within the existing network.

There are no non-direct methods for ambient air quality monitoring. The data collected from this monitoring program may be used for community awareness and comparison with regional air quality. Part of air quality awareness is understanding how the measurements compare to known levels of health risk. U.S. EPA has developed the Air Quality Index (AQI)[2] which is a simplified tool for reporting air quality by scaling pollutant concentrations into general categories that are associated with health messaging.

[2] 40 CFR Part 58 Appendix G.

The AQI is keyed as appropriate so that an AQI value of 100 is matched the short-term national ambient air quality standards (NAAQS) for each pollutant. An AQI value of 50 is associated with the numerical value of the annual standard for the pollutant if one exists. The current NAAQS for PM_{10} and $PM_{2.5}$ are as follows:

Pollutant	Averaging Period	NAAQS ($\mu g/m^3$)	Form of the NAAQS
PM_{10}	24-hour	150	Not to be exceeded more than once per year on average over 3 years
$PM_{2.5}$	24-hour	35	98th percentile, averaged over 3 years
	annual	12	Annual mean, averaged over 3 years

B.10 Data Management

The proper management of data is critical to assuring the quality and usability of the monitoring results. As such, procedures have been implemented to assure robust data acquisition, validation, reduction, reporting, and storage of electronic data. PM_{10}, $PM_{2.5}$, and meteorological monitoring data will be recorded and stored at the site using CSI CR1000x and CR310 data loggers. The DASs will be tested after installation to assure that each one is transforming the analog data accurately (what is reflected in instrument readouts), that the data are reduced correctly (one minute and hourly averages) and are being correctly transmitted to Trinity's main computer.

PM_{10}, $PM_{2.5}$, and meteorological data will be retrieved from the monitoring site daily via cellular modem. The modem can be called from any computer having the correct software and the IP address. Data will be posted on a password-protected website that will be available to CSXT personnel. The data logger can hold over six months' worth of data before it begins overwriting data in its memory.

B.10.1 Electronic Calculations and Statistical Analyses

Electronic calculations and statistical analyses will be performed using standard software (e.g., Microsoft Excel) that can be easily verified. Manual calculations are routinely performed to verify Excel results are correct. Project documentation, records, data, and reports will be stored for at least five years following project completion. Data will be stored on Trinity data center servers which are backed up nightly and are archived on and offsite.

Where software that is not considered public domain is used, quality control software verification is performed during software development and after software changes to assure that the software adequately and correctly performs its intended functions. The verification tests performed demonstrate the capability of the computer program to produce valid results for test problems encompassing the range of permitted usage defined by the program documentation. Acceptable test problem solutions are:

a) Hand calculations,
b) Calculations using comparable proven programs, or
c) Empirical data and information from technical literature.

Depending on the complexity of the computer program being tested, testing can range from a single test of the completed computer program to a series of tests performed at various stages of computer program development to verify correct translation between stages and proper working order of individual modules, followed by an overall computer program test.

The test results developed over the testing of the software are thoroughly documented. Software and modifications to it are backed up on a Trinity server. A Quality Assurance Form (SOP 117) is filled out when a calculation is being verified. Test problems shall be run whenever the computer program is installed on a different computer or when substantial hardware changes are made. Verification test results shall be evaluated by the Trinity Project Manager or Trinity QA Director to assure that test requirements have been established. Modifications to the software will be controlled, documented, and assessed to ensure that performance is not unacceptably altered.

B.10.2 Computer Hardware

The computer hardware used for the storage and manipulation of monitoring data will be considered for its intended use. The computer hardware choices are based upon current cost and availability, along with consumer review and reliability track record. The main goal is to minimize downtime in any system; therefore, reliability and service and support availability are primary concerns.

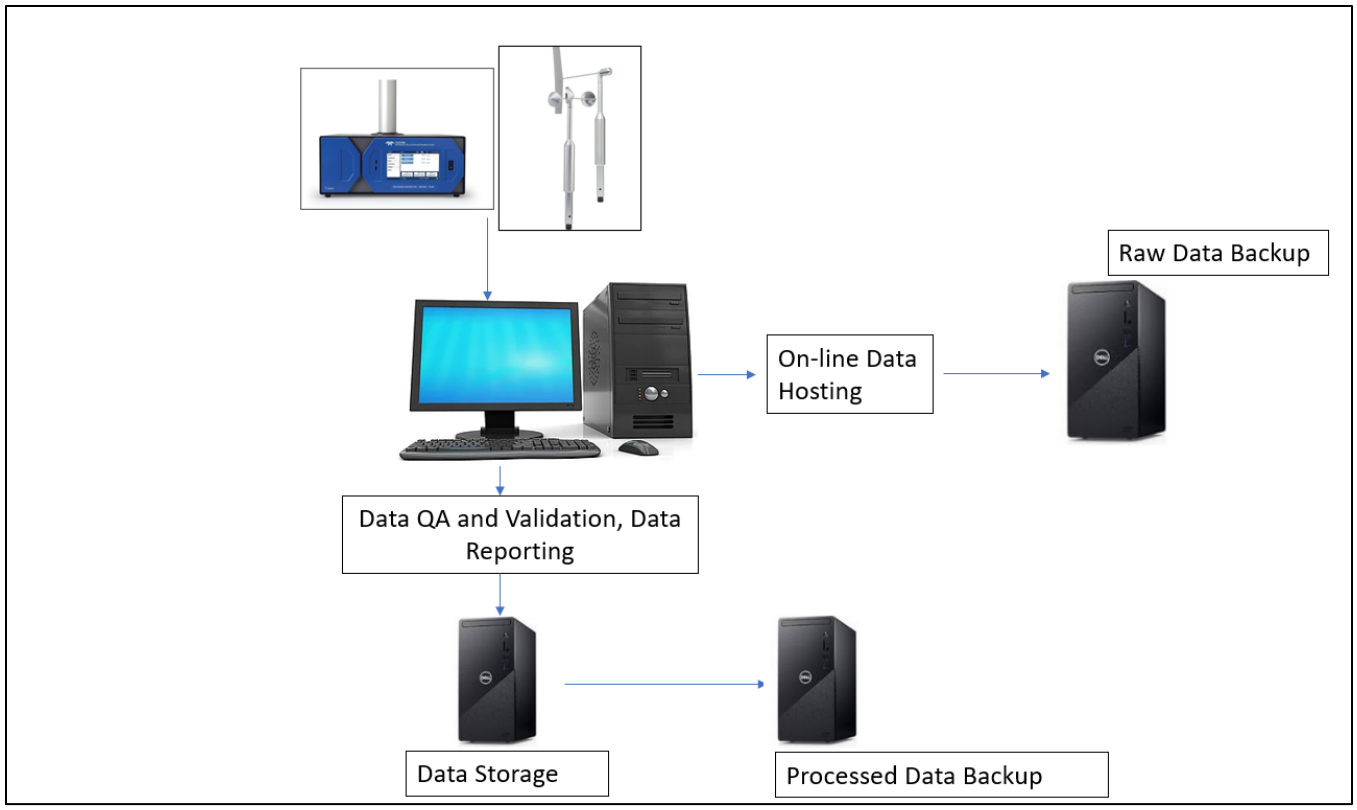
Replacement components should be readily available for the life of the monitoring project. Since most computer systems are factory tested and setup, minimal site testing is required. Functionality checks are made, as well as fault simulations to verify recovery operations. In addition, redundant systems and replication keep data valid and available should the system fail.

Hardware and software systems are purchased and used with available service contracts in place. Software updates are applied when the manufacturer determines the update is essential for system security. Likewise, only required hardware peripherals are employed to minimize system overhead and reduce the number of potential failure points.

B.10.3 Data Review

PM_{10}, $PM_{2.5}$, and meteorological data will be reviewed routinely by the Trinity Data Manager and validated data will be verified by the CSXT Senior Manager for Environmental Programs. These data will be subjected to several levels of quality control, validation, and quality assurance as discussed in Section D. Validated data are compiled into the final database for further analysis and report preparation. The final database is processed and stored on a personal computer and then archived on various storage media and maintained in duplicate in more than one location for protection. The overall flow of data management is illustrated in Figure B-1.

Figure B-1 Data Management Flow Chart



B.10.4 Data Reduction

Data reduction occurs throughout the data management process. Data are collected at a resolution of one minute. The one-minute and hourly data are reviewed monthly using in-house software designed to highlight suspect data.

Trinity has developed and will utilize software which conducts live inspection of monitoring site data. The program is called Data Scanning and Alert System (DSAS) and is used as a tool to assist data management staff identify data outliers, problems with site equipment, or site communication issues. Once every minute, DSAS scans all raw data files downloaded from the monitoring site to see if new data has arrived for interrogation.

After the data collection, DSAS conducts a computerized inspection of the data using pre-defined quality control checks. The quality control checks include data outliers, spikes in data, and data constancy. If parameters fail these tests, the parameter is flagged in the software, and staff are alerted.

A user interface for the DSAS software was developed for visual and audio cues to alert staff when a parameter fails a quality control check. The user interface displays a matrix listing the meteorological and air quality stations in rows as well as associated parameters listed in columns which are reviewed daily. Each cell represents a parameter being measured at a monitoring site and will be colored with green, yellow, orange, or red depending on the severity of the failure. For example, a green cell indicates no problems were detected.

The outlier program does not invalidate data or erase file records based on these outlier tests. It will be left to qualified staff to evaluate the results of the outlier program in conjunction with the data parameter plots and initiate corrective actions if warranted (site visit or data invalidation). To assist in data validation, a copy of the electronic logbook and the note section of the project site software will be examined to confirm periods when instrumentation may have been off-line due to power outages, maintenance or repair, audits, or other quality assurance activities.

Continuous data will be reviewed monthly by using time-series plots. The graphs quickly reveal data abnormalities due to power failure or instrument malfunction. Events flagged as being uncharacteristic measurements will be checked against the graphs for consistency. Calibration data will be reviewed to assess the precision of the data. If the calibrations indicate invalid or low precision, data values may be invalidated as necessary, and the appropriate flags will be applied. Means, maxima, and minima for the month are computed. Especially high values will be checked to be sure that audit or calibration data were not inadvertently included. Suspect data will be reported but flagged as "suspect".

The PM_{10}, $PM_{2.5}$, and meteorological data will be summarized in monthly tables and reported quarterly. The quarterly reports will conform to EPA and MDE guidance.

B.10.5 Data Retrieval

The T-API T640X PM_{10}/$PM_{2.5}$ and meteorological data are retrieved from the monitoring sites by connecting to the DAS via remote telemetry. The MODULAIR-PM produces data which is saved to the onboard micro secure digital (µSD) card every five seconds or every minute. These values are averaged and pushed to the cloud where they are available on the QuantAQ Cloud for retrieval.

B.10.6 Raw Data

Raw data are records, notes, memoranda, worksheets, or exact copies and are the result of original observations and activities of the monitoring project. Raw data includes data from the DAS and data entered directly into a system. Raw data are never corrected.

B.10.7 Data Transfer

The T640X and meteorological sensors produce analog voltages that are collected by DAS and averaged for a specific time period. Data from the MODULAIR-PM are obtained from the QuantAQ Cloud daily. These data are stored on a network and are validated quarterly.

B.10.8 DAS Data Review

Initial and comprehensive data verification is performed by a Trinity Data Manager to assure the instrument is producing data. The review of the data includes reviewing the calibration information, electronic logbook, hourly data, flags, and recording any information that might be vital to proper review of the data. Information used in the review, and which may be used to invalidate data are input to an Excel spreadsheet. This spreadsheet contains data and time of suspect data by parameter, potential reason for data being suspect, and any pertinent comments that relate to this data point. Raw data files are never modified and are archived. Data review also includes documentation of suspect data or invalidations that occurred.

B.10.9 Data Validation

Data validation assures that data processing operations have been carried out correctly and that the quality of field operations has been performed properly and in accordance with written procedures. Once data validation has identified problems, the data can be flagged, or invalidated and correction actions can be taken when necessary. In the event of a failed audit or out of range calibration, the air quality specialist or meteorologist will be responsible for checking or invalidating data. Data validation procedures are described in detail in Section D.

B.10.10 Data Transmittal

Data transmittal occurs when data are transferred from one location to another or from one person or group to another. An example of data transfer is the electronic transfer of data over a telephone or computer network.

Trinity will report ambient air quality data and information to the CSXT Senior Manager for Environmental Programs. Such data will be fully validated and will be submitted directly to MDE by the CSXT Senior Manager for Environmental Programs.

B.10.11 Data Processing

Data processing includes the aggregating and summarizing of results so they can be easily understood and interpreted in various ways. EPA regulations require certain summary data to be computed and reported on a regular basis such as precision, accuracy, bias, etc.

B.10.12 Data Analysis

Data summary and analysis requirements, as presented in 40 CFR Part 58, Appendix A will be followed for the monitoring program. Single analyzer accuracy, based on performance audits, single analyzer precision, bias, and data completeness will be tracked and reported for the monitoring network.

B.10.13 Data Flagging

Data will be flagged if a numeric result is available, but it has been qualified in some respect related to the validity of the result. Null data codes will be generated for invalid data.

B.10.14 Data Storage and Retrieval

An electronic logbook system package will be utilized for the CSXT Curtis Bay Piers Facility monitoring project. The electronic logbook package features Microsoft One-Note. The electronic logbook will keep track of station activities including calibrations, audits, maintenance, or items that in the past would have been entered into a site paper logbook. The entries are automatically time stamped and cannot be deleted. Original entries are recorded and archived. Initial entries are not erased when revisions (edits to previous entries in a different entry session) are made. Personnel entering or editing information are uniquely identified and have been given authority to enter/edit. A list of the personnel, their authority and access privileges are maintained by the Trinity Project Manager. Personnel using the electronic logbook system must be logged in to the system with a unique ID so that all entries can be tracked definitively. Changes are recorded. One Note is accessible from anywhere by logging into the Microsoft One Note account.

C. ASSESSMENTS AND OVERSIGHT

This section describes the quality assurance assessments conducted to provide oversight of the quality control protocols and assure that the quality goals for the data are being met. For roles and responsibilities regarding assessments, please see Section A.4 and below.

C.1 Assessments and Response Actions

According to EPA QA/R-5, the results of quality assurance assessments indicate whether the control efforts are adequate or need to be improved. Documentation of all quality assurance and quality control efforts implemented during the data collection, analysis, and reporting phases is important to data users, who can then consider the impact of these control efforts on the data quality. Both qualitative and quantitative assessments of the effectiveness of these control efforts will identify those areas most likely to impact the data quality and to what extent. The selection and extent of the QA and QC activities used in a program depend on a number of local factors such as the field conditions, the objectives for monitoring, the level of the data quality needed, the expertise of assigned personnel, the cost of control procedures, pollutant concentration levels, etc. To ensure the adequate performance of the quality system, MDE will review and approve the quality program as outlined in the QAPP.

As PQAO, CSXT Senior Manager for Environmental Programs is responsible for QAPP review, quarterly report review, review of QA/QC activities, network reviews, data quality assessments, and oversight of contractor performance audits. The CSXT Senior Manager for Environmental Programs is responsible for oversight of the Quality Management System and is ultimately responsible for the quality of the data. The CSXT QA Manager receives assessment information and ensures that any response actions required as a result of these assessments are carried out. Assessment findings may become corrective actions. Both the finding and corrective action are recorded on a form to facilitate completion of the corrective action and to close and monitor corrective actions for effectiveness.

CSXT has an independent responsibility for the work being assessed and will be responsible for data validation, reporting, and submittal to MDE, if necessary. Disputes related to quality issues or as a result of an assessment are first resolved jointly by CSXT and its contractor, and may include MDE, as appropriate. Ultimate conflict resolution authority is held by the CSXT Senior Manager for Environmental Programs. The CSXT Senior Manager for Environmental Programs has the authority to issue stop work orders.

The adequacy of the quality system is assessed annually through the QAPP review conducted by the CSXT Senior Manager for Environmental Programs and the Trinity Project Manager. Assessments and corrective actions are reported as described in Section C2. Conditions requiring revision or renewal include expiration after five calendar year life span following approval date, major changes to the organization, revisions to 40 CFR 58 or other regulations that affect the quality system, and assessment findings requiring corrective action.

An Independent Auditor will perform performance audits on the continuous PM_{10}/$PM_{2.5}$ monitors and meteorological sensors. The CSXT Senior Manager for Environmental Programs may be in attendance to observe the performance audits. Audit procedures and techniques will follow established EPA audit guidelines as found in the following EPA's Quality Assurance *Handbooks Volume II: Ambient Air Specific Methods and Volume IV: Meteorological Measurements*. PM audits will be performed quarterly; meteorological audits will be performed semi-annually.

The Independent Auditor will verify the flow rates, temperature, and pressure readings of the continuous PM_{10}/$PM_{2.5}$ samplers. Performance audits for the meteorological sensors will be conducted by challenging the sensors with known inputs or collocating audit meteorological sensors with those being used for the monitoring program. Performance audits will serve the monitoring program with a measure of quality assurance and a means to produce a defensible data set. At the conclusion of each audit, a formal report summarizing audit activities and results will be produced and provided to the CSXT Senior Manager for Environmental Programs.

C.1.1 Corrective Actions

Deficiencies identified during routine data surveillance, performance audits and/or site surveillances will be documented and reported to the CSXT Senior Manager for Environmental Programs and Trinity Project Manager no later than three working days of discovery and, depending on the nature of the deficiency, corrective action will be initiated no later than seven working days of the notification. The corrective action report will be initiated by Trinity's Data Manager, Trinity Project Manager, or Trinity Instrumentation Specialist.

Corrective actions to deficiencies will be addressed and documented in the electronic logbook and on a Corrective Action Report. Follow-up action shall be taken to verify implementation of the corrective action. A corrective action report form will be filled out that identifies the problem or deficiency, the proposed corrective action, and the results of the corrective action. Trinity's Project Manager will verify corrective actions and sign off on the completion of the work. Trinity's Project Manager will notify the CSXT Senior Manager for Environmental Programs when the work has been completed to resolve the issue that needed to be corrected. An example copy of a Corrective Action Report is presented in Appendix B.

C.1.2 QAPP and SOP Revisions

The QAPP will be revised any time there are substantial changes to the program and will be submitted to CSXT for review and approval and to the MDE, who will review, comment (if applicable), and ultimately approve the QAPP. If there are no substantial changes to the monitoring program, an annual review will be conducted and will be documented by the CSXT Senior Manager for Environmental Programs and provided to MDE.

As needed, substantial QAPP revisions will be forwarded to the individuals on the distribution list in electronic format with new signatures obtained. Trinity's QA Director will be responsible for revising the QAPP for approval by the CSXT Senior Manager for Environmental Programs and ultimately MDE.

C.2 Reports to Management

Trinity's Project Manager is responsible for overseeing the completion of any reports and distribution of the reports and data to CSXT. A summary of the reports to be generated is presented in Table C-1.

Table C-1 Reports to Management

Reports	Frequency	Content	Responsible Position	Distribution
Quarterly Summaries (Includes Precision and Accuracy)	Every three months	Summarize Data for Quarterly Summaries.	Trinity Data Manager	See Section A.3 Distribution List
Corrective Action Reports	As Needed	Summarizes Corrective Actions Taken to return the Monitoring Station to compliant status	Trinity Project Manager, QA Director, Monitoring Instrumentation Specialists, and Data Manager	See Section A.3 Distribution List
Response to Corrective Action Reports	As Needed	Reports the results of the Corrective Actions Taken	Trinity Project Manager, QA Director, Monitoring Instrumentation Specialists	See Section A.3 Distribution List
Performance Audit Summaries	Every three months	Summarize results of performance audits	Independent Auditor	See Section A.3 Distribution List
QA Status Report	Annual	Annual QAPP Review and review of quality-related activities	CSXT Senior Manager for Environmental Programs, Trinity QA Director	See Section A.3 Distribution List

Quarterly summaries will be submitted to CSXT within 45 days of the end of the monitoring quarter. The quarterly reports will detail the operation of the PM_{10}, $PM_{2.5}$, and meteorological monitoring activities as well as maintenance and service work performed. These reports will contain:

(1) detailed data summaries for each monitoring parameter.
(2) a summary of any problems encountered, the status of any current problems, and the corrective action taken.
(3) a summary of any meetings or correspondence:
(4) a synopsis of percent recovery including brief explanations of missing data.
(5) overall data recovery.
(6) quality control; and
(7) all quality assurance documentation.

The quarterly reports will include a fully quality-assured hourly data file in Excel format, an Adobe Acrobat PDF copy of the formalized report, and other necessary files that are required by MDE. Copies of the quarterly reports are provided to the CSXT Senior Manager for Environmental Programs who will distribute them to MDE.

D. DATA VALIDITY AND USEABILITY

D.1 Data Review, Validation, and Verification Requirements

The purpose of this element is to state the criteria for deciding the degree to which each data item has met its quality specifications and can be used for its intended purpose. Data verification is the process of evaluating the completeness, correctness, and conformance/compliance of a specific data set against the method, procedural, or contractual requirements. Data validation is an analyte and sample specific process that extends the evaluation of data beyond method, procedural, or contractual compliance to determine the analytical quality of a specific data set.

The sampling network design and monitoring station selection will comply with the requirements of 40 CFR Part 58, Appendix A – Quality Assurance Requirements for Monitoring used in Evaluations of National Ambient Air Quality Standards and 40 CFR Part 58, Appendix E – Probe and Monitoring Path Siting Criteria for Ambient Air Quality Monitoring.

Exceptional field events may occur, and field activities may negatively affect the validity of monitoring results. In addition, some of the QC checks may fail to meet acceptance criteria. Information on problems that affect the integrity of data is identified in the form of flags. The review of routine data and associated QC data will be verified and validated monthly. It is assumed that if measurement uncertainty can be controlled within acceptance criteria, then the overall measurement uncertainty will be maintained within the precision and bias DQOs.

On a quarterly basis, a thorough review of the data will be conducted for completeness and accuracy. Unacceptable or questionable data will be flagged appropriately. These data will be "bracketed" using the results of the QC checks. For example, when a QC check exceeds the acceptance criterion, data may be invalidated back to the last known, passing QC check; similarly, data will be invalidated forward until the time of successful corrective action and recalibration.

According to EPA QA/R-5, verification can be defined as confirmation by examination and provision of objective evidence that specified requirements have been fulfilled. Validation is the confirmation by examination and provision of objective evidence that the requirements for a specific intended use are fulfilled.

Verification and validation activities occur at several data collection stages. Previous sections of this QAPP describe in detail how the activities in the data collection phases will be implemented to meet the data quality objectives of the program. Review and approval of the QAPP provides the process, when implemented, for the PQAO to provide data of adequate quality.

A Trinity Data Manager will review the data as the quarterly reports are prepared. Once the reports are completed, they are submitted to the CSXT Senior Manager for Environmental Programs for final approval. Also, the MDE will review the quarterly reports to verify that the QAPP is being followed and data are accurate. Any changes made to the data summary report after submittal to the MDE will include a revision number.

The air quality data validation criteria are based on U.S. EPA's *Quality Assurance Handbook for Air Pollution Measurement Systems, Volumes I and II*. The data validation templates for PM_{10} and $PM_{2.5}$ that are presented in the *Quality Assurance Handbook for Air Pollution Measurement Systems - Volume II* have been adopted for this project (See Tables B-4 through B-6). These templates are comprised of critical criteria, operational evaluations, and systematic issues. Data that do not meet each criterion on the Critical Criteria Table should be invalidated unless there is a compelling justification for not doing so. Violation of a criterion on the Operational Evaluations Table may be cause for invalidation and the reason for not meeting the criterion must be investigated, mitigated, or justified. If a criterion on the Systematic Issues Table is not met, it does not invalidate these data but may impact the "error rate associated with the attainment/nonattainment decision."

Meteorological data validation criteria are based on the U.S. EPA *Quality Assurance Handbook for Air Pollution Measurement Systems, Volume IV (March 2008)*, and U.S. EPA's *Meteorological Monitoring Guidance for Regulatory Modeling Applications (February 2000)*, including recommended system accuracies and response characteristics for meteorological sensors and other applicable U.S. EPA guidance.

The Trinity Project Manager and instrumentation specialists are responsible for verifying the proper operation of the air quality and meteorological monitoring equipment. The Trinity Data Manager and Trinity Project Manager will review the incoming data to the standards discussed in Section B.5 of this document. During each quarter, the data will be reviewed again by a quality assurance reviewer appointed by the Trinity QA Manager to assure that the data are complete, accurate, and representative and that erroneous data have been replaced with a null code in preparation for the final data report.

The Trinity Data Manager will routinely check for irregularities during the daily data review. Data review includes evaluation of the raw data, maintenance records, calibration, and audit data. Abnormalities in the data will be flagged and noted on the appropriate checklists. Suspected data will be brought to the attention of the Trinity Project Manager as soon as possible. Other documentation pertaining to the project (e.g., electronic logbook, calibration, and audit sheets) will be reviewed to assure that erroneous data are identified and removed, as necessary, from the final data set. CSXT Senior Manager for Environmental Programs will review the validity of the data prior to submittal to MDE.

Calibration procedures for the T-640X PM samplers and meteorological equipment are presented in Section B.7 of this QAPP. For the T-640X analyzers and QuantAQ MODULAIR-PM samplers, precision, bias, and accuracy will be determined using the formulas presented in Section B.5. For both the air quality and meteorological data, data will be considered valid when the system response indicated precision, bias and accuracy goals are being achieved.

D.2 Data Validation and Verification Methods

Air quality data validation will be based on the critical criteria presented in QA Handbook Volume II, Appendix D and summarized in Table B-4 above; meteorological data validation will be based on Tables 0-6 and 0-8 of QA Handbook Volume IV and summarized in Table A-12 above. Air quality and meteorological data will be stored by CR1000x and CR310 data loggers. Data will be stored in each data logger memory as one-minute and hourly averages. An hourly average must consist of at least 45 minutes of valid data. Data validation will be performed on the hourly average data.

PM_{10}, $PM_{2.5}$, and meteorological data are screened using an automated system which applies various quality control criteria which is presented in D.2.2. Data flagged by the screening software are checked visually by a Trinity Data Manager. Data identified as possibly erroneous are thoroughly evaluated using instrument records, field notes, instrument maintenance and calibration records, nearby meteorological records, or other available methods. Records of invalid periods will be kept with a brief summary of why the data were invalidated with the associated AQS code. At least one flag will be associated with each invalid data record.

Trinity's Project Manager and CSXT Senior Manager for Environmental Programs are responsible for verifying the proper operation of the PM and meteorological monitoring equipment by reviewing the calibration records, audit results, and field notes from the instrumentation technicians prior to formal acceptance of these data. The Trinity Project Manager and Data Manager will use the validation templates (Section B.5) to assure that the reported data meets the appropriate data quality objectives.

If a 24-hour PM concentration exceeds the short-term primary NAAQS, the MDE Lead Regulation and Compliance Engineer and Air Monitoring Program Manager will be notified within 48 hours or two (2) business days by the CSXT Senior Manager for Environmental Programs via email. This notification will include the date of the exceedance, the exceeding monitor, and PM_{10} or $PM_{2.5}$ concentration (preliminary or validated), and the location of the exceedance. Further information will be included in the quarterly data package including a narrative of the exceedance, a discussion of the meteorological parameters, facility activities and operations, and relevant mitigation information for the period that the exceedance occurred.

D.2.1 Level 0 Data Validation

Level 0 data validation is essentially raw data obtained directly from the data acquisition systems in the field. These data have not received any adjustments for known biases or problems that may have been identified during preventive maintenance checks or audits. Level 0 data validation is accomplished by collecting data via modem and initially screening daily data for anomalies using the DSAS software.

Once data are downloaded via modem, they will be subjected to a series of quality control checks by a software package. The software package performs extensive quality control checks of the data, generates a data summary report which lists means, maximums, minimums, time of occurrence, data values which fall outside of prescribed ranges, periods of constant values, and periods of rapid value changes. This software uses selected data flagging criteria. Example but not all-inclusive criteria that will cause a data flag in the PM_{10}/$PM_{2.5}$ and meteorological data are presented in Table D-1.

Table D-1 Quality Control Checks

Parameter	Less Than	Greater Than	Constant For
PM_{10}	-5 ug/m^3	150 ug/m^3	4 hours
$PM_{2.5}$	-10 ug/m^3	35 ug/m^3	4 hours
Sampler Temperature	0°C	50°C	NA
Wind Speed	0 m/s	35 m/s	2 hours
Wind Direction	0 deg	360 deg	2 hours
Temperature	-30°C	45°C	30 minutes
Relative Humidity	3%	102%	16 hours
Barometric Pressure	-20 mb < 7-day Avg.	20 mb > 7-day Avg.	2 hours
Precipitation	0 inches	1 inch in 24 hours	N/A
Battery Voltage	11.5 V	16 V	N/A

The quality assurance software is used to generate flags or warnings that the parameter value is outside of a normally acceptable range. The outlier program does not invalidate data or erase file records based on these outlier tests. Raw data files are never modified and are archived. It will be left to the Trinity Data Manager to examine the results of the outlier program in conjunction with the data parameter plots and initiate corrective actions if warranted (site visit or data invalidation). Data will be validated in accordance with EPA's *Quality Assurance Handbook for Air Pollution Measurement Systems, Volume II* and *Volume IV*. The CSXT Senior Manager for Environmental Programs will be responsible for verifying and approving the final validated data set. The CSXT Senior Manager for Environmental Programs will notify the Trinity Project Manager of any issues found in the review of the reports/data and Trinity will work with the CSXT Senior Manager for Environmental Programs to resolve any issues.

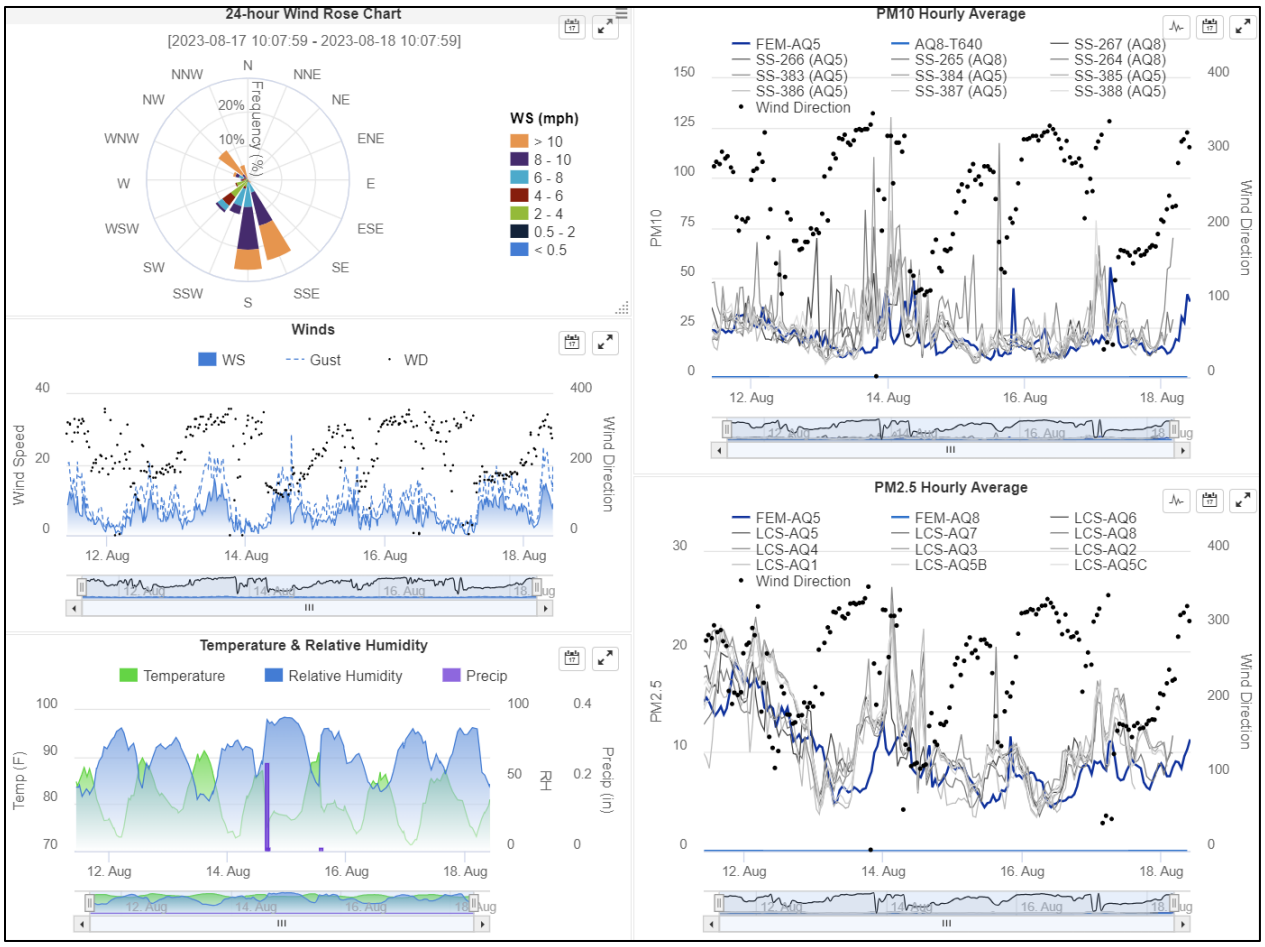
Stacked parameter plots will be generated for the station which consist of data downloaded since the last site interrogation and reviewed by the Data Manager and assigned quality assurance reviewer for consistency and possible problems. This redundancy ensures that problems that might go unnoticed by the software will likely be caught by the reviewer.

To aid in data validation, a password-protected project website will be hosted and updated daily. The site will contain hourly data, daily minimum, maximums, averages, quality assurance reports, and pollutant roses. Historical data can also be reviewed on this website. Figures D.1 and D.2 present examples of the graphical approach for the presentation of these data. By using this graphical approach, data collection percentages are greatly enhanced, and data management personnel can quickly note and resolve potential instrumentation problems.

Figure D-1 Login Page to Web Site



Figure D-2 Example Real-Time Display



D.2.2 Level 1 Data Verification

After the QC software is run, it generates flags in the data for further confirmation and inspection, visual inspection of the data is then performed by a Trinity Data Manager on daily basis to identify suspect data values that warrant further investigation. Hourly PM_{10} and $PM_{2.5}$ data will be evaluated for any exceedances. Null codes will be applied for hours in which maintenance or calibrations occurred. Quality Control flow checks occur on a monthly basis, these checks will be evaluated, and appropriate action taken, if necessary, as part of the data verification process.

Per EPA's *Quality Assurance Handbook for Air Pollution Measurement Systems, Volume II: Ambient Air Quality Monitoring Program*, EPA recommends the use of flags or result qualifiers to identify potential problems with data (or a sample). According to EPA, a flag is an indicator of the fact and the reason that a data value (a) did not produce a numeric result, (b) produced a numeric result but it is qualified in some respect relating to the type or validity of the result, or (c) produced a numeric result but for administrative reasons is not to be reported outside the organization.

Thus, quality control flags and codes, consisting of a letter and value will be assigned to each datum to indicate its quality. Multiple flags will be applied to each invalid data point such as data invalid due to calibration. Table D-2 presents the data flags and codes that will be applied to the data.

Table D-2 Data Flags

Flag	Code	Description
V	0	Valid
C	1	Corrected or estimated
S	7	Suspect: data appears to be a data spike or outside normal data range
I	8	Invalid data
M	9999	Missing data: measurement not taken
BJ	9963	Operator Error
AC	9969	Construction in Area
AE	9971	Shelter Temperature Outside Limits
AH	9974	Sample Flow Rate Out of Limits
AL	9978	Voided by Operator
AM	9979	Miscellaneous Void
AN	9980	Instrument Malfunction
AP	9982	Vandalism
AQ	9983	Collection Failure
AS	9985	Poor QA Results
AT	9986	Calibration
AV	9988	Power Failure
AW	9989	Wildlife Damage
AX	9990	Precision Check
AY	9991	QC Control Points (Zero/Span)
AZ	9992	QC Audit
BA	9993	Maintenance
BB	9994	Unable to Reach Site
BC	9995	Multi-Point Calibration
BD	9996	Auto Calibration

To assist in data verification and validation, a copy of the site electronic logbook and corrective action reports will be examined to confirm periods when instrumentation may have been off-line due to power outages, maintenance or repair, audits, or other quality assurance activities. Events flagged as being uncharacteristic measurements will be checked against the graphs for consistency.

Calibration and flow check data will be reviewed to assess the precision and bias of the data. If the calibrations indicate invalid or low precision, data values may be invalidated, and the appropriate flags will be applied.

Especially high values will be checked to be sure that audit or calibration data were not inadvertently included. Suspect data will be reported but flagged as suspect. Missing data will be left missing. It is important to maintain detailed, accurate records of changes to the data. The justification for data invalidations will be documented in a data validation summary spreadsheet. Suspect data will also be documented in an Excel spreadsheet by the Trinity Data Manager.

Data Quality Objectives are qualitative and quantitative statements that clarify the monitoring objectives, define the appropriate type of data, and specify the tolerable levels of measurement errors for the monitoring program. Table D-3 presents the DQOs for the PM_{10} and $PM_{2.5}$ monitoring.

Table D-3 PM_{10} and $PM_{2.5}$ Data Quality Objectives

Requirement	Frequency	Acceptance Criteria
Sampling period – midnight to midnight	Each sample period	1,380-1,440 minutes
Average flow rate	Every 24 hours	Average within <±5.1% of design
One-point flow rate verification (PM_{10})	Monthly	<±7.1% of transfer standard
One-point flow rate verification ($PM_{2.5}$)	Monthly	<±4.1% of transfer standard <±5.1% of transfer standard

D.2.3 Minimum Acceptable Data Recovery Percentage

A 24-hour PM_{10} and $PM_{2.5}$ concentration must consist of at least 18 hours of hourly data. The data recovery goal for PM_{10} and $PM_{2.5}$ will be at least 75 percent per quarter. To be considered valid, each hour of meteorological data must consist of at least 45 minutes of valid data. Data recovery for meteorological parameters will be 90 percent per quarter.

D.3 Reconciliation with User Requirements

The CSXT Curtis Bay Piers Facility was required to submit a fenceline monitoring plan to the MDE describing the installation, operation, and maintenance of a network of PM_{10} and $PM_{2.5}$ monitors and weather station. Per the Permit to Construct, CSXT is required to install at least one FEM monitor to measure both PM_{10} and $PM_{2.5}$, establish a perimeter network of sensors capable of measuring PM_{10} and $PM_{2.5}$, and a 10-meter meteorological tower that meets current U.S. EPA protocols and guidance. Meteorological measurements consist of wind speed and wind direction at 10-meters, temperature at two-meters, relative humidity at two-meters, barometric pressure at 1.5 meters, and precipitation at 1.2 meters.

The CSXT Senior Manager for Environmental Programs will oversee the monitoring program designed to obtain accurate PM_{10}, $PM_{2.5}$, and meteorological data around the CSXT Curtis Bay Piers Facility in Baltimore, Maryland. The PM_{10}, $PM_{2.5}$ and meteorological monitoring systems will operate according to established EPA protocols to provide scientifically defensible air quality and meteorological data. Data are expected to provide a true representation of PM_{10} and $PM_{2.5}$ concentrations and meteorological conditions at the Curtis Bay Piers Facility and fulfill the goals and objectives of the monitoring program which are defined in Section A.5. Reconciliation with the DQOs will involve reviewing both routine and QA/QC data to determine whether the DQOs have been attained and whether the data are adequate for their intended use.

Uncertainty of validated data is assessed according to procedures identified in Section B.5 and in the quarterly reports. Any limitations on data use are included in the quarterly reports. Following the procedures described in this QAPP will ensure that the data quality objectives are met, and the data will be representative of local meteorological and air quality conditions and be of acceptable quality accuracy, precision, and completeness.

APPENDIX A. PM_{10} AND METEOROLOGICAL EQUIPMENT SPECIFICATIONS

The Model T640 PM Mass Monitor



Teledyne API is excited to unveil the latest addition to our ambient particulate monitoring product portfolio: The Model T640 PM mass monitor. Delivering continuous, real-time PM mass measurements using innovative broadband spectroscopy, the T640 comes with high resolution, fast response, low power, and effortless operation.

— With NumaView™ premium T Series software —

- Large, vivid, and durable color touchscreen display
- Ethernet with TCP/IP Modbus communications and Remote control software
- Lifetime technical support by phone and email
- Standard two-year warranty
- US EPA-approved

TELEDYNE API
Everywhereyoulook™

T640 Specifications

Performance	Measurement Principle	Broadband spectroscopy using 90° white-light scattering with Polychromatic LED
	Particle size resolution	256 sizes over 0.18 – 20µm range, combined to 64 channels for mass calculation
	PM Mass Measurements	PM_{10}, $PM_{2.5}$, and $PM_{10-2.5}$ simultaneously; PM_1 (optional)
	PM Mass Resolution Measurement Range	0.1 - 10,000 µg/m³
	Mass Measurement & Display Resolution	0.1 µg/m³
	Precision	±0.5 ug/m³ (1-hr average)
	Lower Detectable Limit	<0.1 ug/m³ (1-hr average)
	Data Rate	10s to 48hr (user selectable)
	Mass Concentration Accuracy	Exceeds US EPA PM10 FEM and Class III FEM PM2.5 performance requirements for additive and multiplicative bias compared to FRM samplers
	Flow Rate	5.0-lpm sample flow (Standard model); 11.67-lpm optional bypass flow (with option 640x)
	Flow Accuracy	Within ±1%; (Typically within ±0.5%)
Operating Conditions	Operating Temperature	0 - 50°C, non-condensing
	Ambient Temperature	-40 - 60°C
	Ambient Relative Humidity	0 - 100%
	Sample Humidity Control	24VDC, 90W (max) heater controlled to 35% RH
	Weatherproof enclosure required with 0 - 50°C, non-condensing environmental control	
	Requires only 10-min warm-up time	
Interfaces and Data Storage	T Series analyzer interface with full touch screen display and NumaView™ premium operating software and NumaView™ remote software	
	4Gb memory allows for >1 year of internal data storage	
	Front Panel USB Ports	2x type-A Peripheral Ports
	Ethernet Communication (supports TCP/IP Modbus and HTTP polling protocols)	
Electrical	T640 instrument	100 - 240VAC 50/60Hz, Power consumption < 120W @ 120VAC
	External pump (for optional bypass flow - option 640x)	100 - 120VAC 60Hz or 220-240VAC 50/60Hz, Power consumption <360W @ 120VAC
Physical Specifications	Unit dimensions (HxWxD)	7" x 17" x 14" (17.8 x 43.2 x 35.6 cm)
	Unit weight	19 lbs (8.6 kg)
	Sample heater tube height	43" (109 cm)
	Sample heater tube weight	6 lbs (2.7 kg)
Certifications	US EPA $PM_{2.5}$ Federal Equivalent Method EQPM-0516-236 US EPA $PM_{2.5}$ Federal Equivalent Method EQPM-0516-238* US EPA PM_{10} Federal Equivalent Method EQPM-0516-239* US EPA $PM_{10-2.5}$ Federal Equivalent Method EQPM-0516-240*	

* with 640x option
Specifications subject to change without notice.

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www.teledyne-api.com

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QUALITY SYSTEM CERTIFICATION
DNV·GL
ISO 9001

PRODUCT SPECIFICATION SHEET

MODULAIR™-PM

MODULAIR™-PM provides real-time estimates of particulate matter concentrations (PM_1, $PM_{2.5}$, PM_{10}) and particle size distribution using a novel combination of multiple light scattering-based particle sensors (patent pending). Each unit is internet connected and paired with the QuantAQ Cloud™ to provide real-time data visualization and data access, team management tools, and fleet-wide sensor health diagnostics. MODULAIR™-PM is designed to be used indoors or outdoors and is easily deployed as a standalone unit or as part of a distributed air quality sensor network.



AIR QUALITY MEASUREMENTS

PARAMETER	RANGE	ACCURACY
PM_1, $PM_{2.5}$, PM_{10}	0 to 2,000 μgm^{-3}	See page 2.
Particle size distribution	0.35 to 40.0 µm (24 bins)	Not yet determined
Temperature	-40 to 85 °C	±0.2°C
Relative Humidity	0 to 100 %	±2 %

FEATURES

- ✓ 2+ years on-board data storage
- ✓ Full access to raw particle sensor data
- ✓ No user-intervention or maintenance required
- ✓ 1min time resolution (cloud), 5s (on-board)

POWER & COMMUNICATION

PARAMETER	DETAILS
Power	5V, 2A (supply); 250 mA avg. consumption
Communication	LTE (North America), 3G,2G (Worldwide)
Data	Web interface (quant-aq.com) Programmatic access (QuantAQ API) Local storage (µSD card)

OPERATING SPECIFICATIONS

PARAMETER	DETAILS
Weatherproof rating	IP68
Operating temperature	-20 to 50 °C
Operating humidity	5 to 95 %, non-condensing
Dimensions	6.59" x 6.59" x 5.11"
Weight	4 lbs (1.8 kg)

Contact sales@quant-aq.com for more information.

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QUANTAQ

PRODUCT SPECIFICATION SHEET

MODULAIR™-PM

MEASUREMENT ERROR[1]

Time Interval	PM_1	$PM_{2.5}$	PM_{10}
5min	R2 = 0.875 CV_{MAE} = 0.30 MAE = 2.9 μgm^{-3}	N/A	N/A
1h	R2 = 0.899 CV_{MAE} = 0.29 MAE = 2.8 μgm^{-3}	R2 = 0.936 CV_{MAE} = 0.14 MAE = 1.3 μgm^{-3}	R2 = 0.810 CV_{MAE} = 0.32 MAE = 7.6 μgm^{-3}
24h	R2 = 0.919 CV_{MAE} = 0.26 MAE = 2.4 μgm^{-3}	R2 = 0.967 CV_{MAE} = 0.12 MAE = 1.2 μgm^{-3}	R2 = 0.874 CV_{MAE} = 0.31 MAE = 7.6 μgm^{-3}

[1]All statistics were determined via co-location experiments with research and/or regulatory-grade instruments such as the TSI SMPS or Teledyne T640 in environments across the United States. 5min data was not available for $PM_{2.5}$ and PM_{10}. The coefficient of determination (R2) describes how well the MODULAIR-PM predicts the desired outcome. The mean absolute error (MAE) describes the measure of error between the observed and predicted values. The coefficient of variation of the mean absolute error (CV_{MAE}) can be thought of as a 'percent error' as a function of the MAE. This table was last updated in April of 2021.

Contact sales@quant-aq.com for more information.

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QUANTAQ

010C Wind Speed Sensor
020D Wind Direction Sensor

Both wind speed and wind direction sensors are used in environments ranging from Antarctic cold to arid desert heat. The 010C 010C-1 and 020D instruments meet U.S. EPA and NRC performance specifications for critical regulatory, research or scientific measurement applications.

The 010C Wind Speed Sensor provides accurate and detailed information on horizontal wind speed. The lightweight three-cup anemometer is used in virtually all applications where fast response and low starting threshold(s) are of paramount importance.

The 020D Wind Direction Sensor provides azimuth data for use in micro-meteorological measurements related to operational studies and research. The lightweight airfoil vane is directly coupled to a single precision potentiometer. These sensors are especially useful when a low starting threshold, a high damping ratio, or a short delay distance is required.



020D Wind Direction Sensor



010C Wind Speed Sensor

Reliability

The 010C and 020D are made of stainless steel and anodized aluminum components and are functionally more reliable than any other sensors of their kind:

- Built-in electrical field surge protection greatly reduces problems associated with static fields, near-miss lightning hits and poor grounding systems
- Inclusion of Met One Instruments internal heater (AC use only) provides positive clean aspiration through the bearings, thereby greatly increasing sensor bearing life
- Optional, external de-icing heater sleeve for applications where freezing rain, ice and low wind speeds may be encountered

Features

- Low starting threshold
- Internal heater for long bearing life
- High damping ratio
- Low profile to minimize “sensor turbulence”
- Short delay distance
- Quick-disconnect connector
- Ingress Protection Level 65 (IP65)
- Field-replaceable electronic components

Specifications

010C Wind Speed Sensor
020D Wind Direction Sensor

010C Wind Speed Sensor

Performance Characteristics

Maximum Operating Range:	0-135mph (0-60m/s)
Starting Speed:	0.5 mph (0.22 m/s)
Calibrated Range:	0 -112 mph (0 -50 m/s)
Accuracy:	±1% or 0.15 mph (0.07 m/s)
	Resolution <0.1 mph or m/s
Temperature Range:	-50°C to +65°C (-58°F to +149°F)
Distance Constant:	less than 5 lt (1.5m) of flow (meets EPA specifications)

Electrical Characteristics

Power Requirements:	12 VDC at 10 mA, 12 VDC at 350 mA for internal heater
Output Signal:	11 volt (pulse frequency equivalent to speed)
Output Impedance:	100 Ω maximum

Physical Characteristics

Weight:	1.5 lbs (.68 kg)
Finish:	Clear anodized aluminum; Lexan cup assembly

Cable & Mounting

PN 1953	Cable Assembly; specify length in feet or meters
Mounting:	PN 191 Crossarm Assembly

020D Wind Directon Sensor

Performance Characteristics

Azimuth:	Electrical 0° -357°
	Mechanical 0° -360°
Threshold:	0.5 mph (0.22 m/s)
Linearity:	±1/2% of full scale
Accuracy:	±3°
	Resolution <0.1 °
Damping Ratio:	Standard 0.6 (magnesium tail) (meets EPA specifications)
Delay Distance:	Less than 3 ft (91 cm)
Temperature Range:	-50°C to +65°C (-58°F to +149°F

Electrical Characteristics

Power Requirements:	12 VDC at 10 mA, 12 VDC at 350 mA for internal heater
Output Signal:	0-5, 0-2.5 (optional 0-1) VDC for 0° -360°
Output Impedance:	Ω maximum

Physical Characteristics

Weight:	1.5 lbs (.68 kg)
Finish:	Clear anodized aluminum

Cable & Mounting

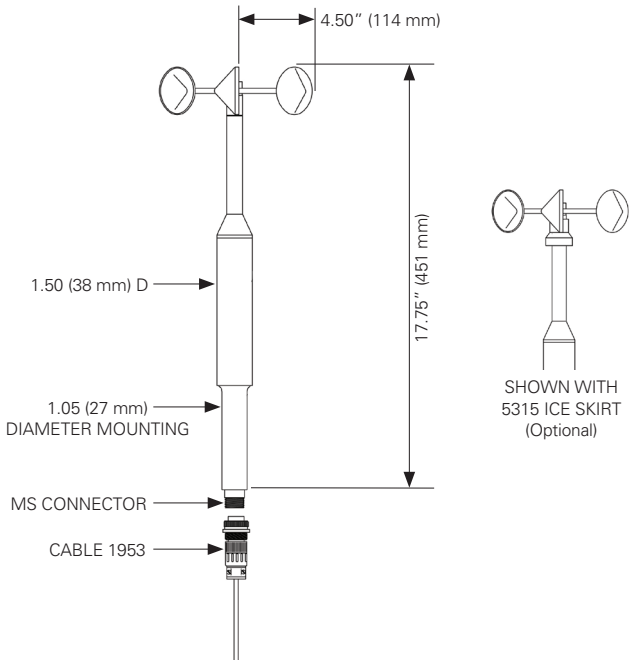
PN 1957	Cable Assembly; specify length in feet or meters PN 191-1
Mounting:	Crossarm Assembly

Wind Sensors W/ Aluminum Cups & Vane

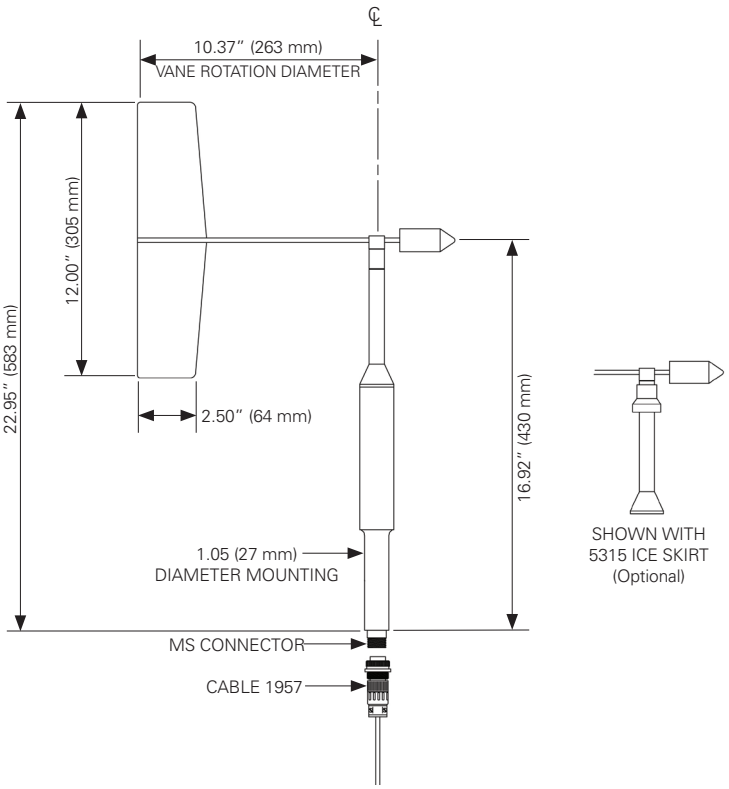
010C Distance Constant:	15 ft. (4.6 m) aluminum cup assembly (meets EPA specifications)
020D Damping Ratio:	0.25 (aluminum tail)

Specifications are subject to change at any time.

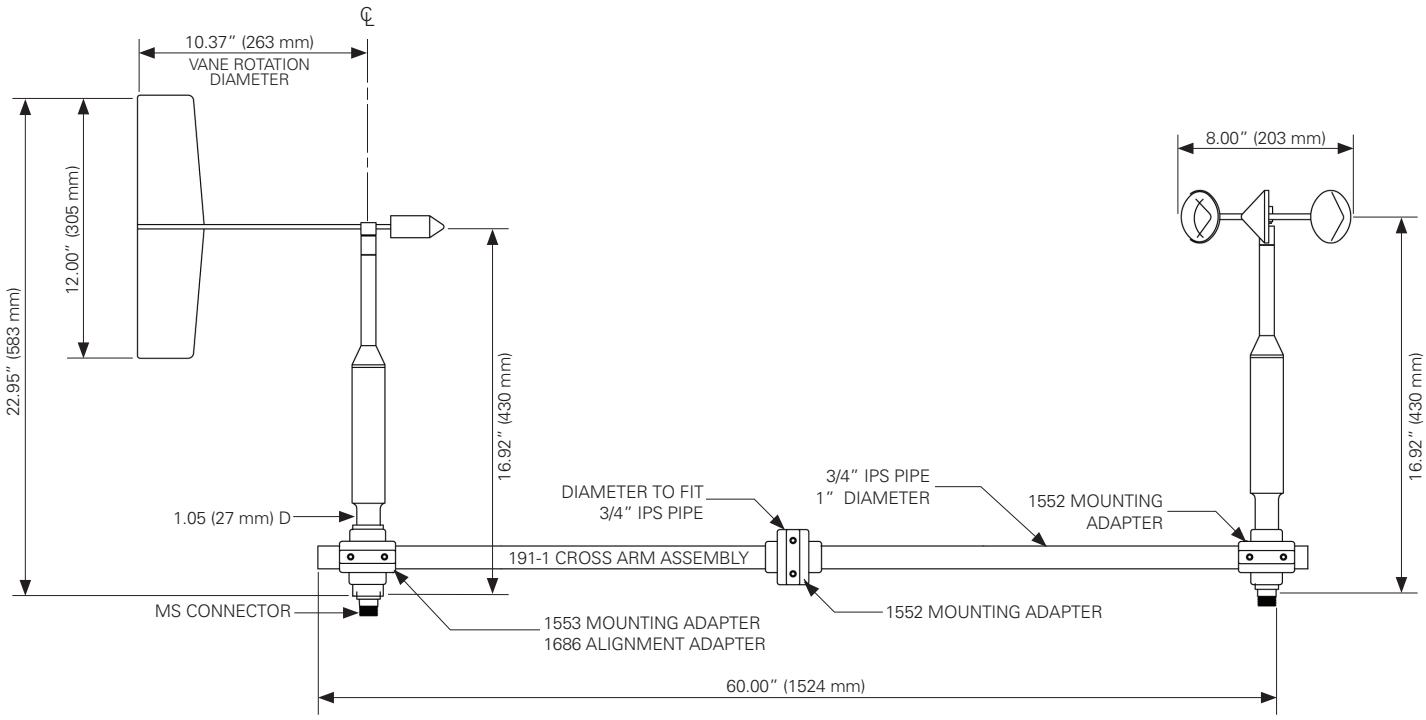
Technical Drawings



010C Wind Speed Sensor



020D Wind Direction Sensor



191-1 Mounting Arm & 010C-020D

CAMPBELL SCIENTIFIC
WHEN MEASUREMENTS MATTER

HygroVUE10

Digital Temperature and Relative Humidity Sensor with M12 Connector



Rugged, Reliable, and Flexible

Simple to use and easy to maintain

Overview

The HygroVUE™10 offers a combined temperature and relative humidity element in an advanced digital sensor that is ideal for weather networks. The electronics within the sensor provide accurate measurements, and the sensor is easy to use. The digital SDI-12 output allows a simple connection and measurement by many data logging systems. Another benefit is that this digital output avoids the extra errors associated with measuring analog sensors.

A stainless-steel mesh filter on the HygroVUE™10 minimizes the effects of dust and dirt on the sensor while allowing air exchange around the sensor element and reducing the chances that condensation remains inside the filter cap. A small PTFE membrane filter is bonded to the surface of the element, which prevents any finer dust or mold from directly influencing the measurement.

Because the sensor housing is designed to withstand permanent exposure to various weather conditions and to fit inside a range of radiation shields (including compact shields), the HygroVUE™10 is truly suitable for a wide range of monitoring applications.

The HygroVUE™10 utilizes a latest-generation, Swiss-made, combined relative humidity and temperature element based on CMOSens® technology that offers good measurements, accuracy, and stability. Each element of the HygroVUE™10 is individually calibrated with the calibration corrections stored on the chip. You can easily change the sensor element in the field, which reduces your downtime and calibration costs.

Benefits and Features

- Uses a combined, pre-calibrated digital humidity and temperature element
- Field-changeable element for fast, on-site recalibration
- Digital SDI-12 output, allowing long cables with no added errors
- Simple data logger programming
- Low power consumption
- Wide operating voltage
- Rugged design with potted electronics
- Standard M12 connector with IP67 sealing rating

Detailed Description

Mounting

When you use the HygroVUE™10 outdoors, it is standard practice to install the sensor within a housing, known as a shield. The shield prevents solar radiation from heating the sensor and creating measurement errors. The radiation shield also provides a degree of protection from adverse weather, such as hail or driving rain. The most common type of shield is a relatively small, naturally ventilated screen that is low maintenance and requires no power.

The HygroVUE™10 is specifically designed for field use with dimensions to suit common radiation shields. (Campbell Scientific recommends the RAD10E 10-Plate Solar Radiation Shield.) You can mount the RAD10E on vertical or horizontal poles.

Field Calibration

Calibration is easy to carry out by simply changing the sensor element. As each sensor element is individually calibrated, no further adjustments of the sensor are required. This means that when you change the element, it returns the sensor to the factory calibration state for both temperature and humidity—without interrupting your measurement collection for long periods.

Specifications

Sensing Element	SHT35 modified by Campbell Scientific
Communication Standard	SDI-12 V1.4 (responds to a subset of commands)
Supply Voltage	7 to 28 Vdc
EMC Compliance	Tested and conforms to IEC61326:2013.
Standard Operating Temperature Range	-40° to +70°C
Main Housing Material	UV stable, white PET-P
Electronics Sealing Classification	IP67
Sensor Protection	Outer glass-filled polypropylene cap fitted with a stainless-steel mesh dust filter with nominal pore size of < 30 µm. The sensor element has a PTFE protective film with a filtration efficiency of > 99.99% for particles of 200 nm or larger size.
Sensor Connector	M12, male, 4-pole, A-coded
Cable	Polyurethane sheathed, screened cable, nominal diameter 4.8 mm (0.19 in.)
Field-Replaceable Chip or Recalibrate	Field-replaceable chip
Sensor Cap Diameter	12.5 mm (0.5 in.)
Body Diameter at Connector	18 mm (0.7 in.)
Length	180 mm (7.1 in.) without cable fitted
Sensor Body Weight	50 g (1.8 oz)
Weight	250 g (8.8 oz) with 5 m (16.4 ft) cable

Relative Humidity

Measurement Range	0 to 100% RH
Accuracy	▸ ±2% (at 25°C, over the range 80 to 100% RH) ▸ *-NOTE- The accuracy figures quoted are the 95% confidence limits relative to factory standards.* ▸ ±1.5% (at 25°C, over the range 0 to 80% RH)
Short-Term Hysteresis	< ±1% RH
Additional Errors at Other Temperatures	< ±1% RH (over -40° to +60°C)
Long-Term Stability	±0.5% per year (maximum drift in clean air conditions)
Reported Resolution	0.001% RH
Repeatability	0.05% RH (3σ noise level)
Response Time with Filter	8 s (63% response time in air moving at 1 m/s)

Air Temperature

Measurement Range	-40°C to +70°C
-NOTE-	*The accuracy figures quoted are the 95% confidence limits relative to factory standards.*
Accuracy	▸ ±0.1°C (over the range 20 to 60°C)

	±0.2°C (over the range -40 to +70°C)
Long-Term Drift	< 0.03°C per year
Reported Resolution	0.001°C
Repeatability	0.04°C (3σ noise level)

Response Time with Filter	< 130 s (63% response time in air moving at 1 m/s)
Calibration Traceability	NIST and NPL standards

Maximum Current Drain

Quiescent	50 µA
During Measurement	0.6 mA (takes 0.5 s)

For comprehensive details, visit: www.campbellsci.com/hygrovue10

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WHEN MEASUREMENTS MATTER

BaroVUE10
Digital Barometer



Perfect for Environmental and Meteorological Applications

User friendly, cost effective, and best-in-class accuracy and stability

Overview

The BaroVUE™10 is a highly accurate barometer that can measure pressures over a range of 500 to 1100 hPa and can be used in a range of applications that includes meteorology and hydrology. This sensor includes our zero downtime recalibration. Other sensors on the market need to be taken offline and sent back to the manufacturer to be recalibrated, often for weeks at a time, causing a loss in valuable data and time, as well as an additional expense.

The sensor card for the BaroVUE™10 is pre-calibrated. Replacement sensor cards are also pre-calibrated, requiring only one trip to the field station and no downtime. The design of the BaroVUE™10 allows you to remove and replace your sensor card quickly and easily without either having to disassemble the equipment in the enclosure or having to send the equipment back to the manufacturer.

Benefits and Features

- Highly reliable measurements (multiple cells)
- Direct-to-digital measurements
- Very low noise
- Integrated identification and diagnostics
- Zero downtime/recalibration
- Easy firmware updates
- Cost effective
- SDI-12 device

Detailed Description

The BaroVUE™10 is a low-power, digital barometer (-40 to +60°C) that provides best-in-class accuracy and stability (±0.1 hPa/yr) over the entire pressure and temperature range. It can run continuously and does not require power cycling unlike other products in this category. The digital output is both SDI-12 and RS-232, which reduces noise and measurement uncertainty compared with analog sensors, and makes the BaroVUE™10 compatible with all Campbell Scientific SDI-12 devices. Moreover, this barometric pressure sensor can be installed and integrated into many new and existing weather stations. The transducers used in the BaroVUE™10 are direct-to-digital sensors, and no reconversion takes place inside the barometer.

Specifications

-NOTE-	*These specifications assume the recommended desiccation is used.*
Pressure Range	500 to 1100 hPa
Temperature Range	-40° to +60°C
Supply Voltage	9 to 28 Vdc
Elevation	~609.6 m (2,000 ft) below sea level (as in a mine) to 4,572 m (15,000 ft) above sea level
Current Consumption	》200 µA (sleep mode) 》< 5 mA (active)
Digital Output	SDI-12, RS-232 serial
Pressure Fitting	Barbed fitting for 0.318 cm (0.125 in.)
Dimensions	2.2 x 9.0 x 10.2 cm (0.87 x 3.54 x 4.02 in.)
Weight	226.8 g (0.5 lb)

Accuracy

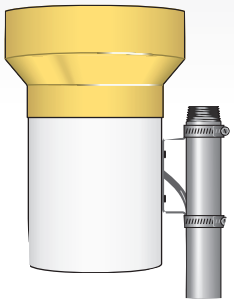
Calibration Uncertainty	±0.15 hPa
Uncertainty	±0.3 hPa (at 20°C)
Total Uncertainty	±0.5 hPa (at -40° to +60°C)
Long-Term Stability	±0.1 hPa/yr
Power Supply Rejection	Negligible
Measurement Noise	0.05 hPa (RMS)
Resolution	0.1 hPa

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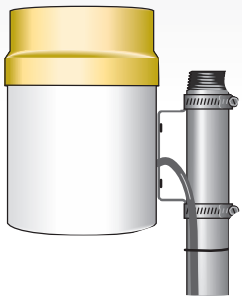
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WHEN MEASUREMENTS MATTER

TE525, TE525WS, and TE525MM

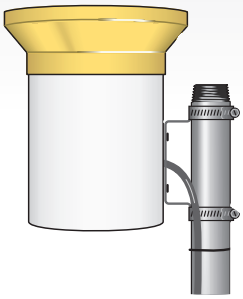
Texas Electronics Tipping Bucket Rain Gages



The TE525WS conforms to the National Weather Service recommendation for an 8-inch funnel orifice.



The TE525 is widely used in environmental monitoring applications.



The TE525MM measures rainfall in metric rather than US units.

Overview

The TE525-series tipping bucket rain gages are manufactured by Texas Electronics. They funnel precipitation into a bucket mechanism that tips when filled to a calibrated level. A magnet attached to the tipping mechanism actuates a switch as the bucket tips. The momentary switch closure is counted by the pulse-counting circuitry of Campbell Scientific dataloggers.

Benefits and Features

- High precision
- Integral bubble level
- Compatible with all Campbell Scientific dataloggers (including the CR200(X) series)
- Compatible with the CWS900-series interfaces, allowing it to be used in a wireless sensor network

Mounting

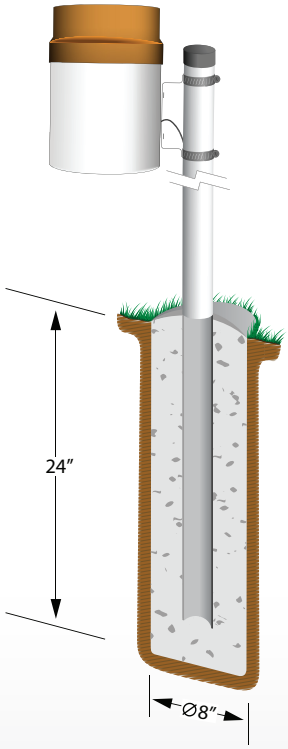
The TE525-series rain gages mount to a CM300-series Mounting Pole or a user-supplied 1.5 in. IPS pole. Several pedestal options are available to secure a CM300-series pole to the ground (see Ordering Information on page 2). Accurate measurements require the gage to be level.

Wind Screen

Campbell Scientific offers the 260-953 Wind Screen to help minimize the affect of wind on the rain measurements. This wind screen consists of 32 leaves that hang freely and swing as wind moves past them.

Snowfall Adapter

Campbell Scientific's CS705 Snowfall Conversion Adapter uses antifreeze to melt snow, allowing the TE525WS to measure the water content of snow. The CS705 cannot be directly used with either the TE525 or TE525MM. However, both the TE525 and TE525MM can be converted to a TE525WS by returning them to Campbell Scientific. For more information, refer to the CS705 brochure.



At left is a TE525 mounted onto a CM310 pole that is embedded directly in a concrete pad (-NP no pedestal base option).

Ordering Information

Tipping Bucket Raingages

Enter the cable length, in feet, after the -L. Recommended length is 25 ft, but many customers will order a 50 ft cable to place the gage away from the tower or tripod. Must choose a cable termination option.

TE525WS-L Tipping bucket with 8 inch diameter orifice and 0.01 in. tips.

TE525-L Tipping bucket with 6 inch diameter orifice and 0.01 in. tips.

TE525MM-L Tipping bucket with 24.5 cm diameter orifice and 0.1 mm tips.

Cable Termination Options (choose one)

-PT Cable terminates in stripped and tinned leads for direct connection to a datalogger's terminals.

-PW Cable terminates in a connector for attachment to a prewired enclosure.

-CWS Cable terminates in a connector for attachment to a CWS900-series interface. Connection to a CWS900-series interface allows this sensor to be used in a wireless sensor network.

-C Cable terminates in a connector for attachment to a CS110 Electric Field Meter or ET107 weather station.

-RQ Cable terminates in a connector for attachment to a RAWS-P Permanent Remote Automated Weather Station. This option is not offered for the TE525MM.

Mounting Poles

CM300 23 inch Mounting Pole with Cap

CM305 47 inch Mounting Pole with Cap

CM310 56 inch Mounting Pole with Cap

Pedestal Options for Mounting Poles (choose one)

-NP No Pedestal Base

-PJ CM340 Pedestal J-Bolt Kit

-PS CM350 Pedestal Short Legs (23 in. legs)

-PL CM355 Pedestal Long Legs (39 in. legs)

Common Accessories

CS705 Snowfall adapter for the TE525WS

10869 Four one-gallon containers of 50:50 PG:E Antifreeze; only U. S. ground shipments

CM270 CM270 Mounting Kit

260-953 Novalynx Alter-type Rain Gage Wind Screen

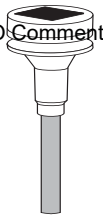
Specifications

	TE525	TE525WS	TE525MM
Sensor Type	tipping bucket/potted magnetic momentary contact reed switch		
Switch Ratings	30 Vdc at 2 A; 115 Vac at 1 A; closure time: 135 ms; bounce settling time: 0.75 ms		
Bucket Material	white powder coated spun aluminum		
Funnel Collector Material	gold anodized spun aluminum		
Screen Material	gold anodized spun aluminum		
Locking Snap Ring Material	stainless steel		
Operating Temperature	0° to +50°C (32° to 125°F)		
Resolution	1 tip		
Volume per Tip	4.73 ml/tip (0.16 fl. oz/tip)	8.24 ml/tip (0.28 fl. oz/tip)	4.73 ml/tip (0.16 fl. oz/tip)
Rainfall per Tip	0.01 in. (0.254 mm)		0.1 mm (0.004 in)
Accuracy	1.0% up to 2 in/hour (50 mm/hr)		
Knife Edge Funnel Collector Diameter	15.4 cm (6.1 in)	20.3 cm (8 in)	24.5 cm (9.7 in)
Height	24.1 cm (9.5 in)	26.7 cm (10.5 in)	29.2 cm (11.5 in)
Tipping Bucket Weight	0.9 kg (2 lb)	1 kg (2.2 lb)	1.1 kg (2.4 lb)
Cable	2-conductor shielded cable		
Cable Weight	0.1 kg (0.2 lb) per 10 ft length		
Warranty	three year		

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October 20, 2015

Sonic Anemometer

6415



The Sonic Anemometer is designed to measure wind-related conditions without moving parts.
Pairs of electro-acoustic transducers in the anemometer send sonic pulses back and forth, and measure the time it takes for the pulse to travel from one to the other. This time is affected by the movement of the air, which allows the anemometer to calculate wind speed and direction, calibrated by temperature measurements.
The sonic anemometer has its own solar panel, so requires no external power.
It can be used with an EnviroMonitor® Node to add wind data to an EnviroMonitor system, as well as a replacement anemometer to your Davis weather station. Installed in a Sensor Transmitter, it can be used to include additional wind stations in your existing system when reporting to a WeatherLink Live™.

General

Operating Temperature	+5°F to +131°F (−15°C to +55°C)
Sensor Type	Ultrasonic sensor
Attached Cable Length	40' (12 m)
Cable Type	4-conductor, 26 AWG
Connector	Modular connector (RJ-11)
Maximum Cable Length	250' (76 m)

Note: Maximum displayable wind speed decreases as cable increases.

Material	
Control Head	Polyacetal
Anemometer Arm	Clear-anodized aluminum
Dimensions (length x width x height)	15.0" x 2.4" (380 mm x 60 mm)
Weight	7 oz. (200 g)

Sensor Output

Wind Direction

Display Resolution	16 points (22.5°) on compass rose, 1° in numeric display
Accuracy	±2 degrees at wind speeds ≥ 7 mph (6 kts, 110 km/h, 3 m/s) ±4 degrees at wind speeds < 7 mph (6 kts, 110 km/h, 3 m/s)

Wind Speed

Resolution and Units	Measured in 1 mph. Other units are converted from mph and rounded to nearest 1 km/h, 0.1 m/s, or 1 knot
Range	0 to 89 mph, 0 to 78 knots, 0 to 40 m/s, 0 to 144 km/h
Accuracy	±2 mph (2 kts, 3 km/h, 1 m/s) or ±4%, whichever is greater
Maximum Cable Length	250' (76 m). Maximum wind speed reading decreases as length of cable increases.

Input/Output Connections

Black	Wind speed open drain to ground
Red	Ground
Green	Wind direction pot wiper (20KΩ potentiometer)
Yellow	Pot supply voltage
Wind Speed Translation Formula	V = P(2.25/T) *(V = speed in mph, P = no. of pulses per sample period T = sample period in seconds))*
Wind Direction Translation	Variable resistance 0 - 20KΩ; 10KΩ = south, 180°

Package Dimensions

Product #	Package Dimensions (Length x Width x Height)	Package Weight	UPC Codes
6415	16.5" x 4.5 x 5.5." (419 mm x 114 mm x 140 mm)	2.0 lbs. (.9 kg)	011698013913

Davis Instruments 3465 Diablo Ave., Hayward, CA 94545-2778 USA
(510) 732-9229 • FAX (510) 670-0589 • sales@davisinstruments.com • www.davisinstruments.com

DS6415 (Rev. B, 7/15/20)

CR1000X Specifications

Datalogger

Electrical specifications are valid over a -40 to +70 °C, non-condensing environment, unless otherwise specified. Extended electrical specifications (noted as XT in specifications) are valid over a -55 to +85 °C non-condensing environment. Recalibration is recommended every three years. Critical specifications and system configuration should be confirmed with Campbell Scientific before purchase.

System specifications 1
Physical specifications 1
Power requirements 1
Power output specifications 2
Analog measurements specifications .. 2
Pulse measurement specifications 4
Digital input/output specifications 4
Communications specifications 5
Standards compliance specifications ... 5
Warranty 5
Terminal functions 6

System specifications

Processor: Renesas RX63N (32-bit with hardware FPU, running at 100 MHz)

Memory:

- Total onboard: 128 MB of flash + 4 MB battery-backed SRAM
  - Data storage: 4 MB SRAM + 72 MB flash (extended data storage automatically used for auto-allocated Data Tables not being written to a card)
  - CPU drive: 30 MB flash
  - OS load: 8 MB flash
  - Settings: 1 MB flash
  - Reserved (not accessible): 10 MB flash
- Data storage expansion: Removable microSD flash memory, up to 16 GB

Program Execution Period: 1 ms to 1 day

Real-Time Clock:

- Battery backed while external power is disconnected
- **Resolution**: 1 ms
- **Accuracy**: ±3 min. per year, optional GPS correction to ±10 µs

Wiring Panel Temperature: Measured using a 10K3A1A BetaTHERM thermistor, located between the two rows of analog input terminals.

Physical specifications

Dimensions: 23.8 x 10.1 x 6.2 cm (9.4 x 4.0 x 2.4 in); additional clearance required for cables and wires.

Weight/Mass: 0.86 kg (1.9 lb)

Case Material: Powder-coated aluminum

Power requirements

Protection: Power inputs are protected against surge, over-voltage, over-current, and reverse power. IEC 61000-4 Class 4 level.

Power In Terminal:

- **Voltage Input**: 10 to 18 VDC
- **Input Current Limit at 12 VDC**:
  - 4.35 A at -40 °C
  - 3 A at 20 °C
  - 1.56 A at 85 °C
- 30 VDC sustained voltage limit without damage.

USB Power: Functions that will be active with USB 5 VDC include sending programs, adjusting data logger settings, and making some measurements. If USB is the only power source, then the CS I/O port and the 5V, 12V, and SW12 terminals will not be operational.

Internal Lithium Battery: AA, 2.4 Ah, 3.6 VDC (Tadiran TL 5903/S) for battery-backed SRAM and clock. 3-year life with no external power source.

Average Current Drain:

Assumes 12 VDC on POWER IN terminals.

- **Idle**: <1 mA
- **Active 1 Hz Scan**: 1 mA
- **Active 20 Hz Scan**: 55 mA
- **Serial** (RS-232/RS-485): Active + 25 mA
- **Ethernet Power Requirements**:
  - **Ethernet 1 Minute**: Active + 1 mA
  - **Ethernet Idle**: Active + 4 mA
  - **Ethernet Link**: Active + 47 mA

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August 23, 2019

Vehicle Power Connection: When primary power is pulled from the vehicle power system, a second power supply OR charge regulator may be required to overcome the voltage drop at vehicle start-up.

Power output specifications

System power out limits (when powered with 12 VDC)

Temperature (°C)	Current Limit[1] (A)
–40°	4.53
20°	3.00
70°	1.83
85°	1.56

[1] Limited by self-resetting thermal fuse

12V and SW12V power output terminals

12V, SW12-1, and SW12-2: Provide unregulated 12 VDC power with voltage equal to the Power Input supply voltage. These are disabled when operating on USB power only.

SW12 current limits	
Temperature (°C)	**Current Limit [1] (mA)**
–40°	1310
0°	1004
20°	900
50°	690
70°	550
80°	470

[1] Thermal fuse hold current.

5 V and 3.3 V

5V: One regulated 5 V output. Supply is shared between the 5V terminal and CS I/O DB9 5 V output.

- **Voltage Output**: Regulated 5 V output (±5%)
- **Current Limit**: 230 mA

C as power output

- C Terminals:
  - **Output Resistance (R_o)**: 150 Ω
  - **5 V Logic Level Drive Capacity**: 10 mA @ 3.5 VDC
  - **3.3 V Logic Level Drive Capacity**: 10 mA @ 1.8 VDC

CS I/O pin 1

5 V Logic Level Max Current: 200 mA

Voltage excitation

VX: Four independently configurable voltage terminals (VX1-VX4). When providing voltage excitation, a single 16-bit DAC shared by all VX outputs produces a user-specified voltage during measurement only.VX terminals can also be used to supply a selectable, switched, regulated 3.3 or 5 VDC power source to power digital sensors and toggle control lines.

	Range	Resolution	Accuracy	Maximum Source/Sink Current[1]
Voltage Excitation	±4 V	0.06 mV	±(0.1% of setting + 2 mV)	±40 mA
Switched, Regulated	+3.3 or 5 V	3.3 or 5 V	±5%	50 mA

[1] Exceeding current limits causes voltage output to become unstable. Voltage should stabilize when current is reduced to within stated limits.

Analog measurements specifications

16 single-ended (SE) or 8 differential (DIFF) terminals individually configurable for voltage, thermocouple, current loop, ratiometric, and period average measurements, using a 24-bit ADC. One channel at a time is measured.

Voltage measurements

Terminals:

- **Differential Configuration**: DIFF 1H/1L – 8H/8L
- **Single-Ended Configuration**: SE1 – SE16

Input Resistance: 20 GΩ typical

Input Voltage Limits: ±5 V

Sustained Input Voltage without Damage: ±20 VDC

DC Common Mode Rejection:

- > 120 dB with input reversal
- ≥ 86 dB without input reversal

Normal Mode Rejection: > 70 dB @ 60 Hz

Input Current @ 25 °C: ±1 nA typical

Filter First Notch Frequency (f_{N1}) Range: 0.5 Hz to 31.25 kHz (user specified)

Analog Range and Resolution:

		Differential with Input Reversal		Single-Ended and Differential without Input Reversal	
Notch Frequency (f_{N1}) (Hz)	Range[1] (mV)	RMS (µV)	Bits[2]	RMS (µV)	Bits[2]
15000	±5000	8.2	20	11.8	19
	±1000	1.9	20	2.6	19
	±200	0.75	19	1.0	18
50/60[3]	±5000	0.6	24	0.88	23
	±1000	0.14	23	0.2	23
	±200	0.05	22	0.08	22
5	±5000	0.18	25	0.28	25
	±1000	0.04	25	0.07	24
	±200	0.02	24	0.03	23

[1] Range overhead of ~5% on all ranges guarantees that full-scale values will not cause over range

[2] Typical effective resolution (ER) in bits; computed from ratio of full-scale range to RMS resolution.

[3] 50/60 corresponds to rejection of 50 and 60 Hz ac power mains noise.

Accuracy (does not include sensor or measurement noise):

- 0 to 40 °C: ±(0.04% of measurement + offset)
- –40 to 70 °C: ±(0.06% of measurement + offset)

Voltage Measurement Accuracy Offsets:

	Typical Offset (µV RMS)	
Range (mV)	Differential with Input Reversal	Single-Ended or Differential without Input Reversal
±5000	±0.5	±2
±1000	±0.25	±1
±200	±0.15	±0.5

Measurement Settling Time: 20 µs to 600 ms; 500 µs default

Multiplexed Measurement Time:

Measurement time = INT(multiplexed measurement time • (reps+1) + 2ms

	Differential with Input Reversal	Single-Ended or Differential without Input Reversal
Example fN1[1] (Hz)	Time[2] (ms)	Time[2] (ms)
15000	2.04	1.02
60	35.24	17.62
50	41.9	20.95
5	401.9	200.95

[1] Notch frequency (1/integration time).

[2] Default settling time of 500 µs used.

Resistance measurements specifications

The data logger makes ratiometric-resistance measurements for four- and six-wire full-bridge circuits and two-, three-, and four-wire half-bridge circuits using voltage excitation. Excitation polarity reversal is available to minimize dc error.

Accuracy:

Assumes input reversal for differential measurements `RevDiff` and excitation reversal `RevEx` for excitation voltage <1000 mV. Does not include bridge resistor errors or sensor and measurement noise.

- 0 to 40 °C: ±(0.01% of voltage measurement + offset)
- –40 to 70 °C: ±(0.015% of voltage measurement + offset)
- –55 to 85 °C (XT): ±(0.02% of voltage measurement + offset)

Period-averaging measurement specifications

Terminals: SE terminals 1-16

Accuracy: ±(0.01% of measurement + resolution), where resolution is 0.13 µs divided by the number of cycles to be measured

Ranges:

- Minimum signal centered around specified period average threshold.
- Maximum signal centered around data logger ground.
- Maximum frequency = 1/(2 * (minimum pulse width)) for 50% duty cycle signals

Gain Code Option	Voltage Gain	Minimum Peak to Peak Signal (mV)	Maximum Peak to Peak Signal (V)	Minimum Pulse Width (µs)	Maximum Frequency (kHz)
0	1	500	10	2.5	200
1	2.5	50	2	10	50
2	12.5	10	2	62	8
3	64	2	2	100	5

Current-loop measurement specifications

The data logger makes current-loop measurements by measuring across a current-sense resistor associated with the RS-485 resistive ground terminal.

Terminals: RG1 and RG2

Maximum Input Voltage: ±16 V

Resistance to Ground: 101 Ω

Current Measurement Shunt Resistance: 10 Ω

Maximum Current Measurement Range: ±80 mA

Absolute Maximum Current: ±160 mA

Resolution: ≤ 20 nA

Accuracy: ±(0.1% of reading + 100 nA) @ -40 to 70 °C

Pulse measurement specifications

Two inputs (P1-P2) individually configurable for switch closure, high-frequency pulse, or low-level AC measurements. See also Digital input/output specifications (p. 4). Each terminal has its own independent 32-bit counter.

> **NOTE:**
> Conflicts can occur when a control port pair is used for different instructions (`TimerInput()`, `PulseCount()`, `SDI12Recorder()`, `WaitDigTrig()`). For example, if C1 is used for `SDI12Recorder()`, C2 cannot be used for `TimerInput()`, `PulseCount()`, or `WaitDigTrig()`.

Maximum Input Voltage: ±20 VDC

Maximum Counts Per Channel: 2^{32}

Maximum Counts Per Scan: 2^{32}

Input Resistance: 5 kΩ

Accuracy: ±(0.02% of reading + 1/scan)

Switch closure input

Terminals: C1-C8

Pull-Up Resistance: 100 kΩ to 5 V

Event: Low (<0.8 V) to High (>2.5 V)

Maximum Input Frequency: 150 Hz

Minimum Switch Closed Time: 5 ms

Minimum Switch Open Time: 6 ms

Maximum Bounce Time: 1 ms open without being counted

High-frequency input

Terminals: C1-C8

Pull-Up Resistance: 100 kΩ to 5 V

Event: Low (<0.8 V) to High (>2.5 V)

Maximum Input Frequency: 250 kHz

Low-level AC input

Minimum Pull-Down Resistance: 10 kΩ to ground

DC-offset rejection: Internal AC coupling eliminates DC-offset voltages up to ±0.05 VDC

CSX PTO Comments – Appendix 16

Input Hysteresis: 12 mV at 1 Hz

Low-Level AC Pulse Input Ranges:

Sine wave (mV RMS)	Range (Hz)
20	1.0 to 20
200	0.5 to 200
2000	0.3 to 10,000
5000	0.3 to 20,000

Digital input/output specifications

Terminals configurable for digital input and output (I/O) including status high/low, pulse width modulation, external interrupt, edge timing, switch closure pulse counting, high-frequency pulse counting, UART[1], RS-232[2], RS-485[3], SDM[4], SDI-12[5], I2C[6], and SPI[7] function. Terminals are configurable in pairs for 5 V or 3.3 V logic for some functions.

> **NOTE:**
> Conflicts can occur when a control port pair is used for different instructions (`TimerInput()`, `PulseCount()`, `SDI12Recorder()`, `WaitDigTrig()`). For example, if C1 is used for `SDI12Recorder()`, C2 cannot be used for `TimerInput()`, `PulseCount()`, or `WaitDigTrig()`.

Terminals: C1-C8

Maximum Input Voltage: ±20 V

Logic Levels and Drive Current:

Terminal Pair Configuration	5 V Source	3.3 V Source
Logic low	≤ 1.5 V	≤ 0.8 V
Logic high	≥ 3.5 V	≥ 2.5 V

Edge timing

Terminals: C1-C8

Maximum Input Frequency: ≤ 1 kHz

---

[1]Universal Asynchronous Receiver/Transmitter for asynchronous serial communications.

[2]Recommended Standard 232. A loose standard defining how two computing devices can communicate with each other. The implementation of RS-232 in Campbell Scientific data loggers to computer communications is quite rigid, but transparent to most users. Features in the data logger that implement RS-232 communication with smart sensors are flexible.

[3]Recommended Standard 485. A standard defining how two computing devices can communicate with each other.

[4]Synchronous Device for Measurement. A processor-based peripheral device or sensor that communicates with the data logger via hardwire over a short distance using a protocol proprietary to Campbell Scientific.

[5]Serial Data Interface at 1200 baud. Communication protocol for transferring data between the data logger and SDI-12 compatible smart sensors.

[6]Inter-Integrated Circuit is a multi-master, multi-slave, packet switched, single-ended, serial computer bus.

[7]Serial Peripheral Interface - a clocked synchronous interface, used for short distance communications, generally between embedded devices.

Resolution: 500 ns

Edge counting

Terminals: C1-C8

Maximum Input Frequency: ≤ 2.3 kHz

Quadrature input

Terminals: C1-C8 can be configured as digital pairs to monitor the two sensing channels of an encoder.

Maximum Frequency: 2.5 kHz

Resolution: 31.25 µs or 32 kHz

Pulse-width modulation

Maximum Period: 36.4 seconds

Resolution:

- **0 – 5 ms**: 83.33 ns
- **5 – 325 ms**: 5.33 µs
- **> 325 ms**: 31.25 µs

Communications specifications

Ethernet Port: RJ45 jack, 10/100Base Mbps, full and half duplex, Auto-MDIX, magnetic isolation, and TVS surge protection.

Internet Protocols: Ethernet, PPP, RNDIS, ICMP/Ping, Auto-IP (APIPA), IPv4, IPv6, UDP, TCP, TLS, DNS, DHCP, SLAAC, Telnet, HTTP(S), FTP(S), POP3/TLS, NTP, SMTP/TLS, SNMPv3, CS I/O IP

Additional Protocols: CPI, PakBus, PakBus Encryption, SDM, SDI-12, Modbus RTU / ASCII / TCP, DNP3, custom user definable over serial, UDP, NTCIP, NMEA 0183, I2C, SPI

USB Device: Micro-B device for computer connectivity

CS I/O: 9-pin D-sub connector to interface with Campbell Scientific CS I/O peripherals.

SDI-12 (C1, C3, C5, C7): Four independent SDI-12 compliant terminals are individually configured and meet SDI-12 Standard v 1.4.

RS-232/CPI: Single RJ45 module port that can operate in one of two modes: CPI or RS-232. CPI interfaces with Campbell Scientific CDM measurement peripherals and sensors. RS-232 connects, with an adapter cable, to computer, sensor, or communications devices serially.

CPI: One CPI bus. Up to 1 Mbps data rate. Synchronization of devices to 5 µS. Total cable length up to 610 m (2000 ft). Up to 20 devices. CPI is a proprietary interface for communications between Campbell Scientific data loggers and Campbell Scientific CDM peripheral devices. It consists of a physical layer definition and a data protocol.

Hardwired: Multi-drop, short haul, RS-232, fiber optic

Satellite: GOES, Argos, Inmarsat Hughes, Irridium

Standards compliance specifications

View EU Declarations of Conformity at www.campbellsci.com/cr1000x.

Shock and Vibration: MIL-STD 810G methods 516.6 and 514.6

EMI and ESD protection:

CSX PTO Comments – Appendix 16

- **Immunity**: Meets or exceeds following standards:
  - **ESD**: per IEC 61000-4-2; ±15 kV air, ±8 kV contact discharge
  - **Radiated RF**: per IEC 61000-4-3; 10 V/m, 80-1000 MHz
  - **EFT**: per IEC 61000-4-4; 4 kV power, 4 kV I/O
  - **Surge**: per IEC 61000-4-5; 4 kV power, 4kV I/O
  - **Conducted RF**: per IEC 61000-4-6; 10 V power, 10 V I/O
- Emissions and immunity performance criteria available on request.

Warranty

Standard: Three years against defects in materials and workmanship.

Extended (optional): An additional four years. against defects in materials and workmanship, bringing the total to 7 years.

Analog input terminal functions

SE DIFF	1 2 ┌1┐ H L		3 4 ┌2┐ H L		5 6 ┌3┐ H L		7 8 ┌4┐ H L		9 10 ┌5┐ H L		11 12 ┌6┐ H L		13 14 ┌7┐ H L		15 16 ┌8┐ H L		RG1	RG2
Single-Ended Voltage	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
Differential Voltage	H	L	H	L	H	L	H	L	H	L	H	L	H	L	H	L		
Ratiometric/ Bridge	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
Thermocouple	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
Current Loop																	✓	✓
Period Average	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		

Pulse counting terminal functions

	P1	P2	C1-C8
Switch-Closure	✓	✓	✓
High Frequency	✓	✓	✓
Low-level Ac	✓	✓	

Analog output terminal functions

	VX1-VX4
Switched Voltage Excitation	✓

Voltage Output

	C1-C8[1]	VX1-VX4	5V	12V	SW12-1	SW12-2
5 VDC	✓	✓	✓			
3.3 VDC	✓	✓				
12 VDC				✓	✓	✓

[1] C terminals have limited drive capacity. Voltage levels are configured in pairs.

Communications terminal functions

	C1	C2	C3	C4	C5	C6	C7	C8	RS-232/CPI
SDI-12	✓		✓		✓		✓		
GPS	PPS	Rx	Tx	Rx	Tx	Rx	Tx	Rx	
TTL 0-5 V	Tx	Rx	Tx	Rx	Tx	Rx	Tx	Rx	
LVTTL 0-3.3 V	Tx	Rx	Tx	Rx	Tx	Rx	Tx	Rx	
RS-232					Tx	Rx	Tx	Rx	✓
RS-485 (Half Duplex)					A-	B+	A-	B+	

Communications terminal functions									
	C1	C2	C3	C4	C5	C6	C7	C8	RS-232/CPI
RS-485 (Full Duplex)					Tx-	Tx+	Rx-	Rx+	
I2C	SDA	SCL	SDA	SCL	SDA	SCL	SDA	SCL	
SPI	MOSI	SCLK	MISO		MOSI	SCLK	MISO		
SDM[1]	Data	Clk	Enabl		Data	Clk	Enabl		
CPI/CDM									✓

[1] SDM can be on either C1-C3 or C5-C7, but not both at the same time.

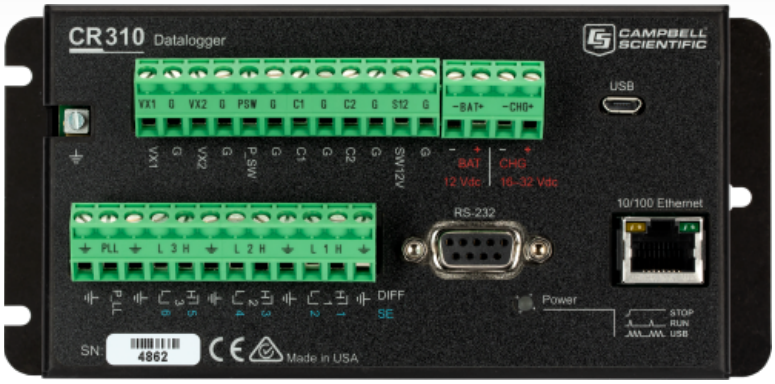
Communications functions also include Ethernet and USB.

Digital I/O terminal functions	
	C1-C8
General I/O	✓
Pulse-Width Modulation Output	✓
Timer Input	✓
Interrupt	✓
Quadrature	✓

CAMPBELL SCIENTIFIC
WHEN MEASUREMENTS MATTER

CR310

Measurement and Control Datalogger



Compact Data Logger with Ethernet

Ideal for small applications

Overview

The CR310 is a multi-purpose, compact, low-cost measurement and control data logger that includes an integrated 10/100 Ethernet port and removable terminal connectors. This entry-level data logger, with its rich instruction set, can measure most hydrological, meteorological, environmental, and industrial sensors. It will concentrate data, making it available over varied networks and deliver it using your preferred protocol. The CR310 also performs automated on-site or remote decision making for control and M2M communications. The CR310 is ideal for small applications requiring long-term, remote monitoring and control.

The primary differences between the CR300 and CR310 are that the CR310 offers removable connectors and a 10/100 Ethernet connection.

The CR310 has multiple radio options that are suitable for different regions:

- CR310-RF407: US and Canada
- CR310-RF412: Australia and New Zealand
- CR310-RF422: Europe
- CR310-RF427: Brazil

Note: Campbell Scientific does not recommend the CR310 for use as a PakBus router in networks with more than 50 devices. Large arrays or string variables may also reach memory limits. For such applications, a CR1000X Measurement and Control Datalogger is recommended.

Benefits and Features

- Set up easily with PC software and USB connectivity
- Measure with confidence analog and digital sensors
- Internet ready–email, FTP, HTTP/web, TCP–with required add-ons
- Trust in the Campbell Scientific quality, including integral surge and ESD protection
- Save money and space using the integrated Ethernet port
- Network wirelessly to another node or Internet gateway with integrated radio option
- CR310-WIFI ideal for short-range, wireless IP communication
- Wiring made easy through removable terminal block
- Communicate from anywhere when using cellular or satellite peripheral
- Charge batteries using the integrated 12 V battery solar charge regulator
- Measure smart sensors using RS-232 or SDI-12
- Connect with PakBus, Modbus, DNP3, GOES, and other standard communication protocols

For comprehensive details, visit: www.campbellsci.com/cr310

- Analyze and control with programmability and multiple general purpose I/O
- Notify with event-driven communications and physical outputs

Detailed Description

Terminal Descriptions

- One switched 12 V terminal (SW12V) for powering sensors or communication devices, 1100 mA @ 20°C
- Two sensor excitation or continuous 0.15 to 5 V terminals (VX1, VX2) for sensor excitation or output control
- Six multipurpose analog input terminals (SE1 - SE6)
  - Analog functions (SE1 - SE6)
    - Analog inputs: 6 single-ended or 3 differential inputs with -100 to +2500 mV and ±34 mV ranges 24 bit ADC
    - 4 to 20 mA or 0 to 20 mA inputs (SE1, SE2 only)
  - Digital I/O functions (SE1 - SE4) consist of 3.3 V logic levels for:
    - High frequency counter (35 kHz)
    - Pulse width modulation
    - Interrupts and timer input
    - Period average (200 kHz, amplitude dependent)
- Two Pulse Counting Terminals (P_SW, P_LL)
  - P_SW
    - Switch closure (150 Hz)
    - High frequency counter (35 kHz)
  - P_LL
    - Low level ac (20 kHz)
    - High frequency counter (20 kHz)
- Two Control Terminals (C1, C2): C terminals are software configurable for digital functions
  - Digital I/O functions consist of 5 V output and 3.3 V input logic levels for:
    - SDI-12
    - High frequency counter (3 kHz)
    - Switch closure (150 Hz)
    - General status/control
    - Voltage source 5 V: 10 mA @ 3.5 V
    - Interrupts
    - Serial asynchronous communication Tx/Rx pair

Specifications

-NOTE-	*Additional specifications are listed in the CR300-Series Specifications Sheet.*
Operating Temperature Range	*Non-condensing environment* -40° to +70°C (standard)
Maximum Scan Rate	10 Hz
Case Material	Powder-coated aluminum
Analog Inputs	6 single-ended or 3 differential (individually configured)
Pulse Counters	8 (P_SW, P_LL, C1, C2, and SE1 to SE4)
Voltage Excitation Terminals	2 (VX1, VX2)
Communications Ports	RS-232 10/100 Ethernet RJ45 USB Micro B
Switched 12 Volt	1 terminal
Digital I/O	7 terminals (C1, C2, P_SW, and SE1 to SE4) configurable for digital input and output. Includes status high/low, pulse width modulation, external interrupt, and communication functions. Exception: The SE4 terminal doesn't do external interrupt.
Input Limits	-100 to +2500 mV
Analog Voltage Accuracy	±(0.04% of measurement + offset) at 0° to 40°C ±(0.1% of measurement + offset) at -40° to +70°C Accuracy specifications do not include sensor or measurement noise.
ADC	24-bit
Power Requirements	16 to 32 Vdc for charger input (CHG) (Current limited to 0.9 A maximum for power converter or solar panel input.)
Power Requirements	10 to 18 Vdc for external batteries (BAT)
Real-Time Clock Accuracy	±1 min. per month
Internet Protocols	Ethernet, PPP, RNDIS, ICMP/Ping, Auto-IP(APIPA), IPv4, IPv6, UDP, TCP, TLS (v1.2), DNS, DHCP, SLAAC,

	NTP, Telnet, HTTP(S), FTP(S), SMTP/TLS, POP3/TLS
Communication Protocols	PakBus, Modbus, DNP3, SDI-12, TCP, UDP, and others
CPU Drive/Programs	80 MB serial flash
Data Storage	30 MB serial flash
Idle Current Drain, Average	10 mA (@ 12 Vdc with Ethernet link idle)
Active Current Drain, Average	56 mA (@ 12 Vdc with Ethernet link active, processor always on)
Dimensions	16.26 x 7.62 x 5.68 cm (6.4 x 3.0 x 2.2 in.)
Weight	288 to 306 g (0.64 to 0.68 lb) depending on communication option selected

CR310-RF407 Option

Radio Type	Frequency Hopping Spread Spectrum (FHSS)
Output Power	5 to 250 mW (user-selectable)
Frequency	902 to 928 MHz (US, Canada)
RF Data Rate	200 kbps
Receive Sensitivity	-101 dBm
Antenna Connector	RPSMA (external antenna required; see www.campbellsci.com/order/rf407 for Campbell Scientific antennas)
Idle Current Drain, Average	12 mA (@ 12 Vdc)
Active Current Drain, Average	< 80 mA (@ 12 Vdc)

CR310-RF412 Option

Radio Type	Frequency Hopping Spread Spectrum (FHSS)
Output Power	5 to 250 mW (user-selectable)
Frequency	915 to 928 MHz (Australia, New Zealand)
RF Data Rate	200 kbps
Receive Sensitivity	-101 dBm
Antenna Connector	RPSMA (external antenna required; see www.campbellsci.com/order/rf412 for Campbell Scientific antennas)
Idle Current Drain, Average	12 mA (@ 12 Vdc)
Active Current Drain, Average	< 80 mA (@ 12 Vdc)

CR310-RF422 Option

Radio Type	868 MHz SRD 860 with Listen Before Talk (LBT) and Automatic Frequency Agility (AFA)
Output Power	2 to 25 mW (user-selectable)
Frequency	863 to 870 MHz (European Union)
RF Data Rate	10 kbps
Receive Sensitivity	-106 dBm
Antenna Connector	(External antenna required; see www.campbellsci.com/order/rf422 for Campbell Scientific antennas.)
Idle Current Drain, Average	9.5 mA
Active Current Drain, Average	20 mA

CR310-RF427 Option

Radio Type	Frequency Hopping Spread Spectrum (FHSS)
Output Power	5 to 250 mW (user-selectable)
Frequency	902 to 907.5 MHz/915 to 928 MHz (Brazil)
RF Data Rate	200 kbps
Receive Sensitivity	-101 dBm
Antenna Connector	RPSMA (External antenna required.)
Idle Current Drain, Average	12 mA (@ 12 Vdc)
Active Current Drain, Average	< 80 mA (@ 12 Vdc)

CR310-WIFI Option

Operational Modes	Client or Access Point
Operating Frequency	2.4 GHz, 20 MHz bandwidth
Antenna Connector	Reverse Polarity SMA (RPSMA)
Antenna	pn 16005 unity gain (0 dBd), 1/2 wave whip, omnidirectional with articulating knuckle joint for vertical or horizontal orientation
Transmit Power	7 to 18 dBm (5 to 63 mW)

CR310-CELL205 Option

-NOTE-	*The CR310-CELL205 option is not compatible with a Verizon cellular network.*
Cell Technologies	4G (LTE CAT-1) 3G (UMTS/HSPA+)
3G Frequency Bands	850, 1700/2100 (AWS), and 1900
4G Frequency Bands	700, 850, 1700/2100 (AWS-1), 1900

Antenna Connector	SMA (External antenna required; see www.campbellsci.com/order/cr310 for Campbell Scientific antennas.)
SIM Interface	3FF (6 position/contacts) Supports SIMs that require 1.8 or 3 V.

CR310-CELL210 Option

-NOTE-	*The CR310-CELL210 option is only compatible with a Verizon cellular network.* CR310-CELL205 Option No
Cell Technologies	4G (LTE CAT-1)
4G Frequency Bands	700, 850, 1700, 1900, 2100
Antenna Connector	SMA (External antenna required; see www.campbellsci.com/order/cr310 for Campbell Scientific antennas.)
SIM Interface	3FF (6 position/contacts) Supports SIMs that require 1.8 or 3 V.

CR310-CELL215 Option

-NOTE-	*The CR310-CELL215 option is intended for use in EMEA countries.*
Cell Technologies	2G (GSM/GPRS/EDGE) 3G (UMTS/HSPA+) 4G (LTE CAT-1)
2G Frequency Bands	900 and 1800 MHz
3G Frequency Bands	850, 900, and 2100 MHz
4G Frequency Bands	800, 850, 900, 1800, 2100, and 2600 MHz
Antenna Connector	SMA (External antenna required; see www.campbellsci.com/order/cr310 for Campbell Scientific antennas.)
SIM Interface	3FF (6 position/contacts) Supports SIMs that require 1.8 or 3 V.

CR310-CELL220 Option

-NOTE-	*The CR310-CELL220 option is intended for use in Australia and New Zealand.*
Cell Technologies	3G (UMTS/HSPA+) 4G (LTE CAT-1)
3G Frequency Bands	850, 900, 1900, and 2100 MHz (EC-21AU) 850 and 2100 MHz (EC-21AUT)
4G Frequency Bands	700, 850, 1800, 2100, and 2600 MHz (EC-21AUT) 700, 900, 1700, 1800, 1900, 2100, and 2600 MHz (EC-21AU)
Antenna Connector	SMA (External antenna required; see www.campbellsci.com/order/cr310 for Campbell Scientific antennas.)
SIM Interface	3FF (6 position/contacts) Supports SIMs that require 1.8 or 3 V.

CR310-CELL225 Option

-NOTE-	*The CR310-CELL225 option is intended for use in Japan.*
Cell Technologies	4G (LTE CAT-1)
4G Frequency Bands	800 (lower), 800 (upper), 850+, 900, 1800, and 2100 MHz
Antenna Connector	SMA (External antenna required; see www.campbellsci.com/order/cr310 for Campbell Scientific antennas.)
SIM Interface	3FF (6 position/contacts) Supports SIMs that require 1.8 or 3 V.

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APPENDIX B. CORRECTIVE ACTION REPORT

Version No: 1
Revision No:
Date:

CORRECTIVE ACTION REPORT

PROJECT NAME _____

Identification of a Problem or Deficiency:

Created By: _____
Assigned To: _____
Date: _____
Verified Satisfactory: _____

Summary:

Corrective Action Taken and Results:

From: _____

Corrective Action Description:

Approved by: _____

APPENDIX C. MONITORING PROGRAM STANDARD OPERATING PROCEDURES

Calibration and Audit Standards Certification

SOP 69

July 28, 2022

Trinity Consultants

Approval of Standard Operating Procedures

Title: Calibration and Audit Standards Certification

SOP: 69

Approved By:



Date: 7/28/2022

Trinity Consultants

Project Director, Casey Lenhart



Date: 7/28/2022

Trinity Consultants

Quality Assurance Director, Linda Conger

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2.0 Audit Standards Certification 4

1.0 General Information

In accordance with EPA's Quality Assurance Handbook for Air Pollution Measurement Systems, Volume II, dated January 2017, reference materials are the standards against which many of the quality control checks are performed. Reference material can be gaseous standards as well as other devices. If these standards are not checked and verified as to their certified values, then the quality of data becomes suspect.

2.0 Calibration and Audit Standards Certification

Reference materials need to be certified and recertified at acceptable frequencies to maintain the integrity of the reference material. All calibration and audit standards will be certified annually or more frequent, as necessary, against National Institute of Standards and Technology (NIST), A2LA, or NVLAP certified or traceable standards. Standards used to audit or calibrate instruments are send for recertification. Upon return of the instruments, they will be acceptance tested to ensure the certification criteria held. Copies of all standards certifications will be kept in hard copy and in electronic form. A standards re-certification schedule will be kept and updated regularly. This schedule will include the audit/calibration standards make, model, serial number, certification date, and date when certifications are due. Calibration and audit standards will be clearly marked with who performed the certification, date of the certification, date due for certification, and standards ID number. Calibration or audit standards found to be out of certification will be tagged and segregated and not used until it is recertified. Calibrations will be performed using only calibration standards; audits will be performed using only audit standards. A list of PM calibration and audit standards and the schedule of recertification is presented in Table 1. Only NIST-traceable standards are used for PM monitoring programs.

TABLE 1 CALIBRATION AND AUDIT STANDARDS

Standard	Model	Serial Number	Date Due	Recertification Vendor
Sreamline Pro For FSA	Streamline Pro	S040205	**5/5/23**	Intermountain Laboratories Chinook Engineering 555 Absaraka (Marty Kjorstad) Sheridan, Wyoming 82801 (307) 672-7790 (800) 828-1407
Streamline Pro (MSI Standard)	Streamline Pro	M051202	**7/8/2022** Out for recertification	Intermountain Laboratories Chinook Engineering 555 Absaraka (Marty Kjorstad) Sheridan, Wyoming 82801 (307) 672-7790 (800) 828-1407
Streamline PRO For UTES	Streamline Pro	M080406	**3/24/23**	Intermountain Laboratories Chinook Engineering 555 Absaraka (Marty Kjorstad) Sheridan, Wyoming 82801 (307) 672-7790 (800) 828-1407
Streamline PRO	Streamline PRO	S210701	**7/29/22**	Marty Kjorstad
Streamline PRO For WDEQ	Streamline Pro	M100604	**5/5/23**	Intermountain Laboratories Chinook Engineering 555 Absaraka (Marty Kjorstad) Sheridan, Wyoming 82801 (307) 672-7790 (800) 828-1407
BGI Delta Cal	Delta Cal	000843	**4/1/23**	Mesa Labs (formerly BGI) *Include PO & RMA* 10 Park Place *w/instrument shipped* Butler, NJ 07405 ATTN: BGI SERVICE 303-987-8000 ext. 34
BGI Delta Cal	Delta Cal	1264 (Kennecott)	**8/18/22**	Mesa Labs (formerly BGI) *Include PO & RMA* 10 Park Place *w/instrument shipped* Butler, NJ 07405 973-492-8400 ATTN: BGI SERVICE 303-987-8000 ext. 34
BGI **AUDIT** DeltaCal	DeltaCal	138171	**8/18/2022**	Mesa Labs (formerly BGI) *Include PO & RMA* 10 Park Place *w/instrument shipped* Butler, NJ 07405 973-492-8400 ATTN: BGI SERVICE 303-987-8000 ext. 34
BGI DeltaCal	DeltaCal	167541 @ (AZR / Trinity - Brad Berglund)	**1/26/2023**	Mesa Labs (formerly BGI) *Include PO & RMA* 10 Park Place *w/instrument shipped* Butler, NJ 07405 973-492-8400 ATTN: BGI SERVICE 303-987-8000 ext. 34
BGI Delta CAL	Delta CAL	179773 was @ Guam	**9/29/22**	Intermountain Laboratories Chinook Engineering 555 Absaraka (Marty Kjorstad) Sheridan, Wyoming 82801 (307) 672-7790 (800) 828-1407
HiVol ORIFICE	Tisch	0379	**12/27/22**	Tisch Environmental, Inc. 145 South Miami Ave. Village of Cleves, OH 45002
HiVol ORIFICE	Tisch	2023	**12/27/22**	Tisch Environmental, Inc. 145 South Miami Ave. Village of Cleves, OH 45002
BIOS Dry Cal BIOS Dry Cal	Definer 220 High Flow Definer 220 Low Flow	140792 140619	**9/15/22** **8/26/22**	MESA LABS 10 Park Place Butler, NJ 07405 For RMA E Mail Denise McHale at mchd@biosint.com
BIOS Dry CAL BIOS Dry CAL	DEFENDER 530+ High Flow DEFENDER 530+ Low Flow	163582 168909	**8/26/2022** **8/26/2022**	MESA LABS 10 Park Place Butler, NJ 07405 For RMA E Mail Denise McHale at mchd@biosint.com

TABLE 1 CONTINUED CALIBRATION AND AUDIT STANDARDS

Standard	Model	Serial Number	Date Due	Recertification Vendor
REO TEMP Digital Thermometer	TM99-A	082818048 AUDIT KIT	**10/12/22**	Meteorological Solutions Laboratory
REO TEMP Digital Thermometer	TM99-A	082818046 KIT 4	**10/12/22**	Meteorological Solutions Laboratory
Brooklyn Digital Thermometer	6661S With utility probe	C404690 CAL KIT	**2/14/23**	Compared with MSI Reference Standard Thermometer. Brooklyn CT071007015-TM9
REOTEMP Digital Thermometer	TM99-A	072409005 KIT 3	**2/14/23**	Meteorological Solutions Laboratory
COOPER Digital Thermometer	TM99-A NEW	120219001 KIT 5	**2/14/23**	Compared with MSI Reference Standard Thermometer. Brooklyn CT071007015-TM9
Cole Parmer (MSI REFERENCE)	90080-12	122171278	**6/10/23**	SIMCO Electronics 65 Wadsworth Park Drive #101, Draper 84020 801-576-0790 tammy.barfield@simco.com
Suunto Digital Barometer	Escape	62900526 **(AUD)**	**7/13/22**	Meteorological Solutions Laboratory Compared with MSI Reference Standard Streamline Pro s/n: M051202
Suunto Digital Barometer	Escape	73403020 **(CAL)**	**7/13/22**	Meteorological Solutions Laboratory Compared with MSI Reference Standard Streamline Pro s/n: M051202
Vaisala	PTB110	G0770063 **(AUD)**	**7/11/23**	Meteorological Solutions Laboratory Compared with MSI Reference Standard Streamline Pro s/n: M051202
Vaisala	PTB110	G0770046 **(CAL)**	**7/11/23**	Meteorological Solutions Laboratory Compared with MSI Reference Standard Streamline Pro s/n: M051202
Vaisala	PTB110	C4240093 **(KIT 4)**	**7/11/23**	Meteorological Solutions Laboratory Compared with MSI Reference Standard Streamline Pro s/n: M051202
Vaisala SETRA (MSI LAB)	PTB 110 @ Indorama?? TREY ??	L0310539 **(KIT 3)** 3323980 **(LAB)**	**7/11/23** **7/12/22**	Meteorological Solutions Laboratory Compared with MSI Reference Standard Streamline Pro s/n: M051202
Vaisala	PTB110	S3450170 **(KIT 5)**	**3/24/23**	Meteorological Solutions Laboratory Compared with MSI Reference Standard Streamline Pro s/n: M051202
Vaisala	PTB110	S2120892 **(AUD-2)**	**3/24/23**	Meteorological Solutions Laboratory Compared with MSI Reference Standard Streamline Pro s/n: M051202
Cooper Digital	TM99A	101314015 **(AUD-2)**	**3/22/23**	Meteorological Solutions Laboratory Compared with MSI Reference Standard Streamline Pro s/n: M051202

In-House Calibration of Test Equipment

SOP 106

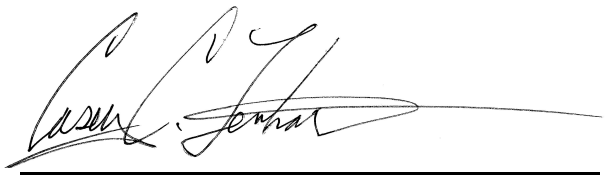
December 7, 2020

Approval of Standard Operating Procedures

Title: In-House Calibration of Test Equipment

SOP: 106

Approved By:



Date: 12/07/2020

Trinity Consultants

Project Director, Casey Lenhart



Date: 12/07/2020

Trinity Consultants

Quality Assurance Director, Linda Conger

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2.0 In-House Equipment Verification 4

1.0 General Information

In accordance with EPA's Quality Assurance Handbook for Air Pollution Measurement Systems, Volume II, dated January 2017, reference materials are the standards against which many of the quality control checks are performed. Reference material can be gaseous standards as well as other devices. If these standards are not checked and verified as to their certified values, then the quality of data becomes suspect. All calibration and/or audit standards will be sent to a certifying authority with standards traceable to National Institute of Standards and Technology (NIST). Calibration standards will only be used for calibration verification activities; audit standards will only be used for audit activities.

2.0 In-House Equipment Verification

Measuring devices such as thermometers and relative humidity devices will be verified annually, and calibration verifications performed at prescribed intervals and whenever the accuracy of the device appears to be suspect. Calibration verifications shall be performed against and traceable to certified calibration/verification standards having known valid relationships to NIST traceable calibration equipment. Monitoring equipment which is new, and which has not been certified against a known reference standard or is out of calibration shall be segregated and not used until a calibration verification has been established. Standards which are new and where a certification was not performed previously, not traceable to NIST or is expired, shall be segregated and not used until a certification traceable to NIST has been established. Audit and calibration standard verifications will be conducted against NIST traceable standards.

A record of the annual calibration or audit verification will be established and will include documentation of all necessary information.

A mass flow controller (MFC) is calibrated by connecting a NIST traceable standard to the output of the MFC. Ten to twenty separate points are compared between the MFC and reference standard readings over the MFC's entire flow range. If the MFC points are greater than 2% off from the reference standard reading, the points are set to match the reference standard and an "after adjustment" full calibration is performed to ensure the points are correct.

Equipment Inventory Procedure

SOP 107

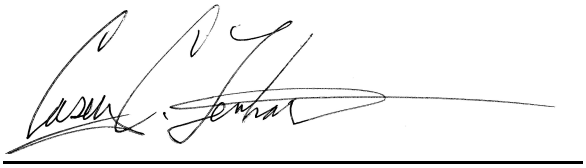
December 7, 2020

Approval of Standard Operating Procedures

Title: Equipment Inventory Procedure

SOP: 107

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Date: 12/07/2020

Trinity Consultants

Project Director, Casey Lenhart



Date: 12/07/2020

Trinity Consultants

Quality Assurance Director, Linda Conger

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1.0 Inventory Procedure

Once procured equipment arrives at Trinity's instrument laboratory, the packing slip is removed from the box and compared against the purchase requisition form. By project, an equipment inventory form is filled out electronically which documents the components ordered, date received, and equipment serial number by Trinity instrumentation specialists. Inventory is tracked by Trinity's senior instrument technician. Copies of the project equipment inventory forms are available in the requisite project directory. An example of this form is presented below. Packing slips are placed in the project file.

Example Equipment Inventory Form

EQUIPMENT INVENTORY SHEET

Trinity Consultants

Description	Serial #	Make	Date Ordered	Date Received	Item Location	Log In/ Date	Log Out/Date

Trinity Consultants	STANDARD OPERATING PROCEDURE	Title: Personnel Training	
		Number: SOP 109	Page: 1 of 3
		Revision Number: 2	Effective Date: 08/18/2022
Approval: Date:			Concurred By:

The purpose of the Standard Operating Procedure (SOP) is to describe the process to document the training and qualification process for personnel involved with the conduct of meteorological and air quality measurements. The intent of this SOP is to ensure that personnel assigned to install, calibrate, maintain and operate meteorological and air quality instrumentation are properly qualified to perform their assignments in an efficient, safe, secure, and compliant manner and are trained to maintain proper qualifications. Personnel assigned to this type of work will receive proper training prior to performing the work. This training is conducted by the MSI Trinity Director of Monitoring Services or his designee.

The Director of Monitoring Services or his designee identifies the qualification requirements and training needs of personnel assigned to work with meteorological and air quality equipment. Qualifications and training to meet these requirements will be validated and verified. Indoctrination and training is commensurate with scope, complexity, education, and experience of the person. Personnel assigned to perform the required monitoring activities will have the education, skills, knowledge and experience commensurate with the functions associated with their work.

A systematic approach has been developed to train personnel in the operation of meteorological and air quality equipment. This approach includes required reading assignments of appropriate monitoring guidance documents and equipment manuals as well as hands-on training in MSI Trinity's monitoring laboratory or in the field, as necessary. Reading assignments will be chosen by the Director of Monitoring Services or his designee include, but are not limited to the following documents:

1. EPA's Quality Assurance Handbook for Air Pollution Measurement Systems: Volume IV, Meteorological Measurements, EPA March 2008;
2. EPA's Meteorological Monitoring Guidance for Regulatory Modeling Applications, EPA-454/R-99-005, February, 2000;
3. 40 CFR Part 58, Appendix A Quality Assurance Requirements for Monitors used in Evaluations of National Ambient Air Quality Standards;
4. 40 CFR Part 50, Appendices A-1, C, D, F, J, L, and,
5. EPA's Quality Assurance Handbook for Air Pollution Measurement Systems, Volume II: Ambient Air Quality Monitoring Program, EPA-454/B-17-001, January 2017.
6. MSI Trinity Standard Operating Procedures, and
7. Manufacturer equipment manuals, as needed.

Title: Personnel Training	Number: SOP 109	Revision Number: 2

Other reading material the Director of Monitoring Services or his designee feels is appropriate in conducting meteorological or air quality measurements will be assigned at his discretion. A required reading form will be completed within two weeks of receipt of reading assignment. In addition, on-the-job training will be provided to personnel responsible for performing instrument integration, calibration, audit, installation, and maintenance. The Director of Monitoring Services or his designee will be responsible for certifying personnel assigned with the above listed activities and will document this certification on the Trinity Employee Qualification Form.

Trinity Required Reading Form

Project Name:	**Date:**
Print Name:	**Position:**
Signature:	
Managers Signature:	
By signing this document, I acknowledge that I have read the latest version of required reading and understand the contents of documents listed below.	

Required Read	**Date**

Title: Personnel Training	Number: SOP 109	Revision Number: 2

Trinity Employee Qualification Form
Name:
Job Title: Date:
Experience in Technical Specialty:
Description of Technical Specialty:
Experience: ☐ High School Graduate or equivalent: (Explain) ☐ College Graduate: ☐ Graduate School: Indicate Degree, Major and Year
Other Education or training as applicable:
Registrations, certifications other qualifications: (List, copies of certificates etc)
MSI Trinity certified to do the perform the following services: (Check box) ☐ meteorological sensor calibration, list sensors: ☐ air quality analyzer calibrations, list analyzers: ☐ meteorological sensor audit, list sensors: ☐ air quality analyzer audit, list analyzers: ☐ other
I hereby certify that to the best of my knowledge the preceding information as presented is correct.
Employee Signature: Date:
Director of Monitor Services: Date:
Quality Assurance Manager: Date:

Trinity Consultants	STANDARD OPERATING PROCEDURE	Title: Visual Inspection of Meteorological Equipment	
		Number: SOP 113	Page: 1 of 1
		Revision Number: 4	Effective Date: 03/31/2022 10/04/2019 (Rev 3)
Approval: Date:			Concurred By:

Upon arrival at site, a visual inspection of the tower and sensors will be performed. The meteorological Site Visit Checklist shall be filled out completely, signed and dated.

If problems are noted, contact project manager, and initiate a corrective action report if needed.

Meteorological Station Visual Inspection Checklist

SITE VISIT CHECKLIST

Trinity Consultants

Operator _____ Date _____
Site Name _____ Stn ID _____
Project _____ Time _____

MET TOWER AND SENSORS:

	YES	NO	N/A	Comments
Solar Panel Clean				
Tower straight, guy wires taut, secured				
Wind Sensors Intact (Propeller, Cups, Vane)				
Temperature Aspirators Operational				
Pyranometer Domes Clean				
Rain Gauge Funnel Clear of Debris/Snow/Ice				
Signs of Sensor Damage				
Sensors Level and Oriented Correctly				
Boom Orientation OK				
Sensor Outputs Check and Functioning Correctly				
Grounding System Intact				
Cellular Antenna Correctly Oriented				
Area Free of Vandalism				
Shelter Integrity				
Fence Integrity				

Computer Program Validation

SOP 117

October 26, 2020

Approval of Standard Operating Procedures

Title: Computer Program Validation

SOP: 117

Approved By:



Date: 10/26/2020

Trinity Consultants

Project Director, Casey Lenhart



Date: 10/26/2020

Trinity Consultants

Quality Assurance Director, Linda Conger



Date: 10/26/2020

Trinity Consultants

Data Manager, Wyndam Lewis

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1.0 Introduction

The procedures defined in this document are used in the validation of computer software written by Trinity programmers.

2.0 Software Verification

Software verification shall be performed during software development and after software changes to ensure that the software adequately and correctly performs all intended functions. The verification tests shall demonstrate the capability of the computer program to produce valid results for test problems encompassing the range of permitted usage defined by the program documentation. Acceptable test problem solutions are:

A. Hand calculations;

B. Calculations using comparable proven programs; or

C. Empirical data and information from technical literature.

Depending on the complexity of the computer program being tested, testing can range from a single test of the completed computer program to a series of tests performed at various stages of computer program development to verify correct translation between stages and proper working order of individual modules, followed by an overall computer program test.

3.0 Test Procedures

Test procedures or plans shall specify the following, if applicable:

A. Required tests and test sequence;

B. Required ranges of input parameters;

C. Identification of the stages at which testing is required;

D. Criteria for establishing test cases;

E. Requirements for testing logic branches;

F. Requirements for hardware integration;

G. Anticipated output values;

H. Acceptance criteria; and

I. Reports and records.

All test results developed over the testing of the software will be thoroughly documented. A Quality Assurance Form (Figure 1) will be filled out when a calculation is being verified. Test problems shall be run whenever the computer program or software updates are installed on a different computer or when significant hardware changes are made. Verification test results shall be evaluated by a responsible authority to assure that test requirements have been established.

4.0 Test Records

Verification test records shall identify the following:

A. Computer program tested;

B. Computer hardware used;

C. Date of test;

D. Test problems;

E. Tester or data recorder;

F. Results and acceptability;

G. Action taken in connection with any deviations noted; and

H. Person evaluating test results.

5.0 Software Validation

Software validation is performed at the end of the implementation phase to ensure that the code satisfies the requirements. Testing shall be the primary method of software validation. The validation of modifications shall be subject to selective regression testing to detect errors introduced during the modification of systems or system components, to verify that the modifications have not caused unintended adverse effects, or to verify that a modified system(s) or system component(s) still meets specified requirements. The selective regression testing analyzes the impact of the new code on the software's existing code.

6.0 Software Configuration Control

A configuration baseline shall be defined at the completion of each phase of the software development. Approved changes created subsequent to a baseline shall be added to the baseline. A baseline shall define the most recent approved software configuration. A labeling system shall be implemented that:

A. Uniquely identified each configuration item;

B. Identifies changes to configuration items; and

C. Provides the ability to uniquely identify each configuration of the revised software available for use.

Changes to software shall be formally documented. This documentation shall contain a description of the change, the reason for the change, and the identification of what was affected by the change. Software verification activities shall be performed for the change, as necessary to ensure the change is appropriately reflected in the software documentation and to ensure traceability. Software validation shall be performed for the change. Before updates or modifying software, ensure that the system is backed-up, and allow for a trial period utilizing all program features used in the past. Review results of system with update to ensure seamless and or improved performance without adverse effects on results (calculations compute correctly, no detrimental effects on other parts of the software program relied on).

7.0 User Documentation

User documentation at a minimum should include:

A. User instructions that contain an introduction, a description of the user=s interaction with the software, and a description of the necessary training to use the software;

B. Input and output specifications;

C. Input and output formats;

D. A description of system limitations;

E. A description of anticipated errors and how the user can respond; and

F. Information for obtaining user and maintenance support.

8.0 Problem Reporting and Corrective Action

A formal procedure of software problem and corrective action shall be established for software errors and failures. This reporting system shall assure that problems are promptly reported. Corrective action shall assure that problems are identified, evaluated, documented, and corrected. Problems should be assessed to determine the impact on past and present applications. Preventive actions and corrective results should be provided to the necessary division within Trinity.

Figure 1. Quality Assurance Form

Reviewer:	
Project:	
Date:	
Time:	
Findings/Calculations:	

Teledyne-API Model T640 Continuous PM Mass Monitor Operation

SOP 218

October 27, 2020

Approval of Standard Operating Procedures

Title: Teledyne-API Model T640 Continuous PM Mass Monitor Operation

SOP: 218

Approved By:

_____ Date:

Trinity Consultants

Project Director, Casey Lenhart

_____ Date:

Trinity Consultants

Quality Assurance Director, Linda Conger

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1.0 Introduction

This Standard Operating Procedure (SOP) describes procedures used by Trinity to operate, maintain and calibrate the Teledyne Advanced Pollution Instruments Model T640 continuous particulate matter (PM) mass monitor utilized for PM_{10} and $PM_{2.5}$ measurement.

2.0 Principle of Operation

The Model T640 PM MassMonitor is an optical aerosol spectrometer that converts optical measurements to mass measurements with sharp accuracy by determining sampled particle size via scattered light at the single particle level according to Lorenz-Mie Theory.

Briefly, the sampling head draws in ambient air with different-sized particles, which are dried with the Aerosol Sample Conditioner (ASC) and moved into the optical particle sensor where scattered light intensity is measured to determine particle size diameter. The particles move separately into the T-aperture through an optically differentiated measurement volume that is homogeneously illuminated with polychromatic light. The polychromatic light source, an LED, combined with a 90° scattered light detection achieves a precise and unambiguous calibration curve in the Mie range, resulting in a large size resolution.

Each particle generates a scattered light impulse that is detected at an 85° to 95° angle where amplitude and signal length are measured; the amplitude (height) of the scattered light impulse is directly related to the particle size diameter.

The T-aperture and simultaneous signal length measurements eliminate border zone error, which is characterized by the partial illumination of particles at the border of the measurement range. The Model T640 has US EPA designation numbers of EQPM-05616-238 for $PM_{2.5}$ at 16.7 LPM and EQPM-0516-239 for PM_{10} at 16.7 LPM.

2.1 Personnel Qualifications

Installation, operation, maintenance, repair or calibration of the instrument and all support equipment will be performed by properly trained personnel. Personnel will meet all minimum requirements and qualifications commensurate with their position.

2.2 Equipment and Supplies

Instrumentation, spare parts, and consumables such as PMT adjustment SpanDust bottle, leak check adaptor kit, and sample tubing used in monitoring activities are stored at the monitoring site or in Trinity's ambient monitoring laboratory.

2.3 Safety Precautions

General safety precautions related to electrical hazards must be observed at all times when working with electrical equipment. Electrical receptacles and equipment must be properly grounded. Use caution when servicing or operating electrical equipment in wet conditions, as frequently encountered at field monitoring sites. Electrical equipment should be switched off and disconnected prior to servicing of internal parts.

3.0 Installation Procedure

The instrument is designed to operate at a temperature range between 0º and 50º C. Care should be taken to install the instrument in a such that it can be accessed for maintenance, repair work, troubleshooting etc. The monitor should be properly grounded. There are several components that are part of drawing in and measuring aerosol samples: the inlet, the Aerosol Sample Conditioner (ASC), an optical particle sensor, a flow sensor, and pump. The US EPA PM_{10} inlet used for the 640X Option samples at 16.67-LPM to mechanically size-cut the aerosol intake for sampling particles at 10 microns and under.

3.1 Physical Inspection

Upon receiving the instrument, confirm that the instrument is in good working order and inspect for damage. If any damage is observed, photograph and document the damage and contact your supervisor. Prior to installation of the instrument, check the following:

1. All items and options are received.
2. Verify that there is no shipping damage.
3. Remove the top cover and inspect for internal shipping damage.
4. Inspect the interior to ensure all circuit boards and other components are intact and securely seated.
5. Check the connectors of the various internal wiring harnesses and pneumatic hoses to ensure they are firmly and securely seated.

3.2 Instrument Siting

The instrument should be sited in accordance with the United States Environmental Protection Agency (U.S. EPA) Title 40, Code of Federal Regulations Part 58 Appendix E "Probe and Monitoring Path Siting Criteria for Ambient Air Quality Monitoring" and US EPA Designated Automated Equivalent Method EQOA-0992-087.

3.3 Datalogger Connection

When using the site datalogger, the RS-232 port on the instrument should be made active using the front control panel of the instrument. The following instrument settings shold be verified to allow for digital communication with the datalogger:

- COM2 on
- BAUD Rate = 9600

After connecting an RS232 cable to the back of the instrument from the datalogger PC to the instrument COM2 port, ensure that both the amber and green RX/TX lights located above the instruments COM2 interface are lit.

3.4 Operational Verification

Prior to operating the T640, ensure that the proper connections have been made including:

A. Connecting the power cord at a well-grounded power outlet; and
B. Connecting the recording devices to the terminal strip and LAN connections on the rear panel.

After proper connections have been made, turn on the power switch.

3.5 Acceptance Testing

Prior to field deployment, all new instruments are tested in the Trinity's ambient laboratory to ensure proper operation prior to collecting data for record. The instrument is set up in the laboratory following the same procedures outlined in this SOP for setting an instrument up in a monitoring station.

A flow and leak check and a multi-point calibration is performed to establish linearity, following the general procedure outlined in this SOP. If the results of the testing are within allowable criteria, the instrument can be deployed to the field for operation.

4.0 Instrument Configuration

Upon initial startup, allow the instrument to run for at least 10 minutes to reach stable operating conditions. Be sure the LED temperature has stabilized before valid measurements are obtained. No adjustments or calibrations should be performed until the LED temperature has stabilized.

After warm-up, navigate to the Dashboard screen to verify that the Monitor is functioning within allowable operating parameters. If not all test functions and values are displayed here, touch the configuration icon to insert additional functions into the Dashboard.

5.0 Analyzer Calibration

A calibration is defined as the comparison of a measurement standard, instrument, or item with a standard or instrument of higher level to detect and quantify inaccuracies and to report or eliminate those inaccuracies by adjustment. To ensure the quality of the data provided by the T640, the analyzer should be calibrated in accordance with recommendations stated in this SOP.

Prior to implementation of any ambient air monitoring activities, PM monitors are required to be calibrated by allowing the instrument to sample and analyze test atmospheres of known concentrations of the appropriate pollutants. Once an instruments' calibration relationship is established, periodic calibrations at reasonable frequencies confirm that the instrument remains in calibration.

To ensure the quality of the data collected, all instruments must be calibrated:

1. During initial field installation and quarterly thereafter,
2. Following physical relocation,
3. Prior to instrument shutdown,
4. After any major maintenance or repair,
5. After an instrument has drifted outside of acceptable QC limits.

Performing frequent adjustments to instrumentation can cause additional measurements uncertainty. Calibration tolerances have been developed so that as long as the instruments are within the tolerances, frequent adjustments to instruments should not be made.

Two forms of field multi-point calibrations, nominally referred to as "As Is" verifications and "As left" calibrations. An "As Is" verification is performed initially to evaluate the instruments accuracy. No adjustments, modifications or repairs are made to the instrument prior to the "AS-IS" verification. This verifies accuracy of the recently generated data; usually back to the previous verification/ calibration check.

A "As Left" calibration is performed after an instrument has failed an "As Is" verification or has undergone major maintenance, repair, or an adjustment.

The flow meter, temperature and pressure devices used to perform the calibrations must be certified and traceable to NIST standards.

5.1 Calibration Equipment

The following equipment is recommended to perform the analyzer calibration:

- NIST traceable ambient temperature, ambient pressure, and flow standard with actual volumetric conversion

- SpanDust bottle,
- Leak check adapter kit, and
- Calibration forms.

5.2 Calibration Verification Procedures

"As Is" instrument verifications should be made prior to making any analyzer repairs or adjustments. It is acceptable to change the particulate inlet filter prior to an "As Is" verification. Prior to beginning "As Is" verification, disable the appropriate DAS channels on the station data logger and record the instruments diagnostic parameters.

There are three basic checks and adjustments that should always be performed in a specific order as shown below:

- Pressure sensor check (and calibration, if needed)
- Flow sensor check(s) (and calibration, if needed)
- PMT Adjustment using SpanDust™

All of these functions are performed in the Calibration menu of the instrument software.

For the Pressure Cal and the two Flow Cal menus, note that the "Measured" parameter provides the value measured by the instrument, and the "Actual" parameter is the value that is to be input from the reading measured by the external auditing device.

5.2.1 Pressure Sensor Check and Calibration

The pressure measurement of the T640 is for the ambient pressure that the instrument is operated in. No direct pneumatic connection to the instrument needs to be made to perform this check/calibration.

1. With the Pressure Standard operating and measuring the ambient pressure in the same room as the T640, navigate to the Pressure Cal menu.
2. Compare the "Measured Pressure" in this screen to the Pressure Standard.
3. If the two values differ by more than 5%, then press the value button in the "Actual Pressure" field, enter the value measured by the Pressure Standard, and press the "Calibrate" button on this screen.

The Measured Pressure value should change to closely match the Actual Pressure within a few seconds.

5.2.2 Sample Flow Cal (5-LPM)

1. Setup your NIST-traceable flow standard transfer device with the appropriate inlet for the flow to be calibrated.
2. Remove the inlet from Upper Inlet Tube.
3. If the 640X Option is installed, remove the Bypass Flow Tube from the ASC tube and cap the Bypass Tube fitting.
4. Connect the Flow Standard to the top of the Upper Inlet Tube. Wait at least one minute for the flow to re-stabilize.
5. With the T640 running, go to the Calibration>Sample Flow Cal menu.
6. Compare the "Measured Flow" in this screen to the Flow Standard.
7. If these values differ by more than 5%, then press the value button in the "Actual Flow" field, enter the value measured by the Flow Standard, and press the "Calibrate" button on this screen. The Measured Flow value should change to closely match the Actual Flow within a few seconds.
8. For the T640 with the 640X Option, leave the Bypass Tube disconnected and proceed to the bypass flow calibration procedure.
9. For the T640 without the 640X Option, leave the Sample Inlet off and proceed to the PMT adjustment procedure.

5.2.3 Bypass Flow Cal (11.67-LPM)

1. Connect the NIST-traceable flow transfer standard device to the Bypass Tube that was disconnected in the Sample Flow Cal procedure above. Wait at least one minute for the flow to re-stabilize.
2. With the T640 running, go to the Calibration>Bypass Flow Cal menu.
3. Compare the "Measured Flow" in this screen to the Flow Standard.
4. If these values differ by more than 5%, then press the value button in the Actual Flow field, enter the value measured by the Flow Standard, and press the Calibrate button on this screen.

The Measured Flow value should change to closely match the Actual Flow within a few seconds.

5.2.4 PMT Adjustment

The Particle Sensor PMT Adjustment uses our SpanDust™, a monodisperse dust with a specific refractive index. All T640 instrument PMTs have a very specific response to this span dust which allows for the sensor to be checked and adjusted in the field for drift caused by contamination of the optics. It is important to note that this is not a calibration of the optical sensor based on the mass of dust being used, but simply a mechanism to check and adjust the PMT response to particles with a specific and known refractive index.

1. Navigate to the PMT Adjust screen.
2. Remove the T640 sample inlet or the 640X Option sample inlet and press the Start button on this screen to suspend normal data acquisition and start this adjustment process.
3. Prepare the SpanDust™ bottle by uncapping the "air intake" at the bottom of the silica gel drier attached to the bottle.
4. Place the tube from the SpanDust™ bottle into the top of the Upper Inlet Tube for the instrument.
5. Ensure that the silicone tube fits snugly inside the aluminum inlet tube, and do not allow the bottle to hang, as it could dislodge the silicone tube from the inlet tube.
6. Gently tap the SpanDust™ bottle to barely agitate the contents just enough to allow the dust to be pulled into the sensor and allow 30 seconds for the Peak Channel reading in this screen to respond.
7. If the Peak Channel reading is not at 11.3, ± 0.5, then adjust the PMT Setting by pressing the Peak Adjust left (decrement) or right (increment) buttons to center the Peak voltage. Each press of a button is 1 volt, so press the Peak Adjust button by as many times as the number of volts the reading is off.

Allow 30 seconds for the Peak Channel reading in this screen to respond, and if it is not at 11.3, ± 0.5, repeat the process. This could take several tries over a long period when conducted in a humid environment.

1. Once the Peak Channel reading is at 11.3, ± 0.5, reattach the sample inlet and press the Stop button to stop the adjustment process and resume normal data acquisition.

5.2.5 Temperature Check

Set the temperature reference standard next to the ambient temperature sensor and wait until the temperature readings for both stabilize. While the temperature sensor cannot be calibrated, it should be checked to make sure it is within ±2°C of a reference standard.

The temperature reading is used for volumetric flow, and once the flow has been calibrated, it is the change in temperature that really matters. If the sensor does not read exactly the same as a reference standard, that is not as important as whether their ΔT match (i.e. change in temperature over the same period of time).

An "as left" calibration is conducted when an analyzer fails the "as is" verification and/or after major repair or maintenance. After performing the necessary maintenance, adjustments or instrument repairs, conduct a final calibration as follows:

5.3 Leak Check

The internal components of the T640 are not meant to be under strict vacuum as what would normally be done in a leak test. So, to avoid damage to internal components, it is recommended that the inlet never be capped (airtight) while the instrument pump is running.

The Leak Check (**Zero Test)** is a way to check for leaks that do not involve pulling a vacuum on the system.

1. Navigate to the Calibration>Leak Check menu.
2. Press Start.
3. Remove the sample line inlet and replace with the T640 leak check kit or equivalent fitting with filter.
4. Within a few minutes, the PM values should be at zero; note the following:
   a. PM values remaining below 0.2ug/m^3 indicate that there are no leaks.
   b. PM values remaining steady above 0.2ug/m^3 indicate a possible leak in the sample line, above the optical sensor.
      - Check o-rings and proper installation of couplers and tubing.
      - It is also possible the HEPA filter being used is either bad or leaking. Always have a second filter handy to check.
5. When satisfied that the readings are stable and the condition has been determined, remove the HEPA filter from the sample line, replace the sample inlet, and then press "Stop" on the Leak Check screen.

6.0 Maintenance Procedures

Presented below in Table 1 is the preventative maintenance schedule for a Teledyne-API Model T640 PM Mass monitor. Perform the routine service checks at least at the prescribed intervals.

Table 1 Maintenance Schedule

Item	Frequency	Manual Section
Clean Inlet	Monthly or as needed	5.2.1 or 5.2.2
Check/Adjust PMT with SpanDust	Monthly or as needed	4.5
Check pump performance	Monthly	5.2.4
Flow Rate Verification	Monthly	5.25
Leaks with zero filter	Monthly or as needed	5.2.8
Inspect and clean optical chamber and RH/T sensor	Every 6 months or as needed	5.2.8
Inspect inner and outer sample tubes	Monthly or as needed	5.2.7

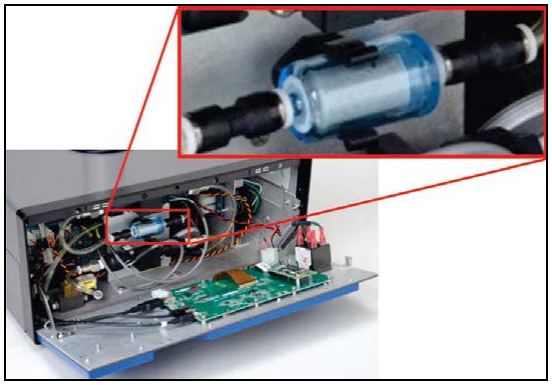
6.1 CLEANING THE T640 INLET

1. Power off the pump from the Setup>Vars>Pump Control menu.
2. Remove the sampling inlet from the sampling line.
3. Disassemble the sampling inlet: two screws at base of inlet and base plate.
4. Carefully and thoroughly remove any dust deposits from inside of the inlet.
5. Remove any insects or other debris from the filtering screen.
6. Clean all the components using water and a mild detergent.
7. Dry all components thoroughly with a clean cloth and blow compressed air through nozzles.
8. Check and, if needed, replace the o-rings located on the outside and the inside of the base plate, and grease them with vacuum grease.
9. Re-assemble the sampling inlet, sliding the baseplate back into the base of the inlet body, making sure to line up with the screw holes. The screws should be put back in to hand-tight pressure.
10. Reconnect sampling line.
11. Power up the pump from the Setup>Vars>Pump Control menu.

6.2 CHANGING THE DISPOSABLE FILTER UNIT (DFU)

1. Power off the pump from the Setup>Vars>Pump Control menu.
2. Pull open the instrument's front panel, using the front panel finger grips.
3. Noting its orientation, remove the old DFU by detaching from the pneumatic quick-connect fittings, and replace with a new DFU matching the orientation. See Figure 1.

FIGURE 1 Disposable Filter Unit

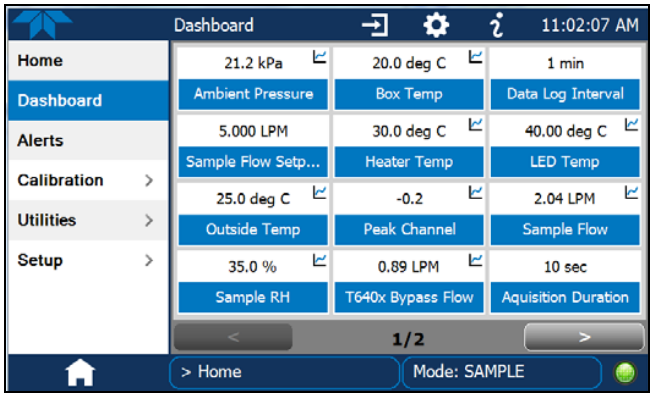


1. Ensure the filter is seated snugly with no gaps, and power on the pump from the Setup>Vars>Pump Control menu.

6.3 CHECKING PUMP PERFORMANCE

There is one internal pump in the T640. The pump must maintain proper flow for measurement accuracy. Check their performance levels on the Dashboard screen. See Figure 2.

Figure 2 Dashboard Page



- Pump PWM should be running between 35% and 80%.
- Valve PWM should be running between 35% and 85%.

If the performance levels are out of range, refer to Model T640 operator's manual.

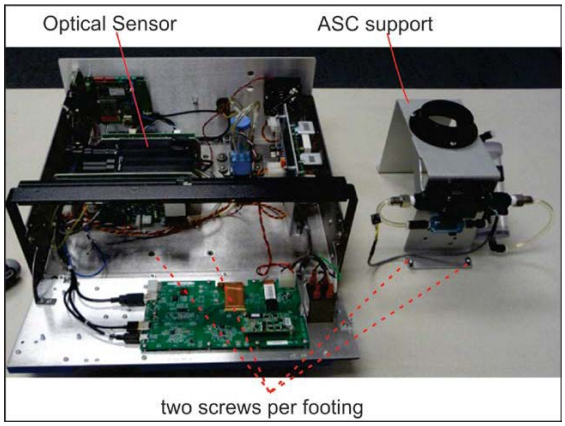
6.4 CHECKING THE VOLUME FLOW

Check the Sample Flow levels in the Dashboard (Figure 2). If out of range (5 LPM, ±0.25 LPM), refer to the Model T640 operator's manual.

6.5 CLEANING THE OPTICAL CHAMBER AND THE RH/T SENSOR

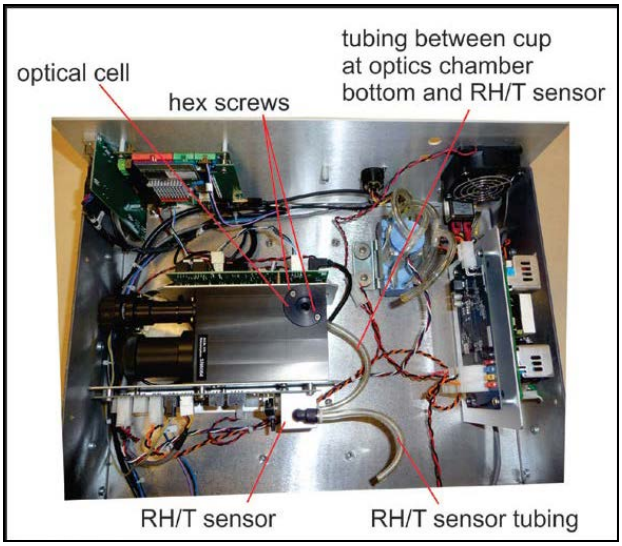
1. Remove the ASC support, which straddles the sensors. Four screws secure that support to the floor of the instrument, two on each footing. See Figure 3.

Figure 3 Optical Chamber and RH/T Sensor Access



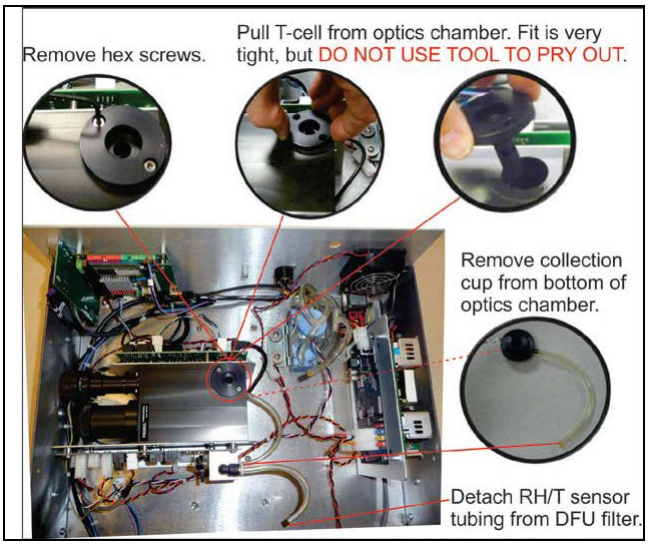
2. Locate the optical cell, the cup at bottom of optics chamber and its tubing, and the Relative Humidity and Temperature (RH/T) sensor. See Figure 4.

FIGURE 4 LOCATION OF OPTICS CHAMBER AND RH/T SENSOR



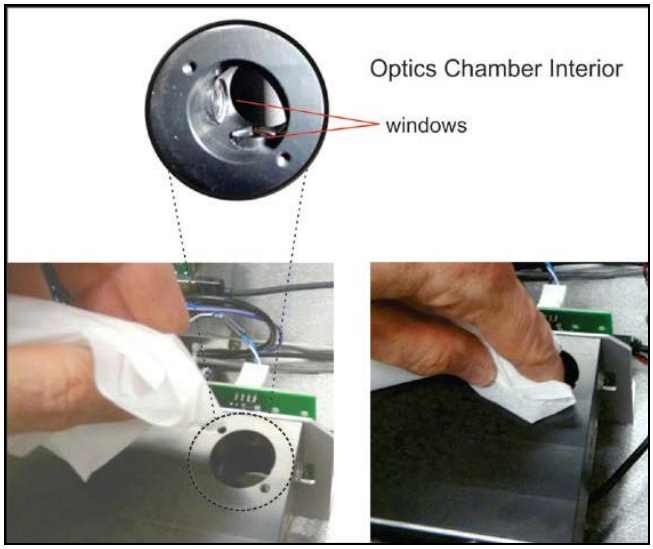
3. Remove optical cell from optics chamber, and remove cup, including its tubing, from optics chamber bottom; detach RH/T sensor tubing from DFU filter. See Figure 5.

Figure 5 Maintenance: Optical Chamber Disassembly



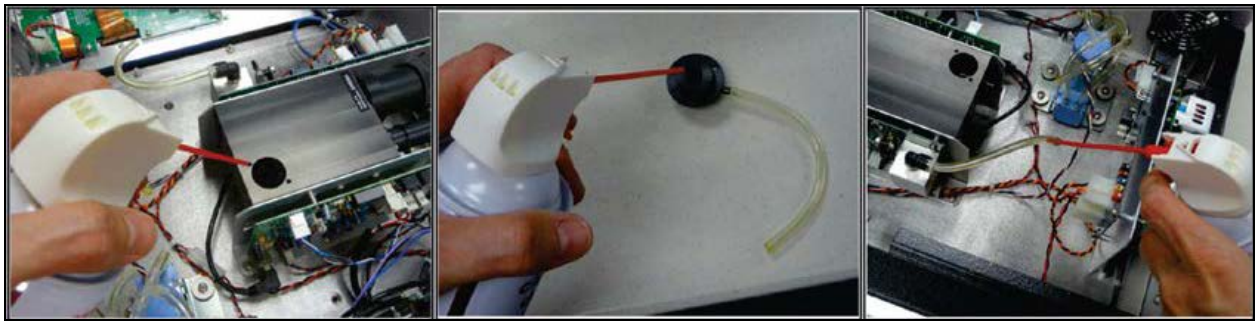
4. Clean the optics chamber interior surfaces, ensuring to include windows, with a lint-free cloth. See Figure 6.

Figure 6 Optics Chamber Windows



5. Use a can of compressed gas made specifically for electronics to blow any dust or other debris from the optics chamber, from the cup, from the bottom of the optics chamber, and from the tubing. See Figure 7.

Figure 7 Final Dusting



6. When finished, reassemble optics chamber components; reinsert cup to bottom of optics chamber; reconnect tubing from cup in bottom of chamber to RH/T sensor and from RH/T sensor to the DFU filter, and reinstall the ASC support.
7. Close instrument and perform a PMT sensor check with the SpanDust™.

6.6 INSPECTING THE SAMPLING LINE

1. Look inside the sampling line for debris or dust on the walls. If needed, push a rag or a paper towel through the line; then use a can of compressed gas made specifically for electronics to blow through the line for final cleaning.

7.0 Troubleshooting

This section provides guidance for resolving fault conditions and possible flow and calibration problems. Table 2 lists some of the alerts that are triggered by faults, described their likely causes, and provided possible solutions.

Table 2 Troubleshooting Alerts

Message	Description	Possible Solution
System Reset	Warning raised when the system is reset	Normal power cycle occurred. If not, check external power source
Sample Flow Warning	The Sample flow is outside the set limits	Check pneumatic fittings. Re-calibrate flow.
Bypass Flow Warning	The Bypass Flow is outside the set limits.	Check pneumatic fittings. Re-calibrate flow.
Sample RH High	Sample RH is above the set limit	Check if ASC is plugged in. Check control board if ASC control LED is illuminated. Check if water is in the sensor.
Check LED	If the LED temperature is equal to the box temperature, the LED may be OFF	Cycle power. Call Tech Support.
Check PMT	The PMT HV setting is out of range (800 – 2200)	Check Sensor with SpanDust™. Perform an optical chamber cleaning. Call Tech Support.
Sample Flow Slope Warning	The Sample Flow Calibration Slope is Out of Range	Check pneumatics for leaks. Re-run flow calibration. Call Tech Support
BYPS Flow Slope Warning	The Bypass Flow Calibration Slope is Out of Range	Check pneumatics for leaks. Re-run flow calibration. Call Tech Support.
Check Int Pump	Check the internal pump if the Pump PWM value is > 80%	Check pneumatics for blockages. Check pneumatics for leaks. Check flow calibration.
Check Ext. Pump	Check the external pump and/or bypass flow control valve if Valve PWM > 85%	Check pneumatics for blockages. Check pneumatics for leaks. Check external pump. Check flow calibration. External pump, or bypass flow control valve may need replacing.
Sample Temp Warning	Sample Temperature Warning (>60°C)	Check ASC (is it latched ON?) Ensure proper climate and ventilation for instrument.
Box Temp Warning	Box Temperature Warning (>60°C)	Ensure proper climate and ventilation for instrument.
AMB Press Slope OOR	Ambient Pressure Calibration Slope is out of range	Check calibration (make sure units match calibration device). Replace pressure sensor. Call Tech Support.
Time Sync Failure	Unable to synchronize time with NTP server	Check network and/or internet connection
Internal Serial Failure	Internal serial communication error with sensor or control board	Check connections and wires to board(s). Call Tech Support.

Trinity Consultants	STANDARD OPERATING PROCEDURE	Title: Level 1 Data Validation	
		Number: SOP 220	Page: 1 of 3
		Revision Number: 1	Effective Date: 04/15/2021 07/26/2016 (Rev. 0)
Approval:		Date: 4/15/2021	Concurred By:

Level 1 data validation involves quantitative and qualitative reviews for accuracy, completeness, and internal consistency. Quantitative checks are performed by Trinity's software screening program. Qualitative checks are performed by meteorologists or trained personnel who manually review the data for outliers and problems.

After daily download, data are processed through Trinity's quality control screening software to identify values that do not meet acceptance criteria. Raw data are graphed as stacked plots and are visually reviewed. Daily stacked plots of the raw data will be output to pdfs. There would be one .pdf per day per station. Acceptance criteria that raw data are compared against are based on State, EPA, and sensor/analyzer manufacturer recommendations.

Data Screening Procedures

Screening procedures act as guidelines for ensuring the highest quality data is delivered. Short and long-term blocks of data are manually inspected for trends, outliers, shifts, and generally unusual behavior. Trained meteorologists investigate any such event for validity, using meteorological data, collocated air quality data, recent QC check results, nearby station data, satellite imagery, and any other means conceivable. Occasionally, oddities will result in a full multipoint quality control (QC) check and/or site visit to confirm proper instrument operation. Data are additionally validated per EPA or Quality Assurance Project Plan (QAPP) requirements, such as analyzer specific minimum concentration bounds and analyzer specific upper and lower shelter temperature limits. Data are marked suspect when appropriate, such as when the 24-hour standard deviation of the shelter temperature exceeds 2 degrees Celsius.

Data Quality Control Flags

Per EPA's Quality Assurance Handbook for Air Pollution Measurement Systems, Volume II: Ambient Air Quality Monitoring Program, EPA recommends the use of flags or result qualifiers to identify potential problems with data (or a sample). According to EPA, a flag is an indicator of the fact and the reason that a data value (a) did not produce a numeric result, (b) produced a numeric result but it is qualified in some respect relating to the type or validity of the result, or (c) produced a numeric result but for administrative reasons is not to be reported outside the organization.

Thus, quality control flags, consisting of a number or letter, will be assigned to each datum to indicate its quality. Multiple flags can be applied to each data point such as data invalid due to calibration (3, IT). It is preferred to assign multiple flags if the problem is known. A list of the quality control codes to be assigned to the data points are presented in Table 1.

Title: Level 1 Data Validation	Number: SOP 220	Revision Number: 1

Table 1 Data Flags

Flag	Code	Description
V	-	Valid
3	-	Field Issue
BF	9998	Precision/Zero/Span Check
BA	9993	Maintenance/Routine Repairs
AZ	9992	QC Audit
AY	9991	Zero/Span Check
AX	9990	Precision Check
AW	9989	Wildlife Damage
AV	9988	Power Outage
AU	9987	Monitoring Waived
AT	9986	Calibration
AS	9985	Poor Quality Assurance Results
AQ	9983	Collection Error
AP	9982	Vandalism
AO	9981	Bad Weather
AN	9980	Machine Malfunction
AM	9979	Miscellaneous Void
AH	9974	Sample Flow Rate out of Limits
AE	9971	Shelter Temperature Outside Limits
AD	9970	Shelter Storm Damage
AC	9969	Construction/Repairs in Area
BJ	9963	Operator Error
BK	9962	Data Logger Down
DA	9951	Aberrant Data

All necessary supporting material, such as audit or calibration field sheets, and any site logs, should be used for the level 1 validation. Access to a daily weather archive should also be reviewed for use in relating suspect data with to local and regional meteorological conditions. Any problem data, such as data flagged in an audit, should be indicated as such. Data values considered questionable should be flagged for verification.

Data Validation Steps

The various steps involved in data validation are summarised below. Note that not all steps apply to all types of data:

- Check any incident log files, in the cases of loggers that automatically produce such files,

Title: Level 1 Data Validation	Number: SOP 220	Revision Number: 1

- Check for power failures,
- Check for data outside the plausible range,
- Investigate the cause of unexpected outlier measurements,
- Check measurements for consistency with other monitoring stations in the region, if available,
- Conduct simple statistical tests on each month's data,
- Flag data that are missing, questionable etc., and
- Record all validation steps for quality control.

Data Validation Summary Spreadsheet

It is important to maintain detailed, accurate records of changes to the data. The justification for all data invalidations will be permanently documented in a data validation summary spreadsheet. These records will save time and effort if questions arise at a later date concerning specific data.

At the end of each month, a data validation summary spreadsheet will be compiled indicating the following:

- Measured parameters with suspicious or invalid data,
- Date and time of this data,
- Identification of data points that were flagged as suspect or invalid, and the reason why they were flagged,
- Systematic problems that affected the data,
- Any adjustments, deletions, or modifications, with a justification or reason for the change,
- Listing of values and value changes, and
- Who performed the data validation and when.

Hourly data files will be prepared for final quality assurance. These data files will contain only validated data and will have a .hry extension.

QuantoAQ MODULAIR-PM

SOP 225

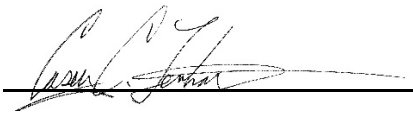
August 23, 2023

Approval of Standard Operating Procedures

Title: QuantoAQ MODULAIR-PM

SOP: 225

Approved By:



Date: 8/23/2023

Trinity Consultants

Project Director, Casey Lenhart



Date: 8/23/2023

Trinity Consultants

Quality Assurance Director, Linda Conger

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1.0 Introduction

This Standard Operating Procedure (SOP) describes procedures used by Trinity to operate and maintain the QuantoAQ MODULAIR-PM to measure particulate matter concentrations (PM_1, $PM_{2.5}$, PM_{10}) and particle size distribution in ambient air. The QuantoAQ MODULAIR-PM uses a novel combination of multiple light scattering-based particle sensors to measure particulate matter concentrations and particle size distribution.

2.0 Principle of Operation

The QuantAQ MODULAIR-PM sensors use a Plantower PMS5003 and an Alphasense OPC-N3 particle sensor. The particle counts across a wide range of particle diameters are converted to $PM_{1.0}$, $PM_{2.5}$ and PM_{10} mass concentrations in $\mu g/m^3$ using proprietary algorithms. The operating temperature range of the QuantAQ MODULAIR-PM is -20°C to 50°C.

3.0 Acceptance Test

Check the monitor packaging carefully for any signs of shipping damage. If damage occurred during transport, immediately file a claim with the carrier. Contact manufacturer or vendor to facilitate repair or replacement.

When you unpack your device, you should have received the following:

- MODULAIR-PM Particulate Matter Sensor
- Power supply and USB-C power cable
- Mounting hardware (flanges with 4 10-32 screws)
- 16 GB µSD card

If any of these components are missing, please contact QuantAQ via support.quant-aq.com. If the shipping box contains multiple devices, you will receive the correct multiple of each component from the list above. Check functionality QuantAQ MODULAIR-PM. An example acceptance testing form to be completed is presented as Figure 1.

FIGURE 1 EXAMPLE ACCEPTANCE TESTING FORM

ACCEPTANCE TEST FORM

Trinity Consultants

Make _____
Model _____
Serial Number _____

Date	Action/Result

4.0 Instrument Layout

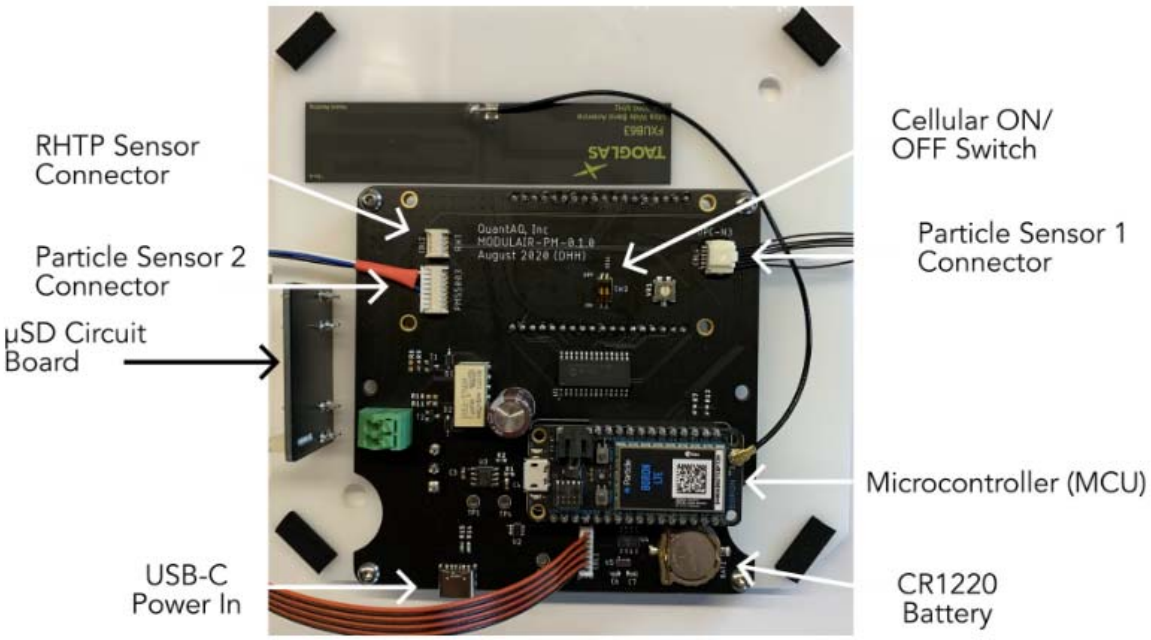
The front panel of the device can be accessed by opening the lid of the enclosure. The MODULAIR-PM Front Panel consists of an LCD screen, power ON/OFF switch, LED indicator, menu button, and access to the onboard µSD card. Each component is labeled in Figure 1.

FIGURE 2 MODULAIR-PM FRONT PANEL



Underneath the front panel (which can be opened by removing the four No. 6 screws in the four corners), you will find the Core Circuit Board and µSD circuit board. While it is unlikely you will ever need to touch this, it is worth pointing out a few key components.

FIGURE 3 CORE CIRCUIT BOARD



The MODULAIR-PM is shipped completely assembled, aside from the mounting hardware. Once the device is mounted and you have verified the power switch is in the OFF position, simply plug in the power supply and connect the USB-C cable into the bottom of the device. Once the power cable is connected, simply flip the power switch to the ON position. Upon receiving power, the LED indicator (Figure 2) will flash green and eventually begin a sequence of slowly breathing cyan; this indicates the cellular connection is active and a session with the cloud server has begun. If the device is being powered on in a new location or has been powered off for an extended period of time, this may take some time to complete. The device will log data locally during this period and push the data to the server once a connection is established. If the LED indicator does not eventually begin breathing cyan, this indicates a cloud connectivity problem.

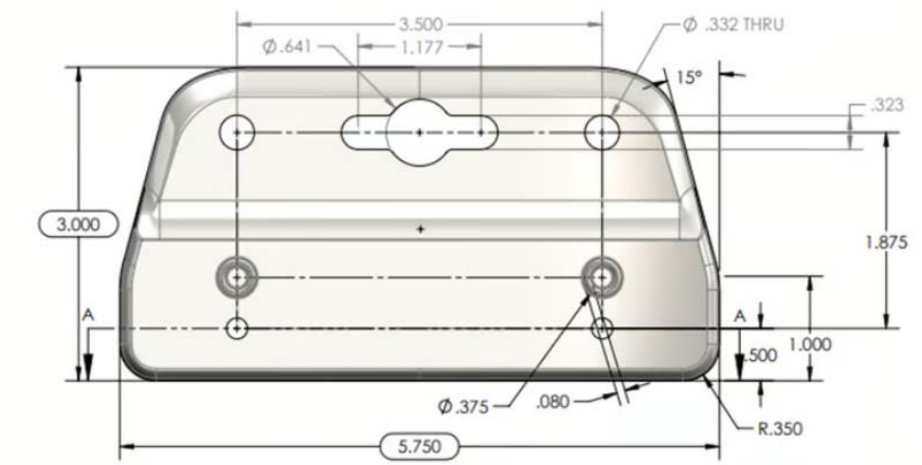
To register your device, scan the QR code that is on the registration card you received with your device. It is easiest to complete this step using a cellphone or tablet with a working internet connection. A laptop with a functioning camera will also work, though maybe more difficult. It is also suggested that you first log in to the website on the device you will use to complete this process. To register your device:

1. Use your camera to scan the QR code. This will open a tab in your default browser and will direct you to the device registration page.
2. Enter the fields for the information that the form asks for and click "Continue".
3. Enter the claim code found on the same QR code card - it should be a 6-character alphanumeric code.
4. Follow the instructions on the form and enter in data for the device location and other metadata. All of these can be changed in the future through the dashboard, so don't worry if you can't answer all questions at this time.

5.0 Installation

The device can be mounted in a number of ways depending on the exact use and available mounting options available to you. The device is shipped with mounting flanges which can be used to easily mount the device to a number of surfaces. Each flange is secured to the back of the device with two 1/4-20 x 0.5" stainless steel screws. Each flange includes three slots with the dimensions found below. The dimensions for the mounting holes for the provided mounting flanges are provided in Figure 4.

FIGURE 4 DIMENSIONS FOR MOUNTING HOLES FOR THE PROVIDED MOUNTING FLANGES



Common installation approaches include:

- using high-strength zip ties to secure the device to a fence or post,
- using screws to mount the device using the provided flanges.

The complete box dimensions are: 7.04" x 7.04" x 5.72" (178.82 mm x 178.82 mm x 145.29 mm)

6.0 Software Setup and Data

There are three primary ways in which data can be accessed for the MODULAIR-PM:

- Raw data is stored locally on the µSD card
- Data can be downloaded from the QuantAQ Cloud Console
- Data can be downloaded from the QuantAQ API

The data formats are slightly different depending on which method you've used to access the data, each of which is documented below.

6.1 Data Stored Locally on the µSD Card

Data are collected and saved to the onboard µSD card every five seconds; every minute, these values are averaged and pushed to the cloud where they are available on the QuantAQ Cloud. It is unlikely you will ever need to use the locally saved data; however, it is there in case you need it. When removing the µSD card to pull the data, make sure your device is turned OFF.

On the µSD card, you will find data files (with a prefix of DATA_YYYYMMDD.csv) and log files which are located in the log's directory. Log files contain debugging information about the onboard sensors and the cellular communications module. It is unlikely these logs will be useful to most users, though they are available to you if you would like to view them. It is highly recommended that you use the QuantAQ CLI (discussed below) to analyze them, as it will vastly reduce the amount of time needed.

Data files are written each day and can be read or analyzed using any programming language or spreadsheet program (e.g., Microsoft Excel). Each file begins with three meta-data rows describing the device model (row 1), device ID (row 2), and the device serial number (row 3). If you are automating your data analysis, you can skip these three rows. The fourth row contains the header information with the names for all columns. The remaining rows contain the data, where each row corresponds to a new 5-second sampling interval.

6.2 Data Downloaded from the QuantAQ Cloud Console

Data are pushed to the QuantAQ Cloud with 1-minute time resolution and can be downloaded via the QuantAQ Cloud Console. When downloading data, you are able to select whether you would like to download the raw data, the final data, or both the raw+final data. Generally, the final data are what is desired, as it contains the final, cleaned data that is ready for analysis. When downloaded, the data is exported as a csv file.

6.3 Data Downloaded via the QuantoAQ API

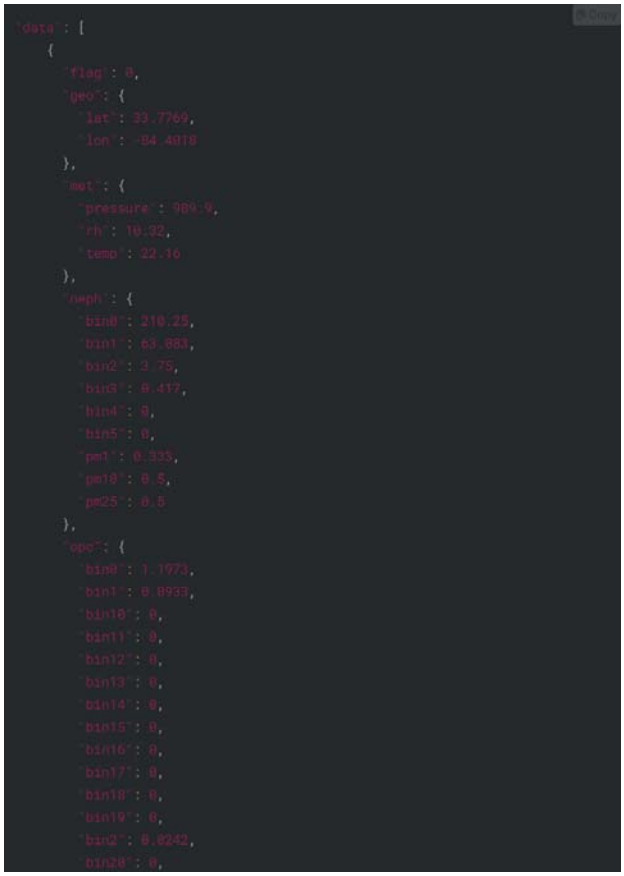
Data are available via the QuantAQ API at a 1-minute recording interval → the data available are the exact same as those available via the QuantAQ Cloud Console discussed above. The API is designed to allow engineers to build applications and map layers powered by the QuantAQ platform; however, it can also be a good way to automate data downloads, especially for large teams or lengthy download intervals. Each API call will return a paginated list of json objects with two keys: "data" and "meta" and will look something like the following:


```
"meta": {
    "first_url": "https://api.quant-aq.com/device-api/v1/devices/MOD-PM-00001
    "last_url": "https://api.quant-aq.com/device-api/v1/devices/MOD-PM-00001/
    "next_url": null,
    "page": 1,
    "pages": 1,
    "per_page": 50,
    "prev_url": null,
    "total": 3
  }
```


The data object contains a list of all individual data objects for that page of data. You can query either the raw or the final data, both of which have different data values available. The final endpoint will return the following:



For **raw** data, the template is similar, but columns slightly different.



7.0 Instrument Siting

The instrument should be sited in accordance with the United States Environmental Protection Agency (U.S. EPA) Title 40, Code of Federal Regulations Part 58 Appendix E "Probe and Monitoring Path Siting Criteria for Ambient Air Quality Monitoring" and Quality Assurance Guidance Document 2.12 "Monitoring $PM_{2.5}$ in Ambient Air Using Designated Reference or Class I Equivalent Methods" Section 5.1.2.

8.0 Maintenance

There are no consumable or user-replaceable components to the MODULAIR-PM. If you believe a component is broken or not functioning correctly, please contact support@quant-aq.com. As a new product, it is likely that issues will arise with the hardware, firmware, or software. If you experience an issue or have a suggestion related to the MODULAIR-PM hardware, please check the knowledge base. If you do not find the answer, you're looking for in the knowledge base, you can open a ticket at support.quant-aq.com.

Wind Direction and Wind Speed Sensor Operation

SOP M11

October 27, 2020

Approval of Standard Operating Procedures

Title: Wind Direction and Wind Speed Sensor Operation

SOP: M11

Approved By:



Date: 10/27/2020

Trinity Consultants

Project Director, Casey Lenhart



Date: 10/27/2020

Trinity Consultants

Quality Assurance Director, Linda Conger

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1.0 Introduction

Manufacturer's specifications define performance criteria of wind instruments and systems needed to meet project objectives. Performance and procurement specifications provide the basis of inspection and testing when instrumentation is received at a site. Wind speed and wind direction are typically the most important parameters measured at a meteorological monitoring site.

Although wind is a vector quantity and may be measured and processed as such, it is common to measure and/or process the scalar components of the wind vector separately; i.e., wind speed (the magnitude of the wind vector) and wind direction (the orientation of the wind vector). Wind speed determines the amount of initial dilution experienced by a plume and appears in the denominator of the steady-state Gaussian dispersion equation. In addition, wind speed is used in the calculation of plume rise associated with point source releases, to estimate aerodynamic effects in downwash calculations, and, in conjunction with other variables, in the determination of atmospheric stability. Instruments used for in situ monitoring of wind speed are of two types: those which employ mechanical sensors (e.g., cup and propeller anemometers) and those which employ non-mechanical sensors (hot wire anemometers and sonic anemometers). The non-mechanical sensors are not included in the scope of this SOP.

Wind direction is generally defined as the orientation of the wind vector in the horizontal. Wind direction for meteorological purposes is defined as the direction from which the wind is blowing and is measured in degrees clockwise from true north. Wind direction determines the transport direction of a plume or puff in air quality modeling applications. The standard deviation of the wind direction, σA, or the standard deviation of the elevation angle, E, may also be used, in conjunction with wind speed, to derive the atmospheric stability category. Wind direction may be measured directly using a wind vane or may be derived from measurements of wind speed component.

2.0 Initial Equipment Checkout

Check the sensor carefully for any signs of shipping damage. Remove the plastic nut on the propeller shaft. Install the propeller on the shaft with the serial number of the propeller facing forward (into the wind). The instrument is aligned, balanced and fully calibrated before shipment; however, it should be checked both mechanically and electrically before installation. The vane and propeller should easily rotate 360° without friction. Check vane balance by holding the instrument base so the vane surface is horizontal. It should have near neutral torque without any particular tendency to rotate.

The potentiometer requires a stable DC excitation voltage. Do not exceed 15 volts. When the potentiometer wiper is in the 5° deadband region, the output signal is "floating" and may show varying or unpredictable values. To prevent false readings, signal conditioning electronics should clamp the signal to excitation or reference level when this occurs.

Before installation, connect the instrument to an indicator as shown in the wiring diagram and check for proper wind speed and azimuth values. To check wind speed, temporarily remove the propeller and connect the shaft to an Anemometer Drive.

3.0 Installation

Proper placement of the instrument is very important. Eddies from trees, buildings, or other structures can greatly influence wind speed and wind direction observations. To get meaningful data for most applications, locate the instrument well above or upwind from obstructions. As a general rule, the air flow around a structure is disturbed to twice the height of the structure upwind, six times the height downwind, and up to twice the height of the structure above ground. For some applications it may not be practical or necessary to meet these requirements.

Grounding of the wind sensor is vitally important. Without proper grounding static electrical charge can build up during certain atmospheric conditions and discharge through the transducers. This discharge can potentially cause erroneous signals or transducer failure.

Initial installation is most easily done with two people; one to adjust the instrument position and the other to observe the indicating device. The installation example below is for a RM Young Model 05305 wind monitor.

1. Mount sensor.
   a. Place orientation ring on mounting post. Do Not tighten band clamp yet.
   b. Place Wind Monitor on mounting post. Do Not tighten band clamp yet.

2. Connect Sensor Cable.
   a. Slide junction box cover up.
   b. Route cable thru strain relief opening at bottom of junction box. Secure cable by tightening packing nut.
   c. Connect sensor cable to terminals. See wiring diagram.
   d. Slide junction box cover down.

3. Align Vane
a. Connect instrument to an indicator.
b. Choose a known wind direction reference point on the horizon.
c. Sighting down instrument centerline, point nose cone at reference point on horizon.
d. While holding vane in position, slowly turn base until indicator shows proper value.
e. Tighten mounting post band clamp.
f. Engage orientation ring indexing pin in notch at instrument base.
g. Tighten orientation ring band clamp

4.0 Calibration

Calibration procedures are in accordance with the guidelines of the EPA Quality Assurance Handbook for Air Pollution Measurement Systems: Volume IV, Version 2.0 Final (EPA, March 2008).

4.1 Calibration Equipment

The calibration technician conducting the calibration will bring the following equipment to the site:

- RM Young Model 18810 anemometer drive,
- RM Young Model 18310 Torque Disc,
- Professional classic pocket transit or precision compass with tripod,
- R.M. Young Model 18212 Vane Angle Fixture,
- R.M. Young Model 18331 Vane Torque Gauge,
- Current magnetic declination angle for site to be calibrated,
- Calibration field data sheets, and
- (optional) Theodolite and True North solar angle program for computer.

4.2 Personnel Qualifications

Installation, operation, maintenance, repair or calibration of the instrument and all support equipment will be performed by properly trained personnel. Personnel will meet all minimum requirements and qualifications commensurate with their position.

4.3 Calibration Procedures

The calibration procedures for wind speed and wind direction are presented below.

4.3.1 Wind Speed

Starting threshold is calibrated by checking sensor shaft rotational torque with a torque disc.

1. With the anemometer sensor in the horizontal position, remove the anemometer cups or propeller and install the torque disc on the anemometer shaft. Use manufacturer-provided allowable torque values or calculate the torque value that corresponds to the starting threshold of 0.5 m/s using the "k" value provided by the manufacturer and the following equation:

$$T = kU^2$$

Where:

T = torque in gm-cm
U = wind speed in m/s
k = constant (from manufacturer)

2. Install the 0.1 gm screw weight in the appropriate hole of the torque disc that corresponds to the calculated torque value and position the weight so that it is level with the anemometer shaft. Release the weight and note if the torque disk and anemometer shaft rotate freely. To measure the actual starting torque, change the position of the screw weight starting at the location closest to the shaft and move outward until the weight rotates freely from the horizontal. The weight of the screw times the distance from the shaft equals the torque in gm-cm.

3. The accuracy of wind speed measurements is tested at zero and at least two speeds within the operational range of the sensor. R.M. Young Model 18810 selectable speed anemometer drive will be used to generate stable calibration input speeds over the range of the sensor.

4. The calibration person removes the anemometer cups or propeller and joins the wind speed sensor shaft to the calibration motor with a coupling device.

5. Calculate the difference between the system and calibration wind speeds using the following equation:

$$\text{Diff.} = \text{System Wind Speed} - \text{Calibration Wind Speed}$$

The differences calculated above are compared with the US EPA PSD recommended criteria of ± 0.2 m/s.

4.3.2 Wind Direction

1. For wind direction instruments that have crossarms, prior to lowering the tower or the crossarm, determine the crossarm alignment by sighting along it using a precision compass corrected for magnetic declination. Current magnetic declination is obtained using the latitude/longitude or UTM coordinates of the site and a magnetic declination calculation computer program. Optionally, if a solar viewing is possible, a theodolite can be set up and oriented using a solar angle computer program. The calibration person views the crossarm through the theodolite to verify alignment with reference to True North.

2. Once the crossarm is lowered, the person conducting the calibration positions the wind vane exactly parallel to the crossarm and records the reading.

3. Determine accuracy and linearity by mounting a direction template or calibration fixture and fixing the vane in at least the four cardinal directions. The vane is rotated sequentially through at least the four directions clockwise and then counterclockwise and the DAS readouts are recorded. (The tip and then the tail of the vane may also be pointed at established distant sighting targets.)

4. The difference between the station and calibration wind directions is calculated using the following equation:

Diff. = System Wind Direction - Calibration Wind Direction

The differences calculated above are compared with the EPA PSD recommended criteria of ±3% for linearity and ±5% for the entire system (orientation plus linearity). If results exceed these criteria, the calibration person should recommend recalibration of the sensor or replacement of the potentiometer.

5. Determine starting threshold of the wind vane by measuring shaft rotational torque of the sensor using a torque gauge or disc. The measured torque should be less than the maximum allowable torque provided by the manufacturer corresponding to a 0.5 m/s wind speed threshold.

If the measured torque exceeds this value, the calibrator should recommend bearing and/or potentiometer replacement. If necessary, calculate the torque value that corresponds to the starting threshold of 0.5 m/s for a 10° deflection using the "k" value provided by the manufacturer and the following equation:

$$T = kU2$$

Where:

T = torque in gm-cm

U = wind speed in m/s

k = constant

The torque gauge test determines if the wind vane starting threshold is less than or equal to the required specifications. The wind vane is considered to be within the recommended criteria if the indicated torque value is less than or equal to the calculated or stated maximum starting torque value. If the wind vane fails the test, the calibrator should recommend that the bearings and/or potentiometer be replaced.

5.0 Maintenance Procedures

Given proper care, the wind sensor should provide years of service. The only components likely to need replacement due to normal wear are the precision ball bearings and the wind direction potentiometer.

Temperature Sensor Operation

SOP M13

October 27, 2020

Approval of Standard Operating Procedures

Title: Temperature Sensor Operation

SOP: M13

Approved By:



Date: 10/27/2020

Trinity Consultants

Project Director, Casey Lenhart



Date: 10/27/2020

Trinity Consultants

Quality Assurance Director, Linda Conger

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1.0 Introduction

Manufacturer's specifications define performance criteria of temperature instruments and systems needed to meet project objectives. Performance and procurement specifications provide the basis of inspection and testing when instrumentation is received at a site. Temperature is typically an important parameter measured at a meteorological monitoring site.

The most common method of air temperature measurement is using devices whose resistance changed with the temperature – resistance temperature detectors (RTD) or thermistor. Thermistors and platinum wires are included in resistance bridges that allow acceptably linear and accurate voltage measurement directly by the data acquisition system.

2.0 Initial Equipment Checkout

Check the sensor carefully for any signs of shipping damage. If damage occurred during transport, immediately file a claim with the carrier. Contact manufacturer or vendor to facilitate repair or replacement.

3.0 Installation

Proper placement of the instrument is very important. For accurate measurements, the temperature probe should be installed in a protective radiation shield. Use of the probe without a radiation shield may result in large errors. Naturally ventilated or motor aspirated shields are recommended. For best performance, the probe and shield should be placed in a location with good air circulation clear of large masses (buildings, pavement, solar panels), exhaust vents, electrical machinery, motors, water fountains and sprinklers. The terminal marked "EARTH GND" should be connected to properly grounded tower, or grounding conductor, as close to the sensor as possible. Failure to do so may result in damage due to static discharge.

4.0 Personnel Qualifications

Installation, operation, maintenance, repair or calibration of the instrument and all support equipment will be performed by properly trained personnel. Personnel will meet all minimum requirements and qualifications commensurate with their position.

5.0 Calibration

Calibration procedures are in accordance with the guidelines of the EPA Quality Assurance Handbook for Air Pollution Measurement Systems: Volume IV, Version 2.0 Final (EPA, March 2008).

5.1 Calibration Equipment

The calibration technician conducting the calibration will bring the following equipment to the site:

- Mercury-in-glass thermometer or digital thermometer calibrated with a laboratory NIST-traceable thermometer.
- Thermos bottles - one with hot water, one warm water, and one ice bath or aluminum blocks at different temperatures.
- Calibration forms.

5.2 Calibration Procedures

Calibration procedures are in accordance with the guidelines of the EPA Quality Assurance Handbook for Air Pollution Measurement Systems: Volume IV, Version 2.0 Final (EPA, March 2008).

Temperature sensing systems are calibrated by collocated intercomparison with a calibrated reference standard. If immersion in water is possible, the station temperature sensing system thermistor and the calibrated thermometer are immersed in a common water bath and the readings are compared at temperatures of approximately 0°, 20°, and 40°C (or 3 points over the expected measurement range at the site) or by using aluminum blocks inserted into wide-mouth thermos bottles to provide the medium for various reference temperatures. If delta-temperature is measured, the delta-temperature is checked by simultaneous insertion of delta-temperature sensors in the same medium and comparing outputs.

Calculate the difference between the sensor and calibration temperatures using the equation:

$$\text{Diff.} = \text{System Temperature} - \text{Calibration Temperature}$$

The differences calculated above are then compared with the EPA recommended criteria of ±0.5°C and ±0.1°C for delta-temperature when the sensors are checked in the same medium.

6.0 Maintenance Procedures

Given proper care, the temperature probe is designed to offer years of service with minimal maintenance. If necessary, the probe may be periodically checked or recalibrated using normal bath calibration methods.

Precipitation Gauge Operation

SOP M14

October 27, 2020

Approval of Standard Operating Procedures

Title: Precipitation Gauge Operation

SOP: M14

Approved By:



Date:

Trinity Consultants

Project Director, Casey Lenhart



Date:

Trinity Consultants

Quality Assurance Director, Linda Conger

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1.0 Introduction

Manufacturer's specifications define performance criteria of temperature instruments and systems needed to meet project objectives. Performance and procurement specifications provide the basis of inspection and testing when instrumentation is received at a site. Precipitation is typically an important parameter measured at a meteorological monitoring site.

The most common method of precipitation is a sensor that uses a collector funnel with a knife-edge that diverts the water to a tipping bucket mechanism. A magnet is attached to the tipping bucket which actuates a magnetic switch on each tip of the bucket. The water drains out of the bottom of the housing, so the sensor requires no attention or servicing. Connecting the sensor to an event counter on a data logger or display module allows for electronics record keeping of accumulated rainfall.

2.0 Initial Equipment Checkout

Check the sensor carefully for any signs of shipping damage. If damage occurred during transport, immediately file a claim with the carrier. Contact manufacturer or vendor to facilitate repair or replacement.

3.0 Installation

Proper placement of the instrument is very important. A clear and unobstructed mounting location is necessary to obtain accurate rainfall readings.

This transmitter is designed to be mounted two ways, by surface mounting or mast mounting. Surface mounting is recommended whenever possible. The transmitter housing must be mounted in a level position and in a location free from vibration. If mast mounted, make sure that the mast is properly guyed so that vibration in high winds is kept to a minimum.

After transmitter installation, remove the gold funnel and observe the black tipping bucket. It should not be held in a dead center position by the magnetic attraction of the bucket magnet and the magnetic switch. Press either end of the bucket down against the stop to be sure it is not centered. The connecting cable between transmitter and indicator can be shortened or lengthened as required.

The funnel and tipping bucket mechanism should be cleaned periodically. An accumulation of dirt, bugs, etc. on the tipping bucket will adversely affect the calibration.

4.0 Personnel Qualifications

Installation, operation, maintenance, repair or calibration of the instrument and all support equipment will be performed by properly trained personnel. Personnel will meet all minimum requirements and qualifications commensurate with their position.

5.0 Calibration

Calibration procedures are in accordance with the guidelines of the EPA Quality Assurance Handbook for Air Pollution Measurement Systems: Volume IV, Version 2.0 Final (EPA, March 2008).

5.1 Calibration Equipment

The calibration technician conducting the calibration will bring the following equipment to the site:

- Centimeter ruler for measuring gauge orifice diameter.
- Water to simulate rainfall.
- Graduated cylinder and graduated syringe or graduated burette.
- Calibration field data forms.

5.2 Calibration Procedures

The diameter of the gauge opening, or collection funnel is measured with a centimeter ruler and the area of the opening is calculated (Area = πr^2).

Precipitation gauge calibrations are performed using a graduated burette, graduated cylinder, graduated syringe or an intravenous drip bottle and tubing arrangement that allows for accurate delivery of water to the precipitation gauge at an infinitely controllable delivery rate. The delivery rate is adjusted to no more than approximately .03"/minute by monitoring the drip rate. For tipping bucket gauges, the calibration technician should deliver enough water for at least the equivalent of 10 tips per run and should calculate the average percent difference of 3 runs.

The amount of water simulating rainfall required to produce 10 tips is divided by the area of the gauge opening to calculate the amount of rainfall in inches or millimeters. This value is compared with the value reported by the site data acquisition system.

The percent difference between the station reading and the reference value is calculated using the following equation:

% diff. = (station reading - calibration reading / calibration reading) * 100

The mean of the percent differences calculated above is compared with the EPA recommended criteria of ±10% of the known calibration input.

6.0 Maintenance Procedures

Given proper care, the precipitation gauge is designed to offer years of service with minimal maintenance. As necessary, the gauge needs to be cleaned of debris.

Relative Humidity Sensor Operation

SOP M15

October 27, 2020

Approval of Standard Operating Procedures

Title: Relative Humidity Sensor Operation

SOP: M15

Approved By:



Date: 10/27/2020

Trinity Consultants

Project Director, Casey Lenhart



Date: 10/27/2020

Trinity Consultants

Quality Assurance Director, Linda Conger

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1.0 Introduction

Manufacturer's specifications define performance criteria of relative humidity instruments and systems needed to meet project objectives. Performance and procurement specifications provide the basis of inspection and testing when instrumentation is received at a site. Relative humidity is typically an important parameter measured at a meteorological monitoring site.

The most common method of relative humidity measurement is using devices with a capacitive RH element.

2.0 Initial Equipment Checkout

Check the sensor carefully for any signs of shipping damage. If damage occurred during transport, immediately file a claim with the carrier. Contact manufacturer or vendor to facilitate repair or replacement.

3.0 Installation

Proper placement of the instrument is very important. Sensors should be located over an open, level area at least 9 m (EPA) in diameter. The surface should be covered by short grass or the natural earth surface where grass does not grow. Sensors should be located at a distance of at least four times the height of any nearby obstruction and at least 30 m (EPA) from large, paved areas. Sensors should be protected from thermal radiation and adequately ventilated. Protect the filter at the top of the sensor from exposure to liquid water. The hydrophobic nature of the filter repels light rain but driving rain can force itself into the pore structure of the filter and take time to dry out.

Install the relative humidity sensor in a radiation shield to the tower or tripod. Attach the probe to the cable by aligning the keyed connectors, pushing the connectors together, and finger tightening the knurled ring. Long lead lengths cause errors in the measured relative humidity. The approximate error in relative humidity is 0.31% per 100 feet of cable length.

4.0 Personnel Qualifications

Installation, operation, maintenance, repair or calibration of the instrument and all support equipment will be performed by properly trained personnel. Personnel will meet all minimum requirements and qualifications commensurate with their position.

5.0 Calibration

Calibration procedures are in accordance with the guidelines of the EPA Quality Assurance Handbook for Air Pollution Measurement Systems: Volume IV, Version 2.0 Final (EPA, March 2008).

5.1 Calibration Equipment

The calibration technician conducting the calibration will bring the following equipment to the site:

- Calibrated digital RH probe or motor aspirated psychrometer.
- Booklet of psychometric tables.
- Water.
- Large plastic bucket (approx. 5-gallon size).
- Calibration forms.
- Portable barometer if using psychometric tables.

5.2 Calibration Procedures

Relative humidity sensors are calibrated using one of two methods.

1. Collocating the station RH sensor and the calibrated RH sensor inside a plastic bucket where water can be added in the bottom of the bucket to provide several different calibration points.
2. Collocating the calibrated RH sensor or motor-aspirated psychrometer adjacent to the site sensor to sense the ambient conditions. Multiple readings are taken over several hours (wet bulb, dry bulb) and converted into RH using the manufacturer's tables.

Calculate the difference between the station and calibration relative humidity's using the equation:

$$\% \text{ Diff.} = \text{Station \% RH - Calibration \% RH/ Calibration \% RH}$$

The mean of the percent differences calculated above is then compared with the EPA recommended criteria of ±7 percent relative humidity.

6.0 Maintenance Procedures

Given proper care, the relative humidity probe is designed to offer years of service with minimal maintenance but dust, debris, and salts on the filter cap will degrade sensor performance. Check the metal mesh filter on the end of the sensor for debris. If dirt or salt is engrained into the filter, it should be cleaned with distilled water or replaced. For particularly stubborn contamination, swish the entire probe tip in isopropyl alcohol (rubbing alcohol) and rinse off with distilled water. Make sure the filter is connected firmly with your fingers — do not over tighten.

Check the radiation shield monthly to make sure it is free from dust and debris. To clean the shield, remove the sensor from the shield. Dismount the shield. Brush all loose dirt off. If more effort is needed, use warm, soapy water and a soft cloth or brush to thoroughly clean the shield. Allow the shield to dry before remounting.

Replace filters that cannot be successfully cleaned. To replace the filter, unscrew the filter from the probe and pull it straight away, being careful not to bend or damage the sensors. Before putting on the replacement filter, check the alignment of the sensors with the probe, and if necessary, carefully correct the alignment before installing the filter.

A coating of salt (mostly NaCl) may build up on the radiation shield, sensor, filter and even the sensor element. A buildup of salt on the filter or sensors will delay or destroy the response to atmospheric humidity.

Long-term exposure of the relative humidity sensor to certain chemicals and gases may affect the characteristics of the sensor and shorten its life. The resistance of the sensor depends strongly on the temperature and humidity conditions and the length of the pollutant influence.

Barometric Pressure Sensor Operation

SOP M17

December 11, 2020

Approval of Standard Operating Procedures

Title: Barometric Pressure Sensor Operation

SOP: M17

Approved By:



Date: 12/11/2020

Trinity Consultants

Project Director, Casey Lenhart



Date: 12/11/2020

Trinity Consultants

Quality Assurance Director, Linda Conger

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Figure 2 Example Barometric Pressure calibration form 7

1.0 Introduction

This SOP applies to Vaisala PTB110 barometric pressure sensors.

Manufacturer's specifications define performance criteria of barometric pressure instruments and systems needed to meet project objectives. Performance and procurement specifications provide the basis of inspection and testing when instrumentation is received at a site. Barometric pressure is a common parameter measured at a meteorological monitoring site.

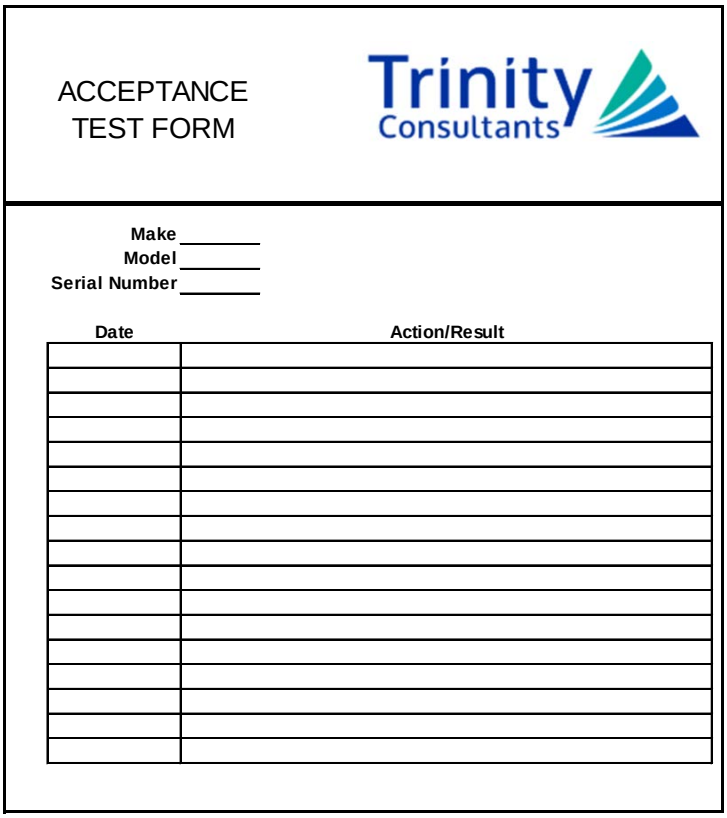
Barometric pressure is the atmospheric pressure on a given surface is the force per unit area exerted by virtue of the weight of the atmosphere above. The pressure is thus equal to the weight of a vertical column of air above a horizontal projection of the surface, extending to the outer limit of the atmosphere.

The barometric pressure sensor is a micro controller-based barometer including a voltage or frequency output. The output of the barometer is a calibrated barometric pressure reading. The barometer uses a silicon capacitive sensor for barometric pressure measurement applications.

2.0 Equipment Checkout

Check the sensor carefully for any signs of shipping damage. If damage occurred during transport, immediately file a claim with the carrier. Contact manufacturer or vendor to facilitate repair or replacement. Verify accuracy of sensor by co-locating a certified reference device with the probe and record readings. An example acceptance test form is presented as Figure 1.

FIGURE 1 EXAMPLE ACCEPTANCE TEST FORM



3.0 Installation

Proper placement of the instrument is very important. The barometric pressure sensor is intended to be installed indoors. The barometer should be installed in a vertical position with the connectors pointing downwards to prevent accumulation of condensated water.

4.0 Personnel Qualifications

Installation, operation, maintenance, repair or calibration of the instrument and all support equipment will be performed by properly trained personnel. Personnel will meet all minimum requirements and qualifications commensurate with their position.

5.0 Calibration

Calibration procedures are in accordance with the guidelines of the EPA Quality Assurance Handbook for Air Pollution Measurement Systems: Volume IV, Version 2.0 Final (EPA, March 2008).

5.1 Calibration Equipment

The calibration technician conducting the calibration will bring the following equipment to the site:

- Certified Digital Barometer or digital or aneroid barometer standardized to local National Weather Service reference, and
- Calibration form.

5.2 Calibration Procedures

Collocate calibration reference barometer with station barometric pressure sensor and record readings for intercomparison.

Calculate the difference between the station and calibration reference barometric pressure (BP) using the equation:

$$\text{Difference} = \text{Station BP} - \text{Calibration BP}$$

The mean of the calculated differences is then compared with the EPA recommended criteria within of ±3 mb of the calibration reference.

An example completed barometric pressure calibration form is presented as Figure 2.

APPENDIX D. SITE CHECK FORM

SITE VISIT CHECKLIST

Trinity Consultants

Operator _____ Date _____
Site Name _____ Stn ID _____
Project _____ Time _____

MET TOWER AND SENSORS:

	YES	NO	N/A	Comments
Solar Panel Clean				
Tower straight, guy wires taut, secured				
Wind Sensors Intact (Propeller, Cups, Vane)				
Temperature Aspirators Operational				
Pyranometer Domes Clean				
Rain Gauge Funnel Clear of Debris/Snow/Ice				
Signs of Sensor Damage				
Sensors Level and Oriented Correctly				
Boom Orientation OK				
Sensor Outputs Check and Functioning Correctly				
Grounding System Intact				
Cellular Antenna Correctly Oriented				
Area Free of Vandalism				
Shelter Integrity				
Fence Integrity				

AQ SHELTER, ANALYZERS, PM:	YES	NO	N/A	
Analyzer intake tubing unobstructed (ice, water, bugs)				
Zero Air System at 30 PSI				
Calibration Gas Cylinder at 30 PSI				CC: Exp: Conc:
Calibration Gas Tank Pressure Above 500 PSI				Tank Pressure:
Check for Analyzer(s) Warnings				
Check for Calibrator Warnings				
Check for PM Warnings				
Analyzer Filters Exchanged				
MFC checks Performed				
Inlet Teflon Exchanged				
Zero Air Media Replaced				
RCEL Checked				Value:
Slopes Checked (between 0.7 and 1.3)				
Inlet Manifold Fittings Checked and Tightened				

	Shelter T	Ref T		
Shelter Temp Checked with Reference Standard				(+/- 2 degrees C)
				Reference s/n:

Site Visit By: _____

CSX Transportation, Inc. Comments on Renewal of State Permit to Operate No. 510-2263 for CSX Transportation Curtis Bay Piers

Appendix 17a: *2023 Q3 Fenceline Monitoring Report submitted Jan. 2024*

SUMMARY OF METEOROLOGICAL AND CONTINUOUS PM_{10} AND PM2.5 MONITORING DATA AT CSXT CURTIS BAY PIERS FACILITY MONITORING STATIONS THIRD QUARTER 2023

CSXT Transportation, Inc.

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December 2023

Project 234501.0038

DRAFT

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1.0 INTRODUCTION

This report, prepared for CSX Transportation, Inc. (CSX) by Trinity Consultants summarizes the third quarter 2023 (July 1 through September 30) meteorological, federal equivalent method (FEM) continuous particulate matter with a diameter of 10 microns or less (PM_{10}) and particulate matter with a diameter of 2.5 microns or smaller ($PM_{2.5}$), being collected at two monitoring stations, identified as AQ5 and AQ8, operated at the Curtis Bay Piers Facility. In addition, a network of eight (8) non-regulatory PM_{10} and $PM_{2.5}$ monitors are being operated along the perimeter of the CSX Curtis Bay Piers facility and these data are presented in this report. The CSX Curtis Bay Piers is a dry material storage, transfer, and shipment terminal located at 1910 Benhill Avenue, in Baltimore, Maryland.

1.1 Background

CSXT, Curtis Bay Piers operates a coal, ore, limestone, and other dry material storage, transfer, and shipment terminal (Curtis Bay Piers Facility) pursuant to State Permit to Operate No. 510-2263. To meet the requirements of the Permit to Construct 510-2263 issued on September 7, 2022, CSXT was required to submit a fenceline monitoring plan to the MDE describing the installation, operation, and maintenance of a network of PM_{10} and $PM_{2.5}$ monitors and a weather station. Per the Permit to Construct, CSX is required to install one FEM monitor to measure both PM_{10} and $PM_{2.5}$, install multiple sensors capable of measuring PM_{10} and $PM_{2.5}$, and operate a 10-meter meteorological tower that meets current U.S. EPA protocols and guidance. Meteorological measurements from a 10-meter tower consist of wind speed and wind direction at 10-meters, temperature at two-meters, relative humidity at two-meters, barometric pressure at 5 feet, and precipitation at 4 feet.

PM_{10}, $PM_{2.5}$, and meteorological data collection officially began at the CSX monitoring sites on March 24, 2023 at 01:00 Eastern Standard Time (EST). Table 1-1 summarizes the parameters collected at the monitoring sites and the units for each parameter.

Table 1-1 Measured Meteorological and Air Quality Parameters

Parameter	Units
Wind Speed	meters per second (m/s)
Wind Direction	degrees from true north (°)
Temperature	degrees Celsius (°C)
Relative Humidity	percent (%)
Barometric Pressure	millibars (mb)
Precipitation	inches (in)
Continuous PM_{10}	micrograms per cubic meter ($\mu g/m^3$)
Continuous $PM_{2.5}$	micrograms per cubic meter ($\mu g/m^3$)
Time	Eastern Standard Time (EST)

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The latitude and longitude coordinates of the monitoring stations are presented in Table 1-2.

Table 1-2 Location of CSX Curtis Bay Piers Facility Monitoring Stations

Site ID	Latitude (Decimal degrees)	Longitude (Decimal degrees)
AQ1	39.22169	-76.58194
AQ2	39.22169	-76.58455
AQ3	39.22710	-76.58483
AQ4	39.22968	-76.58538
AQ5	39.22773	-76.58096
AQ6	39.22485	-76.58015
AQ7	39.22147	-76.57630
AQ8	39.22320	-76.58400
Meteorological Tower (at AQ5)	39.22773	-76.58096

Figure 1.1 presents a Google Earth image showing the location of CSX monitoring stations. Photographs of the AQ5 and AQ8 monitoring stations, where the FEM PM_{10}/$PM_{2.5}$ monitors are located, are presented as Figures 1.2 and 1.3.

Figure 1.1 Google Earth Image Showing Location of CSX Monitoring Stations

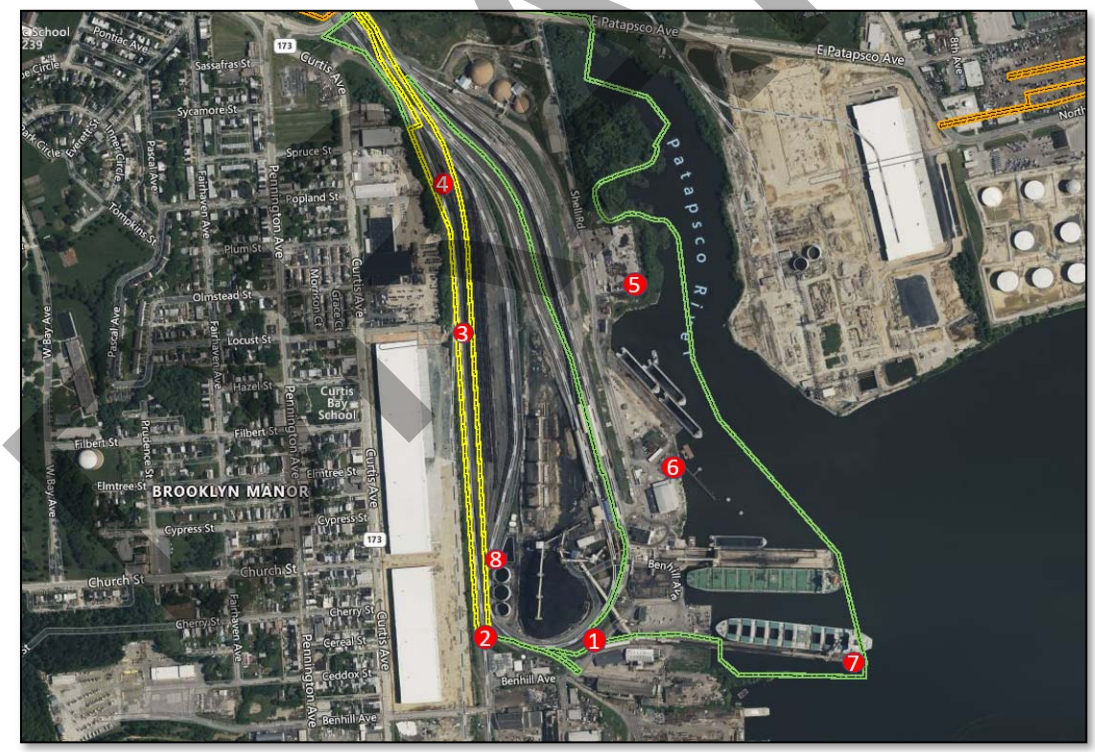


Figure 1.2 Photograph of CSX AQ5 PM and Meteorological Monitoring Station



Figure 1.3 Photograph of CSX AQ8 PM Monitoring Station



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1.2 Meteorological and Particulate Instrumentation

The meteorological parameters provide information on the local meteorology and particulate concentrations at the Curtis Bay Piers Facility. The objective of the particulate and meteorological monitoring is to obtain representative particulate and meteorological information for the Curtis Bay Piers Facility that may be used for informational purposes, including community awareness and comparison with regional air quality. Table 1-3 presents a list of meteorological and PM equipment at the CSX Curtis Bay Piers Facility monitoring stations.

Table 1-3 Particulate and Meteorological Instrumentation at CSX Monitoring Stations

Site ID	Parameter	Equipment Manufacturer	Model Number	Serial Number
AQ1	PM_{10}, $PM_{2.5}$	QuantAQ MODULAIR	MODULAIR-PM	MOD-00386
	Wind speed/Wind direction	Davis Instruments	6415	
AQ2	PM_{10}, $PM_{2.5}$	QuantAQ MODULAIR	MODULAIR-PM	MOD-00385
	Wind speed/Wind direction	Davis Instruments	6415	
AQ3	PM_{10}, $PM_{2.5}$	QuantAQ MODULAIR	MODULAIR-PM	MOD-00384
	Wind speed/Wind direction	Davis instruments	6415	
AQ4	PM_{10}, $PM_{2.5}$	QuantAQ MODULAIR	MODULAIR-PM	MOD-00383
	Wind speed/Wind direction	Davis Instruments	6415	
AQ5	PM_{10}, $PM_{2.5}$	QuantAQ MODULAIR	MODULAIR-PM	MOD-00266
	Wind speed/Wind direction	Davis Instruments	6415	
	PM_{10}, $PM_{2.5}$	QuantAQ MODULAIR	MODULAIR-PM	MOD-00387
	Wind speed/Wind direction	Davis Instruments	6415	
	PM_{10}, $PM_{2.5}$	QuantAQ MODULAIR	MODULAIR-PM	MOD-00388
	Wind speed/Wind direction	Davis Instruments	6415	
	PM_{10}, $PM_{2.5}$	Teledyne-API	T640X	1690
	Wind Direction	Met One	020D	C21028
	Wind Speed	Met One	010C	C21557
	Temperature	Campbell Scientific Inc.	HygroVUE10	E4240
	Relative Humidity	Campbell Scientific Inc.	HygroVUE10	E4240
	Barometric Pressure	Campbell Scientific Inc.	BaroVUE10	1808
	Precipitation	Texas Electronics	TR-525U	93490-1222
	Data Acquisition System	Campbell Scientific Inc.	CR1000X	45777
AQ6	PM_{10}, $PM_{2.5}$	QuantAQ MODULAIR	MODULAIR-PM	MOD-00267
	Wind speed/Wind direction	Davis Instruments	6415	
AQ7	PM_{10}, $PM_{2.5}$	QuantAQ MODULAIR	MODULAIR-PM	MOD-00265
	Wind speed/Wind direction	Davis Instruments	6415	
AQ8	PM_{10}, $PM_{2.5}$	QuantAQ MODULAIR	MODULAIR-PM	MOD-00264
	Wind speed/Wind direction	Davis Instruments	6415	
	PM_{10}, $PM_{2.5}$	Teledyne-API	T640X	1689
	Data Acquisition System	Campbell Scientific Inc.	CR310	

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1.3 Data Acquisition

Campbell Scientific Inc. (CSI) CR1000x DASs are used to store data from the 10-meter tower meteorological sensors and continuous Teledyne-API (T-API) T640X FEM $PM_{10}/PM_{2.5}$ monitors. Tower meteorological data are sampled every second and recorded as five-minute averages on the data logger. T640X particulate data are stored as five-minute and hourly averages. An hourly average is computed from at least nine five-minute averages that are available for the hour. Data from the QuantAQ MODULAIR samplers are sampled every minute and stored on internal data loggers that send data to a cloud server.

Each CSI CR1000x DAS has the capability of being polled locally through an RS232 connector or remotely via modem. An on-site display allows users to view current values of the parameters being measured.

The CSI CR1000x data loggers are interrogated by Trinity daily via a static IP address and the data are copied to duplicate computer files. Each data logger's telecommunications software performs dynamic error checking during download to ensure that an exact duplicate file is created. Any failures in instrumentation or data acquisition are identified daily so that field personnel can correct problems in a timely manner to prevent excessive data loss. The data collected during each interrogation are checked for consistency and the parameters are plotted for visual inspection.

The MODULAIR produces data which is saved to the onboard µSD card every minute. These values are averaged and pushed to the cloud where they are available on the QuantAQ Cloud for retrieval. Data from the MODULAIR are obtained from the QuantAQ Cloud daily.

The quality assurance stacked parameter/time plots for the third quarter (July through September) 2023 are presented in Appendix A. Data presented in Appendix A represent the final, quality assured data set. Hourly values provided are computed by the data logger. If fewer than 45 minutes are available, the hour is considered "missing".

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2.0 METEOROLOGICAL TOWER AND FEDERAL EQUIVALENT METHOD CONTINUOUS PARTICULATE DATA SUMMARY

This section of the report summarizes the data results and data recovery for the third quarter 2023 (July 1 through September 30). Hourly data for the period are tabulated in the appendices. These appendix tables display the hourly average of measurements recorded in the hour "ending"; that is, the first hour of the day is labeled 01, meaning the hour beginning at 00:00:01 and ending at 01:00:00 a.m. The second hour is labeled 02, meaning the values collected from 01:00:01 a.m. to 02:00:00 a.m.

2.1 Meteorological Data

Meteorological data records from the CSX Curtis Bay Piers Facility meteorological monitoring station consists of wind speed and wind direction at 10-meters, temperature at two-meters, relative humidity at two-meters, barometric pressure at 5 feet, and precipitation at 4 feet.

2.1.1 Wind Direction and Horizontal Wind Speed

The most frequent (and predominant) winds during the third quarter at the 10-meter level were from the north-northwest followed by the northwest. Reported wind directions represent the directions from which the wind is blowing.

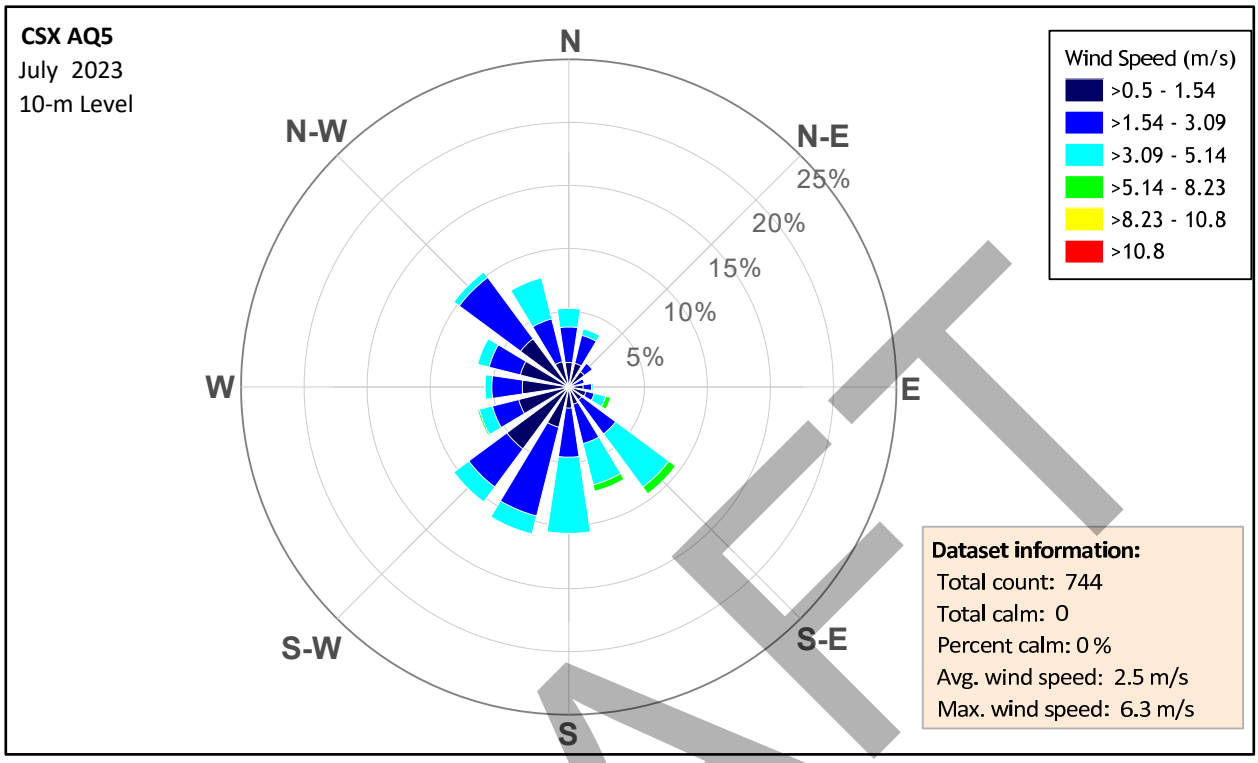
For the third quarter 2023, the percentage of wind that were calm was 0.1 percent at the 10-meter level. The percentage of wind speeds that were not calm and less than or equal to 10.8 meters per second (m/s), which translates to 24.2 miles per hour (mph), was 99.9 percent at the 10-meter level. For the quarter, the percentage of winds greater than 10.8 m/s was 0.0 percent at the 10-meter level.

The sector with the highest average wind speed for the quarter at the 10-meter level was from the southeast at 3.5 m/s (7.8 mph).

Figures 2.1 through 2.3 provide diagrams of the joint frequency of occurrence distributions (wind rose) of wind speed and wind direction by month for the period for the 10-meter level. Figure 2.4 presents the third quarter 10-meter level wind rose. Summary tables of hourly average wind direction and wind speed for the 10-meter level for the third quarter are presented in Appendix B.

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Figure 2.1 10-Meter Level Wind Rose, July 2023.



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Figure 2.2 10-Meter Level Wind Rose, August 2023.

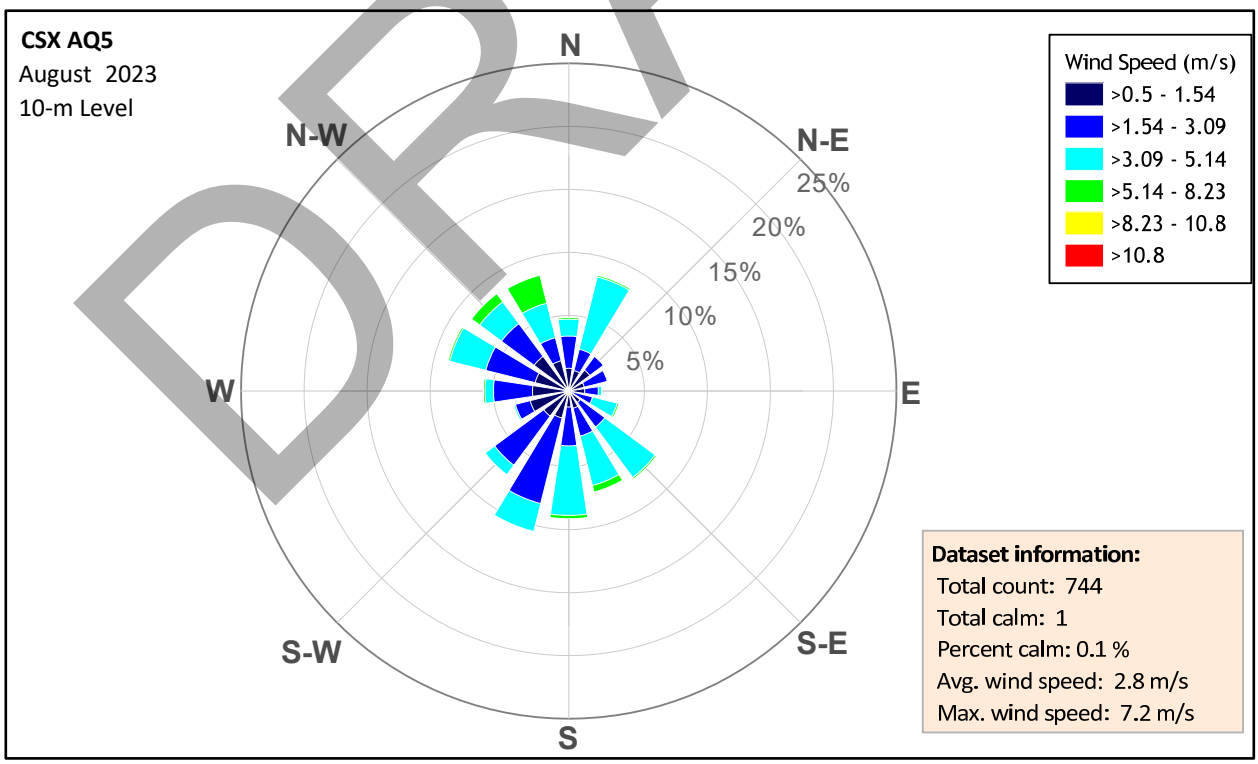
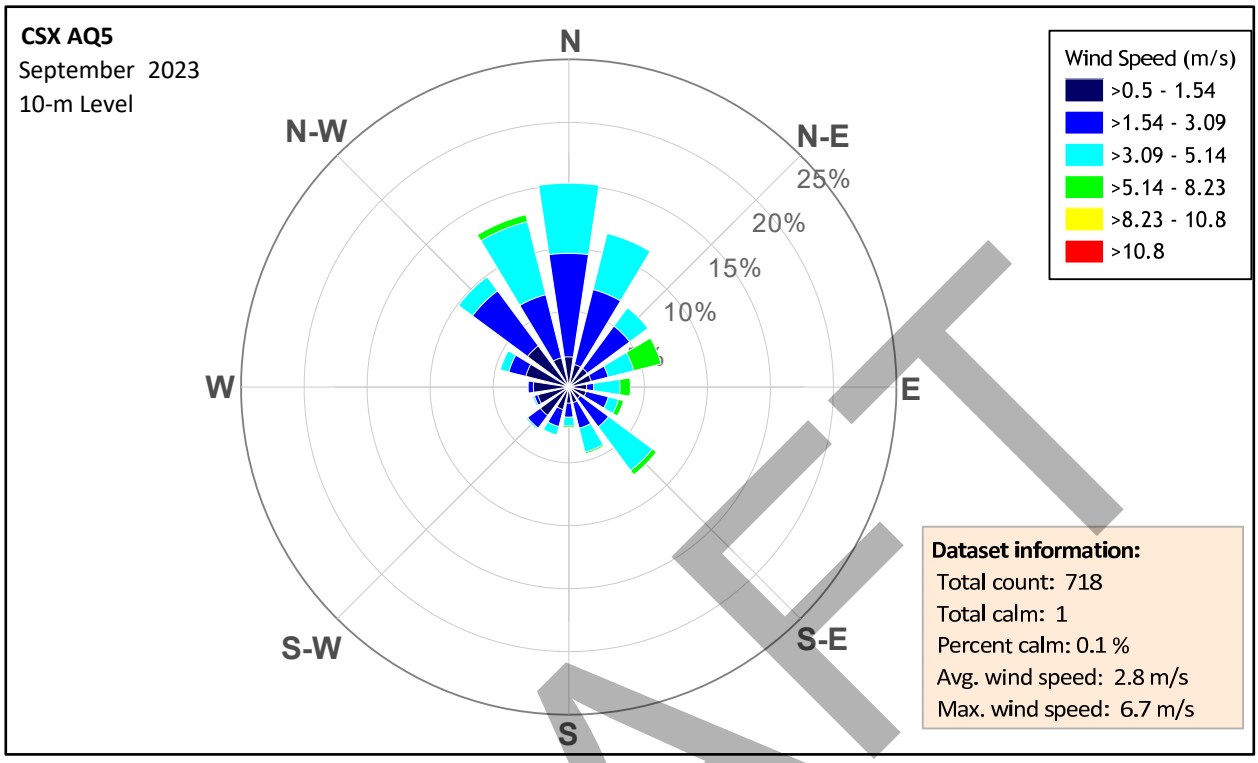
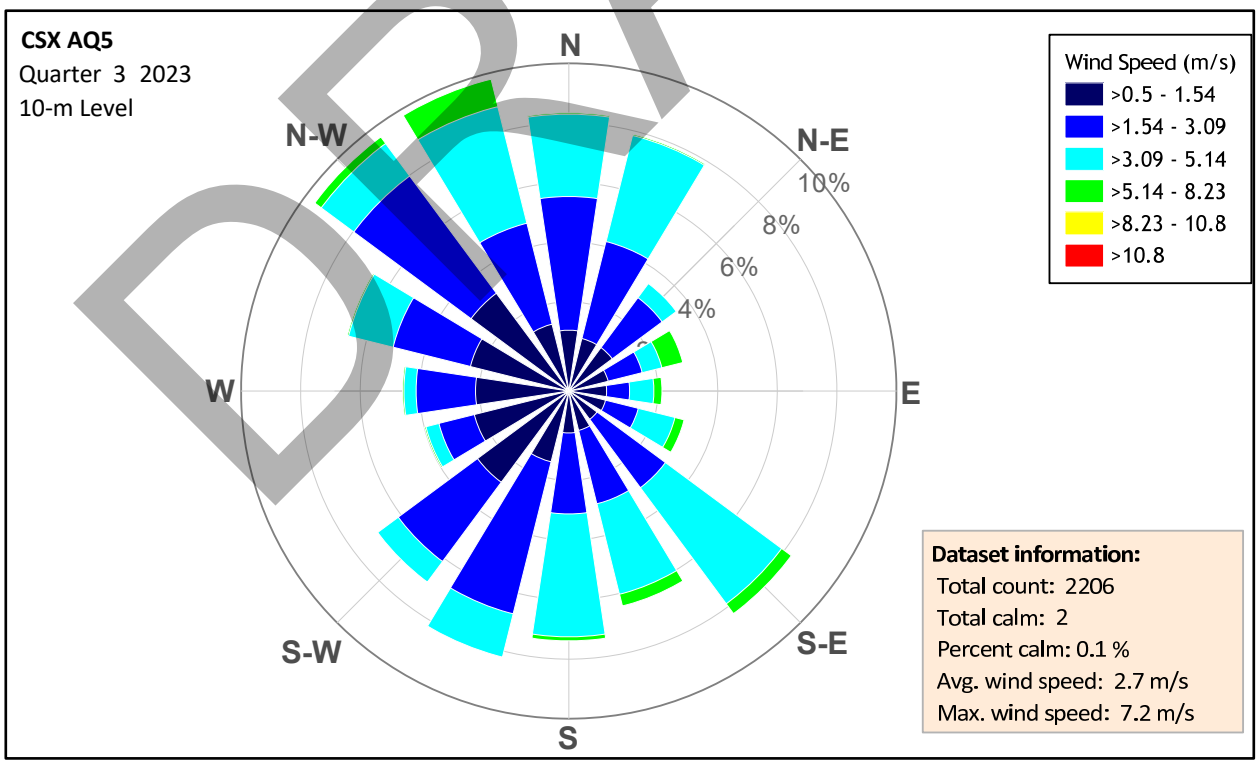


Figure 2.3 10-Meter Level Wind Rose, September 2023.



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Figure 2.4 10-Meter Level Wind Rose, Third Quarter 2023.



2.1.2 Wind Gust

At the 10-meter level, the peak wind gust during the period was 20.7 m/s (46.3 mph) which occurred on July 28 at 19:00. Wind gust information is presented in Table 2-1 and in Appendix B.

Table 2-1 Wind Gust Summary in Meters per Second for Third Quarter 2023

Month	Monthly Mean (m/s)	Maximum Hour (m/s)	Minimum Hour (m/s)
July	4.9	20.7	1.0
August	5.4	18.8	1.0
September	5.5	15.8	1.0

2.1.3 Temperature

The temperature is measured at the 2-meter level. The ambient daily mean temperatures for the third quarter 2023 ranged from a low of 15.9 degrees centigrade (°C) in September to a high of 30.7°C in September. The hourly minimum temperature was -13.6°C on September 20 at 06:00; the hourly maximum temperature was 36.0°C on September 4 at 16:00. Hourly temperature data for the third quarter 2023 are presented in Appendix C. Temperature data for the period are summarized in Table 2-2.

Table 2-2 Summary of Temperature in Degrees Centigrade (°C) for Third Quarter 2023

Month	Monthly Mean (°C)	Maximum Daily Mean (°C)	Minimum Daily Mean (°C)	Maximum Hour (°C)	Minimum Hour (°C)
July	26.5	29.5	24.3	35.2	20.0
August	25.2	28.7	22.7	32.7	17.2
September	21.9	30.7	15.9	36.0	13.6

2.1.4 Relative Humidity

Table 2-3 presents the monthly means, maximum and minimum relative humidity information for the third quarter 2023. Relative humidity data are presented in Appendix D.

Table 2-3 Summary of Relative Humidity in Percent for Third Quarter 2023

Month	Monthly Mean (%)	Maximum Daily Mean (%)	Minimum Daily Mean (%)	Maximum Hour (%)	Minimum Hour (%)
July	73	88	55	97	34
August	68	89	49	98	29
September	72	95	52	98	30

2.1.5 Barometric Pressure

Barometric pressure data for the third quarter 2023 are presented in Table 2-4 and in Appendix E.

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Table 2-4 Barometric Pressure Data in Millibars (mb) for Third Quarter 2023

Month	Monthly Mean (mb)	Maximum Daily Mean (mb)	Minimum Daily Mean (mb)	Maximum Hour (mb)	Minimum Hour (mb)
July	1013	1018	1008	1020	1006
August	1013	1022	1005	1023	1002
September	1017	1025	1008	1027	1006

2.1.6 Precipitation

For the third quarter 2023, 13.02 inches of precipitation were measured at the site. The precipitation data are summarized in Table 2-5 and are presented in Appendix F.

Table 2-5 Summary of Precipitation in Inches for Third Quarter 2023

Month	Monthly Total (in.)	Maximum Daily Total (in.)	Maximum Hourly Total (in.)
July	6.50	1.76	0.86
August	2.04	1.16	0.63
September	4.48	1.10	0.94

2.2 Particulate Data

PM_{10} and $PM_{2.5}$ data are measured at the AQ5 and AQ8 monitoring stations using continuous T-API Model T640X samplers. The T-API Model T640X samplers have Federal Equivalent Method (FEM) certifications of EQPM-0516-239 for PM_{10} and EQPM-0516-238 for $PM_{2.5}$.

2.2.1 AQ5 – PM_{10}

Hourly and 24-hour average PM_{10} concentrations collected at the AQ5 station during the third quarter 2023 are presented in Table 2-6. The ten highest 24-hour average PM_{10} concentrations for the 2023 monitoring year at the AQ5 monitoring station are presented in Table 2-7. Third quarter AQ5 station PM_{10} data are summarized in Appendix G.

Table 2-6 AQ5 PM_{10} Concentrations Third Quarter 2023 in Micrograms per Cubic Meter

AQ5 Statistics	July ($\mu g/m^3$)	August ($\mu g/m^3$)	September ($\mu g/m^3$)	Third Quarter 2023 ($\mu g/m^3$)
Mean	25.6	23.9 [1]	18.4 [1]	22.6
Maximum Hourly PM_{10}	86.9	367.7 [1]	204.7 [1]	367.7
Second Highest Hourly PM_{10}	86.6	185.4 [1]	162.7 [1]	204.7
Maximum 24-hour PM_{10}	60.2	64.9 [1]	38.9 [1]	64.9
Second Highest 24-hour PM_{10}	55.5	42.1 [1]	29.8 [1]	60.2

[1] Data flagged as suspect due to bypass flow issue with instrument (see Section 3)

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Table 2-7 AQ5 Station Ten Highest 24-Hour Average PM_{10} Concentrations in Micrograms per Cubic Meter for 2023 Monitoring Year

Number	24-hour Concentration (µg/m³)	Date of Occurrence
1	247.7	06/08/2023
2	187.7	06/29/2023
3	169.4	06/07/2023
4	82.4	06/30/2023
5	74.7	04/20/2023
6	67.7	06/06/2023
7	65.3	06/28/2023
8	64.8[1]	08/30/2023
9	61.0	06/02/2023
10	60.2	07/01/2023

[1] Data flagged as suspect due to bypass flow issue with instrument (see Section 3)

2.2.2 AQ5 – $PM_{2.5}$

Hourly and 24-hour average $PM_{2.5}$ concentrations collected at the AQ5 station during the third quarter 2023 are presented in Table 2-8. The ten highest 24-hour average $PM_{2.5}$ concentrations for the 2023 monitoring year at the AQ5 monitoring station are presented in Table 2-9. Third quarter AQ5 station $PM_{2.5}$ data are summarized in Appendix G.

Table 2-8 AQ5 $PM_{3.5}$ Concentrations Third Quarter 2023 in Micrograms per Cubic Meter

AQ5 Statistics	July[1] (µg/m³)	August (µg/m³)	September (µg/m³)	Third Quarter 2023 (µg/m³)
Mean	14.6	10.8 [2]	8.3 [2]	11.2
Maximum Hourly $PM_{2.5}$	65.9	42.6 [2]	45.2 [2]	65.9
Second Highest Hourly $PM_{2.5}$	65.4	35.8 [2]	34.6 [2]	65.4
Maximum 24-hour $PM_{2.5}$	40.9	18.8 [2]	13.8 [2]	40.9
Second Highest 24-hour $PM_{2.5}$	39.5	17.6 [2]	13.7 [2]	39.5

[1] Data affected by wildfire smoke and fireworks.
[2] Data flagged as suspect due to bypass flow issue with instrument (see Section 3)

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Table 2-9 AQ5 Station Ten Highest 24-Hour Average $PM_{2.5}$ Concentrations in Micrograms per Cubic Meter for 2023 Monitoring Year

Number	24-hour Concentration ($\mu g/m^3$)	Date of Occurrence
1	177.1	06/08/2023
2	126.7	06/07/2023
3	126.0	06/29/2023
4	55.7	06/30/2023
5	41.4	06/28/2023
6	40.9	07/01/2023
7	40.7	06/06/2023
8	39.5	07/17/2023
9	36.4	07/18/2023
10	31.0	06/11/2023

2.2.3 AQ8 – PM_{10}

Hourly and 24-hour average PM_{10} concentrations for the third quarter 2023 are presented in Table 2-10 for the AQ8 monitoring station. The ten highest 24-hour average PM_{10} concentrations at the AQ8 station are presented in Table 2-11. The third quarter AQ8 station PM_{10} data are summarized in Appendix H.

Table 2-10 AQ8 Station PM_{10} Concentration for Third Quarter 2023 in Micrograms per Cubic Meter

AQ8 Statistics	July ($\mu g/m^3$)	August ($\mu g/m^3$)	September ($\mu g/m^3$)	Third Quarter 2023 ($\mu g/m^3$)
Monthly Mean	23.9	NA	20.6	22.3
Maximum Hourly PM_{10}	80.3	NA	201.7	201.7
Second Highest Hourly PM_{10}	76.3	NA	95.0	95.0
Maximum 24-hour PM_{10}	55.6	NA	49.7	55.6
Second Highest 24-hour PM_{10}	25.8	NA	30.5	30.5

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Table 2-11 AQ8 Station Ten Highest 24-Hour Average PM_{10} Concentrations in Micrograms per Cubic Meter for 2023 Monitoring Year

Number	24-hour Concentration ($\mu g/m^3$)	Date of Occurrence
1	55.5	07/01/2023
2	49.7	09/21/2023
3	30.5	09/28/2023
4	28.9	09/20/2023
5	27.6	09/22/2023
6	26.8	09/27/2023
7	25.8	07/02/2023
8	24.6	07/05/2023
9	22.9	07/04/2023
10	22.9	09/17/2023

2.2.4 AQ8 – $PM_{2.5}$

Hourly and 24-hour average $PM_{2.5}$ concentrations for the third quarter 2023 are presented in Table 2-12 for the AQ8 monitoring station. The ten highest 24-hour average $PM_{2.5}$ concentrations at the AQ8 station are presented in Table 2-13. The third quarter AQ8 station $PM_{2.5}$ data are summarized in Appendix H.

Table 2-12 AQ8 Station $PM_{2.5}$ Concentration for Third Quarter 2023 in Micrograms per Cubic Meter

AQ8 Statistics	July ($\mu g/m^3$)	August ($\mu g/m^3$)	September ($\mu g/m^3$)	Third Quarter 2023 ($\mu g/m^3$)
Monthly Mean	14.0	NA	8.2	11.1
Maximum Hourly $PM_{2.5}$	61.3	NA	45.3	61.3
Second Highest Hourly $PM_{2.5}$	53.8	NA	19.7	53.8
Maximum 24-hour $PM_{2.5}$	38.5	NA	14.1	38.5
Second Highest 24-hour $PM_{2.5}$	15.7	NA	13.0	15.7

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Table 2-13 AQ8 Station Ten Highest 24-Hour Average $PM_{2.5}$ Concentrations in Micrograms per Cubic Meter for 2023 Monitoring Year

Number	24-hour Concentration ($\mu g/m^3$)	Date of Occurrence
1	38.5	07/01/2023
2	15.7	07/02/2023
3	14.1	09/21/2023
4	13.6	07/04/2023
5	13.0	07/05/2023
6	13.0	09/28/2023
7	12.6	09/27/2023
8	11.9	07/07/2023
9	11.8	07/06/2023
10	11.7	07/08/2023

2.3 Data Recovery

Data recoveries for the meteorological parameters and AQ5 and AQ8 station PM_{10} and $PM_{2.5}$ data for the third quarter 2023 in percent possible are provided in Tables 2-14 and A-15.

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Table 2-14 AQ5 Station - Meteorological and PM_{10} Measurement Data Recovery in Percent for Third Quarter 2023

Month	Level (m)	Wind Speed (%)	Wind Dir. (%)	Wind Gust (%)	Temp. (%)	Rel. Hum. (%)	Bar. Press. (%)	Prec. (%)	PM_{10} (%)[1]	$PM_{2.5}$ (%)[1]
July	1.5	--	--	--	--	--	100	100	87.4	87.4
	2.0	--	--	--	100	100	--	--		
	10.0	100	100	100	--	--	--	--		
August	1.5	--	--	--	--	--	100	100	85.6 [2]	85.6 [2]
	2.0	--	--	--	100	100	--	--		
	10.0	100	100	100	--	--	--	--		
September	1.5	--	--	--	--	--	99.7	100	96.9 [2]	96.9 [2]
	2.0	--	--	--	99.7	99.7	--	--		
	10.0	99.7	99.7	99.7	--	--	--	--		
Third Quarter 2023	1.5	--	--	--	--	--	99.9	100	93.4	93.4
	2.0	--	--	--	99.9	99.9	--	--		
	10.0	99.9	99.9	99.9	--	--	--	--		

1 Data capture rate based on valid sample days.
2 Data flagged as suspect due to bypass flow issue with instrument (see Section 3)

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Table 2-15 AQ8 Station - PM_{10} and $PM_{2.5}$ Measurement Data Recovery in Percent for Third Quarter 2023

Month	PM_{10} (%)[1]	PM2.5 (%)[1]
July	35.3	35.3
August	0.0	0.0
September	54.2	54.2
Third Quarter	29.8	29.8

[1] Data capture rate based on valid sample days.

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3.0 PM_{10} AND $PM_{2.5}$ PERIMETER NETWORK MONITORING

At eight locations around the perimeter of the at the Curtis Bay Piers Facility, QuantAQ MODULAIR non-regulatory, community based $PM_{10}/PM_{2.5}$ samplers are operated. Three MODULAIR samplers are being operated at AQ5. These samplers are operated to give an indication of the $PM_{10}/PM_{2.5}$ at each network location and to show $PM_{10}/PM_{2.5}$ trends. These data are not intended to be used for compliance with the National Ambient Air Quality Standards (NAAQS).

Figures 3.1 through 3.10 present the perimeter network MODULAIR PM sampler PM_{10} and $PM_{2.5}$ concentrations compared with the FEM reference PM_{10} and $PM_{2.5}$ samplers for July 2023. QuantAQ MODULAIR network collocation and comparison data are presented in Appendix I.

Figure 3.1 AQ1 MODULAIR PM Collocation and Comparison Data for July 2023

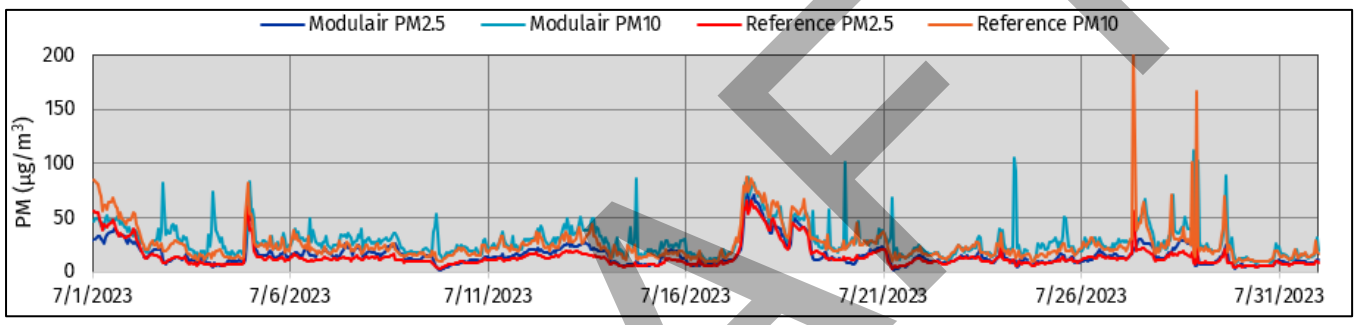


Figure 3.2 AQ2 MODULAIR PM Collocation and Comparison Data for July 2023

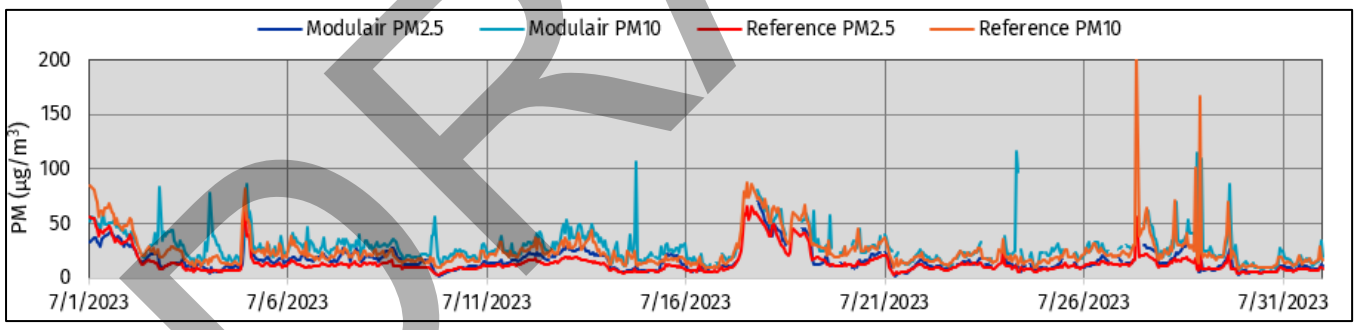
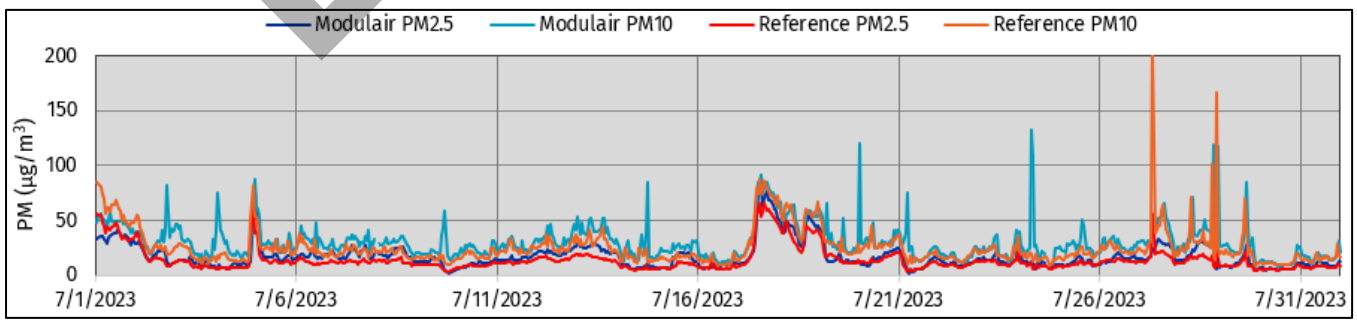


Figure 3.3 AQ3 MODULAIR PM Collocation and Comparison Data for July 2023



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Figure 3.4 AQ4 MODULAIR PM Collocation and Comparison Data for July 2023

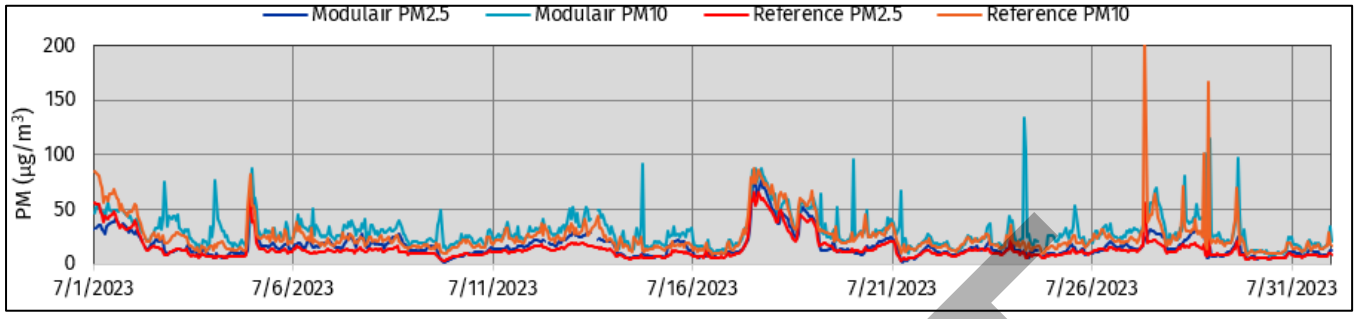


Figure 3.5 AQ5 (MOD-266) MODULAIR PM Collocation and Comparison Data for July 2023

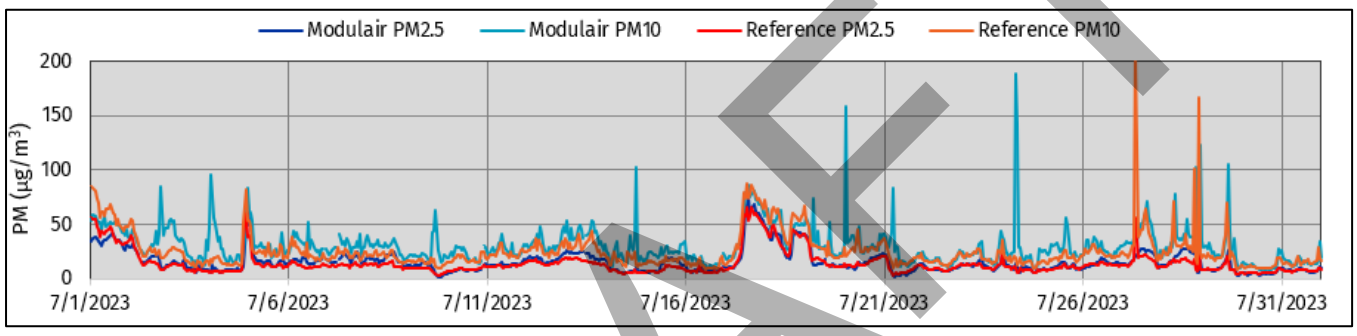


Figure 3.6 AQ5 (MOD-387) MODULAIR PM Collocation and Comparison Data for July 2023

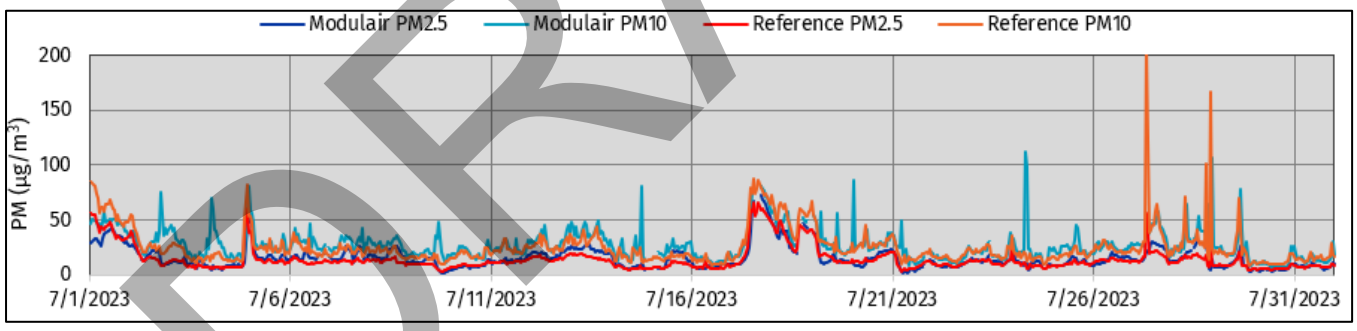
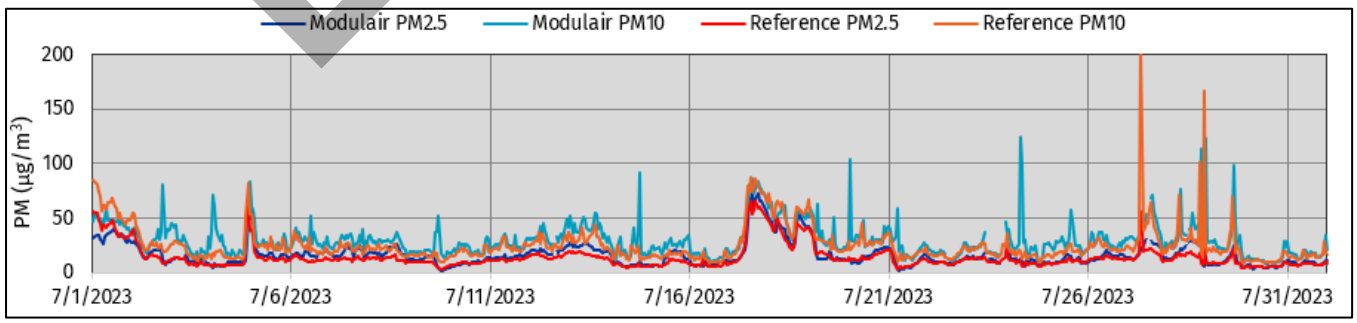


Figure 3.7 AQ5 (MOD-388) MODULAIR PM Collocation and Comparison Data for July 2023



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Figure 3.8 AQ6 MODULAIR PM Collocation and Comparison Data for July 2023

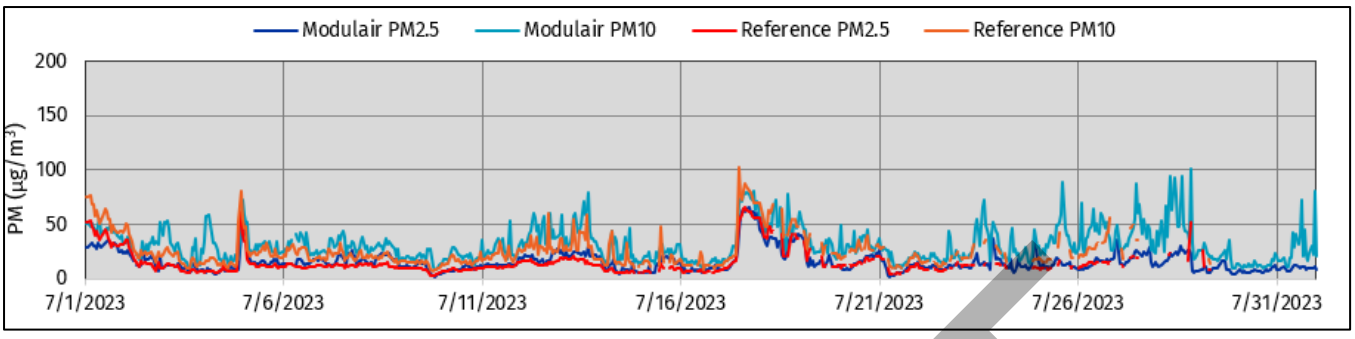


Figure 3.9 AQ7 MODULAIR PM Collocation and Comparison Data for July 2023

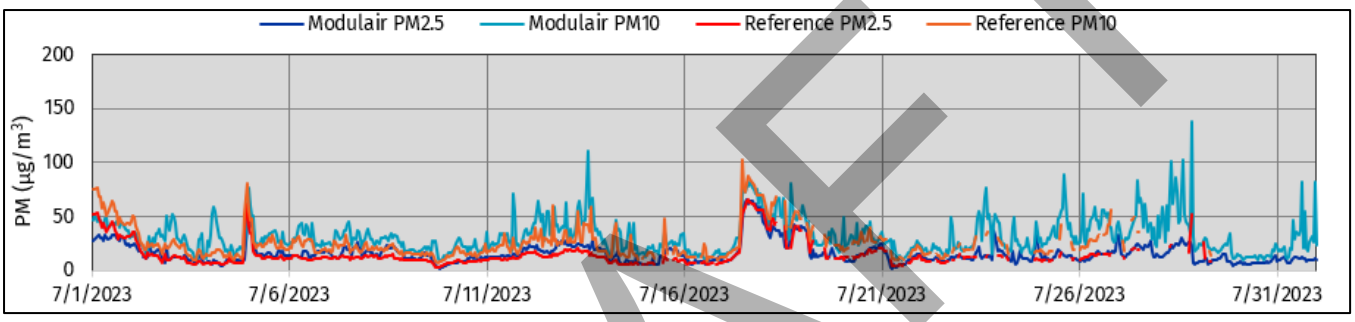
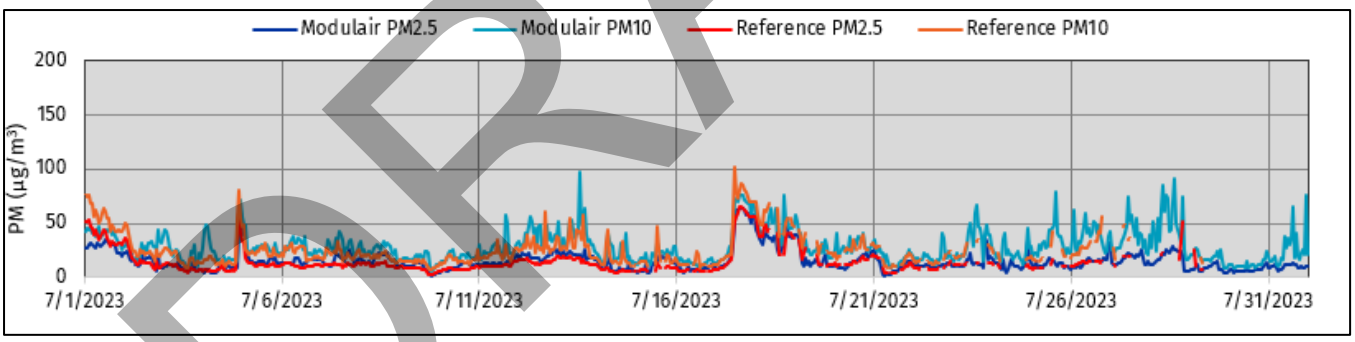


Figure 3.10 AQ8 MODULAIR PM Collocation and Comparison Data for July 2023



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4.0 QUALITY CONTROL

Meteorological, and PM_{10} and $PM_{2.5}$ concentration data collected at CSX monitoring stations have been subjected to a series of quality control procedures to document the validity of the data and increase the integrity of the data sets. The quality control performed for these data is described in this section.

4.1 Visual Inspection of Equipment

Visual inspection of the meteorological tower, sensors, continuous FEM PM_{10}/$PM_{2.5}$ monitors, and network samplers is performed at least every month or more frequently when problems are indicated. Abnormal conditions are logged and reported immediately to the program manager for corrective action.

4.2 Remote Interrogation of the Monitoring Stations

The data loggers at the AQ5 and AQ8 meteorological tower and PM_{10}/$PM_{2.5}$ monitoring stations are interrogated every day to download and process the data. PM_{10} and $PM_{2.5}$ concentration from the MODULAIR samplers are downloaded from the QuantAQ Cloud daily. Abnormal data values or apparent problems are reported immediately to the program manager who initiates corrective action and determines if a special visit to the site is required.

4.3 Quality Control Data Inspections

During data acquisition, the data loggers at AQ5 and AQ8 collect and save 5-minute averages of each measured meteorological parameter, and PM_{10} and $PM_{2.5}$ concentrations. These values are stored in memory for subsequent retrieval via telephone, modem, and internet. Minutely MODULAIR data are downloaded daily. After the AQ5 and AQ8 data loggers are interrogated and MODULAIR data are downloaded from the Cloud, collecting all data since the last interrogation, the data are stored on Trinity computers in Salt Lake City.

The meteorological, PM_{10}, and $PM_{2.5}$ data files are input to a program which performs a series of quality control (QC) tests as listed in Table 4-1. The QC program produces a report that identifies each value in the data file that fails one or more of the listed tests. This report also provides means, maxima, and minima for each variable.

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Table 4-1 Quality Control Checks Imposed by Data QC Program

Parameter	Less Than	Greater Than	Constant For
Wind Speed	0 m/s	35 m/s	2 hours
Wind Direction	0 deg	360 deg	2 hours
Temperature	-30 deg C	45 deg C	30 minutes
Relative Humidity	3%	102%	16 hours
Barometric Pressure	-20 mb < 7 day Avg.	20 mb > 7 day Avg.	2 hours
Precipitation	0 inches	1 inch in 24 hours	N/A
PM_{10}	-5 ug/m^3	150 ug/m^3	4 hours
$PM_{2.5}$	-10 ug/m^3	35 ug/m^3	4 hours
Shelter Temperature	20 deg C	30 deg C	N/A
Battery Voltage	11.5 V	16 V	N/A

4.4 Data Validation

When the QC program identifies values that exceed the criteria set for that parameter, the data file is inspected visually. In most cases, a flagged value is not invalid; it merely fell outside of expected ranges or "normal" rates of change for that parameter. If, after investigation, an air quality meteorologist determines that the value is reasonable, the value is not invalidated. If there is a reason to suspect the data point, the value is reset to "missing" (This is done on the data management file only, not on the raw data file collected from the data logger; the raw data file is never manipulated).

For the purposes of this data report, data failures or discrepancies that would invalidate an hourly average for the meteorological sensors, T640x analyzers, and MODULAIR samplers are listed below:

- Loss of more than three five-minute average in a one-hour period,
- Visual evidence, on the stacked parameter/time plots for example, that the 5-minute value is an outlier,
- Data collected during calibrations and audits,
- Equipment malfunction,
- T640 reports a status error,
- Shelter temperature less than 0°C, $PM_{2.5}$ and PM_{10} concentrations set to missing,
- PM_{10} less than -5 µg/m^3, concentrations set to missing, and
- $PM_{2.5}$ less than -10 µg/m^3, concentrations set to missing.

Invalid data parameters and the corrective action reports for the third quarter 2023 and corresponding times are presented in Appendix J.

From August 5, 2023, through the end of the quarter, the AQ5 T640X had a "bypass flow" warning which was due to the flow sensor not working or reading properly. This sensor was replaced on August 5, 2023, and the warning messages appeared once again shortly after replacement. Trinity contacted the manufacturer several times to diagnose the issue both remotely and while on site to troubleshoot. Tests conducted on the instrument showed the bypass flow was higher than the designed flow for FEM designation. The issue persisted through the end of the quarter. The T640X uses bypass flow to get sufficient flow through the PM_{10} inlet head separator which separates out particles larger than 10 microns. All air sent through bypass is discarded and not used in the measurements. The sample flow throughout the period was within tolerance which indicates the optical chamber was still able to make readings for PM_{10} and $PM_{2.5}$. As a result, data were marked as suspect for not meeting quality control requirements for the bypass flow of the instrument.

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4.5 Equipment Calibration

Calibrations of the meteorological equipment are performed every six months or whenever a sensor exceeds specified control limits or undergoes major maintenance or repair. The T640X $PM_{10}/PM_{2.5}$ samplers are calibrated by Trinity personnel every three months or when problems are identified. The meteorological equipment was calibrated on September 26, 2023; the AQ8 $PM_{10}/PM_{2.}$samplers were calibrated on September 26, 2023. No calibrations are performed on the MODULAIR samplers.

4.6 T-API T640X PM_{10} and $PM_{2.5}$ Flow and Leak Checks

Field quality control activities for the T-API Model T640X samplers include flow rate, temperature, and pressure checks. The T640X $PM_{2.5}/PM_{10}$ continuous samplers quality control checks and calibrations are performed using a certified flow transfer standard**.**

Monthly flow checks are performed on the T-API T640x continuous $PM_{10}/PM_{2.5}$. Copies of the monthly flow checks are included in Appendix K. The results of the monthly flow checks are presented in Table 4-3. The measured flow rates of the particulate samplers should not exceed ±4 percent of the sampler flow rate or within ±5 percent of the design flow rate of 16.7 L/min. Flow rate difference is calculated using the following equation:

$$d_i = \frac{Y_i - X_i}{(X_i)} x100$$

Where d_i is the percent difference, Y_i is the sampler indicated flow, and X_i is the flow as measured by the reference flow standard.

Table 4-2 AQ5 and AQ8 $PM_{10}/PM_{2.5}$ T640X Monthly Flow Check Results

Month	Target Flow Rate (L/min)	Sampler Indicated Flow (L/min)	Reference Flow (L/min)	Percent Difference Ref. Flow (%)	Percent Difference Design Flow (%)
AQ5 PM_{10}/ $PM_{2.5}$					
July	5.0	5.01	4.99	0.4	-0.2
	11.67	11.68	11.84	-1.4	1.5
August[1]	5.0	4.96	4.92	0.8	-1.6
	11.67	NA	NA	NA	NA
September[2]	5.0	NA	NA	NA	NA
	11.67	NA	NA	NA	NA
AQ8 PM_{10}/ $PM_{2.5}$					
July[3]	5.0	NA	NA	NA	NA
	11.67	NA	NA	NA	NA
August[3]	5.0	NA	NA	NA	NA
	11.67	NA	NA	NA	NA
September	5.0	4.98	4.98	0.0	-0.4
	11.67	11.65	11.73	-0.7	0.5

[1] Bypass flowmeter inoperable.
[2] Flow check/calibration not performed due to bypass flow issues.
[3] Not performed due to power cycling issues.

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4.7 T-API T640X PM_{10} and $PM_{2.5}$ Statistics for Assessment

Calculations for the PM_{10} and $PM_{2.5}$ T-API T640X data quality assessment were made based 40 CFR 58 Appendix A.

The bias estimator is an upper bound on the mean absolute value of the percent differences. The bias estimate equation is presented as equation (2).

$$|AB| = AB + t_{0.95,n-1}\frac{AS}{\sqrt{n}} \quad (2)$$

Where: n is the number of single point checks being aggregated; $t_{0.95,\ n-1}$ is the 95th quantile of a T-distribution with $n-1$ degrees of freedom.

The quantity AB is the mean of the absolute values of the d i's and is calculated for PM_{10} and $PM_{2.5}$ using equation (3).

$$AB = \frac{1}{n}\sum_{i=0}^{n}|d_i| \quad (3)$$

The standard deviation of the absolute value of the d_i's is calculated for PM_{10} using equation 4.

$$AS = \sqrt{\frac{n\sum_{i=0}^{n}|d_i^2| - \left(\sum_{i=0}^{n}|d_i|\right)^2}{n(n-1)}} \quad (4)$$

The mean percent difference, precision, and bias estimates limits for PM_{10} and $PM_{2.5}$ for the third quarter 2023 are presented in Table 4-4.

Table 4-3 Third Quarter 2023 Bias Statistics for T-API T640X Continuous $PM_{10}/PM_{2.5}$ Samplers

Statistics	AQ5 $PM_{10}/PM_{2.5}$	AQ8 $PM_{10}/PM_{2.5}$
Mean Percent Difference	0.218	NA
AB	0.332	NA
AS	0.250	NA
Bias Estimate	±0.57	NA

NA = Not available.

4.8 T-API T640X Monitoring Enclosure Temperature

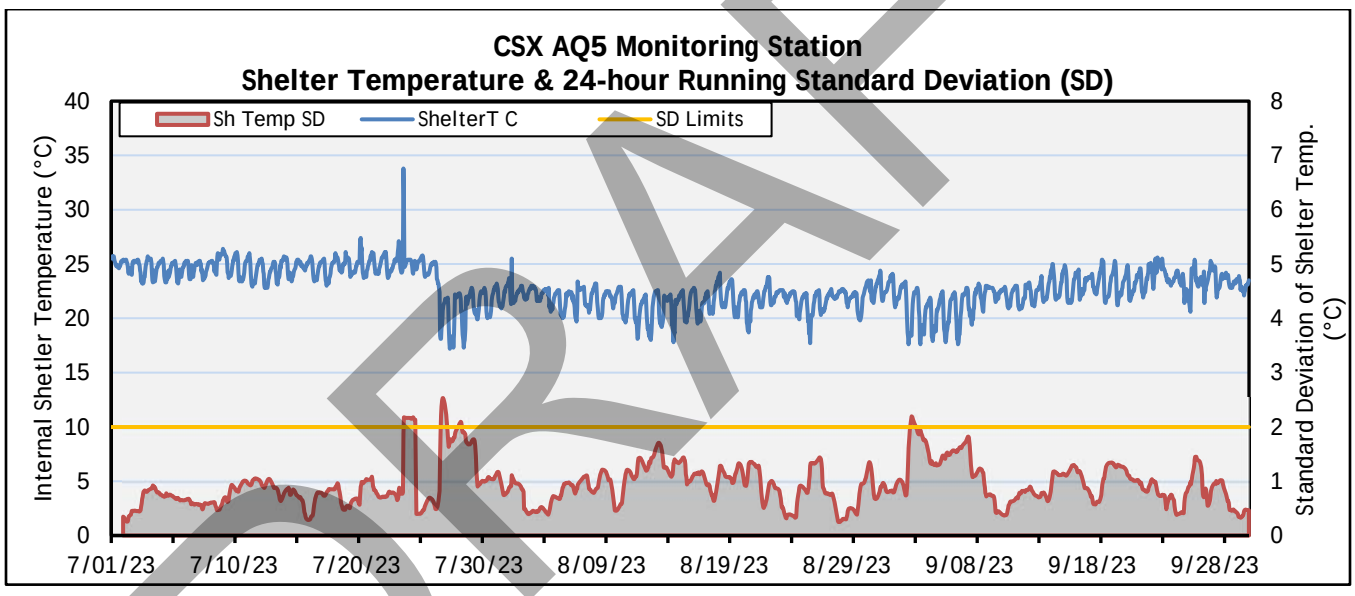
The T-API T640X enclosure's role in quality control is to provide a temperature-controlled environment in which the continuous particulate monitoring equipment can operate at optimum performance. The mean enclosure temperature should be approximately 25°C. Enclosure interior temperature is monitored by the datalogger and reported along with other measurements. Deviations greater than ±5°C from the 25°C optimum shelter temperatures indicate a need to readjust the temperature control system. Table 4-5 presents the average, maximum, and minimum interior shelter temperatures for the monitoring period. Figures 4.1 and 4.2 present plots of the internal enclosure temperatures and a running 24-hour standard deviations of the enclosure temperatures for AQ5 and AQ8. Appendix L contains the hourly shelter temperatures for the third quarter 2023.

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Table 4-4 Monitoring Enclosure Interior Temperature in Degrees Centigrade for Third Quarter 2023 – AQ5 and AQ8 Monitoring Stations

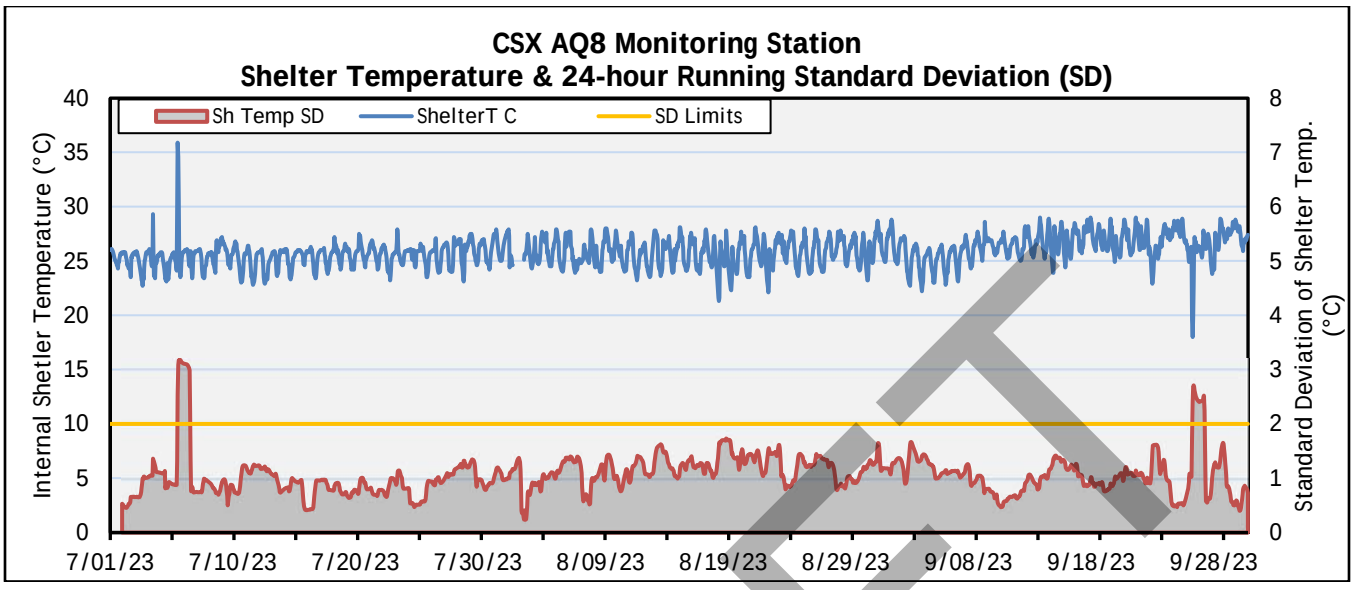
Month	Average Temperature	Maximum Temperature	Minimum Temperature	Deviation from 25°C
		AQ5		
July	24.20	33.80	17.20	2.53
August	21.69	25.50	17.70	1.71
September	22.58	25.60	17.60	2.20
		AQ8		
July	25.43	35.90	22.70	3.18
August	25.74	28.10	21.30	1.73
September	26.43	29.00	18.00	2.71

Figure 4.1 AQ5 Enclosure Temperature and Temperature Standard Deviation



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Figure 4.2 AQ8 Enclosure Temperature and Temperature Standard Deviation



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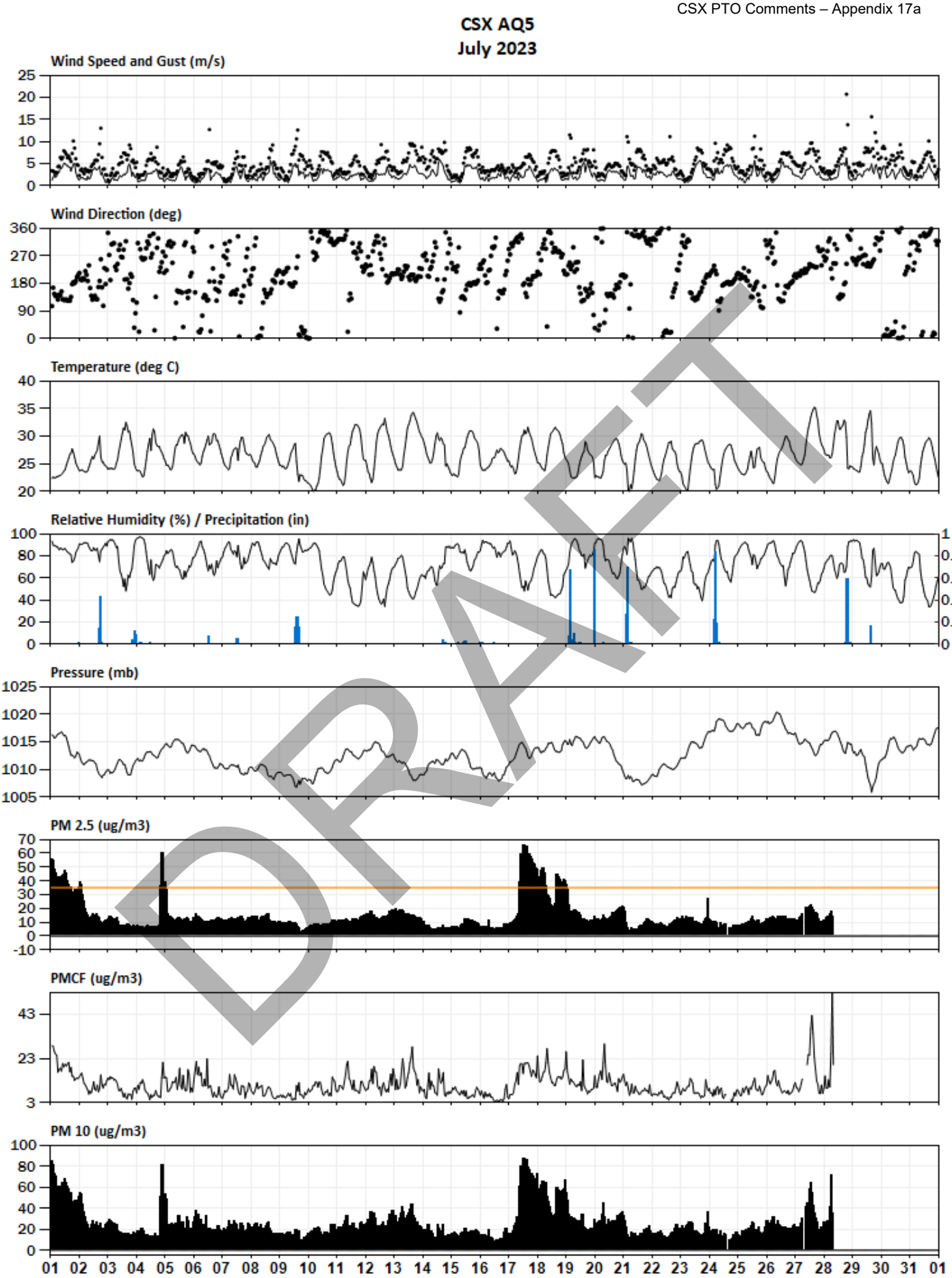
5.0 QUALITY ASSURANCE AUDITS

To comply with EPA requirements, a performance audit of meteorological instrumentation is conducted every six months, every three months for the particulate sampling equipment, or within 60 days after installation. Reference standards used in performance audits are independent of those used for calibration checks. Audits will be performed once the quality assurance project plan developed for this project has been approved.

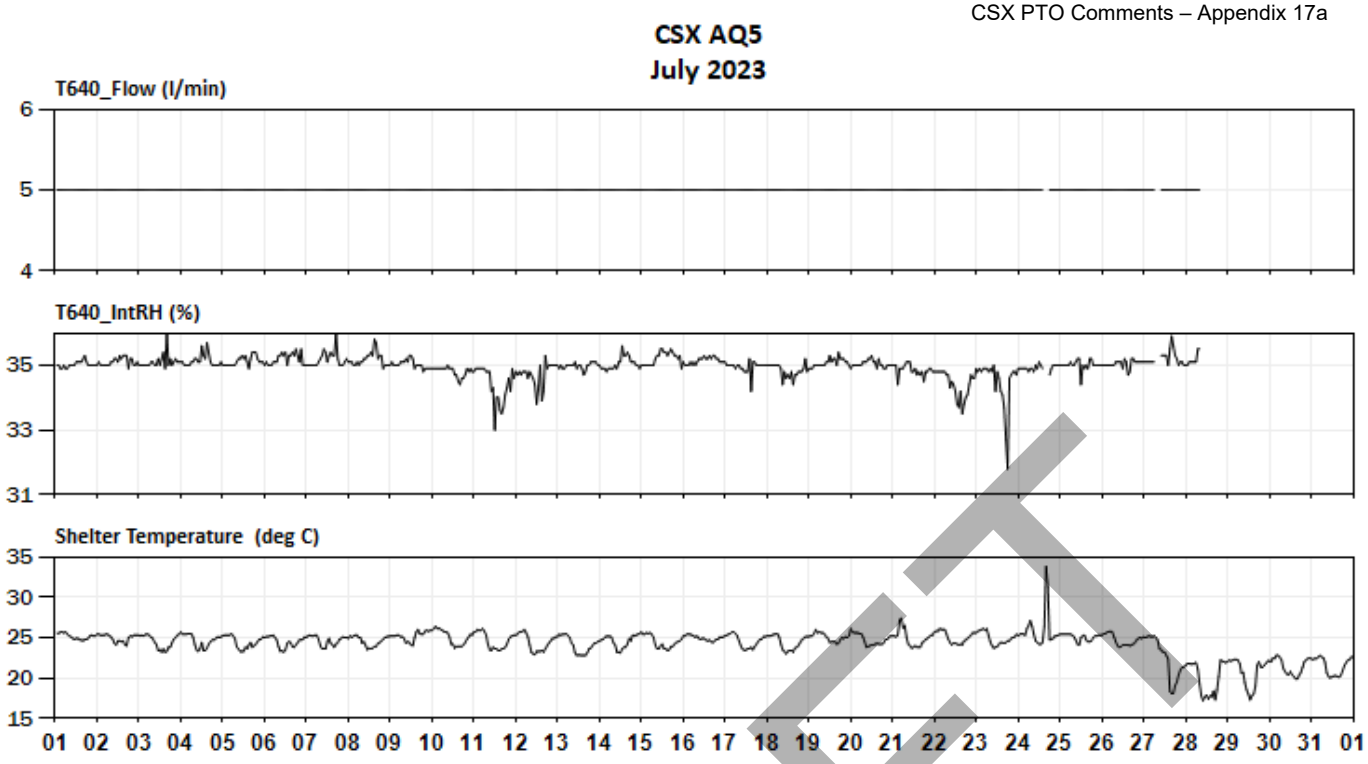
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APPENDIX A. STACKED PARAMETER PLOTS FOR THIRD QUARTER 2023

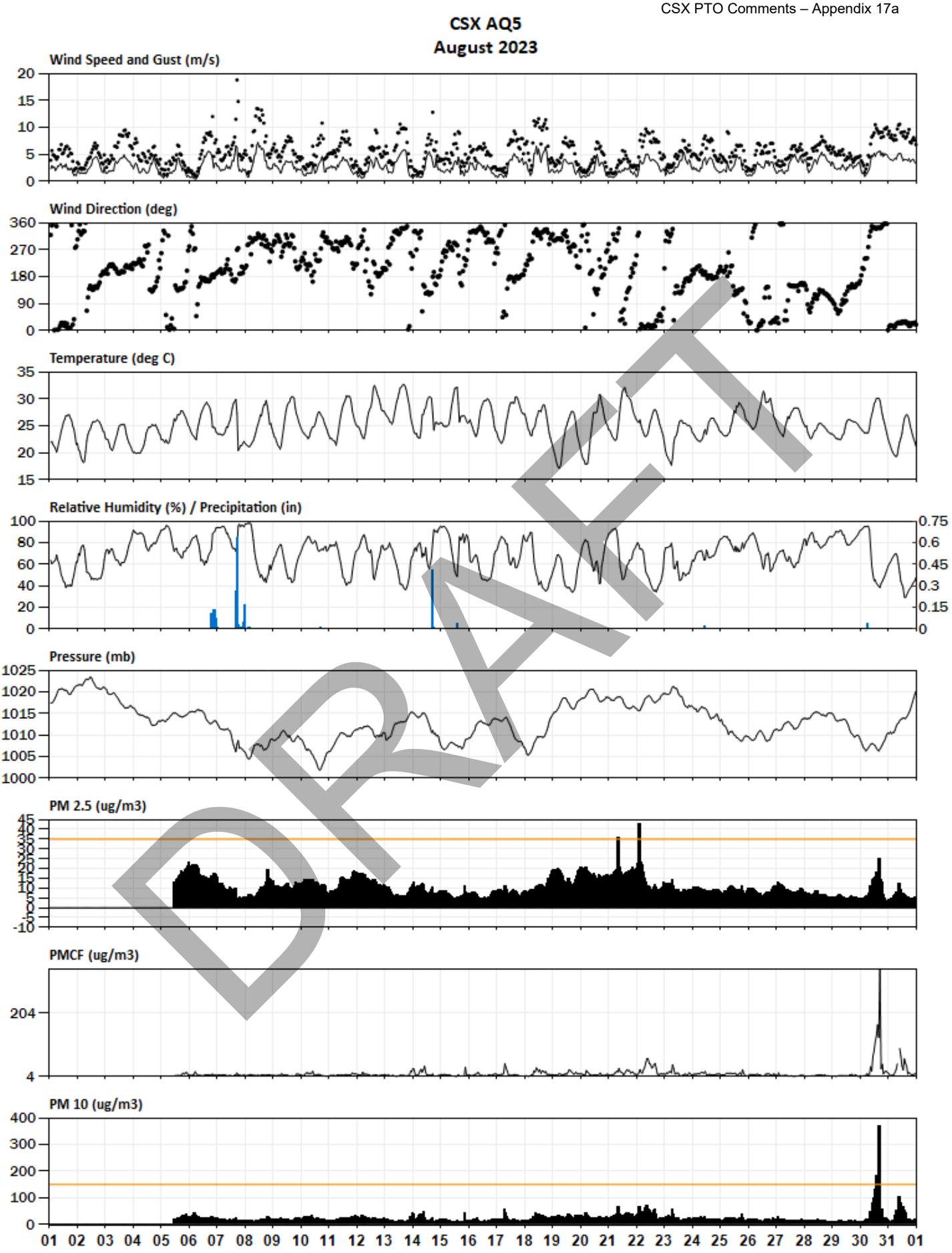
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CSX AQ5
July 2023
Wind Speed and Gust (m/s)
25
20
15
10
5
0
Wind Direction (deg)
360
270
180
90
0
Temperature (deg C)
40
35
30
25
20
Relative Humidity (%) / Precipitation (in)
100
80
60
40
20
0
1
0.8
0.6
0.4
0.2
0
Pressure (mb)
1025
1020
1015
1010
1005
PM 2.5 (ug/m3)
70
60
50
40
30
20
10
0
-10
PMCF (ug/m3)
43
23
3
PM 10 (ug/m3)
100
80
60
40
20
0
01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 01

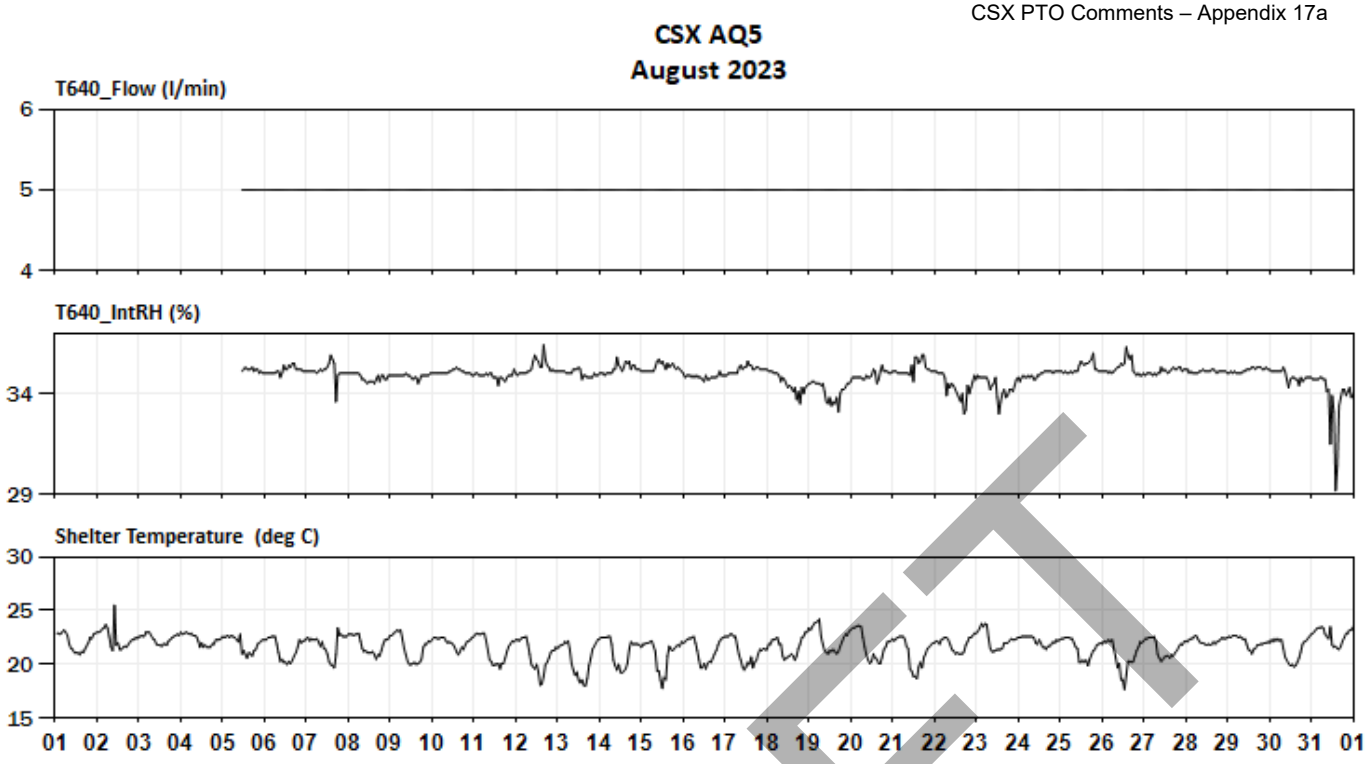
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CSX AQ5
July 2023
T640_Flow (l/min)
6
5
4
T640_IntRH (%)
35
33
31
Shelter Temperature (deg C)
35
30
25
20
15
01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 01

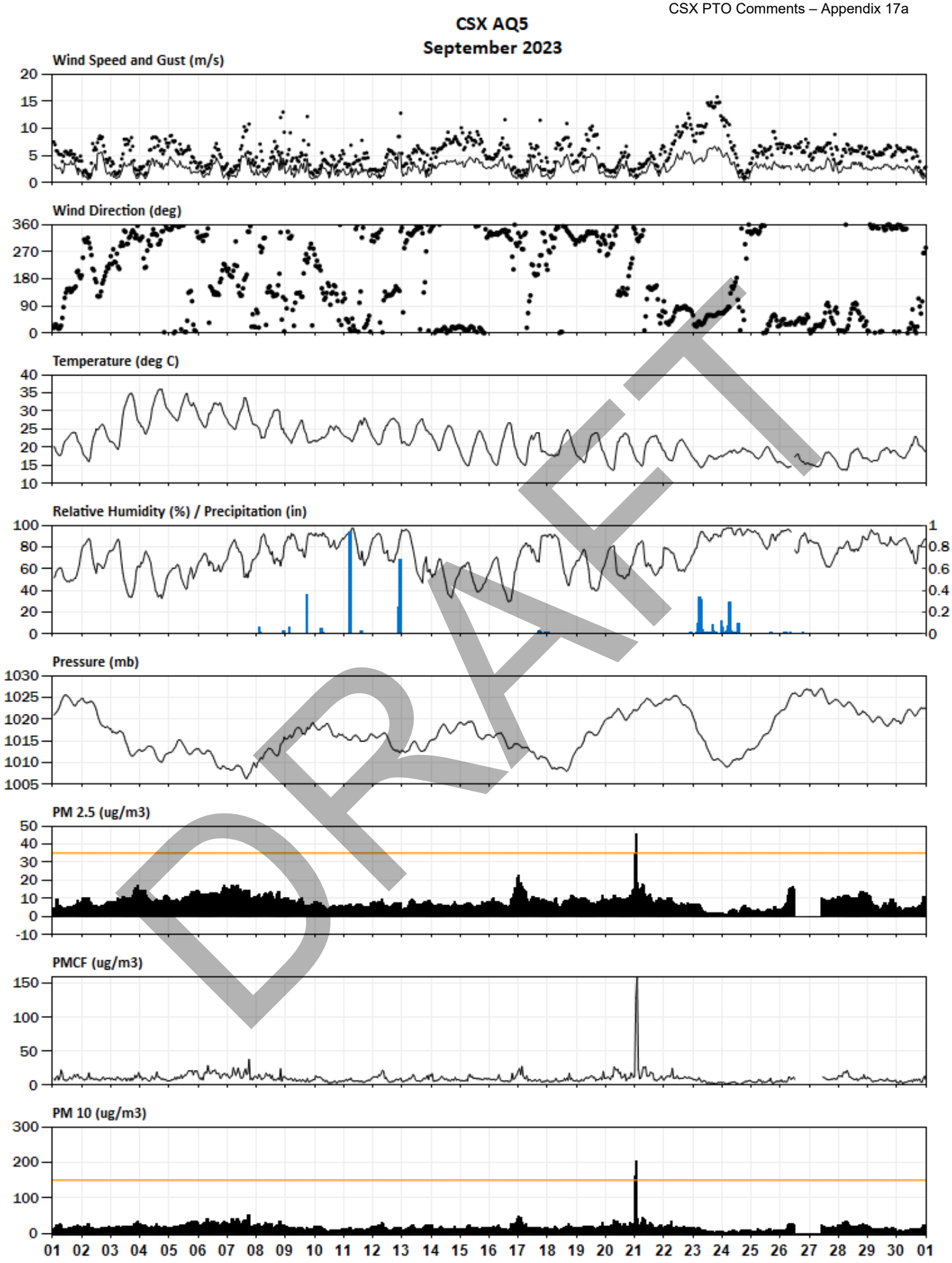
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CSX AQ5
August 2023
Wind Speed and Gust (m/s)
20
15
10
5
0
Wind Direction (deg)
360
270
180
90
0
Temperature (deg C)
35
30
25
20
15
Relative Humidity (%) / Precipitation (in)
100
80
60
40
20
0
0.75
0.6
0.45
0.3
0.15
0
Pressure (mb)
1025
1020
1015
1010
1005
1000
PM 2.5 (ug/m3)
45
-10
PMCF (ug/m3)
204
4
PM 10 (ug/m3)
400
300
200
100
0
01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 01

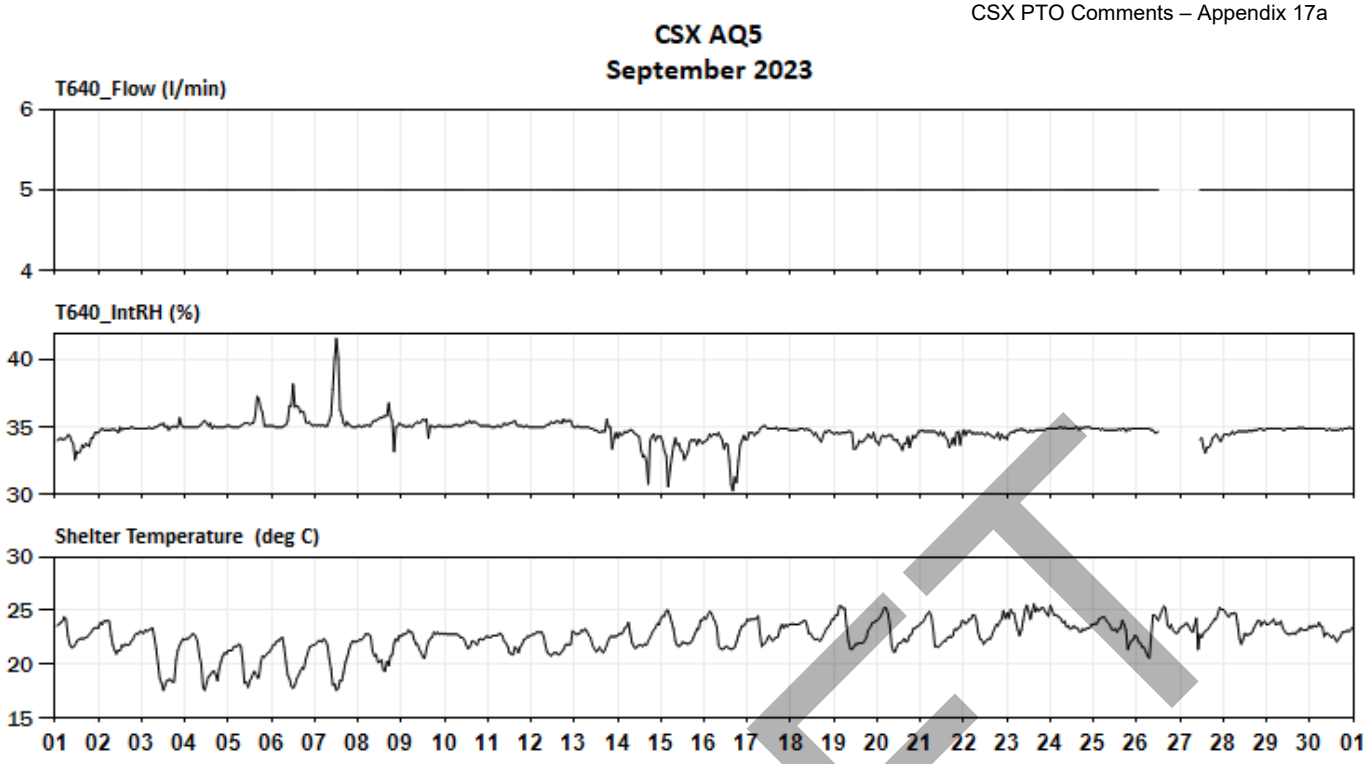
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CSX AQ5
August 2023
T640_Flow (l/min)
6
5
4
T640_IntRH (%)
34
29
Shelter Temperature (deg C)
30
25
20
15
01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 01

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CSX AQ5
September 2023
Wind Speed and Gust (m/s)
20
15
10
5
0
Wind Direction (deg)
360
270
180
90
0
Temperature (deg C)
40
35
30
25
20
15
10
Relative Humidity (%) / Precipitation (in)
100
80
60
40
20
0
1
0.8
0.6
0.4
0.2
0
Pressure (mb)
1030
1025
1020
1015
1010
1005
PM 2.5 (ug/m3)
50
40
30
20
10
0
-10
PMCF (ug/m3)
150
100
50
0
PM 10 (ug/m3)
300
200
100
0
01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 01

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CSX AQ5
September 2023
T640_Flow (l/min)
6
5
4
T640_IntRH (%)
40
35
30
Shelter Temperature (deg C)
30
25
20
15
01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 01

DRAFT

APPENDIX B. HOURLY WIND DATA FOR THIRD QUARTER 2023

DRAFT

CSX AQ5

Unit Vector Wind Speed and Direction in mps for July, 2023

Hr Beg Hr End Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13
1	106/01.2	166/01.9	146/02.5	138/01.9	141/02.2	127/02.9	143/03.0	140/04.3	153/03.9	128/04.4	126/05.1	126/05.0	127/04.6
2	193/01.8	191/01.8	196/01.8	193/01.5	220/01.5	208/01.3	188/02.1	239/01.5	165/01.7	140/02.4	127/03.6	136/03.7	140/04.1
3	272/00.5	191/01.0	307/01.6	309/01.8	311/01.3	235/01.4	224/01.3	243/01.2	289/01.8	306/02.3	267/02.0	265/02.2	290/02.6
4	311/00.9	022/00.9	291/01.1	264/01.2	258/01.2	258/01.2	262/01.2	294/02.0	316/02.7	307/02.8	334/02.7	264/02.9	277/02.8
5	222/01.5	304/01.7	315/01.4	317/01.2	299/01.4	247/01.1	310/01.3	001/01.1	116/01.5	156/02.4	152/03.0	153/03.7	151/04.3
6	150/00.6	347/00.7	352/00.8	022/01.2	020/00.8	030/01.4	075/01.6	133/01.8	142/02.5	137/02.8	124/03.8	126/03.8	186/03.8
7	269/00.8	309/00.8	262/00.6	287/00.8	242/00.9	317/00.9	144/00.8	151/01.8	153/02.3	146/03.6	144/04.3	159/04.2	333/03.0
8	227/01.4	229/01.9	303/01.4	328/01.4	003/01.1	003/02.0	009/01.8	008/02.7	034/01.9	117/01.2	159/02.0	147/02.5	135/02.6
9	182/02.2	185/01.6	211/01.4	218/00.9	218/01.1	229/01.1	230/00.7	179/01.4	175/02.1	171/02.8	170/04.5	182/04.5	182/05.0
10	001/03.0	349/02.9	327/01.9	282/01.0	257/01.4	278/01.2	267/01.4	316/01.8	322/02.4	346/03.7	355/03.9	347/02.8	341/03.8
11	324/01.8	325/02.2	324/02.4	323/01.8	322/01.7	324/01.8	336/01.4	353/01.3	022/01.5	125/01.6	146/02.3	130/02.0	311/02.4
12	235/01.5	266/01.2	208/01.0	239/01.0	210/01.2	285/01.0	307/01.4	317/01.6	334/02.8	334/02.8	313/02.4	277/02.5	259/02.6
13	213/01.7	212/01.8	226/01.5	224/01.5	208/01.7	195/01.8	203/02.3	218/02.7	237/02.7	228/02.5	235/03.0	201/03.7	191/04.8
14	270/02.4	277/02.1	255/01.6	204/02.0	201/02.1	227/02.4	233/03.3	251/03.7	272/03.1	314/02.7	297/02.2	192/02.5	130/05.2
15	227/01.0	233/01.0	229/01.1	218/01.4	236/00.9	297/00.9	085/00.6	134/01.0	138/01.8	135/02.7	128/04.5	159/04.3	174/04.8
16	228/01.5	247/01.9	255/01.2	206/01.2	181/02.0	184/01.7	221/01.0	224/01.5	269/01.7	298/01.7	295/01.9	301/01.7	328/01.9
17	274/01.0	310/01.8	301/02.3	312/02.4	317/01.8	324/01.8	330/02.2	314/01.3	334/02.1	340/02.4	327/01.8	175/01.9	181/02.1
18	278/01.1	210/01.4	255/01.3	295/01.5	309/01.5	323/01.8	293/00.8	039/01.1	347/02.7	351/02.9	344/03.6	311/03.9	282/03.4
19	210/01.5	237/01.4	248/03.8	226/02.7	239/02.2	297/01.5	217/01.8	248/02.0	226/01.3	249/01.6	167/01.9	147/02.8	121/04.4
20	329/01.8	327/01.2	027/01.1	044/01.1	358/01.4	314/01.3	359/01.3	051/01.0	093/01.6	145/02.7	138/03.2	139/03.5	146/03.4
21	199/01.2	203/01.4	347/04.3	006/04.4	098/03.3	177/02.2	341/02.2	002/02.3	334/01.5	354/01.7	335/03.7	338/04.3	330/04.1
22	327/02.7	323/02.6	322/02.4	341/03.1	346/03.3	343/02.7	352/03.2	359/03.0	006/03.0	018/02.5	024/02.4	027/02.0	020/02.1
23	313/01.3	336/01.2	301/00.7	298/00.8	315/01.0	323/00.8	318/01.1	150/01.2	147/01.5	131/02.4	132/03.3	125/04.1	134/04.7
24	214/01.9	219/01.7	224/01.2	238/01.4	222/03.9	210/02.8	122/04.0	091/02.8	119/02.8	130/03.4	173/02.9	176/04.2	179/04.4
25	210/01.4	195/01.8	208/01.3	199/01.6	230/00.8	201/00.7	190/01.3	188/01.9	220/01.4	173/02.5	136/02.3	135/03.2	160/04.5
26	262/01.2	308/01.5	320/01.8	279/01.0	297/00.7	244/00.9	250/01.5	346/01.5	174/02.0	130/02.4	127/03.4	121/04.4	122/05.2
27	199/02.3	210/02.1	211/02.1	205/01.9	220/01.5	217/01.7	213/02.3	227/02.4	215/03.5	224/03.6	230/03.8	243/03.8	240/04.6
28	254/01.3	261/01.4	285/01.3	316/01.4	326/02.1	228/01.3	196/01.6	245/01.5	307/01.8	245/01.7	291/01.9	135/02.3	130/04.4
29	254/01.8	258/01.4	241/01.5	253/02.4	264/02.4	261/02.8	293/02.4	268/02.0	243/02.5	273/03.3	271/03.4	236/03.7	246/03.8
30	347/03.7	008/04.5	012/04.3	010/02.7	031/01.8	007/02.1	011/02.4	013/02.8	021/03.7	016/03.6	023/02.6	055/01.5	354/02.3
31	311/01.8	315/02.9	224/01.7	247/02.0	314/01.3	290/01.2	305/01.8	287/01.9	334/02.4	010/01.7	022/02.1	343/03.1	333/02.9
MEAN	**252/01.6**	**265/01.7**	**272/01.8**	**271/01.7**	**271/01.7**	**267/01.6**	**267/01.8**	**279/01.9**	**259/02.3**	**165/02.6**	**164/03.0**	**166/03.2**	**189/03.7**
MAX	**347/03.7**	**008/04.5**	**347/04.3**	**006/04.4**	**222/03.9**	**127/02.9**	**122/04.0**	**140/04.3**	**153/03.9**	**128/04.4**	**126/05.1**	**126/05.0**	**130/05.2**
MIN	**272/00.5**	**347/00.7**	**262/00.6**	**287/00.8**	**297/00.7**	**201/00.7**	**085/00.6**	**134/01.0**	**226/01.3**	**117/01.2**	**327/01.8**	**055/01.5**	**328/01.9**

MEANS REQUIRE 75% VALID DATA

MISSING DATA DENOTED BY ---

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CSX AQ5

Unit Vector Wind Speed and Direction in mps for July, 2023

Hr Beg Hr End Day	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX SPD	MIN SPD
1	124/04.6	124/04.2	124/04.2	136/03.3	177/04.1	184/04.9	181/05.0	188/03.1	200/02.1	207/01.5	214/01.3	**150/03.4**	**126/05.1**	**106/01.2**
2	129/03.7	128/03.6	168/04.0	188/04.4	258/02.5	167/03.0	107/02.0	230/01.4	178/00.7	224/01.0	345/00.7	**179/02.3**	**188/04.4**	**178/00.7**
3	192/02.4	317/02.8	194/03.0	163/04.5	181/04.9	210/03.9	201/02.2	125/03.0	035/02.2	082/01.8	117/02.7	**242/02.3**	**181/04.9**	**272/00.5**
4	342/03.3	027/03.2	136/03.7	296/03.7	326/02.5	217/01.7	232/01.7	249/01.5	283/01.7	214/00.9	269/01.2	**284/02.0**	**136/03.7**	**311/00.9**
5	150/04.0	038/03.0	305/02.3	314/01.3	152/02.1	133/02.0	155/02.6	203/01.6	214/01.2	297/00.9	283/00.9	**232/02.0**	**151/04.3**	**297/00.9**
6	024/01.2	300/01.8	228/02.2	186/02.3	162/02.9	124/03.1	157/02.8	153/02.5	183/02.6	204/01.9	202/01.7	**139/02.1**	**124/03.8**	**150/00.6**
7	007/02.4	119/01.6	140/02.2	139/03.8	171/03.8	222/01.9	266/01.3	292/01.0	190/01.0	178/01.6	204/01.6	**202/02.0**	**144/04.3**	**262/00.6**
8	146/02.8	147/03.2	148/05.7	160/05.0	190/04.4	188/02.6	183/02.9	208/01.9	217/01.8	222/01.3	219/01.3	**181/02.4**	**148/05.7**	**003/01.1**
9	230/04.1	268/04.7	013/02.3	007/03.3	037/02.8	027/02.9	017/03.0	025/01.7	004/02.4	002/02.3	001/02.3	**213/02.5**	**182/05.0**	**230/00.7**
10	349/03.5	342/03.4	335/03.7	347/03.4	316/03.2	325/03.2	314/02.1	305/01.3	308/01.5	315/01.5	315/02.0	**322/02.5**	**355/03.9**	**282/01.0**
11	281/02.3	283/02.5	278/02.6	261/02.6	297/02.9	310/02.3	284/01.3	234/01.5	218/01.5	226/02.0	241/02.1	**295/02.0**	**297/02.9**	**353/01.3**
12	226/02.5	326/02.7	305/02.5	205/03.1	182/04.3	187/03.3	196/02.5	206/02.4	213/01.8	210/02.1	210/02.1	**249/02.2**	**182/04.3**	**208/01.0**
13	208/04.3	207/04.1	208/04.2	194/04.6	187/04.3	196/03.4	203/02.9	229/02.7	202/02.8	227/02.7	271/02.6	**213/02.9**	**191/04.8**	**226/01.5**
14	120/05.9	129/05.4	151/05.0	157/04.4	193/03.2	346/02.6	229/02.2	278/01.4	325/01.4	308/01.2	246/00.8	**238/02.9**	**120/05.9**	**246/00.8**
15	178/04.4	181/04.7	173/04.6	179/04.0	181/03.9	183/04.0	178/04.0	182/04.3	189/03.2	228/02.4	242/01.5	**186/02.8**	**174/04.8**	**085/00.6**
16	032/01.8	131/02.8	155/02.4	154/02.1	148/03.5	148/03.0	160/02.5	207/01.6	220/01.8	254/02.0	291/01.5	**221/01.9**	**148/03.5**	**221/01.0**
17	148/03.4	136/03.7	193/03.5	176/04.5	177/04.2	191/03.4	203/03.0	201/02.3	204/01.9	205/01.7	218/00.9	**243/02.4**	**176/04.5**	**218/00.9**
18	296/04.0	295/03.8	283/03.5	284/03.5	285/03.0	279/02.3	265/01.4	275/01.3	221/01.3	211/01.6	209/01.5	**287/02.3**	**296/04.0**	**293/00.8**
19	124/04.9	125/05.3	162/03.1	155/04.3	137/05.4	144/04.2	163/03.5	178/02.6	149/02.0	077/02.9	034/02.7	**181/02.9**	**137/05.4**	**226/01.3**
20	141/03.1	144/03.2	134/03.2	160/03.1	176/03.2	168/03.1	166/02.8	183/02.7	206/02.0	206/02.0	208/01.5	**142/02.3**	**139/03.5**	**051/01.0**
21	334/04.1	338/03.9	344/03.0	349/03.7	331/03.4	320/02.3	311/01.9	311/02.0	324/02.2	304/01.4	322/02.0	**331/02.8**	**006/04.4**	**199/01.2**
22	359/02.5	019/02.3	021/02.4	135/03.2	152/03.3	163/02.5	178/02.2	225/01.7	223/01.5	246/01.5	273/01.6	**346/02.5**	**346/03.3**	**223/01.5**
23	129/05.1	141/05.4	149/05.7	153/05.6	166/04.4	186/02.9	181/02.8	199/02.5	208/01.8	207/01.9	205/01.8	**180/02.7**	**149/05.7**	**301/00.7**
24	180/04.5	184/04.8	184/04.3	177/04.7	184/04.6	179/03.8	184/03.0	192/02.5	196/02.3	208/02.1	213/01.8	**186/03.2**	**184/04.8**	**224/01.2**
25	168/05.7	179/03.5	185/02.2	144/02.3	123/02.9	104/04.2	101/03.0	100/02.0	169/02.4	320/01.0	304/01.0	**175/02.3**	**168/05.7**	**201/00.7**
26	123/05.4	148/04.2	171/04.5	171/04.2	167/04.5	176/03.9	181/03.8	182/03.7	187/02.6	203/02.6	210/02.3	**190/02.9**	**123/05.4**	**297/00.7**
27	237/04.2	236/04.1	234/03.4	233/02.9	233/02.4	298/02.6	286/03.1	285/01.9	239/01.8	290/01.4	268/01.5	**236/02.7**	**240/04.6**	**290/01.4**
28	144/05.0	137/04.7	142/05.1	177/05.1	182/04.5	244/06.3	335/04.3	329/01.7	323/01.4	354/01.2	262/01.2	**252/02.7**	**244/06.3**	**354/01.2**
29	235/03.4	235/04.0	244/04.9	252/03.3	258/02.7	307/04.5	328/04.8	326/03.5	321/02.6	287/01.6	326/02.8	**269/03.0**	**244/04.9**	**258/01.4**
30	002/02.8	346/03.0	001/03.9	360/03.6	004/02.7	038/02.1	209/02.0	220/01.6	234/01.5	231/01.4	273/01.4	**360/02.7**	**008/04.5**	**231/01.4**
31	335/03.5	338/04.0	340/04.9	348/04.1	357/03.5	008/03.1	019/02.7	016/02.0	318/01.3	305/01.9	318/02.3	**329/02.5**	**340/04.9**	**290/01.2**
MEAN	**161/03.7**	**161/03.7**	**187/03.6**	**185/03.7**	**190/03.5**	**195/03.2**	**204/02.8**	**225/02.2**	**225/01.9**	**243/01.7**	**257/01.7**	**233/02.5**		
MAX	**120/05.9**	**129/05.4**	**148/05.7**	**153/05.6**	**137/05.4**	**244/06.3**	**181/05.0**	**182/04.3**	**189/03.2**	**077/02.9**	**326/02.8**		**244/06.3**	
MIN	**024/01.2**	**119/01.6**	**228/02.2**	**314/01.3**	**152/02.1**	**217/01.7**	**266/01.3**	**292/01.0**	**178/00.7**	**214/00.9**	**345/00.7**			**272/00.5**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 744 DATA RECOVERY RATE = 100.0%

MONTHLY MEAN = 233/02.5 MAXIMUM WIND SPEED = 06.3 AT 244 DEGREES DATE OF OCCURRENCE = 7/28 AT 1900

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

DRAFT

CSX AQ5

Unit Vector Wind Speed and Direction in mps for August, 2023

Hr Beg Hr End Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13
1	319/02.3	351/02.9	358/02.5	001/02.7	002/02.0	348/02.3	002/02.8	005/02.8	016/03.2	025/03.2	026/02.5	017/02.9	026/02.7
2	332/01.8	354/01.4	320/01.6	326/01.5	333/01.5	331/01.6	360/01.4	066/01.7	111/02.2	140/02.4	150/02.7	144/03.0	136/04.0
3	204/01.5	189/01.6	215/01.9	220/01.9	215/01.9	221/02.0	216/01.9	207/03.2	207/03.7	196/03.3	190/03.6	190/04.0	194/04.3
4	221/02.9	223/03.4	225/03.1	228/02.3	239/01.6	230/01.6	219/01.8	214/02.3	237/02.3	282/01.9	280/01.6	261/01.5	286/01.7
5	301/00.9	333/00.6	325/01.1	052/01.1	011/00.7	317/01.3	002/01.6	017/01.6	040/01.5	007/01.9	005/01.9	151/02.2	140/03.2
6	332/00.7	348/00.9	323/00.6	269/00.9	274/00.4	048/00.5	088/00.9	147/01.3	156/02.3	178/02.9	167/03.3	174/03.7	175/04.7
7	197/02.8	200/02.3	205/01.9	190/02.1	193/02.1	194/02.1	205/02.3	219/03.0	237/02.4	204/02.7	203/02.3	187/02.9	168/03.9
8	217/01.4	285/00.8	289/00.8	310/01.9	255/01.8	296/02.8	303/03.5	308/04.8	305/05.1	310/06.7	323/07.2	318/06.4	311/06.5
9	299/03.3	295/02.8	317/02.9	318/02.5	307/02.3	297/01.6	246/01.6	263/02.5	280/03.1	286/03.2	320/03.8	309/03.6	291/03.6
10	243/01.8	235/01.2	258/01.1	221/01.1	203/01.6	217/01.4	223/01.6	217/01.5	184/01.5	163/03.5	196/02.4	254/01.5	236/01.7
11	292/02.6	290/02.9	275/02.5	271/02.7	273/02.6	297/02.1	275/03.0	264/02.7	291/03.4	296/03.7	285/03.8	291/04.5	299/04.1
12	276/00.8	285/01.2	287/00.9	314/00.6	298/00.7	336/00.7	197/01.5	236/01.9	272/01.7	164/02.5	148/03.6	121/04.0	144/03.5
13	203/03.1	230/02.3	278/01.6	220/01.7	288/01.7	309/01.5	303/01.8	330/03.5	329/03.5	334/03.7	324/04.2	321/04.6	327/05.0
14	330/01.0	332/01.3	270/00.8	325/00.9	325/01.0	308/00.7	332/00.8	064/00.8	152/01.9	146/02.1	124/03.7	126/04.8	128/05.0
15	231/01.9	260/01.8	268/01.6	246/01.9	265/02.2	286/02.1	296/01.9	275/01.6	278/02.5	268/02.2	293/03.1	293/03.7	287/03.7
16	328/03.5	329/03.2	330/03.4	334/02.7	333/02.2	327/02.1	334/03.1	338/03.6	339/03.4	347/03.2	342/03.0	332/02.5	328/02.9
17	258/00.7	317/01.2	326/01.3	334/01.3	045/01.0	063/00.7	352/01.2	052/00.8	140/01.5	171/03.4	180/03.8	179/04.1	177/03.9
18	221/03.6	219/03.1	235/02.0	252/01.7	238/01.1	240/01.5	297/02.6	326/05.1	329/05.2	338/06.5	318/05.0	328/06.0	318/04.7
19	301/01.7	300/01.6	304/01.9	307/02.1	307/01.6	305/01.9	307/01.9	302/02.5	324/03.7	320/04.1	334/04.0	314/03.6	295/03.4
20	316/00.7	351/01.0	354/01.0	009/00.8	297/00.9	322/01.2	267/01.0	189/01.5	196/01.7	201/01.6	054/01.6	139/02.5	129/03.8
21	230/00.9	244/00.9	239/00.8	322/00.7	305/00.8	243/01.1	300/01.2	325/01.7	341/02.0	034/01.6	062/01.8	038/02.1	070/01.9
22	317/01.1	326/02.1	005/03.9	021/03.5	016/03.2	013/03.4	012/04.2	011/05.0	014/05.0	020/05.0	018/04.3	009/03.8	016/03.9
23	299/01.1	331/01.6	322/02.0	297/01.4	315/01.6	323/01.5	339/01.9	034/01.7	125/02.6	148/02.6	148/02.6	128/03.0	125/03.7
24	190/02.6	205/02.2	204/02.4	212/02.0	213/02.0	216/01.8	197/02.5	202/02.4	187/03.7	188/04.1	196/04.4	184/03.1	174/03.6
25	201/01.7	200/02.0	195/02.2	202/01.9	214/01.7	182/03.4	261/02.7	194/02.1	215/01.9	216/02.4	148/02.7	118/03.0	132/03.9
26	024/01.2	027/01.1	310/01.1	329/01.4	343/01.5	353/02.1	001/03.1	001/03.5	015/03.1	023/03.1	018/02.7	033/02.6	029/02.4
27	042/01.5	024/01.9	357/01.9	353/02.0	358/02.2	355/01.6	035/01.4	065/01.9	034/01.9	101/02.0	153/03.3	149/03.7	148/04.1
28	150/03.9	137/03.6	087/02.2	070/01.6	061/01.9	078/02.2	094/02.8	107/03.5	121/04.0	111/03.9	105/03.2	120/04.1	136/04.6
29	092/03.3	088/02.5	074/02.4	069/02.2	057/02.3	064/02.4	067/02.2	087/02.7	103/03.1	092/02.6	120/02.3	100/02.0	132/02.6
30	184/01.9	209/01.4	205/01.5	240/00.9	241/01.2	242/01.5	279/01.9	314/02.4	332/03.8	348/04.8	342/04.6	345/05.2	341/04.6
31	013/04.3	018/04.0	015/04.0	015/03.8	012/04.0	013/04.3	022/04.1	024/04.7	027/05.1	026/05.2	024/05.1	030/04.4	026/03.8
MEAN	**270/02.0**	**292/02.0**	**293/01.9**	**302/01.8**	**300/01.7**	**307/01.8**	**309/02.1**	**323/02.6**	**302/03.0**	**272/03.3**	**046/03.4**	**120/03.5**	**150/03.7**
MAX	**013/04.3**	**018/04.0**	**015/04.0**	**015/03.8**	**012/04.0**	**013/04.3**	**012/04.2**	**326/05.1**	**329/05.2**	**310/06.7**	**323/07.2**	**318/06.4**	**311/06.5**
MIN	**332/00.7**	**333/00.6**	**323/00.6**	**314/00.6**	**274/00.4**	**048/00.5**	**332/00.8**	**064/00.8**	**040/01.5**	**201/01.6**	**280/01.6**	**261/01.5**	**286/01.7**

MEANS REQUIRE 75% VALID DATA

MISSING DATA DENOTED BY ---

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Unit Vector Wind Speed and Direction in mps for August, 2023

Hr Beg Hr End Day	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX SPD	MIN SPD
1	013/03.2	023/02.5	007/02.1	008/02.4	010/02.1	352/02.5	020/01.6	038/01.1	276/01.2	281/01.1	304/01.9	**360/02.4**	**016/03.2**	**038/01.1**
2	138/04.2	148/04.4	146/04.6	142/04.4	152/03.8	161/03.3	184/02.4	188/01.8	197/01.6	192/02.6	192/01.6	**151/02.6**	**146/04.6**	**354/01.4**
3	199/04.3	196/04.4	196/04.9	212/04.4	218/04.2	211/03.9	210/03.7	209/03.6	219/03.0	205/02.9	225/02.3	**207/03.2**	**196/04.9**	**204/01.5**
4	137/02.4	135/03.3	130/03.2	134/04.1	144/04.7	146/03.1	163/02.5	177/02.1	235/01.2	208/01.8	258/01.0	**211/02.4**	**144/04.7**	**258/01.0**
5	133/04.3	136/04.3	141/03.2	139/02.9	140/02.0	144/02.5	159/02.0	162/01.4	200/00.8	267/01.1	281/00.8	**082/01.9**	**133/04.3**	**333/00.6**
6	164/04.5	171/05.1	164/05.5	164/05.5	170/05.4	183/05.0	187/04.1	178/02.5	187/03.3	191/03.4	193/02.8	**178/02.9**	**164/05.5**	**274/00.4**
7	169/03.7	163/04.9	171/06.6	269/06.4	275/02.9	189/01.9	189/02.1	213/01.7	192/02.3	207/02.0	210/02.2	**201/02.9**	**171/06.6**	**213/01.7**
8	288/05.9	307/06.1	318/05.7	282/03.8	302/03.8	278/02.5	288/02.6	230/02.2	271/02.4	263/02.3	286/03.1	**290/03.8**	**323/07.2**	**285/00.8**
9	282/03.5	290/03.6	319/03.7	314/03.0	275/02.3	231/02.6	211/01.8	204/02.3	209/02.2	215/02.1	232/02.3	**278/02.8**	**320/03.8**	**297/01.6**
10	233/02.5	233/03.2	235/03.5	274/03.9	316/04.6	327/03.7	312/01.8	298/01.7	311/02.4	293/02.5	297/02.5	**248/02.3**	**316/04.6**	**258/01.1**
11	295/03.8	312/04.0	302/03.6	305/03.0	291/02.7	285/02.0	224/01.7	207/01.3	222/01.5	219/01.8	222/01.3	**276/02.8**	**291/04.5**	**207/01.3**
12	229/02.5	221/03.0	193/04.4	192/04.3	181/03.6	182/03.0	191/02.5	192/02.4	209/02.1	202/02.5	208/02.9	**215/02.4**	**193/04.4**	**314/00.6**
13	341/05.3	342/05.6	340/05.8	342/05.8	343/05.7	348/03.9	004/02.0	014/01.1	259/00.9	207/01.0	248/00.5	**310/03.2**	**340/05.8**	**248/00.5**
14	120/05.5	124/04.8	126/04.6	179/03.5	195/02.6	156/02.7	152/04.4	180/02.7	179/02.1	183/02.3	202/01.9	**160/02.6**	**120/05.5**	**308/00.7**
15	284/03.1	250/04.5	191/03.8	158/01.3	150/02.0	198/01.6	242/01.0	217/02.1	235/01.7	269/01.8	301/02.3	**256/02.3**	**250/04.5**	**242/01.0**
16	318/02.1	294/02.2	326/03.0	305/02.6	296/02.5	297/02.0	302/01.5	295/01.5	223/01.2	260/00.9	276/01.0	**316/02.5**	**338/03.6**	**260/00.9**
17	172/04.7	163/05.1	178/04.7	181/04.4	174/04.5	175/03.6	180/03.6	184/04.1	186/04.3	186/03.1	201/03.4	**178/02.9**	**163/05.1**	**258/00.7**
18	307/03.5	328/04.8	330/05.3	336/05.7	337/06.4	338/05.3	326/03.1	288/01.6	307/01.8	316/02.1	322/02.2	**303/03.7**	**338/06.5**	**238/01.1**
19	276/03.2	263/03.4	279/03.4	281/03.4	287/02.7	282/01.7	249/01.3	215/01.9	211/01.9	211/01.5	267/00.7	**287/02.5**	**320/04.1**	**267/00.7**
20	121/05.0	138/04.0	237/02.9	212/03.2	177/03.5	185/03.3	187/02.8	206/01.9	262/01.1	268/01.0	289/00.8	**225/02.0**	**121/05.0**	**316/00.7**
21	023/02.5	106/02.3	128/02.2	137/02.3	143/02.6	180/01.7	207/01.7	193/01.3	222/01.7	221/01.3	251/00.8	**235/01.6**	**143/02.6**	**322/00.7**
22	012/04.1	019/03.9	014/03.8	033/03.5	032/03.3	050/02.9	056/02.2	049/01.8	031/02.0	074/02.3	208/02.2	**019/03.4**	**011/05.0**	**317/01.1**
23	126/03.9	131/03.9	147/05.5	160/05.2	171/04.1	173/03.6	175/03.2	165/04.0	169/03.7	183/02.7	201/02.2	**162/02.9**	**147/05.5**	**299/01.1**
24	183/04.1	180/04.4	184/04.3	172/04.0	177/03.3	175/02.6	179/02.3	178/02.0	193/01.9	200/01.6	213/01.7	**192/02.9**	**196/04.4**	**200/01.6**
25	123/04.9	127/04.5	135/04.2	137/04.5	135/03.6	141/02.1	057/02.2	099/02.0	092/01.3	047/01.0	032/01.1	**153/02.6**	**123/04.9**	**047/01.0**
26	110/02.8	141/03.8	146/03.3	145/03.8	111/02.9	026/03.5	026/03.6	032/03.5	035/02.6	029/02.1	043/01.6	**030/02.6**	**141/03.8**	**027/01.1**
27	150/05.0	147/04.5	149/05.0	147/04.3	149/03.8	132/03.5	153/04.3	158/04.8	159/03.7	152/03.4	157/04.0	**113/03.2**	**150/05.0**	**035/01.4**
28	129/04.9	133/05.4	133/04.8	126/05.0	122/04.7	123/04.2	116/03.8	115/03.6	107/03.6	104/02.9	100/03.6	**112/03.7**	**133/05.4**	**070/01.6**
29	146/02.5	145/03.1	142/03.0	155/03.0	147/02.4	144/02.8	146/02.8	155/03.0	155/03.4	157/03.5	165/03.0	**117/02.7**	**157/03.5**	**100/02.0**
30	340/05.2	344/05.4	344/05.5	342/05.6	343/04.8	350/05.3	354/04.6	357/05.1	356/05.0	356/04.9	002/04.5	**324/03.8**	**342/05.6**	**240/00.9**
31	030/04.1	030/04.0	023/04.0	026/03.8	015/04.2	015/03.6	025/03.8	023/04.1	023/04.0	027/03.5	020/03.3	**022/04.1**	**026/05.2**	**020/03.3**
MEAN	**165/03.9**	**163/04.1**	**171/04.2**	**185/04.0**	**183/03.6**	**185/03.1**	**191/02.7**	**188/02.5**	**214/02.3**	**218/02.2**	**244/02.1**	**249/02.8**		
MAX	**288/05.9**	**307/06.1**	**171/06.6**	**269/06.4**	**337/06.4**	**338/05.3**	**354/04.6**	**357/05.1**	**356/05.0**	**356/04.9**	**002/04.5**		**323/07.2**	
MIN	**318/02.1**	**294/02.2**	**007/02.1**	**158/01.3**	**140/02.0**	**198/01.6**	**242/01.0**	**038/01.1**	**200/00.8**	**260/00.9**	**248/00.5**			**274/00.4**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 744 DATA RECOVERY RATE = 100.0%

MONTHLY MEAN = 249/02.8 MAXIMUM WIND SPEED = 07.2 AT 323 DEGREES DATE OF OCCURRENCE = 8/8 AT 1100

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

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Unit Vector Wind Speed and Direction in mps for September, 2023

Hr Beg Hr End Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13
1	017/03.4	029/03.2	028/02.7	019/02.7	014/02.6	017/02.8	025/02.5	050/01.7	086/02.1	117/03.6	134/03.4	147/03.3	145/03.4
2	250/01.1	310/01.4	302/01.1	304/01.0	316/00.6	299/00.7	282/00.8	258/01.3	213/02.5	208/02.8	179/03.4	169/02.3	123/05.3
3	229/01.9	278/01.1	236/01.1	234/00.9	263/00.8	220/01.1	213/01.1	289/01.6	301/02.2	290/03.0	340/03.7	336/03.2	295/03.0
4	315/01.6	319/01.6	248/01.3	217/00.8	219/00.9	274/01.4	306/01.9	292/03.2	290/03.3	327/04.5	344/04.3	329/03.1	329/04.1
5	342/04.8	344/04.4	354/04.1	360/04.0	005/03.5	357/03.3	355/02.9	351/03.2	355/04.0	013/03.3	358/02.9	357/03.0	004/02.7
6	315/02.2	319/02.3	322/01.6	305/01.1	323/01.1	325/01.5	325/01.6	347/01.7	034/01.4	154/02.2	149/02.6	140/03.5	128/03.5
7	213/00.6	193/01.2	189/01.4	186/01.2	207/01.3	226/01.3	304/01.0	222/01.4	157/02.3	133/02.2	124/04.2	125/05.0	148/04.7
8	067/01.5	019/01.4	288/02.1	269/02.0	282/02.0	315/01.4	316/01.2	027/01.0	135/01.5	151/01.8	155/02.2	137/02.8	134/03.8
9	082/02.0	336/02.2	315/02.7	314/03.2	322/01.5	077/01.8	024/01.0	101/01.4	132/02.7	132/02.4	133/01.8	135/03.0	121/03.5
10	223/01.3	240/00.9	217/01.2	222/01.4	208/01.7	149/03.6	133/02.7	111/02.7	117/02.6	133/02.1	165/01.8	156/00.9	094/01.4
11	115/01.9	047/01.4	045/01.5	036/01.6	014/01.9	007/02.8	048/01.0	024/01.6	011/02.0	345/02.6	357/02.1	005/01.5	101/01.9
12	303/01.5	322/01.6	328/01.3	316/00.9	333/01.7	035/00.7	343/01.1	003/01.3	109/01.3	137/02.1	121/02.8	124/03.8	127/04.3
13	069/01.2	282/01.5	300/01.8	307/01.5	331/02.8	330/02.9	325/02.3	325/02.1	331/02.9	337/03.8	341/03.0	356/02.9	345/03.1
14	352/03.5	356/02.7	001/03.2	006/02.6	010/02.9	007/03.2	359/03.6	009/03.5	011/03.7	014/03.6	020/03.7	015/03.3	001/04.1
15	019/03.7	020/03.9	012/02.9	013/03.0	010/03.8	009/04.1	010/04.3	018/04.7	023/04.5	020/04.3	018/03.9	007/03.7	353/04.5
16	335/02.7	325/02.7	329/03.0	328/03.0	328/03.4	332/03.3	326/03.0	331/03.6	332/04.2	337/04.0	340/04.7	337/03.6	343/02.7
17	300/01.1	319/00.9	279/00.7	278/01.0	326/01.2	333/01.3	018/01.1	066/01.7	106/02.8	125/04.6	228/02.8	225/02.0	197/02.6
18	274/01.1	267/00.7	323/00.9	314/01.2	284/01.3	315/02.1	344/03.6	352/04.0	350/03.9	360/03.7	004/02.9	004/03.2	355/03.4
19	306/02.0	304/02.5	315/03.0	319/03.0	313/03.3	308/02.2	319/03.2	324/04.6	335/04.7	337/04.7	330/04.7	332/05.2	336/05.4
20	258/01.2	262/01.1	323/01.2	283/01.0	296/01.3	295/00.9	340/01.2	324/00.9	350/01.3	127/01.7	139/02.3	125/02.7	131/03.4
21	330/00.7	311/00.9	305/01.1	316/01.7	323/01.5	323/02.1	341/01.8	009/01.9	055/01.8	113/02.1	151/02.9	153/03.2	145/03.9
22	069/02.8	035/02.0	034/02.0	029/02.2	040/02.4	039/02.9	045/03.0	054/03.2	070/03.8	079/04.5	088/05.3	080/04.6	079/04.3
23	029/03.5	024/03.8	022/04.1	035/04.2	039/04.4	031/04.4	028/04.6	032/03.9	034/04.0	044/04.4	053/04.7	060/06.0	059/06.2
24	066/04.7	071/04.9	076/05.4	079/05.5	087/04.8	086/04.5	132/03.5	154/03.3	147/03.7	156/03.8	169/02.9	183/02.3	110/01.7
25	332/02.9	337/03.1	343/03.3	340/03.7	336/02.9	329/02.7	337/03.2	351/03.4	357/03.1	001/02.9	356/03.5	002/03.0	011/02.5
26	041/02.7	046/03.2	047/02.6	030/03.0	029/03.0	030/03.1	032/03.0	029/03.1	036/02.4	---	---	029/03.1	037/02.8
27	360/02.5	010/02.2	009/02.2	015/02.1	027/02.5	023/02.8	027/02.6	025/02.9	029/03.0	022/02.5	032/02.6	041/02.6	068/02.9
28	008/02.0	007/02.0	008/02.4	006/03.0	004/02.8	359/02.7	014/02.7	024/02.7	046/02.8	066/02.6	081/03.6	096/03.8	081/03.3
29	006/02.5	360/02.4	350/02.3	347/02.5	356/02.8	001/02.7	351/02.6	348/02.9	347/02.7	004/02.7	006/02.5	006/02.9	351/02.9
30	359/03.2	005/02.7	357/02.9	349/02.9	343/02.8	348/02.8	344/02.6	346/02.4	360/02.9	015/03.1	015/02.8	033/02.5	079/02.4
MEAN	**347/02.3**	**340/02.2**	**336/02.2**	**332/02.3**	**338/02.3**	**348/02.4**	**353/02.4**	**004/02.6**	**030/02.9**	**056/03.2**	**058/03.2**	**058/03.2**	**069/03.5**
MAX	**342/04.8**	**071/04.9**	**076/05.4**	**079/05.5**	**087/04.8**	**086/04.5**	**028/04.6**	**018/04.7**	**335/04.7**	**337/04.7**	**088/05.3**	**060/06.0**	**059/06.2**
MIN	**213/00.6**	**267/00.7**	**279/00.7**	**217/00.8**	**316/00.6**	**299/00.7**	**282/00.8**	**324/00.9**	**109/01.3**	**127/01.7**	**133/01.8**	**156/00.9**	**094/01.4**

MEANS REQUIRE 75% VALID DATA

MISSING DATA DENOTED BY ---

DRAFT

CSX AQ5

Unit Vector Wind Speed and Direction in mps for September, 2023

Hr Beg Hr End Day	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX SPD	MIN SPD
1	148/03.4	137/04.0	140/03.4	148/03.4	149/03.7	154/03.0	203/02.3	206/01.5	191/02.2	182/02.3	191/02.0	**120/02.9**	**137/04.0**	**206/01.5**
2	121/05.5	123/05.4	138/05.7	165/05.3	175/04.2	189/03.3	203/02.0	220/01.6	215/01.8	229/01.9	255/01.3	**218/02.6**	**138/05.7**	**316/00.6**
3	296/03.2	316/03.5	321/03.2	332/04.1	340/03.6	334/01.9	315/01.6	325/00.9	355/00.8	312/01.0	308/02.0	**298/02.1**	**332/04.1**	**263/00.8**
4	324/04.1	294/03.5	295/03.7	307/02.8	337/03.6	338/02.5	003/03.1	359/03.3	347/03.6	346/03.2	344/04.3	**314/02.9**	**327/04.5**	**217/00.8**
5	004/03.0	041/02.6	134/02.7	137/02.9	140/01.8	106/01.8	028/02.0	010/02.0	006/01.9	335/01.9	318/01.9	**009/02.9**	**342/04.8**	**140/01.8**
6	136/03.6	127/04.6	133/04.2	127/03.7	169/03.3	180/02.6	208/01.6	229/00.9	226/01.3	215/01.6	205/01.9	**199/02.3**	**127/04.6**	**229/00.9**
7	177/04.8	184/05.5	194/04.6	336/03.3	335/04.6	354/03.0	021/02.0	063/02.1	022/01.4	020/01.6	077/02.4	**167/02.6**	**184/05.5**	**213/00.6**
8	122/03.3	127/04.7	125/03.9	128/04.3	158/03.6	197/02.3	334/04.8	045/02.5	119/04.5	006/03.0	111/01.7	**111/02.6**	**334/04.8**	**027/01.0**
9	121/02.6	198/03.6	243/01.9	262/02.2	234/04.4	249/02.4	282/01.1	296/00.9	025/00.7	280/00.9	260/00.9	**254/02.1**	**234/04.4**	**025/00.7**
10	131/03.0	135/03.5	159/02.5	155/01.4	130/02.2	107/01.2	042/01.4	359/02.3	027/02.0	105/02.5	132/02.5	**141/02.0**	**149/03.6**	**240/00.9**
11	138/01.9	317/03.1	349/02.0	018/02.5	024/02.2	031/02.4	043/01.6	058/01.1	005/01.0	306/01.6	324/01.7	**022/01.9**	**317/03.1**	**048/01.0**
12	125/04.1	126/04.3	129/04.1	136/03.7	142/03.6	155/02.8	148/02.6	145/05.5	140/05.6	337/05.3	349/02.0	**098/02.8**	**140/05.6**	**035/00.7**
13	351/02.6	013/01.7	349/02.4	331/02.3	135/03.4	169/02.1	271/01.0	360/02.3	008/01.2	337/01.6	345/01.8	**337/02.3**	**337/03.8**	**271/01.0**
14	008/03.9	006/03.8	008/04.0	019/03.9	021/03.9	018/04.0	015/04.2	020/03.5	018/03.3	023/03.7	022/03.5	**011/03.6**	**015/04.2**	**006/02.6**
15	004/04.4	356/04.3	018/03.6	015/03.7	010/03.8	002/03.0	360/02.9	344/02.7	316/02.6	320/02.8	331/02.9	**004/03.7**	**018/04.7**	**316/02.6**
16	331/02.7	321/03.3	338/03.5	313/02.7	310/02.1	253/01.4	211/01.1	359/01.2	297/00.9	289/00.8	331/01.7	**323/02.7**	**340/04.7**	**289/00.8**
17	192/03.1	193/03.4	195/03.3	224/02.6	258/03.1	258/01.2	334/01.2	330/01.2	304/01.3	227/01.5	210/01.6	**259/02.0**	**125/04.6**	**279/00.7**
18	353/04.7	352/04.6	341/05.2	336/04.5	331/03.9	324/02.7	321/02.3	312/01.9	310/01.8	295/02.1	306/02.2	**328/02.8**	**341/05.2**	**267/00.7**
19	331/04.9	331/04.9	335/04.6	322/03.8	302/02.6	273/01.7	294/01.8	317/01.9	325/02.0	307/01.7	296/01.2	**317/03.3**	**336/05.4**	**296/01.2**
20	150/03.3	136/02.6	131/03.1	128/04.1	148/03.0	189/02.4	216/01.2	230/01.7	248/01.3	350/01.0	344/01.3	**227/01.9**	**128/04.1**	**295/00.9**
21	144/03.7	147/03.7	153/03.3	151/02.5	158/02.3	112/01.7	059/01.2	033/01.7	054/02.6	073/02.9	106/03.6	**080/02.3**	**145/03.9**	**330/00.7**
22	082/04.6	085/04.3	084/05.3	090/05.9	088/05.4	079/05.3	081/05.5	080/05.6	077/05.4	071/04.6	059/03.9	**068/04.1**	**090/05.9**	**035/02.0**
23	060/06.4	060/06.3	059/06.2	057/06.5	059/06.7	060/06.3	064/05.9	068/06.5	067/06.2	066/05.8	067/05.1	**049/05.3**	**059/06.7**	**029/03.5**
24	086/00.9	009/01.0	347/01.2	073/00.8	044/00.4	295/00.5	247/01.0	336/00.9	359/00.8	337/01.8	329/02.1	**074/02.6**	**079/05.5**	**044/00.4**
25	030/02.7	025/03.0	041/02.7	053/02.4	059/03.4	062/03.9	056/03.5	042/03.2	023/03.3	024/02.9	027/03.0	**011/03.1**	**062/03.9**	**053/02.4**
26	040/02.8	045/03.5	050/02.9	046/03.0	034/02.2	048/02.5	034/02.4	044/03.2	061/03.4	053/03.3	011/02.4	**039/02.9**	**045/03.5**	**034/02.2**
27	094/04.0	100/04.6	089/04.2	070/04.1	052/03.2	040/02.3	031/02.1	076/04.1	085/03.4	067/02.7	010/01.8	**043/02.9**	**100/04.6**	**010/01.8**
28	101/03.8	095/03.4	073/03.4	066/03.8	044/03.0	052/03.7	052/02.7	024/02.5	027/02.7	039/02.8	008/02.5	**042/02.9**	**096/03.8**	**008/02.0**
29	341/03.4	343/03.2	357/03.4	359/03.2	359/02.9	349/03.0	345/02.5	349/02.6	005/02.5	349/02.8	347/03.2	**354/02.8**	**341/03.4**	**350/02.3**
30	023/01.7	009/02.7	001/03.1	022/02.3	114/01.9	088/02.0	065/01.2	105/01.0	265/00.7	266/01.1	283/01.4	**010/02.3**	**359/03.2**	**265/00.7**
MEAN	**073/03.5**	**058/03.8**	**059/03.6**	**052/03.4**	**067/03.3**	**054/02.6**	**004/02.3**	**011/02.4**	**006/02.4**	**344/02.4**	**343/02.3**	**010/02.8**		
MAX	**060/06.4**	**060/06.3**	**059/06.2**	**057/06.5**	**059/06.7**	**060/06.3**	**064/05.9**	**068/06.5**	**067/06.2**	**066/05.8**	**067/05.1**		**059/06.7**	
MIN	**086/00.9**	**009/01.0**	**347/01.2**	**073/00.8**	**044/00.4**	**295/00.5**	**271/01.0**	**325/00.9**	**025/00.7**	**289/00.8**	**260/00.9**			**044/00.4**

POSSIBLE NUMBER OF OBSERVATIONS = 720 ACTUAL NUMBER OF OBSERVATIONS = 718 DATA RECOVERY RATE = 99.7%

MONTHLY MEAN = 010/02.8 MAXIMUM WIND SPEED = 06.7 AT 59 DEGREES DATE OF OCCURRENCE = 9/23 AT 1800

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

DRAFT

CSX AQ5

WIND GUST in mps for JULY, 2023

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	3.4	3.3	3.1	2.8	3.0	4.3	4.4	6.4	6.0	6.4	7.9	7.6	7.1	6.3	6.7	6.1	5.5	7.3	10.1	8.5	6.1	4.8	4.6	2.3	**5.6**	**10.1**	**2.3**
2	3.5	3.8	3.2	2.7	3.8	3.3	3.5	3.1	3.4	4.3	4.8	5.0	5.7	5.8	5.7	7.0	9.5	13.0	6.4	3.7	3.8	2.5	2.4	1.3	**4.6**	**13.0**	**1.3**
3	1.0	2.3	2.9	3.9	2.3	2.3	2.9	2.9	4.8	5.1	6.5	5.3	7.4	7.4	7.0	5.9	6.9	9.2	8.4	5.5	5.8	5.1	4.1	5.3	**5.0**	**9.2**	**1.0**
4	2.5	1.8	2.3	2.4	2.4	2.6	3.1	4.6	5.6	6.0	6.0	7.3	5.8	6.3	6.3	5.4	8.7	4.9	3.2	2.9	2.9	4.0	2.2	2.3	**4.2**	**8.7**	**1.8**
5	2.7	3.6	3.1	2.1	2.7	2.1	2.8	2.6	2.7	3.3	4.7	5.0	5.6	5.4	6.5	5.5	3.0	3.1	3.8	3.7	2.9	2.2	1.5	1.9	**3.4**	**6.5**	**1.5**
6	1.7	1.2	1.5	2.6	2.0	2.8	2.7	2.8	3.7	3.7	5.5	5.6	12.7	3.3	5.1	4.9	5.3	4.8	5.4	4.3	4.0	4.7	4.0	4.4	**4.1**	**12.7**	**1.2**
7	1.6	1.3	1.0	1.4	1.5	1.7	1.9	2.6	3.8	5.1	6.1	7.7	6.5	4.7	3.2	4.5	6.5	6.5	4.5	2.2	1.8	2.3	3.3	4.0	**3.6**	**7.7**	**1.0**
8	2.1	4.3	2.6	2.5	3.3	3.5	3.5	4.9	3.8	2.9	2.8	3.7	4.2	4.2	6.3	8.3	8.0	9.2	5.3	4.7	3.9	3.9	2.6	2.2	**4.3**	**9.2**	**2.1**
9	4.0	3.5	3.1	1.5	2.2	2.0	1.5	3.2	4.8	7.1	7.2	8.0	8.9	10.6	12.6	5.8	7.1	6.8	6.7	5.9	3.7	5.3	4.4	4.5	**5.4**	**12.6**	**1.5**
10	5.7	4.6	3.9	2.5	2.4	2.5	2.9	3.7	4.5	6.7	7.7	5.9	7.6	7.3	7.1	7.5	6.7	6.3	5.5	5.1	2.2	2.7	2.9	3.4	**4.9**	**7.7**	**2.2**
11	2.7	3.5	3.8	3.0	2.7	3.1	2.6	2.8	3.1	3.1	4.6	4.6	5.1	5.9	6.6	6.7	5.5	5.4	4.5	2.6	2.6	2.5	4.2	3.7	**4.0**	**6.7**	**2.5**
12	3.2	2.8	2.0	2.5	1.7	2.4	3.0	3.4	4.9	5.7	5.2	6.0	9.3	6.3	6.3	6.3	7.7	7.8	5.9	4.5	4.3	3.5	4.1	4.1	**4.7**	**9.3**	**1.7**
13	3.4	3.3	2.7	2.9	3.1	3.2	5.2	5.8	5.6	5.5	6.2	7.4	9.5	9.1	9.5	9.1	9.0	7.9	7.1	5.7	6.3	5.8	8.7	6.5	**6.2**	**9.5**	**2.7**
14	5.2	6.0	3.7	4.2	4.3	5.7	7.2	7.9	6.5	5.3	6.1	6.1	8.3	7.7	8.0	7.3	7.6	9.8	8.0	4.5	3.5	3.1	2.5	1.8	**5.8**	**9.8**	**1.8**
15	1.9	2.4	1.9	2.4	1.8	1.7	1.2	2.1	2.7	5.1	6.3	7.7	8.5	8.0	8.6	8.2	6.9	6.5	7.3	7.4	8.0	6.5	4.7	3.7	**5.1**	**8.6**	**1.2**
16	3.0	4.2	3.4	2.9	3.3	3.4	2.3	3.1	3.5	3.6	3.5	3.4	3.8	4.1	4.5	3.5	3.9	4.7	4.1	3.5	2.8	3.3	3.9	4.0	**3.6**	**4.7**	**2.3**
17	3.0	3.3	4.7	4.1	2.9	3.4	3.9	2.7	4.0	4.2	4.5	5.1	4.9	6.5	6.5	6.5	7.1	6.8	6.1	5.6	5.3	3.6	4.3	2.1	**4.6**	**7.1**	**2.1**
18	2.3	3.0	2.7	3.2	2.8	3.3	1.7	2.3	5.1	6.2	7.5	7.9	7.9	7.9	7.8	6.6	6.7	5.9	4.2	2.9	2.1	2.9	2.3	2.4	**4.5**	**7.9**	**1.7**
19	2.7	4.1	11.5	10.8	4.6	2.9	6.3	5.3	2.9	3.5	4.2	5.6	5.9	7.3	8.1	5.9	8.0	8.2	5.6	5.2	4.3	4.5	8.1	5.5	**5.9**	**11.5**	**2.7**
20	4.1	2.1	2.8	2.2	2.6	2.7	2.5	2.1	3.7	4.2	4.6	4.9	4.5	4.2	4.3	4.5	5.1	4.9	5.0	4.6	4.4	3.3	3.3	2.8	**3.7**	**5.1**	**2.1**
21	2.4	2.3	11.1	9.9	6.0	5.1	4.7	4.9	3.5	4.4	7.6	8.2	7.8	8.2	7.7	6.3	6.9	6.0	4.5	3.5	3.8	3.6	3.0	3.7	**5.6**	**11.1**	**2.3**
22	4.6	4.4	3.9	6.2	5.7	5.1	5.2	5.2	5.6	5.9	5.2	4.7	5.1	5.9	11.1	6.0	6.5	5.6	3.8	3.6	2.5	2.5	2.9	3.3	**5.0**	**11.1**	**2.5**
23	2.7	2.2	1.4	1.3	1.5	1.5	1.9	2.0	3.0	3.7	4.9	5.8	6.5	8.5	8.0	8.1	8.0	7.4	5.1	4.4	4.8	3.8	3.8	3.7	**4.3**	**8.5**	**1.3**
24	3.6	3.1	2.5	5.6	9.6	6.2	7.5	5.1	5.9	5.9	5.2	7.0	8.2	7.8	9.2	8.2	8.7	8.4	6.2	5.5	4.5	3.9	3.9	4.3	**6.1**	**9.6**	**2.5**
25	3.0	3.4	3.0	3.3	2.6	2.3	2.7	3.6	3.6	4.4	4.3	8.3	8.5	11.2	6.5	4.2	3.7	5.8	8.3	5.7	3.7	4.6	2.1	2.8	**4.7**	**11.2**	**2.1**
26	2.9	2.8	2.6	2.1	1.5	2.5	2.7	3.1	3.7	3.5	5.4	5.9	7.3	7.5	7.3	7.3	7.0	7.4	7.5	6.6	6.4	5.5	5.4	5.0	**5.0**	**7.5**	**1.5**
27	4.7	4.5	4.5	4.5	3.2	3.9	4.7	5.1	7.3	7.5	7.5	8.2	9.6	9.7	8.3	7.8	7.0	5.6	7.8	6.3	4.2	3.6	3.2	3.9	**5.9**	**9.7**	**3.2**
28	2.8	3.1	3.3	2.5	3.3	2.7	2.9	3.0	3.5	4.5	4.5	5.4	6.1	8.2	6.8	7.7	8.5	8.4	20.7	13.8	4.1	3.2	2.9	2.3	**5.6**	**20.7**	**2.3**
29	4.9	3.4	3.1	5.0	4.6	5.2	4.5	4.7	4.7	7.5	8.6	7.7	8.4	7.6	7.8	15.6	8.4	6.6	12.0	10.0	7.3	6.0	3.9	6.4	**6.8**	**15.6**	**3.1**
30	8.5	8.9	8.4	6.1	4.2	5.1	4.9	5.8	6.9	6.8	5.7	4.6	6.2	7.4	6.6	9.3	7.6	6.2	4.1	3.6	3.1	2.5	2.4	2.8	**5.7**	**9.3**	**2.4**
31	3.4	5.5	5.2	5.3	2.3	2.1	3.3	3.9	4.6	4.1	5.3	6.0	6.9	7.0	7.6	10.1	7.5	6.5	5.7	5.7	4.4	2.5	3.0	3.7	**5.1**	**10.1**	**2.1**
MEAN	**3.3**	**3.5**	**3.7**	**3.7**	**3.2**	**3.2**	**3.6**	**3.9**	**4.4**	**5.0**	**5.7**	**6.2**	**7.1**	**7.0**	**7.2**	**7.0**	**6.9**	**6.9**	**6.5**	**5.2**	**4.2**	**3.8**	**3.7**	**3.6**	**4.9**		
MAX	**8.5**	**8.9**	**11.5**	**10.8**	**9.6**	**6.2**	**7.5**	**7.9**	**7.3**	**7.5**	**8.6**	**8.3**	**12.7**	**11.2**	**12.6**	**15.6**	**9.5**	**13.0**	**20.7**	**13.8**	**8.0**	**6.5**	**8.7**	**6.5**		**20.7**	
MIN	**1.0**	**1.2**	**1.0**	**1.3**	**1.5**	**1.5**	**1.2**	**2.0**	**2.7**	**2.9**	**2.8**	**3.4**	**3.8**	**3.3**	**3.2**	**3.5**	**3.0**	**3.1**	**3.2**	**2.2**	**1.8**	**2.2**	**1.5**	**1.3**			**1.0**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 744 DATA RECOVERY RATE = 100.0%

MONTHLY MEAN = 4.9 mps

MAXIMUM WIND GUST = 20.7 mps DATE OF OCCURRENCE = 7/28 AT 1900 MAXIMUM DAILY MEAN = 6.8 mps DATE OF OCCURRENCE = 7/29

MINIMUM WIND GUST = 1.0 mps DATE OF OCCURRENCE = 7/3 AT 0100 MINUMUM DAILY MEAN = 3.4 mps DATE OF OCCURRENCE = 7/5

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

DRAFT

CSX AQ5

WIND GUST in mps for AUGUST, 2023

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	3.9	5.7	4.9	4.8	4.5	4.1	4.5	5.9	5.9	6.8	5.1	5.3	5.9	6.4	6.5	4.7	6.0	5.2	5.1	3.7	2.0	2.3	2.4	3.5	**4.8**	**6.8**	**2.0**
2	3.2	2.3	2.5	2.2	2.4	2.3	3.0	3.5	4.1	4.3	4.5	5.3	5.9	6.5	7.1	6.1	6.6	5.3	4.9	4.4	3.4	3.2	4.9	3.7	**4.2**	**7.1**	**2.2**
3	2.6	4.0	3.3	3.7	4.8	4.2	4.1	6.5	6.5	6.3	7.2	8.6	8.5	8.5	8.4	9.4	9.5	8.7	8.3	8.9	6.6	6.5	6.1	4.9	**6.5**	**9.5**	**2.6**
4	7.0	7.9	7.2	4.7	4.1	3.8	3.8	5.2	5.0	4.5	3.7	3.5	5.6	4.3	5.0	4.8	6.3	6.5	4.8	4.0	3.5	3.1	4.1	2.3	**4.8**	**7.9**	**2.3**
5	2.2	1.3	2.1	3.3	1.3	2.2	3.7	3.1	3.2	4.4	3.9	3.9	4.9	6.7	6.5	5.1	4.9	3.7	3.4	2.9	2.0	1.7	2.4	2.1	**3.4**	**6.7**	**1.3**
6	1.7	1.9	1.3	1.4	1.0	1.0	1.8	2.4	4.2	5.0	5.7	7.2	8.1	7.7	8.9	8.9	8.6	9.1	8.4	12.0	4.6	7.1	7.7	5.3	**5.5**	**12.0**	**1.0**
7	5.9	5.4	4.0	3.8	4.0	4.4	4.9	6.4	6.5	5.4	4.9	6.0	6.7	7.2	8.2	11.5	18.8	14.8	5.0	4.7	4.0	4.4	5.1	5.7	**6.6**	**18.8**	**3.8**
8	4.9	1.5	1.7	4.3	3.8	6.6	9.2	9.4	12.1	13.5	13.4	11.7	11.3	13.2	12.3	10.8	7.3	8.4	4.9	5.1	4.4	5.1	5.8	6.2	**7.8**	**13.5**	**1.5**
9	6.9	5.5	5.7	4.5	4.9	3.7	4.5	5.5	6.2	6.6	7.5	7.3	8.3	7.5	8.0	7.4	5.7	5.0	5.1	3.6	4.5	4.5	3.9	4.5	**5.7**	**8.3**	**3.6**
10	4.3	2.7	2.5	2.2	3.1	2.8	3.0	3.4	3.3	6.5	4.9	3.0	4.6	6.7	7.9	7.1	8.5	10.8	7.9	4.1	4.3	4.5	5.0	5.1	**4.9**	**10.8**	**2.2**
11	5.2	5.3	5.1	5.7	5.3	4.6	5.9	5.7	6.5	7.1	8.0	9.2	7.8	7.3	9.3	7.3	7.9	6.8	4.1	2.9	2.5	3.1	3.7	2.9	**5.8**	**9.3**	**2.5**
12	1.7	2.3	2.1	1.6	1.4	1.5	3.1	4.0	3.5	4.4	6.2	5.9	6.4	5.7	6.1	9.5	9.0	6.2	6.3	5.0	4.5	4.6	5.5	5.1	**4.7**	**9.5**	**1.4**
13	6.5	5.2	3.5	3.8	3.6	3.1	3.3	5.7	6.3	6.7	9.0	9.0	10.6	9.7	9.8	9.9	9.7	9.7	7.2	5.1	2.7	3.8	2.7	1.1	**6.2**	**10.6**	**1.1**
14	2.2	1.9	1.9	1.3	1.5	1.7	1.7	1.5	2.7	4.2	5.4	6.7	8.0	8.7	6.9	7.6	12.8	5.8	5.7	7.3	4.7	3.7	4.2	3.8	**4.7**	**12.8**	**1.3**
15	4.1	4.0	3.2	4.2	5.2	4.1	4.0	3.4	5.3	4.9	6.9	8.7	7.0	6.1	9.2	8.9	2.7	3.7	3.4	2.8	5.0	3.4	4.1	4.4	**4.9**	**9.2**	**2.7**
16	6.5	5.4	5.7	5.9	4.3	3.8	5.9	6.1	6.4	6.4	6.1	5.9	7.0	6.3	4.9	5.5	5.1	4.8	4.8	2.4	2.6	2.7	2.6	2.1	**5.0**	**7.0**	**2.1**
17	2.2	2.1	2.3	2.0	2.3	1.7	2.5	1.6	3.2	6.7	7.0	7.7	7.4	7.6	9.3	8.8	7.5	7.8	6.3	6.0	7.9	7.9	5.1	6.9	**5.4**	**9.3**	**1.6**
18	6.9	7.4	5.2	3.9	2.1	2.9	7.1	11.2	10.3	10.9	10.9	11.6	10.0	6.9	9.5	10.2	10.7	11.4	9.8	6.5	4.0	3.4	4.3	3.8	**7.5**	**11.6**	**2.1**
19	3.4	2.8	3.1	3.9	3.7	3.4	4.4	4.9	7.3	7.1	8.1	7.0	6.7	6.4	7.4	6.7	7.3	6.7	5.1	3.6	3.1	3.1	2.2	2.5	**5.0**	**8.1**	**2.2**
20	1.9	1.7	2.1	1.6	1.7	2.0	2.3	2.8	3.3	4.0	3.5	4.5	6.0	7.3	7.1	6.1	6.5	5.5	5.2	4.9	3.5	2.7	1.5	1.5	**3.7**	**7.3**	**1.5**
21	1.6	2.2	1.5	1.4	1.5	1.7	2.5	3.0	3.9	3.4	3.6	5.7	4.1	5.5	4.8	4.2	3.6	3.7	3.0	2.7	2.6	3.0	2.8	2.2	**3.1**	**5.7**	**1.4**
22	2.9	4.5	7.6	8.7	6.4	7.4	8.5	9.7	9.2	9.0	8.9	7.4	7.2	9.2	7.9	7.3	7.7	7.3	7.3	5.3	4.2	4.1	4.9	4.5	**7.0**	**9.7**	**2.9**
23	2.1	2.6	3.1	2.5	3.0	2.6	2.9	3.3	4.6	5.0	4.2	4.7	5.5	5.7	5.5	7.6	7.5	6.2	6.0	5.5	6.7	5.7	4.6	5.0	**4.7**	**7.6**	**2.1**
24	5.1	5.0	4.8	4.4	4.1	4.0	5.0	5.3	6.8	7.9	8.4	6.1	7.6	7.5	7.3	7.9	7.6	5.7	4.8	4.5	4.0	3.7	4.2	4.9	**5.7**	**8.4**	**3.7**
25	3.5	4.5	4.1	3.8	3.6	9.2	8.9	4.5	3.6	5.3	4.6	4.7	5.8	6.7	6.5	6.6	6.7	6.6	3.1	5.7	3.8	2.7	1.9	2.4	**5.0**	**9.2**	**1.9**
26	2.2	2.0	2.0	2.3	2.9	4.9	5.7	7.0	7.0	6.7	5.1	5.6	5.2	6.4	6.6	5.3	5.3	5.4	7.0	7.1	7.0	5.7	4.5	3.3	**5.1**	**7.1**	**2.0**
27	3.0	3.8	2.8	2.8	3.7	3.1	3.1	4.1	4.1	4.3	4.4	4.8	6.0	6.5	6.5	6.6	5.9	5.5	5.7	6.3	6.9	5.8	4.8	4.9	**4.8**	**6.9**	**2.8**
28	5.0	5.2	4.2	3.1	4.3	4.3	6.1	5.6	6.3	6.5	5.7	6.8	6.8	7.2	8.3	7.6	7.4	7.3	6.5	6.1	5.8	6.5	5.2	5.9	**6.0**	**8.3**	**3.1**
29	6.3	5.4	4.9	4.8	5.1	5.6	4.9	5.6	5.9	4.9	3.9	4.0	4.5	4.3	5.2	4.7	4.1	3.5	3.9	4.4	4.3	4.5	4.5	4.7	**4.7**	**6.3**	**3.5**
30	3.8	3.4	2.9	1.7	2.3	3.1	4.8	4.5	6.9	8.2	8.5	9.0	10.5	9.8	9.4	8.9	9.1	8.1	9.1	8.3	9.7	9.7	10.0	8.7	**7.1**	**10.5**	**1.7**
31	9.3	8.1	8.6	7.9	7.6	8.5	7.7	9.7	10.4	10.6	9.0	9.1	8.4	9.2	8.0	8.3	8.9	9.6	7.3	7.1	7.7	8.1	7.6	6.8	**8.5**	**10.6**	**6.8**
MEAN	**4.1**	**4.0**	**3.7**	**3.6**	**3.5**	**3.8**	**4.6**	**5.2**	**5.8**	**6.4**	**6.4**	**6.6**	**7.0**	**7.2**	**7.6**	**7.5**	**7.6**	**6.9**	**5.8**	**5.3**	**4.6**	**4.5**	**4.5**	**4.2**	**5.4**		
MAX	**9.3**	**8.1**	**8.6**	**8.7**	**7.6**	**9.2**	**9.2**	**11.2**	**12.1**	**13.5**	**13.4**	**11.7**	**11.3**	**13.2**	**12.3**	**11.5**	**18.8**	**14.8**	**9.8**	**12.0**	**9.7**	**9.7**	**10.0**	**8.7**		**18.8**	
MIN	**1.6**	**1.3**	**1.3**	**1.3**	**1.0**	**1.0**	**1.7**	**1.5**	**2.7**	**3.4**	**3.5**	**3.0**	**4.1**	**4.3**	**4.8**	**4.2**	**2.7**	**3.5**	**3.0**	**2.4**	**2.0**	**1.7**	**1.5**	**1.1**			**1.0**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 744 DATA RECOVERY RATE = 100.0%

MONTHLY MEAN = 5.4 mps

MAXIMUM WIND GUST = 18.8 mps DATE OF OCCURRENCE = 8/7 AT 1700 MAXIMUM DAILY MEAN = 8.5 mps DATE OF OCCURRENCE = 8/31

MINIMUM WIND GUST = 1.0 mps DATE OF OCCURRENCE = 8/6 AT 0500 MINUMUM DAILY MEAN = 3.1 mps DATE OF OCCURRENCE = 8/21

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

DRAFT

CSX AQ5

WIND GUST in mps for SEPTEMBER, 2023

Hr Beg Hr End Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	7.5	7.0	5.9	5.8	5.3	5.2	5.2	3.9	4.9	5.7	5.8	5.3	5.5	5.1	5.9	5.3	4.6	5.2	4.1	4.5	2.5	4.0	4.9	4.0	**5.1**	**7.5**	**2.5**
2	1.8	2.2	2.3	1.9	1.5	1.1	1.5	3.6	7.2	6.0	6.5	6.1	7.4	8.1	8.6	8.1	8.4	6.8	5.7	4.3	3.7	4.2	4.5	3.1	**4.8**	**8.6**	**1.1**
3	3.9	3.5	2.0	1.5	1.6	1.8	2.1	3.1	4.4	5.3	8.0	7.0	8.0	7.1	7.7	6.0	8.3	6.7	4.1	2.6	2.3	1.5	2.3	2.9	**4.3**	**8.3**	**1.5**
4	2.5	2.9	3.0	1.5	1.8	3.4	3.9	6.0	6.1	8.2	8.4	6.5	8.4	8.2	6.8	7.7	5.9	6.1	5.3	5.9	8.0	7.3	6.6	7.3	**5.7**	**8.4**	**1.5**
5	8.6	8.7	7.7	7.5	7.7	6.0	5.7	5.3	7.1	6.1	5.3	5.6	5.9	5.9	6.1	6.7	6.1	3.7	4.8	4.6	3.9	3.7	2.7	3.1	**5.8**	**8.7**	**2.7**
6	3.6	3.7	2.9	1.9	2.1	3.1	2.6	3.3	2.7	3.4	4.0	4.9	4.8	6.5	7.2	6.1	6.1	5.2	4.7	2.9	2.4	2.7	3.1	3.5	**3.9**	**7.2**	**1.9**
7	1.5	2.0	2.5	1.9	2.1	3.0	2.5	3.1	3.2	4.1	6.2	6.8	8.4	10.3	9.5	9.7	5.6	10.8	5.4	3.6	4.2	3.2	3.7	4.7	**4.9**	**10.8**	**1.5**
8	2.9	3.0	7.1	5.8	4.1	2.4	2.2	2.2	2.5	2.7	3.4	4.6	5.7	4.8	7.6	6.3	6.7	5.7	5.1	12.0	5.5	13.0	9.3	3.5	**5.3**	**13.0**	**2.2**
9	4.0	5.2	6.1	9.2	4.0	4.5	2.5	3.0	4.6	4.1	3.9	4.8	5.5	5.1	7.8	4.2	5.1	12.2	7.0	3.3	1.9	1.8	1.5	2.3	**4.7**	**12.2**	**1.5**
10	2.3	1.9	1.9	2.5	3.1	5.5	4.1	4.3	4.1	3.7	3.5	1.8	3.2	4.9	4.8	4.3	2.9	3.3	2.2	3.9	5.0	4.4	5.9	5.3	**3.7**	**5.9**	**1.8**
11	3.5	3.5	2.9	3.4	3.3	6.9	2.3	3.5	3.7	4.9	4.1	4.1	4.2	3.3	7.8	4.5	5.4	4.5	5.5	4.6	2.2	2.5	2.3	2.4	**4.0**	**7.8**	**2.2**
12	2.4	2.5	2.1	2.2	2.3	1.2	2.2	2.5	2.7	3.5	4.7	5.2	6.1	5.8	5.9	5.7	5.3	5.3	4.5	4.5	8.5	8.5	12.8	5.4	**4.7**	**12.8**	**1.2**
13	3.0	3.2	3.5	3.5	4.8	4.9	4.3	3.6	5.5	6.1	6.0	5.7	6.8	6.3	4.3	5.9	5.5	5.5	3.8	2.1	5.1	2.4	3.2	4.4	**4.6**	**6.8**	**2.1**
14	6.3	5.5	6.3	4.7	5.7	6.1	6.3	6.2	6.4	6.7	7.2	6.9	8.0	9.3	7.9	7.3	7.4	7.5	8.0	8.5	8.0	7.5	7.1	7.0	**7.0**	**9.3**	**4.7**
15	10.1	9.2	6.1	6.5	8.1	7.5	8.5	9.2	8.2	7.8	6.9	7.8	7.5	9.4	8.8	7.1	8.0	7.5	5.7	6.1	5.0	4.4	4.6	4.8	**7.3**	**10.1**	**4.4**
16	4.4	4.5	4.3	4.5	5.2	4.9	5.4	5.9	7.0	7.3	8.2	6.5	11.6	6.2	6.9	6.3	4.9	4.8	2.4	2.8	2.8	1.8	2.1	2.3	**5.1**	**11.6**	**1.8**
17	2.1	1.4	1.3	2.3	1.7	1.8	2.4	3.9	5.0	7.1	6.4	4.9	4.8	6.2	6.8	6.6	5.3	11.5	4.0	2.4	2.4	2.4	4.6	3.8	**4.2**	**11.5**	**1.3**
18	2.1	2.0	1.9	2.2	2.4	3.8	6.3	7.3	6.9	7.0	6.1	6.3	7.9	8.1	8.3	10.9	8.3	6.7	7.1	5.1	3.5	3.8	3.9	4.1	**5.5**	**10.9**	**1.9**
19	3.8	5.0	5.2	5.5	6.2	4.8	6.1	8.9	7.9	7.8	10.0	9.7	10.4	8.6	8.8	8.7	8.9	6.4	2.9	3.3	3.3	3.3	2.9	2.3	**6.3**	**10.4**	**2.3**
20	2.3	2.3	2.2	1.9	2.2	2.1	2.3	1.9	2.7	3.1	3.7	4.2	5.5	4.7	4.9	5.6	6.7	4.7	5.1	2.3	2.4	2.2	2.1	2.5	**3.3**	**6.7**	**1.9**
21	1.4	1.3	2.6	3.5	2.8	3.3	3.0	3.5	3.5	4.0	4.3	4.4	5.5	4.9	4.9	4.4	3.3	3.2	3.0	2.1	5.2	6.2	6.8	6.6	**3.9**	**6.8**	**1.3**
22	5.7	4.0	4.2	4.6	5.3	6.1	7.2	7.1	7.7	8.8	10.3	9.4	8.4	8.8	9.3	10.5	10.4	10.9	10.1	12.7	11.9	10.7	9.9	8.7	**8.4**	**12.7**	**4.0**
23	7.7	7.6	9.1	10.5	10.5	9.1	10.5	9.2	10.3	10.3	10.8	14.7	14.3	14.2	14.8	14.1	13.8	14.0	14.7	15.8	14.7	14.8	12.3	11.5	**12.1**	**15.8**	**7.6**
24	11.9	10.4	11.5	11.1	8.7	10.7	7.5	6.4	6.0	6.8	5.3	4.6	3.2	1.9	2.2	2.2	1.6	1.0	1.1	1.8	2.3	2.0	3.5	3.6	**5.3**	**11.9**	**1.0**
25	4.5	5.8	5.9	5.5	4.8	5.4	6.8	6.7	5.7	5.2	6.3	5.8	4.6	6.1	6.2	6.6	5.1	9.4	9.4	8.2	7.1	6.3	7.1	7.2	**6.3**	**9.4**	**4.5**
26	6.5	7.1	5.6	6.2	6.8	6.6	6.8	6.5	5.4	---	---	6.7	6.5	6.4	7.1	6.5	7.5	5.6	5.9	5.6	8.0	6.6	7.3	4.9	**6.5**	**8.0**	**4.9**
27	5.3	4.2	4.6	5.6	5.6	6.2	6.5	5.9	6.4	5.8	6.0	6.5	5.6	6.9	7.3	7.3	7.3	6.3	5.2	4.3	8.9	6.6	6.1	3.5	**6.0**	**8.9**	**3.5**
28	3.6	3.9	4.9	6.1	6.2	5.6	7.1	6.9	6.1	5.4	6.3	5.9	5.9	5.9	5.8	5.8	6.7	6.3	6.7	5.4	5.4	6.2	6.4	4.9	**5.8**	**7.1**	**3.6**
29	5.6	4.7	4.5	4.6	5.8	5.3	5.1	5.1	5.1	5.6	5.1	5.5	5.3	6.1	6.2	6.3	6.9	6.7	6.5	4.8	5.2	5.1	5.7	6.8	**5.6**	**6.9**	**4.5**
30	6.3	6.2	6.3	5.9	5.7	5.9	5.9	4.1	6.5	6.3	6.4	6.1	4.5	4.7	6.0	5.7	4.9	2.8	3.9	2.2	1.7	1.5	2.7	2.9	**4.8**	**6.5**	**1.5**
MEAN	**4.6**	**4.5**	**4.5**	**4.7**	**4.6**	**4.8**	**4.8**	**5.1**	**5.5**	**5.8**	**6.2**	**6.1**	**6.6**	**6.7**	**7.1**	**6.7**	**6.4**	**6.5**	**5.5**	**5.1**	**5.1**	**5.0**	**5.3**	**4.6**	**5.5**		
MAX	**11.9**	**10.4**	**11.5**	**11.1**	**10.5**	**10.7**	**10.5**	**9.2**	**10.3**	**10.3**	**10.8**	**14.7**	**14.3**	**14.2**	**14.8**	**14.1**	**13.8**	**14.0**	**14.7**	**15.8**	**14.7**	**14.8**	**12.8**	**11.5**		**15.8**	
MIN	**1.4**	**1.3**	**1.3**	**1.5**	**1.5**	**1.1**	**1.5**	**1.9**	**2.5**	**2.7**	**3.4**	**1.8**	**3.2**	**1.9**	**2.2**	**2.2**	**1.6**	**1.0**	**1.1**	**1.8**	**1.7**	**1.5**	**1.5**	**2.3**			**1.0**

POSSIBLE NUMBER OF OBSERVATIONS = 720 ACTUAL NUMBER OF OBSERVATIONS = 718 DATA RECOVERY RATE = 99.7%

MONTHLY MEAN = 5.5 mps

MAXIMUM WIND GUST = 15.8 mps DATE OF OCCURRENCE = 9/23 AT 2000 MAXIMUM DAILY MEAN = 12.1 mps DATE OF OCCURRENCE = 9/23

MINIMUM WIND GUST = 1.0 mps DATE OF OCCURRENCE = 9/24 AT 1800 MINUMUM DAILY MEAN = 3.3 mps DATE OF OCCURRENCE = 9/20

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

DRAFT

CSX AQ5

Joint Frequency Distribution for July, 2023

Percentage frequency of occurence of hourly wind velocities for all stability classes

Wind Direction		Wind Speed (mps) 0.5 - 1.54	1.54 - 3.09	3.09 - 5.14	5.14 - 8.23	8.23 - 10.8	OVER 10.8	TOTAL	AVG SPEED
N	348.75 - 11.25	0.9	2.8	1.5	0.0	0.0	0.0	**5.2**	**2.6**
NNE	11.25 - 33.75	0.9	2.3	0.5	0.0	0.0	0.0	**3.8**	**2.2**
NE	33.75 - 56.25	0.5	0.8	0.0	0.0	0.0	0.0	**1.3**	**1.9**
ENE	56.25 - 78.75	0.0	0.3	0.0	0.0	0.0	0.0	**0.3**	**2.2**
E	78.75 - 101.25	0.1	0.7	0.1	0.0	0.0	0.0	**0.9**	**2.2**
ESE	101.25 - 123.75	0.4	0.7	0.9	0.4	0.0	0.0	**2.4**	**3.4**
SE	123.75 - 146.25	0.3	3.4	5.2	0.7	0.0	0.0	**9.5**	**3.4**
SSE	146.25 - 168.75	0.4	3.2	3.4	0.5	0.0	0.0	**7.5**	**3.3**
S	168.75 - 191.25	0.7	3.9	6.0	0.0	0.0	0.0	**10.6**	**3.3**
SSW	191.25 - 213.75	2.3	7.3	1.5	0.0	0.0	0.0	**11.0**	**2.2**
SW	213.75 - 236.25	5.1	3.8	1.5	0.0	0.0	0.0	**10.3**	**1.9**
WSW	236.25 - 258.75	3.1	2.2	1.1	0.1	0.0	0.0	**6.5**	**2.1**
W	258.75 - 281.25	2.8	2.4	0.5	0.0	0.0	0.0	**5.8**	**1.9**
WNW	281.25 - 303.75	3.0	2.6	0.9	0.0	0.0	0.0	**6.5**	**1.9**
NW	303.75 - 326.25	3.8	6.0	0.5	0.0	0.0	0.0	**10.3**	**1.9**
NNW	326.25 - 348.75	1.1	3.5	3.4	0.0	0.0	0.0	**7.9**	**2.9**
	CALM							**0.0**	
	TOTAL	**25.4**	**45.7**	**27.2**	**1.7**	**0.0**	**0.0**	**100.0**	**2.5**

TOTAL NUMBER OF OBSERVATIONS = 744

POSSIBLE NUMBER OF OBSERVATIONS = 744

DATA RECOVERY = 100.0%

DRAFT

CSX AQ5

Joint Frequency Distribution for August, 2023

Percentage frequency of occurence of hourly wind velocities for all stability classes

Wind Direction		Wind Speed (mps) 0.5 - 1.54	1.54 - 3.09	3.09 - 5.14	5.14 - 8.23	8.23 - 10.8	OVER 10.8	TOTAL	AVG SPEED
N	348.75 - 11.25	0.8	2.6	1.3	0.1	0.0	0.0	**4.8**	**2.7**
NNE	11.25 - 33.75	0.7	1.7	5.9	0.1	0.0	0.0	**8.5**	**3.4**
NE	33.75 - 56.25	1.2	1.3	0.0	0.0	0.0	0.0	**2.6**	**1.6**
ENE	56.25 - 78.75	0.3	1.9	0.0	0.0	0.0	0.0	**2.2**	**1.9**
E	78.75 - 101.25	0.3	1.1	0.3	0.0	0.0	0.0	**1.6**	**2.3**
ESE	101.25 - 123.75	0.0	0.9	2.0	0.1	0.0	0.0	**3.1**	**3.6**
SE	123.75 - 146.25	0.1	2.4	5.0	0.1	0.0	0.0	**7.7**	**3.6**
SSE	146.25 - 168.75	0.4	2.3	4.0	0.5	0.0	0.0	**7.3**	**3.5**
S	168.75 - 191.25	0.3	3.1	5.5	0.3	0.0	0.0	**9.1**	**3.4**
SSW	191.25 - 213.75	1.2	7.0	2.3	0.0	0.0	0.0	**10.5**	**2.4**
SW	213.75 - 236.25	1.5	4.8	0.9	0.0	0.0	0.0	**7.3**	**2.1**
WSW	236.25 - 258.75	2.3	1.2	0.1	0.0	0.0	0.0	**3.6**	**1.5**
W	258.75 - 281.25	1.9	3.1	0.7	0.1	0.0	0.0	**5.8**	**2.1**
WNW	281.25 - 303.75	1.7	4.0	3.0	0.1	0.0	0.0	**8.9**	**2.5**
NW	303.75 - 326.25	2.4	3.2	2.2	0.8	0.0	0.0	**8.6**	**2.8**
NNW	326.25 - 348.75	1.5	1.9	2.8	2.3	0.0	0.0	**8.5**	**3.5**
	CALM							**0.1**	
	TOTAL	**16.5**	**42.6**	**36.0**	**4.7**	**0.0**	**0.0**	**100.0**	**2.8**

TOTAL NUMBER OF OBSERVATIONS = 744

POSSIBLE NUMBER OF OBSERVATIONS = 744

DATA RECOVERY = 100.0%

DRAFT

CSX AQ5

Joint Frequency Distribution for September, 2023

Percentage frequency of occurence of hourly wind velocities for all stability classes

Wind Direction		Wind Speed (mps) 0.5 - 1.54	1.54 - 3.09	3.09 - 5.14	5.14 - 8.23	8.23 - 10.8	OVER 10.8	TOTAL	AVG SPEED
N	348.75 - 11.25	1.4	8.2	5.6	0.0	0.0	0.0	**15.2**	**2.9**
NNE	11.25 - 33.75	0.8	6.1	4.6	0.0	0.0	0.0	**11.6**	**2.9**
NE	33.75 - 56.25	0.8	4.2	1.8	0.0	0.0	0.0	**6.8**	**2.7**
ENE	56.25 - 78.75	0.8	1.4	2.1	2.2	0.0	0.0	**6.5**	**4.0**
E	78.75 - 101.25	0.4	0.6	2.1	0.8	0.0	0.0	**3.9**	**3.8**
ESE	101.25 - 123.75	0.4	1.8	0.8	0.4	0.0	0.0	**3.5**	**2.8**
SE	123.75 - 146.25	0.1	2.8	4.3	0.4	0.0	0.0	**7.7**	**3.4**
SSE	146.25 - 168.75	0.3	2.1	1.9	0.1	0.0	0.0	**4.5**	**2.9**
S	168.75 - 191.25	0.3	1.1	0.7	0.1	0.0	0.0	**2.2**	**2.9**
SSW	191.25 - 213.75	0.8	1.4	0.7	0.0	0.0	0.0	**2.9**	**2.2**
SW	213.75 - 236.25	1.8	1.3	0.1	0.0	0.0	0.0	**3.2**	**1.6**
WSW	236.25 - 258.75	1.5	0.3	0.1	0.0	0.0	0.0	**1.9**	**1.5**
W	258.75 - 281.25	1.8	0.4	0.0	0.0	0.0	0.0	**2.2**	**1.2**
WNW	281.25 - 303.75	2.6	1.4	0.7	0.0	0.0	0.0	**4.7**	**1.7**
NW	303.75 - 326.25	3.1	5.4	1.4	0.0	0.0	0.0	**9.9**	**2.0**
NNW	326.25 - 348.75	1.4	5.2	6.0	0.6	0.0	0.0	**13.1**	**3.1**
	CALM							**0.1**	
	TOTAL	**18.5**	**43.6**	**33.0**	**4.7**	**0.0**	**0.0**	**100.0**	**2.8**

TOTAL NUMBER OF OBSERVATIONS = 718

POSSIBLE NUMBER OF OBSERVATIONS = 720

DATA RECOVERY = 99.7%

DRAFT

APPENDIX C. HOURLY TEMPERATURE DATA FOR THIRD QUARTER 2023

DRAFT

CSX AQ5

TEMPERATURE in Deg C for JULY, 2023

Hr Beg Hr End Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	22.3	22.6	22.5	22.4	22.7	22.7	22.8	22.9	23.1	23.3	23.7	23.9	24.7	25.4	26.0	26.7	26.9	27.7	27.1	26.2	25.2	24.6	24.2	23.7	**24.3**	**27.7**	**22.3**
2	23.8	23.9	23.8	23.6	23.5	23.5	23.7	24.4	25.0	25.8	26.3	25.9	26.6	27.0	27.5	28.9	30.0	26.3	25.3	25.3	24.8	24.6	24.4	24.0	**25.3**	**30.0**	**23.5**
3	24.2	24.1	24.2	24.1	24.0	24.2	25.1	25.7	27.1	28.2	29.4	30.5	31.5	31.1	32.5	31.9	30.8	30.9	29.5	28.3	27.0	25.0	24.3	23.8	**27.4**	**32.5**	**23.8**
4	23.7	23.8	23.6	23.1	22.6	22.8	24.1	25.6	27.3	28.5	29.6	27.4	30.3	31.3	30.8	28.9	28.3	28.1	28.1	27.5	27.1	26.6	25.9	25.5	**26.7**	**31.3**	**22.6**
5	24.7	24.8	24.5	24.0	23.9	24.4	25.7	27.5	28.4	28.4	29.2	29.7	30.0	30.3	30.1	28.7	30.7	30.1	30.1	29.3	28.7	27.7	26.9	26.8	**27.7**	**30.7**	**23.9**
6	26.3	25.6	25.3	25.1	24.8	25.1	26.4	27.2	27.8	28.5	29.3	30.0	28.4	28.6	28.8	30.3	30.5	30.2	29.2	29.2	28.4	27.7	26.8	26.1	**27.7**	**30.5**	**24.8**
7	25.2	24.7	24.5	24.2	23.9	24.2	26.1	26.6	27.4	27.7	27.9	27.7	25.6	27.8	29.1	29.8	29.7	28.5	27.3	26.8	26.7	26.5	26.7	26.4	**26.7**	**29.8**	**23.9**
8	25.7	25.3	25.1	24.4	24.4	25.0	25.5	26.5	27.2	28.1	28.4	28.9	29.8	30.0	30.3	29.4	29.2	28.9	28.4	27.9	26.9	26.1	25.3	24.7	**27.1**	**30.3**	**24.4**
9	24.7	24.4	24.6	24.2	24.1	24.3	25.0	25.6	26.7	27.3	27.7	28.4	28.7	25.4	23.1	21.8	23.0	22.9	22.9	22.3	22.0	21.9	21.6	21.5	**24.3**	**28.7**	**21.5**
10	21.3	21.0	20.5	20.0	20.2	20.3	21.0	21.4	22.4	24.3	26.4	27.7	29.5	30.0	30.3	30.4	30.6	30.5	29.9	28.6	26.9	25.6	24.4	23.6	**25.3**	**30.6**	**20.0**
11	22.7	22.2	22.1	21.6	21.1	21.4	23.1	25.4	27.2	28.2	28.4	29.8	30.9	31.4	32.0	32.1	32.0	31.7	31.2	29.9	27.6	25.9	25.6	25.6	**27.0**	**32.1**	**21.1**
12	24.7	23.5	23.2	22.3	21.6	22.2	24.1	26.3	28.9	30.4	31.1	31.5	31.9	32.2	32.0	33.2	32.1	30.8	30.2	29.3	28.1	27.2	26.5	25.9	**27.9**	**33.2**	**21.6**
13	25.0	24.5	23.9	23.9	23.9	23.9	24.6	26.6	28.0	29.7	31.5	32.1	32.7	33.7	34.1	34.3	33.7	33.1	32.5	31.6	30.8	30.4	29.8	29.5	**29.3**	**34.3**	**23.9**
14	28.7	27.9	26.8	26.2	25.7	25.1	25.2	25.8	27.0	28.6	30.0	30.6	29.6	29.2	29.7	29.4	28.6	28.4	24.6	25.0	24.5	24.0	23.4	23.0	**27.0**	**30.6**	**23.0**
15	22.9	23.2	22.9	22.8	22.6	23.2	25.3	26.3	26.9	27.8	27.9	28.8	29.8	30.4	30.9	31.0	30.9	30.6	29.7	29.4	29.1	28.6	27.3	24.8	**27.2**	**31.0**	**22.6**
16	24.2	23.8	23.9	23.8	24.1	24.3	24.4	24.8	25.0	25.9	26.1	26.1	26.7	27.5	27.0	27.2	27.8	27.6	27.4	27.1	26.5	26.0	25.5	25.5	**25.8**	**27.8**	**23.8**
17	24.8	24.4	24.6	24.0	23.2	23.3	24.4	26.0	27.7	29.0	30.1	30.2	31.1	30.4	30.8	31.6	30.7	30.1	29.6	28.6	27.6	26.8	26.1	25.2	**27.5**	**31.6**	**23.2**
18	25.1	25.0	24.5	24.1	24.0	23.7	24.7	26.6	28.0	29.2	30.4	30.7	30.9	31.4	31.6	31.2	31.0	30.8	30.2	29.3	28.6	27.0	26.2	25.8	**27.9**	**31.6**	**23.7**
19	25.5	25.0	23.8	22.7	22.5	22.4	22.5	22.5	22.7	23.5	24.8	25.6	26.3	26.9	27.2	29.0	28.6	27.5	27.0	26.7	26.5	26.2	25.3	22.5	**25.1**	**29.0**	**22.4**
20	22.9	22.6	22.7	22.5	22.4	22.9	23.6	25.5	26.5	26.5	27.2	27.6	28.0	28.5	28.8	29.2	29.4	29.6	29.3	28.7	27.8	26.5	25.7	25.2	**26.2**	**29.6**	**22.4**
21	24.9	25.1	23.7	20.1	20.0	21.2	20.5	21.8	23.7	25.8	27.5	28.5	28.8	29.4	30.4	30.3	29.3	29.0	28.5	27.7	26.7	25.9	25.0	24.3	**25.8**	**30.4**	**20.0**
22	23.7	23.1	22.6	22.2	22.1	21.9	22.4	23.3	24.7	25.8	26.4	27.2	28.0	28.9	28.8	29.1	27.8	27.4	27.2	26.7	25.0	24.1	23.6	23.5	**25.2**	**29.1**	**21.9**
23	22.8	21.4	21.0	20.6	20.2	20.2	22.1	24.0	25.7	27.1	28.0	28.5	28.6	28.7	28.7	29.1	29.2	29.3	28.8	27.8	26.9	26.0	25.2	24.9	**25.6**	**29.3**	**20.2**
24	24.4	24.1	23.9	24.0	21.3	20.4	20.6	21.0	22.6	24.2	25.6	26.7	27.4	27.8	28.1	28.4	28.5	28.4	27.7	26.8	25.7	25.2	24.7	24.2	**25.1**	**28.5**	**20.4**
25	23.8	23.5	23.2	23.1	23.0	23.1	23.5	24.0	25.3	26.3	27.3	26.1	24.3	24.4	26.1	27.6	27.8	28.0	26.2	25.6	25.3	25.2	24.2	23.6	**25.0**	**28.0**	**23.0**
26	23.4	22.8	22.3	22.1	21.6	21.4	22.6	24.5	25.9	26.6	27.2	27.5	27.9	28.5	29.3	30.0	29.9	29.4	29.1	28.1	27.4	27.1	26.8	26.1	**26.1**	**30.0**	**21.4**
27	25.6	25.3	25.1	24.9	24.8	25.0	25.8	26.6	28.5	30.1	31.4	32.3	33.4	34.2	34.8	35.2	35.1	33.8	32.8	30.6	29.4	28.5	28.1	27.6	**29.5**	**35.2**	**24.8**
28	26.8	26.6	26.5	26.6	26.1	26.1	26.8	28.5	30.4	31.6	32.8	32.7	31.3	31.3	31.7	32.0	32.9	32.5	29.8	24.2	24.1	24.6	24.5	24.4	**28.5**	**32.9**	**24.1**
29	24.1	24.0	23.8	23.7	23.5	23.5	24.5	26.3	27.0	28.5	30.7	31.4	32.9	34.0	34.6	32.4	26.0	24.8	27.2	28.1	27.5	26.8	25.7	25.1	**27.3**	**34.6**	**23.5**
30	25.0	23.8	22.8	22.2	21.7	21.4	22.1	23.1	23.9	25.2	26.1	26.6	27.8	28.9	29.5	29.8	29.7	29.3	28.3	26.2	25.2	24.1	23.4	23.6	**25.4**	**29.8**	**21.4**
31	23.7	23.4	22.8	21.6	21.2	21.3	21.6	22.4	24.5	26.0	27.3	28.0	28.7	29.1	29.3	29.7	29.5	28.9	27.9	26.7	25.9	24.7	23.6	22.6	**25.4**	**29.7**	**21.2**
MEAN	**24.4**	**24.0**	**23.7**	**23.2**	**22.9**	**23.0**	**23.9**	**25.0**	**26.2**	**27.3**	**28.2**	**28.7**	**29.1**	**29.5**	**29.8**	**30.0**	**29.7**	**29.2**	**28.5**	**27.6**	**26.8**	**26.0**	**25.4**	**24.8**	**26.5**		
MAX	**28.7**	**27.9**	**26.8**	**26.6**	**26.1**	**26.1**	**26.8**	**28.5**	**30.4**	**31.6**	**32.8**	**32.7**	**33.4**	**34.2**	**34.8**	**35.2**	**35.1**	**33.8**	**32.8**	**31.6**	**30.8**	**30.4**	**29.8**	**29.5**		**35.2**	
MIN	**21.3**	**21.0**	**20.5**	**20.0**	**20.0**	**20.2**	**20.5**	**21.0**	**22.4**	**23.3**	**23.7**	**23.9**	**24.3**	**24.4**	**23.1**	**21.8**	**23.0**	**22.9**	**22.9**	**22.3**	**22.0**	**21.9**	**21.6**	**21.5**			**20.0**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 744 DATA RECOVERY RATE = 100.0%

MONTHLY MEAN = 26.5 Deg C

MAXIMUM TEMPERATURE = 35.2 Deg C DATE OF OCCURRENCE = 7/27 AT 1600 MAXIMUM DAILY MEAN = 29.5 Deg C DATE OF OCCURRENCE = 7/27

MINIMUM TEMPERATURE = 20.0 Deg C DATE OF OCCURRENCE = 7/10 AT 0400 MINUMUM DAILY MEAN = 24.3 Deg C DATE OF OCCURRENCE = 7/1

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

DRAFT

CSX AQ5

TEMPERATURE in Deg C for AUGUST, 2023

Hr Beg Hr End Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	21.9	22.1	21.5	21.2	20.8	20.1	20.9	22.0	22.9	24.0	24.8	25.7	26.2	26.9	26.8	27.0	27.0	26.4	26.0	24.9	24.4	23.0	21.5	21.7	**23.7**	**27.0**	**20.1**
2	20.5	20.3	19.2	18.6	18.2	18.4	20.2	22.3	23.4	24.0	24.4	25.1	25.7	25.8	25.7	25.9	26.1	25.9	25.7	25.2	24.6	24.0	23.8	22.7	**23.2**	**26.1**	**18.2**
3	22.5	22.5	21.9	21.0	20.6	20.4	21.1	21.9	22.7	23.4	24.4	25.0	25.2	25.2	25.2	25.3	24.7	23.4	22.6	21.9	21.5	21.0	20.4	20.0	**22.7**	**25.3**	**20.0**
4	20.1	19.9	19.9	20.0	19.9	20.0	20.4	20.8	21.4	22.3	23.6	24.2	24.7	24.7	24.8	25.2	25.1	25.0	25.2	24.7	24.3	23.6	23.3	22.4	**22.7**	**25.2**	**19.9**
5	22.5	22.2	21.9	22.4	21.9	21.7	22.1	23.2	24.3	25.0	26.3	25.9	26.3	27.1	27.0	27.2	27.8	27.8	27.4	26.9	26.5	25.8	25.1	24.8	**25.0**	**27.8**	**21.7**
6	24.1	23.6	23.2	23.0	22.6	22.4	24.3	25.3	26.3	27.2	27.8	28.3	28.8	29.0	29.4	28.9	28.7	28.1	27.0	24.7	24.7	24.6	23.9	23.6	**25.8**	**29.4**	**22.4**
7	23.4	23.5	23.4	23.3	23.3	23.5	24.0	24.8	24.7	25.5	26.0	27.0	28.3	29.2	29.5	29.9	27.3	20.4	20.8	21.3	21.3	21.8	22.1	21.7	**24.4**	**29.9**	**20.4**
8	21.5	21.3	21.1	21.2	21.5	21.9	22.2	22.9	23.7	24.6	25.3	26.0	27.0	26.8	28.0	28.9	28.9	29.7	28.7	27.3	25.3	25.4	24.5	23.7	**24.9**	**29.7**	**21.1**
9	23.0	22.7	22.0	21.4	21.1	20.7	21.4	23.1	24.6	26.3	27.7	28.7	29.2	29.4	30.1	30.4	30.4	30.1	28.3	27.2	26.6	25.7	25.1	24.5	**25.8**	**30.4**	**20.7**
10	24.1	23.6	23.5	23.2	23.0	22.6	22.9	23.8	24.4	24.8	24.8	25.3	26.2	27.1	27.6	27.5	27.0	26.7	26.3	25.5	24.9	24.4	23.6	23.1	**24.8**	**27.6**	**22.6**
11	22.6	22.7	22.4	22.2	22.1	21.4	22.6	23.9	25.5	26.8	27.9	28.8	29.3	29.8	30.6	30.4	30.5	30.4	29.5	27.8	26.8	25.9	25.3	24.9	**26.3**	**30.6**	**21.4**
12	24.9	24.6	24.0	23.3	22.8	22.6	23.4	24.9	26.5	27.5	28.1	28.5	29.8	32.0	32.5	32.0	31.3	30.5	30.0	29.0	28.0	27.7	27.8	27.4	**27.5**	**32.5**	**22.6**
13	27.0	26.7	26.4	25.8	25.7	25.3	25.8	27.1	28.2	29.4	30.1	31.0	32.0	32.2	32.5	32.7	32.5	31.9	30.9	29.7	28.6	26.7	25.6	24.8	**28.7**	**32.7**	**24.8**
14	23.8	23.5	23.6	22.9	22.8	22.7	24.1	27.0	27.1	28.0	28.3	29.5	30.1	30.4	30.3	30.1	27.4	24.2	25.4	25.7	25.4	25.3	25.4	25.6	**26.2**	**30.4**	**22.7**
15	25.5	25.0	24.9	24.9	24.9	25.0	25.3	26.5	28.4	29.6	30.9	32.0	32.0	32.2	29.1	25.7	26.7	26.8	26.8	26.9	26.5	25.9	25.5	25.7	**27.2**	**32.2**	**24.9**
16	26.1	25.4	24.8	24.1	23.5	23.0	23.4	24.5	26.2	27.7	28.5	29.1	29.6	29.7	29.7	30.0	29.8	29.4	28.8	27.7	26.6	24.8	24.1	23.8	**26.7**	**30.0**	**23.0**
17	23.0	22.4	22.1	21.7	22.1	22.6	23.7	25.6	26.5	27.7	28.7	29.3	29.3	29.3	29.2	30.3	30.4	30.0	29.3	28.5	27.8	27.3	27.2	27.2	**26.7**	**30.4**	**21.7**
18	26.4	25.4	24.4	24.0	23.3	23.1	24.3	24.6	25.1	26.4	26.9	27.8	27.8	27.6	28.5	28.9	28.8	27.9	26.5	25.1	23.7	22.8	22.0	21.2	**25.5**	**28.9**	**21.2**
19	20.4	19.6	18.5	17.7	17.2	17.2	17.8	19.6	22.1	23.1	24.4	25.0	25.8	26.4	27.0	27.6	27.7	27.5	26.7	25.3	23.4	22.5	21.6	20.6	**22.7**	**27.7**	**17.2**
20	19.6	18.9	18.6	17.9	17.9	18.0	19.7	22.0	23.7	25.5	27.4	27.5	27.4	27.6	28.9	30.8	30.7	29.2	28.4	27.1	26.1	25.4	25.1	24.3	**24.5**	**30.8**	**17.9**
21	24.2	23.7	23.1	22.7	22.4	22.3	22.6	24.3	26.2	28.4	30.1	31.4	31.8	32.1	31.2	30.5	30.5	30.0	29.8	28.9	27.8	27.1	26.6	26.1	**27.2**	**32.1**	**22.3**
22	25.8	25.6	26.1	25.0	24.3	23.7	23.1	23.0	23.2	23.8	24.9	25.9	26.5	27.4	27.9	28.0	27.7	27.0	26.1	25.2	24.6	23.8	23.1	21.7	**25.1**	**28.0**	**21.7**
23	20.3	19.5	19.1	18.6	18.2	17.7	19.0	21.8	22.9	23.1	23.8	25.0	25.8	26.0	26.0	25.5	25.5	25.5	25.2	25.0	25.1	24.9	24.5	23.7	**23.0**	**26.0**	**17.7**
24	23.5	23.1	22.7	22.4	22.3	22.1	22.1	22.4	22.8	23.9	24.3	23.4	24.5	25.7	26.0	26.4	26.4	26.4	26.0	25.6	25.3	24.8	24.2	23.9	**24.2**	**26.4**	**22.1**
25	23.8	23.4	23.2	23.1	23.1	23.2	23.6	23.8	25.0	25.6	26.8	27.8	27.4	28.7	28.5	29.3	29.1	28.7	28.2	28.0	26.9	26.1	26.0	25.7	**26.0**	**29.3**	**23.1**
26	25.3	25.0	24.6	24.3	24.6	24.8	25.5	26.4	27.8	28.4	29.3	30.6	31.4	30.9	29.3	29.4	29.4	29.8	30.1	28.9	27.8	26.6	26.2	25.5	**27.6**	**31.4**	**24.3**
27	24.8	24.4	23.9	23.6	23.3	23.0	23.8	25.1	25.8	26.7	26.3	26.9	27.5	27.8	28.2	28.3	28.3	28.3	28.2	27.7	26.9	26.2	25.6	25.2	**26.1**	**28.3**	**23.0**
28	24.8	25.0	23.8	23.3	22.8	22.6	23.0	23.6	24.1	24.2	24.6	25.3	25.4	25.5	25.3	25.0	24.9	24.6	24.4	24.0	23.8	23.6	23.5	23.5	**24.2**	**25.5**	**22.6**
29	23.3	23.1	22.7	22.6	22.6	22.5	22.4	22.7	23.3	23.5	24.5	25.5	26.0	26.1	26.2	26.0	25.9	25.8	25.7	25.7	25.5	25.3	24.9	24.6	**24.4**	**26.2**	**22.4**
30	24.4	24.1	23.9	23.6	23.7	23.7	23.7	24.6	26.2	27.0	27.9	29.1	29.5	30.1	30.1	30.1	29.7	28.4	27.2	26.2	25.4	24.4	23.5	22.6	**26.2**	**30.1**	**22.6**
31	21.9	21.3	20.6	20.1	19.7	19.4	19.3	19.6	21.0	22.0	22.7	23.6	25.1	26.3	26.8	27.1	26.9	26.2	25.0	24.2	23.3	22.6	22.0	21.2	**22.8**	**27.1**	**19.3**
MEAN	**23.4**	**23.0**	**22.6**	**22.2**	**22.0**	**21.9**	**22.5**	**23.6**	**24.7**	**25.7**	**26.5**	**27.2**	**27.8**	**28.2**	**28.3**	**28.4**	**28.2**	**27.5**	**27.0**	**26.2**	**25.5**	**24.8**	**24.3**	**23.8**	**25.2**			
MAX	**27.0**	**26.7**	**26.4**	**25.8**	**25.7**	**25.3**	**25.8**	**27.1**	**28.4**	**29.6**	**30.9**	**32.0**	**32.0**	**32.2**	**32.5**	**32.7**	**32.5**	**31.9**	**30.9**	**29.7**	**28.6**	**27.7**	**27.8**	**27.4**		**32.7**	
MIN	**19.6**	**18.9**	**18.5**	**17.7**	**17.2**	**17.2**	**17.8**	**19.6**	**21.0**	**22.0**	**22.7**	**23.4**	**24.5**	**24.7**	**24.8**	**25.0**	**24.7**	**20.4**	**20.8**	**21.3**	**21.3**	**21.0**	**20.4**	**20.0**			**17.2**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 744 DATA RECOVERY RATE = 100.0%

MONTHLY MEAN = 25.2 Deg C

MAXIMUM TEMPERATURE = 32.7 Deg C DATE OF OCCURRENCE = 8/13 AT 1600 MAXIMUM DAILY MEAN = 28.7 Deg C DATE OF OCCURRENCE = 8/13

MINIMUM TEMPERATURE = 17.2 Deg C DATE OF OCCURRENCE = 8/19 AT 0500 MINUMUM DAILY MEAN = 22.7 Deg C DATE OF OCCURRENCE = 8/3

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

DRAFT

CSX AQ5

TEMPERATURE in Deg C for SEPTEMBER, 2023

Hr Beg Hr End Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	20.3	19.7	18.8	18.3	17.9	17.7	18.0	19.2	20.7	21.6	22.0	22.3	22.8	23.2	23.7	24.0	24.1	24.1	24.0	22.9	21.5	21.2	20.6	19.8	**21.2**	**24.1**	**17.7**
2	18.3	17.8	17.3	17.1	16.3	16.1	17.1	19.6	21.7	23.0	23.8	25.1	24.8	25.1	25.7	26.0	26.4	26.1	25.2	24.2	23.0	22.4	21.7	21.6	**21.9**	**26.4**	**16.1**
3	21.5	21.3	20.9	20.2	19.7	19.4	20.5	23.2	26.2	29.0	30.9	31.7	32.7	33.7	34.5	34.8	34.9	34.3	33.0	31.3	29.1	27.6	26.9	26.7	**27.7**	**34.9**	**19.4**
4	25.8	25.7	25.1	23.9	23.6	24.6	25.3	26.7	28.1	30.7	31.7	32.9	34.2	34.7	35.7	36.0	35.9	36.0	34.7	33.2	31.8	30.8	30.5	30.0	**30.3**	**36.0**	**23.6**
5	29.5	29.1	28.6	28.3	28.0	27.5	27.3	28.1	29.5	31.0	31.9	33.0	34.0	34.8	34.8	32.8	32.2	31.5	31.5	32.3	31.5	30.8	29.9	28.8	**30.7**	**34.8**	**27.3**
6	27.9	27.4	26.8	26.1	25.6	25.5	26.0	27.7	29.3	29.4	30.1	30.9	32.1	32.1	32.1	31.8	31.7	32.3	31.7	30.5	29.4	28.7	28.1	27.7	**29.2**	**32.3**	**25.5**
7	26.7	26.3	26.0	25.7	25.3	24.9	25.2	26.7	27.6	29.1	30.0	30.6	31.4	33.6	33.7	32.8	31.4	29.8	28.8	27.5	26.5	26.3	26.2	26.1	**28.3**	**33.7**	**24.9**
8	25.8	25.4	24.4	22.5	22.8	22.6	22.8	24.6	25.4	25.9	27.3	28.1	28.4	29.7	30.3	30.1	30.4	30.3	29.9	26.4	24.9	25.2	23.9	23.7	**26.3**	**30.4**	**22.5**
9	23.0	22.6	22.1	21.8	21.1	22.3	22.6	23.9	24.5	25.2	26.0	26.7	27.5	27.3	25.5	24.3	23.8	22.0	21.3	21.4	21.4	21.6	21.9	21.8	**23.4**	**27.5**	**21.1**
10	21.7	21.7	21.9	22.2	22.3	22.8	22.7	22.6	23.0	23.5	23.8	25.2	25.9	25.6	25.3	24.7	25.6	25.9	25.4	25.3	24.5	24.0	23.6	23.3	**23.9**	**25.9**	**21.7**
11	22.9	22.9	22.6	22.5	22.4	21.8	21.6	22.2	23.3	23.9	24.6	26.0	26.9	27.4	26.2	26.9	28.1	27.7	26.9	25.9	25.2	24.4	23.5	22.8	**24.5**	**28.1**	**21.6**
12	22.4	21.9	21.3	20.8	20.8	20.9	21.4	22.8	24.6	24.8	26.0	26.1	26.9	27.3	27.7	27.8	28.0	27.8	27.3	27.0	26.7	25.6	22.7	21.1	**24.6**	**28.0**	**20.8**
13	21.4	21.6	21.1	20.7	20.7	20.5	21.0	21.6	22.2	23.2	24.3	25.8	26.5	26.8	27.3	27.8	27.8	26.3	25.7	24.6	24.6	24.2	23.7	23.6	**23.9**	**27.8**	**20.5**
14	23.1	22.3	21.8	21.0	20.2	19.2	19.1	19.7	21.1	22.4	23.6	24.6	25.2	25.9	25.9	25.8	25.3	24.4	23.3	22.2	21.2	20.5	19.7	18.8	**22.3**	**25.9**	**18.8**
15	17.8	17.1	16.3	15.8	15.3	14.9	15.0	16.1	17.5	18.9	20.3	21.2	22.3	23.5	24.2	24.6	24.3	23.7	22.6	21.9	21.1	19.6	18.8	18.3	**19.6**	**24.6**	**14.9**
16	18.0	17.1	16.1	15.7	15.3	15.0	15.3	17.1	18.9	20.4	21.9	22.8	24.3	25.3	26.2	26.7	26.8	26.3	24.1	22.1	20.2	19.4	18.0	17.1	**20.4**	**26.8**	**15.0**
17	16.8	16.0	15.8	15.4	15.1	15.1	16.4	19.7	21.5	22.5	23.3	22.1	22.5	23.5	24.0	24.0	24.0	21.0	18.8	19.0	18.8	18.8	18.4	18.1	**19.6**	**24.0**	**15.1**
18	17.9	17.8	17.9	17.9	17.7	17.5	17.9	17.9	17.9	19.1	20.3	21.5	22.6	23.6	24.0	24.7	24.8	24.2	22.9	21.6	20.5	19.7	18.7	17.8	**20.3**	**24.8**	**17.5**
19	17.5	17.3	16.9	16.7	16.4	15.8	16.0	17.3	19.0	20.3	22.0	23.1	23.5	23.6	23.9	24.0	24.0	23.3	21.9	20.7	19.3	18.9	18.1	16.9	**19.9**	**24.0**	**15.8**
20	16.2	14.9	14.6	14.2	14.0	13.6	14.0	16.9	19.5	21.5	21.7	22.7	22.9	23.0	23.6	23.9	23.7	23.4	22.8	20.9	20.4	19.8	18.4	17.7	**19.3**	**23.9**	**13.6**
21	16.8	16.2	16.0	15.6	15.1	14.8	15.5	18.6	20.5	21.4	21.5	22.4	22.7	22.9	23.0	23.0	23.2	23.1	22.2	21.2	21.1	20.1	19.3	19.1	**19.8**	**23.2**	**14.8**
22	18.6	17.5	17.0	16.6	16.5	16.4	16.3	17.2	18.5	19.7	20.9	21.3	21.8	22.0	22.2	21.7	21.2	20.5	20.0	19.5	18.9	18.4	17.6	17.2	**19.1**	**22.2**	**16.3**
23	16.9	16.3	16.2	15.6	15.0	14.6	14.4	14.6	15.1	15.8	16.2	17.1	17.6	17.8	17.4	17.4	16.9	16.8	16.9	16.9	17.3	17.4	17.7	17.5	**16.5**	**17.8**	**14.4**
24	17.6	17.9	18.1	18.3	18.6	18.9	19.0	18.5	19.1	19.3	19.0	18.5	18.5	18.7	18.8	19.3	19.8	19.6	19.5	19.2	18.9	19.0	18.8	18.6	**18.8**	**19.8**	**17.6**
25	18.4	18.1	17.5	17.2	17.0	16.8	17.1	17.5	17.9	18.8	19.2	19.8	20.2	20.0	19.6	18.8	18.3	17.6	17.0	16.5	16.0	15.8	16.1	16.0	**17.8**	**20.2**	**15.8**
26	15.8	15.6	15.2	15.0	14.7	14.5	14.5	14.6	14.8	---	---	17.3	17.8	18.1	18.0	16.8	16.4	16.0	16.1	15.5	15.4	15.6	15.7	15.3	**15.9**	**18.1**	**14.5**
27	15.2	15.2	15.1	15.0	14.8	14.7	14.6	14.8	15.1	15.9	16.7	17.6	18.3	18.6	18.5	18.7	18.4	18.0	17.5	17.2	16.8	16.2	15.7	14.7	**16.4**	**18.7**	**14.6**
28	14.3	14.0	13.8	13.9	13.9	13.8	13.8	14.6	16.4	18.0	18.6	18.6	19.2	19.3	19.5	19.7	19.0	18.5	17.8	17.0	17.0	17.0	17.0	16.9	**16.7**	**19.7**	**13.8**
29	16.6	16.3	16.0	16.1	16.4	16.4	16.4	16.3	16.8	18.0	18.8	19.1	19.3	19.3	19.8	19.9	19.5	19.2	18.4	18.9	19.1	19.1	18.9	18.5	**18.0**	**19.9**	**16.0**
30	18.0	17.7	17.4	17.4	17.0	17.0	17.1	17.8	18.5	18.9	19.6	20.7	20.6	21.8	23.0	22.9	22.3	20.7	20.4	20.3	20.0	19.5	19.0	18.8	**19.4**	**23.0**	**17.0**
MEAN	**20.1**	**19.7**	**19.3**	**18.9**	**18.7**	**18.5**	**18.8**	**19.9**	**21.1**	**22.5**	**23.3**	**23.8**	**24.4**	**24.9**	**25.1**	**25.1**	**24.9**	**24.3**	**23.6**	**22.8**	**22.1**	**21.6**	**21.0**	**20.5**	**21.9**		
MAX	**29.5**	**29.1**	**28.6**	**28.3**	**28.0**	**27.5**	**27.3**	**28.1**	**29.5**	**31.0**	**31.9**	**33.0**	**34.2**	**34.8**	**35.7**	**36.0**	**35.9**	**36.0**	**34.7**	**33.2**	**31.8**	**30.8**	**30.5**	**30.0**		**36.0**	
MIN	**14.3**	**14.0**	**13.8**	**13.9**	**13.9**	**13.6**	**13.8**	**14.6**	**14.8**	**15.8**	**16.2**	**17.1**	**17.6**	**17.8**	**17.4**	**16.8**	**16.4**	**16.0**	**16.1**	**15.5**	**15.4**	**15.6**	**15.7**	**14.7**			**13.6**

POSSIBLE NUMBER OF OBSERVATIONS = 720 ACTUAL NUMBER OF OBSERVATIONS = 718 DATA RECOVERY RATE = 99.7%

MONTHLY MEAN = 21.9 Deg C

MAXIMUM TEMPERATURE = 36.0 Deg C DATE OF OCCURRENCE = 9/4 AT 1600 MAXIMUM DAILY MEAN = 30.7 Deg C DATE OF OCCURRENCE = 9/5

MINIMUM TEMPERATURE = 13.6 Deg C DATE OF OCCURRENCE = 9/20 AT 0600 MINUMUM DAILY MEAN = 15.9 Deg C DATE OF OCCURRENCE = 9/26

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

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APPENDIX D. HOURLY RELATIVE HUMIDITY DATA FOR THIRD QUARTER 2023

DRAFT

CSX AQ5

RELATIVE HUMIDITY in % for JULY, 2023

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	93	90	89	89	88	88	85	87	87	85	86	87	85	83	83	82	81	74	75	78	83	85	87	91	**85**	**93**	**74**
2	91	90	91	92	92	92	91	88	86	85	85	87	85	85	87	80	75	85	86	88	89	91	89	93	**88**	**93**	**75**
3	94	95	94	95	93	91	87	89	76	66	64	59	52	59	48	54	63	60	65	68	78	89	94	95	**76**	**95**	**48**
4	96	97	97	97	96	95	91	83	75	69	63	76	61	58	61	72	72	71	69	72	74	77	80	81	**78**	**97**	**58**
5	85	82	83	85	86	84	79	72	69	71	68	67	63	60	59	66	61	66	67	71	70	73	78	79	**73**	**86**	**59**
6	80	83	86	89	93	93	88	86	82	77	71	67	72	69	73	66	62	65	76	69	73	75	78	79	**77**	**93**	**62**
7	84	87	88	91	93	92	86	84	82	85	84	79	89	82	73	68	70	78	73	74	75	80	84	88	**82**	**93**	**68**
8	91	91	89	92	93	92	89	85	81	76	75	73	71	69	68	77	76	74	73	73	72	76	81	83	**80**	**93**	**68**
9	86	88	88	90	92	92	90	89	84	81	77	74	73	83	90	95	90	87	84	84	85	85	85	86	**86**	**95**	**73**
10	87	87	89	91	91	91	89	87	85	76	68	63	54	52	49	48	46	45	45	49	57	62	66	68	**69**	**91**	**45**
11	73	76	75	77	79	79	73	66	58	53	51	43	38	37	36	35	35	34	36	40	52	66	63	59	**55**	**79**	**34**
12	63	68	71	74	79	74	67	61	52	46	41	38	36	38	41	34	44	51	54	58	64	68	69	70	**57**	**79**	**34**
13	72	74	77	78	79	81	79	73	67	60	51	48	45	43	41	41	43	47	50	55	59	62	63	62	**60**	**81**	**41**
14	62	60	64	67	67	69	70	69	65	58	54	54	65	71	69	69	73	73	88	88	88	89	87	87	**71**	**89**	**54**
15	88	87	90	90	91	90	84	83	83	82	86	81	74	71	68	66	68	71	76	77	80	84	83	85	**81**	**91**	**66**
16	90	94	92	93	93	92	92	91	91	88	87	88	84	79	83	83	79	82	83	84	85	88	91	92	**88**	**94**	**79**
17	93	87	81	82	85	83	78	72	64	57	51	53	48	57	53	49	55	57	59	63	69	72	76	79	**68**	**93**	**48**
18	81	84	86	85	82	82	78	68	56	51	44	45	44	43	42	44	45	45	46	49	52	63	65	67	**60**	**86**	**42**
19	69	73	83	89	92	94	96	95	93	90	85	83	80	80	81	69	73	76	79	81	80	81	85	92	**83**	**96**	**69**
20	92	95	96	95	95	94	90	80	76	77	76	76	71	67	64	65	63	60	59	62	65	73	81	86	**77**	**96**	**59**
21	89	86	81	96	95	93	96	92	84	77	66	58	58	55	50	50	52	51	54	57	61	62	64	66	**70**	**96**	**50**
22	67	69	69	70	69	70	68	66	60	55	55	51	47	43	44	42	50	52	51	56	60	64	66	66	**59**	**70**	**42**
23	69	79	78	81	84	84	78	72	66	65	55	54	54	50	52	48	43	39	45	55	61	63	65	69	**63**	**84**	**39**
24	73	76	77	75	90	94	94	91	83	77	75	70	67	65	66	61	58	56	63	71	78	80	81	83	**75**	**94**	**56**
25	86	88	90	91	92	92	91	90	85	82	79	72	81	80	75	68	71	73	77	78	80	81	84	87	**82**	**92**	**68**
26	90	91	92	92	93	94	90	84	80	78	74	73	70	71	60	53	59	68	70	74	78	83	82	85	**78**	**94**	**53**
27	88	91	92	93	94	93	88	84	76	68	63	58	53	48	48	47	47	51	55	55	58	63	65	68	**69**	**94**	**47**
28	73	75	76	77	79	81	80	74	67	64	60	63	72	73	73	72	65	66	70	88	93	93	94	93	**76**	**94**	**60**
29	95	93	94	94	93	92	86	78	76	70	61	60	54	53	52	61	85	87	75	62	63	65	70	73	**75**	**95**	**52**
30	73	68	68	71	73	74	72	69	61	52	49	49	45	41	40	38	38	38	43	58	61	67	70	69	**58**	**74**	**38**
31	69	70	76	83	84	83	82	81	67	59	53	47	43	41	40	34	34	36	39	42	46	53	57	61	**57**	**84**	**34**
MEAN	**82**	**83**	**84**	**86**	**87**	**87**	**84**	**80**	**75**	**70**	**66**	**64**	**62**	**61**	**60**	**59**	**60**	**62**	**64**	**67**	**71**	**75**	**77**	**79**	**73**		
MAX	**96**	**97**	**97**	**97**	**96**	**95**	**96**	**95**	**93**	**90**	**87**	**88**	**89**	**85**	**90**	**95**	**90**	**87**	**88**	**88**	**93**	**93**	**94**	**95**		**97**	
MIN	**62**	**60**	**64**	**67**	**67**	**69**	**67**	**61**	**52**	**46**	**41**	**38**	**36**	**37**	**36**	**34**	**34**	**34**	**36**	**40**	**46**	**53**	**57**	**59**			**34**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 744 DATA RECOVERY RATE = 100.0%

MONTHLY MEAN = 73 %

MAXIMUM RELATIVE HUMIDITY = 97 % DATE OF OCCURRENCE = 7/4 AT 0300 MAXIMUM DAILY MEAN = 88 % DATE OF OCCURRENCE = 7/2

MINIMUM RELATIVE HUMIDITY = 34 % DATE OF OCCURRENCE = 7/31 AT 1700 MINUMUM DAILY MEAN = 55 % DATE OF OCCURRENCE = 7/11

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

DRAFT

CSX AQ5

RELATIVE HUMIDITY in % for AUGUST, 2023

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	64	60	61	63	64	69	64	61	56	50	48	44	43	38	40	40	40	41	40	46	50	56	62	62	**53**	**69**	**38**
2	70	68	75	77	77	74	62	53	52	52	49	46	47	46	46	47	45	47	47	47	51	56	64	70	**57**	**77**	**45**
3	73	74	70	72	74	74	70	67	64	64	63	60	59	62	62	62	64	68	72	77	80	83	88	92	**70**	**92**	**59**
4	90	90	88	88	89	89	89	88	86	81	76	74	72	75	77	77	80	79	79	81	84	87	89	92	**83**	**92**	**72**
5	92	93	93	96	96	95	93	89	82	77	72	74	75	71	70	68	66	66	71	72	73	75	76	77	**80**	**96**	**66**
6	80	83	84	85	86	87	82	79	72	63	64	63	59	63	61	66	70	71	74	88	90	91	94	94	**77**	**94**	**59**
7	94	94	94	95	95	95	92	89	89	85	84	79	76	74	75	72	74	96	97	95	96	96	95	97	**89**	**97**	**72**
8	97	98	98	98	97	91	83	72	65	60	55	52	48	50	47	45	47	43	49	51	59	55	59	62	**66**	**98**	**43**
9	66	68	71	74	76	78	78	72	66	61	55	50	46	47	47	43	44	45	54	60	64	67	69	72	**61**	**78**	**43**
10	75	78	80	82	84	86	85	83	80	79	80	82	80	74	72	72	74	74	73	76	77	72	73	76	**78**	**86**	**72**
11	78	77	77	78	77	81	76	72	66	61	55	48	47	43	40	42	44	43	45	53	62	67	72	73	**61**	**81**	**40**
12	74	76	80	83	86	87	85	80	74	72	71	73	65	48	46	52	56	63	66	70	77	77	74	73	**71**	**87**	**46**
13	74	75	77	80	76	75	71	66	63	59	55	48	42	42	41	38	37	37	39	44	49	62	67	68	**58**	**80**	**37**
14	73	75	72	77	79	80	75	67	70	68	75	64	58	56	60	67	81	92	90	91	89	92	94	95	**77**	**95**	**56**
15	94	95	95	94	92	90	88	83	75	68	61	53	51	49	65	85	82	84	88	80	84	87	85	80	**79**	**95**	**49**
16	63	62	63	66	67	69	67	62	55	51	47	46	46	46	45	45	45	47	48	53	59	69	72	73	**57**	**73**	**45**
17	76	81	83	86	85	84	82	79	79	69	61	59	62	66	65	57	57	59	63	66	73	81	87	83	**73**	**87**	**57**
18	82	82	85	87	90	89	77	63	56	50	48	41	42	44	39	37	37	35	36	38	43	46	49	53	**56**	**90**	**35**
19	56	59	65	69	69	67	66	60	49	44	40	39	38	39	37	35	34	35	38	44	54	60	64	68	**51**	**69**	**34**
20	74	78	80	83	81	81	76	69	65	59	54	55	62	63	56	42	43	58	64	71	77	83	84	88	**69**	**88**	**42**
21	89	90	92	92	93	93	91	83	70	58	52	46	47	49	55	59	60	64	64	65	71	74	75	78	**71**	**93**	**46**
22	80	78	74	74	74	70	61	53	51	49	46	42	39	37	35	36	34	37	40	42	45	49	56	71	**53**	**80**	**34**
23	75	75	76	76	77	80	73	56	56	59	63	52	45	45	47	52	52	49	50	52	52	55	59	64	**60**	**80**	**45**
24	63	65	69	71	72	72	72	73	69	64	64	73	70	66	66	67	68	68	69	72	76	78	82	83	**70**	**83**	**63**
25	84	85	86	86	85	86	83	83	79	77	74	72	77	72	75	72	72	75	80	75	78	81	82	84	**79**	**86**	**72**
26	86	87	88	89	87	85	81	78	73	71	67	60	56	60	69	69	70	65	53	55	56	61	62	65	**70**	**89**	**53**
27	69	70	72	72	73	73	69	66	63	63	67	66	61	60	57	57	61	62	61	67	71	74	79	83	**67**	**83**	**57**
28	83	77	82	84	87	89	90	86	81	81	81	78	77	75	76	76	78	78	80	83	85	86	86	85	**82**	**90**	**75**
29	86	87	90	90	90	90	92	91	87	87	84	80	78	78	78	79	81	82	83	84	86	87	90	91	**86**	**92**	**78**
30	92	93	94	95	95	95	95	92	75	59	50	45	45	42	41	39	38	42	44	46	49	52	55	58	**64**	**95**	**38**
31	60	62	64	66	68	70	70	67	60	52	44	41	38	30	29	31	34	36	38	39	42	43	45	48	**49**	**70**	**29**
MEAN	**78**	**79**	**80**	**81**	**82**	**82**	**79**	**73**	**69**	**64**	**61**	**58**	**56**	**55**	**55**	**56**	**57**	**59**	**61**	**64**	**68**	**71**	**74**	**76**	**68**		
MAX	**97**	**98**	**98**	**98**	**97**	**95**	**95**	**92**	**89**	**87**	**84**	**82**	**80**	**78**	**78**	**85**	**82**	**96**	**97**	**95**	**96**	**96**	**95**	**97**		**98**	
MIN	**56**	**59**	**61**	**63**	**64**	**67**	**61**	**53**	**49**	**44**	**40**	**39**	**38**	**30**	**29**	**31**	**34**	**35**	**36**	**38**	**42**	**43**	**45**	**48**			**29**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 744 DATA RECOVERY RATE = 100.0%

MONTHLY MEAN = 68 %

MAXIMUM RELATIVE HUMIDITY = 98 % DATE OF OCCURRENCE = 8/8 AT 0300 MAXIMUM DAILY MEAN = 89 % DATE OF OCCURRENCE = 8/7

MINIMUM RELATIVE HUMIDITY = 29 % DATE OF OCCURRENCE = 8/31 AT 1500 MINUMUM DAILY MEAN = 49 % DATE OF OCCURRENCE = 8/31

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

DRAFT

CSX AQ5

RELATIVE HUMIDITY in % for SEPTEMBER, 2023

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	52	53	57	59	60	61	61	58	53	51	49	48	49	48	50	49	50	51	51	54	59	64	71	77	**56**	**77**	**48**
2	81	82	83	85	87	88	86	78	70	64	60	56	65	65	64	63	60	60	63	67	72	74	76	76	**72**	**88**	**56**
3	77	77	80	83	85	87	85	75	64	56	49	46	41	37	34	35	34	36	41	47	58	62	62	61	**59**	**87**	**34**
4	66	65	69	74	76	73	72	68	65	56	51	46	39	38	34	35	36	33	36	41	46	51	54	56	**53**	**76**	**33**
5	58	59	60	60	61	62	64	63	58	52	49	46	43	41	42	53	56	61	58	51	54	57	61	64	**56**	**64**	**41**
6	67	68	70	72	74	74	72	67	63	67	65	65	58	59	58	60	63	58	58	61	65	66	67	69	**65**	**74**	**58**
7	74	78	81	83	85	87	84	79	78	76	75	72	66	53	52	56	52	58	58	64	68	68	70	71	**70**	**87**	**52**
8	74	74	81	89	90	92	90	83	81	81	75	73	76	68	65	69	70	67	68	63	68	70	81	84	**76**	**92**	**63**
9	86	89	90	87	92	91	91	88	84	79	77	77	77	78	72	70	78	88	92	92	93	91	91	90	**85**	**93**	**70**
10	93	91	90	91	92	90	93	92	89	89	88	82	80	81	82	86	80	78	79	81	84	86	88	87	**86**	**93**	**78**
11	89	91	92	92	92	95	97	97	93	87	82	75	69	68	76	69	63	66	69	70	75	80	84	88	**82**	**97**	**63**
12	88	90	91	92	92	92	89	82	75	74	75	77	68	67	68	68	66	68	73	75	80	87	91	96	**80**	**96**	**66**
13	95	95	96	96	95	94	90	84	79	73	67	59	56	54	51	49	47	63	66	71	58	57	59	55	**71**	**96**	**47**
14	52	55	54	58	62	67	69	69	63	59	53	48	42	37	36	34	33	38	42	48	52	53	55	59	**52**	**69**	**33**
15	61	61	63	62	64	66	66	61	56	52	48	45	42	39	39	39	41	42	45	47	48	52	54	56	**52**	**66**	**39**
16	59	62	66	68	69	71	69	62	56	51	45	42	39	36	31	30	30	31	38	45	57	59	66	70	**52**	**71**	**30**
17	72	77	79	81	81	84	83	81	82	81	75	78	76	71	67	68	66	79	90	90	91	91	91	89	**80**	**91**	**66**
18	91	92	91	88	90	91	90	89	88	82	76	69	62	55	54	48	45	45	51	57	61	62	64	67	**71**	**92**	**45**
19	68	68	70	73	75	78	77	71	65	59	48	43	41	43	41	40	40	42	47	52	58	61	63	68	**58**	**78**	**40**
20	70	76	78	80	80	81	81	70	58	54	54	53	53	53	51	51	53	55	54	60	63	64	71	73	**64**	**81**	**51**
21	77	81	83	83	85	86	84	70	63	62	65	63	64	60	57	55	54	55	56	59	62	61	63	79	**68**	**86**	**54**
22	79	78	79	78	77	75	75	74	70	66	62	58	59	58	58	59	58	60	63	64	66	68	72	73	**68**	**79**	**58**
23	75	78	79	84	89	92	94	94	92	90	89	87	86	85	88	88	91	92	91	92	89	91	90	94	**88**	**94**	**75**
24	96	96	97	97	98	97	98	97	94	91	91	95	96	96	97	94	91	92	93	94	96	96	95	94	**95**	**98**	**91**
25	94	94	95	94	92	92	90	88	87	83	81	79	78	80	81	87	91	92	88	86	90	91	91	93	**88**	**95**	**78**
26	95	94	95	95	95	96	96	95	94	---	---	78	75	75	76	86	88	91	90	93	91	88	84	86	**89**	**96**	**75**
27	86	85	84	84	84	84	84	81	78	73	70	68	65	62	62	62	62	64	66	68	72	74	74	79	**74**	**86**	**62**
28	80	79	79	79	81	83	85	85	81	77	77	78	76	78	78	76	79	80	83	90	90	87	87	87	**81**	**90**	**76**
29	90	93	96	94	92	92	92	93	91	86	83	83	83	84	82	81	83	84	89	86	85	83	82	82	**87**	**96**	**81**
30	84	85	86	86	87	88	88	86	83	81	78	75	77	72	65	65	69	81	81	80	84	85	87	88	**81**	**88**	**65**
MEAN	**78**	**79**	**80**	**82**	**83**	**84**	**83**	**79**	**75**	**71**	**68**	**65**	**63**	**61**	**60**	**61**	**61**	**64**	**66**	**68**	**71**	**73**	**75**	**77**	**72**		
MAX	**96**	**96**	**97**	**97**	**98**	**97**	**98**	**97**	**94**	**91**	**91**	**95**	**96**	**96**	**97**	**94**	**91**	**92**	**93**	**94**	**96**	**96**	**95**	**96**		**98**	
MIN	**52**	**53**	**54**	**58**	**60**	**61**	**61**	**58**	**53**	**51**	**45**	**42**	**39**	**36**	**31**	**30**	**30**	**31**	**36**	**41**	**46**	**51**	**54**	**55**			**30**

POSSIBLE NUMBER OF OBSERVATIONS = 720 ACTUAL NUMBER OF OBSERVATIONS = 718 DATA RECOVERY RATE = 99.7%

MONTHLY MEAN = 72 %

MAXIMUM RELATIVE HUMIDITY = 98 % DATE OF OCCURRENCE = 9/24 AT 0500 MAXIMUM DAILY MEAN = 95 % DATE OF OCCURRENCE = 9/24

MINIMUM RELATIVE HUMIDITY = 30 % DATE OF OCCURRENCE = 9/16 AT 1600 MINUMUM DAILY MEAN = 52 % DATE OF OCCURRENCE = 9/14

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

DRAFT

APPENDIX E. HOURLY BAROMETRIC PRESSURE DATA FOR THIRD QUARTER 2023

DRAFT

CSX AQ5

PRESSURE in mb for JULY, 2023

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	1016	1016	1016	1016	1016	1016	1017	1017	1017	1017	1016	1016	1016	1015	1014	1013	1013	1013	1012	1012	1012	1013	1013	1013	**1015**	**1017**	**1012**
2	1012	1011	1011	1011	1011	1011	1012	1012	1012	1012	1012	1012	1011	1011	1010	1009	1009	1009	1009	1009	1009	1010	1010	1010	**1011**	**1012**	**1009**
3	1010	1009	1010	1009	1010	1010	1011	1011	1012	1012	1012	1011	1011	1011	1010	1009	1009	1009	1009	1010	1011	1011	1012	1012	**1010**	**1012**	**1009**
4	1012	1012	1012	1012	1012	1012	1013	1013	1013	1013	1013	1013	1013	1013	1013	1012	1012	1012	1013	1013	1014	1014	1014	1015	**1013**	**1015**	**1012**
5	1015	1014	1014	1014	1014	1015	1015	1015	1015	1015	1015	1015	1015	1015	1015	1014	1014	1013	1013	1013	1014	1014	1014	1014	**1014**	**1015**	**1013**
6	1014	1014	1014	1013	1013	1013	1014	1014	1014	1014	1013	1013	1013	1012	1011	1011	1010	1010	1010	1010	1011	1011	1011	1011	**1012**	**1014**	**1010**
7	1010	1010	1010	1010	1010	1011	1011	1011	1011	1011	1011	1010	1011	1010	1009	1009	1009	1009	1009	1009	1009	1010	1010	1010	**1010**	**1011**	**1009**
8	1010	1010	1010	1010	1010	1010	1011	1011	1011	1011	1011	1011	1010	1009	1009	1009	1009	1008	1008	1009	1009	1009	1010	1010	**1010**	**1011**	**1008**
9	1010	1009	1009	1009	1009	1009	1009	1009	1009	1009	1008	1008	1007	1007	1007	1008	1007	1008	1008	1008	1008	1008	1008	1008	**1008**	**1010**	**1007**
10	1008	1008	1007	1008	1008	1009	1010	1010	1010	1010	1010	1010	1010	1010	1009	1009	1009	1010	1010	1010	1011	1012	1012	1012	**1010**	**1012**	**1007**
11	1012	1011	1011	1012	1012	1013	1014	1014	1014	1013	1013	1013	1013	1013	1012	1012	1012	1012	1012	1012	1013	1013	1014	1013	**1013**	**1014**	**1011**
12	1013	1014	1014	1014	1014	1014	1015	1015	1015	1015	1015	1014	1014	1013	1013	1013	1012	1012	1012	1012	1013	1013	1013	1012	**1013**	**1015**	**1012**
13	1012	1012	1011	1012	1011	1011	1011	1011	1011	1011	1010	1010	1009	1009	1008	1008	1008	1008	1008	1009	1009	1009	1009	1009	**1010**	**1012**	**1008**
14	1009	1010	1010	1011	1011	1011	1011	1012	1011	1011	1012	1012	1012	1011	1011	1011	1011	1011	1012	1012	1012	1012	1013	1013	**1011**	**1013**	**1009**
15	1013	1013	1012	1012	1012	1013	1013	1014	1014	1013	1013	1013	1013	1012	1011	1010	1010	1010	1010	1010	1010	1010	1010	1010	**1012**	**1014**	**1010**
16	1010	1009	1009	1009	1008	1009	1009	1009	1009	1009	1009	1009	1009	1008	1008	1008	1008	1008	1009	1009	1010	1010	1011	1011	**1009**	**1011**	**1008**
17	1011	1011	1012	1012	1012	1013	1013	1014	1015	1015	1015	1015	1014	1014	1013	1012	1012	1012	1013	1013	1014	1014	1014	1014	**1013**	**1015**	**1011**
18	1014	1013	1013	1013	1013	1013	1014	1014	1015	1015	1015	1015	1014	1014	1013	1013	1013	1013	1013	1013	1015	1015	1015	1015	**1014**	**1015**	**1013**
19	1015	1015	1015	1015	1014	1015	1016	1016	1016	1016	1016	1016	1015	1015	1015	1014	1014	1014	1014	1015	1015	1015	1016	1016	**1015**	**1016**	**1014**
20	1015	1015	1015	1015	1015	1016	1016	1016	1016	1015	1015	1015	1014	1014	1014	1013	1012	1012	1011	1011	1011	1011	1010	1009	**1014**	**1016**	**1009**
21	1009	1008	1008	1009	1008	1009	1008	1008	1008	1008	1008	1008	1008	1008	1007	1007	1007	1008	1008	1008	1008	1008	1009	1009	**1008**	**1009**	**1007**
22	1009	1009	1009	1009	1009	1010	1010	1011	1011	1011	1011	1011	1010	1010	1010	1010	1010	1010	1010	1010	1011	1011	1012	1012	**1010**	**1012**	**1009**
23	1012	1012	1012	1012	1013	1013	1014	1015	1015	1015	1015	1015	1015	1015	1014	1014	1014	1014	1015	1015	1016	1016	1017	1017	**1014**	**1017**	**1012**
24	1017	1017	1017	1017	1018	1019	1019	1019	1019	1019	1019	1019	1018	1018	1018	1017	1017	1017	1017	1017	1017	1018	1018	1018	**1018**	**1019**	**1017**
25	1018	1018	1018	1017	1018	1018	1018	1018	1018	1018	1018	1018	1017	1017	1016	1016	1016	1016	1017	1018	1018	1019	1019	1019	**1018**	**1019**	**1016**
26	1019	1018	1018	1019	1019	1019	1020	1020	1020	1020	1020	1020	1019	1018	1018	1017	1017	1017	1017	1017	1016	1016	1016	1017	**1018**	**1020**	**1016**
27	1016	1015	1015	1015	1015	1015	1015	1016	1015	1015	1015	1015	1014	1014	1013	1013	1013	1013	1013	1014	1015	1015	1015	1015	**1014**	**1016**	**1013**
28	1015	1015	1015	1015	1016	1016	1017	1017	1017	1017	1017	1016	1016	1015	1014	1014	1013	1013	1014	1015	1015	1015	1015	1014	**1015**	**1017**	**1013**
29	1013	1013	1013	1013	1013	1013	1014	1013	1013	1012	1011	1010	1009	1008	1007	1006	1007	1007	1008	1009	1010	1011	1012	1012	**1011**	**1014**	**1006**
30	1012	1012	1012	1013	1013	1014	1015	1016	1016	1016	1016	1015	1015	1014	1014	1013	1013	1013	1013	1014	1014	1014	1014	1014	**1014**	**1016**	**1012**
31	1014	1014	1014	1014	1014	1014	1015	1016	1016	1016	1016	1016	1015	1015	1015	1015	1014	1015	1015	1016	1017	1017	1018	1018	**1015**	**1018**	**1014**
MEAN	**1013**	**1013**	**1012**	**1012**	**1013**	**1013**	**1013**	**1014**	**1014**	**1014**	**1014**	**1013**	**1013**	**1012**	**1012**	**1012**	**1011**	**1011**	**1012**	**1012**	**1012**	**1013**	**1013**	**1013**	**1013**		
MAX	**1019**	**1018**	**1018**	**1019**	**1019**	**1019**	**1020**	**1020**	**1020**	**1020**	**1020**	**1020**	**1019**	**1018**	**1018**	**1017**	**1017**	**1017**	**1017**	**1018**	**1018**	**1019**	**1019**	**1019**		**1020**	
MIN	**1008**	**1008**	**1007**	**1008**	**1008**	**1009**	**1008**	**1008**	**1008**	**1008**	**1008**	**1008**	**1007**	**1007**	**1007**	**1006**	**1007**	**1007**	**1008**	**1008**	**1008**	**1008**	**1008**	**1008**			**1006**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 744 DATA RECOVERY RATE = 100.0%

MONTHLY MEAN = 1013 mb

MAXIMUM PRESSURE = 1020 mb DATE OF OCCURRENCE = 7/26 AT 0900 MAXIMUM DAILY MEAN = 1018 mb DATE OF OCCURRENCE = 7/26

MINIMUM PRESSURE = 1006 mb DATE OF OCCURRENCE = 7/29 AT 1600 MINUMUM DAILY MEAN = 1008 mb DATE OF OCCURRENCE = 7/21

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

DRAFT

CSX AQ5

PRESSURE in mb for AUGUST, 2023

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	1017	1017	1018	1018	1019	1019	1020	1021	1021	1021	1021	1021	1020	1020	1020	1020	1019	1019	1020	1020	1021	1021	1021	1022	**1020**	**1022**	**1017**
2	1022	1022	1022	1022	1022	1022	1023	1023	1023	1023	1023	1023	1023	1022	1022	1021	1021	1021	1021	1021	1021	1021	1021	1021	**1022**	**1023**	**1021**
3	1021	1020	1020	1019	1019	1020	1020	1020	1019	1019	1018	1018	1017	1017	1017	1017	1016	1016	1016	1016	1017	1017	1016	1016	**1018**	**1021**	**1016**
4	1016	1016	1015	1015	1015	1015	1015	1015	1014	1014	1014	1014	1014	1014	1013	1012	1012	1012	1012	1013	1013	1013	1013	1013	**1014**	**1016**	**1012**
5	1014	1013	1013	1013	1014	1014	1014	1015	1015	1015	1015	1015	1015	1015	1015	1014	1014	1014	1014	1014	1015	1015	1015	1015	**1014**	**1015**	**1013**
6	1015	1016	1015	1015	1015	1016	1016	1016	1016	1016	1016	1015	1015	1014	1013	1013	1013	1013	1013	1013	1013	1013	1013	1013	**1014**	**1016**	**1013**
7	1012	1012	1011	1011	1011	1011	1011	1011	1012	1011	1011	1010	1009	1008	1007	1006	1008	1009	1007	1007	1007	1007	1006	1006	**1009**	**1012**	**1006**
8	1005	1005	1004	1005	1005	1006	1007	1008	1008	1008	1008	1008	1007	1008	1007	1007	1007	1007	1007	1008	1008	1009	1009	1009	**1007**	**1009**	**1004**
9	1009	1009	1009	1009	1010	1010	1011	1011	1011	1011	1010	1010	1010	1010	1009	1009	1009	1009	1009	1009	1010	1010	1009	1009	**1010**	**1011**	**1009**
10	1009	1008	1008	1007	1006	1007	1007	1006	1006	1005	1005	1004	1004	1003	1002	1002	1002	1003	1004	1004	1005	1006	1006	1006	**1005**	**1009**	**1002**
11	1006	1007	1007	1008	1008	1009	1009	1010	1010	1011	1011	1010	1010	1010	1010	1010	1010	1010	1010	1010	1011	1011	1011	1011	**1010**	**1011**	**1006**
12	1011	1012	1012	1012	1012	1012	1012	1012	1012	1012	1012	1012	1011	1011	1010	1009	1010	1010	1010	1010	1010	1010	1011	1010	**1011**	**1012**	**1009**
13	1009	1009	1009	1010	1010	1011	1011	1012	1013	1013	1013	1013	1013	1013	1013	1013	1013	1013	1014	1014	1015	1015	1015	1015	**1012**	**1015**	**1009**
14	1015	1015	1014	1014	1014	1014	1015	1015	1015	1015	1015	1014	1013	1012	1012	1011	1011	1010	1010	1010	1010	1010	1008	1008	**1012**	**1015**	**1008**
15	1007	1007	1007	1007	1007	1007	1008	1008	1008	1008	1008	1008	1008	1008	1007	1007	1007	1007	1007	1008	1009	1009	1009	1009	**1008**	**1009**	**1007**
16	1009	1010	1010	1011	1011	1012	1013	1013	1013	1013	1013	1013	1013	1013	1013	1012	1012	1012	1013	1013	1014	1014	1014	1014	**1012**	**1014**	**1009**
17	1014	1014	1013	1013	1013	1014	1014	1014	1014	1013	1013	1012	1011	1011	1010	1009	1009	1009	1009	1009	1009	1008	1007	1007	**1011**	**1014**	**1007**
18	1006	1006	1005	1006	1006	1007	1007	1008	1009	1009	1010	1010	1010	1010	1010	1010	1010	1010	1011	1012	1013	1014	1014	1015	**1009**	**1015**	**1005**
19	1015	1015	1015	1016	1016	1017	1018	1018	1019	1019	1019	1018	1018	1017	1017	1016	1016	1016	1016	1017	1018	1018	1018	1018	**1017**	**1019**	**1015**
20	1019	1019	1019	1019	1019	1020	1020	1021	1021	1021	1021	1020	1020	1019	1019	1018	1018	1018	1018	1018	1018	1019	1019	1019	**1019**	**1021**	**1018**
21	1019	1018	1018	1018	1018	1019	1019	1019	1019	1019	1019	1018	1018	1017	1017	1016	1016	1016	1016	1016	1017	1017	1016	1016	**1017**	**1019**	**1016**
22	1016	1016	1016	1016	1017	1018	1018	1019	1019	1019	1019	1019	1018	1018	1018	1018	1018	1018	1018	1018	1019	1019	1020	1020	**1018**	**1020**	**1016**
23	1020	1019	1019	1020	1020	1021	1021	1021	1021	1021	1021	1020	1019	1019	1019	1018	1017	1017	1017	1016	1017	1017	1017	1017	**1019**	**1021**	**1016**
24	1016	1016	1016	1015	1016	1016	1016	1017	1016	1016	1016	1016	1015	1015	1014	1014	1014	1014	1014	1015	1015	1014	1013	1013	**1015**	**1017**	**1013**
25	1014	1013	1012	1012	1012	1011	1010	1011	1011	1011	1010	1010	1010	1009	1009	1009	1009	1009	1009	1009	1010	1010	1010	1010	**1010**	**1014**	**1009**
26	1009	1009	1009	1009	1009	1009	1010	1010	1011	1011	1011	1011	1010	1010	1009	1009	1009	1009	1009	1010	1011	1011	1011	1011	**1010**	**1011**	**1009**
27	1011	1011	1011	1011	1011	1012	1013	1013	1013	1013	1013	1013	1012	1012	1012	1011	1012	1012	1012	1013	1013	1014	1014	1014	**1012**	**1014**	**1011**
28	1014	1014	1014	1014	1014	1014	1015	1015	1015	1015	1015	1015	1015	1015	1015	1015	1015	1014	1014	1015	1015	1015	1015	1015	**1015**	**1015**	**1014**
29	1015	1014	1014	1013	1013	1013	1014	1013	1014	1014	1014	1013	1013	1012	1011	1011	1010	1010	1010	1010	1010	1010	1010	1009	**1012**	**1015**	**1009**
30	1008	1008	1007	1007	1006	1007	1007	1007	1008	1008	1008	1008	1008	1007	1007	1006	1007	1007	1008	1008	1009	1010	1010	1011	**1008**	**1011**	**1006**
31	1010	1011	1010	1011	1011	1011	1012	1013	1013	1013	1014	1014	1014	1014	1014	1014	1015	1015	1016	1017	1018	1019	1019	1020	**1014**	**1020**	**1010**
MEAN	**1013**	**1013**	**1013**	**1013**	**1013**	**1013**	**1014**	**1014**	**1014**	**1014**	**1014**	**1014**	**1013**	**1013**	**1012**	**1012**	**1012**	**1012**	**1012**	**1013**	**1013**	**1013**	**1013**	**1013**	**1013**		
MAX	**1022**	**1022**	**1022**	**1022**	**1022**	**1022**	**1023**	**1023**	**1023**	**1023**	**1023**	**1023**	**1023**	**1022**	**1022**	**1021**	**1021**	**1021**	**1021**	**1021**	**1021**	**1021**	**1021**	**1022**		**1023**	
MIN	**1005**	**1005**	**1004**	**1005**	**1005**	**1006**	**1007**	**1006**	**1006**	**1005**	**1005**	**1004**	**1004**	**1003**	**1002**	**1002**	**1002**	**1003**	**1004**	**1004**	**1005**	**1006**	**1006**	**1006**			**1002**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 744 DATA RECOVERY RATE = 100.0%

MONTHLY MEAN = 1013 mb

MAXIMUM PRESSURE = 1023 mb DATE OF OCCURRENCE = 8/2 AT 1100 MAXIMUM DAILY MEAN = 1022 mb DATE OF OCCURRENCE = 8/2

MINIMUM PRESSURE = 1002 mb DATE OF OCCURRENCE = 8/10 AT 1600 MINUMUM DAILY MEAN = 1005 mb DATE OF OCCURRENCE = 8/10

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

DRAFT

CSX AQ5

PRESSURE in mb for SEPTEMBER, 2023

Hr Beg Hr End Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	1021	1021	1022	1022	1022	1023	1024	1025	1025	1026	1026	1025	1025	1025	1024	1024	1023	1023	1023	1024	1024	1024	1025	1025	**1024**	**1026**	**1021**
2	1025	1024	1024	1024	1024	1024	1024	1024	1024	1024	1023	1022	1021	1020	1019	1019	1019	1018	1018	1018	1018	1018	1018	1018	**1021**	**1025**	**1018**
3	1017	1017	1017	1017	1017	1017	1017	1017	1017	1017	1016	1015	1014	1014	1013	1012	1012	1012	1012	1012	1012	1013	1013	1013	**1015**	**1017**	**1012**
4	1013	1013	1013	1013	1013	1014	1014	1014	1014	1014	1013	1013	1012	1011	1011	1010	1010	1010	1011	1011	1012	1012	1012	1012	**1012**	**1014**	**1010**
5	1012	1012	1013	1013	1014	1014	1015	1015	1015	1015	1015	1014	1014	1013	1012	1012	1012	1012	1012	1013	1013	1013	1013	1013	**1013**	**1015**	**1012**
6	1013	1013	1012	1012	1012	1012	1013	1013	1013	1013	1012	1012	1011	1010	1010	1009	1009	1009	1009	1009	1009	1009	1009	1009	**1011**	**1013**	**1009**
7	1009	1008	1008	1008	1009	1009	1009	1009	1009	1009	1009	1009	1008	1007	1007	1006	1007	1007	1008	1009	1009	1010	1009	1009	**1008**	**1010**	**1006**
8	1010	1010	1011	1011	1011	1012	1012	1013	1013	1013	1013	1013	1013	1012	1012	1012	1012	1012	1013	1014	1015	1015	1016	1015	**1013**	**1016**	**1010**
9	1015	1016	1016	1016	1016	1016	1017	1018	1018	1018	1018	1018	1018	1017	1017	1017	1017	1018	1018	1018	1019	1019	1019	1019	**1017**	**1019**	**1015**
10	1018	1018	1018	1018	1018	1018	1018	1018	1019	1019	1019	1018	1018	1017	1016	1016	1016	1016	1016	1017	1016	1016	1017	1016	**1017**	**1019**	**1016**
11	1016	1016	1015	1015	1015	1015	1016	1016	1016	1016	1016	1016	1016	1015	1015	1015	1015	1015	1015	1016	1016	1017	1017	1016	**1016**	**1017**	**1015**
12	1016	1016	1016	1016	1016	1016	1016	1017	1017	1017	1017	1016	1015	1015	1014	1013	1013	1013	1013	1013	1013	1012	1013	1013	**1015**	**1017**	**1012**
13	1013	1013	1012	1013	1013	1013	1014	1014	1015	1015	1015	1014	1014	1013	1013	1013	1013	1013	1013	1013	1014	1015	1015	1015	**1014**	**1015**	**1012**
14	1015	1015	1015	1016	1016	1017	1018	1018	1018	1019	1019	1018	1018	1017	1017	1017	1017	1017	1017	1018	1018	1019	1019	1019	**1017**	**1019**	**1015**
15	1019	1019	1019	1019	1019	1019	1019	1019	1020	1019	1019	1018	1017	1017	1016	1016	1016	1015	1015	1016	1016	1016	1016	1016	**1018**	**1020**	**1015**
16	1016	1016	1016	1016	1016	1017	1017	1017	1017	1017	1016	1016	1015	1015	1014	1013	1013	1013	1014	1014	1014	1014	1014	1014	**1015**	**1017**	**1013**
17	1014	1014	1013	1014	1013	1014	1014	1013	1013	1013	1012	1013	1012	1012	1011	1011	1011	1011	1011	1011	1011	1011	1011	1011	**1012**	**1014**	**1011**
18	1010	1010	1009	1009	1009	1009	1009	1009	1009	1009	1009	1009	1009	1009	1008	1008	1008	1009	1010	1011	1011	1012	1012	1013	**1009**	**1013**	**1008**
19	1013	1013	1014	1014	1014	1015	1016	1017	1017	1017	1017	1017	1017	1017	1016	1016	1016	1017	1017	1018	1019	1019	1020	1020	**1016**	**1020**	**1013**
20	1020	1020	1020	1020	1021	1021	1021	1022	1022	1022	1022	1022	1021	1021	1020	1020	1020	1020	1021	1021	1021	1022	1022	1022	**1021**	**1022**	**1020**
21	1022	1022	1022	1023	1023	1024	1024	1024	1025	1025	1025	1025	1024	1024	1024	1023	1023	1023	1023	1024	1024	1024	1024	1024	**1024**	**1025**	**1022**
22	1025	1025	1025	1024	1025	1025	1025	1025	1025	1025	1025	1025	1025	1024	1024	1023	1023	1023	1023	1023	1022	1022	1022	1021	**1024**	**1025**	**1021**
23	1020	1019	1018	1017	1017	1016	1016	1016	1015	1015	1014	1013	1013	1012	1011	1011	1011	1011	1011	1011	1011	1011	1010	1010	**1014**	**1020**	**1010**
24	1010	1010	1009	1009	1009	1009	1010	1010	1011	1011	1011	1011	1011	1011	1011	1011	1011	1012	1012	1013	1013	1013	1013	1013	**1011**	**1013**	**1009**
25	1013	1013	1013	1014	1014	1014	1015	1015	1016	1016	1016	1017	1017	1017	1017	1018	1018	1019	1020	1021	1021	1021	1021	1022	**1017**	**1022**	**1013**
26	1022	1022	1022	1022	1023	1024	1024	1025	1026	1026	1026	1026	1026	1026	1025	1025	1025	1026	1026	1027	1027	1027	1027	1027	**1025**	**1027**	**1022**
27	1027	1026	1026	1025	1025	1026	1026	1027	1027	1027	1027	1026	1025	1025	1024	1024	1024	1024	1024	1024	1025	1025	1024	1024	**1025**	**1027**	**1024**
28	1024	1024	1023	1023	1023	1023	1024	1024	1024	1024	1023	1023	1023	1022	1022	1021	1021	1021	1021	1022	1022	1022	1021	1021	**1022**	**1024**	**1021**
29	1021	1020	1020	1019	1019	1020	1020	1021	1021	1021	1020	1020	1019	1019	1019	1018	1019	1019	1019	1020	1020	1020	1020	1020	**1020**	**1021**	**1018**
30	1020	1020	1019	1019	1020	1020	1021	1021	1022	1022	1022	1022	1022	1021	1021	1021	1021	1022	1022	1023	1023	1023	1023	1023	**1021**	**1023**	**1019**
MEAN	**1017**	**1017**	**1017**	**1017**	**1017**	**1017**	**1018**	**1018**	**1018**	**1018**	**1018**	**1017**	**1017**	**1016**	**1016**	**1016**	**1016**	**1016**	**1016**	**1017**	**1017**	**1017**	**1017**	**1017**	**1017**		
MAX	**1027**	**1026**	**1026**	**1025**	**1025**	**1026**	**1026**	**1027**	**1027**	**1027**	**1027**	**1026**	**1026**	**1026**	**1025**	**1025**	**1025**	**1026**	**1026**	**1027**	**1027**	**1027**	**1027**	**1027**		**1027**	
MIN	**1009**	**1008**	**1008**	**1008**	**1009**	**1009**	**1009**	**1009**	**1009**	**1009**	**1009**	**1009**	**1008**	**1007**	**1007**	**1006**	**1007**	**1007**	**1008**	**1009**	**1009**	**1009**	**1009**	**1009**			**1006**

POSSIBLE NUMBER OF OBSERVATIONS = 720 ACTUAL NUMBER OF OBSERVATIONS = 720 DATA RECOVERY RATE = 100.0%

MONTHLY MEAN = 1017 mb

MAXIMUM PRESSURE = 1027 mb DATE OF OCCURRENCE = 9/27 AT 1000 MAXIMUM DAILY MEAN = 1025 mb DATE OF OCCURRENCE = 9/27

MINIMUM PRESSURE = 1006 mb DATE OF OCCURRENCE = 9/7 AT 1600 MINUMUM DAILY MEAN = 1008 mb DATE OF OCCURRENCE = 9/7

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

DRAFT

APPENDIX F. HOURLY PRECIPITATION DATA FOR THIRD QUARTER 2023

DRAFT

CSX AQ5

PRECIPITATION in in for JULY, 2023

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	TOTAL	MAX HR
1																								0.01	**0.01**	**0.01**
2																	0.14	0.43	0.01						**0.58**	**0.43**
3																					0.04		0.12	0.08	**0.24**	**0.12**
4				0.01								0.01													**0.02**	**0.01**
5																									**0.00**	**0.00**
6													0.07												**0.07**	**0.07**
7													0.05												**0.05**	**0.05**
8																									**0.00**	**0.00**
9														0.15	0.24	0.15									**0.54**	**0.24**
10																									**0.00**	**0.00**
11																									**0.00**	**0.00**
12																									**0.00**	**0.00**
13																									**0.00**	**0.00**
14																	0.04		0.01						**0.05**	**0.04**
15						0.01					0.01	0.03												0.01	**0.06**	**0.03**
16	0.01	0.01										0.01													**0.03**	**0.01**
17																									**0.00**	**0.00**
18																									**0.00**	**0.00**
19			0.07	0.67		0.04	0.09	0.02				0.01												0.86	**1.76**	**0.86**
20								0.01																	**0.01**	**0.01**
21			0.27	0.70	0.02	0.02	0.01																		**1.02**	**0.70**
22																									**0.00**	**0.00**
23																									**0.00**	**0.00**
24					0.22	0.83	0.19	0.01	0.01																**1.26**	**0.83**
25																									**0.00**	**0.00**
26																									**0.00**	**0.00**
27																									**0.00**	**0.00**
28																			0.02	0.59	0.01		0.01		**0.63**	**0.59**
29																0.17									**0.17**	**0.17**
30																									**0.00**	**0.00**
31																									**0.00**	**0.00**
TOTAL	**0.01**	**0.01**	**0.34**	**1.38**	**0.24**	**0.90**	**0.29**	**0.04**	**0.01**	**0.00**	**0.01**	**0.06**	**0.12**	**0.15**	**0.24**	**0.32**	**0.18**	**0.43**	**0.04**	**0.59**	**0.05**	**0.00**	**0.13**	**0.96**	**6.50**	
MAX	**0.01**	**0.01**	**0.27**	**0.70**	**0.22**	**0.83**	**0.19**	**0.02**	**0.01**	**0.00**	**0.01**	**0.03**	**0.07**	**0.15**	**0.24**	**0.17**	**0.14**	**0.43**	**0.02**	**0.59**	**0.04**	**0.00**	**0.12**	**0.86**		**0.86**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 744 DATA RECOVERY RATE = 100.0%

TOTAL PRECIPITATION FOR MONTH = 6.50 in

MAXIMUM DAILY PRECIPITATION = 1.76 in DATE OF OCCURRENCE = 7/19

MAXIMUM HOURLY PRECIPITATION = 0.86 in DATE OF OCCURRENCE = 7/19 AT 2400

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

DRAFT

CSX AQ5

PRECIPITATION in in for AUGUST, 2023

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	TOTAL	MAX HR
1																									0.00	0.00
2																									0.00	0.00
3																									0.00	0.00
4																									0.00	0.00
5																									0.00	0.00
6																			0.02	0.11		0.13	0.07	0.01	0.34	0.13
7																	0.26	0.63	0.03	0.01		0.01	0.05	0.17	1.16	0.63
8				0.01																					0.01	0.01
9																									0.00	0.00
10																	0.01								0.01	0.01
11																									0.00	0.00
12																									0.00	0.00
13																									0.00	0.00
14																	0.41	0.01							0.42	0.41
15															0.04										0.04	0.04
16																									0.00	0.00
17																									0.00	0.00
18																									0.00	0.00
19																									0.00	0.00
20																									0.00	0.00
21																									0.00	0.00
22																									0.00	0.00
23																									0.00	0.00
24											0.02														0.02	0.02
25																									0.00	0.00
26																									0.00	0.00
27																									0.00	0.00
28																									0.00	0.00
29																									0.00	0.00
30							0.04																		0.04	0.04
31																									0.00	0.00
TOTAL	**0.00**	**0.00**	**0.00**	**0.01**	**0.00**	**0.00**	**0.04**	**0.00**	**0.00**	**0.00**	**0.02**	**0.00**	**0.00**	**0.00**	**0.04**	**0.00**	**0.68**	**0.64**	**0.05**	**0.12**	**0.00**	**0.14**	**0.12**	**0.18**	**2.04**	
MAX	**0.00**	**0.00**	**0.00**	**0.01**	**0.00**	**0.00**	**0.04**	**0.00**	**0.00**	**0.00**	**0.02**	**0.00**	**0.00**	**0.00**	**0.04**	**0.00**	**0.41**	**0.63**	**0.03**	**0.11**	**0.00**	**0.13**	**0.07**	**0.17**		**0.63**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 744 DATA RECOVERY RATE = 100.0%

TOTAL PRECIPITATION FOR MONTH = 2.04 in

MAXIMUM DAILY PRECIPITATION = 1.16 in DATE OF OCCURRENCE = 8/7

MAXIMUM HOURLY PRECIPITATION = 0.63 in DATE OF OCCURRENCE = 8/7 AT 1800

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

DRAFT

CSX AQ5

PRECIPITATION in in for SEPTEMBER, 2023

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	TOTAL	MAX HR
1																									0.00	0.00
2																									0.00	0.00
3																									0.00	0.00
4																									0.00	0.00
5																									0.00	0.00
6																									0.00	0.00
7																									0.00	0.00
8			0.06	0.02																			0.03		0.11	0.06
9				0.06														0.36							0.42	0.36
10						0.05	0.02																		0.07	0.05
11						0.94									0.03										0.97	0.94
12																						0.25	0.68	0.07	1.00	0.68
13																									0.00	0.00
14																									0.00	0.00
15																									0.00	0.00
16																									0.00	0.00
17																		0.03	0.01				0.02		0.06	0.03
18	0.01																								0.01	0.01
19																									0.00	0.00
20																									0.00	0.00
21																									0.00	0.00
22																							0.01		0.01	0.01
23				0.01	0.09	0.34	0.31	0.04			0.01		0.02	0.01	0.01	0.01	0.08	0.03	0.01	0.01				0.12	1.10	0.34
24	0.06	0.01	0.01	0.03	0.07	0.04	0.29	0.03		0.01		0.02		0.10											0.67	0.29
25																	0.01								0.01	0.01
26				0.01		0.01			0.02										0.01						0.05	0.02
27																									0.00	0.00
28																									0.00	0.00
29																									0.00	0.00
30																									0.00	0.00
TOTAL	**0.07**	**0.01**	**0.07**	**0.13**	**0.16**	**1.38**	**0.62**	**0.07**	**0.02**	**0.01**	**0.01**	**0.02**	**0.02**	**0.11**	**0.04**	**0.01**	**0.09**	**0.42**	**0.03**	**0.01**	**0.00**	**0.25**	**0.74**	**0.19**	**4.48**	
MAX	**0.06**	**0.01**	**0.06**	**0.06**	**0.09**	**0.94**	**0.31**	**0.04**	**0.02**	**0.01**	**0.01**	**0.02**	**0.02**	**0.10**	**0.03**	**0.01**	**0.08**	**0.36**	**0.01**	**0.01**	**0.00**	**0.25**	**0.68**	**0.12**		**0.94**

POSSIBLE NUMBER OF OBSERVATIONS = 720 ACTUAL NUMBER OF OBSERVATIONS = 720 DATA RECOVERY RATE = 100.0%

TOTAL PRECIPITATION FOR MONTH = 4.48 in

MAXIMUM DAILY PRECIPITATION = 1.10 in DATE OF OCCURRENCE = 9/23

MAXIMUM HOURLY PRECIPITATION = 0.94 in DATE OF OCCURRENCE = 9/11 AT 0600

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

DRAFT

APPENDIX G. HOURLY AQ5 PM_{10} AND $PM_{2.5}$ CONCENTRATION DATA FOR THIRD QUARTER 2023

DRAFT

CSX AQ5

HOURLY AVERAGES of PM10 in µg/m3 for JULY, 2023

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	84.5	83.8	80.8	73.1	69.9	55.7	61.3	61.0	58.1	64.5	64.2	68.2	64.9	60.5	58.6	49.6	54.5	48.8	46.5	44.0	47.2	47.7	47.5	50.5	**60.2**	**84.5**	**44.0**
2	55.0	53.7	44.0	36.7	31.3	27.2	24.4	19.8	21.1	20.9	24.3	28.5	24.5	24.0	26.7	22.3	22.9	26.1	18.7	18.7	21.1	21.3	24.5	25.9	**27.7**	**55.0**	**18.7**
3	26.3	28.7	28.1	27.4	25.9	25.5	24.6	24.5	18.8	16.6	17.1	15.6	11.9	15.4	11.3	11.3	16.0	14.8	14.6	11.3	15.2	16.9	16.5	12.3	**18.6**	**28.7**	**11.3**
4	18.4	15.2	18.8	18.9	20.7	17.9	15.2	13.8	14.2	13.8	11.7	13.6	12.4	13.0	13.4	15.6	13.5	12.2	12.8	13.5	51.0	81.8	53.2	53.7	**22.4**	**81.8**	**11.7**
5	48.1	27.0	24.7	23.3	23.8	26.2	24.4	23.5	25.5	21.1	25.2	32.3	22.9	20.1	26.5	21.0	20.4	21.3	31.8	28.4	17.9	20.3	18.9	27.0	**25.1**	**48.1**	**17.9**
6	31.4	38.0	30.5	33.8	28.3	28.7	22.6	21.4	24.6	20.6	33.0	19.5	21.3	20.8	19.2	17.0	19.2	17.2	17.1	19.5	23.3	19.2	17.6	16.0	**23.3**	**38.0**	**16.0**
7	18.2	20.3	19.6	19.7	21.5	28.2	23.4	24.3	21.8	27.9	26.2	24.6	19.2	20.1	19.2	25.1	23.5	23.0	15.7	17.9	20.1	25.1	24.5	21.0	**22.1**	**28.2**	**15.7**
8	21.9	20.9	21.0	24.1	26.2	20.2	21.7	22.2	24.1	20.2	19.8	21.1	23.2	25.6	26.5	20.9	18.0	16.5	15.7	15.4	14.1	15.2	15.4	16.2	**20.3**	**26.5**	**14.1**
9	16.0	14.8	16.0	15.2	15.3	16.0	17.1	16.4	17.4	14.1	13.7	15.0	13.6	19.4	15.6	18.3	10.3	9.2	9.3	8.9	12.1	12.0	13.6	15.6	**14.4**	**19.4**	**8.9**
10	14.9	15.7	16.6	18.8	18.9	21.2	21.2	19.2	21.4	20.2	16.8	15.1	15.1	16.7	16.5	17.6	14.8	15.7	15.2	24.7	24.7	24.5	19.7	18.3	**18.5**	**24.7**	**14.8**
11	19.0	22.4	22.1	21.4	20.3	24.2	27.5	33.0	33.0	23.7	23.7	21.5	19.8	25.2	20.3	21.0	20.7	19.1	19.3	25.7	27.0	24.3	24.6	24.2	**23.5**	**33.0**	**19.0**
12	25.5	25.7	28.7	29.0	36.4	26.6	35.1	31.7	30.3	23.5	22.1	22.6	18.6	24.0	26.3	23.3	22.3	23.7	21.7	28.4	33.6	28.1	37.4	34.3	**27.5**	**37.4**	**18.6**
13	26.7	33.0	27.0	26.8	30.1	35.8	41.4	36.0	26.0	27.3	30.3	32.9	35.8	39.2	43.7	33.0	32.5	30.2	24.1	26.7	20.1	23.5	21.4	19.1	**30.1**	**43.7**	**19.1**
14	19.2	12.8	12.2	19.1	24.5	15.4	18.3	16.2	15.9	12.4	12.0	11.5	24.2	20.3	17.3	18.7	24.8	12.9	11.3	13.7	12.9	14.2	13.1	13.9	**16.1**	**24.8**	**11.3**
15	16.4	15.6	17.0	15.6	14.8	13.2	12.1	15.7	14.4	16.9	15.0	20.4	16.8	17.0	17.3	16.9	17.8	18.0	15.7	18.6	19.6	18.8	17.0	12.8	**16.4**	**20.4**	**12.1**
16	14.9	13.1	11.1	14.2	12.3	13.3	11.7	19.0	11.9	12.1	10.5	8.8	9.1	10.2	9.7	9.8	10.8	10.3	10.0	11.2	17.6	20.2	13.2	12.5	**12.4**	**20.2**	**8.8**
17	15.4	16.2	16.2	17.9	22.7	25.7	31.2	27.8	44.4	60.3	79.8	73.6	86.9	73.7	78.4	86.6	78.7	77.0	72.6	73.3	70.4	68.1	63.6	72.3	**55.5**	**86.9**	**15.4**
18	58.5	50.1	51.1	62.2	66.1	62.4	60.4	63.8	50.7	45.8	41.6	35.0	33.4	31.2	34.4	51.9	59.6	57.6	55.4	53.2	53.4	56.8	58.8	66.6	**52.5**	**66.6**	**31.2**
19	54.7	47.9	34.0	30.0	31.1	30.1	30.3	29.4	28.4	27.6	27.3	28.0	20.8	34.5	21.8	21.8	20.3	18.5	19.3	19.0	20.4	20.7	21.1	29.3	**27.8**	**54.7**	**18.5**
20	21.1	21.8	25.3	27.2	28.2	25.2	33.9	44.7	32.2	24.4	24.3	28.8	26.8	25.2	27.8	28.6	28.6	27.6	25.9	33.3	31.7	33.5	35.6	37.1	**29.1**	**44.7**	**21.1**
21	33.2	28.6	22.3	15.2	9.8	11.9	17.2	11.5	11.7	15.8	13.8	13.0	12.4	13.5	15.5	16.4	16.5	19.3	19.4	20.9	19.8	22.9	17.9	16.3	**17.3**	**33.2**	**9.8**
22	16.2	16.0	15.5	14.8	14.8	16.7	16.1	18.4	16.3	13.1	13.5	12.3	12.7	11.5	13.9	14.2	16.2	17.2	17.5	20.8	24.3	23.7	20.3	19.1	**16.5**	**24.3**	**11.5**
23	20.3	23.4	21.1	21.1	23.7	24.0	23.0	27.0	26.8	25.4	18.4	17.4	17.8	16.8	17.2	15.7	13.5	14.5	14.8	16.5	26.2	23.4	36.1	21.5	**21.1**	**36.1**	**13.5**
24	18.5	18.5	16.6	19.8	15.4	20.0	19.5	12.6	14.8	18.9	13.5	12.1	15.5	15.2	---	---	---	10.2	9.5	11.4	15.2	13.7	17.0	16.7	**15.5**	**20.0**	**9.5**
25	14.9	13.7	14.1	18.1	16.0	18.1	19.5	18.7	16.7	20.3	19.4	23.5	26.6	25.7	19.5	19.5	19.7	22.2	17.6	15.6	16.2	17.5	20.1	21.5	**18.9**	**26.6**	**13.7**
26	27.8	25.0	23.7	26.2	27.6	31.4	31.3	25.0	23.2	27.6	24.8	23.7	21.6	21.1	21.2	21.9	19.2	20.7	19.1	20.2	19.9	20.3	23.1	24.3	**23.7**	**31.4**	**19.1**
27	21.7	21.4	19.7	22.1	26.0	30.2	---	---	---	40.8	45.3	45.2	57.8	64.6	55.1	42.6	35.6	30.0	27.3	19.4	16.9	22.0	17.7	20.4	**32.5**	**64.6**	**16.9**
28	26.4	21.2	22.4	28.2	24.4	41.1	71.2	34.7	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
29	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
30	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
31	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
MEAN	**28.0**	**26.6**	**25.0**	**25.7**	**25.9**	**26.1**	**28.0**	**26.3**	**24.8**	**25.0**	**25.5**	**25.3**	**25.4**	**26.1**	**25.9**	**25.4**	**25.0**	**23.5**	**22.1**	**23.3**	**25.6**	**27.2**	**26.3**	**26.6**	**25.6**		
MAX	**84.5**	**83.8**	**80.8**	**73.1**	**69.9**	**62.4**	**71.2**	**63.8**	**58.1**	**64.5**	**79.8**	**73.6**	**86.9**	**73.7**	**78.4**	**86.6**	**78.7**	**77.0**	**72.6**	**73.3**	**70.4**	**81.8**	**63.6**	**72.3**		**86.9**	
MIN	**14.9**	**12.8**	**11.1**	**14.2**	**9.8**	**11.9**	**11.7**	**11.5**	**11.7**	**12.1**	**10.5**	**8.8**	**9.1**	**10.2**	**9.7**	**9.8**	**10.3**	**9.2**	**9.3**	**8.9**	**12.1**	**12.0**	**13.1**	**12.3**			**8.8**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 650 DATA RECOVERY RATE = 87.4% DATA CAPTURE RATE = 87.1%

MONTHLY MEAN = 25.6 µg/m3

MAXIMUM PM10 = 86.9 µg/m3 DATE OF OCCURRENCE = 7/17 at 1300 MAXIMUM DAILY MEAN = 60.2 µg/m3 DATE OF OCCURRENCE = 7/1

SECOND MAXIMUM PM10 = 86.6 µg/m3 DATE OF OCCURRENCE = 7/17 at 1600 SECOND MAXIMUM DAILY MEAN = 55.5 µg/m3 DATE OF OCCURRENCE = 7/17

MINIMUM PM10 = 8.8 µg/m3 DATE OF OCCURRENCE = 7/16 at 1200 MINUMUM DAILY MEAN = 12.4 µg/m3 DATE OF OCCURRENCE = 7/16

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

DRAFT

CSX AQ5

HOURLY AVERAGES of PM10 in µg/m3 for AUGUST, 2023

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
2	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
3	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
4	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
5	---	---	---	---	---	---	---	---	---	---	17.4	19.9	19.5	21.3	22.1	22.6	24.6	31.0	32.9	29.9	35.3	36.2	30.7	31.3	---	---	---
6	29.3	28.2	30.7	32.4	41.4	35.7	29.5	27.2	26.8	24.0	22.8	22.7	24.0	24.6	25.0	25.5	24.3	22.5	24.2	27.9	24.4	25.6	24.5	23.3	**26.9**	**41.4**	**22.5**
7	24.1	20.9	19.6	21.7	21.3	20.8	18.7	15.9	16.0	15.8	18.4	16.2	14.0	14.9	18.5	19.0	22.9	13.6	13.8	13.2	11.1	12.8	14.3	13.1	**17.1**	**24.1**	**11.1**
8	10.8	13.3	13.3	16.5	16.8	15.0	12.0	12.0	12.6	12.7	15.7	14.6	16.3	20.1	18.8	19.2	18.9	21.9	21.6	29.6	24.4	21.6	21.3	21.2	**17.5**	**29.6**	**10.8**
9	20.0	17.8	17.8	18.5	18.6	18.7	22.9	21.5	19.1	19.5	20.2	20.5	19.7	15.8	15.2	16.0	15.9	15.4	17.9	24.6	24.1	23.3	22.5	21.7	**19.5**	**24.6**	**15.2**
10	18.8	19.7	22.5	28.3	31.0	26.0	29.7	25.8	28.3	35.0	24.4	20.9	21.9	23.8	22.6	21.8	19.1	17.0	18.5	17.5	16.5	12.6	13.1	12.9	**22.0**	**35.0**	**12.6**
11	14.3	16.2	15.7	16.7	15.3	15.8	18.8	19.0	19.4	22.0	23.6	23.6	22.5	24.2	23.7	22.3	23.4	22.4	24.5	31.2	30.7	31.1	32.0	27.9	**22.3**	**32.0**	**14.3**
12	27.4	25.8	25.2	26.6	35.3	25.7	29.1	25.7	24.5	24.6	22.9	18.4	20.4	22.2	21.5	24.2	21.3	17.3	17.5	20.2	18.2	20.7	18.8	22.9	**23.2**	**35.3**	**17.3**
13	20.3	16.3	20.9	17.0	14.9	14.6	14.7	10.4	10.1	10.5	12.5	11.2	14.7	13.2	13.6	14.7	12.2	12.4	12.5	14.7	14.9	30.4	30.0	41.4	**16.6**	**41.4**	**10.1**
14	39.9	20.9	17.1	19.2	22.4	32.1	38.3	29.7	37.6	48.7	24.6	17.3	17.1	15.3	16.4	17.5	22.9	11.5	12.4	12.2	13.2	14.8	15.6	18.8	**22.3**	**48.7**	**11.5**
15	18.8	17.8	19.4	18.3	18.0	16.2	16.2	14.9	12.5	11.4	10.5	9.6	8.8	10.8	15.9	11.1	10.7	12.6	11.7	12.0	44.7	17.0	15.3	16.2	**15.4**	**44.7**	**8.8**
16	15.4	14.6	14.2	16.4	17.9	18.7	20.0	24.6	17.1	11.8	12.3	12.1	10.1	13.0	10.3	12.0	15.1	14.6	13.3	14.7	19.0	19.3	21.9	19.7	**15.8**	**24.6**	**10.1**
17	16.8	18.7	17.3	20.8	18.9	21.9	55.1	42.7	31.2	17.5	15.0	15.1	15.7	16.8	19.3	18.9	16.4	17.0	13.5	12.5	11.4	13.0	14.0	14.4	**19.7**	**55.1**	**11.4**
18	15.3	14.2	11.8	12.6	14.9	19.1	18.4	30.3	27.6	41.6	37.9	30.7	36.8	25.2	34.1	31.9	26.9	29.7	21.7	22.6	26.2	25.6	25.3	29.7	**25.4**	**41.6**	**11.8**
19	27.3	28.5	28.2	27.5	31.4	32.8	29.2	27.1	26.7	22.4	26.5	23.3	28.9	39.8	38.3	32.7	28.3	23.9	24.9	32.9	29.0	31.6	32.1	33.1	**29.4**	**39.8**	**22.4**
20	33.4	30.0	30.0	29.6	43.8	37.0	33.7	27.6	26.6	23.7	26.1	26.6	25.5	23.2	21.9	29.5	31.0	22.6	22.5	22.8	23.6	25.1	28.9	26.2	**28.0**	**43.8**	**21.9**
21	23.8	24.1	27.3	24.8	32.6	34.6	40.3	37.8	65.6	40.2	35.7	32.3	25.4	31.1	37.6	43.9	39.6	41.7	33.5	37.4	38.7	31.0	31.1	29.1	**35.0**	**65.6**	**23.8**
22	31.7	37.3	68.7	41.3	35.9	45.4	49.8	62.8	72.8	71.3	55.4	53.5	40.3	42.4	51.8	57.2	39.9	21.0	19.5	19.5	23.0	22.0	22.1	25.7	**42.1**	**72.8**	**19.5**
23	23.4	28.3	26.0	31.7	31.0	27.7	55.5	40.1	20.3	22.5	24.4	24.1	14.0	14.9	14.1	16.7	19.6	21.2	15.5	17.9	25.0	23.8	18.9	18.6	**24.0**	**55.5**	**14.0**
24	20.2	22.9	20.2	22.9	24.9	21.7	24.5	27.7	25.4	23.4	29.5	18.1	16.6	19.8	19.5	18.5	17.0	18.6	18.4	19.3	21.4	20.3	21.9	19.5	**21.3**	**29.5**	**16.6**
25	16.3	17.1	17.2	18.5	22.5	23.4	22.9	24.4	24.7	25.0	23.5	24.0	24.2	18.5	17.6	21.9	25.1	18.1	36.5	23.9	13.7	14.6	13.4	14.9	**20.9**	**36.5**	**13.4**
26	20.8	19.2	20.6	18.3	20.2	19.0	19.1	20.0	16.4	17.1	14.5	12.4	11.5	14.2	19.5	19.0	21.8	19.4	15.7	16.9	16.8	24.1	20.4	20.1	**18.2**	**24.1**	**11.5**
27	17.6	28.4	19.5	18.2	18.9	17.7	18.2	16.2	17.0	15.0	13.6	14.2	14.6	12.3	12.7	12.4	13.1	13.7	13.7	16.1	17.2	18.1	16.3	14.9	**16.2**	**28.4**	**12.3**
28	13.1	12.2	12.8	11.8	13.0	12.1	14.0	12.7	14.1	15.8	16.9	17.5	15.3	14.9	15.8	13.6	14.5	15.2	11.8	11.7	11.9	11.3	11.0	10.9	**13.5**	**17.5**	**10.9**
29	11.5	10.8	10.2	10.4	12.4	13.8	13.3	12.9	12.3	12.1	10.8	11.6	11.3	9.6	14.2	13.4	17.1	12.1	11.6	16.0	12.5	9.9	8.1	11.4	**12.1**	**17.1**	**8.1**
30	9.9	10.0	11.4	10.8	13.1	19.7	13.6	18.5	46.0	32.5	81.0	100.6	130.7	150.5	185.4	143.2	367.7	42.2	56.2	20.9	24.9	26.6	22.5	19.0	**64.9**	**367.7**	**9.9**
31	16.4	10.2	12.4	13.1	16.6	22.9	32.6	52.3	---	105.0	78.5	44.5	29.6	66.8	53.1	42.9	16.4	21.6	19.1	14.5	13.8	15.4	16.4	20.0	**31.9**	**105.0**	**10.2**
MEAN	**20.6**	**20.1**	**21.2**	**20.9**	**23.2**	**23.4**	**26.5**	**26.1**	**26.0**	**27.7**	**26.5**	**24.3**	**24.1**	**26.6**	**28.8**	**27.5**	**34.3**	**20.4**	**20.6**	**20.5**	**21.7**	**21.4**	**20.8**	**21.4**	**23.9**		
MAX	**39.9**	**37.3**	**68.7**	**41.3**	**43.8**	**45.4**	**55.5**	**62.8**	**72.8**	**105.0**	**81.0**	**100.6**	**130.7**	**150.5**	**185.4**	**143.2**	**367.7**	**42.2**	**56.2**	**37.4**	**44.7**	**36.2**	**32.1**	**41.4**		**367.7**	
MIN	**9.9**	**10.0**	**10.2**	**10.4**	**12.4**	**12.1**	**12.0**	**10.4**	**10.1**	**10.5**	**10.5**	**9.6**	**8.8**	**9.6**	**10.3**	**11.1**	**10.7**	**11.5**	**11.6**	**11.7**	**11.1**	**9.9**	**8.1**	**10.9**			**8.1**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 637 DATA RECOVERY RATE = 85.6% DATA CAPTURE RATE = 83.9%

MONTHLY MEAN = 23.9 µg/m3

MAXIMUM PM10 = 367.7 µg/m3 DATE OF OCCURRENCE = 8/30 at 1700 MAXIMUM DAILY MEAN = 64.9 µg/m3 DATE OF OCCURRENCE = 8/30

SECOND MAXIMUM PM10 = 185.4 µg/m3 DATE OF OCCURRENCE = 8/30 at 1500 SECOND MAXIMUM DAILY MEAN = 42.1 µg/m3 DATE OF OCCURRENCE = 8/22

MINIMUM PM10 = 8.1 µg/m3 DATE OF OCCURRENCE = 8/29 at 2300 MINUMUM DAILY MEAN = 12.1 µg/m3 DATE OF OCCURRENCE = 8/29

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

UNDERLINED DATA ARE SUSPECT

DRAFT

CSX AQ5

HOURLY AVERAGES of PM10 in µg/m3 for SEPTEMBER, 2023

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	14.6	11.9	16.1	22.9	12.5	16.6	28.3	22.5	13.3	12.1	11.8	12.2	13.6	16.9	15.8	14.1	17.6	21.2	17.3	22.3	24.4	17.9	19.5	18.1	**17.2**	**28.3**	**11.8**
2	17.5	17.7	19.1	17.3	21.8	28.7	17.0	18.5	15.6	15.1	14.7	15.3	14.1	12.8	12.7	13.1	17.0	17.8	14.5	16.0	17.3	18.1	18.9	15.4	**16.9**	**28.7**	**12.7**
3	18.5	15.6	16.7	15.5	20.1	21.6	19.0	18.4	16.2	17.7	20.7	20.1	16.1	19.6	19.2	16.8	20.9	17.9	21.5	29.1	26.7	29.7	35.9	25.6	**20.8**	**35.9**	**15.5**
4	27.5	21.8	23.7	24.9	24.4	19.6	16.6	15.2	16.6	21.0	17.6	16.9	20.9	28.9	20.2	20.7	17.7	16.9	18.2	16.6	19.7	18.7	17.5	16.4	**19.9**	**28.9**	**15.2**
5	15.5	16.4	16.3	17.8	20.2	17.5	21.0	19.6	18.5	23.3	19.2	22.4	25.4	25.6	28.4	32.2	32.0	32.9	35.3	28.4	34.4	34.1	34.8	30.2	**25.1**	**35.3**	**15.5**
6	23.8	20.9	23.3	19.2	28.9	32.0	29.5	41.5	32.9	28.9	30.6	34.2	33.3	35.8	30.0	30.2	29.9	23.0	22.3	29.3	32.1	34.4	29.8	32.6	**29.5**	**41.5**	**19.2**
7	27.2	24.5	27.8	29.6	42.7	36.1	31.1	34.9	42.1	34.2	25.9	23.6	24.7	33.2	38.5	30.2	31.1	52.1	18.7	21.1	17.7	21.6	24.6	23.1	**29.8**	**52.1**	**17.7**
8	19.9	27.8	26.4	18.7	19.3	21.0	24.6	30.9	27.1	26.1	29.1	23.5	27.4	18.1	18.1	16.8	18.9	22.8	21.3	33.9	11.7	19.3	22.8	21.5	**22.8**	**33.9**	**11.7**
9	20.1	18.2	18.6	18.2	17.4	15.7	16.3	18.4	13.7	14.3	15.7	17.4	14.4	18.6	15.0	10.0	11.4	16.0	10.4	10.2	12.4	13.4	14.8	14.8	**15.2**	**20.1**	**10.0**
10	22.1	19.7	18.3	18.9	19.0	15.8	13.2	12.6	9.5	11.5	8.1	7.4	8.0	9.0	8.6	11.3	11.8	8.8	9.1	11.1	11.7	11.4	12.8	10.4	**12.5**	**22.1**	**7.4**
11	12.0	14.9	12.0	14.2	14.2	17.5	11.0	10.1	11.6	11.6	12.5	12.6	12.2	12.3	12.4	8.3	9.0	10.5	11.8	12.0	12.4	12.9	17.6	19.0	**12.7**	**19.0**	**8.3**
12	20.7	20.3	20.0	18.9	23.4	22.1	25.7	31.3	27.9	15.0	17.3	13.6	10.0	8.7	10.1	11.1	11.5	13.2	15.7	16.1	13.9	15.7	18.2	9.9	**17.1**	**31.3**	**8.7**
13	8.0	9.5	11.8	12.1	12.5	16.9	16.9	20.0	24.5	23.4	16.4	13.1	13.1	13.5	11.8	13.3	13.6	17.6	16.7	19.4	22.6	15.8	23.9	20.7	**16.1**	**24.5**	**8.0**
14	23.7	11.8	11.3	12.3	12.7	13.5	15.2	17.9	20.0	16.8	14.8	14.4	15.0	12.8	13.3	11.5	14.2	13.8	14.0	19.3	14.6	14.7	13.5	12.5	**14.7**	**23.7**	**11.3**
15	12.6	12.6	11.9	12.8	14.5	12.9	21.3	23.4	18.2	18.7	15.3	16.1	15.8	14.2	16.0	15.2	15.2	14.9	15.6	16.6	17.1	16.9	17.3	17.9	**16.0**	**23.4**	**11.9**
16	16.5	15.7	18.2	18.9	15.3	16.5	18.9	23.6	16.8	13.5	13.4	11.7	12.1	12.0	11.3	10.5	10.7	12.6	27.3	19.4	21.7	28.6	32.3	42.4	**18.3**	**42.4**	**10.5**
17	47.0	32.5	46.0	30.2	25.1	23.8	27.5	15.2	16.9	15.8	15.3	17.1	18.2	18.5	15.7	16.2	18.2	16.0	12.7	13.8	14.9	14.4	15.6	16.0	**20.9**	**47.0**	**12.7**
18	13.7	12.7	13.0	12.6	12.5	14.4	19.6	17.2	12.2	9.8	11.3	12.1	12.9	18.3	15.7	19.5	15.7	26.9	18.3	22.1	18.5	17.1	16.3	18.1	**15.9**	**26.9**	**9.8**
19	15.8	14.3	15.0	18.2	17.1	17.5	20.4	20.7	19.7	19.0	19.5	20.4	20.4	18.2	18.5	13.3	15.2	16.0	17.3	19.6	16.7	31.9	19.5	19.9	**18.5**	**31.9**	**13.3**
20	20.1	21.5	19.0	16.8	23.0	21.7	38.5	35.3	32.3	33.5	26.7	29.0	18.9	20.6	21.9	26.0	14.1	17.8	21.1	20.4	29.9	26.5	25.8	28.3	**24.5**	**38.5**	**14.1**
21	162.7	204.7	42.2	24.4	25.0	32.5	44.8	43.1	39.4	24.3	24.1	25.2	31.5	28.4	25.1	14.9	15.9	13.6	16.7	17.6	20.9	23.4	18.4	14.4	**38.9**	**204.7**	**13.6**
22	17.4	21.3	22.0	24.0	21.0	24.6	34.8	18.6	17.7	17.2	20.7	16.3	15.8	16.4	17.8	16.8	19.1	18.0	16.2	18.7	18.1	17.7	16.9	15.2	**19.3**	**34.8**	**15.2**
23	15.7	14.7	13.6	15.0	17.8	14.5	9.9	8.7	9.6	8.7	5.7	4.9	6.7	5.5	4.7	5.6	5.0	4.6	3.5	5.2	5.8	5.9	6.3	5.1	**8.4**	**17.8**	**3.5**
24	6.9	4.6	3.2	2.9	3.8	4.5	6.2	7.7	7.7	8.7	7.5	5.9	4.2	3.4	3.0	5.6	8.5	9.2	11.7	11.3	9.8	11.3	11.4	9.9	**7.0**	**11.7**	**2.9**
25	8.0	8.0	7.3	7.9	7.6	12.2	10.7	10.0	5.6	8.1	6.0	7.2	8.1	10.3	10.7	14.1	7.3	5.3	6.3	9.7	10.5	8.8	10.1	8.7	**8.7**	**14.1**	**5.3**
26	11.6	9.0	9.8	11.5	10.8	14.0	23.4	26.9	24.4	26.1	28.1	23.5	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
27	---	---	---	---	---	---	---	---	---	---	22.8	21.2	19.9	17.6	17.1	16.4	16.7	18.1	18.1	20.1	18.8	17.3	18.7	24.8	**---**	**---**	**---**
28	24.2	23.7	23.0	29.5	30.3	29.7	33.6	30.0	23.1	22.2	20.1	19.7	17.5	18.6	20.1	15.8	18.7	22.4	24.8	22.7	29.0	23.3	21.8	24.9	**23.7**	**33.6**	**15.8**
29	21.8	21.4	17.7	13.7	12.0	12.1	11.7	12.2	12.1	12.5	12.0	11.8	11.1	12.9	14.2	15.7	12.3	12.0	13.4	15.2	15.5	13.0	14.9	8.2	**13.7**	**21.8**	**8.2**
30	7.8	8.0	11.7	10.0	4.8	7.0	7.8	8.9	9.6	11.0	10.7	12.0	9.7	14.2	11.2	13.4	10.9	14.6	15.0	10.6	11.1	18.3	24.2	18.2	**11.7**	**24.2**	**4.8**
MEAN	**23.2**	**23.3**	**18.4**	**17.5**	**18.3**	**19.1**	**21.2**	**21.1**	**19.1**	**17.9**	**17.1**	**16.7**	**16.2**	**17.1**	**16.5**	**15.8**	**15.9**	**17.5**	**16.7**	**18.2**	**18.3**	**19.0**	**19.8**	**18.7**	**18.4**		
MAX	**162.7**	**204.7**	**46.0**	**30.2**	**42.7**	**36.1**	**44.8**	**43.1**	**42.1**	**34.2**	**30.6**	**34.2**	**33.3**	**35.8**	**38.5**	**32.2**	**32.0**	**52.1**	**35.3**	**33.9**	**34.4**	**34.4**	**35.9**	**42.4**		**204.7**	
MIN	**6.9**	**4.6**	**3.2**	**2.9**	**3.8**	**4.5**	**6.2**	**7.7**	**5.6**	**8.1**	**5.7**	**4.9**	**4.2**	**3.4**	**3.0**	**5.6**	**5.0**	**4.6**	**3.5**	**5.2**	**5.8**	**5.9**	**6.3**	**5.1**			**2.9**

POSSIBLE NUMBER OF OBSERVATIONS = 720 ACTUAL NUMBER OF OBSERVATIONS = 698 DATA RECOVERY RATE = 96.9% DATA CAPTURE RATE = 93.3%

MONTHLY MEAN = 18.4 µg/m3

MAXIMUM PM10 = 204.7 µg/m3 DATE OF OCCURRENCE = 9/21 at 200 MAXIMUM DAILY MEAN = 38.9 µg/m3 DATE OF OCCURRENCE = 9/21

SECOND MAXIMUM PM10 = 162.7 µg/m3 DATE OF OCCURRENCE = 9/21 at 100 SECOND MAXIMUM DAILY MEAN = 29.8 µg/m3 DATE OF OCCURRENCE = 9/7

MINIMUM PM10 = 2.9 µg/m3 DATE OF OCCURRENCE = 9/24 at 400 MINUMUM DAILY MEAN = 7.0 µg/m3 DATE OF OCCURRENCE = 9/24

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

UNDERLINED DATA ARE SUSPECT

DRAFT

CSX AQ5

HOURLY AVERAGES of PM2.5 in µg/m3 for JULY, 2023

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	55.5	55.3	54.6	48.1	45.3	38.9	43.2	42.4	40.7	43.7	45.0	47.8	45.2	40.1	37.3	32.6	35.4	33.8	31.5	30.8	33.3	33.5	33.6	35.7	**40.9**	**55.5**	**30.8**
2	39.3	37.3	30.0	25.1	20.2	17.3	15.5	12.9	12.7	13.5	14.6	16.0	15.5	15.3	15.7	14.4	13.5	10.5	7.7	8.9	9.6	10.3	11.3	11.7	**16.6**	**39.3**	**7.7**
3	12.8	13.9	14.1	13.0	12.5	12.0	11.8	13.2	10.2	8.0	7.5	8.0	6.3	8.2	5.8	6.6	9.0	8.2	7.7	6.6	6.9	7.4	6.7	4.9	**9.2**	**14.1**	**4.9**
4	7.5	5.9	6.5	7.1	7.3	6.1	6.3	6.0	6.8	7.4	7.3	6.9	6.9	6.6	6.9	7.0	6.8	6.3	6.9	8.2	36.6	60.5	38.9	39.1	**12.9**	**60.5**	**5.9**
5	33.8	18.7	16.5	14.0	13.8	13.6	12.1	11.1	11.0	12.1	13.1	13.7	12.2	10.9	11.1	11.2	12.0	12.5	13.7	12.5	10.1	10.6	10.8	13.4	**13.5**	**33.8**	**10.1**
6	13.6	16.3	14.7	14.6	13.0	12.1	11.7	10.8	10.9	9.9	10.1	9.8	10.9	9.9	11.3	11.3	11.5	11.2	11.5	12.8	13.1	12.6	12.2	10.9	**11.9**	**16.3**	**9.8**
7	11.3	11.7	11.7	11.3	11.5	12.4	12.4	13.4	12.6	12.2	12.1	12.5	10.2	12.9	12.6	14.4	13.0	12.6	10.6	10.3	11.7	13.0	13.4	12.5	**12.1**	**14.4**	**10.2**
8	14.3	14.0	12.9	14.1	14.1	10.9	11.6	11.7	13.1	14.0	13.9	14.3	14.8	15.7	16.3	11.5	10.4	10.9	10.5	10.6	8.9	9.1	9.8	10.1	**12.3**	**16.3**	**8.9**
9	9.5	9.4	9.5	9.7	10.0	10.0	9.9	10.3	10.2	9.8	9.4	9.9	9.2	8.6	7.3	6.2	3.7	2.4	3.2	3.8	4.5	5.4	5.7	6.3	**7.6**	**10.3**	**2.4**
10	7.0	7.0	7.5	7.8	8.1	8.7	9.1	9.1	9.1	7.9	7.6	8.2	8.7	8.7	8.6	8.8	8.6	8.4	9.0	10.0	11.2	11.7	10.9	10.4	**8.8**	**11.7**	**7.0**
11	10.6	11.6	11.4	11.5	11.2	11.7	11.9	12.7	11.2	9.7	10.4	10.6	10.7	12.0	11.7	12.2	12.2	11.4	11.9	13.0	14.3	13.5	14.8	15.6	**11.9**	**15.6**	**9.7**
12	16.2	16.3	15.8	16.0	18.1	15.0	15.6	14.6	13.5	13.0	12.7	12.4	12.2	13.6	14.1	13.7	14.4	14.5	13.8	15.6	17.5	17.2	18.9	18.9	**15.1**	**18.9**	**12.2**
13	17.8	19.5	17.8	17.3	18.6	18.7	18.4	17.7	16.2	16.5	15.9	16.2	14.8	15.5	15.3	14.3	15.1	14.0	13.0	13.2	12.5	13.3	12.4	10.9	**15.6**	**19.5**	**10.9**
14	10.1	7.4	7.2	8.2	8.0	6.2	5.4	5.3	5.2	4.8	4.8	5.0	5.8	5.6	5.4	5.6	8.1	6.2	5.4	6.0	6.0	6.1	5.8	5.8	**6.2**	**10.1**	**4.8**
15	6.6	6.6	6.8	6.9	6.8	6.1	5.6	7.4	7.4	8.3	8.9	12.0	11.5	12.0	11.6	11.2	11.4	11.5	10.1	10.3	9.6	9.5	8.9	6.3	**8.8**	**12.0**	**5.6**
16	6.5	6.5	5.9	6.3	6.5	6.3	5.8	11.9	6.3	6.4	6.0	5.4	5.4	5.9	6.0	6.1	6.3	6.0	6.2	6.4	8.4	9.0	7.5	7.6	**6.6**	**11.9**	**5.4**
17	8.6	9.4	9.5	10.1	11.3	12.7	14.4	16.5	24.5	39.4	59.3	57.3	65.9	53.0	57.3	65.4	58.9	59.8	57.7	55.5	53.1	52.4	49.2	48.0	**39.5**	**65.9**	**8.6**
18	42.7	37.8	38.0	47.3	49.2	45.2	39.1	36.3	29.7	29.2	27.2	22.9	21.3	20.4	23.4	38.5	44.7	43.0	40.6	39.4	38.9	39.2	40.7	40.5	**36.4**	**49.2**	**20.4**
19	37.7	33.5	22.6	16.2	18.2	17.6	18.8	18.8	18.0	16.1	16.6	15.4	12.2	12.1	11.0	12.3	11.7	11.5	11.0	11.0	11.4	11.5	11.6	14.1	**16.2**	**37.7**	**11.0**
20	11.1	11.9	12.0	11.3	10.7	11.6	12.6	15.0	12.9	11.8	12.1	12.4	13.5	14.4	16.9	17.0	16.7	17.3	17.7	19.3	19.4	20.7	21.0	21.2	**15.0**	**21.2**	**10.7**
21	20.3	17.7	10.0	5.8	3.4	4.0	5.6	4.0	4.2	5.2	5.2	5.0	5.4	6.5	7.5	7.7	8.2	9.7	10.9	12.3	12.3	11.7	10.9	10.2	**8.4**	**20.3**	**3.4**
22	9.2	9.1	8.5	8.2	8.4	8.9	8.9	9.9	9.1	7.6	7.6	7.2	7.2	7.3	8.3	8.7	9.1	9.5	10.1	11.1	11.9	13.1	12.2	12.4	**9.3**	**13.1**	**7.2**
23	12.2	13.9	12.7	12.5	13.8	13.5	12.5	13.0	13.5	13.5	10.8	10.3	10.1	9.4	9.6	9.3	8.3	8.3	9.1	10.4	12.8	13.1	27.6	12.1	**12.1**	**27.6**	**8.3**
24	11.1	11.0	10.7	10.9	8.9	10.5	9.2	5.6	5.8	9.2	7.8	7.2	8.7	8.6	---	---	---	5.7	5.9	6.1	7.6	7.5	8.2	8.0	**8.2**	**11.1**	**5.6**
25	7.7	7.5	7.7	8.5	8.3	8.9	9.0	9.4	9.9	10.3	10.2	12.8	13.9	11.6	10.1	10.7	11.3	11.7	9.0	9.1	9.2	8.6	9.7	10.4	**9.8**	**13.9**	**7.5**
26	12.4	12.2	12.1	13.5	13.7	14.1	13.7	12.6	12.6	14.5	14.4	14.6	14.0	13.2	12.7	14.0	11.9	12.0	12.4	12.8	12.2	11.6	12.4	12.2	**12.9**	**14.6**	**11.6**
27	11.7	11.7	11.6	12.9	14.4	16.3	---	---	---	20.6	20.5	20.6	21.3	22.1	20.5	18.8	17.4	17.1	15.8	12.1	9.7	11.0	10.5	10.7	**15.5**	**22.1**	**9.7**
28	11.3	11.5	12.9	14.7	14.2	16.0	18.2	14.6	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
29	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
30	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
31	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
MEAN	**16.7**	**15.9**	**14.7**	**14.4**	**14.3**	**13.8**	**13.6**	**13.6**	**13.0**	**13.9**	**14.5**	**14.6**	**14.6**	**14.1**	**14.4**	**15.0**	**15.0**	**14.3**	**13.8**	**14.0**	**15.3**	**16.4**	**16.1**	**15.6**	**14.6**		
MAX	**55.5**	**55.3**	**54.6**	**48.1**	**49.2**	**45.2**	**43.2**	**42.4**	**40.7**	**43.7**	**59.3**	**57.3**	**65.9**	**53.0**	**57.3**	**65.4**	**58.9**	**59.8**	**57.7**	**55.5**	**53.1**	**60.5**	**49.2**	**48.0**		**65.9**	
MIN	**6.5**	**5.9**	**5.9**	**5.8**	**3.4**	**4.0**	**5.4**	**4.0**	**4.2**	**4.8**	**4.8**	**5.0**	**5.4**	**5.6**	**5.4**	**5.6**	**3.7**	**2.4**	**3.2**	**3.8**	**4.5**	**5.4**	**5.7**	**4.9**			**2.4**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 650 DATA RECOVERY RATE = 87.4% DATA CAPTURE RATE = 87.1%

MONTHLY MEAN = 14.6 µg/m3

MAXIMUM PM2.5 = 65.9 µg/m3 DATE OF OCCURRENCE = 7/17 at 1300 MAXIMUM DAILY MEAN = 40.9 µg/m3 DATE OF OCCURRENCE = 7/1

SECOND MAXIMUM PM2.5 = 65.4 µg/m3 DATE OF OCCURRENCE = 7/17 at 1600 SECOND MAXIMUM DAILY MEAN = 39.5 µg/m3 DATE OF OCCURRENCE = 7/17

MINIMUM PM2.5 = 2.4 µg/m3 DATE OF OCCURRENCE = 7/9 at 1800 MINUMUM DAILY MEAN = 6.2 µg/m3 DATE OF OCCURRENCE = 7/14

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

DRAFT

CSX AQ5

HOURLY AVERAGES of PM2.5 in µg/m3 for AUGUST, 2023

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
2	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
3	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
4	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
5	---	---	---	---	---	---	---	---	---	---	11.4	12.7	12.7	14.0	14.9	15.9	16.9	18.5	17.9	18.1	19.1	20.3	21.1	23.0	---	---	---
6	21.3	21.0	21.0	21.7	21.9	21.7	21.1	19.7	18.3	16.9	15.9	15.6	15.9	15.4	15.8	15.2	15.0	14.5	14.0	16.2	16.3	17.3	16.6	15.6	**17.6**	**21.9**	**14.0**
7	14.6	12.6	11.7	12.5	12.4	11.1	9.9	8.8	9.1	9.3	10.4	9.6	8.5	9.0	9.2	9.6	7.6	4.9	5.0	5.1	5.0	5.0	5.7	5.4	**8.8**	**14.6**	**4.9**
8	4.8	5.0	5.4	6.4	6.6	6.0	4.6	4.3	5.1	5.8	7.1	7.9	9.1	10.2	9.9	10.3	11.4	12.7	13.0	19.4	14.9	14.1	13.8	13.8	**9.2**	**19.4**	**4.3**
9	12.1	11.0	11.1	10.6	11.1	10.4	10.6	10.4	10.4	11.0	11.4	11.8	12.1	10.6	9.4	9.5	9.7	9.9	10.9	12.8	12.1	12.1	12.5	12.2	**11.0**	**12.8**	**9.4**
10	12.0	12.5	13.0	14.2	14.2	13.6	14.0	13.6	13.8	14.3	14.4	13.1	13.1	13.1	12.3	11.4	10.6	10.9	11.9	11.5	10.9	8.2	7.3	6.7	**12.1**	**14.4**	**6.7**
11	7.0	8.8	8.7	8.4	8.8	9.3	9.2	9.9	11.5	13.7	14.8	15.3	14.8	14.2	13.6	14.0	14.5	13.6	14.2	15.7	17.8	19.0	18.2	18.1	**13.0**	**19.0**	**7.0**
12	16.7	17.2	16.5	16.8	17.3	16.4	16.5	14.3	14.1	14.6	14.2	12.3	13.4	14.3	13.7	14.3	12.8	11.0	11.2	11.7	10.9	11.3	11.2	11.9	**13.9**	**17.3**	**10.9**
13	11.1	10.1	10.6	10.4	8.9	7.8	6.5	4.8	4.8	6.0	6.4	6.1	5.9	5.9	6.3	6.2	5.9	6.2	6.3	7.2	7.9	9.8	10.5	11.7	**7.6**	**11.7**	**4.8**
14	12.9	10.3	9.6	10.1	10.8	11.3	11.2	11.9	12.4	12.0	8.3	7.9	7.5	7.4	8.1	9.2	10.6	6.4	7.1	6.5	6.9	7.3	7.9	8.8	**9.2**	**12.9**	**6.4**
15	8.5	8.1	8.3	8.3	8.3	7.6	7.1	6.8	6.0	5.6	4.8	4.3	4.8	4.9	5.6	4.9	5.2	6.1	5.9	6.4	11.4	8.1	7.4	7.6	**6.7**	**11.4**	**4.3**
16	7.3	7.6	7.6	7.9	7.7	7.1	7.0	6.8	5.3	4.7	4.3	4.7	4.7	5.1	4.9	5.0	5.3	5.4	5.6	6.5	7.8	8.4	8.6	8.4	**6.4**	**8.6**	**4.3**
17	7.6	8.9	8.7	9.0	8.4	8.1	11.0	10.9	9.4	7.3	7.1	7.1	8.0	8.5	9.1	8.6	8.4	8.2	6.8	6.3	6.1	7.0	7.8	8.3	**8.1**	**11.0**	**6.1**
18	8.8	8.2	7.5	7.5	8.4	8.9	8.8	8.2	9.4	10.2	11.1	11.2	11.5	11.2	11.6	10.9	10.7	9.4	10.2	12.4	15.2	15.2	16.7	19.0	**10.9**	**19.0**	**7.5**
19	19.1	19.4	19.5	19.3	19.8	19.2	18.5	17.6	15.9	13.6	12.6	12.6	12.8	15.2	14.5	13.1	11.9	12.0	12.3	14.4	16.1	18.9	19.4	20.2	**16.1**	**20.2**	**11.9**
20	20.9	19.8	20.0	19.6	20.7	19.3	18.7	18.0	17.5	16.6	16.9	17.7	16.3	14.7	14.6	16.6	16.0	14.9	15.4	15.3	16.1	16.2	16.7	17.1	**17.3**	**20.9**	**14.6**
21	15.9	16.3	16.8	16.9	17.9	18.9	19.1	19.5	35.8	20.6	18.0	17.1	16.1	16.7	17.3	17.8	17.5	18.7	18.4	19.5	20.4	18.9	19.5	19.2	**18.8**	**35.8**	**15.9**
22	20.2	22.6	42.6	23.0	21.7	20.3	18.0	15.0	12.7	11.2	11.0	10.7	9.0	9.5	10.5	11.7	10.6	9.1	9.0	8.7	9.1	9.8	10.3	12.7	**14.5**	**42.6**	**8.7**
23	12.6	12.5	12.2	12.1	11.9	12.2	14.0	10.9	8.5	8.5	9.2	9.5	8.0	8.2	7.9	8.1	9.1	9.0	8.1	8.7	9.4	9.5	9.4	9.5	**9.9**	**14.0**	**7.9**
24	9.5	10.2	9.8	10.3	10.6	9.8	9.3	9.9	9.0	8.7	9.5	8.3	8.3	8.7	8.6	8.5	8.5	8.7	8.9	9.1	8.9	8.8	9.3	8.5	**9.1**	**10.6**	**8.3**
25	7.7	7.5	7.5	8.3	8.4	8.7	9.1	9.9	10.4	11.1	10.3	10.0	9.7	9.2	8.7	9.1	9.3	8.6	11.2	8.6	7.1	7.5	7.7	8.4	**8.9**	**11.2**	**7.1**
26	9.8	9.5	9.7	9.7	9.7	9.5	8.8	8.0	7.2	7.5	7.1	6.2	5.9	6.4	7.5	7.5	7.7	7.4	6.8	7.9	9.4	10.7	10.8	11.4	**8.4**	**11.4**	**5.9**
27	11.4	12.9	12.3	11.9	11.8	11.2	10.2	9.1	9.2	9.0	8.6	8.3	7.8	7.5	7.8	7.9	7.8	8.1	8.5	8.8	9.6	9.9	8.9	8.1	**9.4**	**12.9**	**7.5**
28	7.9	7.1	6.6	6.6	7.0	6.9	6.9	6.9	7.3	8.3	8.8	8.3	6.9	6.7	6.8	6.7	6.7	6.4	6.0	5.4	5.4	5.5	5.5	5.3	**6.7**	**8.8**	**5.3**
29	5.3	5.4	5.2	5.4	6.2	6.5	6.5	6.1	5.3	5.2	4.7	4.8	4.6	4.5	4.8	5.1	5.8	5.3	5.1	5.7	5.3	4.7	4.0	4.6	**5.2**	**6.5**	**4.0**
30	4.5	4.4	4.6	4.8	5.3	6.3	5.8	7.0	11.0	11.1	14.5	14.8	15.7	17.5	18.4	16.3	24.9	14.0	13.3	8.7	6.7	5.0	3.7	3.7	**10.0**	**24.9**	**3.7**
31	4.1	4.1	4.8	4.9	5.9	5.8	6.4	8.0	---	12.4	9.0	8.1	5.2	7.2	6.6	5.8	4.6	5.1	5.0	4.5	4.5	4.5	4.4	5.4	**5.9**	**12.4**	**4.1**
MEAN	**11.3**	**11.3**	**12.0**	**11.4**	**11.6**	**11.3**	**11.1**	**10.6**	**11.2**	**10.6**	**10.4**	**10.2**	**9.9**	**10.2**	**10.3**	**10.3**	**10.6**	**9.8**	**9.9**	**10.4**	**10.8**	**10.9**	**10.9**	**11.3**	**10.8**		
MAX	**21.3**	**22.6**	**42.6**	**23.0**	**21.9**	**21.7**	**21.1**	**19.7**	**35.8**	**20.6**	**18.0**	**17.7**	**16.3**	**17.5**	**18.4**	**17.8**	**24.9**	**18.7**	**18.4**	**19.5**	**20.4**	**20.3**	**21.1**	**23.0**		**42.6**	
MIN	**4.1**	**4.1**	**4.6**	**4.8**	**5.3**	**5.8**	**4.6**	**4.3**	**4.8**	**4.7**	**4.3**	**4.3**	**4.6**	**4.5**	**4.8**	**4.9**	**4.6**	**4.9**	**5.0**	**4.5**	**4.5**	**4.5**	**3.7**	**3.7**			**3.7**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 637 DATA RECOVERY RATE = 85.6% DATA CAPTURE RATE = 83.9%

MONTHLY MEAN = 10.8 µg/m3

MAXIMUM PM2.5 = 42.6 µg/m3 DATE OF OCCURRENCE = 8/22 at 300 MAXIMUM DAILY MEAN = 18.8 µg/m3 DATE OF OCCURRENCE = 8/21

SECOND MAXIMUM PM2.5 = 35.8 µg/m3 DATE OF OCCURRENCE = 8/21 at 900 SECOND MAXIMUM DAILY MEAN = 17.6 µg/m3 DATE OF OCCURRENCE = 8/6

MINIMUM PM2.5 = 3.7 µg/m3 DATE OF OCCURRENCE = 8/30 at 2300 MINUMUM DAILY MEAN = 5.2 µg/m3 DATE OF OCCURRENCE = 8/29

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

UNDERLINED DATA ARE SUSPECT

DRAFT

CSX AQ5

HOURLY AVERAGES of PM2.5 in µg/m3 for SEPTEMBER, 2023

Hr Beg Hr End Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	4.8	4.5	4.9	9.4	4.9	5.2	6.0	5.3	4.8	4.6	4.6	4.9	5.3	5.4	5.3	5.3	5.3	5.9	5.5	6.7	8.8	7.7	7.7	7.2	**5.8**	**9.4**	**4.5**
2	8.4	10.5	10.3	8.8	9.8	10.5	8.0	7.5	6.1	6.2	6.1	6.0	5.4	5.3	5.3	5.4	6.3	6.3	6.4	6.8	7.2	8.2	8.2	7.6	**7.3**	**10.5**	**5.3**
3	7.9	7.4	8.1	8.0	8.4	10.1	9.7	8.8	9.3	9.8	10.8	10.5	9.9	10.2	9.9	10.0	10.3	10.5	11.6	14.6	15.8	15.8	17.4	14.7	**10.8**	**17.4**	**7.4**
4	14.7	14.3	14.1	14.3	14.1	11.7	10.0	9.3	8.6	7.9	7.8	8.1	8.6	9.3	8.6	8.6	8.2	8.2	8.6	9.0	10.8	11.8	11.0	10.3	**10.3**	**14.7**	**7.8**
5	8.9	8.4	8.5	8.8	8.6	8.7	9.4	8.9	8.1	8.4	9.1	10.2	10.6	10.9	10.6	11.1	11.0	12.4	13.7	13.4	13.9	13.6	14.0	14.3	**10.6**	**14.3**	**8.1**
6	13.4	12.4	12.1	11.6	12.1	12.3	11.7	12.6	11.8	12.2	12.7	13.2	12.6	13.2	13.1	12.9	12.2	12.0	11.9	13.8	15.8	16.9	15.5	16.1	**13.0**	**16.9**	**11.6**
7	14.8	14.5	14.9	15.2	16.9	16.3	16.6	16.6	16.9	15.3	14.8	13.7	12.8	13.8	14.5	14.4	13.4	14.2	10.5	10.5	10.1	10.2	11.2	11.2	**13.8**	**16.9**	**10.1**
8	10.1	11.8	12.5	10.2	10.2	11.1	12.6	13.0	12.5	12.1	13.1	13.5	13.0	10.7	9.6	9.7	9.9	12.3	13.5	9.8	6.1	7.7	9.8	10.5	**11.0**	**13.5**	**6.1**
9	10.6	9.7	10.2	8.8	7.6	8.7	9.1	8.9	7.8	7.6	8.5	9.4	9.0	10.5	7.9	4.7	6.1	6.3	5.0	5.1	5.9	6.1	6.6	6.7	**7.7**	**10.6**	**4.7**
10	8.3	7.9	6.9	7.0	7.4	6.3	6.0	5.3	4.3	4.4	4.2	4.1	4.5	5.1	4.8	5.8	5.8	5.2	5.3	5.4	6.1	6.1	6.3	4.9	**5.7**	**8.3**	**4.1**
11	5.1	6.1	5.7	5.7	5.9	7.0	4.4	4.5	5.5	5.6	6.0	6.7	6.6	6.9	6.1	4.2	4.8	5.3	5.2	5.1	5.0	5.6	7.4	7.7	**5.7**	**7.7**	**4.2**
12	8.1	8.3	7.7	7.8	8.2	8.2	8.2	9.3	7.7	5.3	6.1	5.8	4.6	4.5	5.2	5.7	6.2	6.7	7.2	7.6	6.5	6.9	7.7	3.9	**6.8**	**9.3**	**3.9**
13	3.0	3.7	5.0	4.7	4.9	6.4	7.9	8.8	9.3	9.0	7.9	6.8	6.8	6.9	6.5	6.5	6.3	7.0	7.6	8.5	8.5	7.5	8.8	7.7	**6.9**	**9.3**	**3.0**
14	7.0	5.9	5.5	5.3	5.8	5.9	6.6	6.7	7.0	6.2	5.9	5.8	5.5	5.8	5.8	5.6	5.6	6.0	6.7	8.0	7.1	6.3	5.8	5.8	**6.1**	**8.0**	**5.3**
15	5.7	5.7	5.8	6.2	6.7	6.9	7.3	7.3	6.5	5.8	5.5	5.6	5.7	5.0	6.1	5.9	6.2	6.2	7.9	7.1	7.2	7.8	8.0	8.3	**6.5**	**8.3**	**5.0**
16	8.0	7.9	9.9	10.0	7.9	8.2	8.5	8.3	7.7	7.2	6.8	6.3	6.0	5.8	5.3	5.1	5.3	5.8	9.9	10.6	12.1	15.5	16.0	21.4	**8.9**	**21.4**	**5.1**
17	22.6	17.0	18.3	16.3	15.1	14.4	13.6	9.3	8.5	8.1	9.5	10.7	11.0	10.2	9.9	9.7	10.0	8.4	8.1	8.8	9.4	9.1	8.9	8.5	**11.4**	**22.6**	**8.1**
18	8.2	7.8	8.0	7.1	7.1	7.8	9.7	10.1	6.8	4.5	5.1	5.5	6.7	8.3	8.8	8.9	8.5	9.2	9.9	11.7	11.5	10.7	10.2	10.5	**8.4**	**11.7**	**4.5**
19	9.7	9.0	9.0	9.7	10.5	10.5	10.6	9.3	9.0	8.7	7.4	6.8	7.3	7.4	7.2	7.0	6.9	8.0	7.9	8.5	9.0	11.7	9.5	9.7	**8.7**	**11.7**	**6.8**
20	9.5	9.1	9.0	8.5	9.3	9.3	11.5	11.4	10.5	9.8	9.6	10.0	8.3	8.9	9.3	9.5	7.6	8.4	10.1	10.0	11.7	11.6	14.5	15.1	**10.1**	**15.1**	**7.6**
21	34.6	45.2	18.9	14.8	14.5	15.5	18.0	17.4	12.2	10.8	10.6	11.6	12.0	10.3	8.1	7.2	7.8	7.5	8.7	8.7	10.0	9.9	9.0	7.0	**13.7**	**45.2**	**7.0**
22	7.5	8.7	9.0	10.0	9.0	9.6	10.2	8.2	7.2	6.6	6.6	6.3	6.3	6.3	7.4	7.0	6.5	6.2	6.3	7.3	7.1	7.1	7.0	6.8	**7.5**	**10.2**	**6.2**
23	7.1	7.1	6.7	6.7	6.9	6.3	5.0	3.4	2.7	2.4	1.9	2.0	2.2	2.1	1.8	1.9	2.3	2.0	1.9	2.0	1.8	2.2	1.9	1.9	**3.4**	**7.1**	**1.8**
24	2.3	1.6	1.2	1.2	1.3	1.2	2.7	3.3	3.3	3.8	3.4	3.1	2.2	2.0	2.1	3.5	5.0	5.3	6.2	5.7	4.3	4.7	4.6	4.1	**3.2**	**6.2**	**1.2**
25	3.5	3.4	3.4	3.6	3.2	3.9	3.5	2.9	2.4	2.6	2.1	2.6	3.2	3.5	4.3	3.8	3.2	2.5	2.5	5.2	4.2	4.0	4.0	3.5	**3.3**	**5.2**	**2.1**
26	3.8	3.8	4.6	5.6	6.6	7.7	11.4	15.4	16.0	16.1	16.4	15.1	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
27	---	---	---	---	---	---	---	---	---	---	10.5	9.9	9.4	8.8	8.7	8.6	8.8	9.0	9.4	10.3	9.4	8.5	9.3	10.7	**---**	**---**	**---**
28	11.0	10.3	10.5	11.1	11.2	11.3	11.9	11.8	10.9	10.4	10.1	10.2	9.6	10.2	10.3	9.0	10.4	12.6	13.7	13.3	13.8	13.0	12.5	12.8	**11.3**	**13.8**	**9.0**
29	11.8	11.5	10.8	8.4	6.7	5.9	5.8	5.8	5.2	4.0	3.7	4.1	4.5	6.1	7.3	5.9	4.8	5.1	7.3	9.3	9.6	6.8	7.4	4.4	**6.7**	**11.8**	**3.7**
30	3.9	4.4	5.1	4.9	3.1	3.3	3.7	4.4	4.5	4.7	5.0	4.9	5.0	5.4	4.6	4.5	4.3	5.7	6.3	6.2	6.3	7.7	11.0	10.2	**5.3**	**11.0**	**3.1**
MEAN	**9.5**	**9.6**	**8.8**	**8.6**	**8.4**	**8.6**	**9.0**	**8.8**	**8.0**	**7.6**	**7.7**	**7.8**	**7.4**	**7.5**	**7.4**	**7.2**	**7.2**	**7.6**	**8.1**	**8.6**	**8.8**	**9.0**	**9.4**	**9.1**	**8.3**		
MAX	**34.6**	**45.2**	**18.9**	**16.3**	**16.9**	**16.3**	**18.0**	**17.4**	**16.9**	**16.1**	**16.4**	**15.1**	**13.0**	**13.8**	**14.5**	**14.4**	**13.4**	**14.2**	**13.7**	**14.6**	**15.8**	**16.9**	**17.4**	**21.4**		**45.2**	
MIN	**2.3**	**1.6**	**1.2**	**1.2**	**1.3**	**1.2**	**2.7**	**2.9**	**2.4**	**2.4**	**1.9**	**2.0**	**2.2**	**2.0**	**1.8**	**1.9**	**2.3**	**2.0**	**1.9**	**2.0**	**1.8**	**2.2**	**1.9**	**1.9**			**1.2**

POSSIBLE NUMBER OF OBSERVATIONS = 720 ACTUAL NUMBER OF OBSERVATIONS = 698 DATA RECOVERY RATE = 96.9% DATA CAPTURE RATE = 93.3%

MONTHLY MEAN = 8.3 µg/m3

MAXIMUM PM2.5 = 45.2 µg/m3 DATE OF OCCURRENCE = 9/21 at 200 MAXIMUM DAILY MEAN = 13.8 µg/m3 DATE OF OCCURRENCE = 9/7

SECOND MAXIMUM PM2.5 = 34.6 µg/m3 DATE OF OCCURRENCE = 9/21 at 100 SECOND MAXIMUM DAILY MEAN = 13.7 µg/m3 DATE OF OCCURRENCE = 9/21

MINIMUM PM2.5 = 1.2 µg/m3 DATE OF OCCURRENCE = 9/24 at 300 MINUMUM DAILY MEAN = 3.2 µg/m3 DATE OF OCCURRENCE = 9/24

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

UNDERLINED DATA ARE SUSPECT

DRAFT

APPENDIX H. HOURLY AQ8 PM_{10} AND $PM_{2.5}$ CONCENTRATION DATA FOR THIRD QUARTER 2023

DRAFT

CSX AQ8

HOURLY AVERAGES of PM10 in µg/m3 for JULY, 2023

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	75.5	74.5	76.3	67.7	68.9	56.7	62.7	57.1	50.1	53.3	59.5	63.9	60.9	55.0	54.0	42.3	49.1	45.4	42.4	42.7	43.6	43.1	42.9	45.6	**55.6**	**76.3**	**42.3**
2	50.6	48.9	40.4	34.0	27.7	24.7	23.6	19.3	19.3	25.6	22.1	24.1	21.7	22.9	22.8	23.9	21.6	19.6	15.6	25.1	20.3	19.9	22.2	24.2	**25.8**	**50.6**	**15.6**
3	27.4	28.1	25.2	23.9	21.0	23.1	23.6	23.9	16.8	15.1	13.9	13.5	10.0	9.8	9.3	16.5	18.6	18.4	12.7	11.4	14.9	13.7	14.0	13.5	**17.4**	**28.1**	**9.3**
4	16.1	16.3	16.3	19.1	19.7	17.1	16.4	12.7	14.1	12.8	---	---	---	10.2	13.1	14.5	13.2	12.8	11.4	13.9	51.3	80.3	54.5	46.5	**23.0**	**80.3**	**10.2**
5	48.1	26.4	24.3	21.0	22.9	24.2	22.4	21.9	24.2	24.6	27.7	29.5	26.6	32.3	24.2	20.4	20.2	20.3	28.0	20.9	20.5	19.1	19.5	22.3	**24.6**	**48.1**	**19.1**
6	20.0	28.4	25.6	27.8	29.6	31.4	23.7	22.2	27.5	27.4	---	---	---	---	15.0	16.4	16.5	16.4	17.6	19.1	18.7	19.9	18.4	18.5	**22.0**	**31.4**	**15.0**
7	16.5	17.6	26.8	25.8	23.4	21.1	23.5	23.8	22.7	32.7	25.8	25.2	15.9	18.9	18.5	23.4	20.4	17.7	16.8	18.1	21.0	24.0	25.6	19.8	**21.9**	**32.7**	**15.9**
8	19.4	21.6	19.2	20.9	21.5	18.5	18.5	20.8	18.1	20.9	18.8	21.6	23.4	22.9	24.6	20.2	19.7	16.7	14.8	17.4	14.2	14.4	15.8	16.8	**19.2**	**24.6**	**14.2**
9	15.8	15.4	15.3	14.8	15.5	14.8	14.5	14.2	16.0	13.2	16.6	14.7	13.6	16.4	14.4	12.2	8.5	7.2	7.9	8.9	9.7	10.0	11.1	13.3	**13.1**	**16.6**	**7.2**
10	12.1	13.6	14.3	17.9	20.4	21.6	20.3	16.9	16.0	17.5	13.8	15.7	14.7	15.9	14.2	13.2	15.8	11.8	15.3	16.9	16.2	17.2	25.0	16.4	**16.4**	**25.0**	**11.8**
11	18.1	18.4	19.9	18.1	17.7	21.9	21.8	22.7	23.5	23.0	34.5	22.0	20.5	16.4	20.0	29.9	20.7	17.4	15.4	20.0	24.8	27.9	26.6	24.6	**21.9**	**34.5**	**15.4**
12	26.2	26.2	31.1	28.1	40.0	30.5	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
13	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
14	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
15	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
16	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
17	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
18	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
19	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
20	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
21	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
22	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
23	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
24	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
25	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
26	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
27	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
28	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
29	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
30	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
31	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
MEAN	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**23.9**		
MAX	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**		**80.3**	
MIN	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**			**7.2**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 263 DATA RECOVERY RATE = 35.3% DATA CAPTURE RATE = 35.5%

MONTHLY MEAN = 23.9 µg/m3

MAXIMUM PM10 = 80.3 µg/m3 DATE OF OCCURRENCE = 7/4 at 2200 MAXIMUM DAILY MEAN = 55.6 µg/m3 DATE OF OCCURRENCE = 7/1

SECOND MAXIMUM PM10 = 76.3 µg/m3 DATE OF OCCURRENCE = 7/1 at 300 SECOND MAXIMUM DAILY MEAN = 25.8 µg/m3 DATE OF OCCURRENCE = 7/2

MINIMUM PM10 = 7.2 µg/m3 DATE OF OCCURRENCE = 7/9 at 1800 MINUMUM DAILY MEAN = 13.1 µg/m3 DATE OF OCCURRENCE = 7/9

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

DRAFT

CSX AQ8

HOURLY AVERAGES of PM10 in µg/m3 for AUGUST, 2023

Hr Beg Hr End Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
2	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
3	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
4	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
5	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
6	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
7	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
8	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
9	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
10	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
11	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
12	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
13	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
14	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
15	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
16	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
17	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
18	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
19	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
20	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
21	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
22	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
23	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
24	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
25	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
26	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
27	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
28	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
29	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
30	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
31	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MEAN	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---		
MAX	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---		---	
MIN	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---			---

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 0 DATA RECOVERY RATE = 0.0% DATA CAPTURE RATE = 0.0%

MONTHLY MEAN = --- µg/m3

MAXIMUM PM10 = --- µg/m3 DATE OF OCCURRENCE = --- MAXIMUM DAILY MEAN = --- µg/m3 DATE OF OCCURRENCE = ---

SECOND MAXIMUM PM10 = --- µg/m3 DATE OF OCCURRENCE = --- SECOND MAXIMUM DAILY MEAN = --- µg/m3 DATE OF OCCURRENCE = ---

MINIMUM PM10 = --- µg/m3 DATE OF OCCURRENCE = --- MINUMUM DAILY MEAN = --- µg/m3 DATE OF OCCURRENCE = ---

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

DRAFT

CSX AQ8

HOURLY AVERAGES of PM10 in µg/m3 for SEPTEMBER, 2023

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
2	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
3	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
4	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
5	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
6	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
7	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
8	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
9	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
10	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
11	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
12	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
13	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
14	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	18.0	19.0	22.4	15.2	17.6	20.4	12.9	12.9	16.2	**---**	**---**	**---**
15	14.6	15.1	10.7	11.3	15.9	11.2	15.5	21.4	21.5	26.5	15.7	15.6	19.8	16.3	13.8	16.6	19.4	16.0	44.2	17.8	14.0	12.0	16.1	14.0	**17.3**	**44.2**	**10.7**
16	24.2	13.2	16.5	15.1	14.1	14.2	13.3	13.2	16.1	11.0	15.5	9.1	9.2	10.1	13.8	15.8	9.1	11.0	16.4	17.5	21.4	23.5	25.2	52.5	**16.7**	**52.5**	**9.1**
17	25.4	24.1	21.6	33.1	56.4	21.1	95.0	17.6	20.5	21.8	15.2	15.4	21.5	17.8	18.9	19.4	13.3	15.5	12.8	12.9	14.0	14.1	11.5	12.1	**23.0**	**95.0**	**11.5**
18	12.1	13.0	12.1	10.8	12.3	12.8	15.6	16.4	12.1	8.2	9.7	11.4	14.9	17.5	17.2	20.2	13.1	15.2	13.6	16.7	19.7	15.0	14.9	14.0	**14.1**	**20.2**	**8.2**
19	14.5	13.7	13.5	19.0	15.5	15.9	18.8	24.3	18.9	18.2	22.7	15.4	16.8	22.0	20.8	13.8	14.1	11.0	28.1	25.4	14.0	56.3	28.3	14.0	**19.8**	**56.3**	**11.0**
20	29.0	21.7	16.6	15.1	27.9	26.7	26.9	24.5	40.8	29.5	30.1	36.2	29.0	45.6	29.7	27.1	27.9	17.9	18.4	14.2	41.8	21.2	40.3	56.1	**28.9**	**56.1**	**14.2**
21	30.1	201.7	66.9	46.2	87.7	31.8	53.3	53.5	44.1	28.5	31.6	29.3	49.3	47.3	35.7	30.8	37.3	20.8	76.4	85.1	43.4	22.0	19.0	21.0	**49.7**	**201.7**	**19.0**
22	21.1	20.7	23.9	26.6	19.0	26.6	32.2	22.9	22.4	24.3	42.4	38.4	28.1	37.4	29.8	38.1	36.3	31.0	18.9	30.6	34.0	25.7	19.1	14.4	**27.7**	**42.4**	**14.4**
23	15.5	17.4	13.5	15.6	16.3	12.5	9.0	7.3	8.5	7.0	3.4	6.0	4.5	3.7	4.6	4.1	4.1	4.3	3.5	4.5	5.4	5.5	6.3	9.4	**8.0**	**17.4**	**3.4**
24	5.3	4.0	3.1	4.2	3.3	4.4	5.2	8.8	10.4	9.9	5.5	4.5	8.8	4.7	3.8	6.8	8.3	8.6	12.4	11.4	9.8	10.3	10.6	9.4	**7.2**	**12.4**	**3.1**
25	8.4	7.6	9.2	8.5	8.3	7.1	12.5	10.0	7.1	5.7	5.2	6.9	7.8	8.8	9.3	9.9	8.0	5.4	5.7	9.2	10.4	10.0	10.6	9.3	**8.4**	**12.5**	**5.2**
26	12.6	9.2	7.9	10.7	9.9	11.5	17.3	21.6	21.1	22.8	24.7	---	---	---	23.7	21.7	24.6	20.7	18.6	14.4	13.9	18.4	23.1	29.9	**18.0**	**29.9**	**7.9**
27	27.2	29.6	31.5	33.3	28.8	26.8	28.8	29.0	24.2	24.3	21.9	22.6	24.3	36.0	40.5	25.1	26.2	22.9	18.3	20.6	29.9	24.3	22.8	25.9	**26.9**	**40.5**	**18.3**
28	27.0	24.2	21.9	33.4	32.2	30.7	35.9	43.4	33.6	32.7	29.2	32.2	28.0	33.7	29.3	24.8	29.4	29.6	31.0	34.0	32.0	28.0	26.6	29.6	**30.5**	**43.4**	**21.9**
29	25.4	23.5	20.0	15.3	13.5	14.5	14.0	14.2	15.4	14.9	17.9	33.7	15.7	17.0	22.1	16.6	17.4	13.6	17.1	18.9	27.4	14.9	23.6	9.6	**18.2**	**33.7**	**9.6**
30	9.7	9.8	10.1	10.5	12.6	17.5	22.2	10.3	15.3	14.8	16.4	14.0	16.4	14.7	19.5	22.8	15.2	24.4	21.9	13.3	16.6	17.1	40.7	22.8	**17.0**	**40.7**	**9.7**
MEAN	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**20.6**		
MAX	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---		**201.7**	
MIN	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---			**3.1**

POSSIBLE NUMBER OF OBSERVATIONS = 720 ACTUAL NUMBER OF OBSERVATIONS = 390 DATA RECOVERY RATE = 54.2% DATA CAPTURE RATE = 53.3%

MONTHLY MEAN = 20.6 µg/m3

MAXIMUM PM10 = 201.7 µg/m3 DATE OF OCCURRENCE = 9/21 at 200 MAXIMUM DAILY MEAN = 49.7 µg/m3 DATE OF OCCURRENCE = 9/21

SECOND MAXIMUM PM10 = 95.0 µg/m3 DATE OF OCCURRENCE = 9/17 at 700 SECOND MAXIMUM DAILY MEAN = 30.5 µg/m3 DATE OF OCCURRENCE = 9/28

MINIMUM PM10 = 3.1 µg/m3 DATE OF OCCURRENCE = 9/24 at 300 MINUMUM DAILY MEAN = 7.2 µg/m3 DATE OF OCCURRENCE = 9/24

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

DRAFT

CSX AQ8

HOURLY AVERAGES of PM2.5 in µg/m3 for JULY, 2023

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	52.2	52.4	53.8	47.5	45.5	39.2	43.7	39.7	35.4	37.8	41.7	44.5	41.8	36.7	33.6	29.1	33.1	31.6	29.8	30.2	31.5	31.2	30.8	33.1	**38.5**	**53.8**	**29.1**
2	36.1	35.2	28.3	23.6	18.6	15.9	14.8	12.1	11.4	16.4	13.5	14.8	13.6	13.5	14.0	13.2	11.5	9.6	7.1	14.8	9.3	9.5	10.2	11.5	**15.7**	**36.1**	**7.1**
3	12.3	13.3	13.2	12.6	11.9	11.0	11.6	12.4	9.7	7.2	7.2	7.5	5.8	5.5	5.2	8.0	8.9	8.1	7.0	6.1	6.7	7.0	7.0	5.7	**8.7**	**13.3**	**5.2**
4	7.1	7.1	6.6	7.0	6.4	6.0	6.0	5.9	7.1	7.2	---	---	---	6.2	6.5	6.4	6.5	6.8	6.7	7.5	37.2	61.3	41.0	33.9	**13.6**	**61.3**	**5.9**
5	34.3	17.9	15.2	13.1	13.2	13.1	11.5	10.6	11.1	12.2	12.8	12.5	11.8	11.1	10.6	11.0	11.4	11.8	13.2	11.2	10.2	10.7	10.6	11.4	**13.0**	**34.3**	**10.2**
6	11.4	13.9	13.7	14.2	13.3	12.4	11.4	10.8	11.2	10.8	---	---	---	---	9.8	10.9	10.6	10.7	11.2	12.5	12.4	12.3	12.4	11.2	**11.8**	**14.2**	**9.8**
7	10.7	11.4	12.3	11.9	11.6	11.6	11.8	13.1	12.4	12.2	12.4	12.3	9.6	12.2	11.1	13.0	12.3	12.0	10.6	10.3	12.4	13.1	13.8	12.9	**11.9**	**13.8**	**9.6**
8	13.6	13.5	12.5	13.3	13.6	10.4	11.1	11.2	11.9	13.5	12.4	13.3	13.3	13.5	14.8	11.1	10.5	10.6	10.2	10.6	9.0	9.3	9.6	10.1	**11.7**	**14.8**	**9.0**
9	10.0	9.3	9.7	9.3	9.7	9.5	9.2	9.1	9.1	9.0	9.0	8.9	8.2	8.0	7.4	5.7	3.4	2.3	3.1	3.7	4.3	5.0	5.3	6.2	**7.2**	**10.0**	**2.3**
10	6.4	7.0	7.0	7.9	8.4	9.3	9.3	8.3	8.0	7.1	7.3	7.8	7.9	8.1	8.0	8.2	8.0	7.6	9.2	8.9	9.4	9.9	10.2	9.4	**8.2**	**10.2**	**6.4**
11	10.2	10.9	10.5	10.6	10.4	10.5	10.3	10.6	10.0	9.9	10.7	10.2	10.4	10.7	11.5	12.6	11.4	10.8	10.6	12.9	14.5	14.5	15.3	16.3	**11.5**	**16.3**	**9.9**
12	16.6	16.4	16.2	16.5	17.8	15.2	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
13	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
14	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
15	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
16	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
17	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
18	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
19	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
20	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
21	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
22	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
23	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
24	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
25	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
26	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
27	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
28	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
29	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
30	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
31	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
MEAN	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**14.0**		
MAX	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**		**61.3**	
MIN	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**			**2.3**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 263 DATA RECOVERY RATE = 35.3% DATA CAPTURE RATE = 35.5%

MONTHLY MEAN = 14.0 µg/m3

MAXIMUM PM2.5 = 61.3 µg/m3 DATE OF OCCURRENCE = 7/4 at 2200 MAXIMUM DAILY MEAN = 38.5 µg/m3 DATE OF OCCURRENCE = 7/1

SECOND MAXIMUM PM2.5 = 53.8 µg/m3 DATE OF OCCURRENCE = 7/1 at 300 SECOND MAXIMUM DAILY MEAN = 15.7 µg/m3 DATE OF OCCURRENCE = 7/2

MINIMUM PM2.5 = 2.3 µg/m3 DATE OF OCCURRENCE = 7/9 at 1800 MINUMUM DAILY MEAN = 7.2 µg/m3 DATE OF OCCURRENCE = 7/9

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

DRAFT

CSX AQ8

HOURLY AVERAGES of PM2.5 in µg/m3 for AUGUST, 2023

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
2	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
3	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
4	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
5	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
6	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
7	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
8	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
9	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
10	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
11	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
12	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
13	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
14	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
15	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
16	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
17	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
18	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
19	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
20	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
21	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
22	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
23	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
24	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
25	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
26	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
27	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
28	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
29	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
30	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
31	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MEAN	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---		
MAX	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---		---	
MIN	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---			---

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 0 DATA RECOVERY RATE = 0.0% DATA CAPTURE RATE = 0.0%

MONTHLY MEAN = --- µg/m3

MAXIMUM PM2.5 = --- µg/m3 DATE OF OCCURRENCE = --- MAXIMUM DAILY MEAN = --- µg/m3 DATE OF OCCURRENCE = ---

SECOND MAXIMUM PM2.5 = --- µg/m3 DATE OF OCCURRENCE = --- SECOND MAXIMUM DAILY MEAN = --- µg/m3 DATE OF OCCURRENCE = ---

MINIMUM PM2.5 = --- µg/m3 DATE OF OCCURRENCE = --- MINUMUM DAILY MEAN = --- µg/m3 DATE OF OCCURRENCE = ---

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

DRAFT

CSX AQ8

HOURLY AVERAGES of PM2.5 in µg/m3 for SEPTEMBER, 2023

Hr Beg Hr End Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
2	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
3	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
4	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
5	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
6	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
7	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
8	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
9	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
10	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
11	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
12	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
13	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
14	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	5.3	5.9	6.8	6.4	6.8	7.0	5.8	5.3	5.7	**---**	**---**	**---**
15	5.7	5.6	5.1	5.3	6.1	5.9	6.3	6.4	6.4	6.1	5.2	4.9	5.3	4.7	5.3	5.6	6.3	5.7	8.5	6.4	6.1	6.2	7.1	6.7	**5.9**	**8.5**	**4.7**
16	7.7	6.6	7.8	8.2	6.7	7.1	7.2	6.8	6.8	6.1	6.1	5.2	5.2	5.1	4.8	5.0	4.6	4.9	6.5	8.6	10.5	10.5	12.9	17.2	**7.4**	**17.2**	**4.6**
17	12.7	12.3	12.8	14.0	15.3	11.8	19.7	9.4	9.3	9.4	8.6	9.6	10.1	9.4	9.0	8.9	8.0	7.5	7.6	8.2	8.7	8.6	7.5	6.8	**10.2**	**19.7**	**6.8**
18	6.9	7.2	7.3	6.5	6.5	6.8	8.5	9.3	6.2	3.9	4.6	4.9	6.0	7.0	7.6	8.3	7.2	7.4	8.1	9.9	9.8	9.2	9.0	9.1	**7.3**	**9.9**	**3.9**
19	8.4	7.9	7.9	8.8	8.9	9.3	9.1	9.0	7.8	7.5	6.7	5.8	6.1	7.0	6.5	6.1	5.9	6.2	7.6	7.8	7.2	11.8	8.4	7.8	**7.7**	**11.8**	**5.8**
20	9.4	7.8	7.2	7.2	8.1	8.7	8.6	9.0	9.8	9.1	10.3	10.7	9.3	11.0	11.6	10.0	10.8	9.2	7.8	7.9	10.9	9.6	11.6	14.6	**9.5**	**14.6**	**7.2**
21	13.3	45.3	16.7	15.1	16.1	14.4	16.1	17.8	12.2	11.2	13.8	11.4	16.9	14.5	10.4	10.1	10.7	8.7	14.0	14.6	11.2	8.9	8.0	8.0	**14.1**	**45.3**	**8.0**
22	7.9	8.3	8.8	9.7	8.0	9.4	9.8	8.4	7.2	7.2	10.0	8.3	7.6	8.4	8.5	9.6	9.3	8.0	6.6	8.4	8.5	7.8	7.2	6.6	**8.3**	**10.0**	**6.6**
23	6.9	7.1	6.3	6.5	6.2	5.6	4.5	3.0	2.6	1.8	1.5	1.6	1.7	1.5	1.4	1.5	1.8	1.6	1.6	1.7	2.2	2.5	3.7	5.3	**3.3**	**7.1**	**1.4**
24	2.2	1.5	1.3	1.3	1.3	1.8	2.3	3.6	3.5	3.7	2.5	2.5	3.5	2.7	2.8	3.7	5.0	5.2	6.0	5.2	4.4	4.8	4.9	4.2	**3.3**	**6.0**	**1.3**
25	3.4	3.5	3.7	3.7	3.3	3.1	3.4	2.8	2.3	1.5	1.9	2.7	3.1	3.5	4.4	3.8	3.6	2.5	2.1	4.8	4.2	4.7	4.7	3.7	**3.3**	**4.8**	**1.5**
26	3.7	3.5	4.1	5.0	5.9	6.8	10.0	13.5	14.0	14.0	14.9	---	---	---	15.3	14.8	16.0	14.7	12.6	9.2	8.7	10.7	13.8	16.1	**10.8**	**16.1**	**3.5**
27	16.7	16.9	16.2	15.8	15.2	14.9	15.0	14.7	13.0	11.8	11.1	10.4	10.9	12.7	12.9	10.3	10.7	10.1	9.7	10.7	11.9	10.4	10.2	11.0	**12.6**	**16.9**	**9.7**
28	11.3	10.8	10.4	11.8	11.6	11.6	12.4	13.6	12.6	12.6	12.5	12.8	12.0	13.4	12.6	10.9	12.4	14.6	16.4	16.8	16.5	15.0	14.2	14.3	**13.0**	**16.8**	**10.4**
29	14.1	13.6	12.9	9.6	8.1	7.3	7.7	7.3	6.7	5.0	4.8	6.4	6.3	7.4	9.1	7.6	6.7	6.8	9.2	10.8	11.8	8.1	7.1	5.0	**8.3**	**14.1**	**4.8**
30	4.3	5.1	5.7	5.9	4.1	6.3	4.5	4.8	6.4	5.2	5.4	5.5	6.4	6.0	5.5	5.4	5.3	8.4	8.0	6.8	7.5	8.7	12.6	12.1	**6.4**	**12.6**	**4.1**
MEAN	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**8.2**		
MAX	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---		**45.3**	
MIN	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---			**1.3**

POSSIBLE NUMBER OF OBSERVATIONS = 720 ACTUAL NUMBER OF OBSERVATIONS = 390 DATA RECOVERY RATE = 54.2% DATA CAPTURE RATE = 53.3%

MONTHLY MEAN = 8.2 µg/m3

MAXIMUM PM2.5 = 45.3 µg/m3 DATE OF OCCURRENCE = 9/21 at 200 MAXIMUM DAILY MEAN = 14.1 µg/m3 DATE OF OCCURRENCE = 9/21

SECOND MAXIMUM PM2.5 = 19.7 µg/m3 DATE OF OCCURRENCE = 9/17 at 700 SECOND MAXIMUM DAILY MEAN = 13.0 µg/m3 DATE OF OCCURRENCE = 9/28

MINIMUM PM2.5 = 1.3 µg/m3 DATE OF OCCURRENCE = 9/24 at 300 MINUMUM DAILY MEAN = 3.3 µg/m3 DATE OF OCCURRENCE = 9/23

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

DRAFT

APPENDIX I. MODULAIR PM_{10} AND $PM_{2.5}$ COLLOCATION AND COMPARISON DATA

DRAFT

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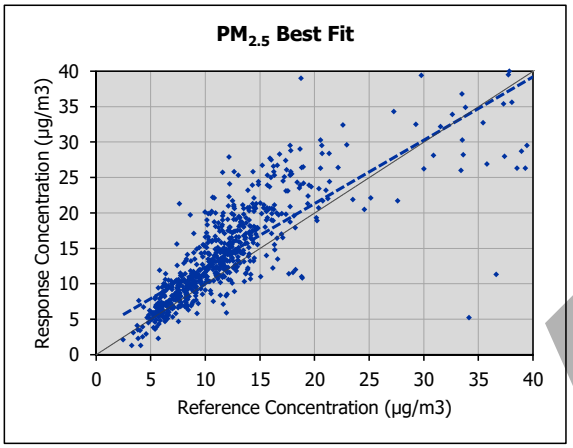
MODULAIR PM COLLOCATION & COMPARISON SHEET

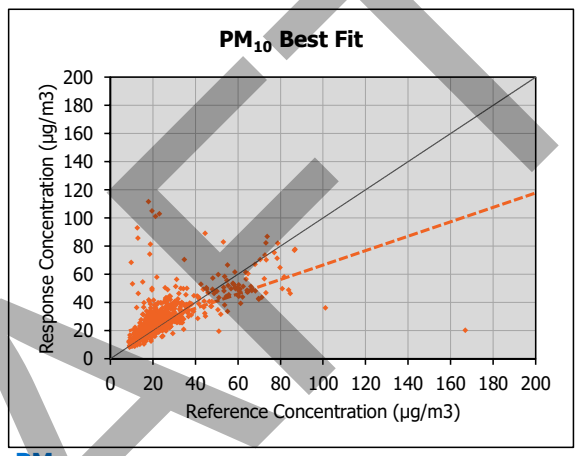
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SITE NAME CSX MOD 386 **Date** 7/1/2023 **Start Time** 1:00
PROJECT CSX **Date** 8/1/2023 **Stop Time** 0:00
SITE OPERATOR

REFERENCE STANDARD:
Reference: AQ5 **Serial #:** 1690
Model: T640X

Analyzer:
Analyzer s/n MOD386
Anal. Range 0- 2000 **µg/m3**



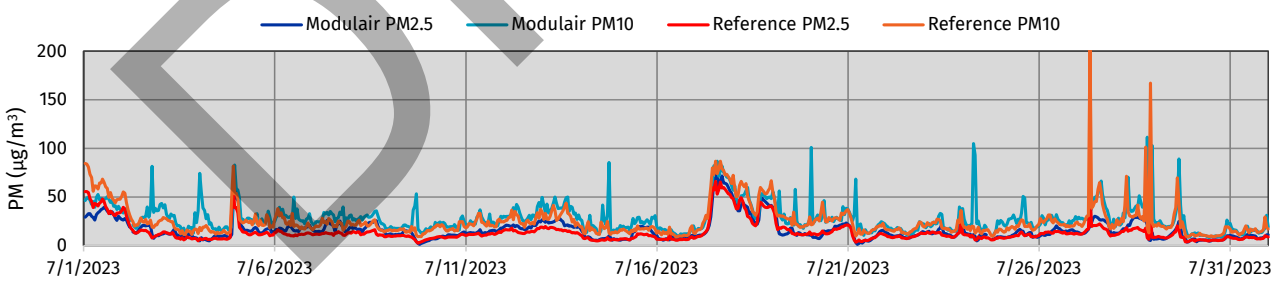


$PM_{2.5}$:

Correlation Coefficent(r2)	0.791	≥ 0.70
Slope(m)	0.895	1.0 ± 0.35
Intercept(b)	3.420	0 ± 5.0
RMSE	5.452	≤ 7.0
Precision CV(%)	19.080	≤ 30.0
Precision SD	1.581	≤ 5.0

PM_{10}:

Correlation Coefficent(r2)	0.345	≥ 0.70
Slope(m)	0.512	1.0 ± 0.35
Intercept(b)	15.399	0 ± 5.0
RMSE	14.880	≤ 7.0
Precision CV(%)	22.070	≤ 30.0
Precision SD	4.329	≤ 5.0



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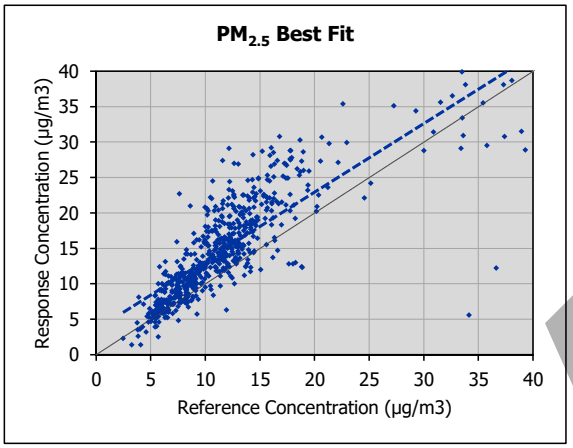
MODULAIR PM COLLOCATION & COMPARISON SHEET

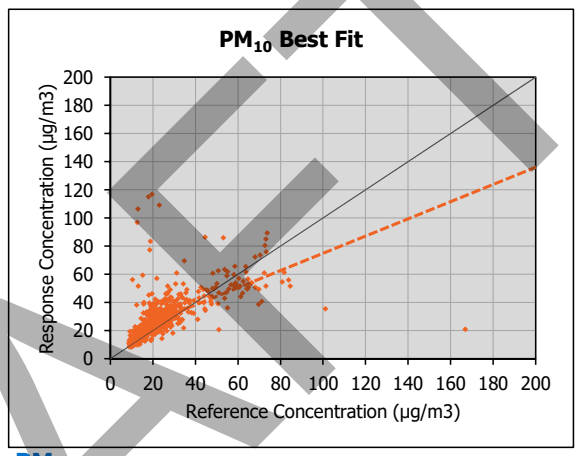
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SITE NAME CSX MOD 385 **Date** 7/1/2023 **Start Time** 1:00
PROJECT CSX **Date** 8/1/2023 **Stop Time** 0:00
SITE OPERATOR

REFERENCE STANDARD:
Reference: AQ5 **Serial #:** 1690
Model: T640X

Analyzer:
Analyzer s/n MOD385
Anal. Range 0- 2000 **µg/m3**



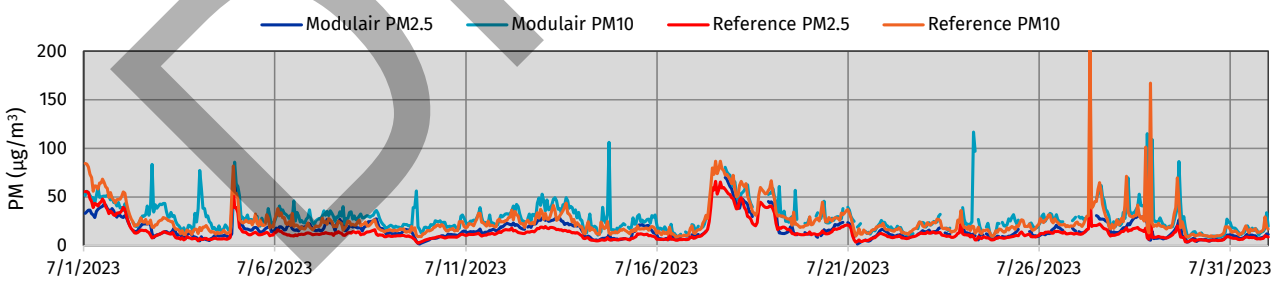


$PM_{2.5}$:

Correlation Coefficent(r2)	0.782	≥ 0.70
Slope(m)	0.969	1.0 ± 0.35
Intercept(b)	3.540	0 ± 5.0
RMSE	9.565	≤ 7.0
Precision CV(%)	18.640	≤ 30.0
Precision SD	2.786	≤ 5.0

PM_{10}:

Correlation Coefficent(r2)	0.374	≥ 0.70
Slope(m)	0.611	1.0 ± 0.35
Intercept(b)	13.838	0 ± 5.0
RMSE	18.700	≤ 7.0
Precision CV(%)	21.300	≤ 30.0
Precision SD	5.449	≤ 5.0



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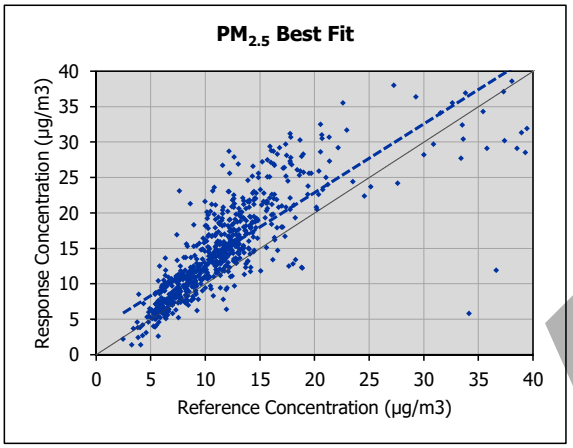
MODULAIR PM COLLOCATION & COMPARISON SHEET

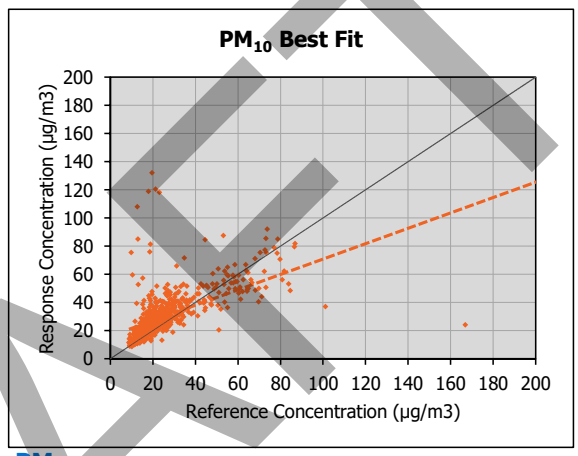
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SITE NAME CSX MOD 384 **Date** 7/1/2023 **Start Time** 1:00
PROJECT CSX **Date** 8/1/2023 **Stop Time** 0:00
SITE OPERATOR

REFERENCE STANDARD:
Reference: AQ5 **Serial #:** 1690
Model: T640X

Analyzer:
Analyzer s/n MOD384
Anal. Range 0- 2000 **µg/m3**



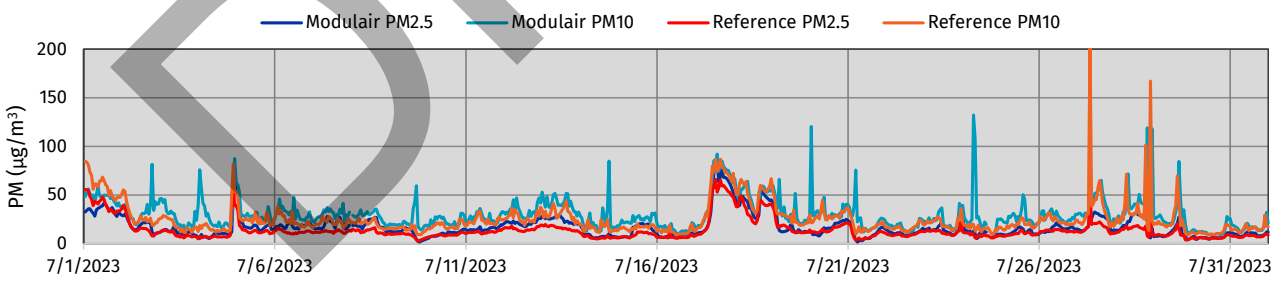


$PM_{2.5}$:

Correlation Coefficent(r2)	0.799	≥ 0.70
Slope(m)	0.970	1.0 ± 0.35
Intercept(b)	3.457	0 ± 5.0
RMSE	6.061	≤ 7.0
Precision CV(%)	18.600	≤ 30.0
Precision SD	1.748	≤ 5.0

PM_{10}:

Correlation Coefficent(r2)	0.339	≥ 0.70
Slope(m)	0.546	1.0 ± 0.35
Intercept(b)	16.279	0 ± 5.0
RMSE	15.780	≤ 7.0
Precision CV(%)	21.760	≤ 30.0
Precision SD	4.582	≤ 5.0



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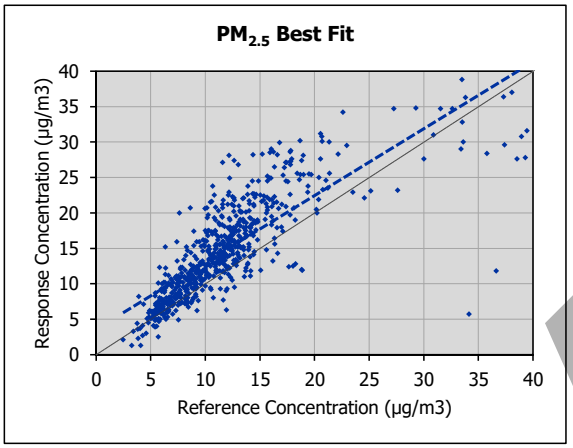
MODULAIR PM COLLOCATION & COMPARISON SHEET

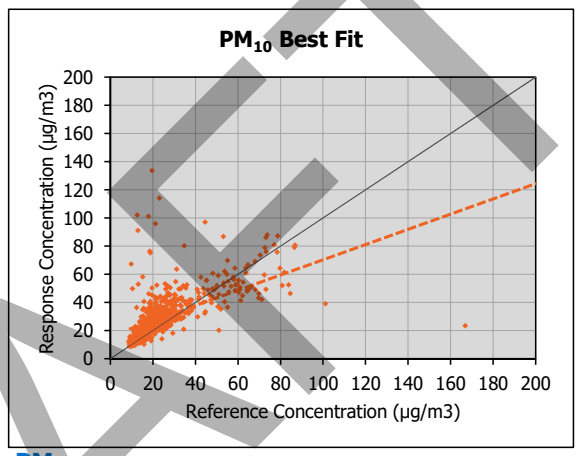
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SITE NAME CSX MOD 383 **Date** 7/1/2023 **Start Time** 1:00
PROJECT CSX **Date** 8/1/2023 **Stop Time** 0:00
SITE OPERATOR

REFERENCE STANDARD:
Reference: AQ5 **Serial #:** 1690
Model: T640X

Analyzer:
Analyzer s/n MOD383
Anal. Range 0- 2000 **µg/m3**



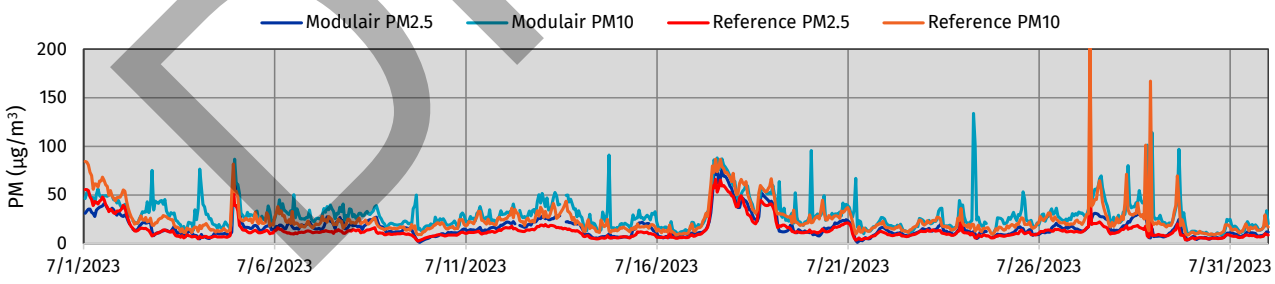


$PM_{2.5}$:

Correlation Coefficent(r2)	0.796	≥ 0.70
Slope(m)	0.944	1.0 ± 0.35
Intercept(b)	3.560	0 ± 5.0
RMSE	6.134	≤ 7.0
Precision CV(%)	18.940	≤ 30.0
Precision SD	1.775	≤ 5.0

PM_{10}:

Correlation Coefficent(r2)	0.345	≥ 0.70
Slope(m)	0.541	1.0 ± 0.35
Intercept(b)	16.289	0 ± 5.0
RMSE	15.895	≤ 7.0
Precision CV(%)	21.990	≤ 30.0
Precision SD	4.618	≤ 5.0



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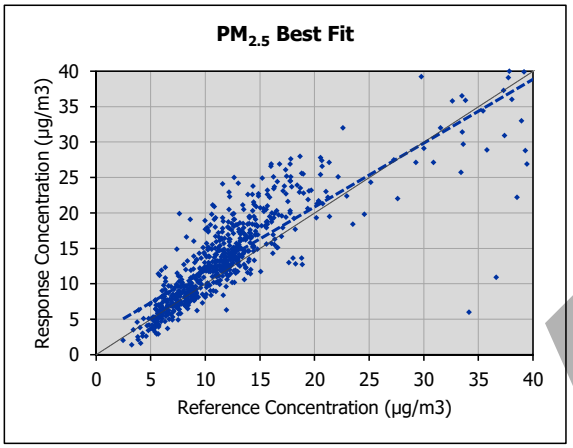
MODULAIR PM COLLOCATION & COMPARISON SHEET

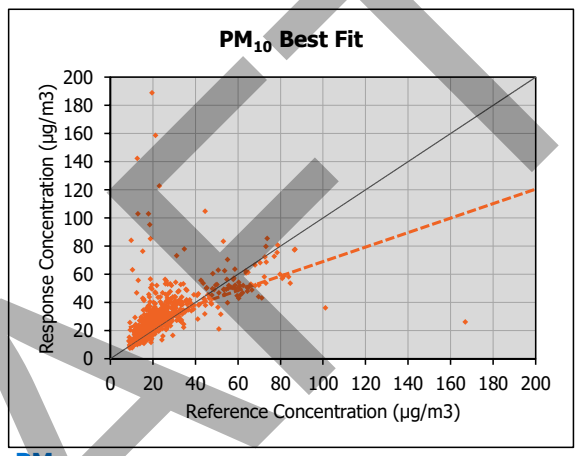
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SITE NAME CSX MOD 266 **Date** 7/1/2023 **Start Time** 1:00
PROJECT CSX **Date** 8/1/2023 **Stop Time** 0:00
SITE OPERATOR

REFERENCE STANDARD:
Reference: AQ5 **Serial #:** 1690
Model: T640X

Analyzer:
Analyzer s/n MOD266
Anal. Range 0- 2000 **µg/m3**



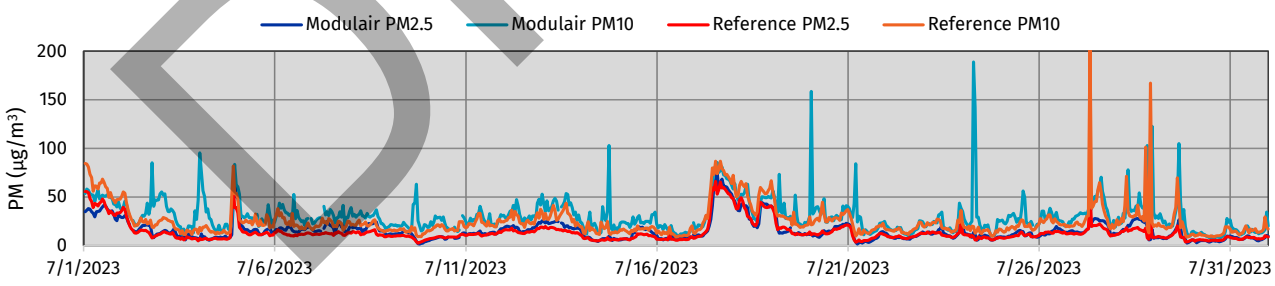


$PM_{2.5}$:

Correlation Coefficent(r2)	0.824	≥ 0.70
Slope(m)	0.901	1.0 ± 0.35
Intercept(b)	2.822	0 ± 5.0
RMSE	4.983	≤ 7.0
Precision CV(%)	18.240	≤ 30.0
Precision SD	1.448	≤ 5.0

PM_{10}:

Correlation Coefficent(r2)	0.251	≥ 0.70
Slope(m)	0.515	1.0 ± 0.35
Intercept(b)	17.559	0 ± 5.0
RMSE	18.093	≤ 7.0
Precision CV(%)	23.920	≤ 30.0
Precision SD	5.257	≤ 5.0



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Trinity Consultants

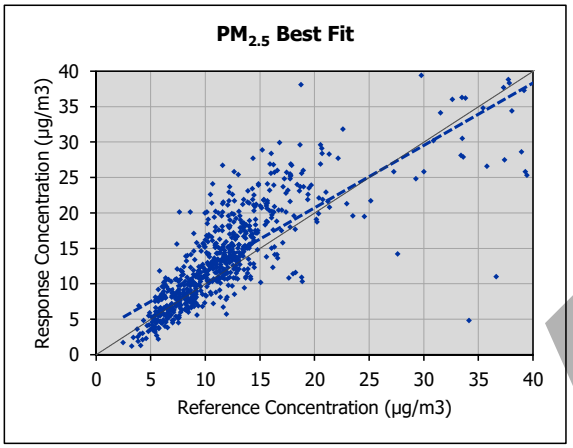
MODULAIR PM COLLOCATION & COMPARISON SHEET

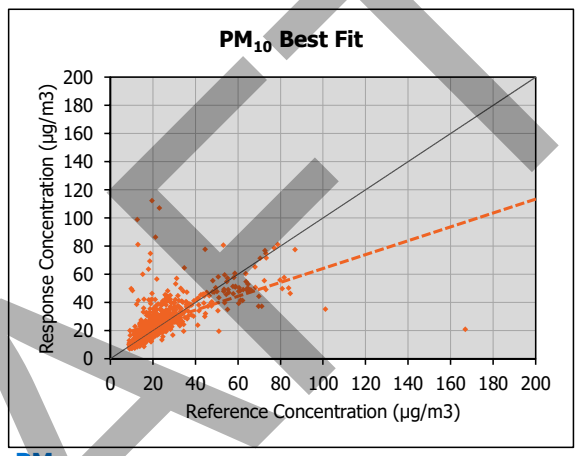
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SITE NAME CSX MOD 387 **Date** 7/1/2023 **Start Time** 1:00
PROJECT CSX **Date** 8/1/2023 **Stop Time** 0:00
SITE OPERATOR

REFERENCE STANDARD:
Reference: AQ5 **Serial #:** 1690
Model: T640X

Analyzer:
Analyzer s/n MOD387
Anal. Range 0- 2000 **µg/m3**



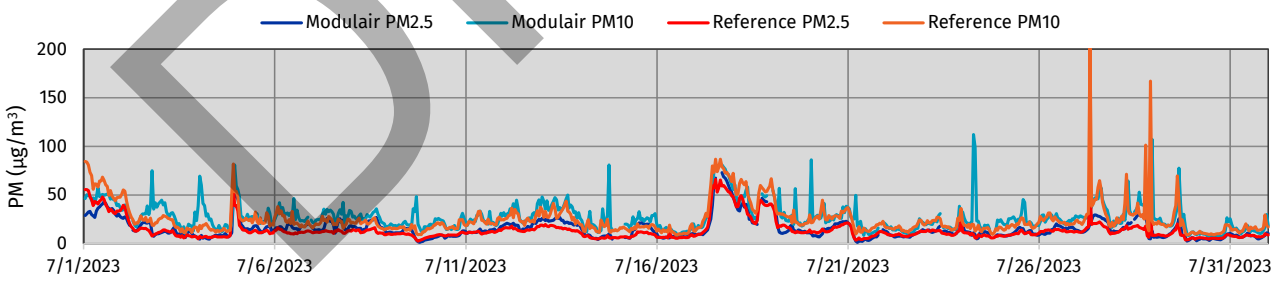


$PM_{2.5}$:

Correlation Coefficent(r2)	0.764	≥ 0.70
Slope(m)	0.881	1.0 ± 0.35
Intercept(b)	3.086	0 ± 5.0
RMSE	7.261	≤ 7.0
Precision CV(%)	21.220	≤ 30.0
Precision SD	2.115	≤ 5.0

PM_{10}:

Correlation Coefficent(r2)	0.337	≥ 0.70
Slope(m)	0.493	1.0 ± 0.35
Intercept(b)	14.927	0 ± 5.0
RMSE	15.858	≤ 7.0
Precision CV(%)	22.920	≤ 30.0
Precision SD	4.620	≤ 5.0



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Trinity Consultants

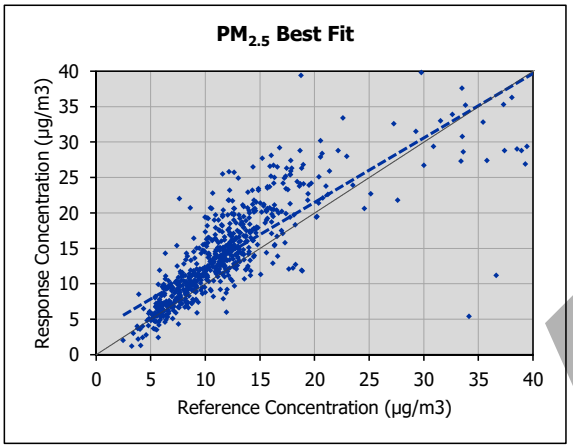
MODULAIR PM COLLOCATION & COMPARISON SHEET

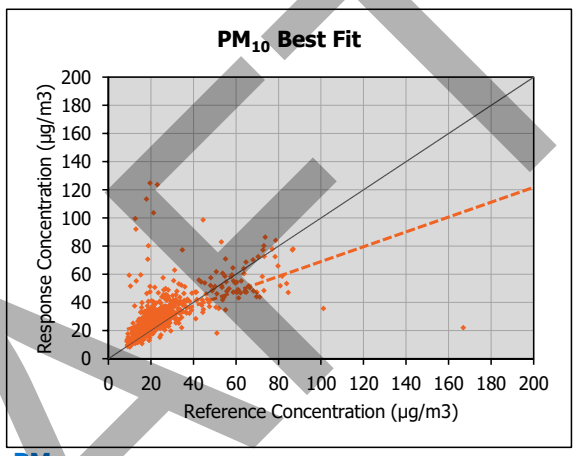
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SITE NAME CSX MOD 388 **Date** 7/1/2023 **Start Time** 1:00
PROJECT CSX **Date** 8/1/2023 **Stop Time** 0:00
SITE OPERATOR

REFERENCE STANDARD:
Reference: AQ5 **Serial #:** 1690
Model: T640X

Analyzer:
Analyzer s/n MOD388
Anal. Range 0- 2000 **µg/m3**



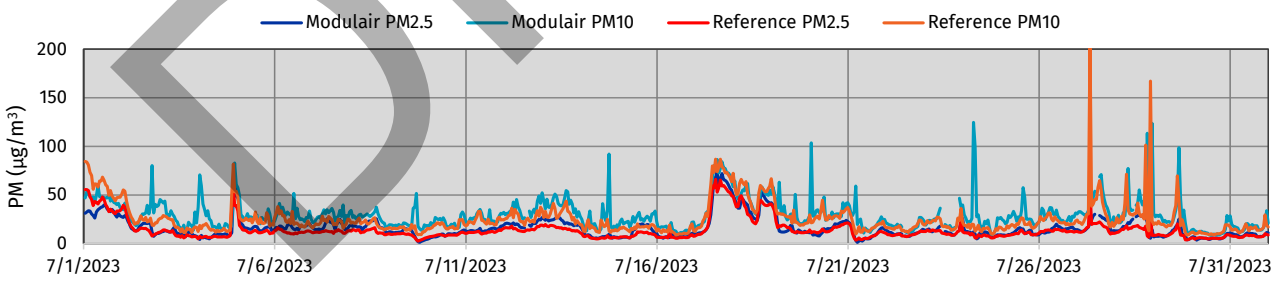


$PM_{2.5}$:

Correlation Coefficent(r2)	0.804	≥ 0.70
Slope(m)	0.910	1.0 ± 0.35
Intercept(b)	3.281	0 ± 5.0
RMSE	5.555	≤ 7.0
Precision CV(%)	18.780	≤ 30.0
Precision SD	1.612	≤ 5.0

PM_{10}:

Correlation Coefficent(r2)	0.333	≥ 0.70
Slope(m)	0.527	1.0 ± 0.35
Intercept(b)	16.405	0 ± 5.0
RMSE	15.932	≤ 7.0
Precision CV(%)	22.050	≤ 30.0
Precision SD	4.631	≤ 5.0



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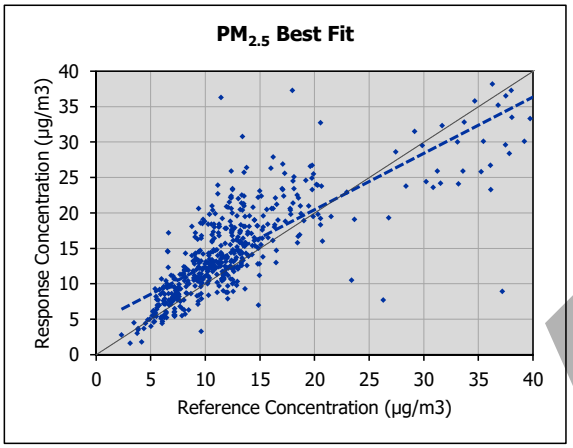
MODULAIR PM COLLOCATION & COMPARISON SHEET

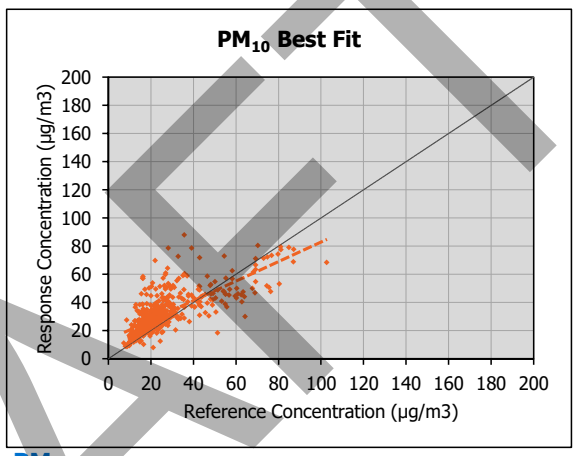
As Found

SITE NAME CSX MOD 267 **Date** 7/1/2023 **Start Time** 1:00
PROJECT CSX **Date** 8/1/2023 **Stop Time** 0:00
SITE OPERATOR

REFERENCE STANDARD:
Reference: AQ8 **Serial #:** 1689
Model: T640X

Analyzer:
Analyzer s/n MOD267
Anal. Range 0- 2000 **µg/m3**



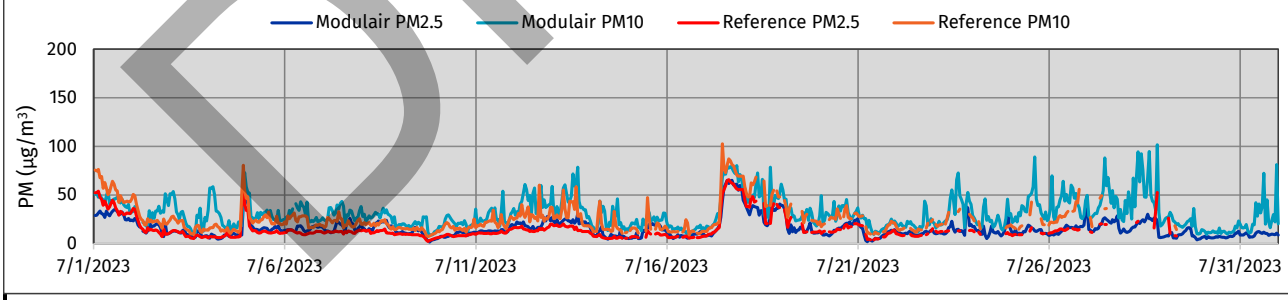


$PM_{2.5}$:

Correlation Coefficent(r2)	0.781	≥ 0.70
Slope(m)	0.795	1.0 ± 0.35
Intercept(b)	4.553	0 ± 5.0
RMSE	10.815	≤ 7.0
Precision CV(%)	20.850	≤ 30.0
Precision SD	2.682	≤ 5.0

PM_{10}:

Correlation Coefficent(r2)	0.551	≥ 0.70
Slope(m)	0.695	1.0 ± 0.35
Intercept(b)	13.500	0 ± 5.0
RMSE	24.997	≤ 7.0
Precision CV(%)	20.320	≤ 30.0
Precision SD	6.153	≤ 5.0



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Trinity Consultants

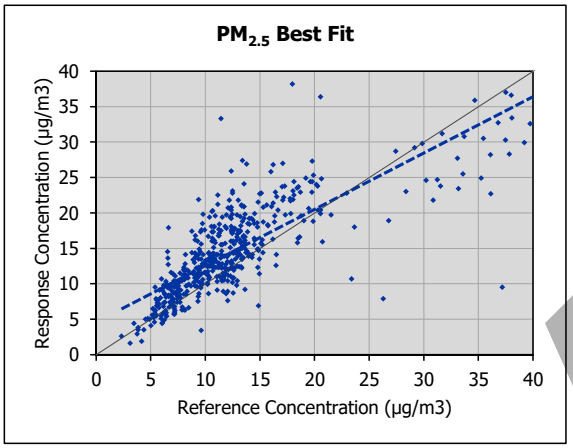
MODULAIR PM COLLOCATION & COMPARISON SHEET

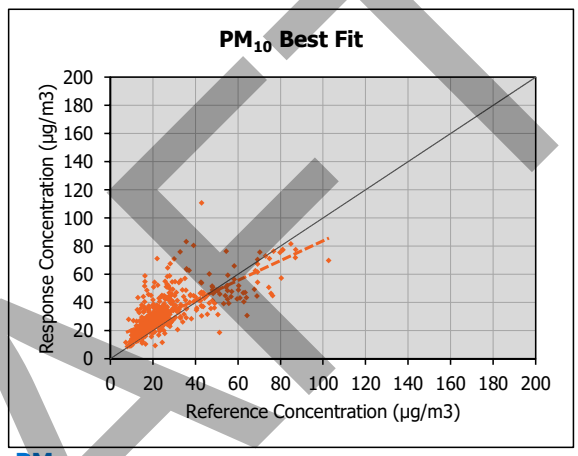
As Found

SITE NAME CSX MOD 265 **Date** 7/1/2023 **Start Time** 1:00
PROJECT CSX **Date** 8/1/2023 **Stop Time** 0:00
SITE OPERATOR

REFERENCE STANDARD:
Reference: AQ8 **Serial #:** 1689
Model: T640X

Analyzer:
Analyzer s/n MOD265
Anal. Range 0- 2000 **µg/m3**



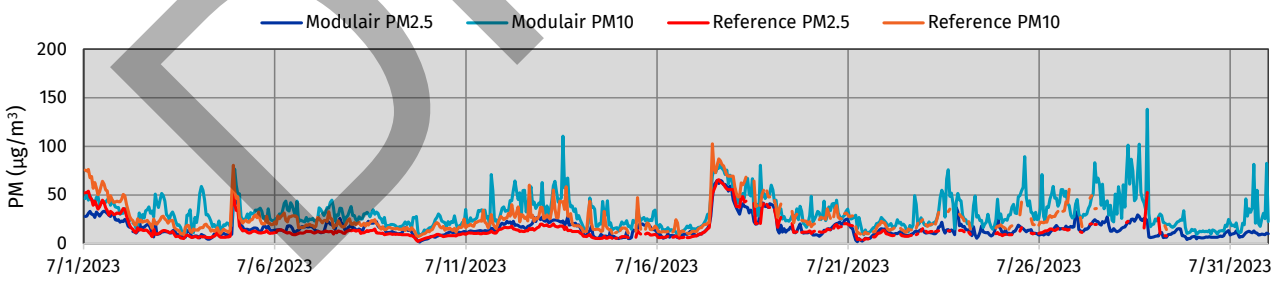


$PM_{2.5}$:

Correlation Coefficent(r2)	0.785	≥ 0.70
Slope(m)	0.795	1.0 ± 0.35
Intercept(b)	4.617	0 ± 5.0
RMSE	10.775	≤ 7.0
Precision CV(%)	20.460	≤ 30.0
Precision SD	2.671	≤ 5.0

PM_{10}:

Correlation Coefficent(r2)	0.539	≥ 0.70
Slope(m)	0.703	1.0 ± 0.35
Intercept(b)	13.538	0 ± 5.0
RMSE	25.746	≤ 7.0
Precision CV(%)	20.390	≤ 30.0
Precision SD	6.337	≤ 5.0



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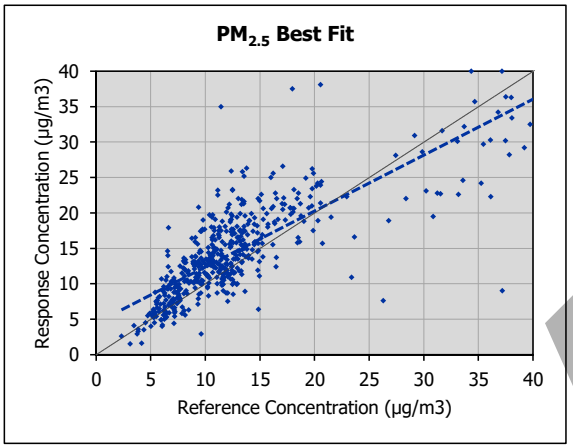
MODULAIR PM COLLOCATION & COMPARISON SHEET

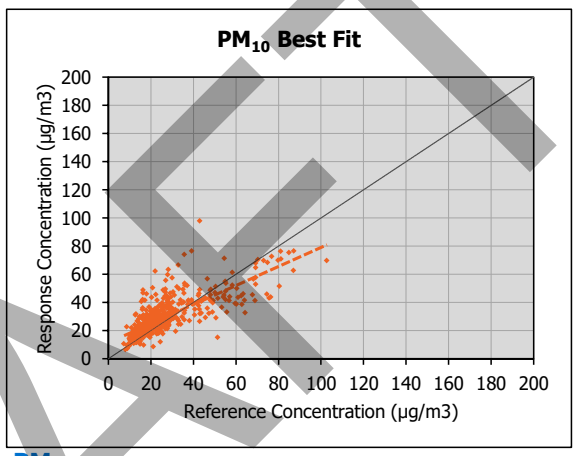
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SITE NAME CSX MOD 264 **Date** 7/1/2023 **Start Time** 1:00
PROJECT CSX **Date** 8/1/2023 **Stop Time** 0:00

REFERENCE STANDARD:
Reference: AQ8 **Serial #:** 1689
Model: T640X

Analyzer:
Analyzer s/n MOD264
Anal. Range 0- 2000 **µg/m3**



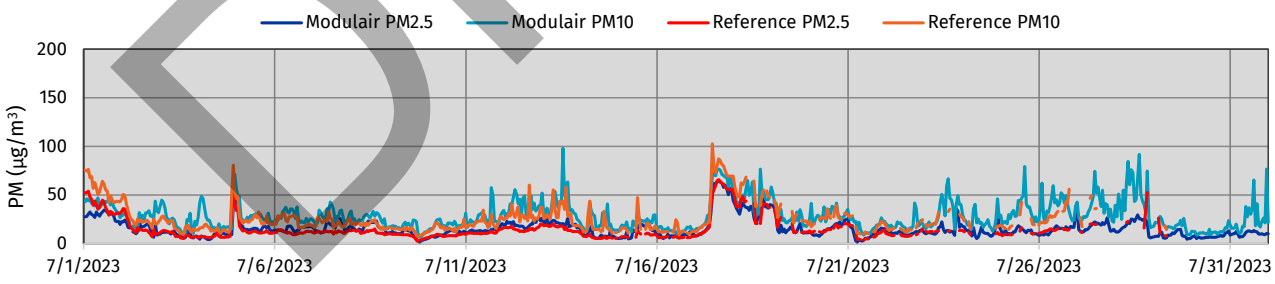


$PM_{2.5}$:

Correlation Coefficent(r2)	0.782	≥ 0.70
Slope(m)	0.789	1.0 ± 0.35
Intercept(b)	4.503	0 ± 5.0
RMSE	10.738	≤ 7.0
Precision CV(%)	21.020	≤ 30.0
Precision SD	2.664	≤ 5.0

PM_{10}:

Correlation Coefficent(r2)	0.590	≥ 0.70
Slope(m)	0.675	1.0 ± 0.35
Intercept(b)	11.543	0 ± 5.0
RMSE	22.527	≤ 7.0
Precision CV(%)	18.760	≤ 30.0
Precision SD	5.562	≤ 5.0



= cell containing equations

DRAFT

APPENDIX J. INVALID DATA PERIODS AND CORRECTIVE ACTION FORMS FOR THIRD QUARTER 2023

DRAFT

Parameter	Start Date	Start Time	End Date	End Time	Hours Invalid	AQS NULL Code	Description
PM10	07/01/2023	00:01	07/03/2023	00:00	48	IT	Wildfire-U. S.
	07/04/2023	20:01	07/05/2023	01:00	5	IH	Fireworks
	07/24/2023	14:01	07/24/2023	17:00	3	AV	Power Failure
	07/27/2023	06:01	07/27/2023	09:00	3	BA	Maintenance/Routine Repairs
	07/28/2023	08:01	08/01/2023	00:00	88	AN	Machine Malfunction
	08/01/2023	00:01	08/05/2023	08:00	104	AN	Machine Malfunction
	08/05/2023	08:01	08/05/2023	09:00	1	BA	Maintenance/Routine Repairs
	08/05/2023	09:01	08/05/2023	10:00	1	AT	Calibration
	08/05/2023	10:01	08/31/2023	08:00	622	QX	Does not meet QC criteria
	08/31/2023	08:01	08/31/2023	09:00	1	BA	Maintenance/Routine Repairs
	08/31/2023	09:01	09/01/2023	00:00	15	QX	Does not meet QC criteria
	09/01/2023	00:01	09/26/2023	12:00	612	QX	Does not meet QC criteria
	09/26/2023	12:01	09/27/2023	10:00	22	BA	Maintenance/Routine Repairs
	09/27/2023	10:01	10/01/2023	00:00	86	QX	Does not meet QC criteria
PM25	07/01/2023	00:01	07/03/2023	00:00	48	IT	Wildfire-U. S.
	07/04/2023	20:01	07/05/2023	01:00	5	IH	Fireworks
	07/24/2023	14:01	07/24/2023	17:00	3	AV	Power Failure
	07/27/2023	06:01	07/27/2023	09:00	3	BA	Maintenance/Routine Repairs
	07/28/2023	08:01	08/01/2023	00:00	88	AN	Machine Malfunction
	08/01/2023	00:01	08/05/2023	08:00	104	AN	Machine Malfunction
	08/05/2023	08:01	08/05/2023	09:00	1	BA	Maintenance/Routine Repairs
	08/05/2023	09:01	08/05/2023	10:00	1	AT	Calibration
	08/05/2023	10:01	08/31/2023	08:00	622	QX	Does not meet QC criteria
	08/31/2023	08:01	08/31/2023	09:00	1	BA	Maintenance/Routine Repairs
	08/31/2023	09:01	09/01/2023	00:00	15	QX	Does not meet QC criteria
	09/01/2023	00:01	09/26/2023	12:00	612	QX	Does not meet QC criteria
	09/26/2023	12:01	09/27/2023	10:00	22	BA	Maintenance/Routine Repairs
	09/27/2023	10:01	10/01/2023	00:00	86	QX	Does not meet QC criteria
PMCF	07/01/2023	00:01	07/03/2023	00:00	48	IT	Wildfire-U. S.
	07/04/2023	20:01	07/05/2023	01:00	5	IH	Fireworks
	07/24/2023	14:01	07/24/2023	17:00	3	AV	Power Failure
	07/27/2023	06:01	07/27/2023	09:00	3	BA	Maintenance/Routine Repairs
	07/28/2023	08:01	08/01/2023	00:00	88	AN	Machine Malfunction
	08/01/2023	00:01	08/05/2023	08:00	104	AN	Machine Malfunction
	08/05/2023	08:01	08/05/2023	09:00	1	BA	Maintenance/Routine Repairs
	08/05/2023	09:01	08/05/2023	10:00	1	AT	Calibration
	08/05/2023	10:01	08/31/2023	08:00	622	QX	Does not meet QC criteria
	08/31/2023	08:01	08/31/2023	09:00	1	BA	Maintenance/Routine Repairs
	08/31/2023	09:01	09/01/2023	00:00	15	QX	Does not meet QC criteria
	09/01/2023	00:01	09/26/2023	12:00	612	QX	Does not meet QC criteria
	09/26/2023	12:01	09/27/2023	10:00	22	BA	Maintenance/Routine Repairs
	09/27/2023	10:01	10/01/2023	00:00	86	QX	Does not meet QC criteria
RH	09/26/2023	09:01	09/26/2023	11:00	2	AT	Calibration
Temp	09/26/2023	09:01	09/26/2023	11:00	2	AT	Calibration
WS	09/26/2023	09:01	09/26/2023	11:00	2	AT	Calibration

AQS Null Code Description

IT - Wildfire-U. S.	AN - Machine Malfunction
IH - Fireworks	AT - Calibration
AV - Power Failure	QX - Does not meet QC criteria
BA - Maintenance/Routine Repairs	

DRAFT

Parameter	Start Date	Start Time	End Date	End Time	Hours Invalid	AQS NULL Code	Description
PM10	07/01/2023	00:01	07/03/2023	00:00	48	IT	Wildfire-U. S.
	07/04/2023	10:01	07/04/2023	13:00	3	AV	Power Failure
	07/04/2023	20:01	07/05/2023	01:00	5	IH	Fireworks
	07/06/2023	10:01	07/06/2023	14:00	4	AV	Power Failure
	07/12/2023	06:01	07/27/2023	07:00	361	AV	Power Failure
	07/27/2023	07:01	07/27/2023	10:00	3	BA	Maintenance/Routine Repairs
	07/27/2023	10:01	08/01/2023	00:00	110	AV	Power Failure
	08/01/2023	00:01	08/02/2023	14:00	38	AV	Power Failure
	08/02/2023	14:01	09/01/2023	00:00	706	BA	Maintenance/Routine Repairs
	09/01/2023	00:01	09/14/2023	15:00	327	BA	Maintenance/Routine Repairs
	09/26/2023	11:01	09/26/2023	14:00	3	BA	Maintenance/Routine Repairs
PM25	07/01/2023	00:01	07/03/2023	00:00	48	IT	Wildfire-U. S.
	07/04/2023	10:01	07/04/2023	13:00	3	AV	Power Failure
	07/04/2023	20:01	07/05/2023	01:00	5	IH	Fireworks
	07/06/2023	10:01	07/06/2023	14:00	4	AV	Power Failure
	07/12/2023	06:01	07/27/2023	07:00	361	AV	Power Failure
	07/27/2023	07:01	07/27/2023	10:00	3	BA	Maintenance/Routine Repairs
	07/27/2023	10:01	08/01/2023	00:00	110	AV	Power Failure
	08/01/2023	00:01	08/02/2023	14:00	38	AV	Power Failure
	08/02/2023	14:01	09/01/2023	00:00	706	BA	Maintenance/Routine Repairs
	09/01/2023	00:01	09/14/2023	15:00	327	BA	Maintenance/Routine Repairs
	09/26/2023	11:01	09/26/2023	14:00	3	BA	Maintenance/Routine Repairs
PMCF	07/01/2023	00:01	07/03/2023	00:00	48	IT	Wildfire-U. S.
	07/04/2023	10:01	07/04/2023	13:00	3	AV	Power Failure
	07/04/2023	20:01	07/05/2023	01:00	5	IH	Fireworks
	07/06/2023	10:01	07/06/2023	14:00	4	AV	Power Failure
	07/12/2023	06:01	07/27/2023	07:00	361	AV	Power Failure
	07/27/2023	07:01	07/27/2023	10:00	3	BA	Maintenance/Routine Repairs
	07/27/2023	10:01	08/01/2023	00:00	110	AV	Power Failure
	08/01/2023	00:01	08/02/2023	14:00	38	AV	Power Failure
	08/02/2023	14:01	09/01/2023	00:00	706	BA	Maintenance/Routine Repairs
	09/01/2023	00:01	09/14/2023	15:00	327	BA	Maintenance/Routine Repairs
	09/26/2023	11:01	09/26/2023	14:00	3	BA	Maintenance/Routine Repairs
AQS Null Code Description							
IT - Wildfire-U. S.			IH - Fireworks				
AV - Power Failure			BA - Maintenance/Routine Repairs				

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Trinity Consultants

CORRECTIVE ACTION REPORT

PROJECT NAME CSX - AQ5 & AQ8 Firmware U

Identification of a Problem or Deficiency:

Created By: Otto AhChing
Assigned To: Field Team
Date: 07/13/2023

Summary: The T640 at both CSX 5 and CSX 8 have been intermittently throwing an OPC error. This error likely caused a PM flatline at AQ5 on 6/22.
Teledyne API did recently release a new firmware for the T640s that should fix the issue. AQ8 has power issues at location prior to getting firmware update (see separate Corrective Action Report).

Corrective Action Taken and Results:

From: Field Team

Corrective Action Description:
07/14 - periods of flatlining increasing in frequency and duration.
07/17 - Rebooting units with the remote webswitch does not correct the issue.
07/27 - AQ5 had firmware update installed.
07/31 - AQ5 has a continuous System Service Warning since 7/29. When connected to the T640, the following alarms also appear: "ByPass Flow Warning" and "Check Ext Pump". These alarms immediately return when cleared.
08/02 - While performing the flow check at AQ5, noted the Bypass Flow and Check EXT Pump warnings are indicated on the analyzer, on the dashboard the Bypass flow was at -3.8 and the sample flow was at 4.99. Pump PWM was 73% and Valve PWM was 100%. During the flow check he said the main sample flow looked good at 5.0 lpm but the Bypass flow did not. The Delta Cal said 15.7 lpm and the T640 said -3.8. API Tech support thinks that the Bypass Flow sensor needs to be replaced. Replacement part was ordered under warranty and shipped to technician to get it installed ASAP. If this fixes the problem he can perform the flow check as well.
08/05 - Trinity technician was on site Saturday 8/5 and installed the new flow sensor in the AQ5 T640. This fixed the Bypass flow issue. Nick ran and recorded an As Found check which showed it needed to be recalibrated. He then documented the After Adjustment check. Sample Flow was within acceptance criteria.
08/17 - "Bypass Flow Warning", "System Fault", and "Check Ext Pump" warnings have returned to the CSX AQ5 T640 since 8/5 and are currently present. Clearing the alarms did not resolve the issue. Sent Teledyne API a support request to understand issue.

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CORRECTIVE ACTION REPORT

PROJECT NAME CSX - AQ5 & AQ8 Firmware

Identification of a Problem or Deficiency:

Created By: Otto AhChing
Assigned To: Field Team
Date: 07/13/2023

Corrective Action Taken and Results:

From: Field Team

Corrective Action Description:

08/22 - As of yesterday, the CSX AQ5 T640 pressure sensor is reading about 100 mb too high. The T640 also has a bypass flow warning, span dust check warning, and external pump check warning.
08/25 - Teledyne API requested more information asking about optical chamber cleaning and when all flows were cleaned. Last maintenance was on 08/05 but did not include optical chamber cleaning.
09/26 - AQ5 still had bypass flow warning, Teledyne API sending another flow sensor that will be replaced on the next visit. DFU filter exchanges will increase frequency to every other month or monthly as needed. The problem of the pressure sensor reading high stopped.
Ticket remains open

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Trinity Consultants

CORRECTIVE ACTION REPORT

PROJECT NAME CSX - AQ5 & AQ8 Firmware

Identification of a Problem or Deficiency:

Created By: Nick Bratton
Assigned To: Data Team
Date: 07/27/2023

Summary: Site has intermittent power that causes the unit to shutdown and not boot up properly. Flow checks cannot be performed

Corrective Action Taken and Results:

From: Field Team

Corrective Action Description: CSX personnel were informed of power issues and they are working to restore power.
08/22 - CSX personnel confirmed power is at AQ8. Trinity will go on site to calibrate the device.
08/31 - Analyzer is unable to boot properly likely due to an issue with CPU from power outages. Trinity loaner will be shipped to site for installation.
09/14 - Trinity loaner T640 installed. CSX device sent to Trinity lab for diagnosis.
09/26 - CSX T640X reinstalled at site and calibrated with new firmware.

DRAFT

Trinity Consultants

CORRECTIVE ACTION REPORT

PROJECT NAME CSX - AQ5 Met Tower

Identification of a Problem or Deficiency:

Created By: Mike Peterson
Assigned To: Data Team
Date: 07/27/2023

Summary: During the semi-annual calibration of the meteorological tower, the cross arm was found to be -10 degrees off from true north. Nothing was loose or bent. There was a lot of large metal I beam structures near the tower that may have affected the compass readings during the install but were no longer on the site. Site declination is -11 degrees which was put in the compass as 349 degrees.

Corrective Action Taken and Results:

From: Data Team

Corrective Action Description: The tower crossarm was adjusted to true north. Measurements going forward will be in alignment.
Wind Direction data were adjusted back to the beginning of the project.

DRAFT

APPENDIX K. $PM_{10}/PM_{2.5}$ FLOW CHECKS AND FLOW CHECK EQUIPMENT CERTIFICATE AND FIELD CALIBRATION SHEETS FOR THIRD QUARTER 2023

DRAFT

Trinity Consultants

CONTINUOUS PARTICULATE SAMPLER

FLOW CHECK

SITE NAME	CSX AQ5	**Date**	7/27/2023	**Start Time**	7:15
PROJECT	234501.0038			**Stop Time**	8:30
SITE OPERATOR	Trintiy				

Analyzer Mfg	T-API
Analyzer Model	T640X
Analyzer s/n	1690

= Enter Flow Check Data
= Cell Containing Equations

REFERENCE EQUIPMENT:

	Model	Serial Number
Temperature Standard	Delta Cal	923
Pressure Standard	Delta Cal	923
Flow Standard	Delta Cal	923
Certification Date	11/2/2022	

ZERO TEST / LEAK CHECK

PM Channel	Indicated Conc.	
PM_{10}	0.1	µg/m3
$PM_{2.5}$	0.1	µg/m3

CRITERIA:
PM < 0.2 µg/m3

TEMPERATURE SENSOR CALIBRATION

Indicated Temp.	Ref. Std. Temp.	Difference	
26.2	26.0	-0.2	°C
26.2	26.1	-0.1	°C

CRITERIA:
DIFFERENCE < ±2°C

PRESSURE SENSOR CALIBRATION

Indicated Pressure		Ref. Std. Pressure	Difference
kPa	mmHg	mmHg	mmHg
101.6	762.1	760.0	-2.1
101.6	762.1	760.0	-2.1

CRITERIA:

DIFFERENCE < ±10 mm Hg

Sample FLOW VERIFICATION

Target Flow L/min	Indicated Flow (I) L/min	Ref. Std. Flow (R) L/min	Difference Ref. Flow %	Difference Design Flow %
5.00	5.01	4.99	0.4%	-0.2%
5.00	5.02	4.99	0.6%	-0.2%

CRITERIA:
±4% OF REFERENCE, OR ±5% OF DESIGN FLOW (5.0 L/min)

Bypass FLOW VERIFICATION

Target Flow L/min	Indicated Flow (I) L/min	Ref. Std. Flow (R) L/min	Difference Ref. Flow %	Difference Design Flow %
11.67	11.68	11.84	-1.4%	1.5%
11.67	11.67	11.65	0.2%	-0.2%

CRITERIA:
±4% OF REFERENCE, OR ±5% OF DESIGN FLOW (11.7 L/min)

PMT VERIFICATION

Peak Channel	Indicated Value	Difference
10.9	10.7	-0.2
10.9	10.9	0.0

CRITERIA:
10.9 ±0.5

COMMENTS

Performed monthly maintenance and cleaning. Updated to firmware 1.4.31.529

Flow Check by: Nick Bratton

DRAFT

Trinity Consultants

CONTINUOUS PARTICULATE SAMPLER

FLOW CHECK

SITE NAME	CSX AQ5	**Date**	8/5/2023	**Start Time**	8:45
PROJECT	234501.0038			**Stop Time**	9:30
SITE OPERATOR	Trintiy				

Analyzer Mfg	T-API
Analyzer Model	T640X
Analyzer s/n	1690

= Enter Flow Check Data
= Cell Containing Equations

REFERENCE EQUIPMENT:

	Model	Serial Number
Temperature Standard	Delta Cal	923
Pressure Standard	Delta Cal	923
Flow Standard	Delta Cal	923
Certification Date	11/2/2022	

ZERO TEST / LEAK CHECK

PM Channel	Indicated Conc.	
PM_{10}	0.0	µg/m3
$PM_{2.5}$	0.0	µg/m3

CRITERIA:
PM < 0.2 µg/m3

TEMPERATURE SENSOR CALIBRATION

Indicated Temp.	Ref. Std. Temp.	Difference	
25.2	24.8	-0.4	°C
25.3	25	-0.3	°C

CRITERIA:
DIFFERENCE < ±2°C

PRESSURE SENSOR CALIBRATION

Indicated Pressure		Ref. Std. Pressure	Difference
kPa	mmHg	mmHg	mmHg
101.6	762.1	759.0	-3.1
101.6	762.1	759.5	-2.6

CRITERIA:
DIFFERENCE < ±10 mm Hg

Sample FLOW VERIFICATION

Target Flow L/min	Indicated Flow (I) L/min	Ref. Std. Flow (R) L/min	Difference Ref. Flow %	Difference Design Flow %	
5.00	5.23	4.97	5.2%	-0.6%	as found.
5.00	5.01	4.98	0.6%	-0.4%	Calibrated.

CRITERIA:
±4% OF REFERENCE, OR ±5% OF DESIGN FLOW (5.0 L/min)

Bypass FLOW VERIFICATION

Target Flow L/min	Indicated Flow (I) L/min	Ref. Std. Flow (R) L/min	Difference Ref. Flow %	Difference Design Flow %	
11.67	13.06	11.92	9.6%	2.1%	as found.
11.67	11.69	11.70	-0.1%	0.3%	Calibrated.

CRITERIA:
±4% OF REFERENCE, OR ±5% OF DESIGN FLOW (11.7 L/min)

PMT VERIFICATION

Peak Channel	Indicated Value	Difference	
10.9	10.0	-0.9	as found.
10.9	10.8	-0.1	Calibrated.

CRITERIA:
10.9 ±0.5

COMMENTS

Errors caused by issues with bypass flow controlled (unit was reading a flow of -11). Replaced bypass flow controller prior to performing flow check. Swapped pumps with AQ8.

Flow Check by: Nick Bratton

DRAFT

Trinity Consultants

CONTINUOUS PARTICULATE SAMPLER

FLOW CHECK

SITE NAME	CSX AQ5	**Date**	8/31/2023	**Start Time**	8:15
PROJECT	234501.0038			**Stop Time**	9:15
SITE OPERATOR	Trintiy				

Analyzer Mfg	T-API
Analyzer Model	T640X
Analyzer s/n	1690

= Enter Flow Check Data
= Cell Containing Equations

REFERENCE EQUIPMENT:

	Model	Serial Number
Temperature Standard	Delta Cal	210026
Pressure Standard	Delta Cal	210062
Flow Standard	Delta Cal	210062
Certification Date	7/11/2023	

ZERO TEST / LEAK CHECK

PM Channel	Indicated Conc.	
PM_{10}	0.0	µg/m3
$PM_{2.5}$	0.0	µg/m3

CRITERIA:
PM < 0.2 µg/m3

TEMPERATURE SENSOR CALIBRATION

Indicated Temp.	Ref. Std. Temp.	Difference	
18.2	21.8	3.6	°C
18.1	21.7	3.6	°C

CRITERIA:
DIFFERENCE < ±2°C

PRESSURE SENSOR CALIBRATION

Indicated Pressure		Ref. Std. Pressure	Difference	
kPa	mmHg	mmHg	mmHg	
112.6	844.6	760.5	-84.1	as found.
101.4	760.6	760.5	-0.1	Calibrated.

CRITERIA:
DIFFERENCE < ±10 mm Hg

Sample FLOW VERIFICATION

Target Flow L/min	Indicated Flow (I) L/min	Ref. Std. Flow (R) L/min	Difference Ref. Flow %	Difference Design Flow %	
5.00	4.96	4.92	0.8%	-1.6%	as found.
5.00	5.01	5.02	-0.2%	0.4%	Calibrated.

CRITERIA:
±4% OF REFERENCE, OR ±5% OF DESIGN FLOW (5.0 L/min)

Bypass FLOW VERIFICATION

Target Flow L/min	Indicated Flow (I) L/min	Ref. Std. Flow (R) L/min	Difference Ref. Flow %	Difference Design Flow %	
11.67	0.00	unstable	#VALUE!	#VALUE!	as found.
11.67	0.00	unstable	#VALUE!	#VALUE!	Calibrated.

CRITERIA:
±4% OF REFERENCE, OR ±5% OF DESIGN FLOW (11.7 L/min)

PMT VERIFICATION

Peak Channel	Indicated Value	Difference	
10.9	10.7	-0.2	as found.
10.9	10.9	0.0	Calibrated.

CRITERIA:
10.9 ±0.5

COMMENTS

Errors caused by issues with bypass flow controlled (unit was reading a flow of -11). -updated by CK 12/11/23

Flow Check by: Nick Bratton

DRAFT

Trinity Consultants

CONTINUOUS PARTICULATE SAMPLER

FLOW CHECK

SITE NAME CSX AQ8 **Date** 7/27/2023 **Start Time** -
PROJECT 234501.0038 **Stop Time** -
SITE OPERATOR Trintiy

Analyzer Mfg T-API
Analyzer Model T640X
Analyzer s/n 1689

= Enter Flow Check Data
= Cell Containing Equations

REFERENCE EQUIPMENT:

	Model	Serial Number
Temperature Standard		
Pressure Standard		
Flow Standard		
Certification Date		

ZERO TEST / LEAK CHECK

PM Channel	Indicated Conc.	
PM_{10}		µg/m3
$PM_{2.5}$		µg/m3

CRITERIA:
PM < 0.2 µg/m3

TEMPERATURE SENSOR CALIBRATION

Indicated Temp.	Ref. Std. Temp.	Difference	
			°C
			°C

CRITERIA:
DIFFERENCE < ±2°C

PRESSURE SENSOR CALIBRATION

Indicated Pressure		Ref. Std. Pressure	Difference
kPa	mmHg	mmHg	mmHg

CRITERIA:
DIFFERENCE < ±10 mm Hg

Sample FLOW VERIFICATION

Target Flow L/min	Indicated Flow (I) L/min	Ref. Std. Flow (R) L/min	Difference Ref. Flow %	Difference Design Flow %
5.00				
5.00				

CRITERIA:
±4% OF REFERENCE, OR ±5% OF DESIGN FLOW (5.0 L/min)

Bypass FLOW VERIFICATION

Target Flow L/min	Indicated Flow (I) L/min	Ref. Std. Flow (R) L/min	Difference Ref. Flow %	Difference Design Flow %	
11.67					as found.
11.67					Calibrated

CRITERIA:
±4% OF REFERENCE, OR ±5% OF DESIGN FLOW (11.7 L/min)

PMT VERIFICATION

Peak Channel	Indicated Value	Difference	
			as found.
			Calibrated

CRITERIA:
10.9 ±0.5

COMMENTS

Unable to perform flow check due to power issue at the site. Incosistent electricity/brownout from generator is causing the unit to cycle power constantly. Unit is not able to boot up before losing power again.

Flow Check by: Nick Bratton

DRAFT

Trinity Consultants

CONTINUOUS PARTICULATE SAMPLER

FLOW CHECK

SITE NAME CSX AQ8 **Date** 8/5/2023 **Start Time** -
PROJECT 234501.0038 **Stop Time** -
SITE OPERATOR Trintiy

Analyzer Mfg T-API
Analyzer Model T640X
Analyzer s/n 1689

= Enter Flow Check Data
= Cell Containing Equations

REFERENCE EQUIPMENT:

	Model	Serial Number
Temperature Standard		
Pressure Standard		
Flow Standard		
Certification Date		

ZERO TEST / LEAK CHECK

PM Channel	Indicated Conc.	
PM_{10}		µg/m3
$PM_{2.5}$		µg/m3

CRITERIA:
PM < 0.2 µg/m3

TEMPERATURE SENSOR CALIBRATION

Indicated Temp.	Ref. Std. Temp.	Difference	
			°C
			°C

CRITERIA:
DIFFERENCE < ±2°C

PRESSURE SENSOR CALIBRATION

Indicated Pressure		Ref. Std. Pressure	Difference
kPa	mmHg	mmHg	mmHg

CRITERIA:
DIFFERENCE < ±10 mm Hg

Sample FLOW VERIFICATION

Target Flow L/min	Indicated Flow (I) L/min	Ref. Std. Flow (R) L/min	Difference Ref. Flow %	Difference Design Flow %
5.00				
5.00				

CRITERIA:
±4% OF REFERENCE, OR ±5% OF DESIGN FLOW (5.0 L/min)

Bypass FLOW VERIFICATION

Target Flow L/min	Indicated Flow (I) L/min	Ref. Std. Flow (R) L/min	Difference Ref. Flow %	Difference Design Flow %	
11.67					as found.
11.67					Calibrated

CRITERIA:
±4% OF REFERENCE, OR ±5% OF DESIGN FLOW (11.7 L/min)

PMT VERIFICATION

Peak Channel	Indicated Value	Difference	
			as found.
			Calibrated

CRITERIA:
10.9 ±0.5

COMMENTS

Unable to perform flow check. Power issue seems to have been resolved but the unit will not boot up. Damage to the unit suspected due to constant power cycle.

Turned unit off and left pump and analyzer unplugged.

Flow Check by: Nick Bratton

DRAFT

Trinity Consultants

CONTINUOUS PARTICULATE SAMPLER

FLOW CHECK

SITE NAME CSX AQ8 **Date** _____ **Start Time** _____
PROJECT 234501.0038 **Stop Time** _____
SITE OPERATOR Trintiy

Analyzer Mfg T-API
Analyzer Model T640X
Analyzer s/n 1689

= Enter Flow Check Data
= Cell Containing Equations

REFERENCE EQUIPMENT:

	Model	Serial Number
Temperature Standard		
Pressure Standard		
Flow Standard		
Certification Date		

ZERO TEST / LEAK CHECK

PM Channel	Indicated Conc.	
PM_{10}		µg/m3
$PM_{2.5}$		µg/m3

CRITERIA:
PM < 0.2 µg/m3

TEMPERATURE SENSOR CALIBRATION

Indicated Temp.	Ref. Std. Temp.	Difference	
			°C
			°C

CRITERIA:
DIFFERENCE < ±2°C

PRESSURE SENSOR CALIBRATION

Indicated Pressure		Ref. Std. Pressure	Difference
kPa	mmHg	mmHg	mmHg

CRITERIA:
DIFFERENCE < ±10 mm Hg

Sample FLOW VERIFICATION

Target Flow L/min	Indicated Flow (I) L/min	Ref. Std. Flow (R) L/min	Difference Ref. Flow %	Difference Design Flow %
5.00				
5.00				

CRITERIA:
±4% OF REFERENCE, OR ±5% OF DESIGN FLOW (5.0 L/min)

Bypass FLOW VERIFICATION

Target Flow L/min	Indicated Flow (I) L/min	Ref. Std. Flow (R) L/min	Difference Ref. Flow %	Difference Design Flow %	
11.67					as found.
11.67					Calibrated

CRITERIA:
±4% OF REFERENCE, OR ±5% OF DESIGN FLOW (11.7 L/min)

PMT VERIFICATION

Peak Channel	Indicated Value	Difference	
			as found.
			Calibrated

CRITERIA:
10.9 ±0.5

COMMENTS

Unable to perform flow checks due to instrument issues and not being able to boot up due to continual power cycling. - edited by CK 12/11/23

Flow Check by: _____

DRAFT

Trinity Consultants

CONTINUOUS PARTICULATE SAMPLER
CALIBRATION

SITE NAME	CSX AQ8	**Date**	9/26/2023	**Start Time**	10:54 EST
PROJECT	222101.0081			**Stop Time**	11:32
SITE OPERATOR	Trintiy				

Analyzer Mfg	T-API
Analyzer Model	T640X
Analyzer s/n	1002 Spare

= Enter Flow Check Data
= Cell Containing Equations

REFERENCE EQUIPMENT:

	Model	Serial Number
Temperature Standard	Delta Cal	923
Pressure Standard	Delta Cal	923
Flow Standard	Delta Cal	923
Certification Date	11/2/2022	

ZERO TEST / LEAK CHECK

PM Channel	Indicated Conc.	
PM_{10}	0.1	µg/m3
$PM_{2.5}$	0.1	µg/m3

CRITERIA:
PM < 0.2 µg/m3

TEMPERATURE SENSOR CALIBRATION

Indicated Temp.	Ref. Std. Temp.	Difference	
16.40	16.3	-0.1	°C
			°C

CRITERIA:
DIFFERENCE < ±2°C

PRESSURE SENSOR CALIBRATION

Indicated Pressure		Ref. Std. Pressure	Difference
kPa	mmHg	mmHg	mmHg
102.7	770.30	767.7	-2.6

CRITERIA:
DIFFERENCE < ±10 mm Hg

Sample FLOW VERIFICATION

Target Flow L/min	Indicated Flow (I) L/min	Ref. Std. Flow (R) L/min	Difference Ref. Flow %	Difference Design Flow %
5.00	4.94	4.86	1.6%	-2.8%

CRITERIA:
±4% OF REFERENCE, OR ±5% OF DESIGN FLOW (5.0 L/min)

Bypass FLOW VERIFICATION

Target Flow L/min	Indicated Flow (I) L/min	Ref. Std. Flow (R) L/min	Difference Ref. Flow %	Difference Design Flow %	
11.67	11.91	11.63	2.4%	-0.3%	as found.
					Calibrated

CRITERIA:
±4% OF REFERENCE, OR ±5% OF DESIGN FLOW (11.7 L/min)

PMT VERIFICATION

Peak Channel	Indicated Value	Difference	
10.9	11.1	0.2	as found.
		0.0	Calibrated

CRITERIA:
10.9 ±0.5

COMMENTS

Total flow Main 5.1 Bypass 11.73 ref = 16.53 This was a spare analyzer which was installed back on 9/15 due to the site analyzer not booting up. We will reinstall the site analyzer today and run an as left check on it.

Calibrated by: Mike Peterson

DRAFT

Trinity Consultants

CONTINUOUS PARTICULATE SAMPLER
CALIBRATION

SITE NAME	CSX AQ8	**Date**	9/26/2023	**Start Time**	13:49 EST
PROJECT	222101.0081			**Stop Time**	14:08
SITE OPERATOR	Trintiy				

Analyzer Mfg	T-API
Analyzer Model	T640X
Analyzer s/n	1689

= Enter Flow Check Data
= Cell Containing Equations

REFERENCE EQUIPMENT:

	Model	Serial Number
Temperature Standard	Delta Cal	923
Pressure Standard	Delta Cal	923
Flow Standard	Delta Cal	923
Certification Date	11/2/2022	

ZERO TEST / LEAK CHECK

PM Channel	Indicated Conc.	
PM_{10}	0.1	µg/m3
$PM_{2.5}$	0.1	µg/m3

CRITERIA:
PM < 0.2 µg/m3

TEMPERATURE SENSOR CALIBRATION

Indicated Temp.	Ref. Std. Temp.	Difference	
17.60	17	-0.6	°C
			°C

CRITERIA:
DIFFERENCE < ±2°C

PRESSURE SENSOR CALIBRATION

Indicated Pressure		Ref. Std. Pressure	Difference
kPa	mmHg	mmHg	mmHg
102.5	768.80	767.0	-1.8

CRITERIA:
DIFFERENCE < ±10 mm Hg

Sample FLOW VERIFICATION

Target Flow L/min	Indicated Flow (I) L/min	Ref. Std. Flow (R) L/min	Difference Ref. Flow %	Difference Design Flow %
5.00	4.98	4.98	0.0%	-0.4%

CRITERIA:
±4% OF REFERENCE, OR ±5% OF DESIGN FLOW (5.0 L/min)

Bypass FLOW VERIFICATION

Target Flow L/min	Indicated Flow (I) L/min	Ref. Std. Flow (R) L/min	Difference Ref. Flow %	Difference Design Flow %	
11.67	11.65	11.73	-0.7%	0.5%	as found.
					Calibrated

CRITERIA:
±4% OF REFERENCE, OR ±5% OF DESIGN FLOW (11.7 L/min)

PMT VERIFICATION

Peak Channel	Indicated Value	Difference	
10.9	11.0	0.1	as found.
		0.0	Calibrated

CRITERIA:
10.9 ±0.5

COMMENTS

Total flow from ref sensor 16.65 This is the original site analyzer that was reinstalled today after loading the latest firmware and getting it to boot up again back in our Trinity lab.

Calibrated by: Mike Peterson

DRAFT

Flow Rate Transfer Standard Audit

Type: **BGI deltaCal DC1 Volumetric Air Flow Calibrator, Version 4.00P**
S/N: **0923**
Flow Rate: **1.5 - 19.5 liters/min**
Owner: **Trinity Consultants**
Audit Date: **11/21/2023**
Engineer: MAK

Qa is actual, or volumetric, air flow rate
Qs is standard air flow rate, based on standard conditions BPs = 760 mm Hg and Ts = 25°C

	Sonic Nozzle Apparatus				Read directly from instrument					Qa	diff. from	difference
Pt	P(amb) (mmHg)	T(amb) °C	Qa (l/min)	Qs (l/min)	BP (mmHg)	T fil (°C)	Ta (°C)	Qa (l/min)	Qs (l/min)	abs diff. (l/min)	reading (%)	full scale (%)
1	668.2	22.1	19.10	16.96	667.0	22.0	22.0	19.34	17.14	0.24	1.23%	1.21%
2	668.2	22.0	16.67	14.80	667.0	21.8	22.0	16.85	14.94	0.18	1.09%	0.93%
3	668.2	22.0	13.67	12.14	667.0	21.7	22.0	13.83	12.26	0.16	1.15%	0.81%
4	668.2	22.0	10.00	8.88	667.0	21.7	22.0	10.12	8.97	0.12	1.22%	0.62%
5	668.2	21.9	6.67	5.93	667.0	21.7	22.0	6.73	5.96	0.06	0.87%	0.30%
6	668.0	21.9	5.00	4.44	667.0	21.6	22.0	5.00	4.43	0.00	0.02%	0.01%
7	668.0	21.8	1.79	1.59	667.0	21.6	22.0	1.82	1.61	0.02	1.19%	0.11%

Note: These flow rate audits were performed at the specific laboratory conditions of temperature and pressure. Each individual sensor was not audited, only the values read directly from the instrument, as indicated above. This audit should not be construed as a comprehensive system audit, as individual sensors were not challenged through the full operating range.

Audited against Chinook Engineering's NIST traceable critical flow venturis sonic nozzle apparatus.

Critical Flow Venturis:

S/N 10961, CEESI (NIST) Data File 98FSY152, Disc No. 0698-001
S/N 10962, CEESI (NIST) Data File 98FSY153, Disc No. 0698-001
S/N 10963, CEESI (NIST) Data File 98FSY151, Disc No. 0698-001
S/N 18491, CEESI (NIST) Data File 04FSY001, Job No. 7066
S/N 30421, CEESI (NIST) Data File 17FSY-0468, Job No. CE06195

Temperature Standards:

T080604, CFV#1, CFV#2 and CFV#3, which are traceable through NIST traceable Hg-in-glass thermometer 3L9452. Miller & Weber Hg-in-glass thermometer S/N 3L9452 is traceable to NIST Thermometer 40350, through Transfer Standards 3C4465.

Pressure Standards:

Precision Absolute Manometer Model No. 355-AI0900 S/N 913930-M1, NIST traceable to Ruska Deadweight Tester S/N 38342/C-85.

Certified By: Marty Kjorstad

Date: November 21, 2023

DRAFT

Trinity Consultants

BAROMETRIC PRESSURE CALIBRATION SHEET

AS FOUND

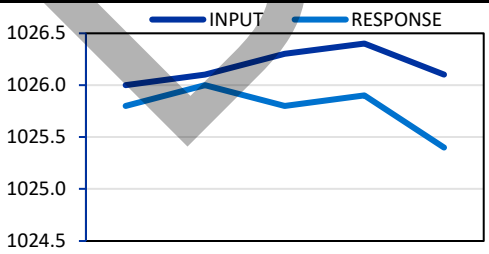
SITE NAME	CSX	**Date**	09/26/2023	**Start Time**	8:30
PROJECT	222101.0081			**Stop Time**	15:15
SITE OPERATOR	Trinity				
Sensor Mfg:	Campbell Sci	**Last Calibration Date:**		3/23/2023	
Sensor Model:	BaroVUE10	**Sensor Height:**		5 feet	
Sensor s/n:	1808				
Sensor Range:	500-1100 hpa mb				

CALIBRATION EQUIPMENT

Calibration Device:	Vaisala	**Certification Date:**	8/7/2023
Calibration Device Model:	PTB110		
Calibration Device s/n:	C4240093		

Time	CALIBRATION INPUT (mb)	SENSOR RESPONSE (mb)	DIFFERENCE (mb)
08:52	1026.0	1025.8	-0.2
09:18	1026.1	1026.0	-0.1
09:48	1026.3	1025.8	-0.5
10:26	1026.4	1025.9	-0.5
14:50	1026.1	1025.4	-0.7
Average	***1026.2***	***1025.8***	***-0.4***

Calibration Criteria: +/- 3 mb



COMMENTS

Side by side comparison in ambient conditions.

Calibrated By: Mike Peterson

= cell containing equations

DRAFT

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RELATIVE HUMIDITY CALIBRATION SHEET

AS FOUND

SITE NAME CSX
PROJECT 222101.0081
SITE OPERATOR Trinity

Date 09/26/2023 **Start Time** 08:30
Stop Time 15:15

Sensor Mfg: Campbell Sci
Sensor Model: HygroVUE10
Sensor s/n: E4240
Sensor Range: 0-100% %

Last Calibration Date: 3/23/2023
Sensor Height: 2 meters

CALIBRATION EQUIPMENT

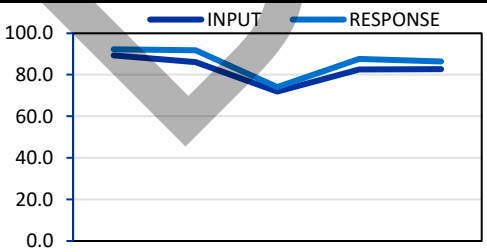
Calibration Device: Vaisala
Calibration Device Model: HMP45AC
Calibration Device s/n: D3250060

Certification Date: 2/14/2023

In bag with silica gel.

Time	CALIBRATION INPUT (%)	SENSOR RESPONSE (%)	DIFFERENCE (%)
09:18	89.4	92.3	2.9
09:48	86.0	91.8	5.8
14:45	71.9	74.1	2.2
14:58	82.5	87.6	5.1
15:07	82.6	86.3	3.7
Average	***82.5***	***86.4***	***3.9***

Calibration Criteria: +/- 7% RH



COMMENTS

Side by side comparison in ambient conditions and one point in bag with silica gel.

Calibrated By: Mike Peterson

= cell containing equations

DRAFT

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PRECIPITATION CALIBRATION SHEET

AS FOUND

SITE NAME	CSX	**Date**	09/26/2023	**Start Time**	08:30
PROJECT	222101.0081			**Stop Time**	15:15
SITE OPERATOR	Trinity				
Sensor Mfg:	Texas Electronics	**Last Calibration Date:**		3/23/2023	
Sensor Model:	TR-525U	**Sensor Height:**		48	inches
Sensor s/n:	93490-1222	**Recording Resolution**		1 tip = 0.01"	
Sensor Range:	Unlimited inches				
		Funnel Diameter:		20.3	cm
CALIBRATION EQUIPMENT		**Funnel Area (A):**		324.3	cm^2
Calibration Device:	Polylab	**Certification Date:**		N/A	
Calibration Device Model:	100 ml buret				
Calibration Device s/n:	N/A				

CALIBRATION INPUT (ml.)	CALIBRATION INPUT (inches)	SENSOR RESPONSE (inches)	DIFFERENCE (%)
85.0	0.1032	0.10	-3.1%
83.0	0.101	0.10	-0.8%
82.4	0.100	0.10	0.0%
Average	***0.1013***	***0.10***	***-1.3%***
Calibration Criteria:	*+/- 10% of input*		

1 cc = 1 ml
Funnel (r)adius = funnel (D)iameter ÷ 2
(A)rea of funnel = $\pi * r^2$
INPUT = Input (ml) ÷ A ÷ cm to inches

COMMENTS

24 hr start = 0.04 then End = 0.34

Calibrated By: Mike Peterson

= cell containing equations

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WIND DIRECTION 10M CALIBRATION SHEET

AS FOUND

SITE NAME	CSX	**Date** 09/26/2023	**Start Time** 08:30
PROJECT	222101.0081		**Stop Time** 15:15
SITE OPERATOR	Trinity		

Sensor Mfg:	Met One	**Last Calibration Date:**	3/23/2023
Sensor Model:	020D	**Sensor Height:**	10 meters
Sensor s/n:	C21028	**Declination:**	-11.0
Sensor Range:	0-360 °	**Alignment:**	350.0
Vane to Crossarm:	1.5 / 180.5 ll 0.6 / 180.5	**Difference:**	-10.0
		Rotational Torque:	< 3.0 gm-cm
		Starting Threshold:	< 0.5 m/s

CALIBRATION EQUIPMENT

Calibration Device:	Met One	**Certification Date:**	1/30/2023
Calibration Device Model:	040 direction template	**Compass:**	5100715063
Calibration Device s/n:	N/A	**Torque Device:**	Met One Torque Disc

	INPUT	CLOCKWISE			COUNTER-CLOCKWISE		
	(°)	RESPONSE (°)	DIFF (°)	TOTAL DIFF (°)	RESPONSE (°)	DIFF (°)	TOTAL DIFF (°)
North	0/360	0.9	0.9	-9.1	0.8	0.8	-9.2
	30	30.3	0.3	-9.7	30.5	0.5	-9.5
	60	60.9	0.9	-9.1	61.0	1.0	-9.0
East	90	90.9	0.9	-9.1	91.0	1.0	-9.0
	120	120.9	0.9	-9.1	120.9	0.9	-9.1
	150	150.2	0.2	-9.8	150.3	0.3	-9.7
South	180	179.8	-0.2	-10.2	179.9	-0.1	-10.1
	210	209.9	-0.1	-10.1	209.8	-0.2	-10.2
	240	240.9	0.9	-9.1	240.9	0.9	-9.1
West	270	271.5	1.5	-8.5	271.3	1.3	-8.7
	300	301.8	1.8	-8.2	301.8	1.8	-8.2
	330	332.5	2.5	-7.5	332.5	2.5	-7.5

Calibration Criteria: Orientation and Linearity: +/- 5 degrees. Starting Threshold: </=0.5 m/s.

TOTAL DIFF is the total difference when including Orientation and Linearity

COMMENTS

Crossarm was off by 10 degrees. Not sure if declination was improperly put into the compass during the install or the large metal parts near by that were not here today. Crossarm was adjusted to correct the issue.

Calibrated By: Mike Peterson

= cell containing equations

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WIND DIRECTION 10M (2) CALIBRATION SHEET

AFTER ADJUSTMENT

SITE NAME	CSX	**Date** 09/26/2023	**Start Time** 08:30
PROJECT	222101.0081		**Stop Time** 15:15
SITE OPERATOR	Trinity		

Sensor Mfg:	Met One	**Last Calibration Date:**	3/23/2023
Sensor Model:	020D	**Sensor Height:**	10 meters
Sensor s/n:	C21028	**Declination:**	-11.0
Sensor Range:	0-360 °	**Alignment:**	1.0
Vane to Crossarm:	1.5 / 180.5 ll 0.6 / 180.5	**Difference:**	1.0
		Rotational Torque:	< 3.0 gm-cm
		Starting Threshold:	< 0.5 m/s

CALIBRATION EQUIPMENT

Calibration Device:	Met One	**Certification Date:**	1/30/2023
Calibration Device Model:	040 direction template	**Compass:**	5100715063
Calibration Device s/n:	N/A	**Torque Device:**	Met One Torque Disc

	INPUT (°)	CLOCKWISE RESPONSE (°)	CLOCKWISE DIFF (°)	CLOCKWISE TOTAL DIFF (°)	COUNTER-CLOCKWISE RESPONSE (°)	COUNTER-CLOCKWISE DIFF (°)	COUNTER-CLOCKWISE TOTAL DIFF (°)
North	0/360	0.9	0.9	1.9	0.8	0.8	1.8
	30	30.3	0.3	1.3	30.5	0.5	1.5
	60	60.9	0.9	1.9	61.0	1.0	2.0
East	90	90.9	0.9	1.9	91.0	1.0	2.0
	120	120.9	0.9	1.9	120.9	0.9	1.9
	150	150.2	0.2	1.2	150.3	0.3	1.3
South	180	179.8	-0.2	0.8	179.9	-0.1	0.9
	210	209.9	-0.1	0.9	209.8	-0.2	0.8
	240	240.9	0.9	1.9	240.9	0.9	1.9
West	270	271.5	1.5	2.5	271.3	1.3	2.3
	300	301.8	1.8	2.8	301.8	1.8	2.8
	330	332.5	2.5	3.5	332.5	2.5	3.5

Calibration Criteria: Orientation and Linearity: +/- 5 degrees. Starting Threshold: </=0.5 m/s.

TOTAL DIFF is the total difference when including Orientation and Linearity

COMMENTS

Crossarm was off by 10 degrees. Not sure if declination was improperly put into the compass during the install or the large metal parts near by that were not here today. Crossarm was adjusted to correct the issue.

Calibrated By: Mike Peterson

= cell containing equations

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WIND SPEED 10M CALIBRATION SHEET

AS FOUND

SITE NAME CSX
PROJECT 222101.0081
SITE OPERATOR Trinity

Date 09/26/2023 **Start Time** 08:30
Stop Time 15:15

Sensor Mfg: Met One
Sensor Model: 010C
Sensor s/n: C21557
Sensor Range: 0-60 m/s

Last Calibration Date: 3/23/2023
Sensor Height: 10 meters

Rotational Torque: < 0.2 gm-cm
Starting Threshold: < 0.5 m/s

CALIBRATION EQUIPMENT

Calibration Device: RM Young
Calibration Device Model: 18802
Calibration Device s/n: CA03365

Certification Date: 12/5/2022
Torque Device: Met One Torque Disc

CALIBRATION INPUT		SENSOR RESPONSE	DIFFERENCE
RPM	(m/s)	(m/s)	(m/s)
0	0.000	0.000	0.000
200	5.600	5.626	0.026
300	8.270	8.265	-0.005
600	16.260	16.260	0.000
900	24.260	24.256	-0.004
1200	32.250	32.251	0.001
1500	40.250	40.246	-0.004
1800	48.240	48.241	0.001
Calibration Criteria:	*+/- 0.2 m/s. Starting Threshold < 0.5 m/s*		

COMMENTS

Calibrated By: Mike Peterson

= cell containing equations

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TEMPERATURE CALIBRATION SHEET

AS FOUND

SITE NAME CSX **Date** 09/26/2023 **Start Time** 08:30
PROJECT 222101.0081 **Stop Time** 15:15
SITE OPERATOR Trinity

Sensor Mfg: Campbell Sci **Last Calibration Date:** 3/23/2023
Sensor Model: Hygrovue10
Sensor Range: -40 to +70 °C

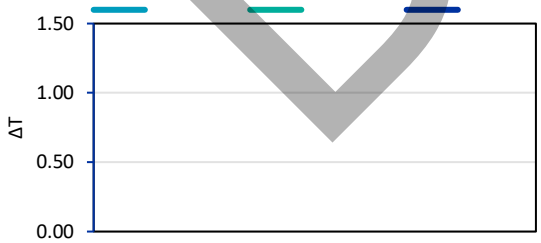
Sensor Ht 2 meters meters **Serial Number** **E4240**

CALIBRATION EQUIPMENT

Calibration Device: Brooklyn Digital **Certification Date:** 2/3/2023
Calibration Device Model: 6661S
Calibration Device s/n: C404690

CALIBRATION INPUT Time	(°C)	2 METER RESPONSE (°C)	DIFF (°C)			
10:06	41.60	41.40	-0.20			
10:14	19.20	19.45	0.25			
10:24	0.00	0.09	0.09			

Calibration Criteria: ± 0.5 °C from audit input, and ± 0.1 °C for ΔT



COMMENTS

Side by side comparison in water bath temperature mediums.

Calibrated By: Mike Peterson

= cell containing equations

DRAFT

APPENDIX L. MONITORING ENCLOSURE TEMPERATURES FOR THIRD QUARTER 2023

DRAFT

CSX AQ5

SHELTER TEMPERATURE in deg C for JULY, 2023

Hr Beg Hr End Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	25.6	25.5	25.7	25.7	25.6	25.7	25.4	25.2	25.1	24.9	24.8	24.9	24.9	24.7	24.7	24.6	24.8	24.8	24.9	25.2	25.3	25.2	25.2	25.4	**25.2**	**25.7**	**24.6**
2	25.4	25.3	25.3	25.3	25.4	25.4	25.2	25.1	24.8	24.3	24.1	24.6	24.6	24.5	24.6	24.1	24.0	25.0	25.2	25.1	25.3	25.3	25.3	25.3	**24.9**	**25.4**	**24.0**
3	25.2	25.3	25.2	25.4	25.4	25.3	25.0	24.9	24.4	24.2	23.4	23.5	23.2	23.6	23.2	23.3	23.8	23.8	24.4	24.8	25.0	25.3	25.4	25.7	**24.5**	**25.7**	**23.2**
4	25.4	25.4	25.4	25.5	25.5	25.5	25.1	24.2	23.5	23.3	23.6	24.4	23.4	23.4	23.7	24.2	24.5	24.7	24.7	24.9	25.1	25.0	25.1	25.2	**24.6**	**25.5**	**23.3**
5	25.3	25.3	25.3	25.3	25.5	25.2	24.9	23.9	23.6	23.3	23.3	23.3	23.8	23.6	24.1	24.4	23.8	24.0	24.2	24.5	24.8	24.8	25.1	25.0	**24.4**	**25.5**	**23.3**
6	25.1	25.1	25.2	25.2	25.3	25.0	24.7	23.9	23.3	23.4	23.2	23.5	24.3	24.5	24.4	23.9	23.8	24.1	24.4	24.7	24.7	24.8	25.1	25.0	**24.4**	**25.3**	**23.2**
7	25.2	25.3	25.2	25.2	25.3	25.3	24.8	24.0	23.6	23.6	23.6	24.5	24.9	24.3	24.1	23.8	24.2	24.4	24.8	24.9	25.1	25.0	25.0	24.9	**24.6**	**25.3**	**23.6**
8	25.2	25.0	25.2	25.3	25.3	25.0	25.0	24.3	24.5	24.0	23.5	23.7	23.6	23.7	23.9	23.9	24.3	24.4	24.6	24.8	25.0	25.1	25.1	25.2	**24.6**	**25.3**	**23.5**
9	25.2	25.2	25.2	25.3	25.3	25.1	25.1	24.9	24.3	24.5	24.4	24.1	24.0	25.0	25.7	26.0	25.5	25.4	25.4	25.8	25.9	25.8	25.9	25.9	**25.2**	**26.0**	**24.0**
10	26.1	26.4	26.1	26.2	26.0	25.9	25.7	25.7	25.6	25.1	24.2	24.2	23.7	23.9	23.9	23.9	23.9	24.1	24.4	24.8	25.1	25.4	25.3	25.7	**25.1**	**26.4**	**23.7**
11	25.7	26.0	25.9	25.9	26.1	25.8	25.3	24.2	23.5	23.4	23.8	23.6	23.6	23.4	23.4	23.6	23.6	23.8	24.2	24.8	25.1	25.2	25.3	25.3	**24.6**	**26.1**	**23.4**
12	25.4	25.7	25.7	25.8	26.0	25.6	25.1	24.1	23.2	23.0	22.9	23.3	23.3	23.3	23.4	23.2	23.6	24.0	24.3	24.6	24.9	24.9	25.1	25.1	**24.4**	**26.0**	**22.9**
13	25.4	25.3	25.4	25.4	25.5	25.2	25.0	24.3	24.1	23.1	22.8	22.9	22.8	22.8	22.8	22.8	23.1	23.6	23.7	24.0	24.3	24.3	24.5	24.6	**24.1**	**25.5**	**22.8**
14	24.7	24.8	25.0	25.2	25.1	25.2	25.0	24.4	24.1	23.2	23.2	23.1	23.6	23.8	23.8	24.2	24.9	24.6	25.3	25.2	25.3	25.4	25.5	25.7	**24.6**	**25.7**	**23.1**
15	25.4	25.4	25.6	25.5	25.6	25.4	25.0	24.1	23.6	23.6	24.0	24.2	23.6	23.6	23.4	23.5	23.9	23.9	24.2	24.4	24.5	24.6	24.8	25.2	**24.5**	**25.6**	**23.4**
16	25.2	25.4	25.4	25.4	25.3	25.2	25.0	25.2	24.9	24.8	24.9	24.9	24.7	24.6	24.7	24.5	24.4	24.6	24.8	24.8	25.1	25.0	25.1	25.2	**25.0**	**25.4**	**24.4**
17	25.3	25.4	25.5	25.7	25.7	25.5	25.2	24.6	24.0	23.6	23.4	23.5	23.6	23.6	23.8	23.5	23.9	24.2	24.5	24.8	24.8	25.1	25.1	25.2	**24.6**	**25.7**	**23.4**
18	25.2	25.2	25.3	25.4	25.4	25.5	25.1	24.2	23.5	23.3	23.0	23.3	23.4	23.4	23.2	23.7	23.8	24.0	24.4	24.7	24.9	25.1	25.1	25.1	**24.4**	**25.5**	**23.0**
19	25.2	25.2	25.5	26.0	25.6	25.7	25.6	25.6	25.4	25.1	24.9	24.4	24.5	24.5	24.5	24.2	24.3	24.7	25.0	24.9	25.1	25.0	25.2	26.1	**25.1**	**26.1**	**24.2**
20	25.7	25.6	25.6	25.6	25.5	25.5	25.1	24.5	23.8	23.9	24.0	24.1	24.1	24.2	24.3	24.2	24.2	24.2	24.4	24.8	24.8	25.1	25.2	25.2	**24.7**	**25.7**	**23.8**
21	25.2	25.1	25.3	27.2	27.4	26.2	26.5	25.1	24.2	24.0	23.7	23.8	24.0	23.8	23.8	23.8	24.4	24.5	24.8	24.9	25.1	25.3	25.3	25.7	**25.0**	**27.4**	**23.7**
22	25.8	25.8	26.1	26.0	26.0	26.0	25.4	24.8	24.4	24.1	24.3	24.3	24.2	24.1	24.2	24.1	24.6	24.7	24.9	25.1	25.3	25.6	25.6	25.6	**25.0**	**26.1**	**24.1**
23	25.8	25.9	26.0	26.1	25.9	26.1	25.3	24.5	24.0	23.7	23.8	23.9	24.2	24.4	24.4	24.3	24.4	24.6	24.6	24.9	25.0	25.1	25.4	25.2	**24.9**	**26.1**	**23.7**
24	25.4	25.5	25.4	25.3	26.1	26.5	27.1	26.4	25.4	24.6	24.4	24.2	24.2	24.4	26.4	33.8	31.3	24.7	24.8	24.9	25.2	25.2	25.3	25.4	**25.9**	**33.8**	**24.2**
25	25.4	25.4	25.4	25.4	25.4	25.4	25.3	25.1	24.7	24.2	24.1	25.0	25.2	25.3	24.7	24.5	24.5	24.6	25.0	25.2	25.2	25.3	25.3	25.3	**25.0**	**25.4**	**24.1**
26	25.5	25.5	25.7	25.7	25.8	25.7	25.1	24.5	24.0	23.8	23.9	24.1	24.1	24.1	24.1	24.0	24.1	24.2	24.4	24.7	24.9	25.0	24.9	25.1	**24.7**	**25.8**	**23.8**
27	25.0	25.1	25.2	25.1	25.1	25.2	25.0	24.7	23.6	23.5	23.2	23.2	22.8	22.4	18.4	18.1	18.1	19.1	19.5	20.4	21.0	21.3	21.4	21.5	**22.4**	**25.2**	**18.1**
28	21.8	21.8	21.7	21.7	21.8	21.9	21.1	19.3	17.8	17.2	17.7	17.9	17.4	17.8	17.7	18.4	17.3	18.5	20.2	22.2	22.1	22.0	21.9	22.0	**20.0**	**22.2**	**17.2**
29	22.2	22.1	22.2	22.3	22.3	22.2	21.8	20.6	20.7	19.4	18.5	18.0	17.3	17.8	18.0	19.0	21.6	22.0	21.4	21.3	21.6	21.8	22.1	22.1	**20.8**	**22.3**	**17.3**
30	22.0	22.5	22.4	22.8	22.8	22.6	22.2	21.2	20.8	20.5	20.4	20.8	20.4	20.2	19.9	19.9	20.3	20.7	21.3	22.0	22.2	22.4	22.5	22.4	**21.5**	**22.8**	**19.9**
31	22.3	22.4	22.4	22.6	22.8	22.6	22.5	21.9	20.6	20.2	20.0	20.2	20.2	20.3	20.2	20.1	20.3	20.9	21.5	21.9	22.2	22.3	22.6	22.6	**21.5**	**22.8**	**20.0**
MEAN	**24.9**	**25.0**	**25.0**	**25.2**	**25.2**	**25.1**	**24.8**	**24.2**	**23.6**	**23.3**	**23.2**	**23.3**	**23.3**	**23.3**	**23.3**	**23.5**	**23.7**	**23.7**	**24.0**	**24.3**	**24.5**	**24.6**	**24.7**	**24.8**	**24.2**		
MAX	**26.1**	**26.4**	**26.1**	**27.2**	**27.4**	**26.5**	**27.1**	**26.4**	**25.6**	**25.1**	**24.9**	**25.0**	**25.2**	**25.3**	**26.4**	**33.8**	**31.3**	**25.4**	**25.4**	**25.8**	**25.9**	**25.8**	**25.9**	**26.1**		**33.8**	
MIN	**21.8**	**21.8**	**21.7**	**21.7**	**21.8**	**21.9**	**21.1**	**19.3**	**17.8**	**17.2**	**17.7**	**17.9**	**17.3**	**17.8**	**17.7**	**18.1**	**17.3**	**18.5**	**19.5**	**20.4**	**21.0**	**21.3**	**21.4**	**21.5**			**17.2**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 744 DATA RECOVERY RATE = 100.0%

MONTHLY MEAN = 24.2 deg C

MAXIMUM SHELTER TEMPERATURE = 33.8 deg C DATE OF OCCURRENCE = 7/24 AT 1600 MAXIMUM DAILY MEAN = 25.9 deg C DATE OF OCCURRENCE = 7/24

MINIMUM SHELTER TEMPERATURE = 17.2 deg C DATE OF OCCURRENCE = 7/28 AT 1000 MINUMUM DAILY MEAN = 20.0 deg C DATE OF OCCURRENCE = 7/28

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

DRAFT

CSX AQ5

SHELTER TEMPERATURE in deg C for AUGUST, 2023

Hr Beg Hr End Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	22.9	22.9	22.8	23.0	23.2	23.0	22.7	21.9	21.5	21.4	21.1	21.1	21.1	20.9	21.2	21.1	21.4	21.7	22.0	22.5	22.4	22.8	22.9	23.0	**22.1**	**23.2**	**20.9**
2	23.0	23.1	23.3	23.4	23.7	23.4	22.6	21.6	21.3	25.5	21.8	22.0	21.4	21.4	21.6	21.7	21.6	21.9	22.1	22.3	22.3	22.5	22.4	22.6	**22.4**	**25.5**	**21.3**
3	22.6	22.7	22.6	23.0	23.0	23.0	22.7	22.4	22.3	21.9	21.8	21.8	21.7	21.9	21.9	21.8	22.2	22.3	22.5	22.6	22.7	22.8	22.7	23.0	**22.4**	**23.0**	**21.7**
4	22.8	22.9	23.0	22.9	22.8	22.9	22.7	22.7	22.6	22.2	21.6	22.0	21.6	21.8	21.6	21.6	21.6	21.9	21.9	22.3	22.3	22.3	22.4	22.6	**22.3**	**23.0**	**21.6**
5	22.5	22.6	22.7	22.5	22.7	22.6	22.5	22.3	22.1	22.8	21.0	21.3	20.9	20.6	21.1	21.0	20.8	21.3	21.4	21.9	22.0	22.2	22.3	22.3	**21.9**	**22.8**	**20.6**
6	22.3	22.5	22.5	22.6	22.6	22.6	21.9	21.1	20.3	20.5	20.2	20.2	20.0	20.3	20.1	20.4	20.8	21.1	21.6	22.3	22.0	22.2	22.2	22.4	**21.4**	**22.6**	**20.0**
7	22.5	22.2	22.4	22.3	22.3	22.4	22.1	21.7	22.1	21.5	21.4	21.0	20.3	20.0	19.9	19.7	20.9	23.4	22.7	22.8	22.6	22.6	22.6	22.8	**21.8**	**23.4**	**19.7**
8	22.8	22.8	22.7	22.8	22.8	22.9	22.2	21.5	21.2	21.3	21.1	21.1	21.1	21.2	20.9	20.5	20.9	20.8	21.3	21.9	22.3	22.3	22.4	22.7	**21.8**	**22.9**	**20.5**
9	22.7	22.9	23.0	23.2	23.1	23.2	22.4	21.5	20.9	20.3	20.0	20.0	20.1	20.2	20.0	20.1	20.2	20.5	21.6	21.9	21.9	22.2	22.1	22.3	**21.5**	**23.2**	**20.0**
10	22.5	22.5	22.4	22.4	22.5	22.5	22.5	22.2	22.0	22.1	22.0	21.9	21.6	21.2	20.9	21.2	21.6	21.4	21.8	22.1	22.2	22.3	22.5	22.6	**22.0**	**22.6**	**20.9**
11	22.8	22.9	22.8	22.8	22.9	22.9	22.2	21.3	20.4	20.3	19.9	20.0	20.0	20.1	19.6	20.1	20.1	20.6	21.2	21.7	21.9	22.2	22.1	22.3	**21.4**	**22.9**	**19.6**
12	22.3	22.2	22.4	22.5	22.5	22.6	21.9	21.0	20.0	19.8	19.6	20.0	19.3	18.1	18.2	18.9	20.0	20.2	20.6	21.1	21.3	21.3	21.6	21.5	**20.8**	**22.6**	**18.1**
13	21.7	21.8	21.8	22.1	22.0	22.2	21.4	20.1	19.5	19.0	19.3	18.6	18.3	18.6	18.1	18.0	18.7	19.9	20.6	21.4	21.7	22.0	22.3	22.4	**20.5**	**22.4**	**18.0**
14	22.5	22.5	22.5	22.5	22.6	22.6	21.9	20.4	19.9	19.5	20.0	19.3	19.2	19.4	19.6	20.1	21.4	22.1	21.9	21.9	21.9	21.9	21.8	21.6	**21.2**	**22.6**	**19.2**
15	21.9	21.9	22.0	22.0	22.1	22.2	21.7	21.2	19.4	19.4	18.5	17.8	18.8	18.6	20.8	21.7	21.4	21.3	21.5	21.7	21.8	21.7	22.1	22.0	**21.0**	**22.2**	**17.8**
16	22.1	22.3	22.4	22.4	22.5	22.6	22.0	21.3	20.5	19.7	19.7	20.1	19.6	20.1	20.3	20.2	20.6	21.0	21.3	21.8	22.2	22.4	22.5	22.6	**21.3**	**22.6**	**19.6**
17	22.6	22.6	22.8	22.8	22.6	22.6	21.7	20.9	20.4	19.8	19.5	19.8	20.2	20.0	20.7	19.7	20.2	20.4	21.0	21.4	21.3	21.5	21.4	21.4	**21.1**	**22.8**	**19.5**
18	21.9	21.9	22.3	22.3	22.4	22.5	21.9	21.9	20.8	20.4	20.6	20.7	20.8	21.0	20.8	20.4	20.8	21.5	21.9	22.5	22.6	23.0	23.0	23.4	**21.7**	**23.4**	**20.4**
19	23.2	23.5	23.8	23.9	24.0	24.2	22.6	21.9	21.3	21.1	21.0	21.3	21.2	21.4	21.2	21.0	21.2	21.7	22.1	22.5	22.8	22.7	23.1	23.2	**22.3**	**24.2**	**21.0**
20	23.4	23.4	23.5	23.6	23.6	23.5	22.5	21.6	20.9	20.4	20.1	20.3	21.0	20.6	20.5	20.1	20.1	20.7	21.4	21.6	22.1	22.1	22.2	22.4	**21.7**	**23.6**	**20.1**
21	22.2	22.4	22.5	22.6	22.6	22.6	22.4	21.7	21.5	19.6	19.4	18.9	18.9	18.7	19.8	20.2	19.7	20.7	21.0	21.5	21.6	21.8	22.0	22.0	**21.1**	**22.6**	**18.7**
22	22.2	22.1	21.9	22.3	22.4	22.5	22.5	22.3	21.9	21.4	21.3	21.0	21.1	21.0	21.0	21.0	21.2	21.8	22.1	22.5	22.5	22.7	22.9	22.9	**21.9**	**22.9**	**21.0**
23	23.1	23.4	23.8	23.5	23.8	23.7	22.5	21.5	21.2	21.2	21.3	21.4	21.4	21.4	21.5	22.0	22.0	22.0	22.2	22.4	22.3	22.3	22.4	22.5	**22.3**	**23.8**	**21.2**
24	22.5	22.6	22.6	22.6	22.6	22.6	22.6	22.6	22.5	22.0	21.9	22.3	22.0	21.6	21.6	21.4	21.7	21.7	21.9	22.1	22.0	22.3	22.2	22.3	**22.2**	**22.6**	**21.4**
25	22.4	22.4	22.5	22.5	22.5	22.4	22.4	22.0	21.6	21.5	20.2	20.2	20.4	20.2	20.4	19.9	20.5	20.9	21.3	21.4	21.8	21.9	22.0	21.9	**21.5**	**22.5**	**19.9**
26	22.2	22.0	22.2	22.3	22.1	22.3	21.4	20.6	19.7	20.1	18.6	18.6	17.7	19.0	20.3	20.3	20.2	20.3	20.8	21.3	21.6	22.1	22.0	22.2	**20.8**	**22.3**	**17.7**
27	22.4	22.4	22.5	22.5	22.5	22.6	22.1	20.9	20.6	20.3	20.5	20.7	20.8	20.8	20.6	20.9	20.8	21.1	21.3	21.6	21.9	21.8	22.1	22.2	**21.5**	**22.6**	**20.3**
28	22.1	22.3	22.4	22.4	22.6	22.7	22.4	22.1	22.0	22.0	21.9	21.8	21.9	21.8	21.9	22.1	21.9	22.1	22.2	22.3	22.5	22.4	22.4	22.5	**22.2**	**22.7**	**21.8**
29	22.6	22.5	22.7	22.7	22.7	22.5	22.6	22.5	22.3	22.4	21.9	21.4	21.3	21.0	21.4	21.5	21.8	21.8	21.9	21.9	22.0	22.0	22.1	22.0	**22.1**	**22.7**	**21.0**
30	22.3	22.1	22.4	22.2	22.4	22.2	22.3	21.5	20.7	20.4	20.1	19.9	20.0	19.8	19.9	20.2	20.6	21.2	21.9	22.1	22.2	22.4	22.6	22.8	**21.4**	**22.8**	**19.8**
31	22.9	23.1	23.3	23.4	23.4	23.5	23.4	22.8	22.6	22.4	23.5	21.8	21.6	21.7	21.5	21.4	21.7	22.2	22.5	22.9	22.9	23.2	23.2	23.5	**22.7**	**23.5**	**21.4**
MEAN	**22.5**	**22.6**	**22.7**	**22.7**	**22.8**	**22.8**	**22.3**	**21.6**	**21.2**	**21.0**	**20.7**	**20.6**	**20.5**	**20.5**	**20.6**	**20.7**	**20.9**	**21.3**	**21.7**	**22.0**	**22.1**	**22.3**	**22.3**	**22.4**	**21.7**		
MAX	**23.4**	**23.5**	**23.8**	**23.9**	**24.0**	**24.2**	**23.4**	**22.8**	**22.6**	**25.5**	**23.5**	**22.3**	**22.0**	**21.9**	**21.9**	**22.1**	**22.2**	**23.4**	**22.7**	**22.9**	**22.9**	**23.2**	**23.2**	**23.5**		**25.5**	
MIN	**21.7**	**21.8**	**21.8**	**22.0**	**22.0**	**22.2**	**21.4**	**20.1**	**19.4**	**19.0**	**18.5**	**17.8**	**17.7**	**18.1**	**18.1**	**18.0**	**18.7**	**19.9**	**20.6**	**21.1**	**21.3**	**21.3**	**21.4**	**21.4**			**17.7**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 744 DATA RECOVERY RATE = 100.0%

MONTHLY MEAN = 21.7 deg C

MAXIMUM SHELTER TEMPERATURE = 25.5 deg C DATE OF OCCURRENCE = 8/2 AT 1000 MAXIMUM DAILY MEAN = 22.7 deg C DATE OF OCCURRENCE = 8/31

MINIMUM SHELTER TEMPERATURE = 17.7 deg C DATE OF OCCURRENCE = 8/26 AT 1300 MINUMUM DAILY MEAN = 20.5 deg C DATE OF OCCURRENCE = 8/13

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

DRAFT

CSX AQ5

SHELTER TEMPERATURE in deg C for SEPTEMBER, 2023

Hr Beg Hr End Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	23.6	23.7	23.9	24.0	24.4	24.2	22.7	21.9	21.6	21.6	21.8	22.2	22.3	22.4	22.4	22.4	22.5	22.6	22.8	23.0	23.3	23.4	23.4	23.4	**22.9**	**24.4**	**21.6**
2	23.9	23.7	24.0	24.0	24.1	24.0	22.7	21.8	21.3	21.0	21.3	21.3	21.8	21.7	21.9	21.8	21.8	22.1	22.3	22.7	22.9	22.8	23.1	23.0	**22.5**	**24.1**	**21.0**
3	22.9	23.2	23.1	23.2	23.3	23.4	22.5	21.5	20.1	18.7	18.3	17.6	18.1	18.5	18.6	18.6	18.4	18.4	20.4	21.3	21.8	22.1	22.4	22.3	**20.8**	**23.4**	**17.6**
4	22.4	22.4	22.6	22.8	22.8	22.6	22.1	20.8	20.1	17.9	17.6	18.3	18.9	19.0	19.3	19.4	19.1	18.5	19.6	20.3	20.8	21.1	21.0	21.3	**20.4**	**22.8**	**17.6**
5	21.3	21.3	21.6	21.7	21.7	21.9	21.7	20.3	18.3	18.4	17.9	18.5	18.8	19.3	19.3	18.8	18.8	20.2	20.8	20.7	20.9	21.1	21.2	21.5	**20.3**	**21.9**	**17.9**
6	21.8	21.9	22.2	22.2	22.4	22.5	21.6	20.2	19.0	18.7	18.0	17.8	18.1	18.7	19.0	19.4	19.7	19.6	20.5	21.0	21.6	21.7	21.8	21.8	**20.5**	**22.5**	**17.8**
7	22.0	22.2	22.2	22.1	22.4	22.2	21.8	20.6	19.6	18.1	18.2	17.6	17.8	18.5	18.5	19.3	20.2	20.7	21.4	21.9	22.2	22.1	22.1	22.2	**20.7**	**22.4**	**17.6**
8	22.3	22.3	22.5	22.8	22.8	22.8	22.6	21.3	20.8	20.9	20.2	20.3	20.4	19.5	19.4	20.3	19.9	20.8	20.9	22.0	22.4	22.2	22.7	22.6	**21.4**	**22.8**	**19.4**
9	22.8	22.8	22.9	23.2	23.0	23.0	22.4	21.9	21.9	21.4	21.1	20.7	20.6	21.5	22.1	22.4	22.5	23.0	22.8	23.0	22.8	22.9	22.8	22.9	**22.4**	**23.2**	**20.6**
10	22.8	22.8	22.8	22.8	22.8	22.8	22.8	22.7	22.5	22.5	22.3	21.8	21.5	21.6	22.1	22.2	22.0	21.8	22.3	22.4	22.3	22.4	22.6	22.6	**22.4**	**22.8**	**21.5**
11	22.5	22.6	22.7	22.7	22.7	22.8	22.9	22.7	22.2	22.0	21.7	21.1	21.0	20.9	21.6	21.5	21.1	21.6	21.9	22.3	22.4	22.6	22.6	22.7	**22.1**	**22.9**	**20.9**
12	22.8	22.8	23.0	23.0	23.0	23.0	22.6	21.8	21.1	21.0	20.8	21.0	21.1	21.1	20.9	21.0	21.2	21.4	21.8	21.9	21.8	21.9	23.1	23.0	**21.9**	**23.1**	**20.8**
13	22.8	22.8	22.9	23.2	23.1	23.3	23.1	22.7	22.5	21.8	21.5	21.2	21.3	21.6	21.3	21.1	21.4	21.8	22.3	22.6	22.6	22.6	22.6	22.7	**22.3**	**23.3**	**21.1**
14	22.9	22.8	23.0	23.4	23.5	23.9	22.9	22.0	21.7	21.5	21.7	21.8	21.8	21.7	21.9	21.8	22.2	22.5	22.9	23.2	23.4	23.8	23.7	24.3	**22.7**	**24.3**	**21.5**
15	24.5	24.5	25.0	25.0	24.5	23.9	23.3	22.2	21.8	21.7	21.8	22.1	22.0	22.0	21.9	22.0	22.1	22.5	22.9	23.3	23.3	24.1	24.1	24.4	**23.1**	**25.0**	**21.7**
16	24.2	24.6	24.9	24.8	24.3	24.0	23.5	21.8	21.5	21.4	21.5	21.7	21.6	21.5	21.4	21.5	21.6	22.1	22.7	23.2	23.6	23.6	23.8	24.2	**22.9**	**24.9**	**21.4**
17	24.1	24.2	24.2	24.2	24.3	24.5	22.8	21.7	21.9	22.0	22.4	22.7	22.4	22.2	22.4	22.5	22.6	23.3	23.7	23.4	23.7	23.5	23.7	23.7	**23.2**	**24.5**	**21.7**
18	23.8	23.7	23.7	23.7	23.8	23.9	24.0	24.1	23.7	22.9	22.9	22.6	22.4	22.3	22.4	22.2	22.3	22.7	23.0	23.4	23.5	23.8	24.2	24.2	**23.3**	**24.2**	**22.2**
19	24.6	24.6	25.4	25.4	25.2	25.2	23.6	22.2	21.5	21.4	21.6	21.9	21.9	22.0	22.0	22.0	22.2	22.5	23.2	23.4	23.8	23.9	24.0	24.1	**23.2**	**25.4**	**21.4**
20	24.3	24.5	24.9	25.3	25.2	24.7	23.6	21.7	21.2	21.2	21.7	22.0	22.0	22.2	22.4	22.1	22.2	22.7	22.8	23.3	23.4	23.5	23.6	23.8	**23.1**	**25.3**	**21.2**
21	23.9	24.1	24.5	24.7	24.9	24.5	23.4	21.7	21.7	21.6	21.8	22.0	22.2	22.2	22.5	22.6	22.5	22.7	23.3	23.2	23.4	23.5	24.0	24.0	**23.1**	**24.9**	**21.6**
22	23.8	23.9	24.2	24.2	24.6	24.6	24.1	23.0	22.4	22.3	21.9	22.1	22.3	22.4	22.4	22.9	23.3	23.7	23.6	24.0	24.2	25.0	24.3	24.8	**23.5**	**25.0**	**21.9**
23	24.3	25.1	24.8	24.7	23.9	23.2	22.7	23.2	24.1	25.1	25.5	24.9	24.2	24.9	25.6	24.9	25.2	25.0	25.2	25.3	25.0	24.7	24.5	25.5	**24.6**	**25.6**	**22.7**
24	25.1	24.6	24.6	24.5	24.4	24.2	23.9	24.0	23.5	23.6	23.3	23.4	23.6	23.4	23.4	23.1	23.0	23.3	23.2	23.3	23.4	23.4	23.7	23.7	**23.7**	**25.1**	**23.0**
25	23.8	23.8	24.2	24.3	24.4	24.4	24.1	23.9	23.7	23.3	23.2	23.3	23.0	23.3	23.4	24.1	23.7	23.2	21.4	21.9	22.2	22.3	22.7	22.6	**23.3**	**24.4**	**21.4**
26	22.1	22.0	21.6	21.6	21.2	20.8	20.6	22.6	24.6	24.6	24.3	24.1	24.6	25.0	25.4	25.2	23.7	23.4	23.7	23.2	23.0	22.9	23.0	23.4	**23.2**	**25.4**	**20.6**
27	23.5	23.6	23.8	23.8	23.5	23.2	23.0	23.6	24.3	21.4	22.8	22.5	22.9	23.1	23.2	23.4	23.7	23.9	24.2	24.2	24.7	25.3	25.1	25.1	**23.7**	**25.3**	**21.4**
28	24.9	24.6	24.4	24.7	24.7	24.8	24.7	23.7	22.4	21.9	22.3	22.9	22.7	22.8	22.8	23.0	23.4	23.7	24.0	24.1	23.6	23.9	24.0	23.7	**23.7**	**24.9**	**21.9**
29	23.7	23.9	24.0	24.2	23.7	23.8	23.8	24.0	23.4	23.1	22.9	22.8	22.8	22.9	22.9	22.8	23.1	23.1	23.4	23.2	23.2	23.2	23.3	23.6	**23.4**	**24.2**	**22.8**
30	23.4	23.6	23.6	23.5	23.9	23.6	23.5	22.6	22.9	22.9	22.7	22.5	22.7	22.4	22.1	22.4	22.6	23.0	23.0	23.1	23.1	23.1	23.3	23.5	**23.0**	**23.9**	**22.1**
MEAN	**23.4**	**23.4**	**23.6**	**23.7**	**23.6**	**23.5**	**23.0**	**22.3**	**21.9**	**21.5**	**21.5**	**21.5**	**21.6**	**21.7**	**21.8**	**21.9**	**21.9**	**22.2**	**22.5**	**22.8**	**22.9**	**23.1**	**23.2**	**23.4**	**22.6**		
MAX	**25.1**	**25.1**	**25.4**	**25.4**	**25.2**	**25.2**	**24.7**	**24.1**	**24.6**	**25.1**	**25.5**	**24.9**	**24.6**	**25.0**	**25.6**	**25.2**	**25.2**	**25.0**	**25.2**	**25.3**	**25.0**	**25.3**	**25.1**	**25.5**		**25.6**	
MIN	**21.3**	**21.3**	**21.6**	**21.6**	**21.2**	**20.8**	**20.6**	**20.2**	**18.3**	**17.9**	**17.6**	**17.6**	**17.8**	**18.5**	**18.5**	**18.6**	**18.4**	**18.4**	**19.6**	**20.3**	**20.8**	**21.1**	**21.0**	**21.3**			**17.6**

POSSIBLE NUMBER OF OBSERVATIONS = 720 ACTUAL NUMBER OF OBSERVATIONS = 720 DATA RECOVERY RATE = 100.0%

MONTHLY MEAN = 22.6 deg C

MAXIMUM SHELTER TEMPERATURE = 25.6 deg C DATE OF OCCURRENCE = 9/23 AT 1500 MAXIMUM DAILY MEAN = 24.6 deg C DATE OF OCCURRENCE = 9/23

MINIMUM SHELTER TEMPERATURE = 17.6 deg C DATE OF OCCURRENCE = 9/3 AT 1200 MINUMUM DAILY MEAN = 20.3 deg C DATE OF OCCURRENCE = 9/5

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

DRAFT

CSX Transportation, Inc. Comments on Renewal of State Permit to Operate No. 510-2263 for CSX Transportation Curtis Bay Piers

Appendix 17b: *2023 Q4 Fenceline Monitoring Report submitted Mar. 2024*

SUMMARY OF METEOROLOGICAL AND CONTINUOUS PM_{10} AND $PM_{2.5}$ MONITORING DATA AT CSXT CURTIS BAY PIERS FACILITY MONITORING STATIONS FOURTH QUARTER 2023

CSXT Transportation, Inc.

Draft

TRINITY CONSULTANTS
4525 Wasatch Blvd.
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Salt Lake City, Utah
801-272-3000

March 2024

Project 234501.0038

SISEC

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1.0 EXECUTIVE SUMMARY

This report, prepared by Trinity Consultants, summarizes the PM_{10} and $PM_{2.5}$ monitoring data collected from October 1 through December 31, 2023 from the monitoring stations. CSXT, Curtis Bay Piers operates a coal, ore, limestone, and other dry material storage, transfer, and shipment terminal (Curtis Bay Piers Facility) pursuant to State Permit to Operate No. 510-2263. To meet the requirements of the Permit, CSXT is operating a fenceline network of continuous particulate matter with a diameter of 10 microns or less (PM_{10}) and particulate matter with a diameter of 2.5 microns or smaller ($PM_{2.5}$) monitors and a weather station. CSX installed Federal Equivalent Method (FEM) monitors at two monitoring stations, identified as AQ5 and AQ8, to measure both PM_{10} and $PM_{2.5}$ at the Curtis Bay Piers Facility, a network of eight (8) non-regulatory, community based PM_{10} and $PM_{2.5}$ monitors along the perimeter of the CSX Curtis Bay Piers facility, and a 10-meter tower to collect continuous wind speed and wind direction, temperature, relative humidity, barometric pressure, and precipitation near AQ5. Wind speed and wind direction measurements are also being collected at the perimeter monitoring locations (AQ1, AQ2, AQ3, AQ4, AQ6, and AQ7).

The equipment being operated in and around the perimeter of the Curtis Bay Piers Facility is presented in Table 1-1. The results of the hourly and 24-hour average PM_{10} and $PM_{2.5}$ concentrations collected from the FEM monitors at AQ5 and AQ8 are presented in Tables 1-2 and 1-3.

Table 1-1 Particulate and Meteorological Instrumentation at CSX Monitoring Stations

Site ID	Parameter	Equipment Manufacturer	Model Number	Serial Number
AQ1	PM_{10}, $PM_{2.5}$	QuantAQ MODULAIR	MODULAIR-PM	MOD-00386
AQ2	PM_{10}, $PM_{2.5}$	QuantAQ MODULAIR	MODULAIR-PM	MOD-00385
AQ3	PM_{10}, $PM_{2.5}$	QuantAQ MODULAIR	MODULAIR-PM	MOD-00384
AQ4	PM_{10}, $PM_{2.5}$	QuantAQ MODULAIR	MODULAIR-PM	MOD-00383
	PM_{10}, $PM_{2.5}$	QuantAQ MODULAIR	MODULAIR-PM	MOD-00266
	PM_{10}, $PM_{2.5}$	QuantAQ MODULAIR	MODULAIR-PM	MOD-00387
	PM_{10}, $PM_{2.5}$	QuantAQ MODULAIR	MODULAIR-PM	MOD-00388
	PM_{10}, $PM_{2.5}$	Teledyne-API	T640X	1690
	Wind Direction	Met One	020D	C21028
AQ5	Wind Speed	Met One	010C	C21557
	Temperature	Campbell Scientific Inc.	HygroVUE10	E4240
	Relative Humidity	Campbell Scientific Inc.	HygroVUE10	E4240
	Barometric Pressure	Campbell Scientific Inc.	BaroVUE10	1808
	Precipitation	Texas Electronics	TR-525U	93490-1222
	Data Acquisition System	Campbell Scientific Inc.	CR1000X	45777
AQ6	PM_{10}, $PM_{2.5}$	QuantAQ MODULAIR	MODULAIR-PM	MOD-00267
AQ7	PM_{10}, $PM_{2.5}$	QuantAQ MODULAIR	MODULAIR-PM	MOD-00265
AQ8	PM_{10}, $PM_{2.5}$	QuantAQ MODULAIR	MODULAIR-PM	MOD-00264
	PM_{10}, $PM_{2.5}$	Teledyne-API	T640X	1689
	Data Acquisition System	Campbell Scientific Inc.	CR310	

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Table 1-2 AQ5 PM_{10} and $PM_{2.5}$ Concentrations for October 1 – December 31 (Fourth Quarter) 2023 in Micrograms per Cubic Meter

Statistics	October (µg/m³)	November (µg/m³)	December (µg/m³)	Fourth Quarter 2023 (µg/m³)
Monthly Mean PM_{10}	23.0	23.9	20.0	22.3
Maximum Hourly PM_{10}	234.3	78.4	81.6	234.3
Second Highest Hourly PM_{10}	199.0	78.1	75.4	199.0
Maximum 24-hour PM_{10}	48.2	48.4	46.5	48.4
Second Highest 24-hour PM_{10}	40.2	44.1	41.8	44.1
Monthly Mean $PM_{2.5}$	9.4	12.3	11.2	11.0
Maximum Hourly $PM_{2.5}$	41.2	43.3	48.3	48.3
Second Highest Hourly $PM_{2.5}$	40.0	40.3	44.2	44.2
Maximum 24-hour $PM_{2.5}$	19.5	25.9	30.1	30.1
Second Highest 24-hour $PM_{2.5}$	15.6	22.4	27.1	27.1

Table 1-3 AQ8 PM_{10} and $PM_{2.5}$ Concentrations for October 1 – December 31 (Fourth Quarter) 2023 in Micrograms per Cubic Meter

Statistics	October (µg/m³)	November (µg/m³)	December (µg/m³)	Fourth Quarter 2023 (µg/m³)
Monthly Mean PM_{10}	31.8	26.3	19.9	26.0
Maximum Hourly PM_{10}	240.4	148.6	308.4	308.4
Second Highest Hourly PM_{10}	193.1	131.0	85.9	193.1
Maximum 24-hour PM_{10}	62.3	58.0	51.3	62.3
Second Highest 24-hour PM_{10}	59.1	50.7	40.4	59.1
Monthly Mean $PM_{2.5}$	9.8	11.2	10.1	10.4
Maximum Hourly $PM_{2.5}$	37.1	34.4	59.5	59.5
Second Highest Hourly $PM_{2.5}$	30.9	34.2	45.8	45.8
Maximum 24-hour $PM_{2.5}$	18.5	23.3	28.4	28.4
Second Highest 24-hour $PM_{2.5}$	17.9	21.5	23.1	23.1

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From the AQ5 meteorological tower, the most frequent (and predominant) winds during the fourth quarter were from the west-northwest followed by the northwest. The percentage of winds that were calm was 1.0 percent and the percentage of wind speeds that were not calm and less than or equal to 24.2 miles per hour (mph) was 99.0 percent. No winds were measured to be greater than 24.2 mph. The peak wind gust for the period was 40.0 mph.

The hourly minimum temperature during the monitoring period was -3.9°C on November 29 at 07:00 and the hourly maximum temperature was 28.7°C on October 28 at 16:00. The mean relative humidity and barometric pressure during the fourth quarter was 70% and 1018.7 millibars, respectively. 10.43 inches of precipitation was measured by the precipitation gauge at the AQ5 meteorological tower.

MODULAIR samplers are being operated at the AQ5 monitoring station to give an indication of the $PM_{10}/PM_{2.5}$ at each network location and to show $PM_{10}/PM_{2.5}$ trends. These data are not intended to be used for compliance with the National Ambient Air Quality Standards (NAAQS). Figures 1.1 through 1.4 present the MODULAIR PM sampler PM_{10} and $PM_{2.5}$ concentrations compared with the FEM reference PM_{10} and $PM_{2.5}$ samplers at AQ5 and AQ8 for the fourth quarter 2023. Tables 1-4 and 1-5 present the EPA performance metrics and target values, and the comparison of the collocated data to the EPA performance target values.

Figure 1.1 AQ5 MODULAIR Serial Number 00266 PM Collocation and Comparison Data for October through December 2023

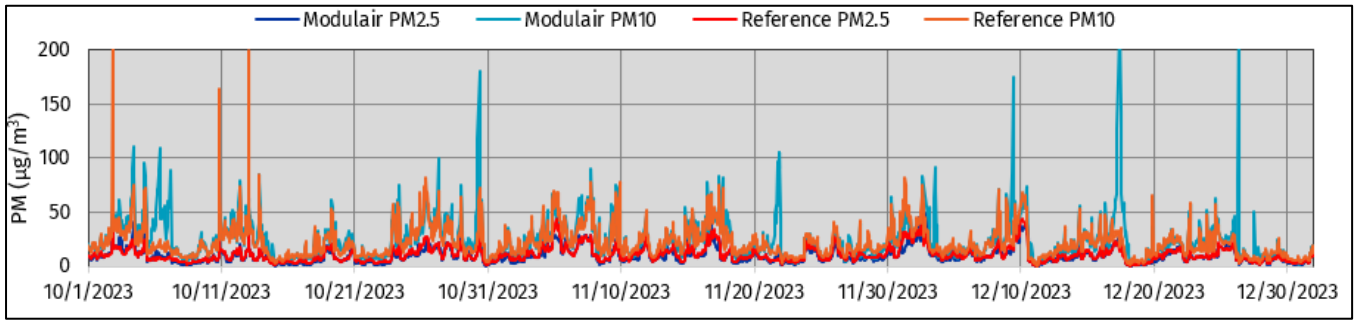


Figure 1.2 AQ5 MODULAIR Serial Number 00387 PM Collocation and Comparison Data for October through December 2023

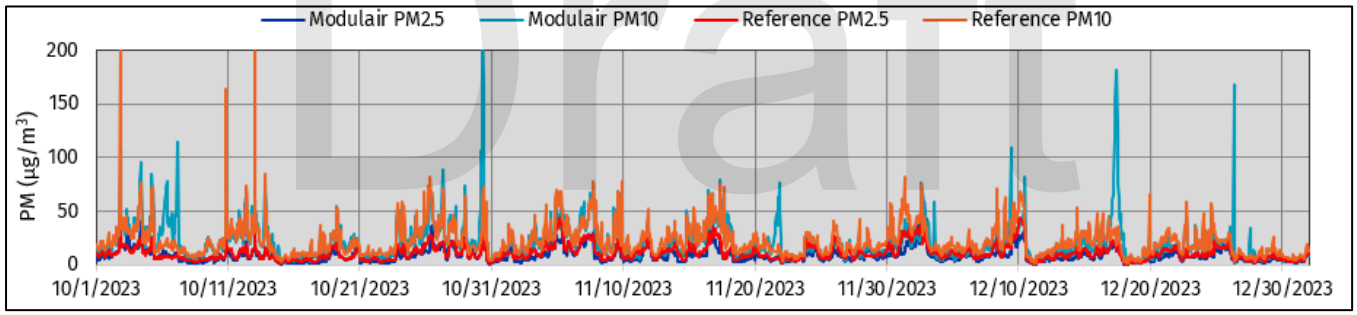
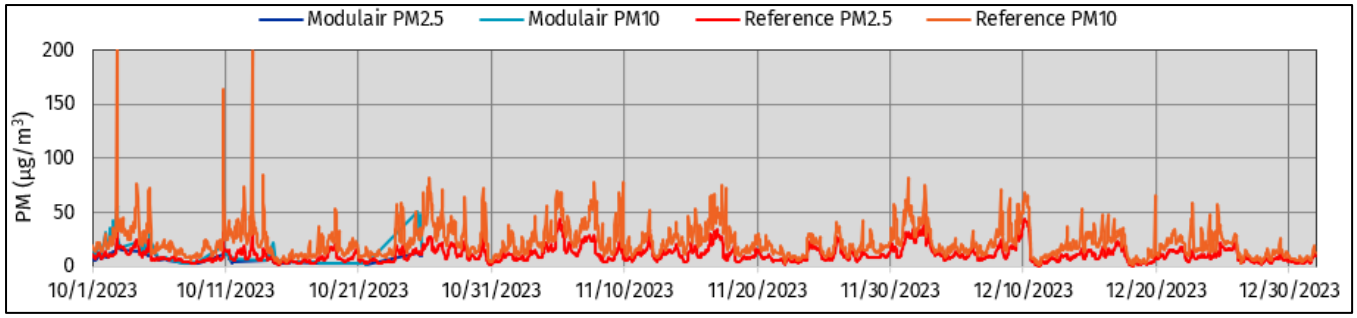


Figure 1.3 AQ5 MODULAIR Serial Number 00388 PM Collocation and Comparison Data for October through December 2023



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Figure 1.4 AQ8 MODULAIR Serial Number 00264 PM Collocation and Comparison Data for October 2023

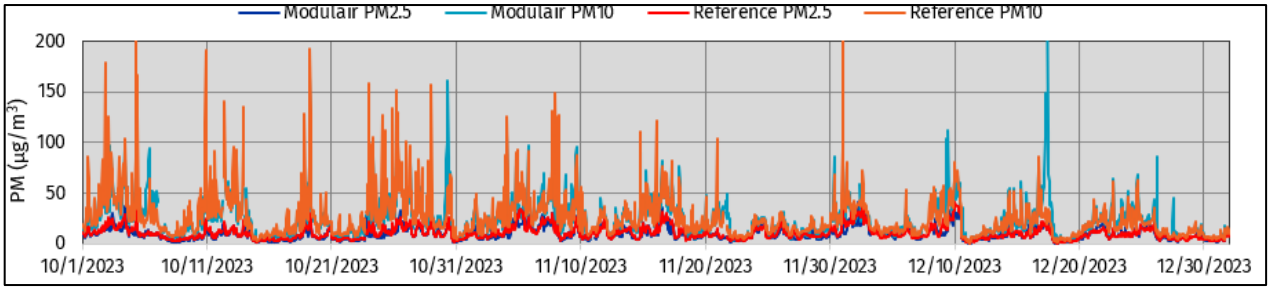


Table 1-4 EPA Recommended Performance Metrics and Target Values for Non-Regulatory PM Monitors

Performance Metric		Target Value
Precision	Standard Deviation	≤5 µg/m³
	CV	≤30%
Bias	Slope (m)	1.0±0.35
	Intercept (b)	-5 ≤ b ≤ 5 µg/m³
Linearity	R^2	≥0.70
Error	RSME	≤7 µg/m³

Table 1-5 AQ5 and AQ8 MODULAIR and FEM Collocation Statistics

Statistics	AQ5 Modulair 00266		AQ5 Modulair 00387		AQ5 Modulair 00388		AQ8 Modulair 00264	
	$PM_{2.5}$	PM_{10}	$PM_{2.5}$	PM_{10}	$PM_{2.5}$	PM_{10}	$PM_{2.5}$	PM_{10}
Correlation Coefficient (r2)	0.843	0.495	0.722	0.528	0.562	0.136	0.788	0.619
Slope (m)	0.945	0.946	0.785	0.861	0.555	0.134	0.855	0.758
Intercept (b)	-0.265	2.976	0.196	1.285	3.538	14.932	0.803	4.381
RMSW	4.139	16.656	4.668	14.678	12.778	26.490	3.965	19.252
Precision (CV)	18.260	23.530	23.460	25.420	20.830	9.830	18.810	21.790
Precision (SD)	3.979	16.650	4.095	14.461	7.391	15.770	3.865	18.916

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PM_{10} and $PM_{2.5}$ concentration and meteorological data collected at the CSX monitoring stations have been subjected to a series of quality control procedures to document the validity of the data and increase the integrity of the data sets. Visual inspection of the meteorological tower, sensors, continuous FEM PM_{10}/$PM_{2.5}$ monitors, and network samplers is performed at least every month or more frequently when problems are indicated. The data loggers at the AQ5 and AQ8 meteorological tower and PM_{10}/$PM_{2.5}$ monitoring stations are interrogated every day to download and process the data. PM_{10} and $PM_{2.5}$ concentration from the MODULAIR samplers are downloaded from the QuantAQ Cloud daily. Abnormal conditions are logged and reported immediately to the program manager for corrective action.

Calibrations of the meteorological equipment are performed every six months or whenever a sensor exceeds specified control limits or undergoes major maintenance or repair. The FEM T640X PM_{10}/$PM_{2.5}$ samplers are calibrated by Trinity personnel every three months or when problems are identified. The meteorological equipment was calibrated on September 26, 2023; the AQ8 PM_{10}/$PM_{2.}$samplers were calibrated on October 25, November 21, and December 21, 2023. No calibrations are performed on the MODULAIR samplers. All calibrations are performed using certified reference standards.

In addition, monthly flow rate, temperature, and pressure checks are performed on the FEM PM_{10} and $PM_{2.5}$ samplers. All flow rate and leak checks are performed using certified flow, temperature, and pressure reference standards.

A software program is utilized to perform a series of quality control (QC) checks of the data. When the QC program identifies values that exceed the criteria set for that parameter, the data file is inspected visually by data management specialists. Data failures or discrepancies that would invalidate an hourly average PM_{10} and/or $PM_{2.5}$ concentration are:

- Loss of more than three five-minute average in a one-hour period,
- Visual evidence, on the stacked parameter/time plots for example, that the 5-minute value is an outlier,
- Data collected during calibrations and audits,
- Equipment malfunction,
- T640 reports a status error,
- Shelter temperature less than 0°C,
- $PM_{2.5}$ and PM_{10} concentrations set to missing,
- PM_{10} less than -5 µg/m^3, concentrations set to missing, and
- $PM_{2.5}$ less than -10 µg/m^3, concentrations set to missing.

Data recoveries for the meteorological parameters and AQ5 and AQ8 station PM_{10} and $PM_{2.5}$ data for October 1 through December 31, 2023, in percent possible, are provided in Tables 1-6 and 1-7.

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Table 1-6 AQ5 Station – Meteorological, PM_{10}, and $PM_{2.5}$ Data Recovery in Percent for October 1 through December 31, 2023

Month	Level (m)	Wind Speed (%)	Wind Dir. (%)	Wind Gust (%)	Temp. (%)	Rel. Hum. (%)	Bar. Press. (%)	Prec. (%)	PM_{10} (%)[1]	$PM_{2.5}$ (%)[1]
October	1.5	--	--	--	--	--	100	100	99.6	99.6
	2.0	--	--	--	100	100	--	--		
	10.0	100	100	100	--	--	--	--		
November	1.5	--	--	--	--	--	98.9	98.9	98.9	98.9
	2.0	--	--	--	98.9	98.9	--	--		
	10.0	98.9	98.9	98.9	--	--	--	--		
December	1.5	--	--	--	--	--	100	100	99.6	99.6
	2.0	--	--	--	100	100	--	--		
	10.0	100	100	100	--	--	--	--		
Fourth Quarter 2023	1.5	--	--	--	--	--	99.6	99.6	99.4	99.4
	2.0	--	--	--	99.6	99.6	--	--		
	10.0	99.6	99.6	99.6	--	--	--	--		

[1] Data capture rate based on valid sample days.

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Table 1-7 AQ8 Station - PM_{10} and $PM_{2.5}$ Measurement Data Recovery in Percent for Fourth Quarter 2023

Month	PM_{10} (%)[1]	$PM_{2.5}$ (%)[1]
October	99.2	99.2
November	98.6	98.6
December	99.9	99.9
Fourth Quarter	99.2	99.2

[1] Data capture rate based on valid sample days.

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2.0 INTRODUCTION

This report, prepared for CSX Transportation, Inc. (CSX) by Trinity Consultants summarizes the fourth quarter 2023 (October 1 through December 31) meteorological, federal equivalent method (FEM) continuous particulate matter with a diameter of 10 microns or less (PM_{10}) and particulate matter with a diameter of 2.5 microns or smaller ($PM_{2.5}$), being collected at two monitoring stations, identified as AQ5 and AQ8, operated at the Curtis Bay Piers Facility. In addition, a network of eight (8) non-regulatory PM_{10} and $PM_{2.5}$ monitors are being operated along the perimeter of the CSX Curtis Bay Piers facility and these data are presented in this report. The CSX Curtis Bay Piers is a dry material storage, transfer, and shipment terminal located at 1910 Benhill Avenue, in Baltimore, Maryland.

2.1 Background

CSXT, Curtis Bay Piers operates a coal, ore, limestone, and other dry material storage, transfer, and shipment terminal (Curtis Bay Piers Facility) pursuant to State Permit to Operate No. 510-2263. To meet the requirements of the Permit to Construct 510-2263 issued on September 7, 2022, CSXT was required to submit a fenceline monitoring plan to the MDE describing the installation, operation, and maintenance of a network of PM_{10} and $PM_{2.5}$ monitors and a weather station. Per the Permit to Construct, CSX is required to install one FEM monitor to measure both PM_{10} and $PM_{2.5}$, install multiple sensors capable of measuring PM_{10} and $PM_{2.5}$, and operate a 10-meter meteorological tower that meets current U.S. EPA protocols and guidance. Meteorological measurements from a 10-meter tower consist of wind speed and wind direction at 10-meters, temperature at two-meters, relative humidity at two-meters, barometric pressure at 5 feet, and precipitation at 4 feet.

PM_{10}, $PM_{2.5}$, and meteorological data collection officially began at the CSX monitoring sites on March 24, 2023 at 01:00 Eastern Standard Time (EST). Table 2-1 summarizes the parameters collected at the monitoring sites and the units for each parameter.

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Table 2-1 Measured Meteorological and Air Quality Parameters

Parameter	Units
Wind Speed	meters per second (m/s)
Wind Direction	degrees from true north (°)
Temperature	degrees Celsius (°C)
Relative Humidity	percent (%)
Barometric Pressure	millibars (mb)
Precipitation	inches (in)
Continuous PM_{10}	micrograms per cubic meter ($\mu g/m^3$)
Continuous $PM_{2.5}$	micrograms per cubic meter ($\mu g/m^3$)
Time	Eastern Standard Time (EST)

The latitude and longitude coordinates of the monitoring stations are presented in Table 2-2.

Table 2-2 Location of CSX Curtis Bay Piers Facility Monitoring Stations

Site ID	Latitude (Decimal degrees)	Longitude (Decimal degrees)
AQ1	39.22169	-76.58194
AQ2	39.22169	-76.58455
AQ3	39.22710	-76.58483
AQ4	39.22968	-76.58538
AQ5	39.22773	-76.58096
AQ6	39.22485	-76.58015
AQ7	39.22147	-76.57630
AQ8	39.22320	-76.58400
Meteorological Tower (at AQ5)	39.22773	-76.58096

Figure 2.1 presents a Google Earth image showing the location of CSX monitoring stations. Photographs of the AQ5 and AQ8 monitoring stations, where the FEM PM_{10}/$PM_{2.5}$ monitors are located, are presented as Figures 2.2 and 2.3.

Figure 2.1 Google Earth Image Showing Location of CSX Monitoring Stations

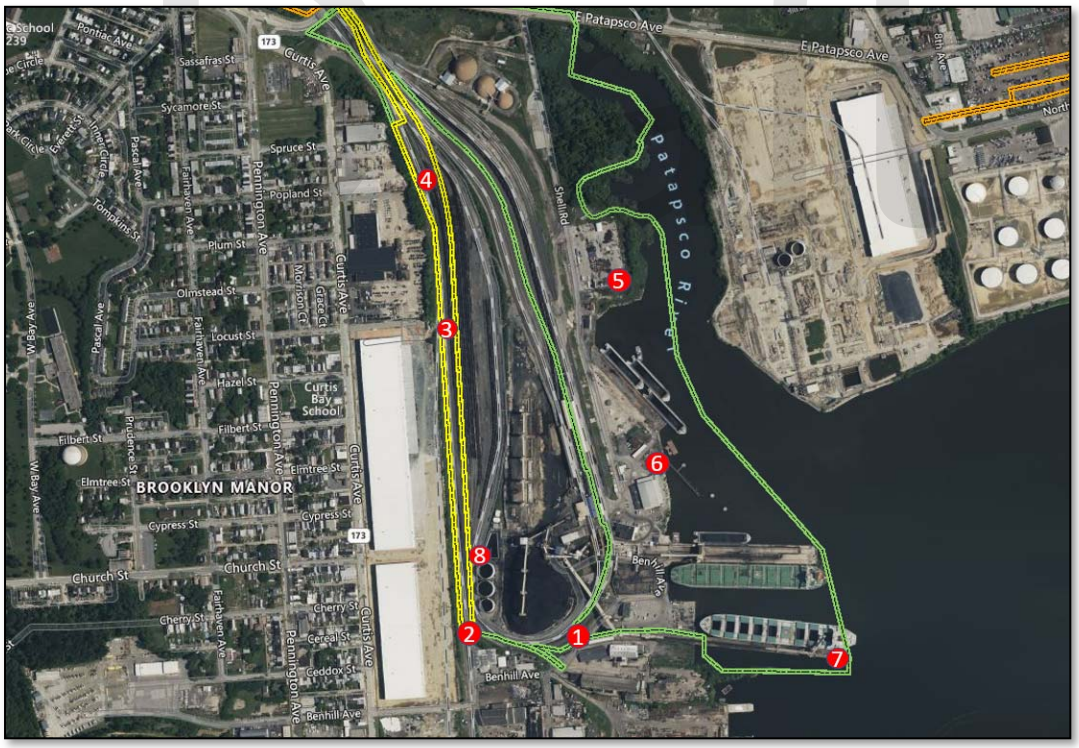


Figure 2.2 Photograph of CSX AQ5 PM and Meteorological Monitoring Station



Figure 2.3 Photograph of CSX AQ8 PM Monitoring Station



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2.2 Meteorological and Particulate Instrumentation

The meteorological parameters provide information on the local meteorology and particulate concentrations at the Curtis Bay Piers Facility. The objective of the particulate and meteorological monitoring is to obtain representative particulate and meteorological information for the Curtis Bay Piers Facility that may be used for informational purposes, including community awareness and comparison with regional air quality. Table 2-3 presents a list of meteorological and PM equipment at the CSX Curtis Bay Piers Facility monitoring stations.

Table 2-3 Particulate and Meteorological Instrumentation at CSX Monitoring Stations

Site ID	Parameter	Equipment Manufacturer	Model Number	Serial Number
AQ1	PM_{10}, $PM_{2.5}$	QuantAQ MODULAIR	MODULAIR-PM	MOD-00386
	Wind speed/Wind direction	Davis Instruments	6415	
AQ2	PM_{10}, $PM_{2.5}$	QuantAQ MODULAIR	MODULAIR-PM	MOD-00385
	Wind speed/Wind direction	Davis Instruments	6415	
AQ3	PM_{10}, $PM_{2.5}$	QuantAQ MODULAIR	MODULAIR-PM	MOD-00384
	Wind speed/Wind direction	Davis instruments	6415	
AQ4	PM_{10}, $PM_{2.5}$	QuantAQ MODULAIR	MODULAIR-PM	MOD-00383
	Wind speed/Wind direction	Davis Instruments	6415	
AQ5	PM_{10}, $PM_{2.5}$	QuantAQ MODULAIR	MODULAIR-PM	MOD-00266
	Wind speed/Wind direction	Davis Instruments	6415	
	PM_{10}, $PM_{2.5}$	QuantAQ MODULAIR	MODULAIR-PM	MOD-00387
	Wind speed/Wind direction	Davis Instruments	6415	
	PM_{10}, $PM_{2.5}$	QuantAQ MODULAIR	MODULAIR-PM	MOD-00388
	Wind speed/Wind direction	Davis Instruments	6415	
	PM_{10}, $PM_{2.5}$	Teledyne-API	T640X	1690
	Wind Direction	Met One	020D	C21028
	Wind Speed	Met One	010C	C21557
	Temperature	Campbell Scientific Inc.	HygroVUE10	E4240
	Relative Humidity	Campbell Scientific Inc.	HygroVUE10	E4240
	Barometric Pressure	Campbell Scientific Inc.	BaroVUE10	1808
	Precipitation	Texas Electronics	TR-525U	93490-1222
	Data Acquisition System	Campbell Scientific Inc.	CR1000X	45777
AQ6	PM_{10}, $PM_{2.5}$	QuantAQ MODULAIR	MODULAIR-PM	MOD-00267
	Wind speed/Wind direction	Davis Instruments	6415	
AQ7	PM_{10}, $PM_{2.5}$	QuantAQ MODULAIR	MODULAIR-PM	MOD-00265
	Wind speed/Wind direction	Davis Instruments	6415	
AQ8	PM_{10}, $PM_{2.5}$	QuantAQ MODULAIR	MODULAIR-PM	MOD-00264
	Wind speed/Wind direction	Davis Instruments	6415	
	PM_{10}, $PM_{2.5}$	Teledyne-API	T640X	1689
	Data Acquisition System	Campbell Scientific Inc.	CR310	

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2.3 Data Acquisition

Campbell Scientific Inc. (CSI) CR1000x DASs are used to store data from the 10-meter tower meteorological sensors and continuous Teledyne-API (T-API) T640X FEM $PM_{10}/PM_{2.5}$ monitors. Tower meteorological data are sampled every second and recorded as five-minute averages on the data logger. T640X particulate data are stored as five-minute and hourly averages. An hourly average is computed from at least nine five-minute averages that are available for the hour. Data from the QuantAQ MODULAIR samplers are sampled every minute and stored on internal data loggers that send data to a cloud server.

Each CSI CR1000x DAS has the capability of being polled locally through an RS232 connector or remotely via modem. An on-site display allows users to view current values of the parameters being measured.

The CSI CR1000x data loggers are interrogated by Trinity daily via a static IP address and the data are copied to duplicate computer files. Each data logger's telecommunications software performs dynamic error checking during download to ensure that an exact duplicate file is created. Any failures in instrumentation or data acquisition are identified daily so that field personnel can correct problems in a timely manner to prevent excessive data loss. The data collected during each interrogation are checked for consistency and the parameters are plotted for visual inspection.

The MODULAIR produces data which is saved to the onboard µSD card every minute. These values are averaged and pushed to the cloud where they are available on the QuantAQ Cloud for retrieval. Data from the MODULAIR are obtained from the QuantAQ Cloud daily.

The quality assurance stacked parameter/time plots for the fourth quarter (October through December) 2023 are presented in Appendix A. Data presented in Appendix A represent the final, quality assured data set. Hourly values provided are computed by the data logger. If fewer than 45 minutes are available, the hour is considered "missing".

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3.0 METEOROLOGICAL TOWER AND FEDERAL EQUIVALENT METHOD CONTINUOUS PARTICULATE DATA SUMMARY

This section of the report summarizes the data results and data recovery for the fourth quarter 2023 (October 1 through December 31). Hourly data for the period are tabulated in the appendices. These appendix tables display the hourly average of measurements recorded in the hour "ending"; that is, the first hour of the day is labeled 01, meaning the hour beginning at 00:00:01 and ending at 01:00:00 a.m. The second hour is labeled 02, meaning the values collected from 01:00:01 a.m. to 02:00:00 a.m.

3.1 Meteorological Data

Meteorological data records from the CSX Curtis Bay Piers Facility meteorological monitoring station consists of wind speed and wind direction at 10-meters, temperature at two-meters, relative humidity at two-meters, barometric pressure at 5 feet, and precipitation at 4 feet.

3.1.1 Wind Direction and Horizontal Wind Speed

The most frequent (and predominant) winds during the fourth quarter at the 10-meter level were from the west-northwest followed by the northwest. Reported wind directions represent the directions from which the wind is blowing.

For the fourth quarter 2023, the percentage of winds that were calm was 1.0 percent at the 10-meter level. The percentage of wind speeds that were not calm and less than or equal to 10.8 meters per second (m/s), which translates to 24.2 miles per hour (mph), was 99.0 percent at the 10-meter level. For the quarter, the percentage of winds greater than 10.8 m/s was 0.0 percent at the 10-meter level.

The sector with the highest average wind speed for the quarter at the 10-meter level was from the northwest at 3.9 m/s (8.7 mph).

Figures 3.1 through 3.3 provide diagrams of the joint frequency of occurrence distributions (wind rose) of wind speed and wind direction by month for the period for the 10-meter level. Figure 3.4 presents the fourth quarter 10-meter level wind rose. Summary tables of hourly average wind direction and wind speed for the 10-meter level for the fourth quarter are presented in Appendix B.

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Figure 3.1 10-Meter Level Wind Rose, October 2023.

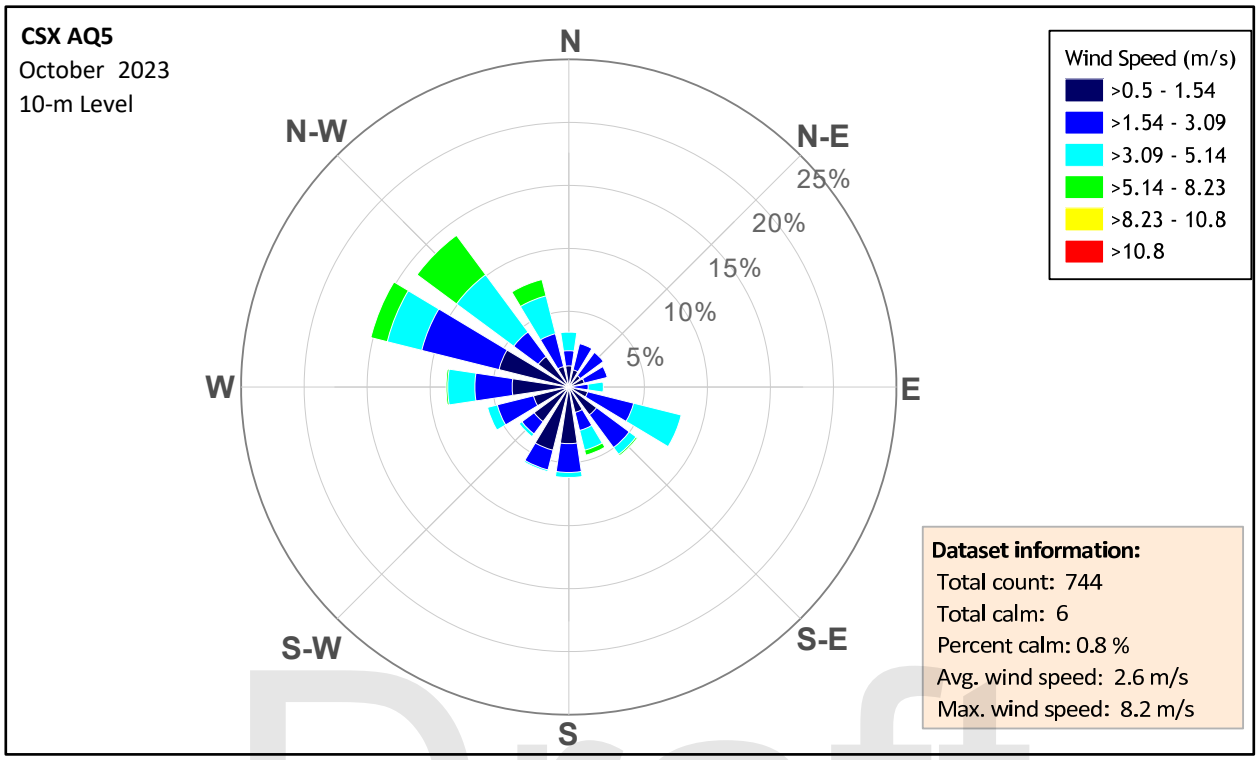
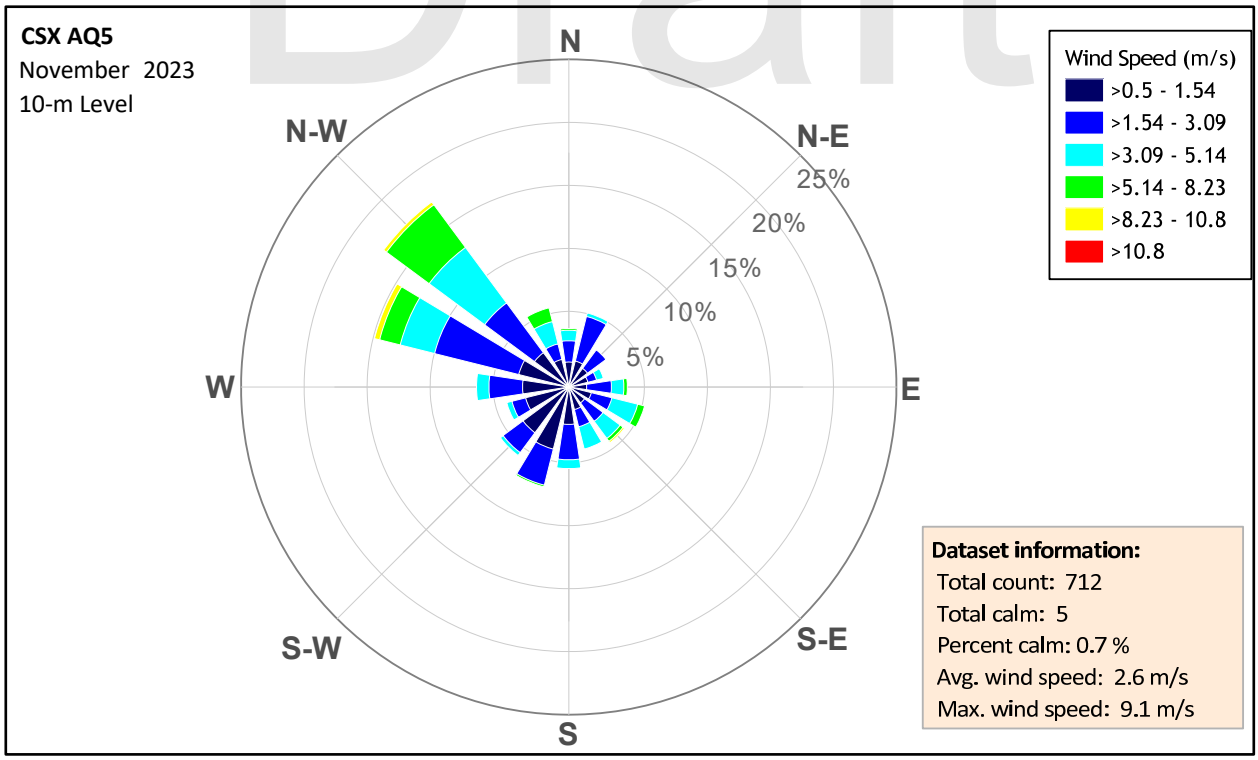


Figure 3.2 10-Meter Level Wind Rose, November 2023.



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Figure 3.3 10-Meter Level Wind Rose, December 2023.

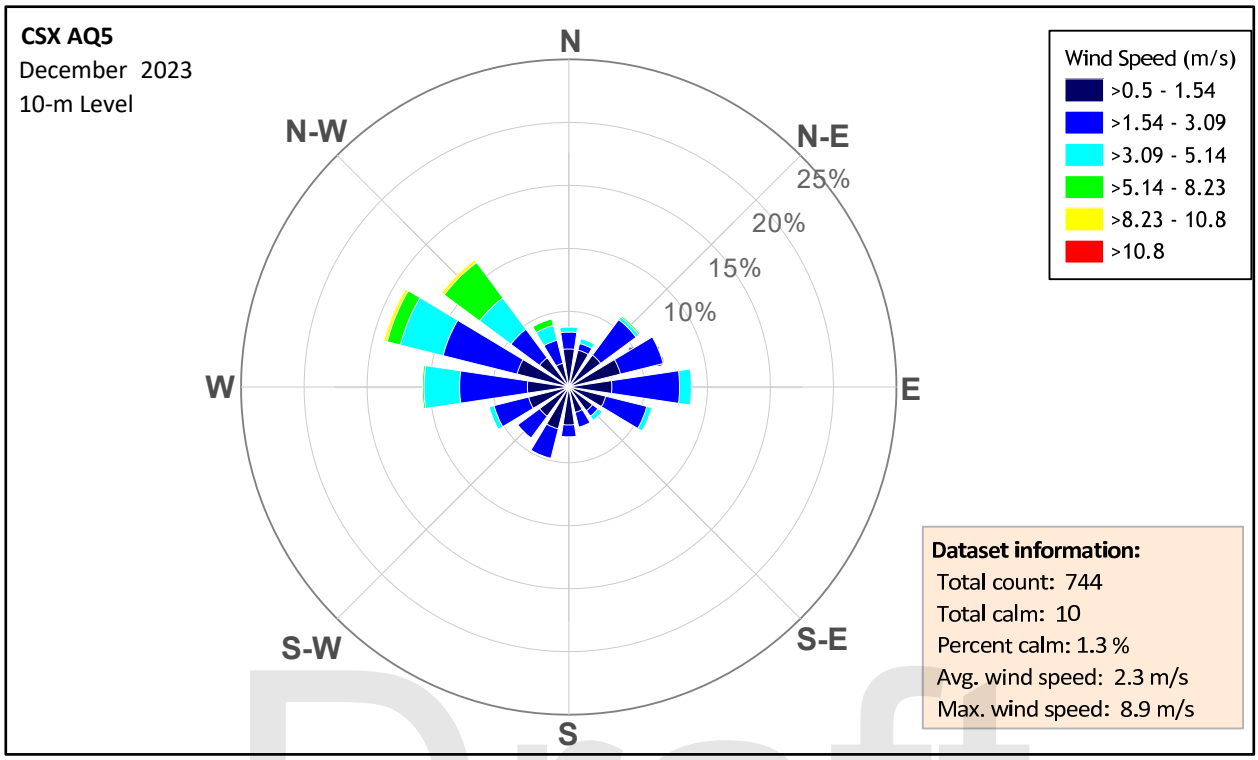
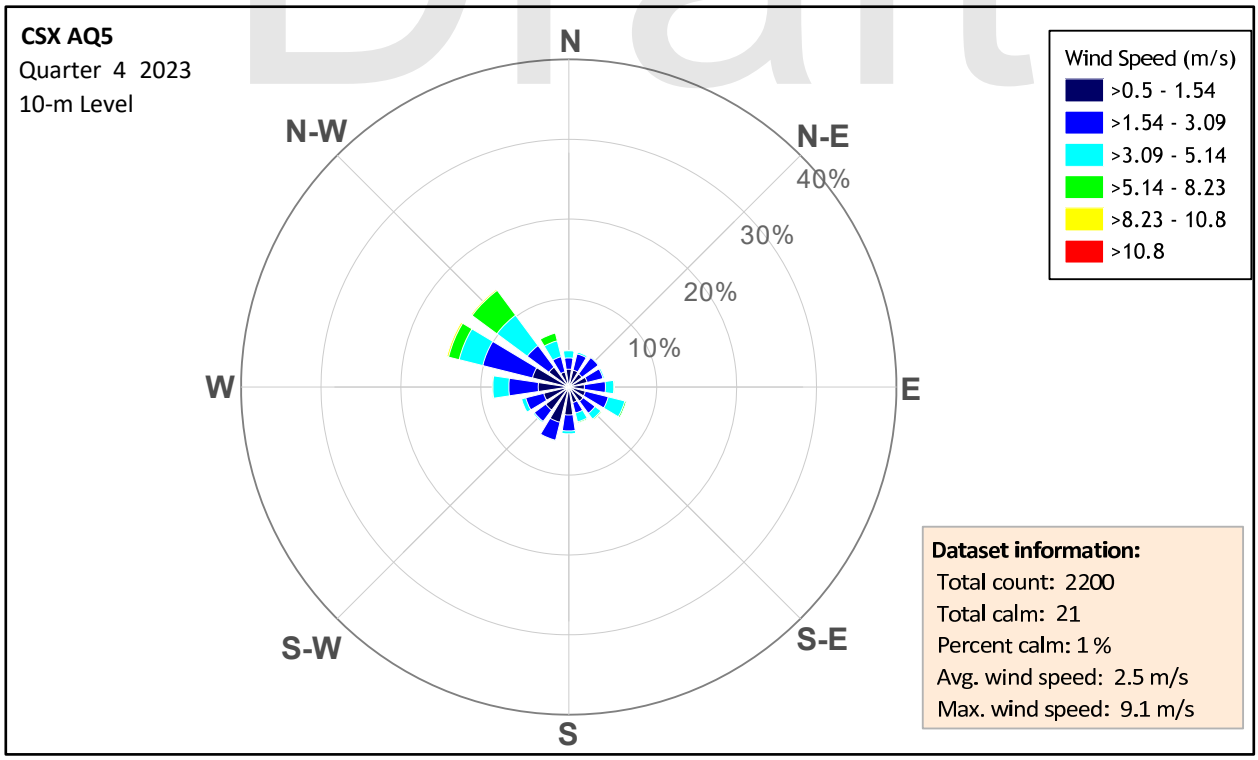


Figure 3.4 10-Meter Level Wind Rose, Fourth Quarter 2023.



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3.1.2 Wind Gust

At the 10-meter level, the peak wind gust during the period was 17.9 m/s (40.0 mph) which occurred on December 18 at 08:00. Wind gust information is presented in Table 3-1 and in Appendix B.

Table 3-1 Wind Gust Summary in Meters per Second for Fourth Quarter 2023

Month	Monthly Mean (m/s)	Maximum Hour (m/s)	Minimum Hour (m/s)
October	5.0	16.2	0.8
November	5.0	17.7	0.8
December	4.4	17.9	0.7

3.1.3 Temperature

The temperature is measured at the 2-meter level. The ambient daily mean temperatures for the fourth quarter 2023 ranged from a low of -0.1 degrees centigrade (°C) in November to a high of 22.3°C in October. The hourly minimum temperature was -3.9°C on November 29 at 07:00; the hourly maximum temperature was 28.7°C on October 28 at 16:00. Hourly temperature data for the fourth quarter 2023 are presented in Appendix C. Temperature data for the period are summarized in Table 3-2.

Table 3-2 Summary of Temperature in Degrees Centigrade (°C) for Fourth Quarter 2023

Month	Monthly Mean (°C)	Maximum Daily Mean (°C)	Minimum Daily Mean (°C)	Maximum Hour (°C)	Minimum Hour (°C)
October	16.1	22.3	9.7	28.7	5.8
November	8.5	16.4	-0.1	21.8	-3.9
December	6.5	11.6	2.2	15.2	-2.4

3.1.4 Relative Humidity

Table 3-3 presents the monthly means, maximum and minimum relative humidity information for the fourth quarter 2023. Relative humidity data are presented in Appendix D.

Table 3-3 Summary of Relative Humidity in Percent for Fourth Quarter 2023

Month	Monthly Mean (%)	Maximum Daily Mean (%)	Minimum Daily Mean (%)	Maximum Hour (%)	Minimum Hour (%)
October	71	89	54	98	29
November	65	86	45	98	31
December	74	100	50	100	32

3.1.5 Barometric Pressure

Barometric pressure data for the fourth quarter 2023 are presented in Table 3-4 and in Appendix E.

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Table 3-4 Barometric Pressure Data in Millibars (mb) for Fourth Quarter 2023

Month	Monthly Mean (mb)	Maximum Daily Mean (mb)	Minimum Daily Mean (mb)	Maximum Hour (mb)	Minimum Hour (mb)
October	1015	1027	998	1029	995
November	1021	1032	1008	1034	1006
December	1020	1038	996	1041	988

3.1.6 Precipitation

For the fourth quarter 2023, 10.43 inches of precipitation were measured at the site. The precipitation data are summarized in Table 3-5 and are presented in Appendix F.

Table 3-5 Summary of Precipitation in Inches for Fourth Quarter 2023

Month	Monthly Total (in.)	Maximum Daily Total (in.)	Maximum Hourly Total (in.)
October	1.23	0.83	0.36
November	2.02	1.47	0.41
December	7.18	1.91	0.48

3.2 Particulate Data

PM_{10} and $PM_{2.5}$ data are measured at the AQ5 and AQ8 monitoring stations using continuous T-API Model T640X samplers. The T-API Model T640X samplers have Federal Equivalent Method (FEM) certifications of EQPM-0516-239 for PM_{10} and EQPM-0516-238 for $PM_{2.5}$.

3.2.1 AQ5 – PM_{10}

Hourly and 24-hour average PM_{10} concentrations collected at the AQ5 station during the fourth quarter 2023 are presented in Table 3-6. The ten highest 24-hour average PM_{10} concentrations for the 2023 monitoring year at the AQ5 monitoring station are presented in Table 3-7. Fourth quarter AQ5 station PM_{10} data are summarized in Appendix G.

Table 3-6 AQ5 PM_{10} Concentrations Fourth Quarter 2023 in Micrograms per Cubic Meter

AQ5 Statistics	October ($\mu g/m^3$)	November ($\mu g/m^3$)	December ($\mu g/m^3$)	Fourth Quarter 2023 ($\mu g/m^3$)
Monthly Mean	23.0	23.9	20.0	22.3
Maximum Hourly PM_{10}	234.3	78.4	81.6	234.3
Second Highest Hourly PM_{10}	199.0	78.1	75.4	199.0
Maximum 24-hour PM_{10}	48.2	48.4	46.5	48.4
Second Highest 24-hour PM_{10}	40.2	44.1	41.8	44.1

Table 3-7 AQ5 Station Ten Highest 24-Hour Average PM_{10} Concentrations in Micrograms per Cubic Meter for 2023 Monitoring Year

Number	24-hour Concentration (µg/m³)	Date of Occurrence
1	247.7[1]	06/08/2023
2	187.7[1]	06/29/2023
3	169.4[1]	06/07/2023
4	82.4[1]	06/30/2023
5	74.7	04/20/2023
6	67.7	06/06/2023
7	65.3	06/28/2023
8	64.8[2]	08/30/2023
9	60.9[3]	06/02/2023
10	60.2	07/01/2023

[1] Concentrations affected by Canadian wildfire smoke.
[2] Data flagged as suspect due to bypass flow issue with instrument (See third quarter data report).
[3] Concentration affected by Canadian and New Jersey wildfires.

3.2.2 AQ5 – $PM_{2.5}$

Hourly and 24-hour average $PM_{2.5}$ concentrations collected at the AQ5 station during the fourth quarter 2023 are presented in Table 3-8. The ten highest 24-hour average $PM_{2.5}$ concentrations for the 2023 monitoring year at the AQ5 monitoring station are presented in Table 3-9. Fourth quarter AQ5 station $PM_{2.5}$ data are summarized in Appendix G.

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Table 3-8 AQ5 $PM_{2.5}$ Concentrations Fourth Quarter 2023 in Micrograms per Cubic Meter

AQ5 Statistics	October (µg/m³)	November (µg/m³)	December (µg/m³)	Fourth Quarter 2023 (µg/m³)
Monthly Mean	9.4	12.3	11.2	11.0
Maximum Hourly $PM_{2.5}$	41.2	43.3	48.3	48.3
Second Highest Hourly $PM_{2.5}$	40.0	40.3	44.2	44.2
Maximum 24-hour $PM_{2.5}$	19.5	25.9	30.1	30.1
Second Highest 24-hour $PM_{2.5}$	15.6	22.4	27.1	27.1

Table 3-9 AQ5 Station Ten Highest 24-Hour Average $PM_{2.5}$ Concentrations in Micrograms per Cubic Meter for 2023 Monitoring Year

Number	24-hour Concentration ($\mu g/m^3$)	Date of Occurrence
1	177.1[1]	06/08/2023
2	126.7[1]	06/07/2023
3	126.0[1]	06/29/2023
4	55.7[1]	06/30/2023
5	41.4	06/28/2023
6	40.9	07/01/2023
7	40.6	06/06/2023
8	39.5[1]	07/17/2023
9	36.4[1]	07/18/2023
10	31.0	06/11/2023

[1] Concentrations affected by Canadian wildfire smoke.

3.2.3 AQ8 – PM_{10}

Hourly and 24-hour average PM_{10} concentrations for the fourth quarter 2023 are presented in Table 3-10 for the AQ8 monitoring station. The ten highest 24-hour average PM_{10} concentrations at the AQ8 station are presented in Table 3-11. The fourth quarter AQ8 station PM_{10} data are summarized in Appendix H.

Table 3-10 AQ8 Station PM_{10} Concentration for Fourth Quarter 2023 in Micrograms per Cubic Meter

AQ8 Statistics	October ($\mu g/m^3$)	November ($\mu g/m^3$)	December ($\mu g/m^3$)	Fourth Quarter 2023 ($\mu g/m^3$)
Monthly Mean	31.8	26.3	19.9	26.0
Maximum Hourly PM_{10}	240.4	148.6	308.4	308.4
Second Highest Hourly PM_{10}	193.1	131.0	85.9	193.1
Maximum 24-hour PM_{10}	62.3	58.0	51.3	62.3
Second Highest 24-hour PM_{10}	59.1	50.7	40.4	59.1

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Table 3-11 AQ8 Station Ten Highest 24-Hour Average PM_{10} Concentrations in Micrograms per Cubic Meter for 2023 Monitoring Year

Number	24-hour Concentration ($\mu g/m^3$)	Date of Occurrence
1	241.2[1]	06/08/2023
2	170.2[1]	06/29/2023
3	169.9[1]	06/07/2023
4	79.4[1]	06/30/2023
5	74.9[2]	06/02/2023
6	66.0	06/06/2023
7	62.3	10/26/2023
8	59.1	10/03/2023
9	58.6	05/31/2023
10	57.9	11/07/2023

[1] Concentrations affected by Canadian wildfire smoke.
[2] Concentration affected by Canadian and New Jersey wildfires.

3.2.4 AQ8 – $PM_{2.5}$

Hourly and 24-hour average $PM_{2.5}$ concentrations for the fourth quarter 2023 are presented in Table 3-12 for the AQ8 monitoring station. The ten highest 24-hour average $PM_{2.5}$ concentrations at the AQ8 station are presented in Table 3-13. The fourth quarter AQ8 station $PM_{2.5}$ data are summarized in Appendix H.

Table 3-12 AQ8 Station $PM_{2.5}$ Concentration for Fourth Quarter 2023 in Micrograms per Cubic Meter

AQ8 Statistics	October ($\mu g/m^3$)	November ($\mu g/m^3$)	December ($\mu g/m^3$)	Fourth Quarter 2023 ($\mu g/m^3$)
Monthly Mean	9.8	11.2	10.1	10.4
Maximum Hourly $PM_{2.5}$	37.1	34.4	59.5	59.5
Second Highest Hourly $PM_{2.5}$	30.9	34.2	45.8	45.8
Maximum 24-hour $PM_{2.5}$	18.5	23.3	28.4	28.4
Second Highest 24-hour $PM_{2.5}$	17.9	21.5	23.1	23.1

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Table 3-13 AQ8 Station Ten Highest 24-Hour Average $PM_{2.5}$ Concentrations in Micrograms per Cubic Meter for 2023 Monitoring Year

Number	24-hour Concentration ($\mu g/m^3$)	Date of Occurrence
1	171.9[1]	06/08/2023
2	122.3[1]	06/07/2023
3	118.4[1]	06/29/2023
4	52.8[1]	06/30/2023
5	39.5	06/06/2023
6	38.5	07/01/2023
7	38.2	06/28/2023
8	30.6	05/31/2023
9	29.6	06/11/2023
10	28.4	12/02/2023

[1] Concentrations affected by Canadian wildfire smoke.

3.3 Data Recovery

Data recoveries for the meteorological parameters and AQ5 and AQ8 station PM_{10} and $PM_{2.5}$ data for the fourth quarter 2023 in percent possible are provided in Tables 3-14 and 3-15.

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Table 3-14 AQ5 Station – Meteorological, PM_{10}, and $PM_{2.5}$ Measurement Data Recovery in Percent for Fourth Quarter 2023

Month	Level (m)	Wind Speed (%)	Wind Dir. (%)	Wind Gust (%)	Temp. (%)	Rel. Hum. (%)	Bar. Press. (%)	Prec. (%)	PM_{10} (%)[1]	$PM_{2.5}$ (%)[1]
October	1.5	--	--	--	--	--	100	100	99.6	99.6
	2.0	--	--	--	100	100	--	--		
	10.0	100	100	100	--	--	--	--		
November	1.5	--	--	--	--	--	98.9	98.9	98.9	98.9
	2.0	--	--	--	98.9	98.9	--	--		
	10.0	98.9	98.9	98.9	--	--	--	--		
December	1.5	--	--	--	--	--	100	100	99.6	99.6
	2.0	--	--	--	100	100	--	--		
	10.0	100	100	100	--	--	--	--		
Fourth Quarter 2023	1.5	--	--	--	--	--			99.4	99.4
	2.0	--	--	--			--	--		
	10.0				--	--	--	--		

[1] Data capture rate based on valid sample days.

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Table 3-15 AQ8 Station - PM_{10} and $PM_{2.5}$ Measurement Data Recovery in Percent for Fourth Quarter 2023

Month	PM_{10} (%)[1]	$PM_{2.5}$ (%)[1]
October	99.2	99.2
November	98.6	98.6
December	99.9	99.9
Fourth Quarter	99.2	99.2

[1] Data capture rate based on valid sample days.

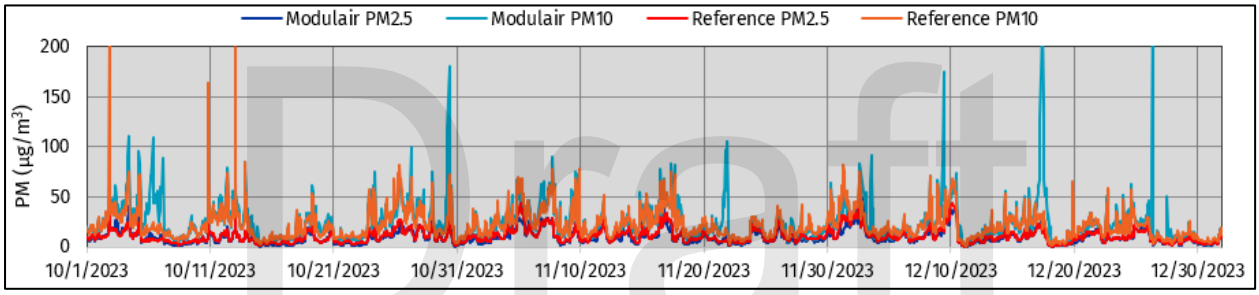
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4.0 PM_{10} AND $PM_{2.5}$ PERIMETER NETWORK MONITORING

At eight locations around the perimeter of the at the Curtis Bay Piers Facility, QuantAQ MODULAIR non-regulatory, community based PM_{10}/$PM_{2.5}$ samplers are operated. Three (3) MODULAIR samplers are being operated at AQ5 and one (1) MODULAIR sampler is operated at AQ8. These samplers are operated to give an indication of the PM_{10}/$PM_{2.5}$ at each network location and to show PM_{10}/$PM_{2.5}$ trends. These data are not intended to be used for compliance with the National Ambient Air Quality Standards (NAAQS).

Figures 4.1 through 4.4 present the perimeter network MODULAIR sampler PM_{10} and $PM_{2.5}$ concentrations compared with the FEM reference PM_{10} and $PM_{2.5}$ samplers at AQ5 and AQ8 for the fourth quarter 2023. QuantAQ MODULAIR network collocation and comparison data are presented in Appendix I.

Figure 4.1 AQ5 MODULAIR Serial Number 00266 PM Collocation and Comparison Data for October – December 2023



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Figure 4.2 AQ5 MODULAIR Serial Number 00387 PM Collocation and Comparison Data for October – December 2023

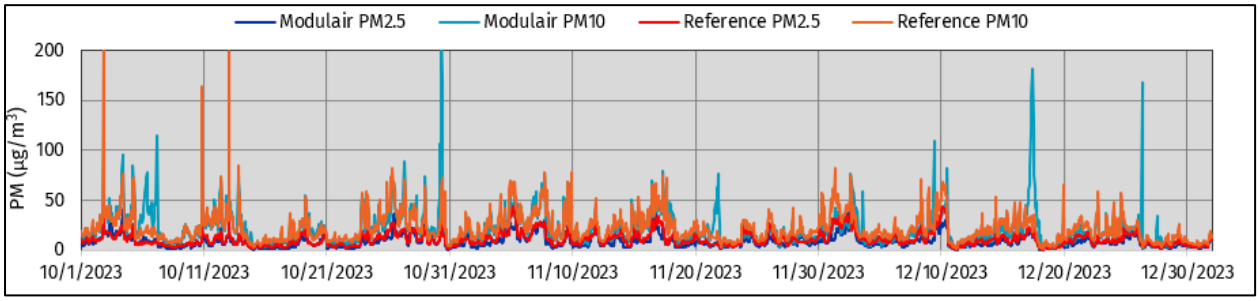


Figure 4.3 AQ5 MODULAIR Serial Number 00388 PM Collocation and Comparison Data for October – December 2023

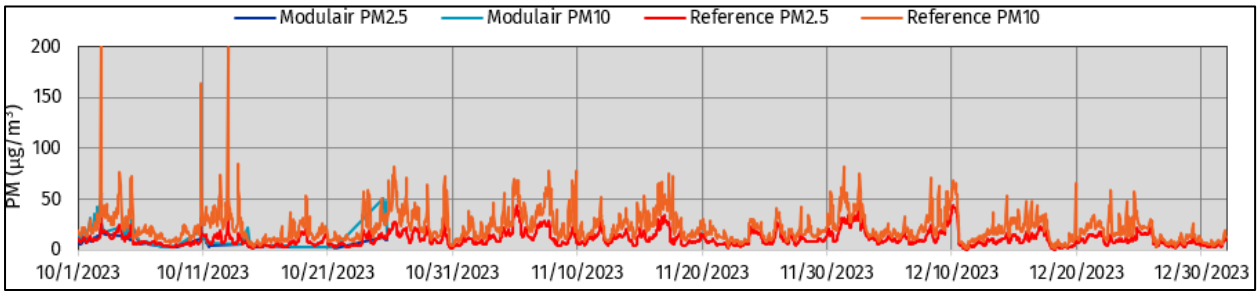
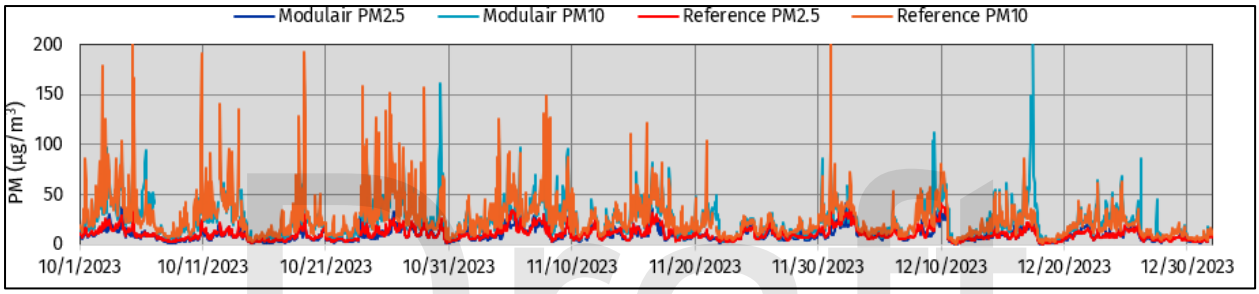


Figure 4.4 AQ8 MODULAIR Serial Number 00264 PM Collocation and Comparison Data for October – December 2023



Measurement error statistics were calculated via co-location of the MODULAIR and the FEM samplers at AQ5 and AQ8. The bias is determined from the slope and intercept measurements; the linearity is determined from the coefficient of determination (R^2). The root-mean-square error (RSME) is a measure of the expected error. Precision is the degree of agreement within a set of observations, and it is presented as the standard deviation (SD) or coefficient of determination (CV). The EPA recommended performance metrics for the non-regulatory MODULAIR sensors are presented in Table 4-1. The performance metric results of the fourth quarter collocation of the MODULAIR and FEM samplers at AQ5 and AQ8 are presented in Table 4-2.

Table 4-1 EPA Recommended Performance Metrics and Target Values

Performance Metric		Target Value
Precision	Standard Deviation	≤5 µg/m^3
	CV	≤30%
Bias	Slope (m)	1.0±0.35
	Intercept (b)	-5 ≤ b ≤ 5 µg/m^3
Linearity	R^2	≥0.70
Error	RSME	≤7 µg/m^3

Table 4-2 AQ5 and AQ8 MODULAIR and FEM Collocation Statistics

Statistics	AQ5 Modulair 00266		AQ5 Modulair 00387		AQ5 Modulair 00388		AQ8 Modulair 00264	
	$PM_{2.5}$	PM_{10}	$PM_{2.5}$	PM_{10}	$PM_{2.5}$	PM_{10}	$PM_{2.5}$	PM_{10}
Correlation Coefficient (r2)	0.843	0.495	0.722	0.528	0.562	0.136	0.788	0.619
Slope (m)	0.945	0.946	0.785	0.861	0.555	0.134	0.855	0.758
Intercept (b)	-0.265	2.976	0.196	1.285	3.538	14.932	0.803	4.381
RMSW	4.139	16.656	4.668	14.678	12.778	26.490	3.965	19.252
Precision (CV)	18.260	23.530	23.460	25.420	20.830	9.830	18.810	21.790
Precision (SD)	3.979	16.650	4.095	14.461	7.391	15.770	3.865	18.916

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5.0 QUALITY CONTROL

Meteorological, and PM_{10} and $PM_{2.5}$ concentration data collected at CSX monitoring stations have been subjected to a series of quality control procedures to document the validity of the data and increase the integrity of the data sets. The quality control performed for these data is described in this section.

5.1 Visual Inspection of Equipment

Visual inspection of the meteorological tower, sensors, continuous FEM PM_{10}/$PM_{2.5}$ monitors, and network samplers is performed at least every month or more frequently when problems are indicated. Abnormal conditions are logged and reported immediately to the program manager for corrective action.

5.2 Remote Interrogation of the Monitoring Stations

The data loggers at the AQ5 and AQ8 meteorological tower and PM_{10}/$PM_{2.5}$ monitoring stations are interrogated every day to download and process the data. PM_{10} and $PM_{2.5}$ concentration from the MODULAIR samplers are downloaded from the QuantAQ Cloud daily. Abnormal data values or apparent problems are reported immediately to the program manager who initiates corrective action and determines if a special visit to the site is required.

5.3 Quality Control Data Inspections

During data acquisition, the data loggers at AQ5 and AQ8 collect and save 5-minute averages of each measured meteorological parameter, and PM_{10} and $PM_{2.5}$ concentrations. These values are stored in memory for subsequent retrieval via telephone, modem, and internet. Minutely MODULAIR data are downloaded daily. After the AQ5 and AQ8 data loggers are interrogated and MODULAIR data are downloaded from the Cloud, collecting all data since the last interrogation, the data are stored on Trinity computers in Salt Lake City.

The meteorological, PM_{10}, and $PM_{2.5}$ data files are input to a program which performs a series of quality control (QC) tests as listed in Table 5-1. The QC program produces a report that identifies each value in the data file that fails one or more of the listed tests. This report also provides means, maxima, and minima for each variable.

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Table 5-1 Quality Control Checks Imposed by Data QC Program

Parameter	Less Than	Greater Than	Constant For
Wind Speed	0 m/s	35 m/s	2 hours
Wind Direction	0 deg	360 deg	2 hours
Temperature	-30 deg C	45 deg C	30 minutes
Relative Humidity	3%	102%	16 hours
Barometric Pressure	-20 mb < 7 day Avg.	20 mb > 7 day Avg.	2 hours
Precipitation	0 inches	1 inch in 24 hours	N/A
PM_{10}	-5 ug/m^3	150 ug/m^3	4 hours
$PM_{2.5}$	-10 ug/m^3	35 ug/m^3	4 hours
Shelter Temperature	20 deg C	30 deg C	N/A
Battery Voltage	11.5 V	16 V	N/A

5.4 Data Validation

When the QC program identifies values that exceed the criteria set for that parameter, the data file is inspected visually. In most cases, a flagged value is not invalid; it merely fell outside of expected ranges or "normal" rates of change for that parameter. If, after investigation, an air quality meteorologist determines that the value is reasonable, the value is not invalidated. If there is a reason to suspect the data point, the value is reset to "missing" (This is done on the data management file only, not on the raw data file collected from the data logger; the raw data file is never manipulated).

For the purposes of this data report, data failures or discrepancies that would invalidate an hourly average for the meteorological sensors, T640x analyzers, and MODULAIR samplers are listed below:

- Loss of more than three five-minute average in a one-hour period,
- Visual evidence, on the stacked parameter/time plots for example, that the 5-minute value is an outlier,
- Data collected during calibrations and audits,
- Equipment malfunction,
- T640 reports a status error,
- Shelter temperature less than 0°C, $PM_{2.5}$ and PM_{10} concentrations set to missing,
- PM_{10} less than -5 µg/m^3, concentrations set to missing, and
- $PM_{2.5}$ less than -10 µg/m^3, concentrations set to missing.

On October 25, 2023, at the AQ5 monitoring station, maintenance was performed on the T640X continuous particulate sampler. The bypass flow controller was replaced, and the slope was set from 0 to 1, and the sample flows were calibrated. The bypass flow was not within the recommended criteria before the sensor replacement and calibration. Therefore, particulate data were marked suspect with the "QX – does not meet QC criteria" identifier code from October 1 through October 25, 2023. This was a continuing problem from the third quarter 2023 and is described further in that report.

On December 5, firmware version 1.4.31.529 was uploaded to the T640X particulate monitors at both the AQ5 and AQ8 monitoring locations. The network data alignment function was then enabled. Per EPA guidance, these modifications are intended to address a positive bias of approximately 20 percent relative to State, Local, and Tribal operated Federal Reference Methods (FRMs).

On December 21, 2023, at the AQ8 monitoring station, the T640x bypass flow was not within recommended criteria during the monthly flow check. The DFU filter was changed, and the bypass flow was calibrated back within tolerance. Therefore, particulate data were marked suspect with the "QX – does not meet QC criteria" identifier code back to the last passing flow check, which was on November 21, 2023.

Invalid data parameters and the corrective action reports for the fourth quarter 2023 and corresponding times are presented in Appendix J.

5.5 Equipment Calibration

Calibrations of the meteorological equipment are performed every six months or whenever a sensor exceeds specified control limits or undergoes major maintenance or repair. The T640X $PM_{10}/PM_{2.5}$ samplers are calibrated by Trinity personnel every three months or when problems are identified. The meteorological equipment was calibrated on September 26, 2023; the AQ8 $PM_{10}/PM_{2.}$samplers were calibrated on October 25, November 21, and December 21, 2023. No calibrations are performed on the MODULAIR samplers. Copies of the field calibration data sheets are presented in Appendix K.

5.6 T-API T640X PM_{10} and $PM_{2.5}$ Flow and Leak Checks

Field quality control activities for the T-API Model T640X samplers include flow rate, temperature, and pressure checks. The T640X $PM_{2.5}/PM_{10}$ continuous samplers quality control checks and calibrations are performed using a certified flow transfer standard**.**

Monthly flow checks are performed on the T-API T640x continuous $PM_{10}/PM_{2.5}$. Copies of the monthly flow checks are included in Appendix L. The results of the monthly flow checks are presented in Table 5-2. The measured flow rates of the particulate samplers should not exceed ±4 percent of the sampler flow rate or within ±5 percent of the design flow rate of 16.7 L/min. Flow rate difference is calculated using the following equation:

$$d_i = \frac{Y_i - X_i}{(X_i)} x100$$

Where d_i is the percent difference, Y_i is the sampler indicated flow, and X_i is the flow as measured by the reference flow standard.

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Table 5-2 AQ5 and AQ8 PM_{10}/$PM_{2.5}$ T640X Monthly Flow Check Results

Month	Target Flow Rate (L/min)	Sampler Indicated Flow (L/min)	Reference Flow (L/min)	Percent Difference Ref. Flow (%)	Percent Difference Design Flow (%)
AQ5 PM_{10}/ $PM_{2.5}$					
October	5.00	5.11	5.12	-0.2	2.4
	11.67[1]	11.68	11.69	-0.1	0.2
November	5.00	4.99	4.88	2.3	-2.4
	11.67	11.66	11.63	0.3	-0.3
December	5.00	4.90	4.84	1.2	-3.2
	11.67	11.68	11.63	0.4	-0.3
AQ8 PM_{10}/ $PM_{2.5}$					
October	5.00	4.99	5.16	-3.3	3.2
	11.67	11.66	11.90	-2.0	2.0
November	5.00	4.99	5.16	-3.3	3.2
	11.67	11.66	11.90	-2.0	2.0
December	5.00	4.99	5.03	-0.8	0.6
	11.67[1]	11.68	11.68	0.0	0.1

[1] As left flow check.

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5.7 T-API T640X PM_{10} and $PM_{2.5}$ Statistics for Assessment

Calculations for the PM_{10} and $PM_{2.5}$ T-API T640X data quality assessment were made based 40 CFR 58 Appendix A.

The bias estimator is an upper bound on the mean absolute value of the percent differences. The bias estimate equation is presented as equation (2).

$$|AB| = AB + t_{0.95,n-1}\frac{AS}{\sqrt{n}} \quad (2)$$

Where: n is the number of single point checks being aggregated; $t_{0.95,\,n-1}$ is the 95th quantile of a T-distribution with $n-1$ degrees of freedom.

The quantity AB is the mean of the absolute values of the d i's and is calculated for PM_{10} and $PM_{2.5}$ using equation (3).

$$AB = \frac{1}{n}\sum_{i=0}^{n}|d_i| \quad (3)$$

The standard deviation of the absolute value of the d_i's is calculated for PM_{10} using equation 4.

$$AS = \sqrt{\frac{n\sum_{i=0}^{n}|d_i^2| - \left(\sum_{i=0}^{n}|d_i|\right)^2}{n(n-1)}} \quad (4)$$

The mean percent difference, precision, and bias estimates limits for PM_{10} and $PM_{2.5}$ for the fourth quarter 2023 are presented in Table 5-3.

Table 5-3 Fourth Quarter 2023 Bias Statistics for T-API T640X Continuous $PM_{10}/PM_{2.5}$ Samplers

Statistics	AQ5 $PM_{10}/PM_{2.5}$	AQ8 $PM_{10}/PM_{2.5}$
Mean Percent Difference	0.650	-1.903
AB	0.744	1.903
AS	0.848	1.323
Bias Estimate	+1.44	-2.99

NA = Not available.

5.8 T-API T640X Monitoring Enclosure Temperature

The T-API T640X enclosure's role in quality control is to provide a temperature-controlled environment in which the continuous particulate monitoring equipment can operate at optimum performance. The mean enclosure temperature should be approximately 25°C. Enclosure interior temperature is monitored by the datalogger and reported along with other measurements. Deviations greater than ±5°C from the 25°C optimum shelter temperatures indicate a need to readjust the temperature control system. Table 5-4 presents the average, maximum, and minimum interior shelter temperatures for the monitoring period. Figures 5.1 and 5.2 present plots of the internal enclosure temperatures and a running 24-hour standard deviations of the enclosure temperatures for AQ5 and AQ8. Appendix M contains the hourly shelter temperatures for the fourth quarter 2023.

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Table 5-4 Monitoring Enclosure Interior Temperature in Degrees Centigrade for Fourth Quarter 2023 – AQ5 and AQ8 Monitoring Stations

Month	Average Temperature	Maximum Temperature	Minimum Temperature	Deviation from 25°C
AQ5				
October	22.6	25.2	16.0	-9.0
November	19.2	25.6	11.7	-13.3
December	17.8	25.2	11.8	-13.2
AQ8				
October	25.2	29.5	16.3	-8.7
November	20.1	29.2	11.5	-13.5
December	18.8	28.9	11.6	-13.4

Figure 5.1 AQ5 Enclosure Temperature and Temperature Standard Deviation

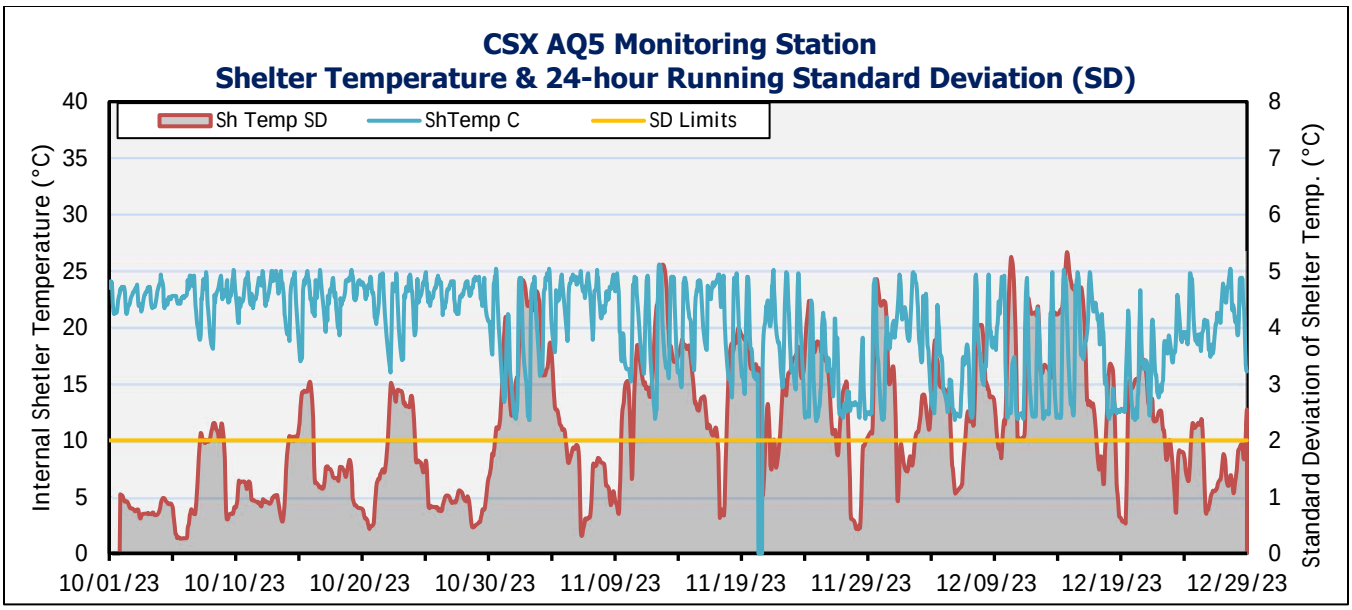
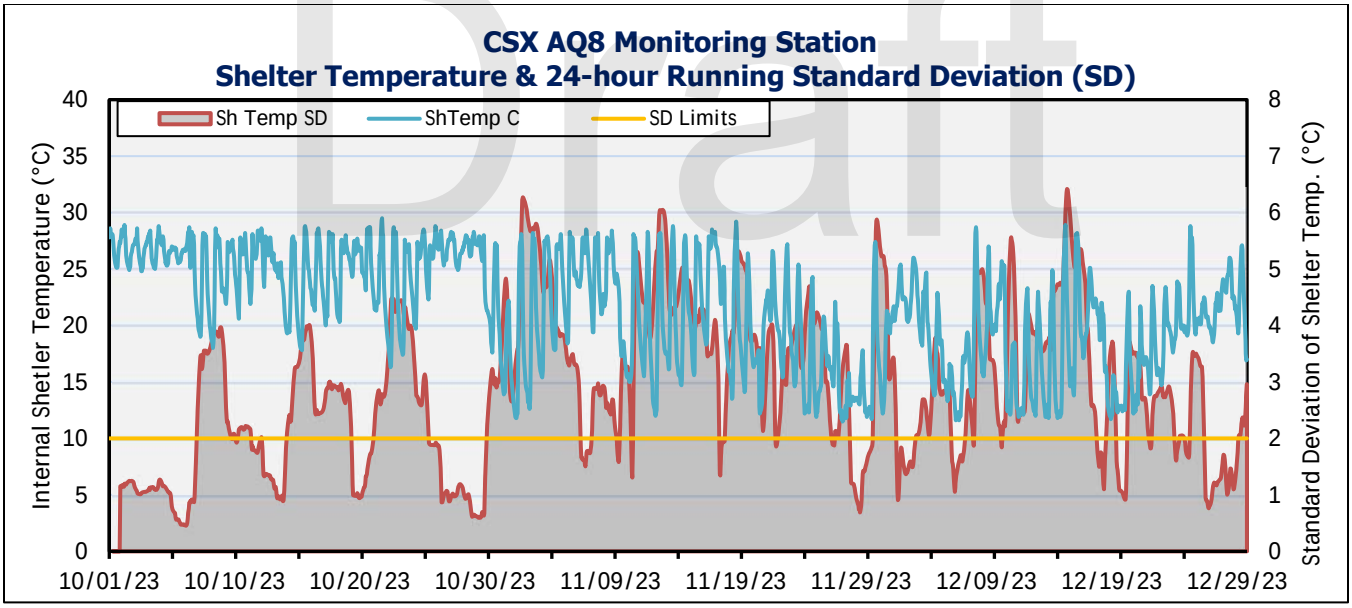


Figure 5.2 AQ8 Enclosure Temperature and Temperature Standard Deviation



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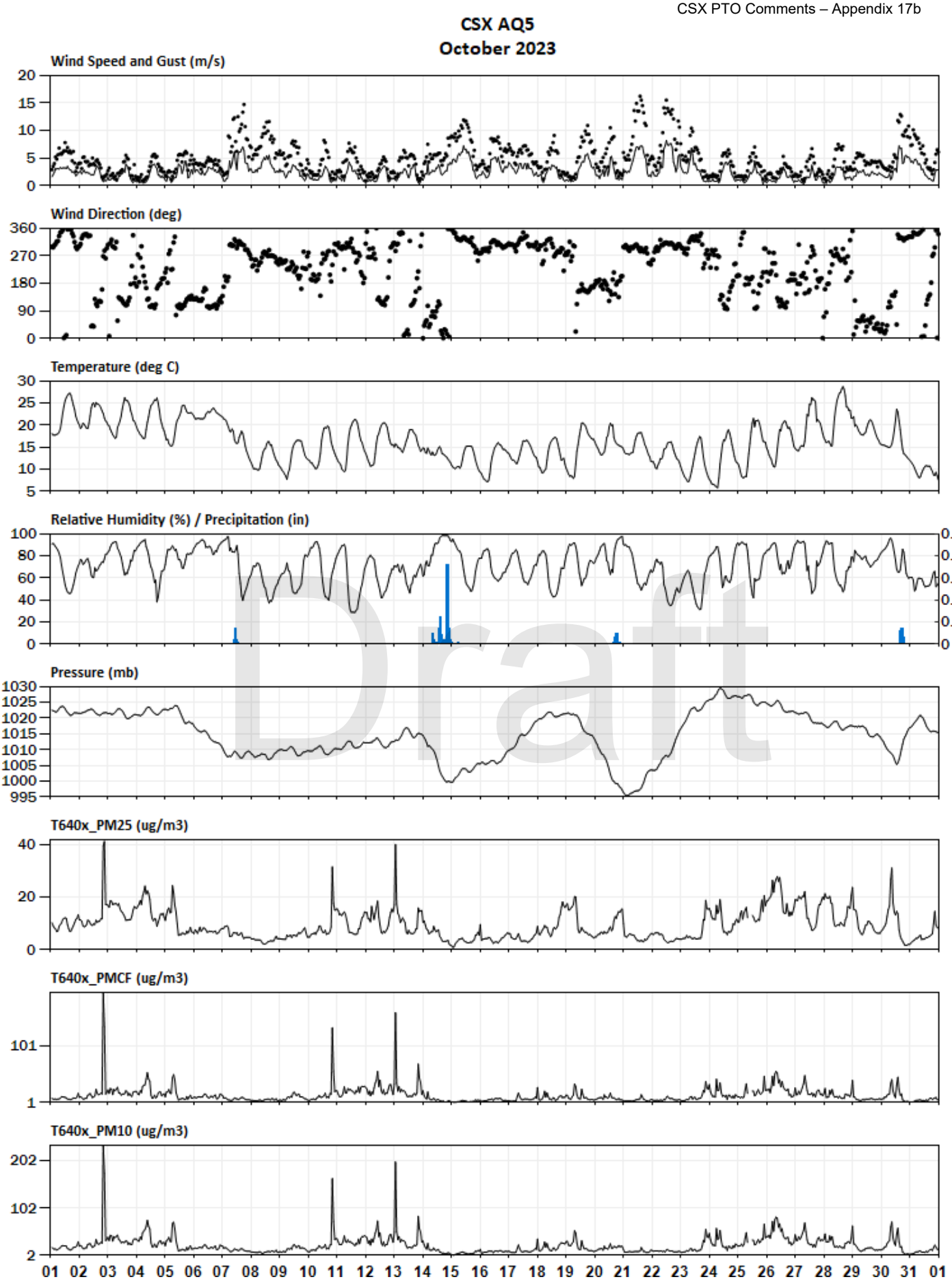
6.0 QUALITY ASSURANCE AUDITS

To comply with EPA requirements, a performance audit of meteorological instrumentation is conducted every six months, every three months for the particulate sampling equipment, or within 60 days after installation. Reference standards used in performance audits are independent of those used for calibration checks. Audits will be performed once the quality assurance project plan developed for this project has been approved.

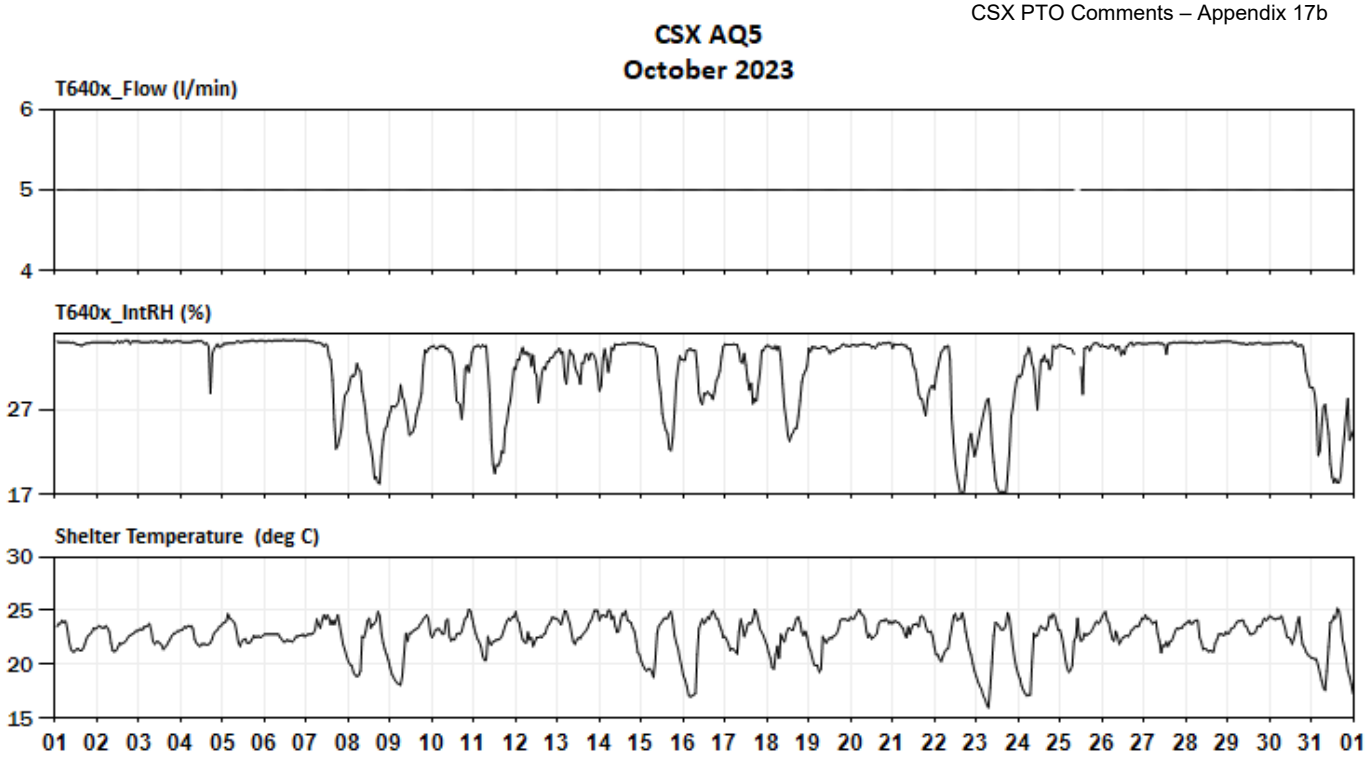
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APPENDIX A. STACKED PARAMETER PLOTS FOR FOURTH QUARTER 2023

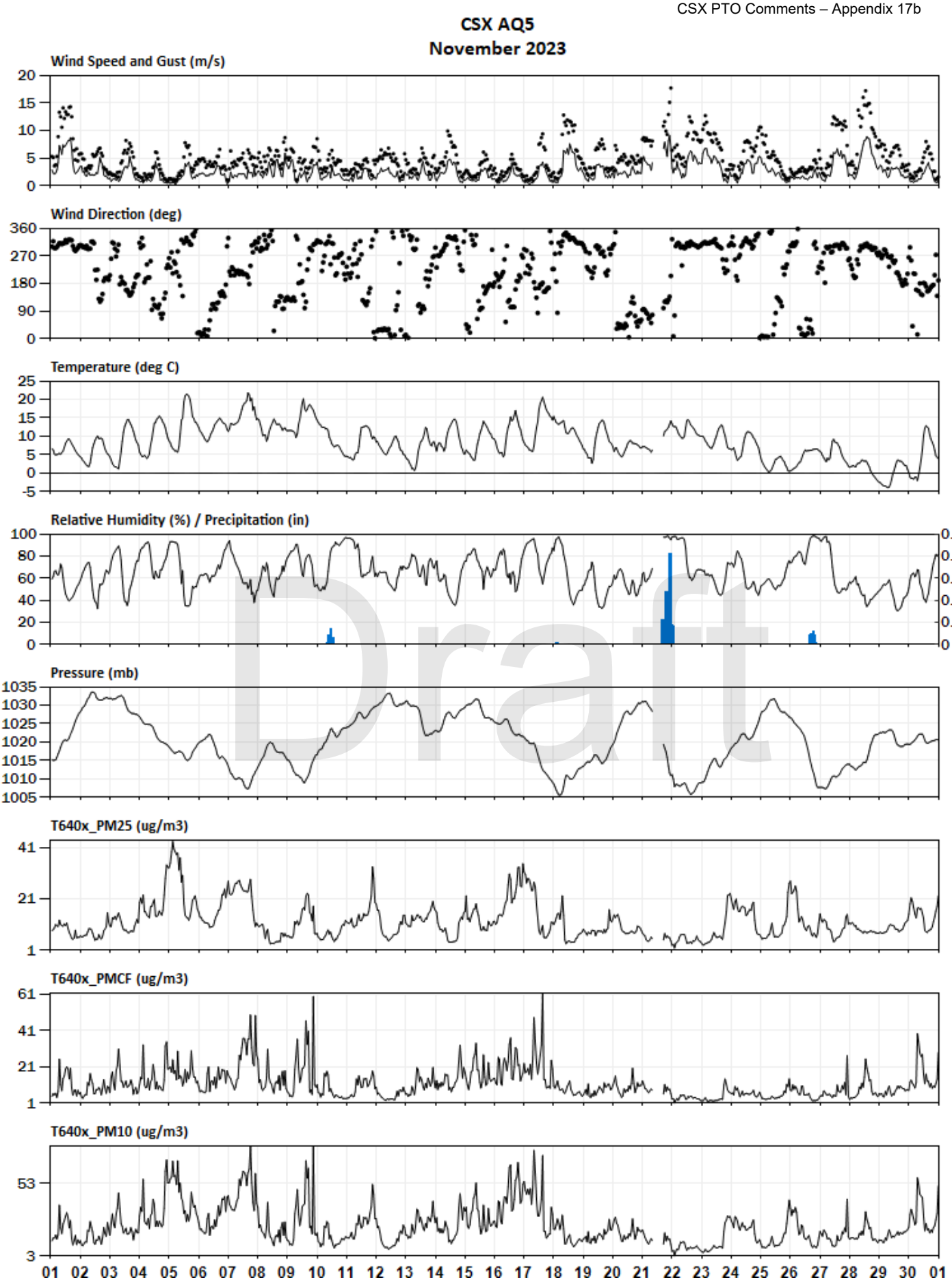
Draft


CSX AQ5
October 2023
Wind Speed and Gust (m/s)
20
15
10
5
0
Wind Direction (deg)
360
270
180
90
0
Temperature (deg C)
30
25
20
15
10
5
Relative Humidity (%) / Precipitation (in)
100
80
60
40
20
0
0.5
0.4
0.3
0.2
0.1
0
Pressure (mb)
1030
1025
1020
1015
1010
1005
1000
995
T640x_PM25 (ug/m3)
40
20
0
T640x_PMCF (ug/m3)
101
1
T640x_PM10 (ug/m3)
202
102
2
01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 01

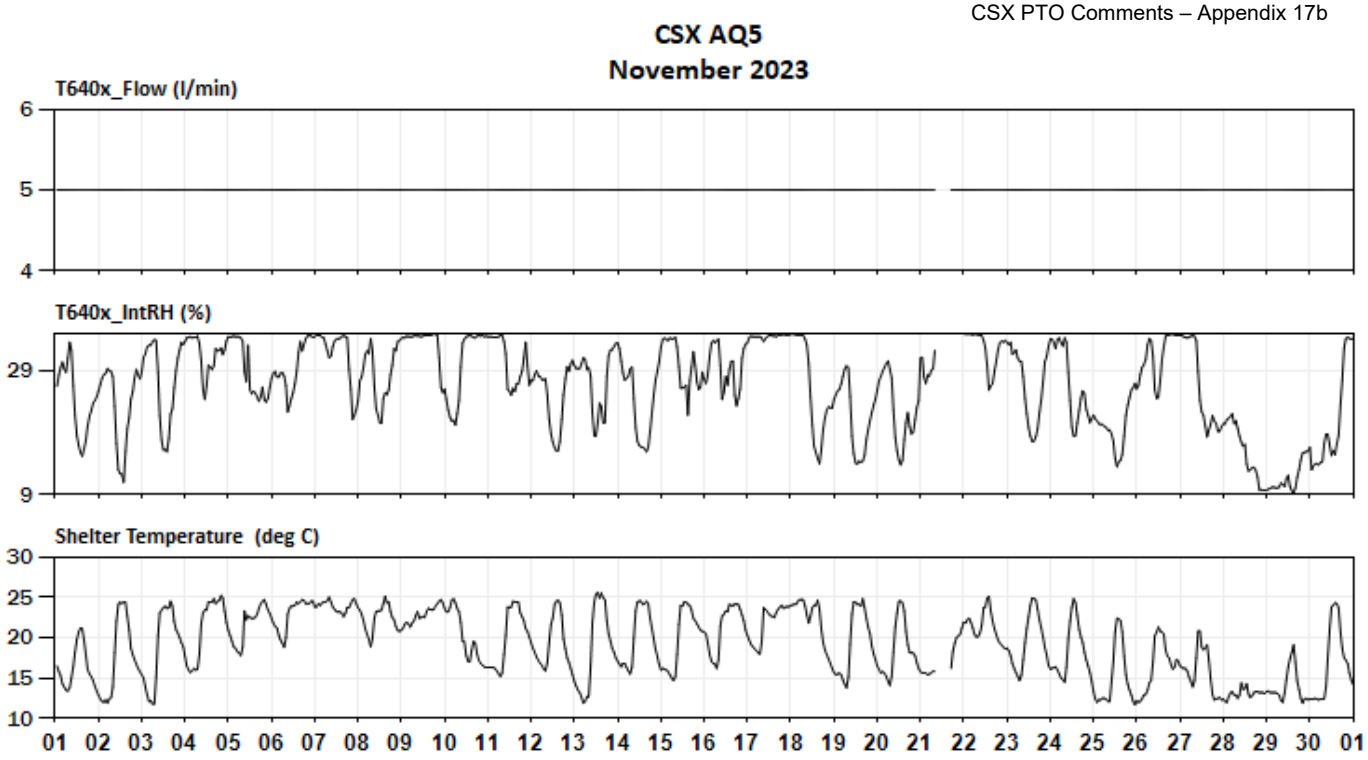
Draft


CSX AQ5
October 2023
T640x_Flow (l/min)
6
5
4
T640x_IntRH (%)
27
17
Shelter Temperature (deg C)
30
25
20
15
01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 01

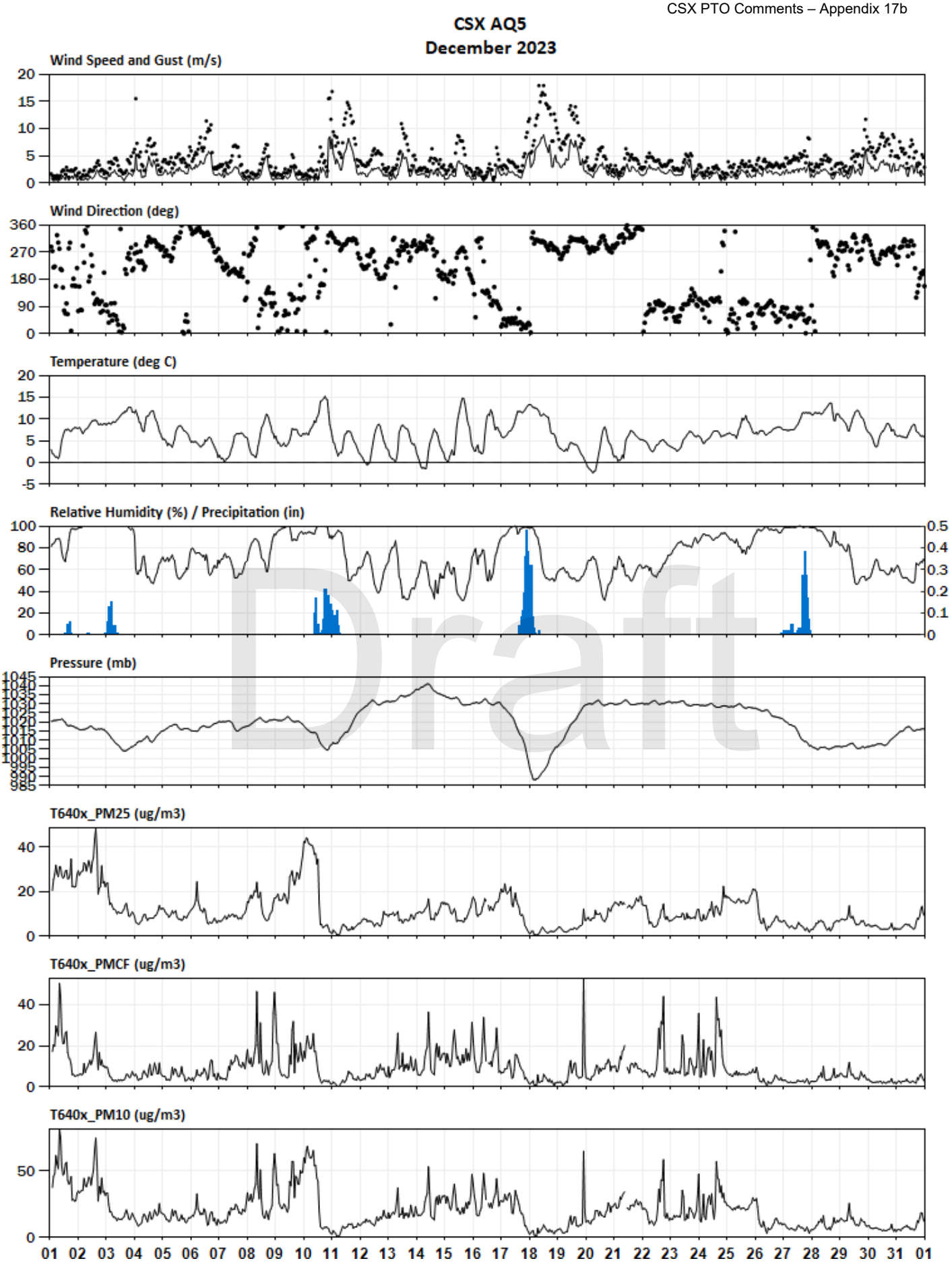
Draft


CSX AQ5
November 2023
Wind Speed and Gust (m/s)
20
15
10
5
0
Wind Direction (deg)
360
270
180
90
0
Temperature (deg C)
25
20
15
10
5
0
-5
Relative Humidity (%) / Precipitation (in)
100
80
60
40
20
0
0.5
0.4
0.3
0.2
0.1
0
Pressure (mb)
1035
1030
1025
1020
1015
1010
1005
T640x_PM25 (ug/m3)
41
21
1
T640x_PMCF (ug/m3)
61
41
21
1
T640x_PM10 (ug/m3)
53
3
01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 01

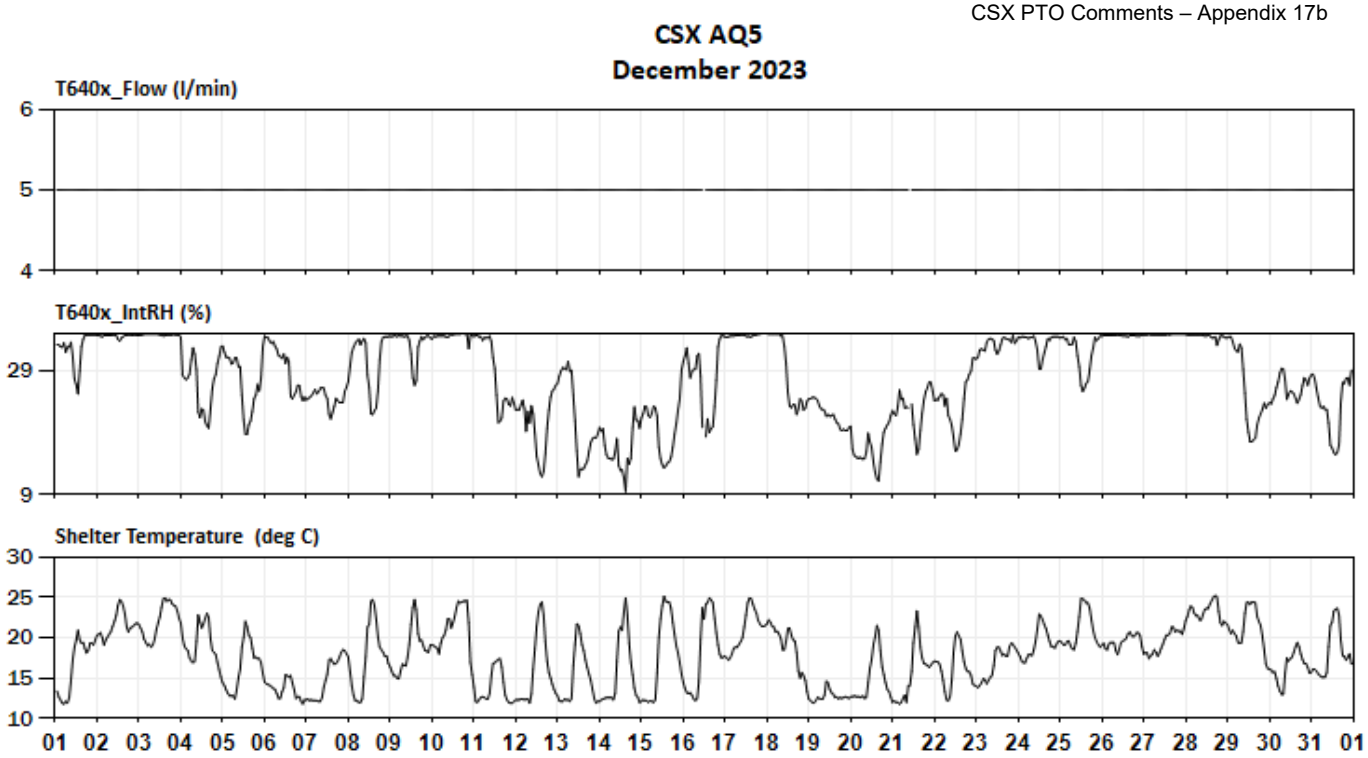
Draft


CSX AQ5
November 2023
T640x_Flow (l/min)
6
5
4
T640x_IntRH (%)
29
9
Shelter Temperature (deg C)
30
25
20
15
10
01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 01

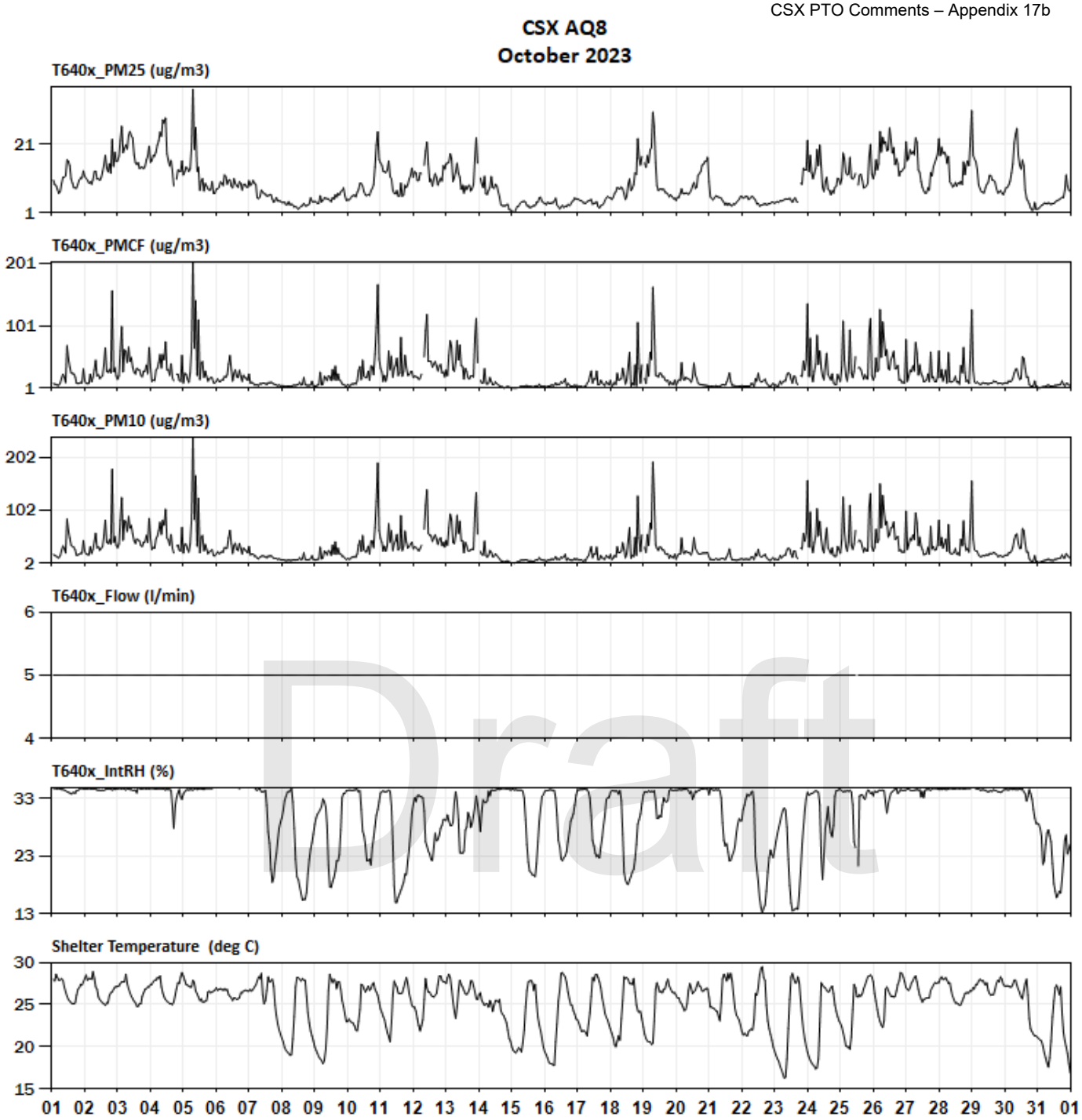
Draft


CSX AQ5
December 2023
Wind Speed and Gust (m/s)
Wind Direction (deg)
Temperature (deg C)
Relative Humidity (%) / Precipitation (in)
Pressure (mb)
T640x_PM25 (ug/m3)
T640x_PMCF (ug/m3)
T640x_PM10 (ug/m3)
01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 01

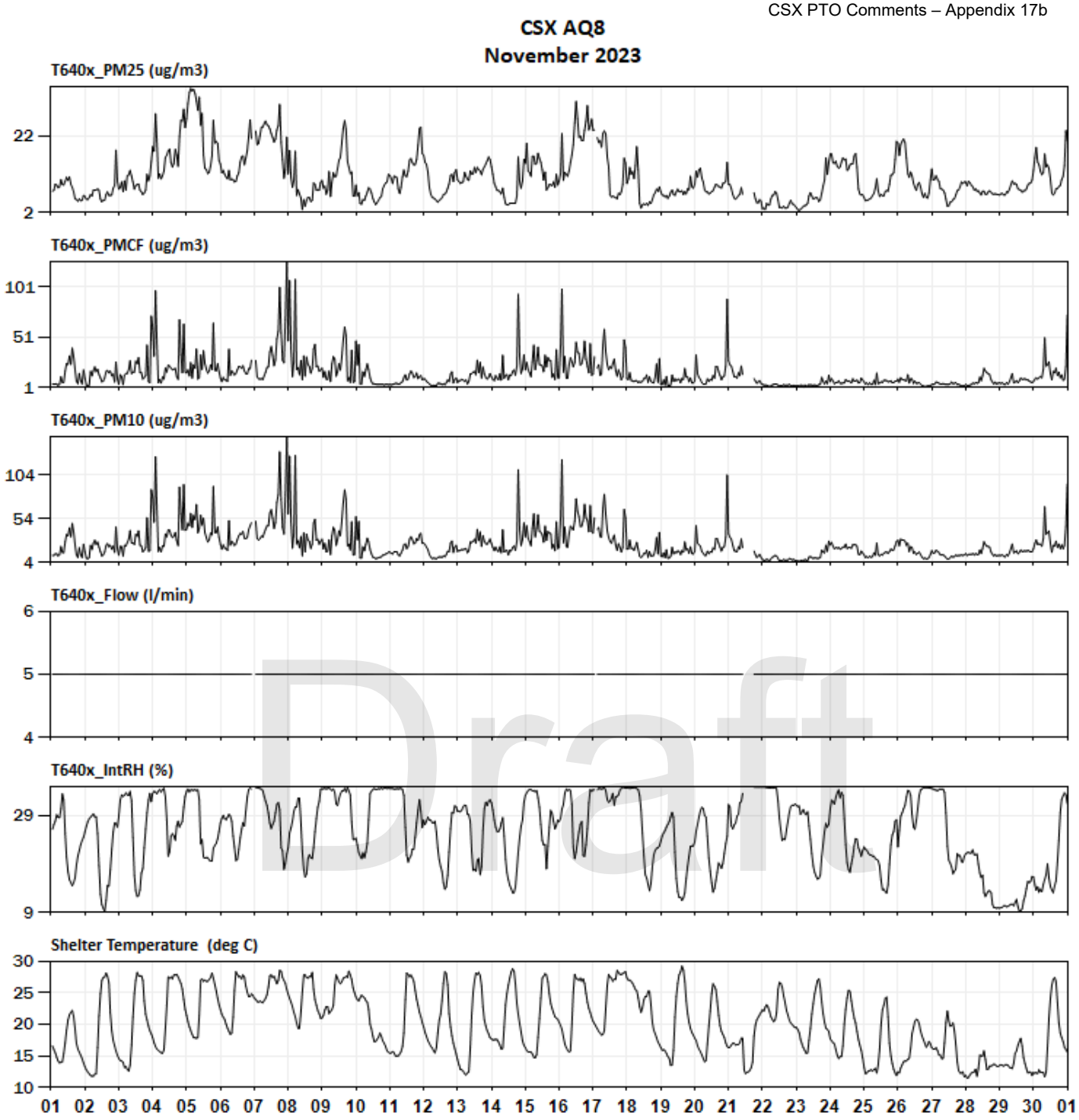
Draft


CSX AQ5
December 2023
T640x_Flow (l/min)
6
5
4
T640x_IntRH (%)
29
9
Shelter Temperature (deg C)
30
25
20
15
10
01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 01

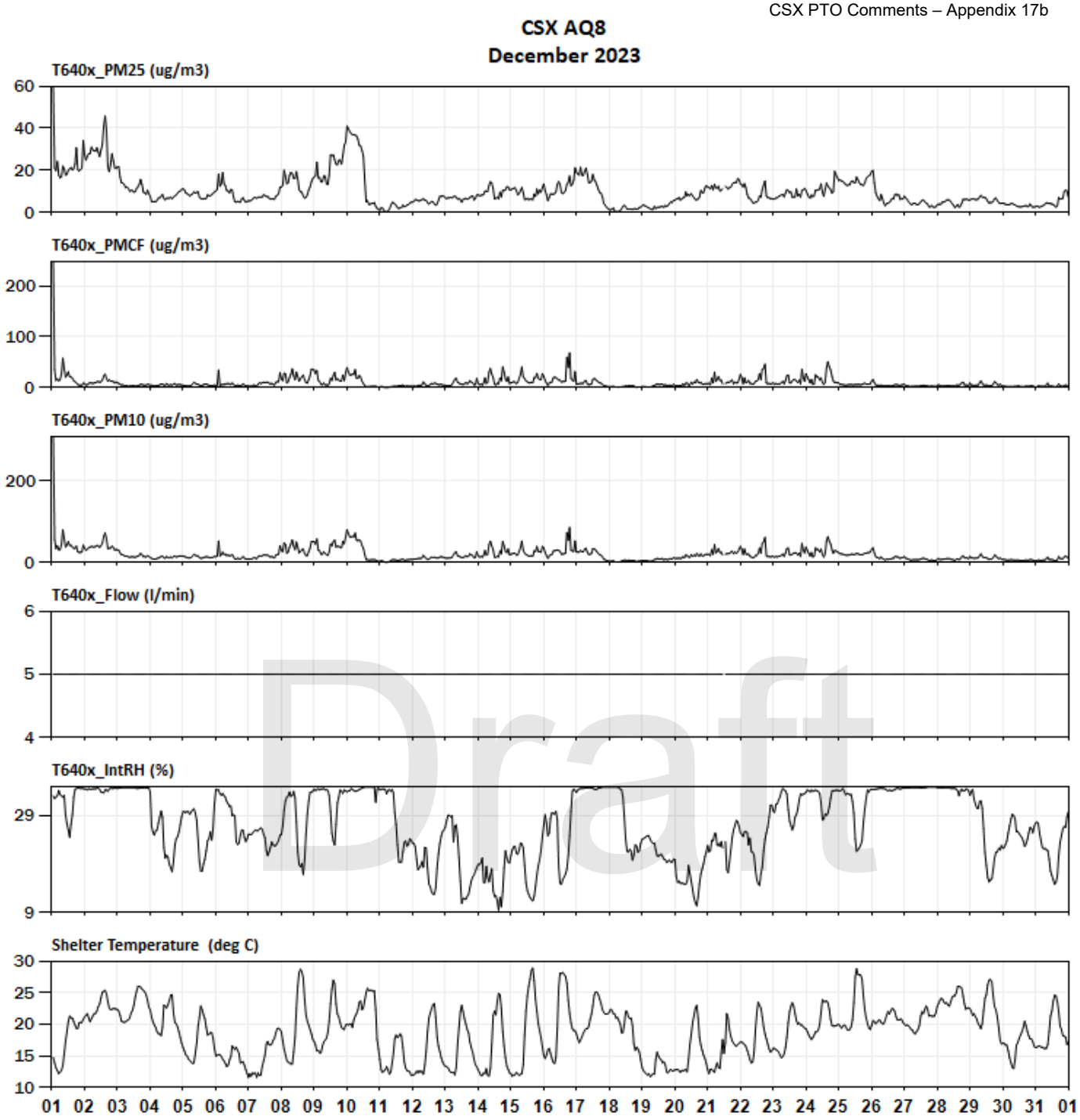
Draft


CSX AQ8
October 2023
T640x_PM25 (ug/m3)
21
1
T640x_PMCF (ug/m3)
201
101
1
T640x_PM10 (ug/m3)
202
102
2
T640x_Flow (l/min)
6
5
4
T640x_IntRH (%)
33
23
13
Shelter Temperature (deg C)
30
25
20
15
01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 01

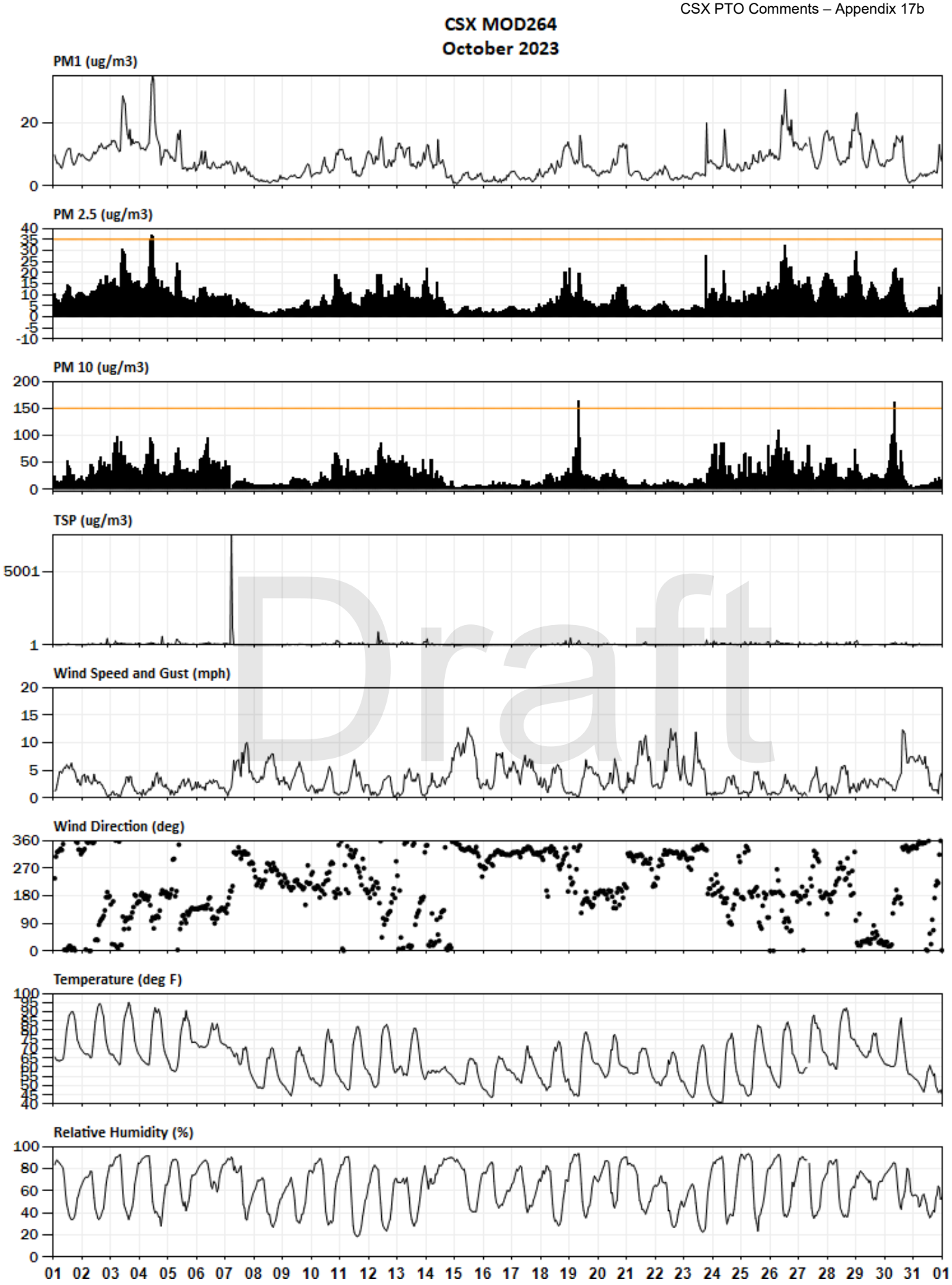
Draft


CSX AQ8
November 2023
T640x_PM25 (ug/m3)
22
2
T640x_PMCF (ug/m3)
101
51
1
T640x_PM10 (ug/m3)
104
54
4
T640x_Flow (l/min)
6
5
4
T640x_IntRH (%)
29
9
Shelter Temperature (deg C)
30
25
20
15
10
01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 01

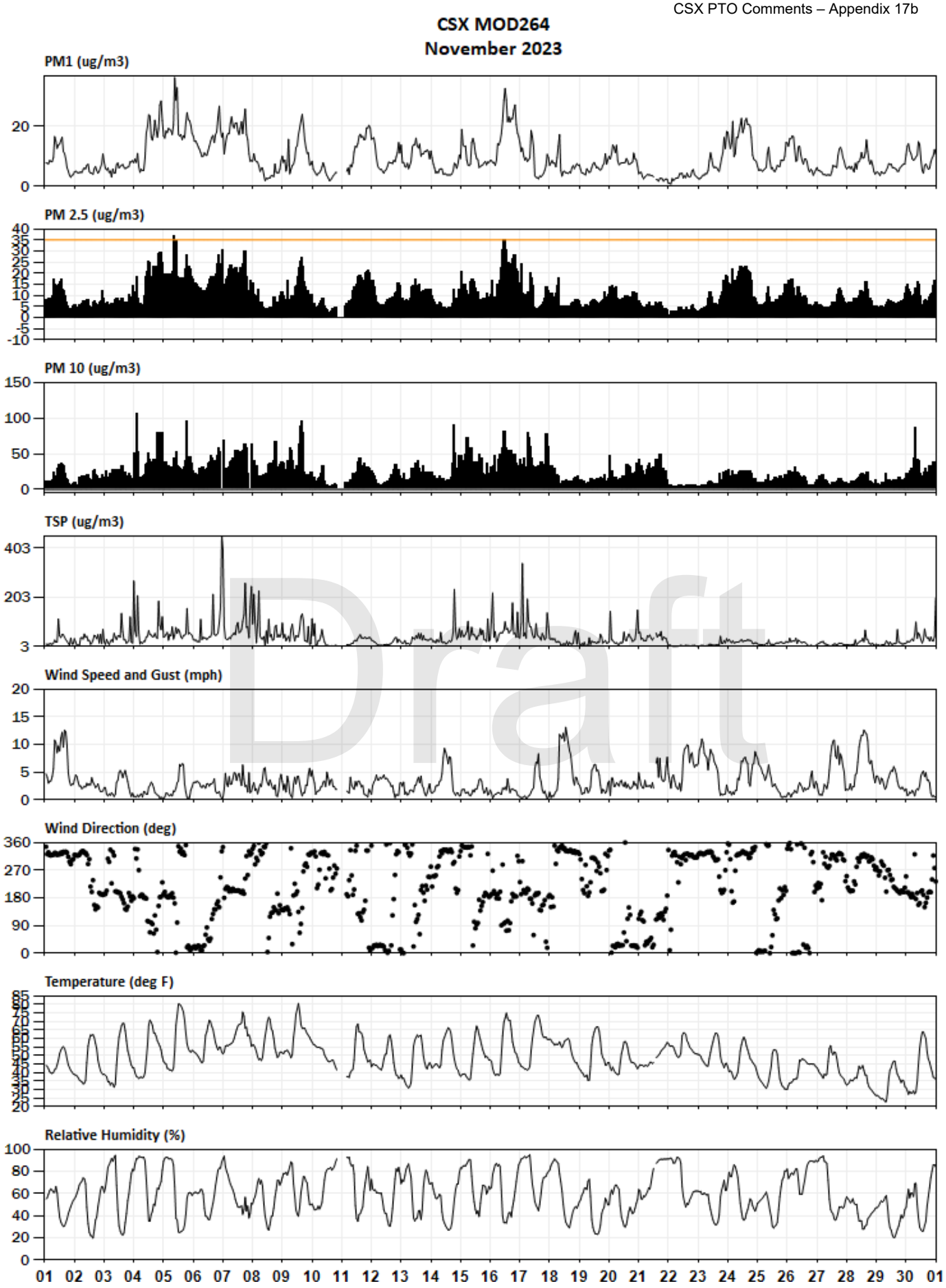
Draft


CSX AQ8
December 2023
T640x_PM25 (ug/m3)
60
40
20
0
T640x_PMCF (ug/m3)
200
100
0
T640x_PM10 (ug/m3)
200
0
T640x_Flow (l/min)
6
5
4
T640x_IntRH (%)
29
9
Shelter Temperature (deg C)
30
25
20
15
10
01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 01

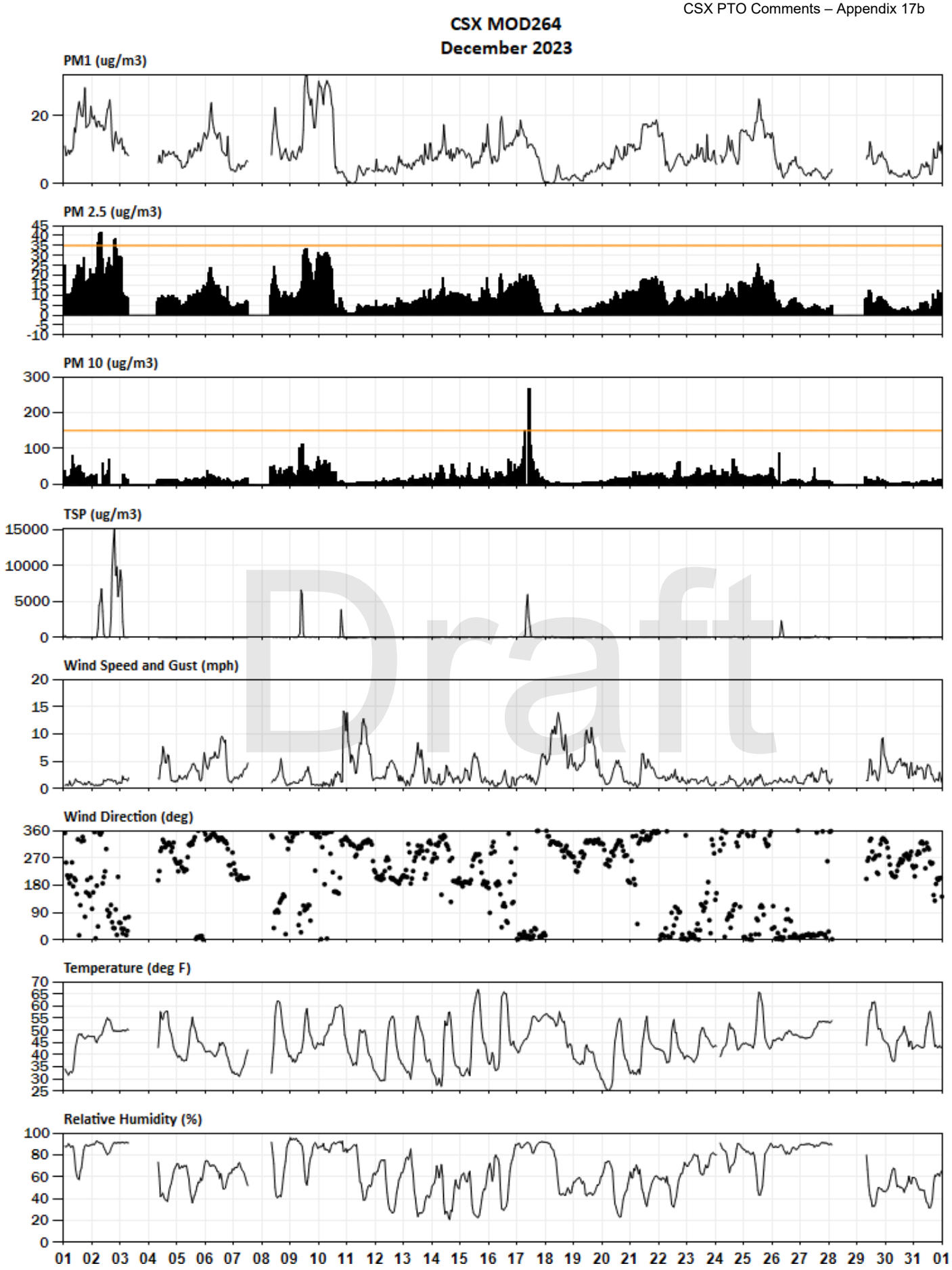
Draft


CSX MOD264
October 2023
PM1 (ug/m3)
PM 2.5 (ug/m3)
PM 10 (ug/m3)
TSP (ug/m3)
Wind Speed and Gust (mph)
Wind Direction (deg)
Temperature (deg F)
Relative Humidity (%)
01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 01

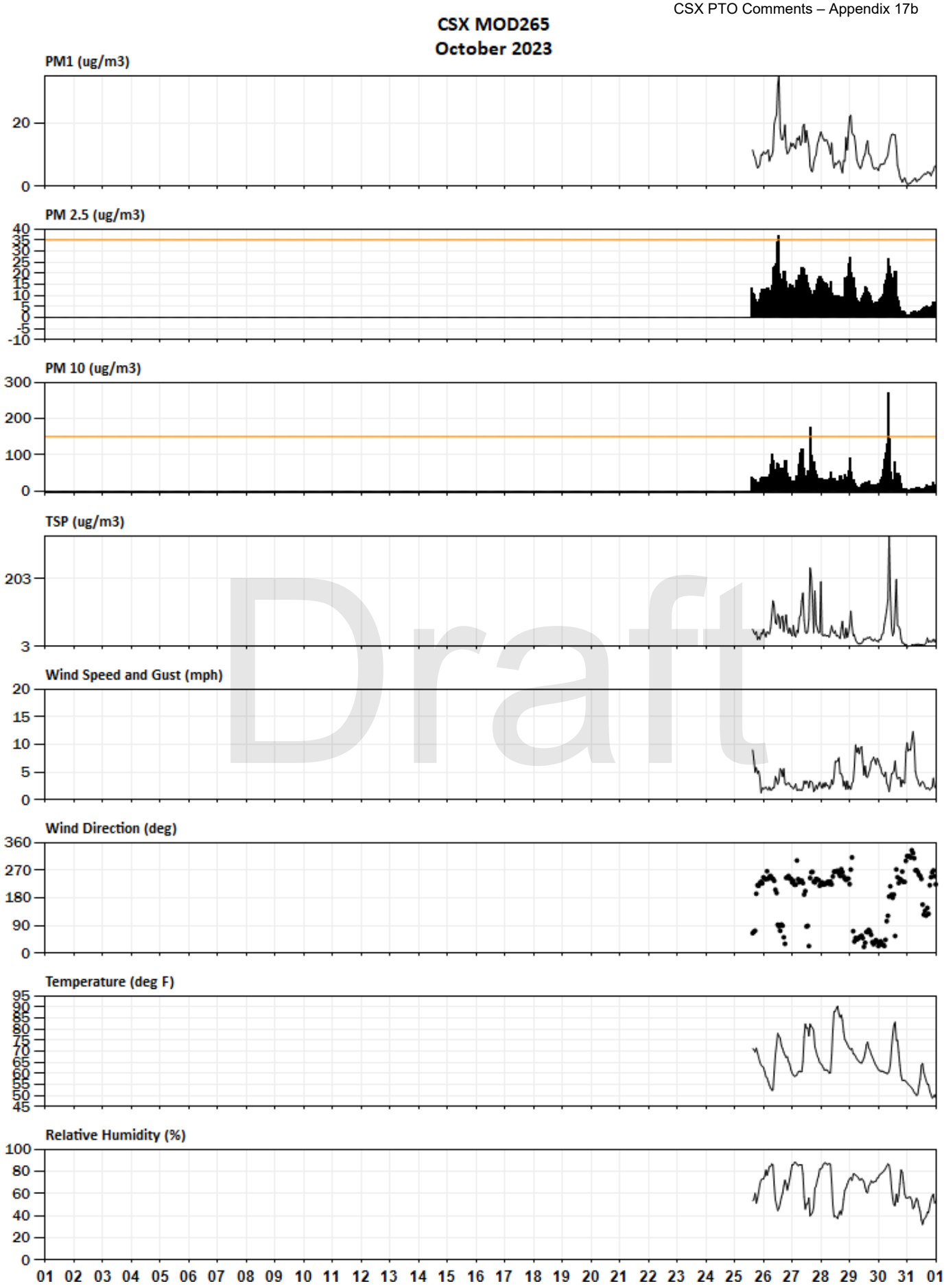
Draft


CSX MOD264
November 2023
PM1 (ug/m3)
PM 2.5 (ug/m3)
PM 10 (ug/m3)
TSP (ug/m3)
Wind Speed and Gust (mph)
Wind Direction (deg)
Temperature (deg F)
Relative Humidity (%)
01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 01

Draft

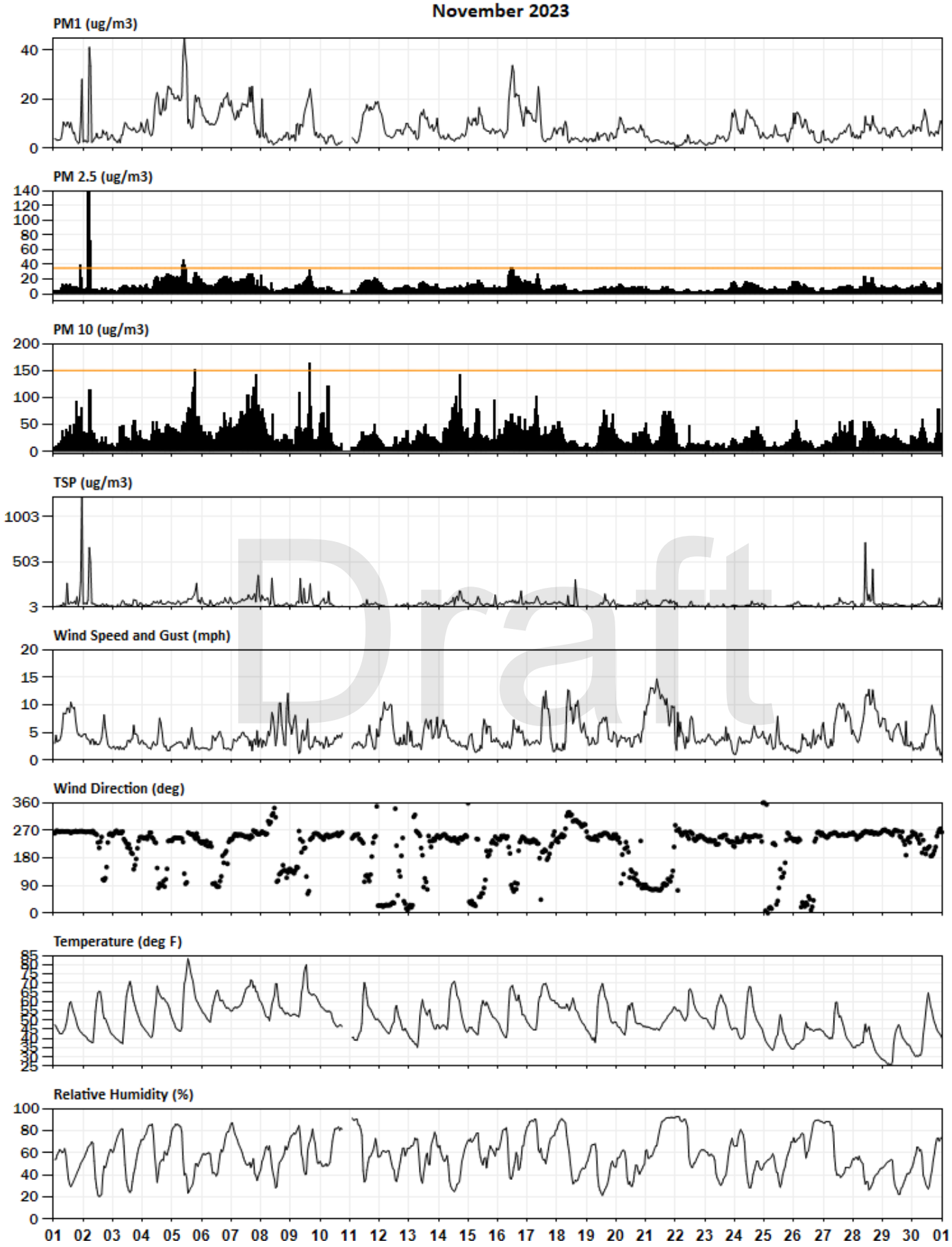

CSX MOD264
December 2023
PM1 (ug/m3)
PM 2.5 (ug/m3)
PM 10 (ug/m3)
TSP (ug/m3)
Wind Speed and Gust (mph)
Wind Direction (deg)
Temperature (deg F)
Relative Humidity (%)
01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 01

Draft

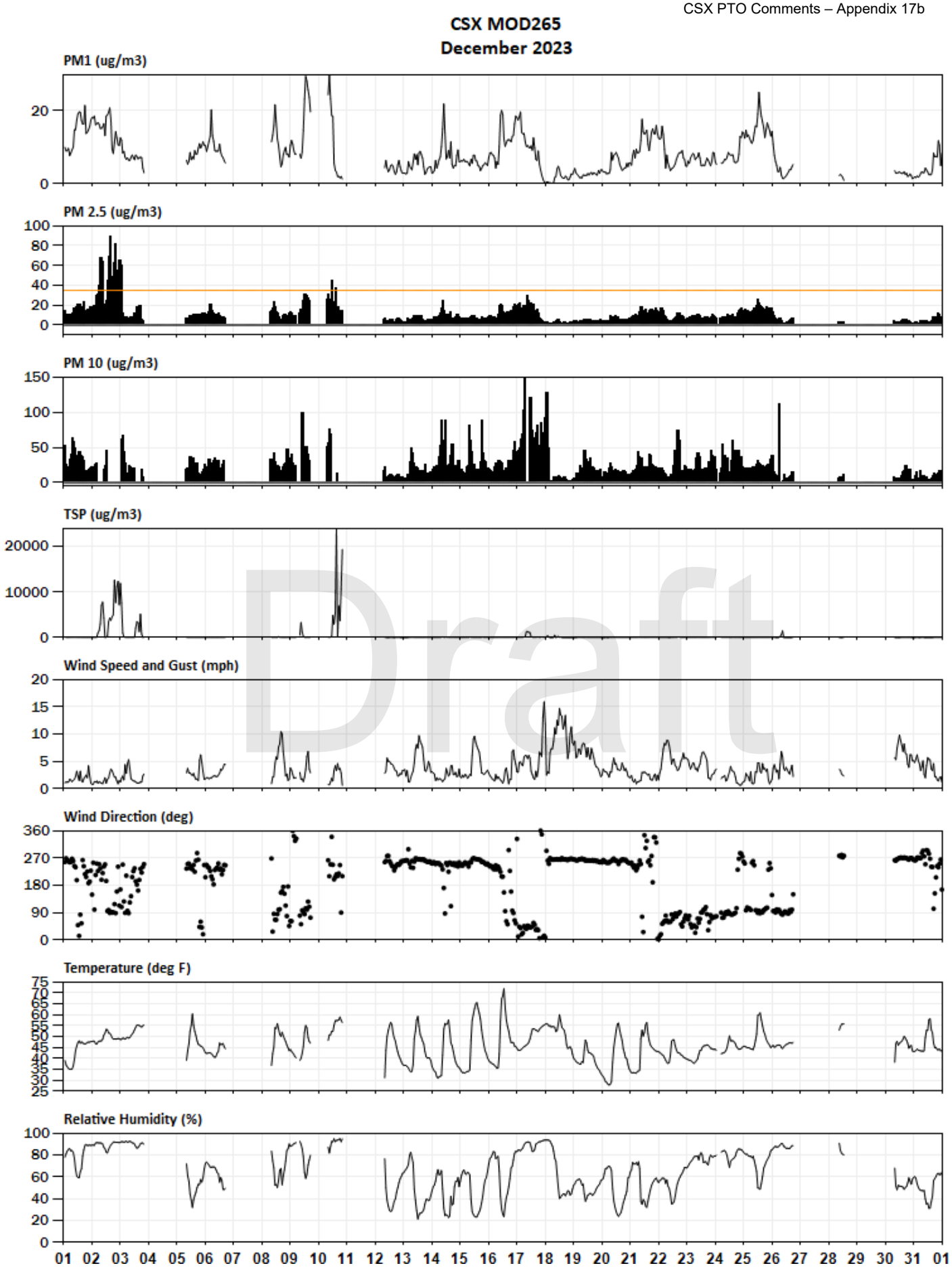

CSX MOD265
October 2023
PM1 (ug/m3)
20
0
PM 2.5 (ug/m3)
40
35
30
25
20
15
10
5
0
-5
-10
PM 10 (ug/m3)
300
200
100
0
TSP (ug/m3)
203
3
Wind Speed and Gust (mph)
20
15
10
5
0
Wind Direction (deg)
360
270
180
90
0
Temperature (deg F)
95
90
85
80
75
70
65
60
55
50
45
Relative Humidity (%)
100
80
60
40
20
0
01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 01

Draft

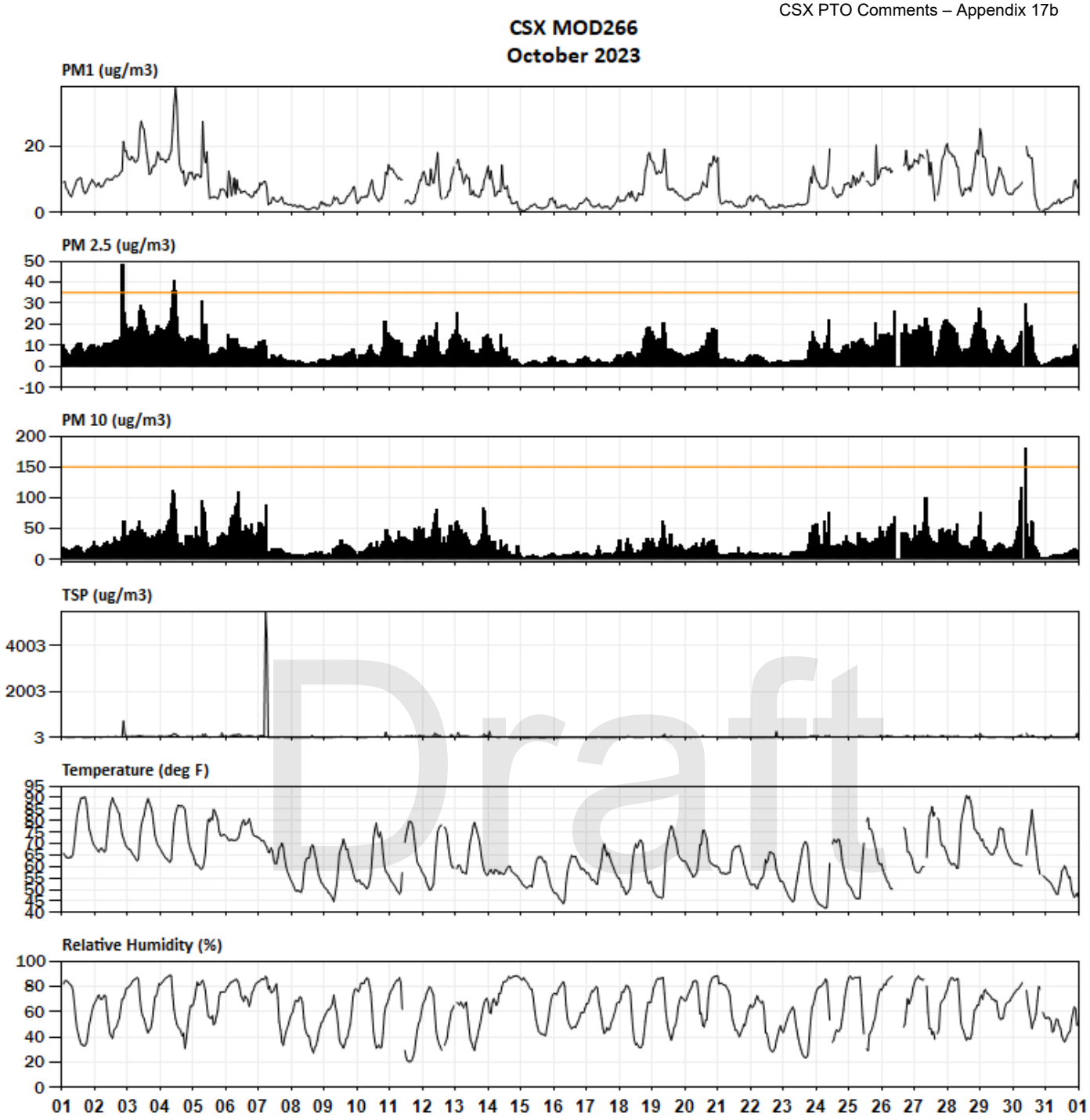
CSX MOD265
November 2023



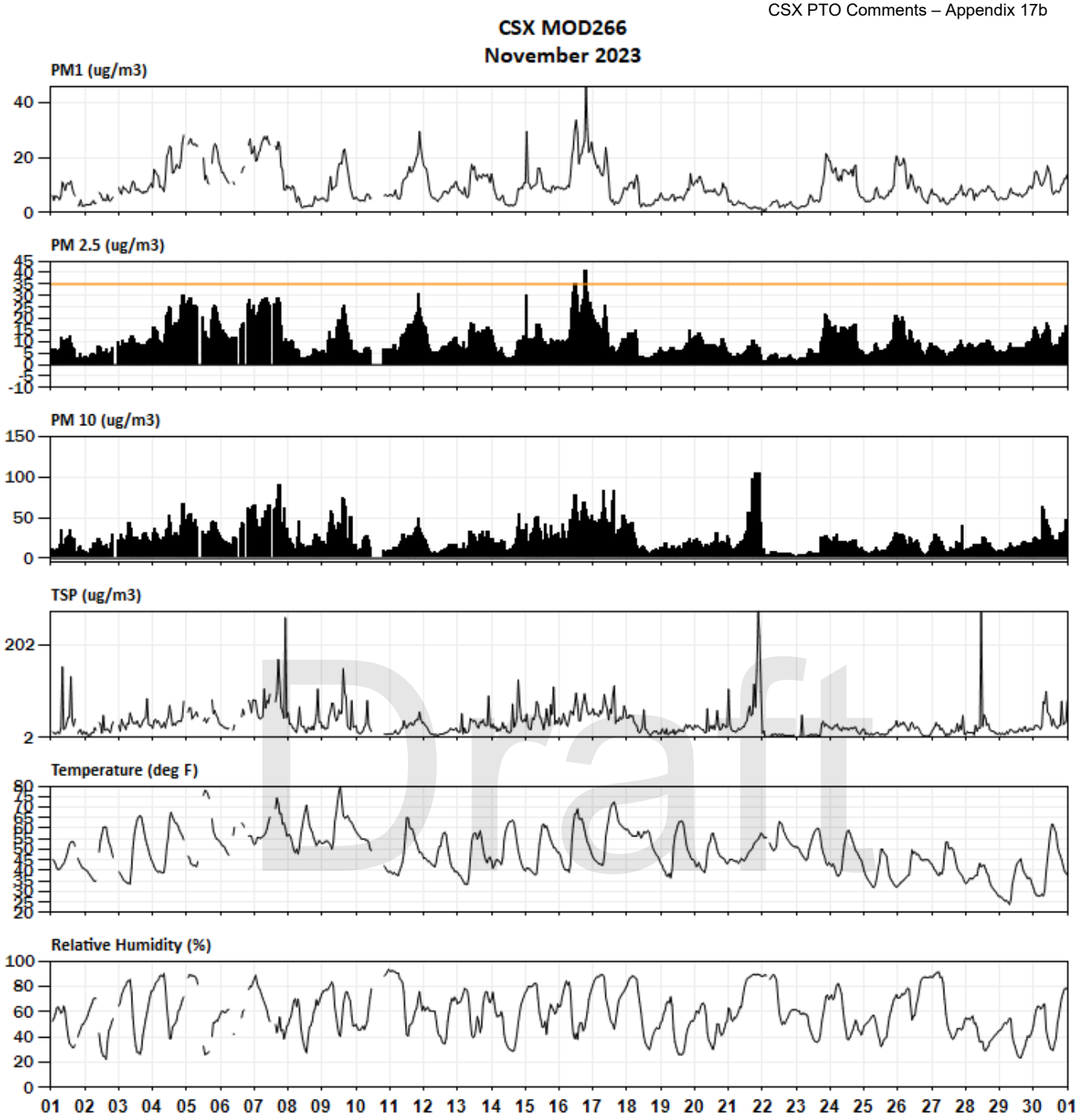
Draft


CSX MOD265
December 2023
PM1 (ug/m3)
PM 2.5 (ug/m3)
PM 10 (ug/m3)
TSP (ug/m3)
Wind Speed and Gust (mph)
Wind Direction (deg)
Temperature (deg F)
Relative Humidity (%)
01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 01

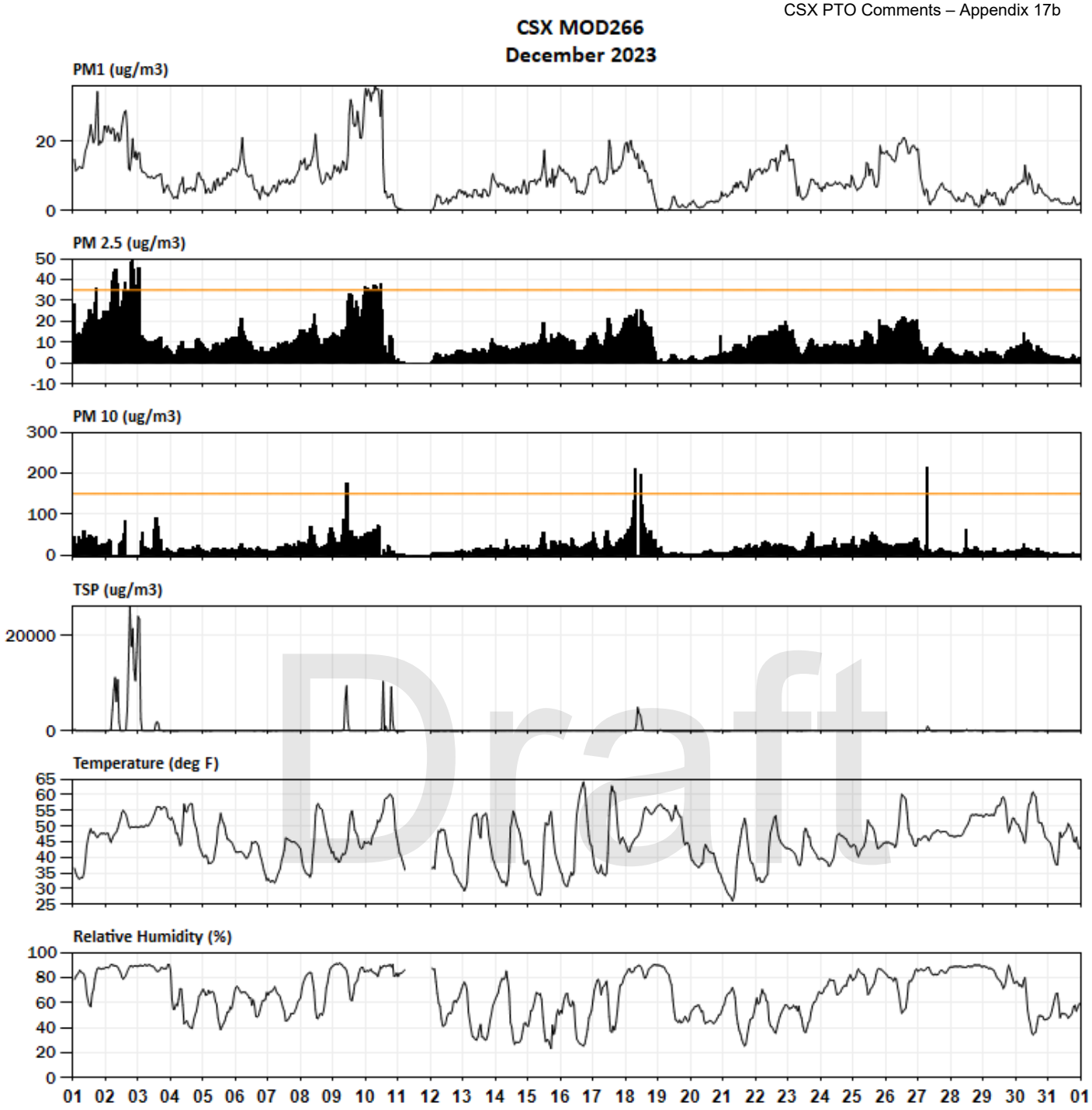
Draft


CSX MOD266
October 2023
PM1 (ug/m3)
20
0
PM 2.5 (ug/m3)
50
40
30
20
10
0
-10
PM 10 (ug/m3)
200
150
100
50
0
TSP (ug/m3)
4003
2003
3
Temperature (deg F)
95
90
85
80
75
70
65
60
55
50
45
40
Relative Humidity (%)
100
80
60
40
20
0
01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 01

Draft


CSX MOD266
November 2023
PM1 (ug/m3)
PM 2.5 (ug/m3)
PM 10 (ug/m3)
TSP (ug/m3)
Temperature (deg F)
Relative Humidity (%)
01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 01

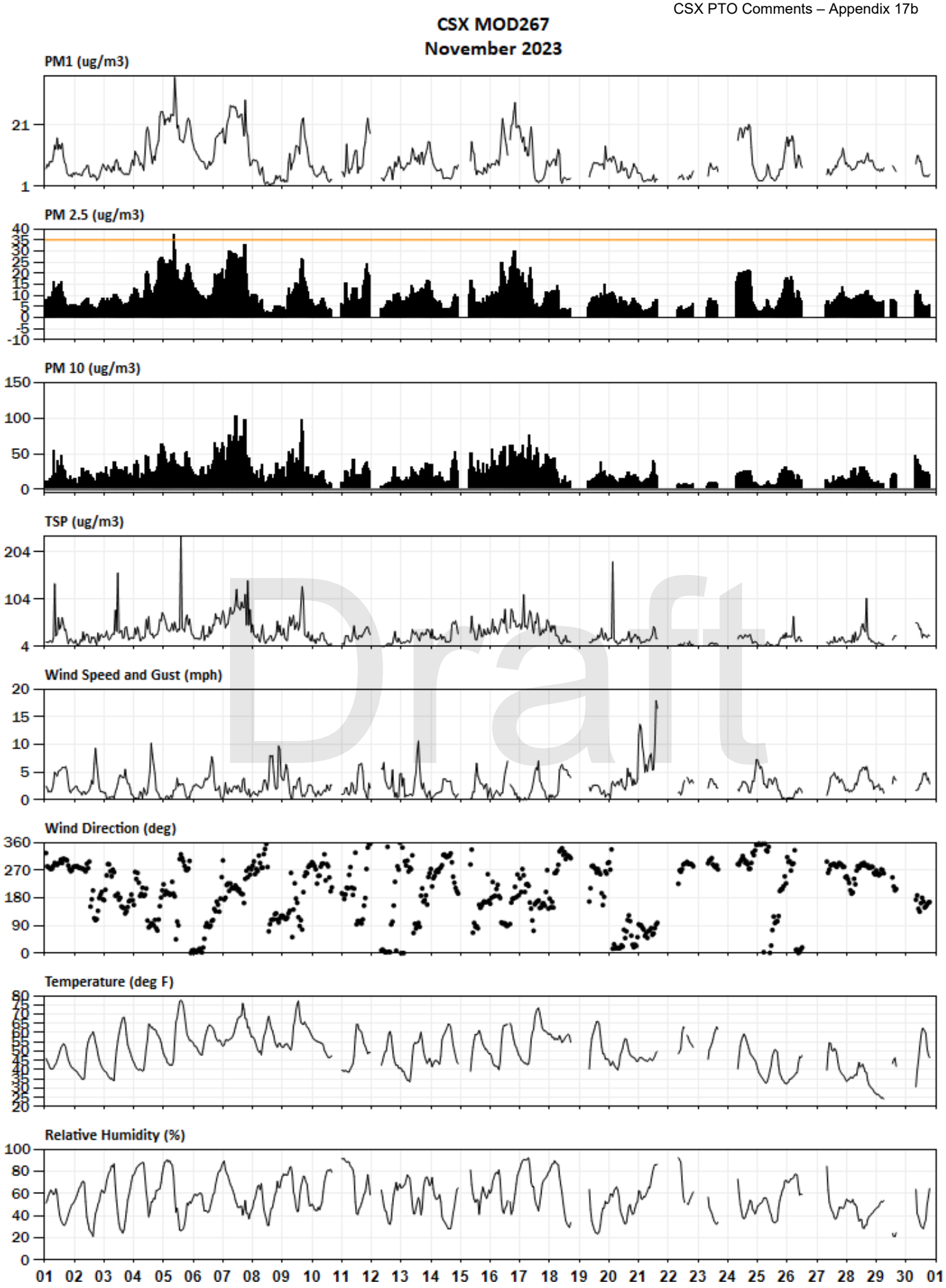
Draft


CSX MOD266
December 2023
PM1 (ug/m3)
20
0
PM 2.5 (ug/m3)
50
40
30
20
10
0
-10
PM 10 (ug/m3)
300
200
100
0
TSP (ug/m3)
20000
0
Temperature (deg F)
65
60
55
50
45
40
35
30
25
Relative Humidity (%)
100
80
60
40
20
0
01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 01

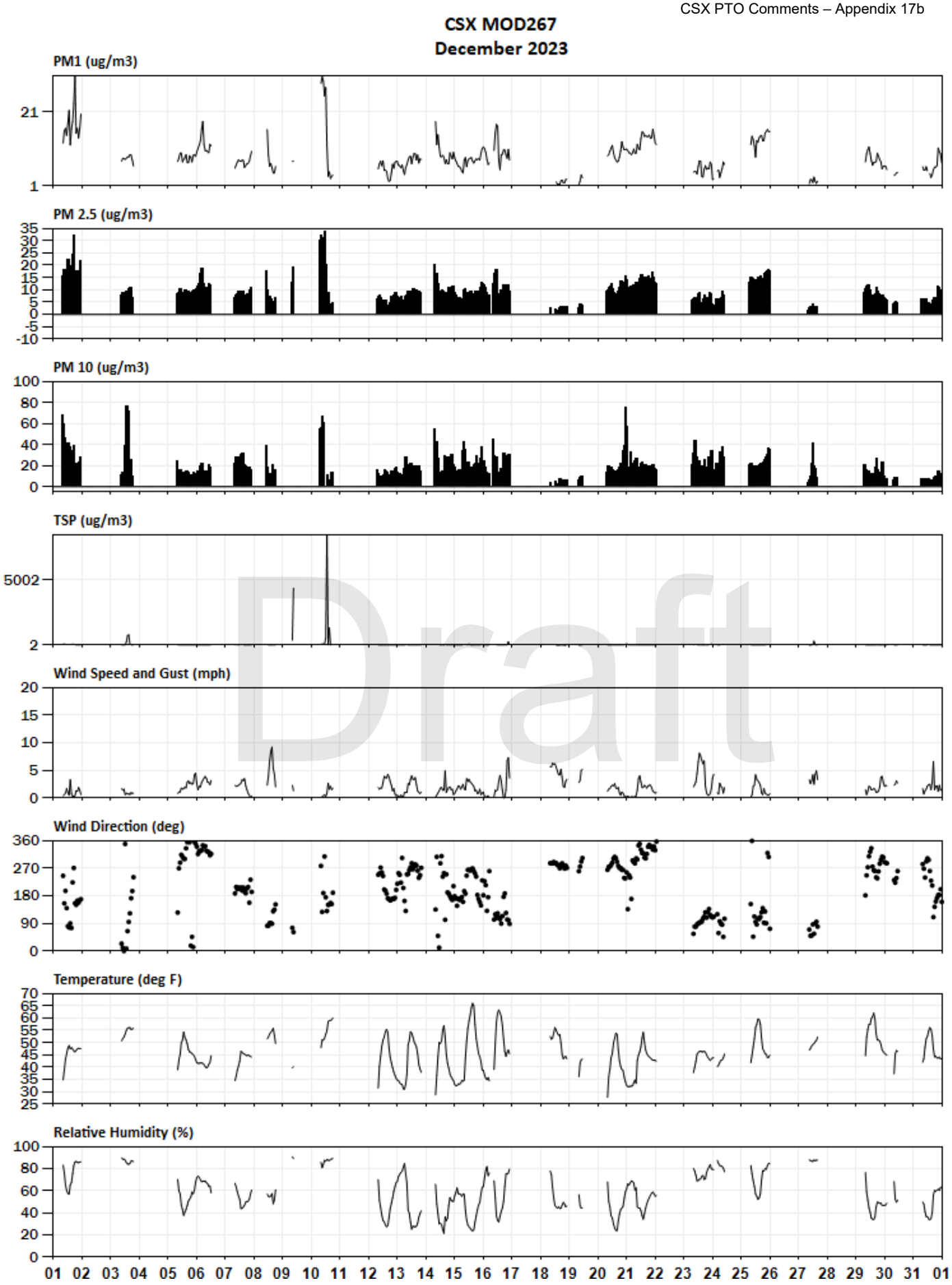
Draft


CSX MOD267
October 2023
PM1 (ug/m3)
PM 2.5 (ug/m3)
PM 10 (ug/m3)
TSP (ug/m3)
Wind Speed and Gust (mph)
Wind Direction (deg)
Temperature (deg F)
Relative Humidity (%)
01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 01

Draft

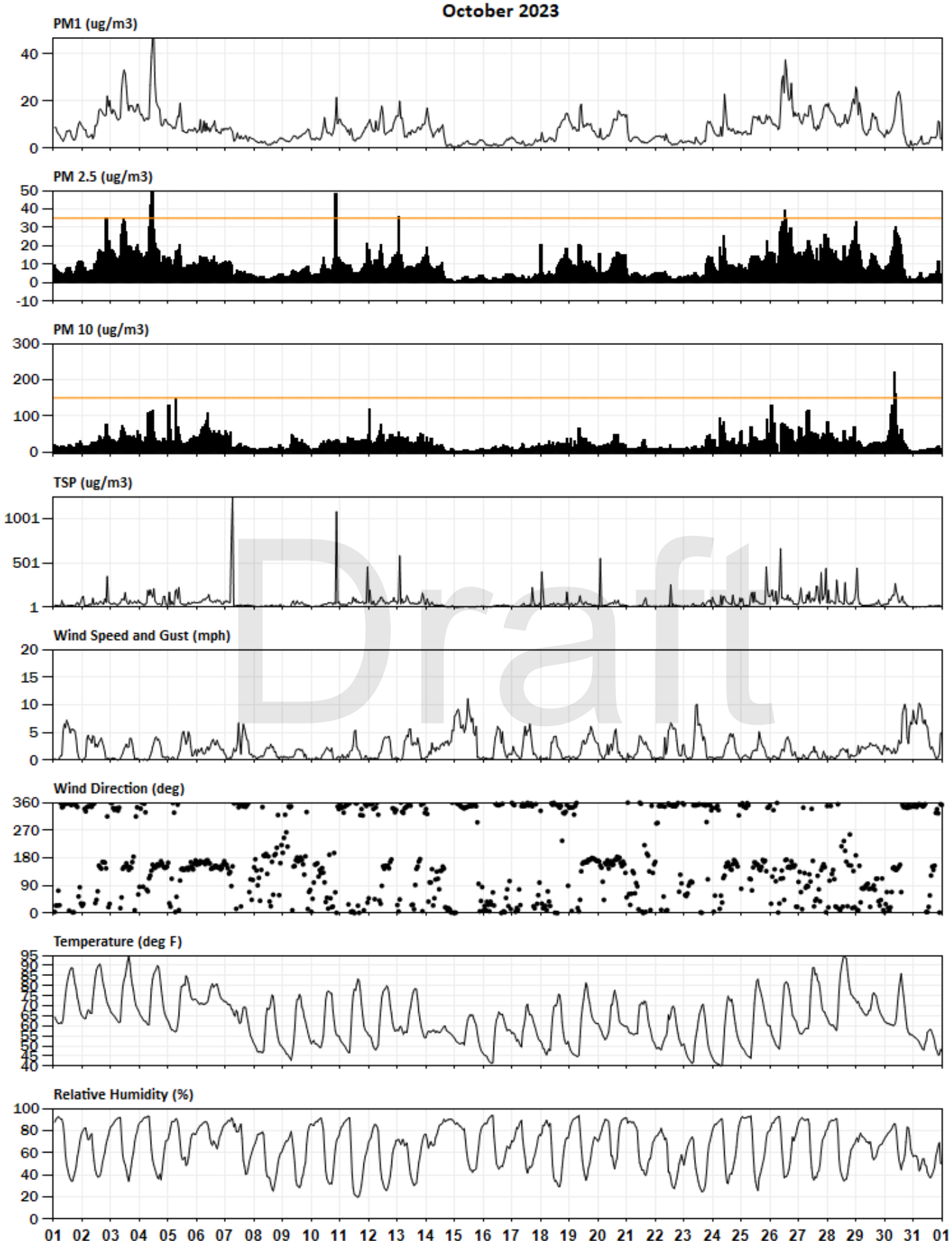

CSX MOD267
November 2023
PM1 (ug/m3)
21
1
PM 2.5 (ug/m3)
40
35
30
25
20
15
10
5
0
-5
-10
PM 10 (ug/m3)
150
100
50
0
TSP (ug/m3)
204
104
4
Wind Speed and Gust (mph)
20
15
10
5
0
Wind Direction (deg)
360
270
180
90
0
Temperature (deg F)
80
75
70
65
60
55
50
45
40
35
30
25
20
Relative Humidity (%)
100
80
60
40
20
0
01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 01

Draft

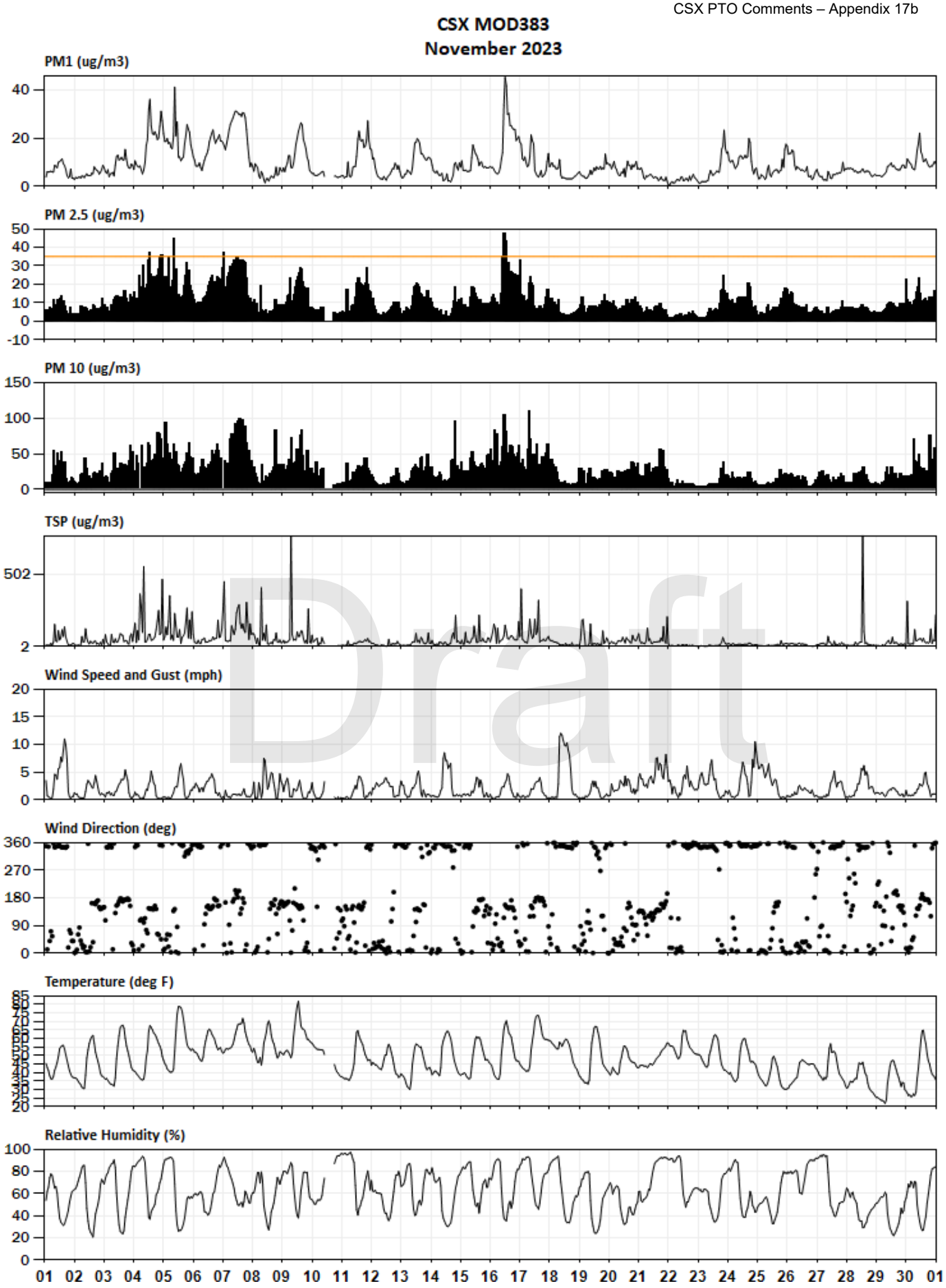

CSX MOD267
December 2023
PM1 (ug/m3)
21
1
PM 2.5 (ug/m3)
35
30
25
20
15
10
5
0
-5
-10
PM 10 (ug/m3)
100
80
60
40
20
0
TSP (ug/m3)
5002
2
Wind Speed and Gust (mph)
20
15
10
5
0
Wind Direction (deg)
360
270
180
90
0
Temperature (deg F)
70
65
60
55
50
45
40
35
30
25
Relative Humidity (%)
100
80
60
40
20
0
01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 01

Draft

CSX MOD383
October 2023



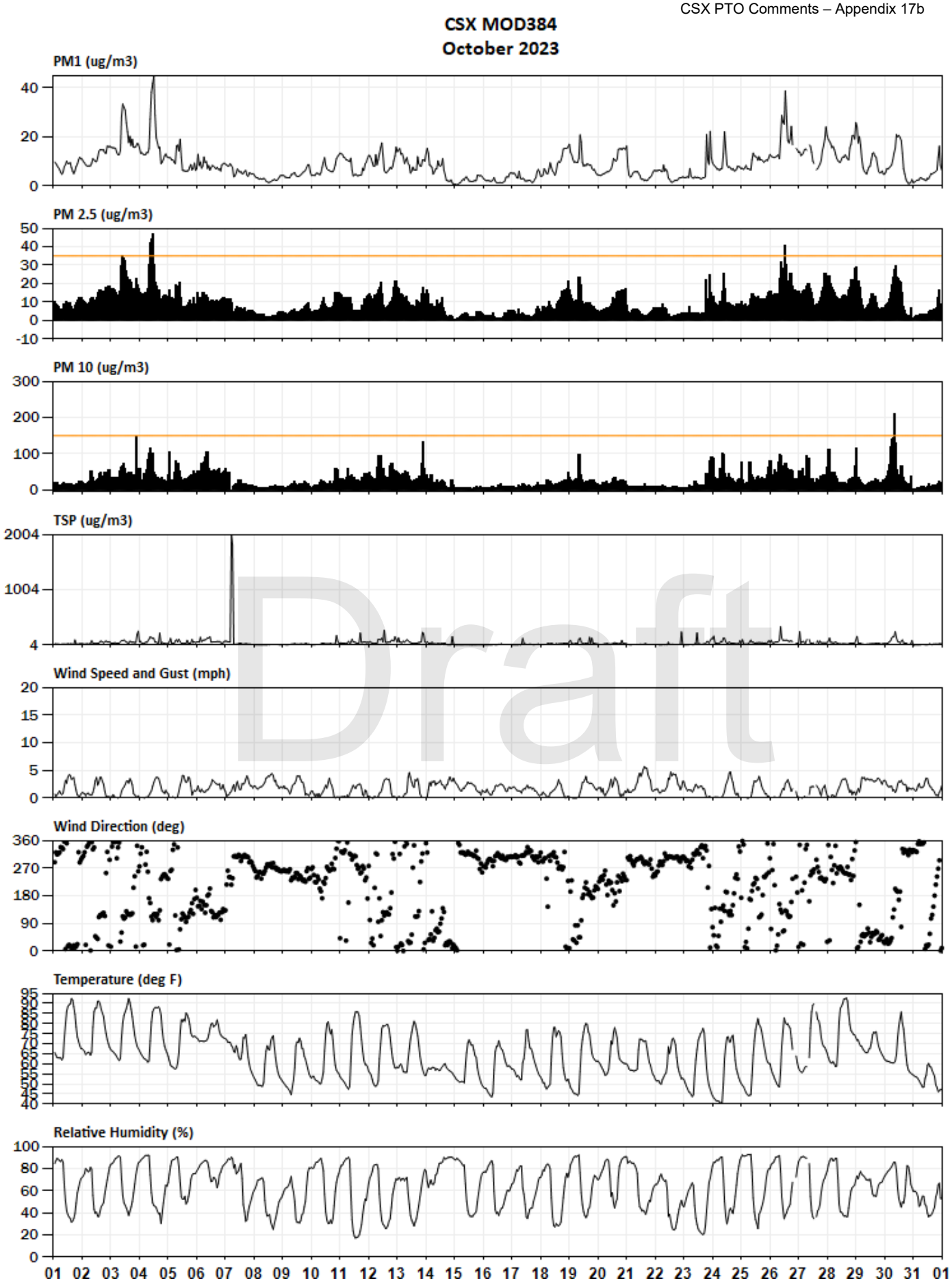
Draft


CSX MOD383
November 2023
PM1 (ug/m3)
40
20
0
PM 2.5 (ug/m3)
50
40
30
20
10
0
-10
PM 10 (ug/m3)
150
100
50
0
TSP (ug/m3)
502
2
Wind Speed and Gust (mph)
20
15
10
5
0
Wind Direction (deg)
360
270
180
90
0
Temperature (deg F)
Relative Humidity (%)
100
80
60
40
20
0
01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 01

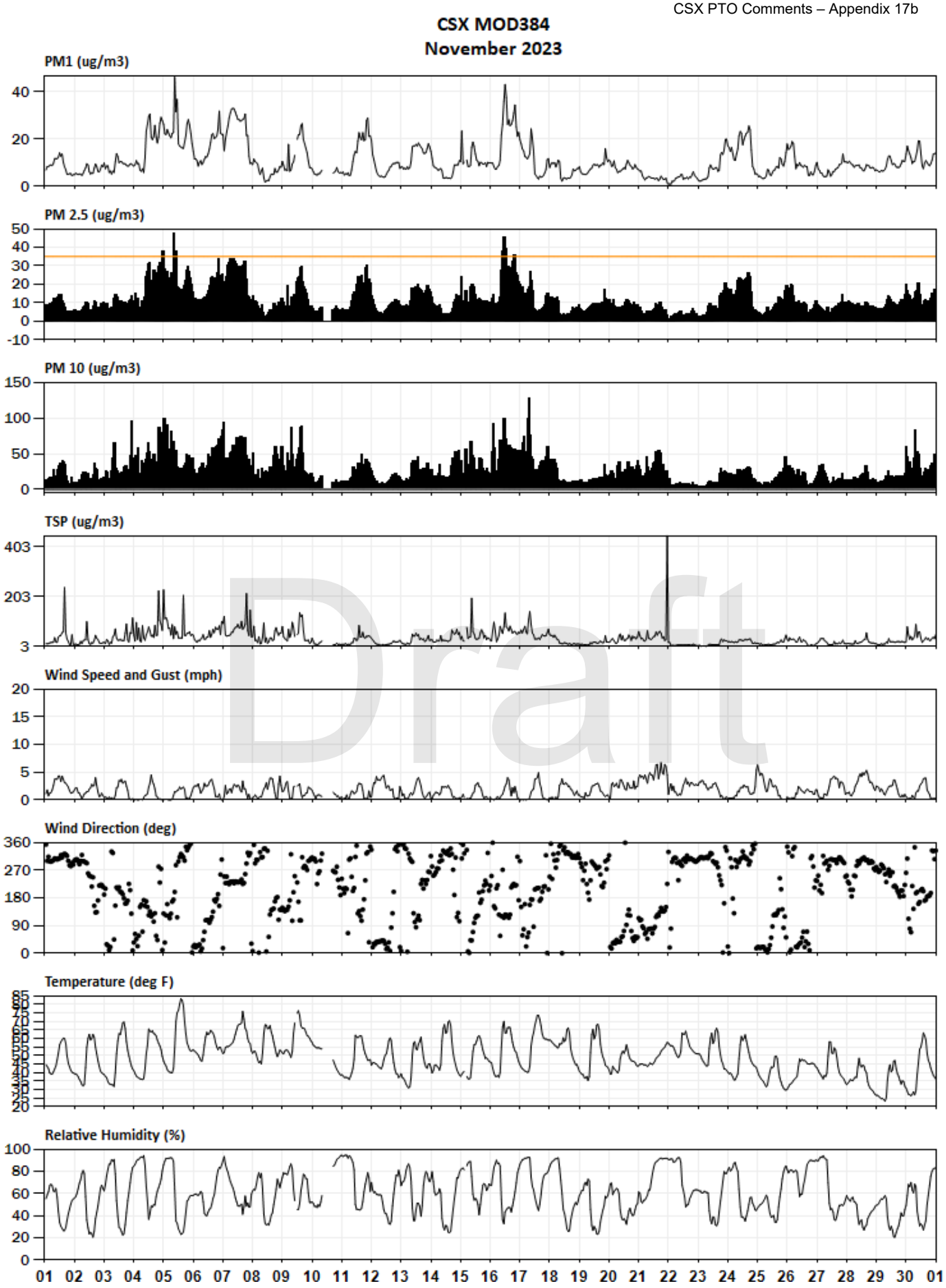
Draft


CSX MOD383
December 2023
PM1 (ug/m3)
PM 2.5 (ug/m3)
PM 10 (ug/m3)
TSP (ug/m3)
Wind Speed and Gust (mph)
Wind Direction (deg)
Temperature (deg F)
Relative Humidity (%)
01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 01

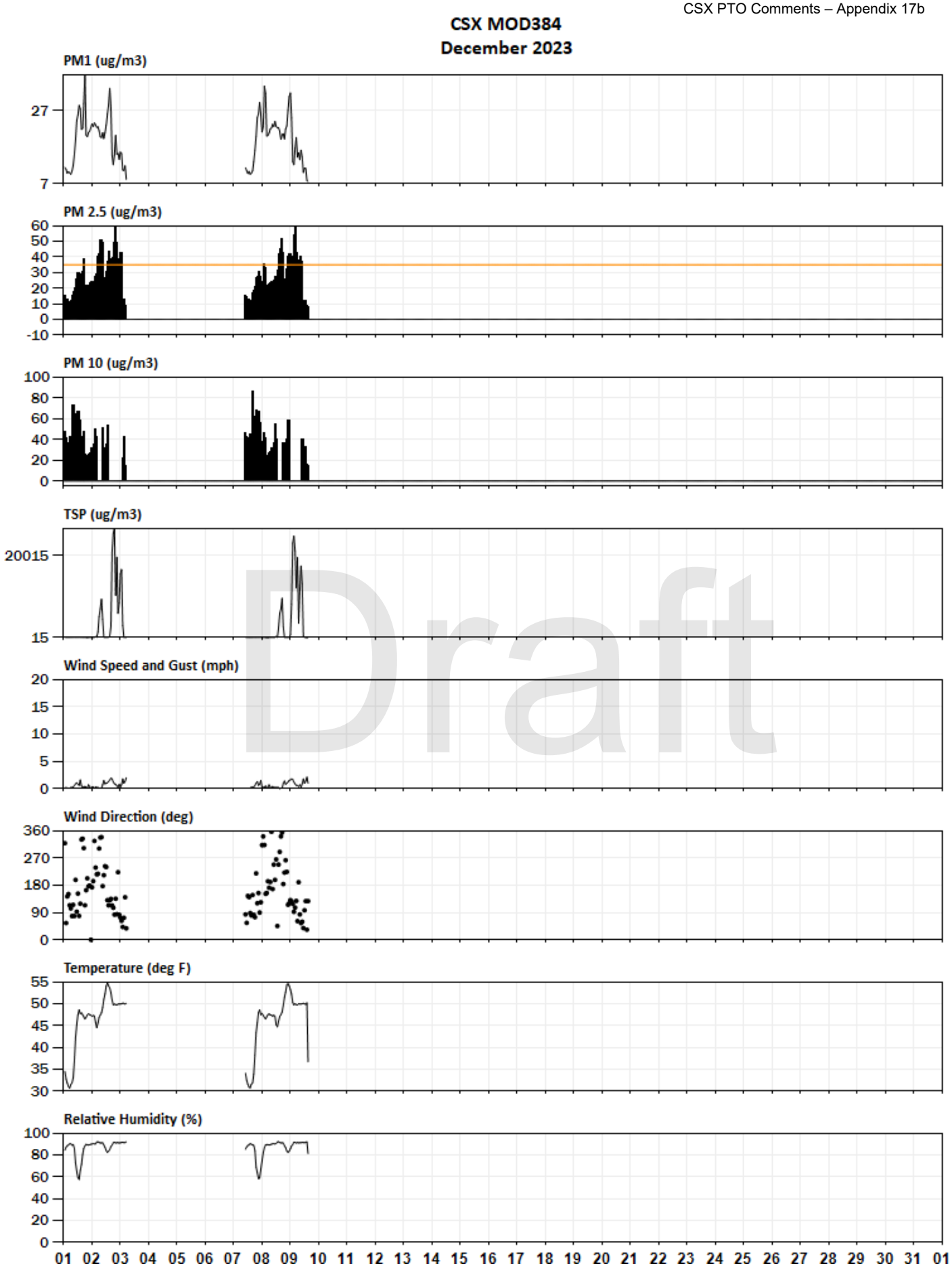
Draft


CSX MOD384
October 2023
PM1 (ug/m3)
PM 2.5 (ug/m3)
PM 10 (ug/m3)
TSP (ug/m3)
Wind Speed and Gust (mph)
Wind Direction (deg)
Temperature (deg F)
Relative Humidity (%)
01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 01

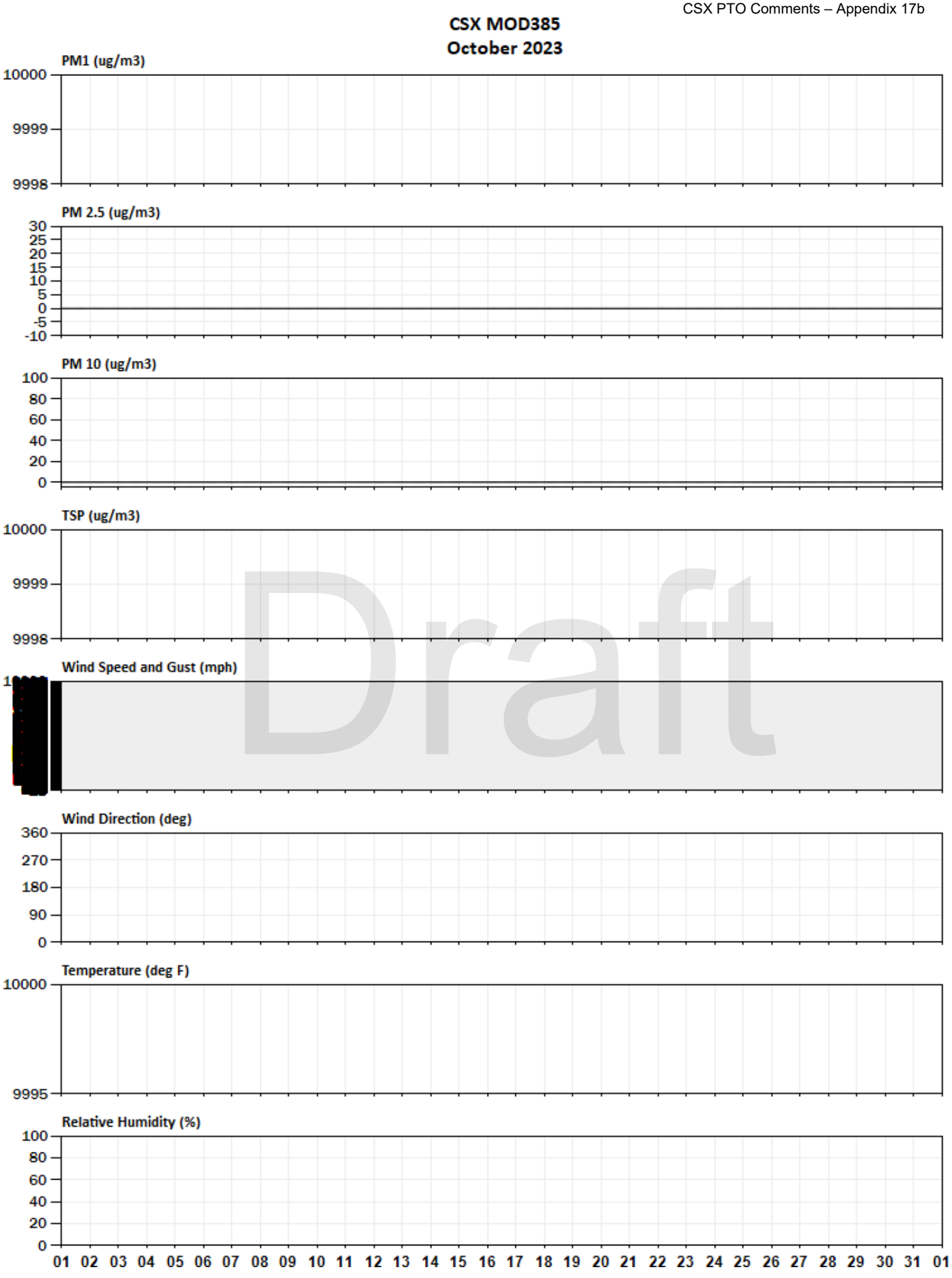
Draft


CSX MOD384
November 2023
PM1 (ug/m3)
PM 2.5 (ug/m3)
PM 10 (ug/m3)
TSP (ug/m3)
Wind Speed and Gust (mph)
Wind Direction (deg)
Temperature (deg F)
Relative Humidity (%)
01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 01

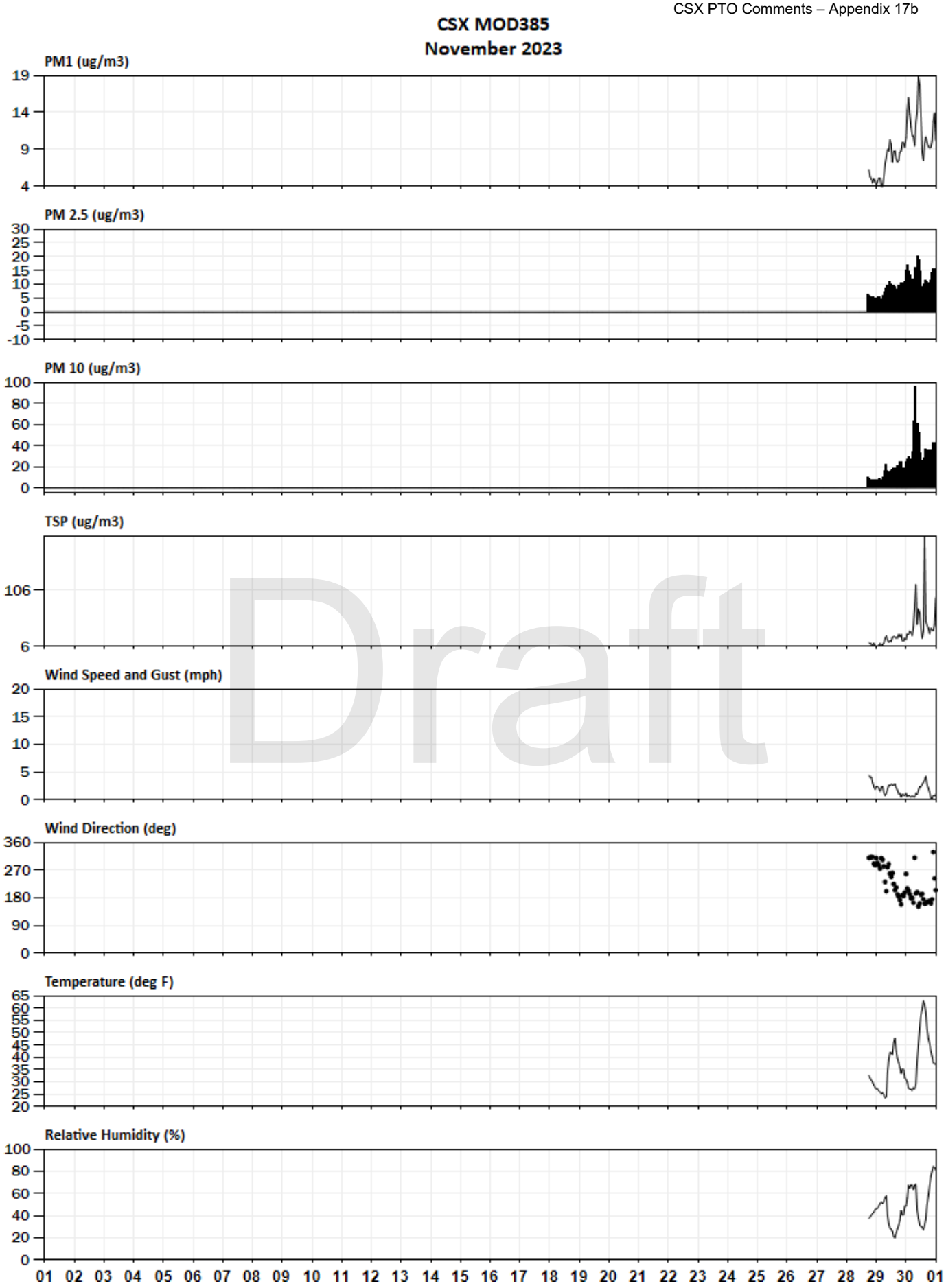
Draft


CSX MOD384
December 2023
PM1 (ug/m3)
27
7
PM 2.5 (ug/m3)
60
50
40
30
20
10
0
-10
PM 10 (ug/m3)
100
80
60
40
20
0
TSP (ug/m3)
200
15
15
Wind Speed and Gust (mph)
20
15
10
5
0
Wind Direction (deg)
360
270
180
90
0
Temperature (deg F)
55
50
45
40
35
30
Relative Humidity (%)
100
80
60
40
20
0
01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 01

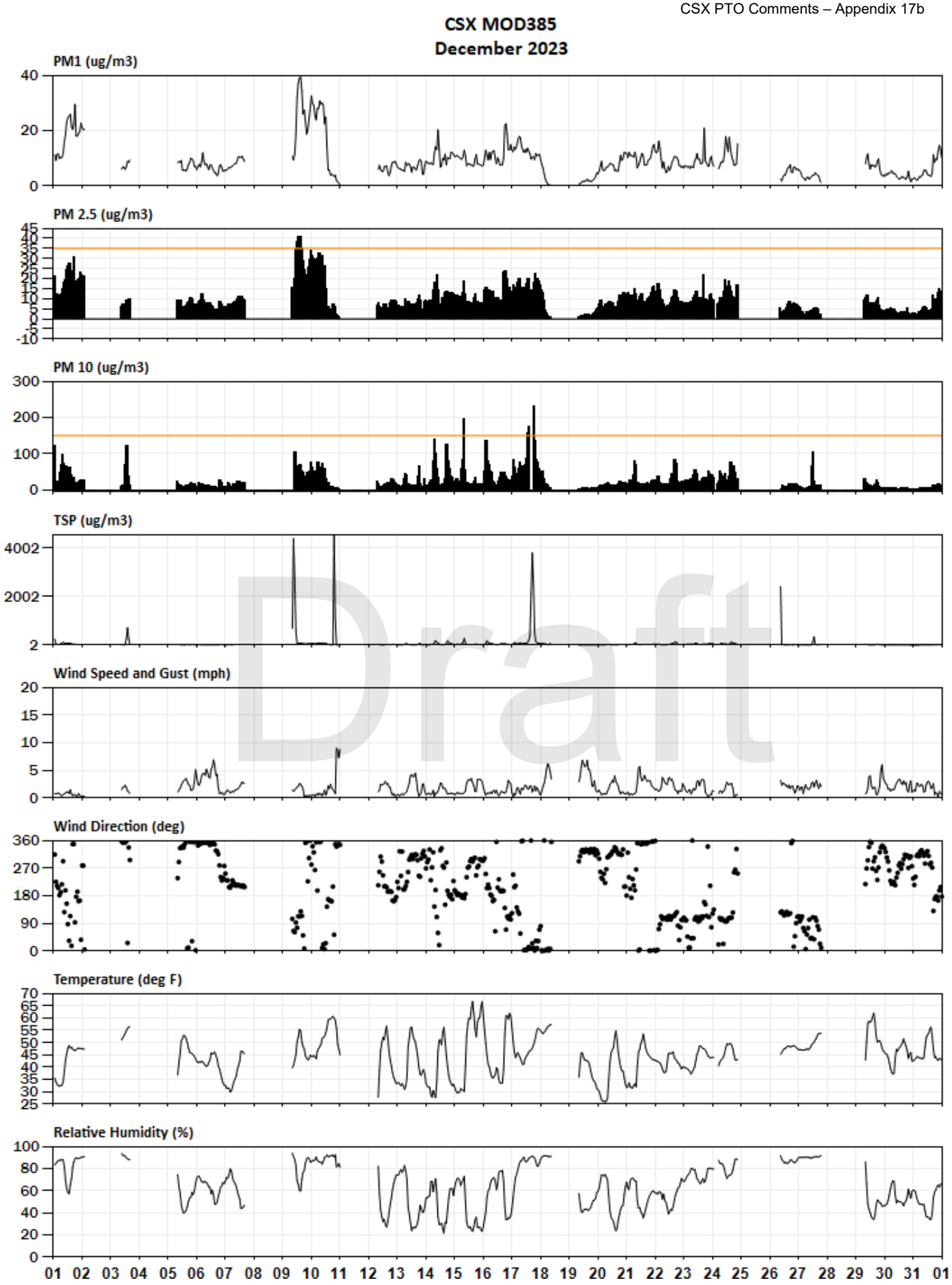
Draft


CSX MOD385
October 2023
PM1 (ug/m3)
10000
9999
9998
PM 2.5 (ug/m3)
30
25
20
15
10
5
0
-5
-10
PM 10 (ug/m3)
100
80
60
40
20
0
TSP (ug/m3)
10000
9999
9998
Wind Speed and Gust (mph)
Wind Direction (deg)
360
270
180
90
0
Temperature (deg F)
10000
9995
Relative Humidity (%)
100
80
60
40
20
0
01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 01

Draft


CSX MOD385
November 2023
PM1 (ug/m3)
19
14
9
4
PM 2.5 (ug/m3)
30
25
20
15
10
5
0
-5
-10
PM 10 (ug/m3)
100
80
60
40
20
0
TSP (ug/m3)
106
6
Wind Speed and Gust (mph)
20
15
10
5
0
Wind Direction (deg)
360
270
180
90
0
Temperature (deg F)
65
60
55
50
45
40
35
30
25
20
Relative Humidity (%)
100
80
60
40
20
0
01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 01

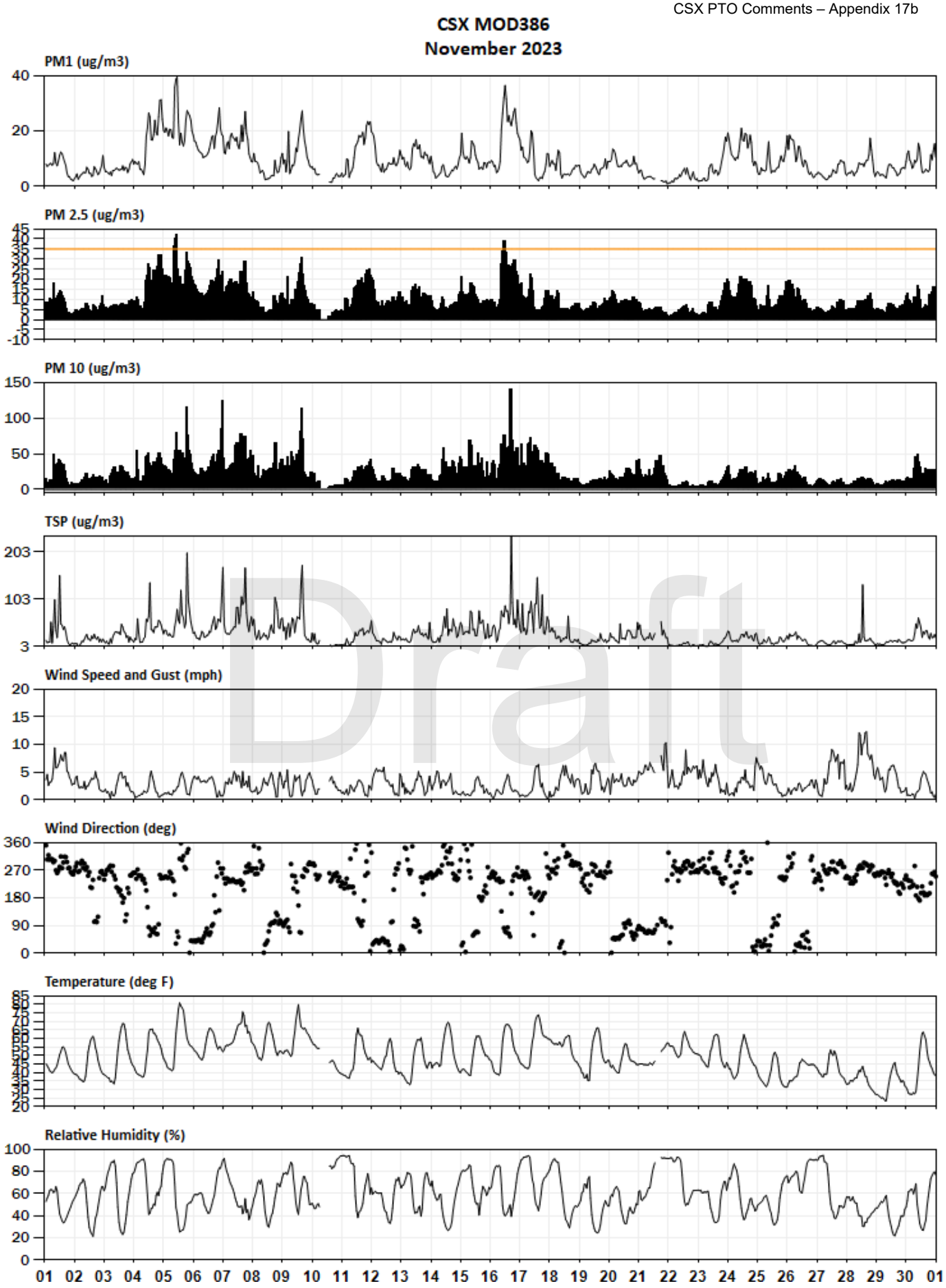
Draft


CSX MOD385
December 2023
PM1 (ug/m3)
PM 2.5 (ug/m3)
PM 10 (ug/m3)
TSP (ug/m3)
Wind Speed and Gust (mph)
Wind Direction (deg)
Temperature (deg F)
Relative Humidity (%)
01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 01

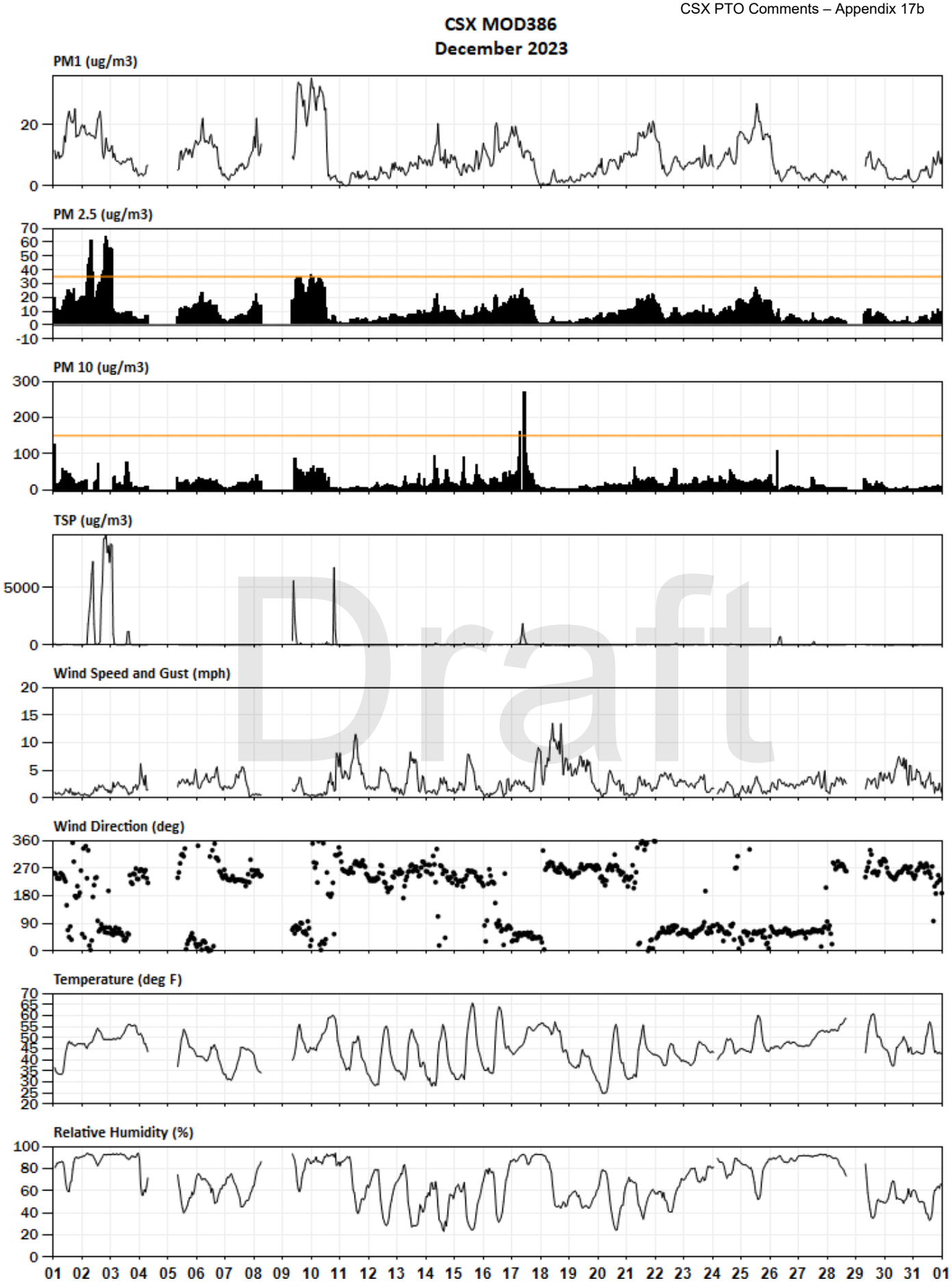
Draft


CSX MOD386
October 2023
PM1 (ug/m3)
PM 2.5 (ug/m3)
PM 10 (ug/m3)
TSP (ug/m3)
Wind Speed and Gust (mph)
Wind Direction (deg)
Temperature (deg F)
Relative Humidity (%)
01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 01

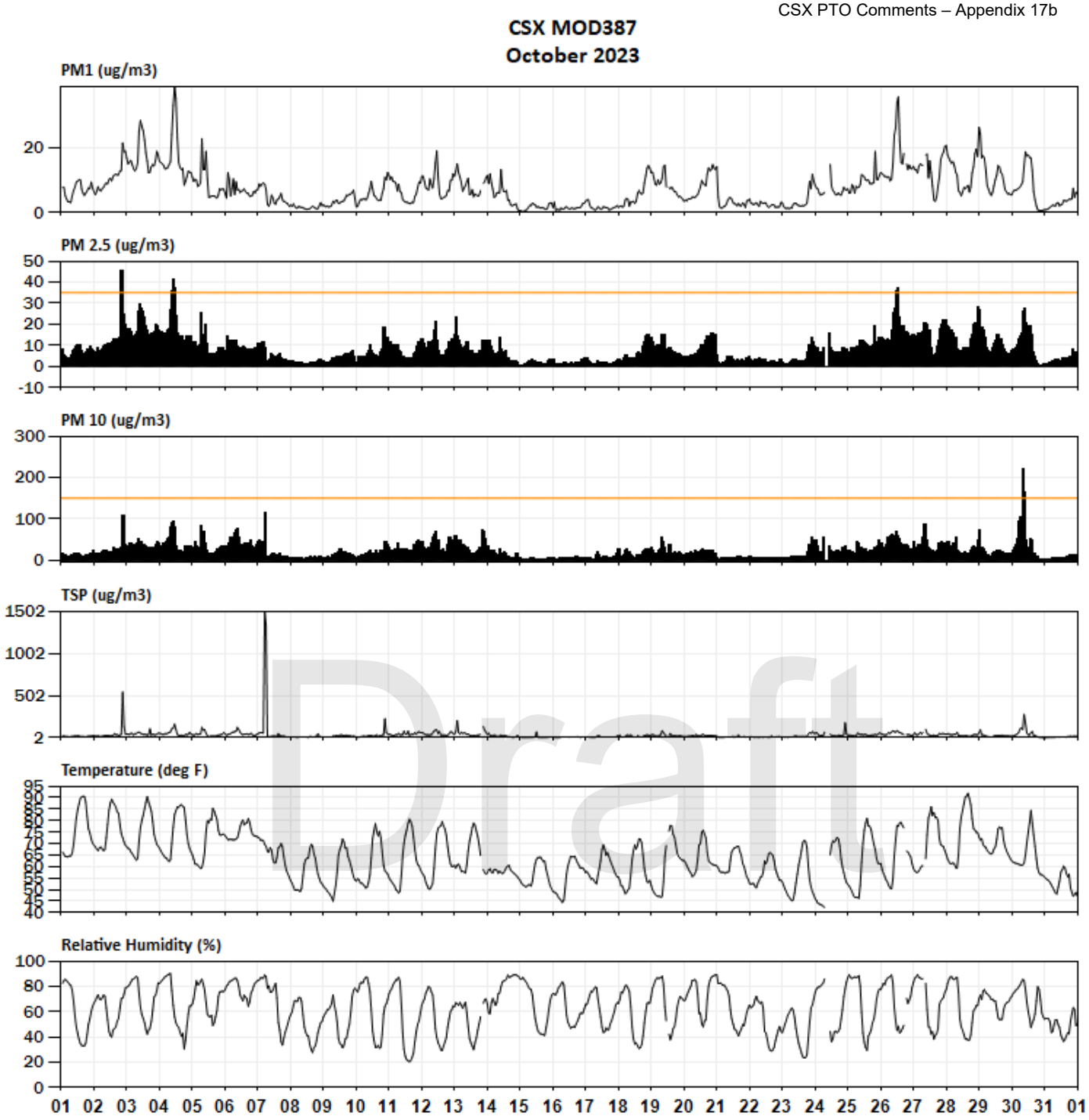
Draft


CSX MOD386
November 2023
PM1 (ug/m3)
PM 2.5 (ug/m3)
PM 10 (ug/m3)
TSP (ug/m3)
Wind Speed and Gust (mph)
Wind Direction (deg)
Temperature (deg F)
Relative Humidity (%)
01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 01

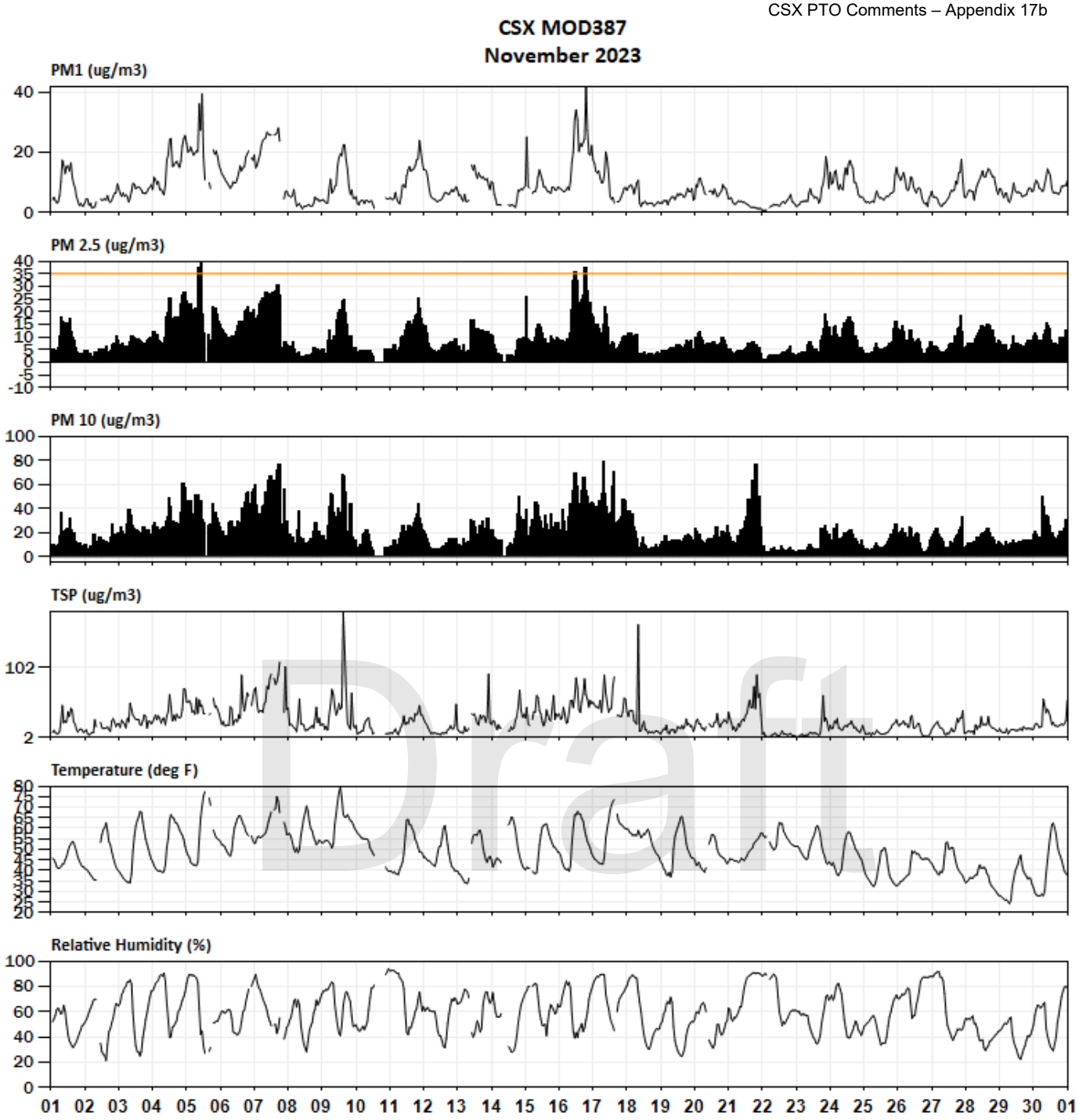
Draft


CSX MOD386
December 2023
PM1 (ug/m3)
PM 2.5 (ug/m3)
PM 10 (ug/m3)
TSP (ug/m3)
Wind Speed and Gust (mph)
Wind Direction (deg)
Temperature (deg F)
Relative Humidity (%)
01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 01

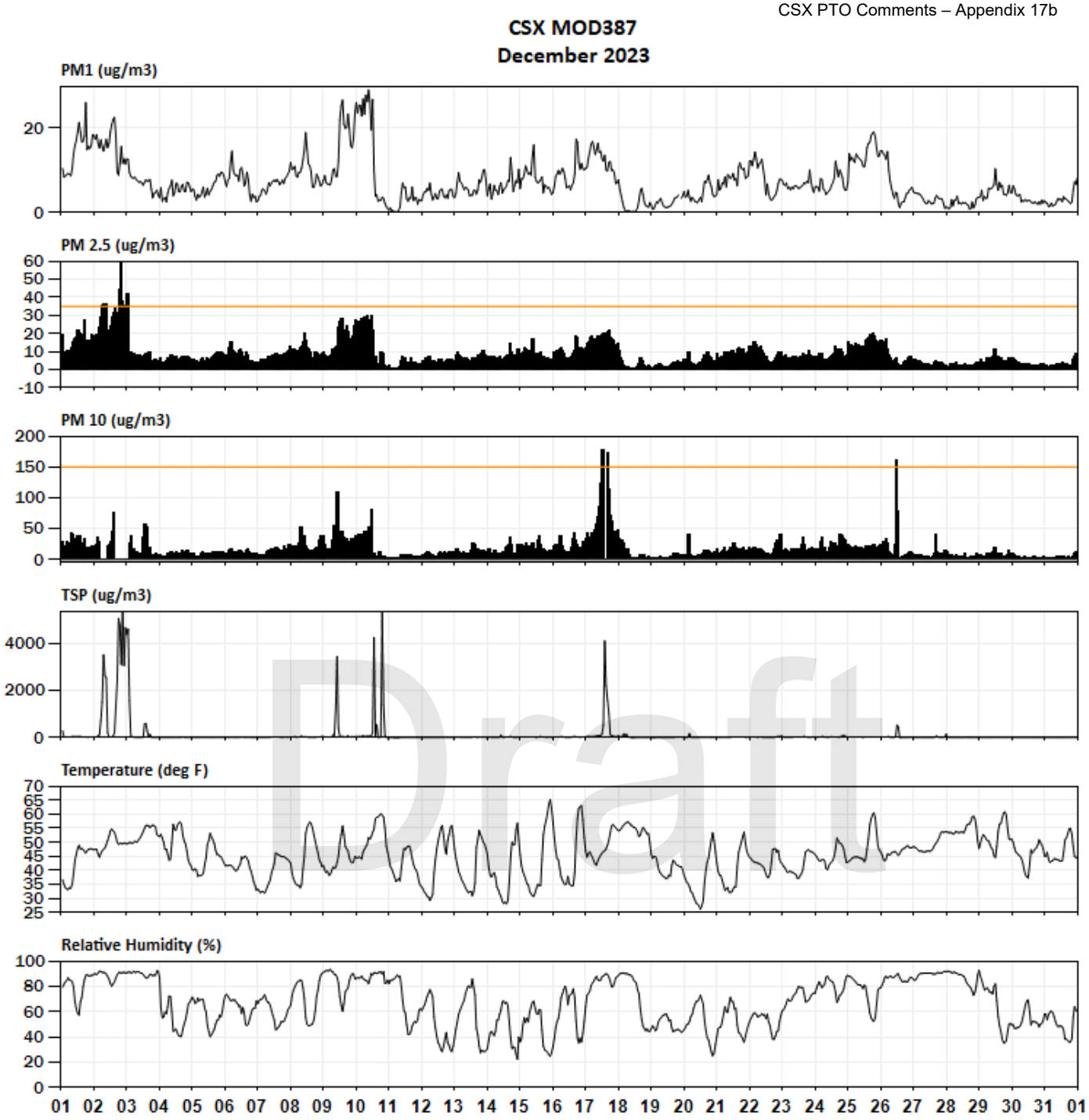
Draft


CSX MOD387
October 2023
PM1 (ug/m3)
20
0
PM 2.5 (ug/m3)
50
40
30
20
10
0
-10
PM 10 (ug/m3)
300
200
100
0
TSP (ug/m3)
1502
1002
502
2
Temperature (deg F)
95
90
85
80
75
70
65
60
55
50
45
40
Relative Humidity (%)
100
80
60
40
20
0
01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 01

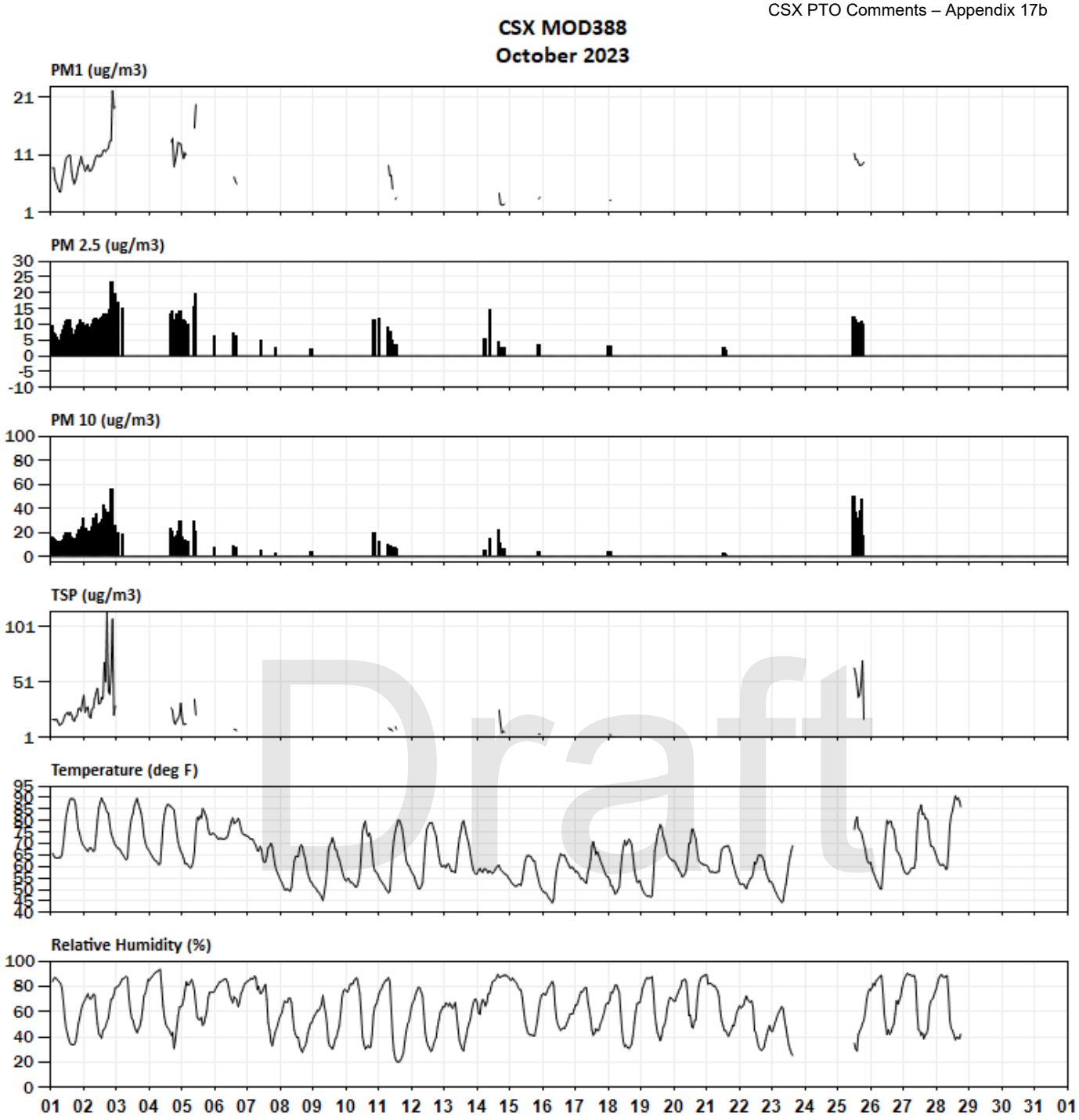
Draft


CSX MOD387
November 2023
PM1 (ug/m3)
PM 2.5 (ug/m3)
PM 10 (ug/m3)
TSP (ug/m3)
Temperature (deg F)
Relative Humidity (%)
01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 01

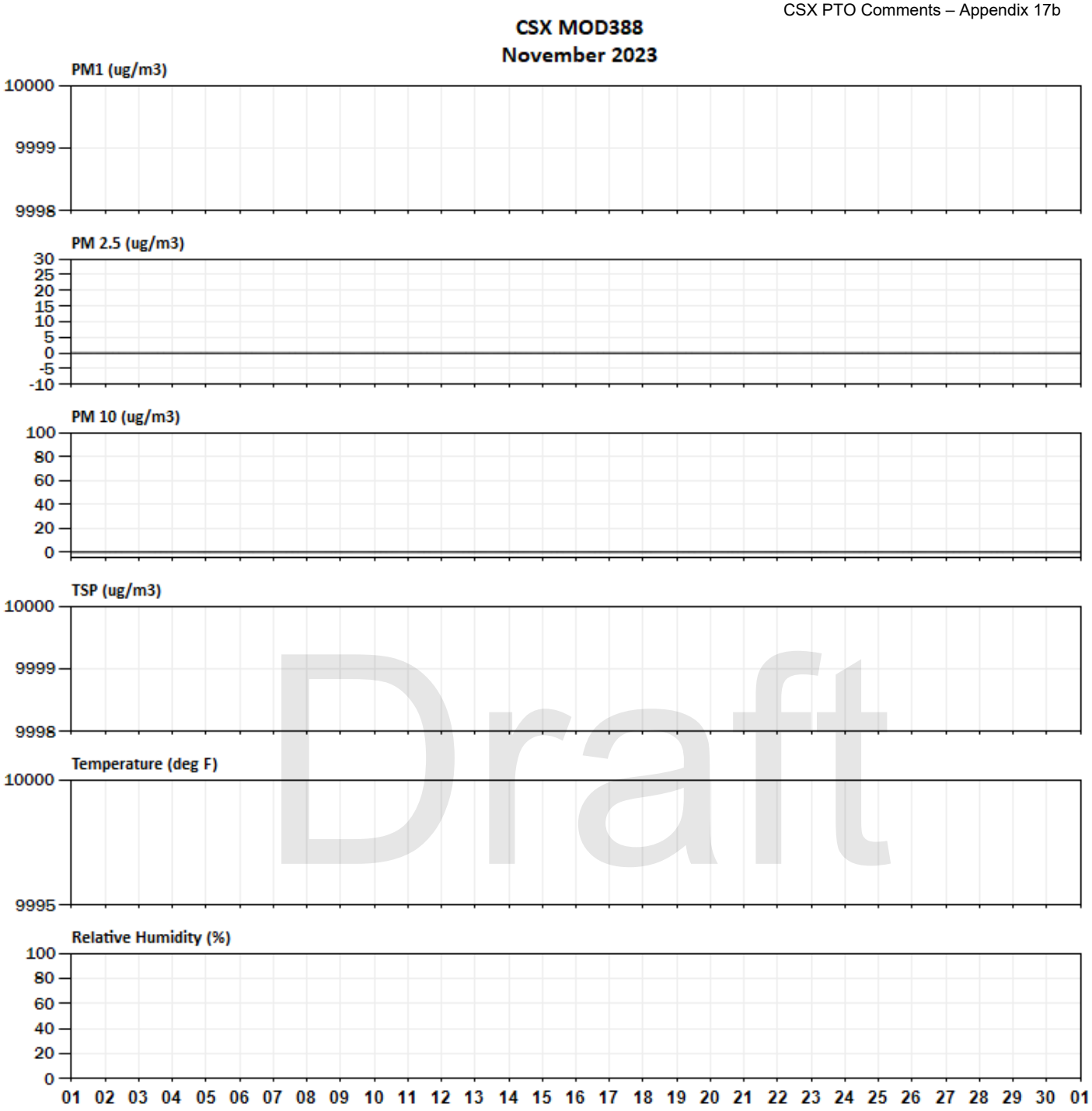
Draft


CSX MOD387
December 2023
PM1 (ug/m3)
20
0
PM 2.5 (ug/m3)
60
50
40
30
20
10
0
-10
PM 10 (ug/m3)
200
150
100
50
0
TSP (ug/m3)
4000
2000
0
Temperature (deg F)
70
65
60
55
50
45
40
35
30
25
Relative Humidity (%)
100
80
60
40
20
0
01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 01

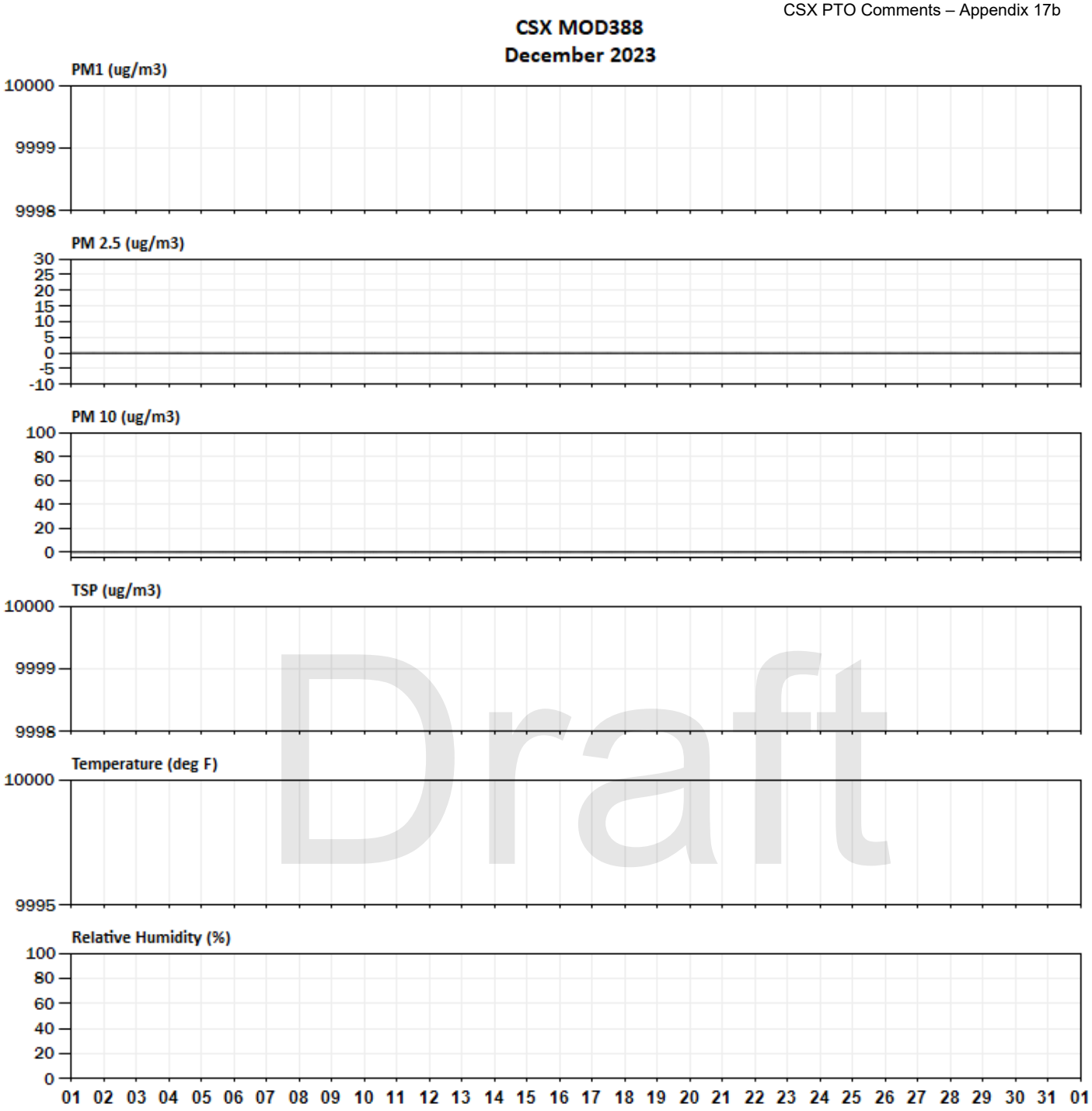
Draft


CSX MOD388
October 2023
PM1 (ug/m3)
21
11
1
PM 2.5 (ug/m3)
30
25
20
15
10
5
0
-5
-10
PM 10 (ug/m3)
100
80
60
40
20
0
TSP (ug/m3)
101
51
1
Temperature (deg F)
95
90
85
80
75
70
65
60
55
50
45
40
Relative Humidity (%)
100
80
60
40
20
0
01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 01

Draft


CSX MOD388
November 2023
PM1 (ug/m3)
10000
9999
9998
PM 2.5 (ug/m3)
30
25
20
15
10
5
0
-5
-10
PM 10 (ug/m3)
100
80
60
40
20
0
TSP (ug/m3)
10000
9999
9998
Temperature (deg F)
10000
9995
Relative Humidity (%)
100
80
60
40
20
0
01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 01

Draft


CSX MOD388
December 2023
PM1 (ug/m3)
10000
9999
9998
PM 2.5 (ug/m3)
30
25
20
15
10
5
0
-5
-10
PM 10 (ug/m3)
100
80
60
40
20
0
TSP (ug/m3)
10000
9999
9998
Temperature (deg F)
10000
9995
Relative Humidity (%)
100
80
60
40
20
0
01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 01

Draft

APPENDIX B. HOURLY WIND DATA FOR FOURTH QUARTER 2023

Draft

CSX AQ5

Unit Vector Wind Speed and Direction in mps for October, 2023

Hr Beg Hr End Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13
1	299/01.6	297/02.0	304/02.4	308/03.1	316/03.0	318/03.1	334/03.0	345/03.3	348/03.1	354/03.2	001/03.2	005/03.2	011/03.1
2	308/02.6	327/02.1	335/02.6	339/02.8	339/02.3	340/02.5	334/02.3	334/02.3	335/02.1	040/01.9	042/02.0	039/01.9	129/02.6
3	008/01.0	312/01.1	322/01.2	300/01.4	298/01.1	294/01.1	315/00.8	058/00.9	134/01.8	129/01.7	129/02.1	123/02.2	116/02.7
4	274/00.8	184/00.5	263/00.6	301/00.9	234/00.5	205/00.5	184/00.6	165/00.7	127/01.1	130/01.6	104/02.4	104/03.1	109/03.7
5	228/00.8	182/01.5	276/01.6	287/01.4	225/00.6	226/00.8	313/01.4	332/01.4	076/01.5	106/02.5	101/03.9	111/03.7	097/03.5
6	128/02.5	132/02.9	127/02.8	123/02.5	125/02.2	123/02.0	129/02.7	153/02.2	164/01.9	160/02.3	105/02.6	105/03.3	099/03.3
7	169/00.9	203/00.8	189/01.2	187/01.3	201/02.4	305/04.5	307/03.2	302/04.0	303/05.3	324/06.2	317/04.1	295/02.9	305/05.7
8	235/02.4	239/02.4	256/02.5	257/02.9	222/02.5	238/03.2	247/03.1	248/03.2	265/04.3	279/04.6	283/05.1	274/04.7	279/05.4
9	256/02.5	245/02.7	252/02.6	249/02.0	254/01.4	225/01.8	228/02.5	225/02.6	233/02.4	249/03.2	241/03.8	217/03.5	224/03.5
10	238/01.4	193/01.2	191/01.5	209/01.0	205/01.2	187/01.0	192/01.1	194/01.0	209/01.4	139/01.8	245/01.6	277/02.1	258/02.8
11	312/01.6	296/01.3	298/01.2	292/00.9	301/01.8	225/00.8	295/02.0	311/02.3	300/03.1	300/04.3	313/03.8	325/03.5	294/02.6
12	348/00.9	265/00.8	292/01.1	264/00.8	266/01.1	294/01.0	277/00.8	259/00.7	360/00.8	127/01.3	133/02.2	122/02.5	116/02.9
13	285/01.0	306/00.9	309/01.5	343/01.6	340/02.4	347/02.3	343/02.3	010/03.0	015/03.0	018/02.7	028/01.9	013/01.4	318/02.0
14	042/01.6	053/02.2	060/02.1	106/04.0	038/02.0	047/02.3	073/02.4	088/02.8	074/02.6	069/02.6	089/03.2	103/03.2	121/03.8
15	352/04.7	344/04.8	344/04.4	331/04.3	324/05.3	325/05.8	321/05.5	321/06.0	326/06.1	331/07.2	329/06.5	323/06.6	320/05.9
16	279/02.0	291/02.6	292/02.2	286/01.9	293/01.4	290/01.5	283/01.8	297/02.5	312/04.7	316/04.8	320/04.9	319/05.1	315/05.1
17	305/04.0	306/03.6	306/03.2	304/03.1	295/02.6	284/02.2	305/02.6	312/03.2	322/04.0	328/04.0	324/03.2	345/03.1	328/03.9
18	291/01.7	303/02.0	302/02.0	243/00.9	252/00.6	308/01.4	290/02.1	320/02.5	322/03.2	324/03.3	325/02.9	310/03.7	298/03.6
19	274/01.0	284/00.8	315/01.1	253/00.7	268/00.9	303/00.8	300/01.0	023/01.0	112/01.4	153/02.7	156/03.2	155/03.5	177/04.2
20	188/01.9	183/01.8	188/01.8	192/01.3	171/01.9	176/02.1	161/02.9	189/01.7	182/02.7	174/03.2	159/01.8	123/02.7	153/05.1
21	296/02.3	305/02.7	298/02.3	290/02.6	286/02.5	298/03.1	297/03.9	295/04.5	300/05.4	305/06.4	306/07.0	300/07.0	291/06.5
22	256/02.5	282/01.8	293/01.8	299/01.7	286/02.2	295/02.3	321/04.3	305/03.2	304/03.3	309/06.7	312/07.2	313/08.2	311/07.4
23	294/03.0	294/02.5	279/02.3	292/02.4	275/02.2	293/02.5	314/03.9	321/04.8	329/06.8	333/05.6	320/03.8	321/04.1	335/03.5
24	231/00.8	289/00.9	283/01.2	272/00.8	289/00.8	229/00.8	270/00.9	266/00.5	127/01.1	142/02.2	139/02.6	111/03.4	098/04.1
25	205/01.1	305/00.9	327/01.1	345/00.9	346/00.5	176/00.6	197/00.8	197/01.2	178/01.6	193/02.4	195/02.1	200/02.4	153/02.8
26	186/00.8	281/01.0	211/01.0	219/00.9	245/00.7	279/00.9	245/00.7	207/00.6	132/01.3	121/01.3	105/01.4	127/02.2	117/02.3
27	145/00.8	178/00.8	306/01.1	178/00.8	204/00.6	203/00.5	213/00.3	147/00.6	196/01.5	248/01.6	151/01.4	158/01.5	266/02.2
28	161/00.6	085/00.4	177/01.0	179/01.1	216/00.6	283/00.7	241/01.1	271/01.7	269/01.9	293/03.2	277/03.4	269/03.3	261/03.3
29	013/01.6	124/01.7	037/01.8	058/02.8	058/02.3	055/02.6	058/02.4	069/02.6	074/02.9	058/02.3	022/01.9	039/01.9	061/02.1
30	046/01.9	021/01.7	017/01.6	026/01.5	042/01.5	101/01.6	120/02.1	104/01.1	141/01.4	140/02.6	139/03.0	152/03.1	046/02.5
31	332/04.3	331/04.4	346/04.1	343/04.7	341/04.8	341/04.5	340/03.8	343/04.0	347/03.7	006/02.9	354/03.0	007/02.4	042/01.9
MEAN	**275/01.8**	**280/01.8**	**293/01.9**	**280/01.9**	**277/01.8**	**277/02.0**	**284/02.2**	**296/02.3**	**311/02.8**	**358/03.3**	**008/03.3**	**021/03.4**	**353/03.7**
MAX	**352/04.7**	**344/04.8**	**344/04.4**	**343/04.7**	**324/05.3**	**325/05.8**	**321/05.5**	**321/06.0**	**329/06.8**	**331/07.2**	**312/07.2**	**313/08.2**	**311/07.4**
MIN	**161/00.6**	**085/00.4**	**263/00.6**	**253/00.7**	**234/00.5**	**205/00.5**	**213/00.3**	**266/00.5**	**360/00.8**	**127/01.3**	**105/01.4**	**013/01.4**	**042/01.9**

MEANS REQUIRE 75% VALID DATA

MISSING DATA DENOTED BY ---

CSX AQ5

Unit Vector Wind Speed and Direction in mps for October, 2023

Hr Beg / Hr End / Day	13 / 14	14 / 15	15 / 16	16 / 17	17 / 18	18 / 19	19 / 20	20 / 21	21 / 22	22 / 23	23 / 24	MEAN	MAX SPD	MIN SPD
1	356/03.5	356/03.1	356/02.9	355/02.8	342/02.4	333/02.5	314/02.3	299/01.8	291/01.9	298/02.4	301/02.5	**330/02.7**	**356/03.5**	**299/01.6**
2	113/03.2	106/03.5	120/03.2	123/02.7	120/01.8	160/01.1	268/00.7	286/01.0	261/00.8	294/01.1	306/01.5	**350/02.1**	**106/03.5**	**268/00.7**
3	112/02.4	108/03.9	110/03.6	122/03.2	133/02.0	177/01.2	236/00.8	337/00.5	180/01.1	198/00.8	170/00.7	**138/01.6**	**108/03.9**	**337/00.5**
4	105/03.8	099/03.9	111/03.4	163/03.1	172/01.9	176/01.9	179/01.5	194/01.8	195/01.4	197/01.6	215/01.0	**170/01.8**	**099/03.9**	**184/00.5**
5	100/02.2	109/02.8	107/03.8	118/04.5	128/03.5	130/01.4	136/01.5	128/02.4	140/02.9	130/02.1	128/03.6	**132/02.3**	**118/04.5**	**225/00.6**
6	102/03.1	103/03.0	107/03.3	108/02.7	111/02.9	098/02.4	108/02.4	122/02.9	130/02.2	118/01.9	139/01.5	**121/02.6**	**105/03.3**	**139/01.5**
7	317/06.1	313/06.1	307/06.6	305/07.0	304/06.4	289/04.2	289/04.0	289/04.0	279/02.6	272/03.0	260/03.0	**284/04.0**	**305/07.0**	**203/00.8**
8	269/04.8	288/05.5	270/04.0	271/03.7	269/03.2	268/03.1	265/02.4	249/02.5	253/02.7	241/02.4	259/03.0	**259/03.5**	**288/05.5**	**235/02.4**
9	231/03.0	205/02.9	195/02.8	204/01.7	162/01.8	230/01.5	283/01.2	228/00.9	227/01.4	268/02.1	280/02.0	**234/02.3**	**241/03.8**	**228/00.9**
10	259/03.5	271/03.3	282/02.9	285/02.3	208/00.9	186/00.6	240/00.9	284/00.9	308/01.3	273/00.9	305/01.7	**235/01.6**	**259/03.5**	**186/00.6**
11	282/02.6	280/02.8	248/02.2	255/02.1	279/01.2	270/01.3	216/01.7	207/01.3	181/00.8	197/01.1	309/00.4	**278/01.9**	**300/04.3**	**309/00.4**
12	111/03.2	119/03.5	109/03.5	128/03.3	134/02.1	199/00.7	253/00.8	297/01.2	301/01.4	310/01.2	312/01.3	**253/01.6**	**119/03.5**	**259/00.7**
13	108/03.1	111/03.2	116/03.8	125/03.7	153/02.2	197/01.0	218/00.6	164/00.3	301/00.8	339/01.2	001/01.0	**355/02.0**	**116/03.8**	**164/00.3**
14	111/03.3	025/02.2	015/01.9	001/02.2	030/02.4	026/02.7	015/02.7	357/03.9	006/03.8	360/04.2	355/03.9	**048/02.8**	**360/04.2**	**042/01.6**
15	321/06.2	316/05.5	314/04.6	329/04.3	304/02.8	300/02.7	281/01.6	289/01.3	253/01.7	277/01.9	279/01.9	**315/04.5**	**331/07.2**	**289/01.3**
16	305/04.3	313/05.1	306/04.2	306/03.4	301/02.7	295/02.4	299/03.1	299/03.5	304/03.2	305/03.4	310/04.2	**302/03.3**	**319/05.1**	**293/01.4**
17	332/04.0	334/03.0	308/04.0	300/03.2	304/03.1	304/03.1	304/02.5	300/01.8	304/02.0	313/02.4	291/01.7	**311/03.1**	**305/04.0**	**291/01.7**
18	268/03.6	274/03.2	280/03.4	285/02.3	282/01.4	282/01.3	295/01.4	292/01.5	221/01.0	272/00.8	280/01.0	**289/02.1**	**310/03.7**	**252/00.6**
19	163/04.4	158/04.3	154/05.5	156/05.5	150/05.8	154/04.9	161/04.5	169/03.5	168/03.2	167/03.4	176/02.8	**181/02.9**	**150/05.8**	**253/00.7**
20	143/05.3	192/04.3	215/03.0	145/02.2	176/01.2	185/01.4	135/01.1	189/01.2	202/01.4	203/01.1	299/03.0	**178/02.3**	**143/05.3**	**135/01.1**
21	284/07.1	294/07.2	286/07.1	283/06.0	287/05.2	295/04.8	277/02.3	246/01.7	245/01.9	241/01.6	255/02.5	**286/04.3**	**294/07.2**	**241/01.6**
22	308/07.3	309/07.6	312/07.6	308/06.9	304/04.3	295/03.6	293/02.5	301/03.1	308/05.3	307/05.6	300/03.5	**301/04.6**	**313/08.2**	**299/01.7**
23	332/02.8	318/02.9	334/02.6	343/02.0	306/01.4	229/00.9	244/00.8	275/00.7	288/00.9	261/00.7	273/00.9	**301/02.7**	**329/06.8**	**275/00.7**
24	102/04.3	096/03.8	127/04.2	152/03.8	167/02.6	173/01.9	188/01.6	242/01.1	244/00.8	203/01.0	206/01.0	**194/01.9**	**102/04.3**	**266/00.5**
25	098/04.5	097/03.3	103/02.3	147/02.4	176/02.0	173/02.0	200/01.3	215/00.3	293/00.9	292/00.8	217/00.5	**195/01.6**	**098/04.5**	**215/00.3**
26	105/03.4	108/02.9	101/02.5	118/01.6	187/01.5	189/01.6	191/01.9	210/01.5	191/01.0	210/00.6	191/00.9	**177/01.4**	**105/03.4**	**207/00.6**
27	300/03.7	287/02.8	274/01.9	221/01.0	167/01.0	193/01.6	186/01.7	195/01.7	196/01.3	002/00.6	071/00.4	**204/01.3**	**300/03.7**	**213/00.3**
28	254/03.4	257/02.8	292/03.3	260/01.7	247/01.1	189/01.5	268/01.4	199/01.4	321/01.6	216/01.1	350/01.1	**250/01.8**	**277/03.4**	**085/00.4**
29	059/01.7	051/02.0	067/02.5	069/02.5	034/02.1	032/02.2	046/02.0	049/01.9	031/02.3	023/02.2	031/02.0	**050/02.2**	**074/02.9**	**013/01.6**
30	339/05.6	327/07.2	331/06.7	327/06.8	327/04.0	320/04.2	326/05.3	327/05.5	328/05.1	332/05.2	332/04.9	**015/03.6**	**327/07.2**	**104/01.1**
31	111/01.8	127/01.5	138/01.2	144/01.3	182/01.0	269/00.9	276/00.9	297/02.2	353/02.8	002/02.9	341/02.8	**348/02.8**	**341/04.8**	**269/00.9**
MEAN	**042/03.9**	**357/03.8**	**318/03.7**	**213/03.3**	**214/02.5**	**228/02.1**	**251/01.9**	**257/01.9**	**262/02.0**	**270/02.0**	**286/02.0**	**275/02.6**		
MAX	**308/07.3**	**309/07.6**	**312/07.6**	**305/07.0**	**304/06.4**	**154/04.9**	**326/05.3**	**327/05.5**	**308/05.3**	**307/05.6**	**332/04.9**		**313/08.2**	
MIN	**059/01.7**	**127/01.5**	**138/01.2**	**221/01.0**	**208/00.9**	**186/00.6**	**218/00.6**	**164/00.3**	**261/00.8**	**210/00.6**	**309/00.4**			**164/00.3**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 744 DATA RECOVERY RATE = 100.0%

MONTHLY MEAN = 275/02.6 MAXIMUM WIND SPEED = 08.2 AT 313 DEGREES DATE OF OCCURRENCE = 10/22 AT 1200

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

CSX AQ5

Unit Vector Wind Speed and Direction in mps for November, 2023

Hr Beg Hr End Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13
1	300/02.9	317/02.3	295/02.1	295/02.3	299/02.8	305/04.2	311/07.3	311/06.6	308/05.7	310/07.4	312/07.0	321/07.3	314/07.7
2	304/03.5	299/02.5	299/02.6	295/01.9	302/01.7	292/02.1	293/02.4	293/01.9	316/02.0	317/02.0	311/01.9	224/02.0	192/02.4
3	261/00.8	314/01.1	311/01.3	294/01.2	268/01.0	286/01.5	306/00.8	177/01.0	201/01.6	187/02.2	182/02.9	179/03.4	158/03.5
4	296/00.7	328/00.9	303/00.5	184/00.9	195/01.1	242/00.9	200/01.2	199/01.0	253/00.8	094/01.0	129/01.7	110/02.3	105/04.4
5	232/00.4	282/00.6	213/00.5	252/00.6	245/00.2	217/00.5	284/00.8	203/01.3	174/01.2	322/01.6	139/01.8	312/02.1	318/04.0
6	020/02.1	011/02.2	012/02.3	018/02.2	030/02.0	009/01.7	008/01.9	029/01.8	060/02.1	095/02.1	112/02.1	113/02.1	100/02.5
7	219/01.1	206/02.5	233/01.6	227/01.4	207/01.9	221/01.8	216/01.6	222/02.1	210/02.2	218/02.1	218/02.1	210/02.2	211/02.1
8	328/02.7	286/02.0	296/01.9	292/01.4	338/02.2	320/02.5	295/01.9	306/02.6	334/04.3	338/03.6	354/02.5	318/01.6	025/01.7
9	128/03.1	128/03.6	124/04.5	129/04.7	135/03.5	124/01.5	335/00.7	324/00.5	181/01.7	242/02.3	183/01.5	187/01.9	143/02.2
10	318/03.1	316/02.3	314/01.2	221/01.1	249/01.4	270/01.6	308/01.6	311/01.8	317/02.4	334/02.5	242/01.4	311/03.7	309/02.7
11	212/01.0	263/00.9	199/01.3	214/01.5	242/00.8	291/01.5	308/02.9	245/02.2	201/01.3	258/01.3	318/01.7	275/01.3	126/02.5
12	025/02.1	030/02.2	029/02.5	031/03.2	027/02.6	032/02.7	032/02.8	028/02.9	028/03.0	031/03.3	016/02.3	005/02.3	347/02.0
13	356/01.9	003/02.1	336/01.3	321/01.6	332/01.3	293/01.7	289/02.1	293/02.0	322/01.2	108/01.0	112/02.0	085/02.3	097/03.7
14	232/00.9	272/01.4	269/01.7	274/02.3	284/02.4	286/02.3	296/02.2	307/02.5	306/03.1	331/04.5	333/04.7	329/04.8	328/04.3
15	046/01.2	033/01.4	038/01.4	020/01.0	338/01.0	321/00.9	305/01.2	307/00.9	337/00.8	065/01.0	123/01.0	094/02.0	100/03.0
16	213/01.0	206/00.5	192/00.5	169/00.5	201/01.1	210/01.4	217/00.7	258/00.9	055/00.9	302/01.1	121/01.5	126/01.9	103/02.6
17	214/00.5	287/00.8	238/00.5	211/00.4	229/00.4	277/00.6	262/00.5	184/00.8	164/01.2	134/01.3	084/01.7	165/03.5	177/03.7
18	277/00.6	186/00.7	084/00.5	312/01.2	279/01.6	301/01.7	317/02.5	338/06.4	342/06.2	345/05.9	332/06.7	337/05.7	322/07.6
19	294/01.8	284/01.2	234/01.1	226/00.8	278/01.6	219/01.4	198/01.2	215/01.1	232/01.3	300/03.4	304/03.8	291/03.8	299/03.9
20	308/01.4	348/03.2	033/02.9	049/01.9	035/02.2	046/02.3	042/02.1	037/02.3	035/02.6	049/02.5	042/02.1	076/01.5	005/02.0
21	096/05.3	093/04.5	085/04.3	081/03.9	066/03.8	070/03.7	051/02.8	078/04.2	---	---	---	---	---
22	008/02.3	075/03.2	302/02.9	309/04.4	312/03.2	308/02.9	297/02.1	238/01.4	301/02.2	295/01.6	297/02.0	310/04.4	312/05.3
23	310/05.9	314/06.5	315/06.8	310/06.7	311/05.5	310/05.3	315/05.0	314/04.1	315/04.7	321/05.4	325/05.2	309/04.8	302/04.1
24	332/01.8	304/01.8	257/01.1	204/01.0	190/00.5	265/01.3	273/01.4	300/02.4	305/02.2	315/03.5	319/04.0	328/04.1	319/04.7
25	010/04.2	006/03.8	006/04.1	007/03.3	006/02.9	006/02.5	347/02.6	343/02.6	351/03.2	013/02.8	047/02.4	084/01.8	135/02.2
26	302/01.5	312/01.5	302/01.2	307/01.4	315/01.5	358/01.4	036/01.5	033/01.3	015/01.6	016/01.8	012/01.4	011/01.3	064/01.3
27	249/01.4	228/01.1	279/01.0	182/00.8	299/01.5	295/02.0	296/01.9	301/01.7	281/02.5	284/03.8	301/06.0	305/05.9	304/06.0
28	240/01.9	227/02.0	206/01.5	198/01.2	201/01.6	258/02.3	242/03.2	287/04.3	302/05.3	296/06.4	299/07.4	307/08.2	301/08.3
29	274/03.7	263/03.5	272/02.5	290/02.9	288/02.9	277/02.0	267/01.5	235/01.7	264/02.6	269/03.3	253/03.0	247/03.1	254/03.1
30	298/00.9	255/00.7	041/00.8	212/00.6	211/00.8	159/00.9	014/00.9	155/01.3	180/01.2	145/01.3	142/02.2	181/02.2	179/02.7
MEAN	**294/02.1**	**300/02.1**	**297/01.9**	**267/01.9**	**282/01.9**	**291/02.0**	**303/02.0**	**288/02.3**	**301/02.5**	**325/02.8**	**336/03.0**	**308/03.2**	**335/03.7**
MAX	**310/05.9**	**314/06.5**	**315/06.8**	**310/06.7**	**311/05.5**	**310/05.3**	**311/07.3**	**311/06.6**	**342/06.2**	**310/07.4**	**299/07.4**	**307/08.2**	**301/08.3**
MIN	**232/00.4**	**206/00.5**	**303/00.5**	**211/00.4**	**245/00.2**	**217/00.5**	**262/00.5**	**324/00.5**	**253/00.8**	**094/01.0**	**123/01.0**	**275/01.3**	**064/01.3**

MEANS REQUIRE 75% VALID DATA

MISSING DATA DENOTED BY ---

CSX AQ5

Unit Vector Wind Speed and Direction in mps for November, 2023

Hr Beg / Hr End / Day	13 / 14	14 / 15	15 / 16	16 / 17	17 / 18	18 / 19	19 / 20	20 / 21	21 / 22	22 / 23	23 / 24	MEAN	MAX SPD	MIN SPD
1	322/08.1	322/08.2	322/08.7	320/06.9	302/04.1	291/02.6	286/02.2	291/02.4	296/02.7	304/03.1	305/03.5	**307/04.9**	**322/08.7**	**295/02.1**
2	225/02.2	130/03.6	121/05.1	127/04.3	146/03.8	188/02.0	197/01.7	197/01.8	198/01.4	192/01.3	207/01.4	**243/02.4**	**121/05.1**	**192/01.3**
3	159/03.2	150/03.6	141/05.3	144/04.3	152/03.6	168/02.3	179/01.6	200/01.1	207/01.2	208/01.0	312/00.9	**205/02.1**	**141/05.3**	**261/00.8**
4	103/03.4	100/03.0	111/02.5	081/01.0	066/01.2	081/00.9	131/00.6	149/00.6	230/00.5	241/00.5	262/00.7	**157/01.3**	**105/04.4**	**303/00.5**
5	329/03.5	318/04.0	317/04.3	307/03.2	307/01.7	339/01.3	333/01.6	348/01.4	359/02.0	018/01.7	020/02.1	**299/01.8**	**317/04.3**	**245/00.2**
6	096/03.0	116/03.7	118/03.6	149/03.5	140/02.1	154/02.0	147/02.0	137/02.2	176/01.1	301/00.4	328/00.5	**078/02.1**	**116/03.7**	**301/00.4**
7	210/01.6	208/01.3	200/03.0	178/02.3	237/02.4	304/02.4	282/01.6	308/03.2	317/01.8	294/02.2	314/02.6	**232/02.0**	**308/03.2**	**219/01.1**
8	107/03.6	121/04.7	121/04.7	121/03.3	139/02.8	137/01.8	097/01.6	098/03.7	123/05.9	132/04.1	135/03.6	**028/02.9**	**123/05.9**	**292/01.4**
9	100/02.8	120/01.5	224/00.7	259/01.4	296/01.4	290/02.0	287/02.4	306/03.8	309/03.7	311/03.8	320/04.3	**210/02.5**	**129/04.7**	**324/00.5**
10	264/01.9	207/01.9	213/02.0	265/02.1	274/02.2	273/01.8	278/01.4	247/01.2	211/01.0	193/01.1	235/01.1	**271/01.9**	**311/03.7**	**211/01.0**
11	122/03.2	115/03.1	109/03.2	121/03.0	149/01.7	164/01.3	300/01.1	322/01.2	021/01.7	002/01.4	350/01.3	**239/01.8**	**122/03.2**	**242/00.8**
12	330/01.7	012/01.6	093/01.7	108/02.6	151/01.8	246/00.7	029/01.1	350/01.0	335/01.0	009/02.5	013/02.2	**021/02.2**	**031/03.3**	**246/00.7**
13	106/04.4	096/03.1	196/02.2	220/01.9	171/02.1	193/01.0	219/01.0	241/01.4	266/02.4	269/02.5	297/01.3	**280/02.0**	**106/04.4**	**108/01.0**
14	326/03.8	325/04.3	333/04.1	322/03.1	297/01.8	279/01.4	240/00.7	223/00.7	222/00.6	316/01.1	353/01.0	**297/02.5**	**329/04.8**	**222/00.6**
15	101/02.6	171/02.8	147/03.2	155/03.1	163/02.4	172/01.5	178/01.6	175/01.7	290/01.2	170/01.2	183/01.3	**111/01.6**	**147/03.2**	**337/00.8**
16	103/04.2	104/03.1	103/02.2	161/02.0	188/01.8	187/01.8	207/01.9	199/01.7	272/01.4	265/00.9	292/00.7	**187/01.5**	**103/04.2**	**206/00.5**
17	176/03.7	182/04.3	153/03.4	153/03.3	160/02.4	165/01.9	166/01.4	351/00.8	313/01.1	227/00.6	227/01.1	**196/01.7**	**182/04.3**	**211/00.4**
18	328/06.9	327/06.1	328/06.0	321/05.9	315/03.8	312/03.1	312/02.7	313/03.0	311/03.3	310/02.7	304/02.3	**318/03.9**	**322/07.6**	**084/00.5**
19	277/03.4	281/03.5	285/03.6	268/02.4	215/01.6	206/01.8	223/01.4	293/02.0	275/01.5	294/02.2	304/02.3	**263/02.2**	**299/03.9**	**226/00.8**
20	083/01.9	119/03.0	136/03.5	115/02.9	074/02.3	054/02.1	040/02.7	059/02.2	054/02.4	062/02.2	094/04.5	**054/02.4**	**094/04.5**	**308/01.4**
21	---	---	---	100/06.7	120/07.9	123/06.5	118/05.3	127/08.1	137/09.1	205/06.8	324/03.2	**---**	**137/09.1**	**051/02.8**
22	302/05.9	316/06.3	311/06.1	306/04.5	306/05.5	304/05.2	302/04.6	298/03.9	301/04.2	302/04.0	307/04.0	**307/03.8**	**316/06.3**	**238/01.4**
23	301/04.4	298/03.7	295/03.0	258/01.9	229/00.9	214/01.2	257/00.9	222/00.5	303/01.5	306/02.4	312/01.7	**297/03.8**	**315/06.8**	**222/00.5**
24	313/04.6	317/04.4	308/03.9	294/02.3	300/02.3	321/03.9	336/04.1	333/04.1	342/05.1	003/05.3	006/05.1	**309/03.1**	**003/05.3**	**190/00.5**
25	131/02.4	125/02.3	120/01.7	106/01.3	232/01.1	209/01.3	231/00.7	242/00.6	284/00.8	284/00.7	303/01.8	**003/02.2**	**010/04.2**	**242/00.6**
26	017/01.1	036/01.4	062/01.7	031/01.5	017/01.6	307/02.7	315/03.0	294/02.1	215/01.5	235/02.4	231/02.1	**348/01.7**	**315/03.0**	**017/01.1**
27	306/06.7	303/05.7	293/05.4	306/06.3	312/05.0	310/05.6	303/05.5	294/04.3	295/03.6	256/01.7	261/02.1	**288/03.6**	**306/06.7**	**182/00.8**
28	310/08.9	301/08.6	297/08.5	302/07.1	290/05.8	290/05.4	297/04.9	295/04.1	279/03.3	272/03.0	281/03.4	**277/04.9**	**310/08.9**	**198/01.2**
29	215/03.4	215/03.1	206/03.0	194/02.5	182/01.8	173/02.0	182/01.6	192/01.4	178/01.6	212/01.6	265/01.7	**237/02.5**	**274/03.7**	**192/01.4**
30	170/03.3	154/03.8	156/04.2	162/03.1	168/02.9	173/02.3	175/01.4	207/00.8	273/00.6	139/00.6	190/01.0	**177/01.7**	**156/04.2**	**212/00.6**
MEAN	**325/03.8**	**140/03.8**	**167/03.8**	**185/03.3**	**210/02.7**	**227/02.4**	**248/02.1**	**263/02.2**	**277/02.3**	**273/02.2**	**296/02.2**	**282/02.6**		
MAX	**310/08.9**	**301/08.6**	**322/08.7**	**302/07.1**	**120/07.9**	**123/06.5**	**303/05.5**	**127/08.1**	**137/09.1**	**205/06.8**	**006/05.1**		**137/09.1**	
MIN	**017/01.1**	**208/01.3**	**224/00.7**	**081/01.0**	**229/00.9**	**246/00.7**	**131/00.6**	**222/00.5**	**230/00.5**	**301/00.4**	**328/00.5**			**245/00.2**

POSSIBLE NUMBER OF OBSERVATIONS = 720 ACTUAL NUMBER OF OBSERVATIONS = 712 DATA RECOVERY RATE = 98.9%

MONTHLY MEAN = 282/02.6 MAXIMUM WIND SPEED = 09.1 AT 137 DEGREES DATE OF OCCURRENCE = 11/21 AT 2200

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

CSX AQ5

Unit Vector Wind Speed and Direction in mps for December, 2023

Hr Beg Hr End Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13
1	287/00.9	273/00.6	219/00.4	222/00.5	157/00.5	326/00.5	301/00.4	281/00.5	214/00.7	210/00.8	153/01.3	076/00.9	067/00.6
2	156/01.1	079/00.5	078/00.6	291/00.6	235/00.6	342/00.8	333/00.8	357/00.5	173/00.7	189/01.3	261/01.0	224/00.8	133/01.0
3	073/01.1	037/01.6	061/01.2	100/01.8	044/01.9	063/02.0	101/02.4	059/01.8	045/01.7	030/01.3	007/01.3	346/01.3	005/01.1
4	294/05.3	269/02.5	240/02.3	235/02.1	272/02.5	240/01.1	233/01.1	212/01.2	222/01.2	291/02.8	303/03.5	319/04.9	312/04.3
5	256/01.9	271/02.5	276/02.2	259/01.6	259/01.7	258/02.0	240/02.1	251/01.2	283/02.0	303/01.8	317/02.3	320/02.6	316/02.2
6	330/02.5	335/02.8	336/02.7	338/03.4	347/02.9	346/03.2	350/03.4	339/04.1	334/03.7	334/03.5	323/03.6	329/04.5	327/05.1
7	246/01.5	238/01.3	220/01.8	211/01.0	216/01.3	230/02.1	220/01.6	196/01.6	204/01.9	204/01.9	208/02.1	210/02.5	214/02.9
8	258/00.3	261/00.6	297/00.8	274/00.9	287/00.5	315/01.0	310/00.9	350/00.9	019/00.9	061/01.1	114/01.4	081/02.1	104/03.2
9	068/00.7	007/00.9	005/00.9	351/00.8	017/00.8	357/00.7	060/01.2	076/01.4	064/01.0	011/00.8	065/01.0	131/01.2	130/02.0
10	008/00.6	297/01.0	283/00.4	302/01.4	190/00.6	314/01.2	309/00.9	321/01.1	315/00.4	243/00.7	349/01.1	120/00.5	137/01.5
11	318/05.4	315/04.7	303/03.5	302/04.4	303/03.8	298/03.3	275/02.4	281/02.4	290/03.7	295/05.3	294/05.7	298/06.2	307/07.3
12	227/01.6	222/02.0	214/01.7	221/01.7	216/01.2	259/01.2	227/01.7	255/01.9	266/02.2	278/02.7	273/02.3	239/02.7	211/02.6
13	247/00.7	031/00.6	239/00.8	311/01.9	317/01.1	153/00.8	233/01.4	275/01.5	259/02.8	273/03.1	289/04.1	307/05.5	277/04.5
14	278/01.5	286/01.5	301/01.6	281/01.7	290/01.6	296/01.8	290/01.6	278/01.1	306/01.4	323/01.0	305/01.5	301/02.5	315/02.4
15	181/00.7	181/00.8	172/00.9	196/01.5	206/01.6	203/01.6	166/01.3	190/01.2	208/01.3	251/03.2	267/03.9	270/04.1	276/03.6
16	130/00.7	054/00.7	308/01.6	304/01.7	315/01.2	285/01.6	315/01.0	141/00.5	239/00.3	135/00.7	133/00.7	143/01.1	135/01.8
17	032/01.5	048/01.8	048/01.8	026/01.4	040/01.6	050/02.3	041/02.0	034/01.9	051/02.1	046/02.0	034/01.7	052/01.4	037/01.4
18	004/02.9	317/03.2	335/03.6	298/04.3	310/06.2	309/06.5	310/06.8	306/07.1	305/07.5	303/08.3	306/08.3	303/08.9	301/07.9
19	266/03.6	248/03.0	247/02.8	258/03.2	268/03.5	284/03.4	284/04.5	273/04.2	287/04.3	304/06.7	319/08.0	309/07.3	313/07.1
20	289/01.8	281/01.8	268/01.6	274/01.5	285/01.3	285/01.0	273/01.7	283/02.0	281/02.2	282/02.7	298/03.0	303/03.3	319/03.2
21	289/01.6	297/01.4	299/01.0	319/00.6	324/01.3	320/01.2	328/01.2	302/01.5	315/02.3	348/03.1	358/03.5	340/02.7	317/02.1
22	007/01.4	036/01.6	063/01.8	066/02.5	072/02.7	096/03.3	079/02.7	081/02.8	076/02.5	081/02.6	104/02.5	097/02.4	101/02.8
23	075/02.1	083/01.8	054/01.5	041/01.4	042/01.4	057/01.5	040/01.4	059/01.5	083/01.5	081/01.6	097/02.4	097/03.0	097/03.6
24	115/02.1	108/01.4	079/01.1	100/00.8	053/00.8	105/01.3	097/01.3	094/01.3	039/00.8	114/01.1	116/01.3	109/01.9	106/01.8
25	003/01.7	048/01.5	063/01.1	081/01.0	040/01.4	066/01.6	337/00.9	034/00.8	016/00.9	050/01.6	106/01.7	104/02.4	100/02.4
26	093/02.1	096/02.6	067/01.9	077/01.7	085/01.7	063/01.3	065/02.4	086/02.7	089/02.5	092/01.9	099/01.9	102/02.3	109/02.1
27	066/01.6	084/02.3	085/02.5	055/01.8	060/02.0	025/01.8	057/02.1	056/02.4	067/01.9	051/02.4	054/02.4	086/02.6	062/02.0
28	351/01.2	040/01.1	008/01.6	342/01.7	308/02.1	297/01.7	287/02.0	292/02.4	304/02.2	298/02.5	296/02.5	303/02.5	298/02.2
29	301/02.2	273/01.7	297/01.2	275/01.2	300/01.6	288/01.2	225/00.8	211/01.1	273/01.4	278/01.9	319/03.3	328/02.8	317/01.8
30	308/03.6	294/03.2	272/02.6	260/03.0	247/02.6	237/02.1	233/02.5	231/02.3	231/02.8	248/03.5	262/03.9	272/03.8	267/04.2
31	227/02.4	254/02.3	284/03.2	288/03.3	288/03.0	304/03.3	312/02.7	307/02.8	291/01.6	256/01.2	290/02.1	306/03.0	306/03.2
MEAN	**312/01.9**	**325/01.8**	**312/01.7**	**298/01.8**	**307/01.8**	**314/01.9**	**303/01.9**	**306/01.9**	**301/02.0**	**308/02.4**	**325/02.8**	**334/03.0**	**342/03.0**
MAX	**318/05.4**	**315/04.7**	**335/03.6**	**302/04.4**	**310/06.2**	**309/06.5**	**310/06.8**	**306/07.1**	**305/07.5**	**303/08.3**	**306/08.3**	**303/08.9**	**301/07.9**
MIN	**258/00.3**	**079/00.5**	**219/00.4**	**222/00.5**	**157/00.5**	**326/00.5**	**301/00.4**	**281/00.5**	**239/00.3**	**243/00.7**	**133/00.7**	**120/00.5**	**067/00.6**

MEANS REQUIRE 75% VALID DATA

MISSING DATA DENOTED BY ---

Draft

CSX AQ5

Unit Vector Wind Speed and Direction in mps for December, 2023

Hr Beg / Hr End / Day	13 / 14	14 / 15	15 / 16	16 / 17	17 / 18	18 / 19	19 / 20	20 / 21	21 / 22	22 / 23	23 / 24	MEAN	MAX SPD	MIN SPD
1	100/01.7	065/00.8	282/00.5	301/01.1	009/00.9	159/01.3	182/00.8	159/01.7	157/01.5	217/00.5	075/00.6	**205/00.8**	**100/01.7**	**219/00.4**
2	098/01.3	107/01.8	114/02.4	108/02.1	099/01.5	070/01.2	107/01.2	075/01.0	202/00.8	095/01.1	095/00.6	**114/01.1**	**114/02.4**	**079/00.5**
3	027/00.7	018/00.4	213/00.8	197/01.2	251/01.4	266/01.9	246/01.7	284/01.6	209/01.3	216/01.9	266/02.2	**022/01.5**	**101/02.4**	**018/00.4**
4	303/03.3	309/03.0	308/04.2	309/03.9	302/03.2	288/01.8	294/01.4	290/01.5	278/01.4	283/01.5	287/01.6	**280/02.6**	**294/05.3**	**240/01.1**
5	317/02.9	335/02.5	358/02.2	006/02.2	360/02.1	041/01.8	063/01.7	039/01.7	007/02.6	356/03.4	345/02.7	**316/02.2**	**356/03.4**	**251/01.2**
6	335/05.2	327/05.8	308/05.4	311/05.6	299/03.1	289/01.8	270/01.5	270/01.5	243/01.4	280/01.6	252/01.8	**316/03.3**	**327/05.8**	**243/01.4**
7	200/03.0	204/02.7	198/02.8	190/01.8	202/01.5	215/01.2	188/00.7	265/00.6	111/00.5	119/00.9	171/00.7	**206/01.7**	**200/03.0**	**111/00.5**
8	098/03.7	097/04.6	134/05.0	144/04.6	153/02.8	135/02.1	100/01.3	089/00.7	134/00.6	101/00.7	061/01.6	**092/01.8**	**134/05.0**	**258/00.3**
9	112/02.7	120/03.2	115/02.1	069/01.3	008/00.8	080/00.6	116/00.6	161/00.7	112/00.7	355/00.5	120/00.6	**069/01.1**	**120/03.2**	**355/00.5**
10	160/02.9	165/02.0	162/02.8	161/02.3	210/02.0	006/01.1	302/01.1	325/08.1	326/08.5	334/06.3	327/08.1	**296/02.4**	**326/08.5**	**283/00.4**
11	313/08.2	311/07.5	311/06.8	308/06.2	315/05.5	311/04.1	311/03.8	298/02.0	265/01.6	251/01.6	249/01.9	**297/04.5**	**313/08.2**	**265/01.6**
12	198/02.7	196/02.8	183/02.8	183/02.3	184/02.3	185/01.7	184/01.3	195/01.6	224/01.2	219/01.5	237/01.3	**220/02.0**	**196/02.8**	**216/01.2**
13	288/04.6	297/04.7	290/03.8	269/02.5	242/01.3	252/01.3	289/01.9	302/02.9	308/03.3	294/01.9	273/01.6	**279/02.4**	**307/05.5**	**031/00.6**
14	279/01.6	258/01.7	117/02.5	270/01.6	211/01.3	193/02.1	190/02.0	202/01.5	180/01.2	238/01.5	195/00.7	**266/01.6**	**301/02.5**	**195/00.7**
15	280/03.5	285/03.5	273/02.8	271/02.2	251/01.5	214/01.3	213/01.4	198/01.3	190/00.9	179/00.6	168/00.8	**219/01.9**	**270/04.1**	**179/00.6**
16	121/02.5	097/01.8	093/01.1	109/00.3	154/00.4	104/01.0	107/02.7	097/03.1	088/02.2	081/01.7	024/01.4	**107/01.3**	**097/03.1**	**239/00.3**
17	033/01.4	083/01.1	038/01.1	015/00.9	032/01.7	025/02.4	020/02.9	019/04.1	030/04.7	036/05.5	030/05.0	**037/02.2**	**036/05.5**	**015/00.9**
18	291/06.9	286/06.4	276/05.6	291/07.0	299/05.1	293/03.0	278/03.0	286/04.5	278/05.1	281/03.9	273/03.8	**299/05.7**	**303/08.9**	**004/02.9**
19	313/06.6	310/07.8	312/06.8	308/06.2	312/05.1	307/03.4	307/03.4	316/04.4	302/02.6	307/02.1	304/02.2	**295/04.7**	**319/08.0**	**307/02.1**
20	322/03.7	322/02.6	308/02.8	294/02.6	282/01.7	286/01.4	273/01.7	282/01.7	269/01.2	292/01.3	283/01.0	**289/02.0**	**322/03.7**	**285/01.0**
21	330/02.2	318/03.0	324/03.0	330/02.8	345/02.4	349/02.1	351/02.3	352/02.0	347/01.6	348/01.4	344/01.4	**329/02.0**	**358/03.5**	**319/00.6**
22	108/02.8	094/02.3	101/02.1	093/02.0	098/02.0	072/01.7	050/01.7	075/01.8	078/02.0	085/02.4	084/02.4	**080/02.3**	**096/03.3**	**007/01.4**
23	098/03.9	098/03.4	110/02.9	124/04.1	148/01.6	109/00.6	135/00.6	124/01.0	096/01.3	092/01.4	113/01.8	**090/02.0**	**124/04.1**	**109/00.6**
24	109/01.8	116/02.1	115/01.8	120/01.5	105/00.7	206/00.4	301/00.8	292/00.9	340/00.5	012/00.8	012/01.0	**091/01.2**	**115/02.1**	**206/00.4**
25	114/02.1	111/02.0	099/01.8	103/01.2	061/01.1	063/01.8	061/01.3	068/01.0	035/01.3	018/01.4	022/01.2	**061/01.5**	**104/02.4**	**034/00.8**
26	105/02.2	067/01.6	092/01.8	058/01.9	039/02.0	040/01.8	048/01.7	047/01.4	074/01.5	087/01.9	086/02.1	**078/02.0**	**086/02.7**	**063/01.3**
27	079/02.6	085/02.7	065/02.4	063/02.7	044/02.9	002/02.0	037/02.4	047/03.1	051/03.9	244/01.1	093/01.6	**060/02.3**	**051/03.9**	**244/01.1**
28	286/02.0	260/01.6	270/01.8	262/00.9	203/00.7	191/00.9	225/01.4	251/02.1	246/01.9	277/02.0	293/01.5	**287/01.8**	**298/02.5**	**203/00.7**
29	299/02.1	271/02.5	272/02.5	244/01.7	248/01.4	277/02.1	305/03.1	318/05.6	324/06.1	323/04.5	313/03.6	**288/02.4**	**324/06.1**	**225/00.8**
30	266/03.3	260/03.4	273/03.7	278/03.2	282/03.5	276/02.3	269/02.0	277/03.1	288/03.6	261/02.2	252/02.4	**264/03.0**	**267/04.2**	**269/02.0**
31	265/03.2	292/01.8	216/02.3	120/03.7	137/01.9	160/01.9	184/01.8	200/01.2	196/01.8	207/01.6	157/01.6	**252/02.4**	**120/03.7**	**256/01.2**
MEAN	**342/03.1**	**344/03.0**	**248/02.9**	**279/02.7**	**271/02.1**	**280/01.7**	**269/01.8**	**301/02.2**	**274/02.2**	**299/02.0**	**321/02.0**	**308/02.2**		
MAX	**313/08.2**	**310/07.8**	**311/06.8**	**291/07.0**	**315/05.5**	**311/04.1**	**311/03.8**	**325/08.1**	**326/08.5**	**334/06.3**	**327/08.1**		**303/08.9**	
MIN	**027/00.7**	**018/00.4**	**282/00.5**	**109/00.3**	**154/00.4**	**206/00.4**	**116/00.6**	**265/00.6**	**111/00.5**	**217/00.5**	**075/00.6**			**258/00.3**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 744 DATA RECOVERY RATE = 100.0%

MONTHLY MEAN = 308/02.2 MAXIMUM WIND SPEED = 08.9 AT 303 DEGREES DATE OF OCCURRENCE = 12/18 AT 1200

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

CSX AQ5

Joint Frequency Distribution for October, 2023

Percentage frequency of occurence of hourly wind velocities for all stability classes

Wind Direction		Wind Speed (mps) 0.5 - 1.54	1.54 - 3.09	3.09 - 5.14	5.14 - 8.23	8.23 - 10.8	OVER 10.8	TOTAL	AVG SPEED
N	348.75 - 11.25	0.7	1.2	1.5	0.0	0.0	0.0	**3.4**	**2.8**
NNE	11.25 - 33.75	0.4	2.2	0.0	0.0	0.0	0.0	**2.6**	**2.0**
NE	33.75 - 56.25	0.1	2.3	0.0	0.0	0.0	0.0	**2.4**	**2.0**
ENE	56.25 - 78.75	0.3	1.9	0.0	0.0	0.0	0.0	**2.2**	**2.3**
E	78.75 - 101.25	0.0	0.5	1.2	0.0	0.0	0.0	**1.7**	**3.3**
ESE	101.25 - 123.75	0.5	3.8	3.9	0.0	0.0	0.0	**8.2**	**2.9**
SE	123.75 - 146.25	1.7	3.2	0.7	0.1	0.0	0.0	**5.8**	**2.2**
SSE	146.25 - 168.75	1.1	1.5	1.6	0.4	0.0	0.0	**4.6**	**2.8**
S	168.75 - 191.25	3.6	2.3	0.4	0.0	0.0	0.0	**6.3**	**1.5**
SSW	191.25 - 213.75	4.4	1.6	0.1	0.0	0.0	0.0	**6.2**	**1.4**
SW	213.75 - 236.25	2.7	1.2	0.3	0.0	0.0	0.0	**4.2**	**1.5**
WSW	236.25 - 258.75	1.9	3.0	0.8	0.0	0.0	0.0	**5.6**	**2.0**
W	258.75 - 281.25	3.6	3.0	2.2	0.1	0.0	0.0	**8.9**	**2.1**
WNW	281.25 - 303.75	4.7	6.3	2.8	1.3	0.0	0.0	**15.2**	**2.5**
NW	303.75 - 326.25	2.0	2.4	5.6	3.9	0.0	0.0	**14.0**	**3.9**
NNW	326.25 - 348.75	0.9	2.7	3.1	1.3	0.0	0.0	**8.1**	**3.6**
	CALM							**0.8**	
	TOTAL	**28.8**	**39.0**	**24.2**	**7.3**	**0.0**	**0.0**	**100.0**	**2.6**

TOTAL NUMBER OF OBSERVATIONS = 744

POSSIBLE NUMBER OF OBSERVATIONS = 744

DATA RECOVERY = 100.0%

Draft

CSX AQ5

Joint Frequency Distribution for November, 2023

Percentage frequency of occurence of hourly wind velocities for all stability classes

Wind Direction		Wind Speed (mps) 0.5 - 1.54	1.54 - 3.09	3.09 - 5.14	5.14 - 8.23	8.23 - 10.8	OVER 10.8	TOTAL	AVG SPEED
N	348.75 - 11.25	1.0	1.7	0.8	0.1	0.0	0.0	**3.7**	**2.5**
NNE	11.25 - 33.75	1.1	3.7	0.3	0.0	0.0	0.0	**5.1**	**2.0**
NE	33.75 - 56.25	0.8	1.8	0.0	0.0	0.0	0.0	**2.7**	**2.0**
ENE	56.25 - 78.75	0.6	0.7	0.6	0.0	0.0	0.0	**1.8**	**2.3**
E	78.75 - 101.25	0.6	2.0	1.0	0.3	0.0	0.0	**3.8**	**2.8**
ESE	101.25 - 123.75	0.8	1.7	2.1	0.6	0.0	0.0	**5.2**	**3.2**
SE	123.75 - 146.25	0.6	1.8	1.7	0.3	0.1	0.0	**4.5**	**3.2**
SSE	146.25 - 168.75	0.8	1.4	1.8	0.0	0.0	0.0	**4.1**	**2.5**
S	168.75 - 191.25	2.2	2.8	0.7	0.0	0.0	0.0	**5.8**	**1.8**
SSW	191.25 - 213.75	4.6	2.9	0.0	0.1	0.0	0.0	**7.7**	**1.6**
SW	213.75 - 236.25	3.9	2.0	0.3	0.0	0.0	0.0	**6.2**	**1.4**
WSW	236.25 - 258.75	2.8	1.1	0.4	0.0	0.0	0.0	**4.4**	**1.5**
W	258.75 - 281.25	2.8	2.7	1.0	0.0	0.0	0.0	**6.5**	**1.9**
WNW	281.25 - 303.75	3.2	6.9	2.8	1.7	0.4	0.0	**15.0**	**2.9**
NW	303.75 - 326.25	2.5	4.9	5.5	4.2	0.3	0.0	**17.4**	**3.7**
NNW	326.25 - 348.75	1.4	1.3	1.8	1.1	0.0	0.0	**5.6**	**3.4**
	CALM							**0.7**	
	TOTAL	**29.9**	**39.3**	**20.8**	**8.4**	**0.8**	**0.0**	**100.0**	**2.6**

TOTAL NUMBER OF OBSERVATIONS = 712

POSSIBLE NUMBER OF OBSERVATIONS = 720

DATA RECOVERY = 98.9%

Draft

CSX AQ5

Joint Frequency Distribution for December, 2023

Percentage frequency of occurence of hourly wind velocities for all stability classes

Wind Direction		Wind Speed (mps) 0.5 - 1.54	1.54 - 3.09	3.09 - 5.14	5.14 - 8.23	8.23 - 10.8	OVER 10.8	TOTAL	AVG SPEED
N	348.75 - 11.25	2.3	1.3	0.4	0.0	0.0	0.0	**4.0**	**1.6**
NNE	11.25 - 33.75	2.0	0.5	0.4	0.0	0.0	0.0	**3.0**	**1.8**
NE	33.75 - 56.25	2.2	3.5	0.3	0.1	0.0	0.0	**6.0**	**1.8**
ENE	56.25 - 78.75	3.2	3.5	0.0	0.0	0.0	0.0	**6.7**	**1.6**
E	78.75 - 101.25	2.6	5.4	0.9	0.0	0.0	0.0	**8.9**	**2.0**
ESE	101.25 - 123.75	2.3	3.4	0.4	0.0	0.0	0.0	**6.0**	**1.8**
SE	123.75 - 146.25	1.5	0.5	0.4	0.0	0.0	0.0	**2.4**	**1.7**
SSE	146.25 - 168.75	1.2	1.2	0.0	0.0	0.0	0.0	**2.4**	**1.6**
S	168.75 - 191.25	2.0	0.9	0.0	0.0	0.0	0.0	**3.0**	**1.3**
SSW	191.25 - 213.75	2.4	2.4	0.0	0.0	0.0	0.0	**4.8**	**1.7**
SW	213.75 - 236.25	2.2	2.2	0.0	0.0	0.0	0.0	**4.3**	**1.6**
WSW	236.25 - 258.75	2.3	2.8	0.4	0.0	0.0	0.0	**5.5**	**1.8**
W	258.75 - 281.25	2.4	5.4	2.8	0.1	0.0	0.0	**10.8**	**2.4**
WNW	281.25 - 303.75	3.5	6.0	3.5	1.1	0.3	0.0	**14.4**	**2.7**
NW	303.75 - 326.25	2.0	2.8	3.1	3.5	0.3	0.0	**11.7**	**4.0**
NNW	326.25 - 348.75	1.1	1.9	1.2	0.5	0.0	0.0	**4.7**	**2.9**
	CALM							**1.3**	
	TOTAL	**35.1**	**43.8**	**13.8**	**5.4**	**0.5**	**0.0**	**100.0**	**2.3**

TOTAL NUMBER OF OBSERVATIONS = 744

POSSIBLE NUMBER OF OBSERVATIONS = 744

DATA RECOVERY = 100.0%

Draft

CSX AQ5

10M Joint Frequency Distribution for October - December 2023

Percentage frequency of occurence of hourly wind velocities for all stability classes

Wind Direction		Wind Speed (mps) 0.5 - 1.54	1.54 - 3.09	3.09 - 5.14	5.14 - 8.23	8.23 - 10.8	OVER 10.8	TOTAL	AVG SPEED
N	348.75 - 11.25	1.3	1.4	0.9	0.0	0.0	0.0	**3.7**	**2.2**
NNE	11.25 - 33.75	1.2	2.1	0.2	0.0	0.0	0.0	**3.5**	**2.0**
NE	33.75 - 56.25	1.0	2.5	0.1	0.0	0.0	0.0	**3.7**	**1.9**
ENE	56.25 - 78.75	1.4	2.0	0.2	0.0	0.0	0.0	**3.6**	**1.8**
E	78.75 - 101.25	1.0	2.6	1.0	0.1	0.0	0.0	**4.8**	**2.4**
ESE	101.25 - 123.75	1.2	3.0	2.1	0.2	0.0	0.0	**6.5**	**2.6**
SE	123.75 - 146.25	1.3	1.9	0.9	0.1	0.0	0.0	**4.2**	**2.4**
SSE	146.25 - 168.75	1.0	1.4	1.1	0.1	0.0	0.0	**3.7**	**2.5**
S	168.75 - 191.25	2.6	2.0	0.4	0.0	0.0	0.0	**5.0**	**1.6**
SSW	191.25 - 213.75	3.8	2.3	0.0	0.0	0.0	0.0	**6.2**	**1.5**
SW	213.75 - 236.25	2.9	1.8	0.2	0.0	0.0	0.0	**4.9**	**1.5**
WSW	236.25 - 258.75	2.3	2.3	0.5	0.0	0.0	0.0	**5.2**	**1.8**
W	258.75 - 281.25	3.0	3.7	2.0	0.1	0.0	0.0	**8.7**	**2.1**
WNW	281.25 - 303.75	3.8	6.4	3.0	1.4	0.2	0.0	**14.9**	**2.7**
NW	303.75 - 326.25	2.2	3.4	4.7	3.9	0.2	0.0	**14.3**	**3.9**
NNW	326.25 - 348.75	1.1	2.0	2.0	1.0	0.0	0.0	**6.1**	**3.3**
	CALM							**1.0**	
	TOTAL	**31.3**	**40.7**	**19.6**	**7.0**	**0.5**	**0.0**	**100.0**	**2.5**

TOTAL NUMBER OF OBSERVATIONS = 2200

POSSIBLE NUMBER OF OBSERVATIONS = 2208

DATA RECOVERY = 99.6%

Draft

CSX AQ5

WIND GUST in mps for OCTOBER, 2023

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	2.9	3.5	4.0	5.2	4.8	5.6	6.8	5.8	5.7	6.0	6.3	7.8	6.3	6.9	6.0	6.3	5.9	4.5	6.2	4.1	2.6	3.3	3.9	4.1	**5.2**	**7.8**	**2.6**
2	4.1	3.1	5.1	5.2	4.4	4.3	4.4	3.6	3.9	3.8	5.0	4.0	3.7	4.5	4.7	4.2	3.8	3.2	1.6	1.3	1.7	1.8	2.1	2.7	**3.6**	**5.2**	**1.3**
3	3.2	1.8	1.9	2.2	1.5	1.7	1.1	2.2	2.3	2.3	2.7	2.9	4.3	4.4	5.5	5.0	4.8	3.1	1.8	1.8	1.2	3.8	1.7	1.2	**2.7**	**5.5**	**1.1**
4	1.5	1.0	1.5	2.0	0.9	1.0	1.2	1.5	1.6	2.6	3.5	4.3	5.3	5.6	5.7	5.1	5.3	3.9	3.4	2.7	3.1	2.5	2.5	1.9	**2.9**	**5.7**	**0.9**
5	1.7	2.4	2.7	2.5	1.1	1.7	2.5	2.3	3.0	4.6	5.5	5.7	5.6	4.3	5.5	5.9	6.2	5.9	2.8	3.8	4.6	5.5	3.9	4.7	**3.9**	**6.2**	**1.1**
6	4.0	4.1	3.9	3.7	4.0	3.0	3.8	3.6	3.5	4.1	4.5	5.1	4.5	4.8	4.5	4.4	3.8	4.7	3.9	3.7	4.5	3.2	2.9	2.5	**3.9**	**5.1**	**2.5**
7	1.9	2.1	2.2	2.5	9.0	8.7	6.1	7.1	12.0	12.3	8.0	6.2	12.5	9.8	10.3	11.1	13.3	14.7	10.7	8.5	8.3	5.2	7.2	6.9	**8.2**	**14.7**	**1.9**
8	4.8	5.5	5.7	6.5	5.6	6.7	7.0	7.1	8.8	9.4	10.6	9.5	11.5	9.9	11.6	8.4	9.0	7.8	8.4	5.0	5.9	5.7	5.7	6.3	**7.6**	**11.6**	**4.8**
9	5.6	5.6	5.9	4.9	3.6	3.9	5.2	5.4	5.4	7.7	8.1	7.3	8.0	7.0	5.9	6.9	3.9	3.7	2.7	2.1	1.9	3.1	4.7	4.0	**5.1**	**8.1**	**1.9**
10	2.7	2.3	2.5	1.9	2.0	1.9	1.9	2.0	2.7	3.8	4.7	4.8	8.2	7.8	6.4	6.1	5.1	1.9	1.3	2.5	1.3	2.1	2.1	2.7	**3.4**	**8.2**	**1.3**
11	2.5	2.8	2.5	1.7	4.2	1.7	4.5	4.7	6.2	7.7	6.7	6.4	6.0	6.0	7.0	5.0	4.3	2.8	2.1	3.5	2.9	2.3	2.5	0.9	**4.0**	**7.7**	**0.9**
12	1.9	1.5	2.2	1.6	2.4	2.0	1.4	1.6	1.7	2.7	3.1	3.9	4.0	4.6	5.2	4.8	4.4	3.0	1.7	1.3	2.4	2.3	2.6	2.3	**2.7**	**5.2**	**1.3**
13	1.5	1.6	2.1	4.5	5.1	5.0	5.1	6.4	6.0	5.1	5.0	3.6	5.4	5.7	5.5	5.4	4.9	3.9	1.9	1.3	0.9	1.3	2.5	1.9	**3.8**	**6.4**	**0.9**
14	4.0	4.4	5.2	7.5	4.3	5.7	4.9	4.9	5.5	5.6	5.5	5.6	5.9	5.9	4.5	3.7	4.6	5.0	5.8	5.4	8.6	7.3	8.7	9.0	**5.7**	**9.0**	**3.7**
15	8.8	8.7	9.4	8.1	8.7	9.9	9.0	10.9	10.4	11.9	11.7	11.7	11.1	10.5	9.7	8.3	7.9	5.3	6.4	3.7	2.9	3.4	3.5	3.8	**8.2**	**11.9**	**2.9**
16	3.9	4.5	3.9	3.2	3.1	2.7	3.4	5.8	8.5	8.5	8.0	8.4	8.2	8.1	8.8	7.7	6.7	5.3	4.3	6.3	6.7	6.1	6.4	7.5	**6.1**	**8.8**	**2.7**
17	6.8	6.3	5.6	6.0	4.1	3.8	5.3	6.0	6.5	6.5	5.9	7.1	7.2	7.2	6.4	6.5	5.5	5.6	5.8	4.3	3.9	4.1	4.3	3.6	**5.6**	**7.2**	**3.6**
18	3.2	3.3	3.4	2.4	1.2	2.9	3.0	4.3	6.1	5.6	6.8	6.4	7.8	9.1	6.3	6.3	5.9	2.7	1.9	1.9	2.5	2.4	2.0	2.0	**4.1**	**9.1**	**1.2**
19	2.3	1.6	1.7	1.2	1.4	1.6	1.4	2.1	4.3	5.1	5.2	7.0	8.8	8.0	8.1	9.9	9.3	10.9	9.3	7.8	8.1	6.1	5.9	6.4	**5.6**	**10.9**	**1.2**
20	3.9	3.3	3.3	2.7	4.3	4.3	5.1	3.4	5.8	6.7	3.4	7.8	10.5	8.4	8.7	8.9	4.1	2.3	2.7	1.7	2.3	2.1	1.9	6.0	**4.7**	**10.5**	**1.7**
21	5.1	4.7	4.7	5.5	4.7	6.4	7.5	8.9	13.6	11.7	14.9	13.5	13.5	16.2	15.5	14.5	13.2	11.3	10.9	5.5	3.9	4.6	4.9	5.3	**9.2**	**16.2**	**3.9**
22	4.9	3.7	3.5	2.8	4.2	5.0	7.3	6.2	9.6	14.1	13.1	15.5	14.0	13.4	13.4	12.9	13.8	12.1	8.4	6.5	7.7	11.7	10.6	7.6	**9.3**	**15.5**	**2.8**
23	5.5	4.7	4.6	5.3	4.3	4.7	6.1	9.1	10.4	9.8	6.3	6.9	6.9	6.5	5.9	4.6	4.8	2.7	1.5	2.6	1.7	1.9	1.3	1.6	**5.0**	**10.4**	**1.3**
24	1.8	1.6	2.1	1.7	1.9	1.5	1.8	1.1	2.6	4.0	5.4	5.9	5.8	6.0	5.3	6.5	5.8	4.4	3.7	3.5	2.3	1.6	1.6	1.7	**3.3**	**6.5**	**1.1**
25	1.8	1.6	1.8	1.5	1.1	1.8	1.6	2.7	4.1	5.2	4.5	5.9	5.9	7.0	5.2	4.1	4.0	3.6	3.5	2.5	1.2	2.7	1.7	1.2	**3.2**	**7.0**	**1.1**
26	2.1	2.1	2.3	2.1	1.5	1.4	1.4	1.3	2.5	2.2	2.5	3.0	3.0	5.3	4.0	3.9	3.5	3.3	3.3	3.1	2.5	1.7	1.7	2.1	**2.6**	**5.3**	**1.3**
27	2.0	1.6	1.8	1.8	2.5	1.1	0.8	1.3	3.4	4.4	2.8	4.9	5.5	6.7	5.3	4.1	1.8	2.0	2.4	3.0	2.7	2.5	2.0	1.3	**2.8**	**6.7**	**0.8**
28	1.3	0.9	2.1	2.7	1.6	1.4	2.1	3.5	4.8	6.6	6.6	7.5	6.9	6.9	6.5	7.1	4.3	2.5	3.3	2.9	2.9	3.4	3.0	2.8	**3.9**	**7.5**	**0.9**
29	4.2	3.0	5.0	5.9	5.3	5.8	5.5	5.3	5.5	4.5	3.7	4.2	4.1	3.9	3.9	4.5	4.3	4.3	4.4	4.2	3.4	4.4	4.4	4.0	**4.5**	**5.9**	**3.0**
30	3.6	3.3	3.1	3.1	2.8	2.9	3.5	2.6	3.3	4.3	5.6	5.1	5.0	11.8	11.5	12.9	12.6	9.2	9.0	9.8	10.1	8.9	10.8	8.7	**6.8**	**12.9**	**2.6**
31	7.3	7.4	10.1	9.3	8.9	8.4	8.6	7.7	6.7	5.9	7.2	5.7	4.1	4.7	3.3	3.0	3.2	2.7	2.1	2.9	4.2	5.7	6.5	6.1	**5.9**	**10.1**	**2.1**
MEAN	**3.6**	**3.4**	**3.7**	**3.8**	**3.7**	**3.8**	**4.2**	**4.5**	**5.7**	**6.3**	**6.2**	**6.6**	**7.1**	**7.3**	**7.0**	**6.7**	**6.1**	**5.1**	**4.4**	**3.8**	**3.8**	**4.0**	**4.0**	**4.0**	**5.0**		
MAX	**8.8**	**8.7**	**10.1**	**9.3**	**9.0**	**9.9**	**9.0**	**10.9**	**13.6**	**14.1**	**14.9**	**15.5**	**14.0**	**16.2**	**15.5**	**14.5**	**13.8**	**14.7**	**10.9**	**9.8**	**10.1**	**11.7**	**10.8**	**9.0**		**16.2**	
MIN	**1.3**	**0.9**	**1.5**	**1.2**	**0.9**	**1.0**	**0.8**	**1.1**	**1.6**	**2.2**	**2.5**	**2.9**	**3.0**	**3.9**	**3.3**	**3.0**	**1.8**	**1.9**	**1.3**	**1.3**	**0.9**	**1.3**	**1.3**	**0.9**			**0.8**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 744 DATA RECOVERY RATE = 100.0%

MONTHLY MEAN = 5.0 mps

MAXIMUM WIND GUST = 16.2 mps DATE OF OCCURRENCE = 10/21 AT 1400 MAXIMUM DAILY MEAN = 9.3 mps DATE OF OCCURRENCE = 10/22

MINIMUM WIND GUST = 0.8 mps DATE OF OCCURRENCE = 10/27 AT 0700 MINUMUM DAILY MEAN = 2.6 mps DATE OF OCCURRENCE = 10/26

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

CSX AQ5

WIND GUST in mps for NOVEMBER, 2023

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	5.3	5.1	3.6	3.8	5.3	8.9	13.3	12.5	10.6	14.1	12.2	13.4	12.9	12.9	14.2	14.3	12.5	8.5	6.4	4.7	6.7	4.5	5.7	5.8	**9.1**	**14.3**	**3.6**
2	5.8	4.9	4.8	3.1	2.7	3.3	3.6	3.1	3.6	5.7	5.3	5.4	5.7	6.2	6.7	6.8	5.9	5.4	3.3	3.0	2.9	2.4	2.1	2.4	**4.3**	**6.8**	**2.1**
3	2.2	1.9	2.0	1.9	1.7	2.4	1.6	2.5	4.1	4.5	5.9	6.4	8.2	5.9	6.6	7.7	7.1	6.1	5.2	3.1	2.1	2.2	1.7	1.7	**3.9**	**8.2**	**1.6**
4	1.5	1.5	1.0	2.2	1.7	1.4	2.0	2.1	1.6	2.1	3.3	3.5	6.1	6.0	4.9	3.8	3.0	2.3	1.9	1.3	1.2	1.0	0.9	1.3	**2.4**	**6.1**	**0.9**
5	1.3	1.2	1.0	1.2	0.8	1.1	1.7	2.3	1.9	2.7	2.6	5.2	7.8	7.2	6.9	7.3	5.7	3.2	2.5	3.0	3.7	4.3	3.9	4.8	**3.5**	**7.8**	**0.8**
6	4.5	4.8	4.9	4.9	4.4	3.3	3.8	3.8	4.4	3.5	3.9	3.5	4.3	4.1	5.3	5.3	6.6	3.2	3.2	3.5	3.5	2.9	1.1	1.0	**3.9**	**6.6**	**1.0**
7	3.1	6.3	4.1	3.4	4.4	3.9	3.7	4.8	4.6	4.9	5.0	5.9	4.1	3.9	3.3	6.5	5.9	4.9	5.3	3.8	5.1	3.5	3.5	5.0	**4.5**	**6.5**	**3.1**
8	6.0	4.3	3.3	2.5	5.3	4.4	2.9	5.5	6.8	6.4	4.7	3.9	4.3	5.4	6.4	6.3	5.4	3.7	3.1	4.0	7.9	8.7	6.5	5.1	**5.1**	**8.7**	**2.5**
9	4.7	5.1	6.7	6.4	6.1	2.7	1.1	1.1	4.3	5.0	3.0	4.1	4.4	4.7	3.3	2.3	3.1	3.3	4.2	4.6	7.1	7.0	6.9	8.5	**4.6**	**8.5**	**1.1**
10	6.3	4.6	3.1	2.3	2.9	3.3	2.6	3.2	4.7	5.7	3.6	6.4	5.0	4.2	3.8	4.2	4.7	4.5	4.5	2.9	2.7	2.0	2.9	2.8	**3.9**	**6.4**	**2.0**
11	2.0	2.1	2.5	2.9	1.9	3.1	4.0	3.9	2.5	3.8	3.5	3.1	3.8	4.6	4.7	4.9	4.3	2.8	2.7	2.0	1.8	4.6	3.9	4.7	**3.3**	**4.9**	**1.8**
12	4.5	4.9	5.3	6.5	4.9	5.5	6.0	5.7	5.7	6.8	5.7	5.1	4.5	5.8	4.4	4.9	4.0	3.6	1.4	2.6	1.7	1.9	5.8	4.7	**4.7**	**6.8**	**1.4**
13	3.9	4.1	2.5	2.8	2.3	3.1	2.9	3.0	2.3	2.1	4.5	4.7	6.8	5.9	5.1	5.0	4.2	3.9	2.5	2.1	3.5	5.1	5.5	3.1	**3.8**	**6.8**	**2.1**
14	2.4	2.7	3.2	4.1	4.2	4.3	3.7	5.2	6.1	9.9	9.1	9.1	7.9	7.0	7.3	7.0	5.6	4.1	2.5	2.5	1.7	1.5	2.1	2.4	**4.8**	**9.9**	**1.5**
15	2.8	2.7	2.2	1.9	1.6	1.5	1.7	1.8	1.5	2.1	2.2	3.8	4.2	4.3	6.1	4.6	5.6	4.8	2.9	3.1	3.6	2.0	2.8	3.2	**3.0**	**6.1**	**1.5**
16	2.2	1.0	1.0	1.4	2.0	2.6	1.7	1.8	2.4	2.4	2.9	3.2	4.8	5.7	4.8	4.0	3.9	3.2	3.0	2.9	2.9	2.1	1.7	1.7	**2.7**	**5.7**	**1.0**
17	1.0	1.8	1.1	1.0	1.2	1.4	1.0	1.9	2.2	2.5	3.3	7.5	7.7	8.7	9.4	7.0	6.5	3.7	3.2	2.8	1.9	1.7	2.2	2.4	**3.5**	**9.4**	**1.0**
18	1.5	1.3	1.3	2.3	2.5	2.9	9.3	12.8	11.5	10.9	11.9	9.6	11.7	11.5	10.9	9.9	11.0	6.5	6.3	5.3	5.0	4.9	4.1	4.0	**7.0**	**12.8**	**1.3**
19	3.2	2.9	2.2	1.9	3.3	3.2	2.0	2.2	3.3	6.5	6.9	6.7	7.7	7.3	8.4	7.5	6.7	3.0	3.2	2.5	3.1	2.9	3.2	3.3	**4.3**	**8.4**	**1.9**
20	2.7	7.3	6.5	4.2	4.8	4.6	5.2	4.6	5.7	5.2	4.1	3.8	4.4	4.3	5.3	5.1	4.7	4.1	4.0	5.5	4.5	4.3	4.9	8.4	**4.9**	**8.4**	**2.7**
21	8.7	8.1	8.6	8.2	8.2	8.2	7.2	8.1	---	---	---	---	---	---	---	---	10.8	11.6	9.9	9.3	12.9	15.1	17.7	6.4	**---**	**---**	**---**
22	4.6	6.9	5.3	7.4	5.7	5.3	4.9	3.9	5.1	3.5	4.3	9.0	9.5	12.5	11.7	11.5	8.4	9.7	9.6	9.3	8.3	8.2	7.9	8.2	**7.5**	**12.5**	**3.5**
23	10.2	11.1	12.7	11.5	9.6	9.4	9.3	8.2	7.9	9.5	9.4	8.4	7.6	7.8	6.9	6.5	4.5	1.9	1.9	2.9	1.5	2.9	3.8	3.8	**7.1**	**12.7**	**1.5**
24	3.0	3.6	2.0	1.7	1.4	3.5	2.9	4.2	4.0	6.3	7.9	8.0	8.2	7.9	7.8	6.9	5.3	6.7	6.2	7.2	8.7	10.0	10.6	10.6	**6.0**	**10.6**	**1.4**
25	9.3	7.8	7.5	9.1	6.1	5.2	5.1	5.1	5.6	6.2	5.5	4.6	4.8	4.3	4.2	3.5	2.7	2.1	1.9	1.5	1.2	1.3	1.4	3.0	**4.5**	**9.3**	**1.2**
26	2.5	2.1	1.8	2.3	2.3	2.5	2.9	2.6	3.2	3.3	2.6	2.9	2.3	2.7	3.0	3.4	3.0	3.3	4.6	4.7	4.1	3.2	6.4	4.9	**3.2**	**6.4**	**1.8**
27	3.1	2.3	2.1	1.8	3.2	4.0	3.5	3.7	5.3	11.2	12.5	12.2	11.0	11.9	11.1	11.4	11.3	10.1	11.0	11.7	10.7	7.3	3.8	4.0	**7.5**	**12.5**	**1.8**
28	3.8	4.4	3.7	2.3	3.1	5.7	13.7	12.7	10.7	12.3	16.0	14.6	17.2	14.5	14.8	14.9	13.2	10.5	10.1	9.5	8.9	7.2	6.9	8.2	**10.0**	**17.2**	**2.3**
29	7.1	7.6	5.3	7.4	6.5	4.5	3.1	4.2	5.4	6.0	6.0	6.9	7.0	7.3	7.3	6.6	5.5	3.3	3.9	3.4	2.7	3.7	2.8	3.9	**5.3**	**7.6**	**2.7**
30	2.1	1.4	1.7	1.3	2.4	1.8	2.5	2.7	3.1	2.8	4.2	5.1	6.1	8.0	6.7	7.1	5.8	5.8	4.8	2.6	2.6	1.2	1.3	1.6	**3.5**	**8.0**	**1.2**
MEAN	**4.0**	**4.2**	**3.8**	**3.8**	**3.8**	**3.9**	**4.3**	**4.6**	**4.8**	**5.8**	**5.9**	**6.4**	**6.9**	**7.0**	**6.9**	**6.8**	**6.2**	**5.0**	**4.5**	**4.2**	**4.5**	**4.3**	**4.5**	**4.4**	**5.0**		
MAX	**10.2**	**11.1**	**12.7**	**11.5**	**9.6**	**9.4**	**13.7**	**12.8**	**11.5**	**14.1**	**16.0**	**14.6**	**17.2**	**14.5**	**14.8**	**14.9**	**13.2**	**11.6**	**11.0**	**11.7**	**12.9**	**15.1**	**17.7**	**10.6**		**17.7**	
MIN	**1.0**	**1.0**	**1.0**	**1.0**	**0.8**	**1.1**	**1.0**	**1.1**	**1.5**	**2.1**	**2.2**	**2.9**	**2.3**	**2.7**	**3.0**	**2.3**	**2.7**	**1.9**	**1.4**	**1.3**	**1.2**	**1.0**	**0.9**	**1.0**			**0.8**

POSSIBLE NUMBER OF OBSERVATIONS = 720 ACTUAL NUMBER OF OBSERVATIONS = 712 DATA RECOVERY RATE = 98.9%

MONTHLY MEAN = 5.0 mps

MAXIMUM WIND GUST = 17.7 mps DATE OF OCCURRENCE = 11/21 AT 2300 MAXIMUM DAILY MEAN = 10.0 mps DATE OF OCCURRENCE = 11/28

MINIMUM WIND GUST = 0.8 mps DATE OF OCCURRENCE = 11/5 AT 0500 MINUMUM DAILY MEAN = 2.4 mps DATE OF OCCURRENCE = 11/4

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

CSX AQ5

WIND GUST in mps for DECEMBER, 2023

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	1.7	1.3	0.8	1.3	1.0	1.4	0.8	1.1	1.4	2.1	2.4	2.3	1.6	2.9	2.3	1.1	2.2	2.4	2.2	2.2	2.5	2.7	1.3	1.8	**1.8**	**2.9**	**0.8**
2	1.9	1.0	1.1	1.5	2.3	1.3	1.5	1.4	2.0	2.5	2.3	2.2	2.3	2.9	3.0	3.7	4.1	3.3	2.2	2.5	2.3	1.7	2.1	1.9	**2.2**	**4.1**	**1.0**
3	1.8	3.8	2.7	3.9	3.5	3.5	4.5	4.6	4.2	3.2	2.3	2.4	2.1	1.7	1.8	1.9	2.3	4.3	4.0	3.6	4.9	2.3	5.6	6.2	**3.4**	**6.2**	**1.7**
4	15.5	7.3	5.1	4.8	5.7	3.4	3.1	2.3	2.3	5.8	6.9	7.9	8.2	6.7	5.3	6.9	7.3	5.3	4.2	3.3	2.4	2.1	2.8	3.9	**5.4**	**15.5**	**2.1**
5	4.3	4.3	3.7	3.7	3.5	3.9	4.7	2.7	3.7	3.4	4.7	4.8	5.3	5.3	4.3	3.8	4.5	4.3	3.7	3.0	3.3	5.0	6.6	5.9	**4.3**	**6.6**	**2.7**
6	4.0	4.5	5.1	5.6	5.3	6.2	7.3	8.4	6.5	5.9	6.5	8.2	11.4	9.4	10.0	9.7	10.7	5.6	2.8	2.6	2.9	2.6	3.1	2.9	**6.1**	**11.4**	**2.6**
7	3.4	3.1	3.4	2.2	2.5	3.7	3.2	2.9	3.8	4.1	5.0	6.7	6.9	6.9	6.6	6.6	4.9	3.2	3.4	1.8	1.3	1.1	2.0	2.2	**3.8**	**6.9**	**1.1**
8	1.2	1.1	1.8	1.9	1.6	1.6	1.4	1.5	1.7	2.3	3.5	3.5	4.4	5.6	6.3	7.1	7.0	4.9	3.1	3.0	1.7	1.5	2.0	2.8	**3.0**	**7.1**	**1.1**
9	1.5	1.7	1.6	1.5	1.5	1.0	1.9	2.6	1.9	1.8	2.4	2.2	3.0	5.2	4.7	3.2	2.9	1.7	1.6	2.1	1.7	1.7	1.1	1.3	**2.2**	**5.2**	**1.0**
10	1.6	1.7	1.4	2.3	1.2	2.6	2.3	2.2	1.1	1.5	2.4	1.0	3.9	6.6	4.9	5.3	3.7	4.1	3.0	2.2	15.5	15.6	11.7	16.8	**4.8**	**16.8**	**1.0**
11	9.4	8.7	6.8	8.4	7.4	5.6	5.3	4.7	7.4	10.7	11.8	12.9	14.8	14.3	13.7	12.4	11.0	11.3	8.2	7.1	4.3	3.1	4.1	4.0	**8.6**	**14.8**	**3.1**
12	3.6	3.3	3.3	3.1	3.1	3.7	3.4	4.0	4.3	5.1	5.9	6.3	5.3	5.5	5.9	5.5	5.4	5.2	3.4	2.6	2.7	2.1	2.6	2.9	**4.1**	**6.3**	**2.1**
13	1.8	1.5	2.2	2.8	2.5	2.7	3.3	4.4	5.4	5.8	10.9	10.0	9.1	8.2	8.6	7.1	6.0	2.3	2.3	3.2	5.0	5.1	4.3	2.2	**4.9**	**10.9**	**1.5**
14	2.2	2.6	2.8	2.3	2.7	2.8	2.8	2.1	2.5	2.1	4.1	4.6	6.3	3.6	4.5	4.4	4.1	2.5	3.5	4.3	2.9	2.8	3.3	2.4	**3.3**	**6.3**	**2.1**
15	1.7	2.2	2.4	3.1	3.4	2.9	2.1	2.4	5.5	7.3	8.7	8.5	7.8	7.7	7.7	6.4	5.2	3.1	1.9	2.7	2.7	2.4	2.0	1.3	**4.2**	**8.7**	**1.3**
16	1.5	2.0	2.7	2.7	1.9	2.3	2.0	1.2	0.7	1.1	1.4	2.0	2.7	3.5	2.5	2.4	0.7	1.1	3.3	6.5	5.3	4.3	3.0	3.0	**2.5**	**6.5**	**0.7**
17	2.5	3.3	3.2	3.0	2.7	4.2	3.9	3.8	3.9	3.7	3.4	3.0	2.9	3.0	2.2	2.2	2.1	3.2	4.8	5.4	8.4	9.3	11.3	11.8	**4.5**	**11.8**	**2.1**
18	5.5	5.8	6.9	7.8	10.6	11.9	12.5	17.9	14.9	16.1	16.6	17.9	16.2	14.6	14.3	13.7	13.9	12.6	7.7	7.7	12.7	11.5	10.1	9.2	**12.0**	**17.9**	**5.5**
19	8.0	6.5	6.1	7.3	7.6	7.1	8.2	8.6	8.8	13.5	14.2	12.5	12.9	11.7	14.0	12.3	11.1	8.7	6.6	7.2	8.2	7.9	3.8	4.0	**9.0**	**14.2**	**3.8**
20	4.7	3.1	2.5	2.5	2.6	2.3	2.9	3.3	4.4	5.2	6.2	5.9	6.5	6.6	4.9	4.9	4.4	3.1	2.1	2.7	3.3	2.1	2.5	1.9	**3.8**	**6.6**	**1.9**
21	3.2	2.4	1.9	1.4	2.0	1.8	2.5	2.8	4.5	6.3	5.4	5.3	4.2	4.8	5.2	4.5	4.3	4.5	4.4	4.1	3.5	2.7	2.9	2.5	**3.6**	**6.3**	**1.4**
22	2.9	2.9	3.9	4.8	4.7	5.5	4.8	4.8	4.6	4.1	4.1	4.0	4.2	4.2	3.6	3.2	3.0	3.2	3.4	3.1	3.3	3.7	4.1	4.1	**3.9**	**5.5**	**2.9**
23	4.1	2.9	2.4	2.4	2.7	2.7	2.3	2.3	2.3	2.8	3.8	4.3	5.3	5.0	4.9	4.2	5.4	5.0	1.2	1.4	2.1	2.1	2.6	3.3	**3.2**	**5.4**	**1.2**
24	3.3	2.9	1.9	1.4	1.5	2.1	2.1	2.7	1.7	1.9	1.9	2.9	2.6	3.0	3.2	2.7	2.5	1.3	1.0	2.0	1.7	1.1	1.8	1.7	**2.1**	**3.3**	**1.0**
25	3.9	2.9	3.1	2.0	2.8	3.4	1.7	1.4	2.2	2.9	2.9	3.6	4.1	3.4	3.0	3.5	2.1	3.0	4.0	3.2	3.1	2.3	2.7	2.3	**2.9**	**4.1**	**1.4**
26	3.4	4.2	4.6	3.0	2.9	2.6	4.0	4.4	3.9	2.9	3.2	3.7	3.1	3.4	2.9	3.1	3.3	3.7	3.4	3.0	2.8	3.3	3.2	3.5	**3.4**	**4.6**	**2.6**
27	3.0	4.6	4.6	3.6	4.0	3.7	4.1	4.3	4.9	4.3	4.6	4.6	4.1	5.4	4.7	5.2	5.0	5.9	3.7	4.9	8.3	8.1	2.5	3.5	**4.7**	**8.3**	**2.5**
28	2.2	2.2	2.9	3.5	3.1	2.9	3.4	4.3	3.5	4.2	5.0	5.1	4.1	4.6	3.9	4.3	2.6	1.6	1.8	3.1	3.5	3.5	3.6	2.5	**3.4**	**5.1**	**1.6**
29	3.7	3.5	2.8	2.2	3.1	2.0	1.8	2.4	2.9	4.5	5.9	4.9	3.9	5.3	4.9	5.3	3.3	2.8	5.0	6.3	9.8	11.7	8.5	6.1	**4.7**	**11.7**	**1.8**
30	7.5	6.6	5.7	6.5	5.0	4.5	5.7	6.0	6.4	7.1	8.5	9.1	8.4	6.8	7.5	7.9	8.1	7.1	5.0	5.9	8.9	8.4	4.9	4.9	**6.8**	**9.1**	**4.5**
31	5.0	4.6	7.6	6.4	5.8	6.3	5.3	5.5	3.6	2.7	4.8	6.7	7.9	7.1	4.6	5.7	5.8	3.1	3.7	3.5	2.1	5.2	4.7	2.9	**5.0**	**7.9**	**2.1**
MEAN	**3.9**	**3.5**	**3.5**	**3.5**	**3.6**	**3.6**	**3.7**	**4.0**	**4.1**	**4.7**	**5.5**	**5.8**	**6.0**	**6.0**	**5.7**	**5.5**	**5.1**	**4.3**	**3.6**	**3.7**	**4.6**	**4.5**	**4.1**	**4.1**	**4.4**		
MAX	**15.5**	**8.7**	**7.6**	**8.4**	**10.6**	**11.9**	**12.5**	**17.9**	**14.9**	**16.1**	**16.6**	**17.9**	**16.2**	**14.6**	**14.3**	**13.7**	**13.9**	**12.6**	**8.2**	**7.7**	**15.5**	**15.6**	**11.7**	**16.8**		**17.9**	
MIN	**1.2**	**1.0**	**0.8**	**1.3**	**1.0**	**1.0**	**0.8**	**1.1**	**0.7**	**1.1**	**1.4**	**1.0**	**1.6**	**1.7**	**1.8**	**1.1**	**0.7**	**1.1**	**1.0**	**1.4**	**1.3**	**1.1**	**1.1**	**1.3**			**0.7**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 744 DATA RECOVERY RATE = 100.0%

MONTHLY MEAN = 4.4 mps

MAXIMUM WIND GUST = 17.9 mps DATE OF OCCURRENCE = 12/18 AT 0800 MAXIMUM DAILY MEAN = 12.0 mps DATE OF OCCURRENCE = 12/18

MINIMUM WIND GUST = 0.7 mps DATE OF OCCURRENCE = 12/16 AT 0900 MINUMUM DAILY MEAN = 1.8 mps DATE OF OCCURRENCE = 12/1

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

APPENDIX C. HOURLY TEMPERATURE DATA FOR FOURTH QUARTER 2023

Draft

CSX AQ5

TEMPERATURE in Deg C for OCTOBER, 2023

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	18.1	17.7	17.7	17.7	17.9	18.0	18.4	19.2	20.8	22.7	24.2	25.5	26.2	26.7	27.1	27.2	26.7	25.6	24.5	23.5	22.0	21.2	20.5	20.0	**22.0**	**27.2**	**17.7**
2	19.2	19.6	20.4	20.2	19.7	19.3	19.2	20.3	22.0	23.9	24.8	25.0	24.1	25.1	24.8	24.7	24.4	23.9	23.2	22.6	21.6	20.9	20.6	20.0	**22.1**	**25.1**	**19.2**
3	19.8	19.0	18.4	17.8	17.4	17.0	17.2	19.5	20.1	20.9	22.0	23.7	25.0	26.2	25.5	25.6	25.2	24.6	23.2	22.4	21.1	20.9	20.3	19.5	**21.3**	**26.2**	**17.0**
4	18.8	18.4	17.8	17.6	17.1	16.9	17.1	19.0	20.6	21.8	23.4	24.4	24.7	25.1	25.7	25.6	26.1	25.0	23.4	21.3	20.3	19.3	18.7	17.7	**21.1**	**26.1**	**16.9**
5	16.6	16.8	15.8	15.4	15.2	15.4	16.3	18.0	20.1	21.1	21.5	22.2	22.9	24.3	24.5	24.4	23.7	23.0	22.7	22.7	22.8	22.8	22.4	22.0	**20.5**	**24.5**	**15.2**
6	21.4	21.4	21.5	21.5	21.4	21.4	21.4	21.4	21.7	22.5	22.8	23.1	22.8	23.0	23.5	23.8	23.7	23.2	22.8	22.6	22.4	22.2	22.0	21.8	**22.3**	**23.8**	**21.4**
7	21.4	21.3	21.0	20.2	19.5	18.6	18.5	19.1	18.6	16.7	16.0	15.8	16.0	17.2	17.9	18.6	18.1	16.8	15.3	14.2	13.5	12.7	12.0	11.5	**17.1**	**21.4**	**11.5**
8	10.8	10.1	10.1	10.1	9.9	9.8	10.0	11.3	12.7	13.9	14.5	14.7	15.7	16.2	16.2	15.4	15.5	14.4	13.5	12.7	12.0	11.6	10.9	10.6	**12.6**	**16.2**	**9.8**
9	10.2	9.7	9.4	8.9	8.4	7.7	9.2	9.9	11.7	13.7	15.0	15.7	16.1	16.5	16.5	16.6	16.4	16.4	15.3	14.2	13.2	12.6	12.3	12.1	**12.8**	**16.6**	**7.7**
10	11.9	11.4	11.4	10.9	10.5	10.1	10.2	10.8	11.7	13.6	16.5	18.1	19.3	19.4	19.3	19.8	19.5	18.2	16.2	15.2	14.3	13.6	12.9	12.3	**14.5**	**19.8**	**10.1**
11	11.7	11.4	11.0	10.0	9.7	9.4	9.7	12.1	15.6	17.8	19.2	19.9	20.6	21.0	21.3	21.1	20.5	19.2	17.6	16.5	16.0	15.0	14.1	13.6	**15.6**	**21.3**	**9.4**
12	12.9	12.0	11.4	10.7	10.8	10.9	11.3	13.5	15.9	17.5	18.0	19.1	19.9	20.3	20.5	20.5	20.1	19.5	18.0	16.6	15.8	15.4	15.6	15.0	**15.9**	**20.5**	**10.7**
13	15.7	15.5	14.9	14.8	14.7	14.1	13.8	14.6	15.4	16.4	17.1	18.3	19.0	18.9	19.0	18.4	18.0	17.7	16.5	15.4	14.9	14.0	14.3	14.8	**16.1**	**19.0**	**13.8**
14	14.7	13.8	13.6	14.8	14.2	13.6	13.2	13.9	13.3	13.1	13.4	14.2	14.8	15.1	14.6	13.5	13.4	13.2	12.9	12.7	12.2	11.9	11.5	10.9	**13.4**	**15.1**	**10.9**
15	10.5	10.3	10.1	10.4	10.6	10.6	10.2	10.8	12.1	13.6	14.5	15.1	15.2	15.2	15.2	15.2	15.1	14.3	13.3	12.0	11.1	10.3	9.6	9.3	**12.3**	**15.2**	**9.3**
16	9.0	8.3	7.8	7.6	7.3	7.1	7.4	8.9	11.3	12.8	13.8	14.8	15.2	15.7	16.0	15.6	15.5	15.1	14.5	14.5	14.4	14.0	13.7	13.6	**12.2**	**16.0**	**7.1**
17	13.0	12.4	12.0	12.1	11.8	11.3	11.3	12.2	13.2	14.3	15.4	16.4	16.4	16.3	16.6	16.3	15.8	15.3	14.6	13.9	13.2	12.8	12.7	11.7	**13.8**	**16.6**	**11.3**
18	10.5	10.4	9.7	9.1	9.3	9.7	10.0	12.1	14.1	15.3	16.1	16.5	16.9	17.1	17.2	16.9	15.8	14.6	13.3	12.0	12.2	12.5	11.1	10.2	**13.0**	**17.2**	**9.1**
19	9.6	8.9	8.4	8.5	8.4	7.9	8.4	11.1	14.1	15.6	17.4	18.9	20.4	20.5	20.2	19.9	19.2	18.3	17.7	17.4	17.0	16.8	16.8	16.2	**14.9**	**20.5**	**7.9**
20	15.5	15.0	14.5	13.8	13.3	13.2	13.6	13.9	15.3	17.2	17.6	19.5	20.4	19.9	20.0	17.2	16.3	15.9	15.6	15.4	15.3	15.1	15.0	14.5	**16.0**	**20.4**	**13.2**
21	13.8	13.5	13.5	13.4	13.3	13.6	13.7	13.8	15.3	16.6	17.5	18.1	18.2	18.2	18.3	17.4	16.6	15.5	15.0	14.1	13.3	12.8	11.8	11.7	**15.0**	**18.3**	**11.7**
22	11.7	11.1	10.3	10.1	11.0	11.5	12.4	12.3	12.9	14.5	14.6	15.0	15.9	16.1	16.1	16.2	15.5	14.4	13.6	12.8	12.3	12.1	11.5	10.6	**13.1**	**16.2**	**10.1**
23	9.8	9.1	8.4	8.0	7.6	7.1	7.3	8.2	9.4	10.7	12.2	13.6	15.0	16.0	16.8	17.4	17.1	15.1	12.8	11.1	10.0	9.1	8.3	7.7	**11.2**	**17.4**	**7.1**
24	7.3	6.7	6.6	6.5	6.2	6.0	5.8	7.9	11.1	13.4	15.6	16.6	16.5	17.2	18.4	18.9	18.2	17.0	15.5	14.3	12.9	11.9	11.5	11.3	**12.2**	**18.9**	**5.8**
25	10.6	9.4	8.4	8.1	8.1	8.4	8.3	10.6	13.5	15.9	18.5	20.5	21.5	19.6	21.0	21.0	21.1	20.3	19.1	17.6	16.3	16.2	16.1	14.8	**15.2**	**21.5**	**8.1**
26	14.2	13.2	12.7	12.2	11.1	10.6	10.5	11.8	14.6	17.0	19.0	18.7	20.1	20.5	20.9	20.8	19.9	19.2	19.5	18.9	17.9	16.5	15.1	14.7	**16.2**	**20.9**	**10.5**
27	14.4	14.2	14.2	14.9	15.3	15.3	15.1	16.3	19.4	22.4	22.0	24.7	24.6	26.2	25.7	25.7	25.2	20.8	21.2	20.8	20.4	19.3	18.1	17.1	**19.7**	**26.2**	**14.2**
28	16.6	16.0	16.1	16.4	15.9	15.3	15.3	18.6	21.8	23.9	25.5	26.4	27.2	27.4	28.2	28.7	28.1	26.6	24.1	24.0	23.3	23.4	21.6	21.5	**22.2**	**28.7**	**15.3**
29	21.9	19.7	20.0	19.6	18.8	18.3	17.9	17.8	17.7	18.1	18.3	19.4	20.3	20.9	21.2	20.9	20.2	19.3	18.4	17.6	16.9	16.5	15.8	15.6	**18.8**	**21.9**	**15.6**
30	15.5	15.4	15.4	15.2	15.1	15.0	14.9	15.1	15.7	17.0	18.8	21.0	23.6	22.9	20.9	19.0	16.5	14.5	13.5	13.3	13.0	12.6	12.3	12.0	**16.2**	**23.6**	**12.0**
31	11.7	11.3	10.9	10.3	9.6	9.0	8.4	8.0	8.3	9.1	9.8	10.3	10.7	10.8	10.7	10.7	10.7	10.0	9.5	8.7	8.6	9.3	8.5	7.6	**9.7**	**11.7**	**7.6**
MEAN	**14.2**	**13.6**	**13.3**	**13.1**	**12.9**	**12.6**	**12.8**	**13.9**	**15.5**	**16.9**	**17.9**	**18.9**	**19.5**	**19.9**	**20.0**	**19.8**	**19.3**	**18.3**	**17.3**	**16.5**	**15.8**	**15.3**	**14.8**	**14.3**	**16.1**		
MAX	**21.9**	**21.4**	**21.5**	**21.5**	**21.4**	**21.4**	**21.4**	**21.4**	**22.0**	**23.9**	**25.5**	**26.4**	**27.2**	**27.4**	**28.2**	**28.7**	**28.1**	**26.6**	**24.5**	**24.0**	**23.3**	**23.4**	**22.4**	**22.0**		**28.7**	
MIN	**7.3**	**6.7**	**6.6**	**6.5**	**6.2**	**6.0**	**5.8**	**7.9**	**8.3**	**9.1**	**9.8**	**10.3**	**10.7**	**10.8**	**10.7**	**10.7**	**10.7**	**10.0**	**9.5**	**8.7**	**8.6**	**9.1**	**8.3**	**7.6**			**5.8**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 744 DATA RECOVERY RATE = 100.0%

MONTHLY MEAN = 16.1 Deg C

MAXIMUM TEMPERATURE = 28.7 Deg C DATE OF OCCURRENCE = 10/28 AT 1600 MAXIMUM DAILY MEAN = 22.3 Deg C DATE OF OCCURRENCE = 10/6

MINIMUM TEMPERATURE = 5.8 Deg C DATE OF OCCURRENCE = 10/24 AT 0700 MINUMUM DAILY MEAN = 9.7 Deg C DATE OF OCCURRENCE = 10/31

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

CSX AQ5

TEMPERATURE in Deg C for NOVEMBER, 2023

Hr Beg Hr End Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	6.7	6.3	5.2	4.9	5.1	5.1	5.4	5.1	5.6	6.0	7.0	8.1	8.7	9.2	9.2	8.7	8.0	7.4	6.8	6.1	5.6	5.1	4.7	4.4	**6.4**	**9.2**	**4.4**
2	4.1	3.5	3.1	2.6	2.2	1.9	1.8	2.8	4.9	6.9	8.0	8.9	9.6	10.1	9.4	9.4	9.5	9.2	7.8	6.6	5.8	5.2	5.0	4.4	**5.9**	**10.1**	**1.8**
3	3.6	2.6	2.1	1.7	1.7	1.4	1.2	3.3	5.8	8.6	11.2	12.7	13.6	14.4	14.6	13.9	13.2	12.4	11.4	10.2	8.9	8.3	7.7	5.7	**7.9**	**14.6**	**1.2**
4	5.1	4.6	4.5	4.9	4.5	4.0	4.4	5.3	7.7	9.2	11.4	13.6	13.7	14.7	15.0	15.5	15.1	14.6	13.8	13.3	12.3	10.8	9.5	8.8	**9.8**	**15.5**	**4.0**
5	8.2	7.2	6.7	6.4	6.0	6.0	5.7	7.2	10.6	14.4	14.9	19.3	21.0	21.4	21.3	20.9	19.9	17.9	15.3	14.9	13.9	13.7	13.1	12.4	**13.3**	**21.4**	**5.7**
6	11.5	11.1	10.5	9.9	9.2	8.8	8.5	9.0	9.8	10.7	11.3	12.1	13.2	13.6	14.1	14.5	15.0	14.6	14.0	13.6	13.5	13.0	11.9	11.3	**11.9**	**15.0**	**8.5**
7	12.0	13.5	13.4	13.1	13.3	13.4	13.7	14.0	14.8	16.0	17.3	18.4	18.9	19.2	19.7	21.8	21.3	19.6	20.3	17.1	18.0	15.9	14.5	14.8	**16.4**	**21.8**	**12.0**
8	14.4	13.2	11.8	10.2	10.3	10.4	8.7	9.4	11.2	12.2	13.1	13.8	14.7	14.1	13.3	13.2	13.4	13.0	12.5	11.6	12.1	12.3	11.7	11.5	**12.2**	**14.7**	**8.7**
9	11.6	11.6	11.6	11.5	11.3	11.0	9.7	10.6	13.2	14.6	16.7	19.1	20.2	17.6	16.8	17.3	18.2	18.6	18.2	17.6	17.1	16.1	15.1	14.4	**15.0**	**20.2**	**9.7**
10	13.8	13.3	13.0	12.5	12.4	12.4	12.0	12.1	11.6	9.7	9.0	8.0	7.5	7.1	7.4	7.5	7.6	7.2	6.5	5.9	5.3	4.7	4.6	4.6	**9.0**	**13.8**	**4.6**
11	4.5	4.1	4.3	3.9	3.6	3.8	5.2	5.5	5.5	7.2	10.3	12.4	12.5	12.6	12.7	12.9	12.6	12.3	11.6	10.1	9.3	9.9	9.6	8.5	**8.5**	**12.9**	**3.6**
12	8.6	7.8	7.2	6.7	6.1	5.6	5.2	5.0	5.4	6.3	7.0	7.4	8.3	9.1	9.9	10.1	9.2	8.6	6.8	6.2	6.0	5.1	5.0	4.3	**7.0**	**10.1**	**4.3**
13	3.8	3.6	2.7	2.2	1.2	1.3	0.7	1.4	3.2	5.8	7.3	8.5	8.8	9.5	10.7	12.4	12.1	10.1	8.7	7.7	7.4	8.4	8.5	7.2	**6.4**	**12.4**	**0.7**
14	6.0	7.6	8.2	8.1	7.3	7.0	6.0	6.8	9.5	11.1	12.1	12.8	13.5	14.2	14.6	14.6	13.9	12.3	10.2	8.7	7.1	6.4	5.3	5.3	**9.5**	**14.6**	**5.3**
15	6.3	5.8	5.4	5.2	4.4	4.0	3.5	3.6	5.6	7.8	9.0	10.7	11.6	12.7	14.1	13.5	13.0	12.4	11.6	10.9	10.7	9.6	9.4	9.2	**8.8**	**14.1**	**3.5**
16	8.4	6.9	6.0	5.4	5.5	5.6	4.4	5.0	8.1	10.7	12.5	13.3	15.3	14.2	14.6	15.7	17.0	15.4	14.0	12.6	11.9	10.4	9.0	8.3	**10.4**	**17.0**	**4.4**
17	7.6	7.3	7.0	6.4	6.3	6.0	5.9	7.4	10.2	12.3	13.9	17.3	18.9	19.7	20.6	19.5	18.3	17.2	16.6	16.1	15.4	15.2	14.4	15.4	**13.1**	**20.6**	**5.9**
18	14.5	13.8	13.5	13.2	13.6	13.7	14.0	14.3	12.6	11.0	10.8	10.8	11.4	12.0	12.3	12.2	11.6	10.8	10.0	9.5	8.8	8.2	7.5	6.5	**11.5**	**14.5**	**6.5**
19	6.4	5.6	5.2	4.1	4.1	4.2	2.7	3.7	6.9	9.5	11.0	12.4	13.5	13.9	14.3	14.3	13.6	12.0	11.0	9.9	8.6	8.3	7.9	7.1	**8.8**	**14.3**	**2.7**
20	5.9	6.8	6.8	5.9	5.2	4.8	4.4	4.7	5.5	6.3	7.0	8.1	8.5	8.9	8.6	8.1	8.1	8.0	7.9	7.7	7.4	7.0	6.8	7.2	**6.9**	**8.9**	**4.4**
21	7.2	7.2	6.9	6.7	6.5	6.3	5.7	6.3	---	---	---	---	---	---	---	---	10.1	11.3	11.6	11.9	12.4	13.3	14.2	13.4	**---**	**---**	**---**
22	12.7	12.6	12.6	11.9	10.9	10.3	9.9	9.5	9.5	10.0	12.4	14.3	14.5	14.0	13.1	12.8	12.3	11.9	11.2	10.6	10.4	10.2	10.0	10.0	**11.6**	**14.5**	**9.5**
23	10.0	9.5	8.8	8.3	7.7	7.3	6.9	6.7	7.3	8.1	9.2	10.1	11.3	12.2	12.6	13.1	12.7	11.2	10.2	8.5	7.0	6.7	6.6	6.4	**9.1**	**13.1**	**6.4**
24	6.5	6.9	5.8	4.4	3.5	3.9	4.3	4.6	6.1	8.3	9.7	10.8	11.2	11.2	11.1	10.8	10.3	9.6	9.2	8.4	7.7	7.0	5.6	4.0	**7.5**	**11.2**	**3.5**
25	3.1	2.4	1.8	1.3	0.9	0.4	0.4	0.6	1.2	2.1	2.9	3.8	3.9	4.2	4.4	4.6	4.1	3.5	3.1	2.2	1.6	0.7	0.5	0.6	**2.3**	**4.6**	**0.4**
26	0.8	1.1	1.3	1.5	1.8	2.4	2.9	3.0	3.9	4.9	5.7	6.3	6.0	6.1	6.1	6.2	6.2	6.4	6.5	6.5	6.6	6.5	6.1	6.0	**4.6**	**6.6**	**0.8**
27	5.5	4.8	4.2	3.6	3.1	4.1	3.6	4.0	6.4	8.7	9.2	8.5	8.3	8.2	7.5	7.0	5.7	4.7	4.0	3.5	3.0	2.6	1.9	1.6	**5.2**	**9.2**	**1.6**
28	1.8	1.9	2.1	1.8	1.7	2.5	2.7	2.7	3.1	3.6	3.4	3.2	3.4	3.0	2.3	1.7	0.6	0.0	-0.5	-0.9	-1.3	-1.8	-2.2	-2.5	**1.3**	**3.6**	**-2.5**
29	-2.6	-3.0	-3.3	-3.5	-3.5	-3.7	-3.9	-3.8	-3.1	-1.8	-0.3	0.7	1.8	3.0	3.6	3.3	3.3	3.2	2.9	2.3	2.1	2.0	1.0	0.1	**-0.1**	**3.6**	**-3.9**
30	-1.1	-1.4	-1.4	-1.6	-1.1	-1.0	-2.0	-0.5	1.5	3.6	6.4	10.2	12.2	12.9	12.5	12.2	10.4	9.2	8.4	7.6	6.2	4.7	4.3	3.9	**4.8**	**12.9**	**-2.0**
MEAN	**6.9**	**6.6**	**6.2**	**5.8**	**5.5**	**5.4**	**5.1**	**5.6**	**7.0**	**8.4**	**9.6**	**10.9**	**11.6**	**11.8**	**11.9**	**12.0**	**11.5**	**10.8**	**10.1**	**9.2**	**8.7**	**8.2**	**7.6**	**7.2**	**8.5**		
MAX	**14.5**	**13.8**	**13.5**	**13.2**	**13.6**	**13.7**	**14.0**	**14.3**	**14.8**	**16.0**	**17.3**	**19.3**	**21.0**	**21.4**	**21.3**	**21.8**	**21.3**	**19.6**	**20.3**	**17.6**	**18.0**	**16.1**	**15.1**	**15.4**		**21.8**	
MIN	**-2.6**	**-3.0**	**-3.3**	**-3.5**	**-3.5**	**-3.7**	**-3.9**	**-3.8**	**-3.1**	**-1.8**	**-0.3**	**0.7**	**1.8**	**3.0**	**2.3**	**1.7**	**0.6**	**0.0**	**-0.5**	**-0.9**	**-1.3**	**-1.8**	**-2.2**	**-2.5**			**-3.9**

POSSIBLE NUMBER OF OBSERVATIONS = 720 ACTUAL NUMBER OF OBSERVATIONS = 712 DATA RECOVERY RATE = 98.9%

MONTHLY MEAN = 8.5 Deg C

MAXIMUM TEMPERATURE = 21.8 Deg C DATE OF OCCURRENCE = 11/7 AT 1600 MAXIMUM DAILY MEAN = 16.4 Deg C DATE OF OCCURRENCE = 11/7

MINIMUM TEMPERATURE = -3.9 Deg C DATE OF OCCURRENCE = 11/29 AT 0700 MINUMUM DAILY MEAN = -0.1 Deg C DATE OF OCCURRENCE = 11/29

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

CSX AQ5

TEMPERATURE in Deg C for DECEMBER, 2023

Hr Beg Hr End Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	3.0	2.1	1.9	1.5	1.2	1.3	0.9	1.5	3.3	5.1	6.1	7.0	7.6	7.4	7.7	7.5	7.3	7.1	7.6	7.8	8.0	8.0	7.9	7.8	**5.3**	**8.0**	**0.9**
2	8.1	7.7	7.1	6.6	7.1	7.5	7.7	7.9	8.3	8.8	9.2	9.6	9.6	9.7	9.7	9.5	8.8	8.7	8.9	8.6	8.8	8.9	8.9	8.6	**8.5**	**9.7**	**6.6**
3	8.9	9.1	9.0	8.8	9.2	9.4	9.2	9.4	9.8	10.0	10.4	10.8	11.1	11.4	11.4	11.8	11.7	12.3	12.7	12.7	12.6	11.6	11.6	11.4	**10.7**	**12.7**	**8.8**
4	12.0	11.1	10.4	9.2	9.1	7.9	7.2	7.1	8.9	10.5	10.7	10.8	11.4	11.7	11.9	11.8	10.6	9.8	9.3	8.3	7.2	6.6	5.9	5.3	**9.4**	**12.0**	**5.3**
5	5.4	5.2	4.7	3.9	4.4	4.1	3.9	3.5	4.5	5.3	7.1	7.7	8.2	8.4	8.5	8.2	7.7	7.3	7.2	6.9	6.7	6.1	5.3	4.7	**6.0**	**8.5**	**3.5**
6	4.8	4.7	4.8	4.8	4.5	4.2	3.9	3.6	3.7	4.1	4.2	5.2	4.9	5.3	5.7	5.8	5.5	4.7	4.2	3.6	3.0	2.4	1.2	1.7	**4.2**	**5.8**	**1.2**
7	1.2	0.8	1.0	0.4	0.3	0.8	0.9	1.3	1.7	2.9	3.6	4.6	6.1	6.4	6.7	6.6	6.6	6.7	6.8	6.6	6.2	5.9	5.8	5.6	**4.0**	**6.8**	**0.3**
8	4.1	3.0	2.2	1.8	1.7	1.5	1.1	1.9	3.8	4.9	6.6	8.0	8.5	9.2	10.1	11.1	10.9	10.3	9.2	8.3	7.0	6.7	5.6	6.1	**6.0**	**11.1**	**1.1**
9	5.1	4.5	4.5	3.9	3.7	4.1	4.5	3.8	3.7	4.1	4.5	5.2	6.3	7.8	7.6	7.6	7.6	7.6	6.8	6.4	6.1	6.1	6.6	6.6	**5.6**	**7.8**	**3.7**
10	6.5	6.8	6.5	6.4	7.3	7.8	8.2	8.7	9.6	9.2	10.3	10.7	11.8	14.0	14.1	14.5	14.8	15.2	14.6	14.4	11.5	8.7	7.6	6.1	**10.2**	**15.2**	**6.1**
11	4.7	4.4	3.2	2.5	1.5	2.0	2.4	2.2	3.2	5.3	6.5	6.7	7.2	7.1	7.2	6.9	6.1	5.3	4.7	4.3	3.6	2.8	2.1	1.9	**4.3**	**7.2**	**1.5**
12	1.5	1.1	0.5	0.0	-0.2	-0.6	-0.2	-0.1	1.4	3.1	4.7	6.3	7.4	8.1	8.7	8.8	8.3	7.1	6.1	4.9	4.3	3.4	3.1	2.8	**3.8**	**8.8**	**-0.6**
13	1.6	1.2	0.8	0.8	0.5	0.1	1.1	2.9	6.9	7.6	8.4	8.6	8.3	8.0	7.8	7.7	7.2	6.0	4.9	4.3	4.2	4.2	3.4	2.1	**4.5**	**8.6**	**0.1**
14	1.4	0.6	-0.4	-1.2	-1.3	-1.1	-1.4	-1.4	0.2	2.6	4.3	5.2	5.9	7.0	7.7	7.1	6.9	6.1	4.8	3.8	3.3	2.6	2.2	1.0	**2.7**	**7.7**	**-1.4**
15	0.6	0.3	0.3	1.4	2.0	2.9	1.8	1.8	4.8	8.2	10.1	11.4	12.7	14.0	14.8	14.7	13.5	11.8	9.8	8.7	8.0	5.6	3.9	3.4	**6.9**	**14.8**	**0.3**
16	2.7	2.6	3.6	4.0	2.4	2.5	2.0	2.1	2.9	6.3	8.9	10.7	11.1	10.8	12.1	11.6	10.4	8.6	7.5	8.1	8.0	7.3	6.9	6.1	**6.6**	**12.1**	**2.0**
17	5.8	5.7	5.9	6.1	6.4	7.0	7.2	7.3	7.7	8.2	8.9	9.9	10.9	11.8	11.6	11.8	11.6	11.4	11.7	12.0	12.5	12.9	13.2	13.3	**9.6**	**13.3**	**5.7**
18	13.3	13.0	12.6	12.7	12.4	12.5	12.1	11.8	10.9	10.7	10.9	11.2	10.9	10.7	10.5	10.4	8.9	7.1	6.6	6.7	6.5	5.9	4.7	3.9	**9.9**	**13.3**	**3.9**
19	3.6	3.2	3.1	2.9	2.6	2.7	3.1	2.7	3.3	4.2	4.6	4.5	4.3	4.2	4.1	4.1	3.7	3.1	2.5	1.9	1.6	1.1	0.4	0.1	**3.0**	**4.6**	**0.1**
20	-0.8	-1.2	-1.5	-1.7	-2.1	-2.4	-2.0	-1.9	-0.7	0.7	2.2	3.5	5.4	6.9	7.8	8.2	7.5	6.1	4.9	4.4	4.0	3.2	1.9	1.3	**2.2**	**8.2**	**-2.4**
21	1.4	1.3	0.4	0.5	0.5	0.9	1.7	1.0	3.0	5.1	5.7	6.1	6.6	7.3	7.3	7.0	6.8	6.3	6.1	5.8	5.5	5.3	5.3	5.2	**4.3**	**7.3**	**0.4**
22	5.1	5.0	4.8	4.5	4.0	3.4	2.9	2.6	2.5	2.8	3.5	4.0	4.1	4.3	4.9	5.0	5.2	5.2	4.8	4.6	4.2	4.0	3.8	3.7	**4.1**	**5.2**	**2.5**
23	3.5	3.4	3.2	3.1	2.7	2.7	2.9	3.2	3.6	4.5	5.3	5.6	5.9	6.4	6.7	7.1	7.1	7.0	6.6	6.2	6.0	5.9	6.2	6.1	**5.0**	**7.1**	**2.7**
24	5.9	5.5	4.8	4.4	4.5	5.0	5.2	5.4	5.6	6.0	6.5	7.0	7.2	7.2	7.2	7.2	6.9	6.5	5.9	6.1	6.2	6.2	6.4	6.6	**6.1**	**7.2**	**4.4**
25	6.6	6.8	6.7	6.4	6.3	6.4	6.1	5.6	6.4	7.6	8.0	9.1	10.2	9.7	10.1	10.8	9.8	9.3	9.1	8.3	7.7	6.9	6.7	6.7	**7.8**	**10.8**	**5.6**
26	7.0	6.5	6.8	7.2	7.3	7.3	7.2	6.7	6.3	6.4	6.7	6.9	7.0	7.2	7.6	7.8	7.9	8.0	8.1	8.2	8.1	8.0	7.7	7.5	**7.3**	**8.2**	**6.3**
27	7.5	7.5	7.4	7.4	7.4	7.5	7.5	7.5	7.6	7.9	8.3	8.6	9.1	9.8	10.4	11.3	11.5	11.3	11.5	11.4	11.4	11.4	11.4	11.0	**9.3**	**11.5**	**7.4**
28	10.9	11.2	11.5	11.4	11.3	11.4	11.4	11.1	11.2	11.5	12.1	12.3	12.7	13.1	13.5	13.7	13.5	11.4	9.7	9.6	11.1	11.1	11.1	10.5	**11.6**	**13.7**	**9.6**
29	10.2	10.0	9.7	9.3	9.0	8.3	7.3	7.3	8.4	9.2	10.2	10.8	11.5	11.8	12.0	11.8	11.1	10.5	10.3	9.9	9.1	8.0	7.4	7.0	**9.6**	**12.0**	**7.0**
30	6.8	6.5	6.0	5.4	4.5	3.8	3.6	3.8	5.0	6.1	6.6	7.1	7.2	7.7	8.3	8.9	9.0	8.7	8.1	7.2	7.6	7.4	6.4	6.3	**6.6**	**9.0**	**3.6**
31	6.0	6.1	6.2	6.0	5.9	5.9	5.8	5.7	5.7	6.4	7.0	7.5	8.2	8.5	8.8	8.6	7.2	7.0	6.8	6.4	6.0	6.2	5.9	6.1	**6.7**	**8.8**	**5.7**
MEAN	**5.3**	**5.0**	**4.8**	**4.5**	**4.4**	**4.4**	**4.4**	**4.4**	**5.3**	**6.3**	**7.2**	**7.8**	**8.4**	**8.8**	**9.1**	**9.2**	**8.8**	**8.2**	**7.7**	**7.3**	**7.0**	**6.5**	**6.0**	**5.7**	**6.5**		
MAX	**13.3**	**13.0**	**12.6**	**12.7**	**12.4**	**12.5**	**12.1**	**11.8**	**11.2**	**11.5**	**12.1**	**12.3**	**12.7**	**14.0**	**14.8**	**14.7**	**14.8**	**15.2**	**14.6**	**14.4**	**12.6**	**12.9**	**13.2**	**13.3**		**15.2**	
MIN	**-0.8**	**-1.2**	**-1.5**	**-1.7**	**-2.1**	**-2.4**	**-2.0**	**-1.9**	**-0.7**	**0.7**	**2.2**	**3.5**	**4.1**	**4.2**	**4.1**	**4.1**	**3.7**	**3.1**	**2.5**	**1.9**	**1.6**	**1.1**	**0.4**	**0.1**			**-2.4**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 744 DATA RECOVERY RATE = 100.0%

MONTHLY MEAN = 6.5 Deg C

MAXIMUM TEMPERATURE = 15.2 Deg C DATE OF OCCURRENCE = 12/10 AT 1800 MAXIMUM DAILY MEAN = 11.6 Deg C DATE OF OCCURRENCE = 12/28

MINIMUM TEMPERATURE = -2.4 Deg C DATE OF OCCURRENCE = 12/20 AT 0600 MINUMUM DAILY MEAN = 2.2 Deg C DATE OF OCCURRENCE = 12/20

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

APPENDIX D. HOURLY RELATIVE HUMIDITY DATA FOR FOURTH QUARTER 2023

Draft

CSX AQ5

RELATIVE HUMIDITY in % for OCTOBER, 2023

Hr Beg Hr End Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	90	91	90	88	87	85	82	78	72	65	60	54	50	47	46	46	47	50	54	58	64	68	71	73	**67**	**91**	**46**
2	77	76	72	73	75	77	78	74	69	62	61	60	69	66	67	69	71	72	75	74	77	81	82	83	**72**	**83**	**60**
3	85	88	90	92	92	93	92	87	85	82	79	73	67	62	65	63	67	70	76	75	80	85	84	87	**80**	**93**	**62**
4	89	89	92	92	93	93	95	88	85	81	74	70	67	62	56	58	38	43	51	60	66	67	68	72	**73**	**95**	**38**
5	79	85	86	85	87	89	87	85	86	82	76	77	75	69	69	72	76	81	82	81	82	82	84	87	**81**	**89**	**69**
6	88	91	91	92	93	94	95	94	92	87	88	88	89	88	85	81	82	85	84	87	89	91	92	93	**89**	**95**	**81**
7	94	94	95	97	97	85	87	83	84	83	85	89	81	64	55	44	40	44	48	51	54	59	61	63	**72**	**97**	**40**
8	67	71	70	71	74	73	72	67	61	56	52	51	45	41	37	39	39	41	46	50	53	54	58	60	**56**	**74**	**37**
9	62	64	64	66	68	74	67	66	62	53	47	46	46	46	49	50	52	54	64	76	81	81	79	81	**62**	**81**	**46**
10	84	88	87	89	91	93	93	90	87	80	66	56	48	43	43	41	40	46	60	65	69	73	77	80	**70**	**93**	**40**
11	82	85	87	89	89	90	87	73	53	38	31	29	29	29	29	31	32	39	45	51	54	61	68	71	**57**	**90**	**29**
12	74	77	79	81	79	78	77	70	61	58	53	48	42	42	45	47	48	52	57	62	64	68	68	71	**63**	**81**	**42**
13	70	70	72	66	65	69	72	67	64	55	53	49	46	54	55	61	62	61	64	68	70	72	69	61	**63**	**72**	**46**
14	63	72	75	71	71	74	81	81	87	91	91	91	92	96	97	98	98	98	98	98	98	96	94	93	**88**	**98**	**63**
15	95	93	91	88	86	84	84	81	75	68	61	55	53	52	51	48	48	52	57	66	71	76	78	78	**70**	**95**	**48**
16	78	82	84	85	86	87	85	79	70	64	62	60	59	58	57	59	59	61	64	65	65	68	71	72	**70**	**87**	**57**
17	77	80	82	83	84	85	84	79	73	69	64	59	56	56	55	54	57	59	63	66	71	72	71	75	**70**	**85**	**54**
18	81	80	82	84	85	83	81	73	60	51	47	45	43	43	44	45	50	55	63	69	68	69	75	81	**65**	**85**	**43**
19	83	88	91	89	90	92	92	89	83	74	64	60	53	56	59	60	62	69	73	76	75	74	73	74	**75**	**92**	**53**
20	78	80	82	85	88	89	90	91	85	75	75	67	63	68	65	80	87	92	95	95	96	97	98	90	**84**	**98**	**63**
21	89	90	89	88	88	85	83	78	72	66	60	55	54	52	49	51	54	55	54	58	62	65	67	65	**68**	**90**	**49**
22	66	70	75	77	74	74	72	74	70	54	51	45	39	37	35	35	37	40	44	49	51	48	47	50	**55**	**77**	**35**
23	54	58	61	63	65	67	65	62	56	51	46	41	37	34	32	31	32	41	53	64	66	71	76	80	**54**	**80**	**31**
24	80	82	82	84	85	88	88	83	76	63	51	54	61	62	58	57	56	58	64	75	81	87	90	92	**73**	**92**	**51**
25	90	91	92	92	91	90	91	84	73	61	52	45	42	59	57	58	59	59	65	73	79	82	82	84	**73**	**92**	**42**
26	85	85	87	89	91	91	92	89	80	74	68	72	63	65	64	66	73	76	68	71	76	82	87	90	**79**	**92**	**63**
27	91	94	92	92	92	93	93	91	79	67	71	59	56	46	48	49	53	75	71	72	74	79	83	88	**75**	**94**	**46**
28	90	93	93	91	91	92	92	77	67	62	58	56	53	53	51	47	50	56	66	67	70	69	79	79	**71**	**93**	**47**
29	75	85	83	81	80	80	78	77	78	79	80	76	74	72	70	71	72	74	75	76	77	79	81	83	**77**	**85**	**70**
30	84	85	86	88	89	92	95	96	94	89	83	76	68	65	65	67	76	86	83	74	64	61	60	60	**79**	**96**	**60**
31	61	61	58	48	50	55	60	60	59	59	57	54	52	52	53	53	53	57	61	65	66	52	53	55	**56**	**66**	**48**
MEAN	**79**	**82**	**83**	**83**	**83**	**84**	**83**	**80**	**74**	**68**	**63**	**60**	**57**	**56**	**55**	**56**	**57**	**61**	**65**	**69**	**71**	**73**	**75**	**76**	**71**		
MAX	**95**	**94**	**95**	**97**	**97**	**94**	**95**	**96**	**94**	**91**	**91**	**91**	**92**	**96**	**97**	**98**	**98**	**98**	**98**	**98**	**98**	**97**	**98**	**93**		**98**	
MIN	**54**	**58**	**58**	**48**	**50**	**55**	**60**	**60**	**53**	**38**	**31**	**29**	**29**	**29**	**29**	**31**	**32**	**39**	**44**	**49**	**51**	**48**	**47**	**50**			**29**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 744 DATA RECOVERY RATE = 100.0%

MONTHLY MEAN = 71 %

MAXIMUM RELATIVE HUMIDITY = 98 % DATE OF OCCURRENCE = 10/14 AT 1700 MAXIMUM DAILY MEAN = 89 % DATE OF OCCURRENCE = 10/6

MINIMUM RELATIVE HUMIDITY = 29 % DATE OF OCCURRENCE = 10/11 AT 1400 MINUMUM DAILY MEAN = 54 % DATE OF OCCURRENCE = 10/23

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

CSX AQ5

RELATIVE HUMIDITY in % for NOVEMBER, 2023

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	59	62	66	67	64	63	66	73	70	61	52	46	43	40	39	41	42	43	46	49	52	53	55	58	**55**	**73**	**39**
2	61	65	67	70	72	74	74	70	60	49	42	39	38	33	48	55	54	55	58	64	67	66	64	67	**59**	**74**	**33**
3	75	79	82	84	86	88	89	86	76	61	46	39	38	35	39	50	53	57	62	68	73	76	76	82	**67**	**89**	**35**
4	86	88	88	90	91	92	93	90	80	70	61	59	66	63	61	61	68	68	71	75	77	80	86	90	**77**	**93**	**59**
5	93	93	93	93	92	92	90	83	72	55	67	45	36	35	35	35	36	43	53	51	53	52	56	60	**63**	**93**	**35**
6	62	63	63	63	64	64	63	59	56	60	62	62	62	65	69	72	68	71	76	81	86	87	90	92	**69**	**92**	**56**
7	94	86	83	81	77	74	71	69	67	63	59	56	55	56	56	51	53	59	45	47	38	44	49	49	**62**	**94**	**38**
8	55	59	64	71	69	66	74	70	60	54	49	46	43	54	60	59	59	63	64	71	66	71	76	79	**63**	**79**	**43**
9	80	82	84	84	85	87	91	91	84	79	71	63	62	73	78	80	81	81	76	72	60	52	53	54	**75**	**91**	**52**
10	51	49	49	50	52	50	53	56	66	76	84	88	89	89	93	91	91	90	91	93	94	96	97	96	**76**	**97**	**49**
11	96	96	96	95	95	93	87	88	91	86	71	62	61	63	63	64	65	65	67	75	80	70	62	65	**77**	**96**	**61**
12	61	64	66	65	65	65	65	65	60	56	54	53	52	50	49	51	60	62	69	71	68	71	70	69	**62**	**71**	**49**
13	69	70	73	76	82	80	81	78	73	65	62	62	67	72	67	54	54	71	76	78	76	70	69	73	**71**	**82**	**54**
14	76	64	58	57	59	59	63	62	53	48	45	42	40	38	36	36	38	44	53	60	67	69	73	76	**55**	**76**	**36**
15	76	81	82	81	83	85	87	86	81	76	75	71	69	66	50	62	67	70	67	64	61	64	69	67	**72**	**87**	**50**
16	68	74	78	82	84	81	86	85	74	63	61	64	55	65	66	62	48	49	55	61	70	78	81	85	**70**	**86**	**48**
17	88	91	92	93	94	95	95	96	90	84	82	69	63	61	55	61	67	73	76	78	81	83	88	85	**81**	**96**	**55**
18	92	95	96	97	95	92	90	82	77	71	63	54	45	41	39	36	38	42	45	48	49	49	49	54	**64**	**97**	**36**
19	54	58	60	66	67	68	75	71	61	49	42	37	34	34	33	34	36	42	45	50	53	53	53	57	**51**	**75**	**33**
20	63	59	61	65	68	68	67	64	59	54	51	48	45	46	54	58	55	47	44	45	50	53	54	64	**56**	**68**	**44**
21	65	58	57	59	60	62	66	69	---	---	---	---	---	---	---	---	97	97	97	98	98	96	95	97	**---**	**---**	**---**
22	98	98	98	96	95	96	96	97	96	95	87	73	66	61	61	58	60	62	65	67	68	68	68	67	**79**	**98**	**58**
23	67	67	63	63	64	62	62	63	61	58	54	51	48	46	45	45	46	53	57	66	74	74	73	74	**60**	**74**	**45**
24	73	70	73	81	85	83	79	78	74	67	60	52	51	50	51	52	55	57	54	49	47	45	48	53	**62**	**85**	**45**
25	54	55	56	57	59	59	59	57	55	53	51	50	52	54	53	53	55	58	60	66	70	74	76	74	**59**	**76**	**50**
26	74	77	79	80	81	83	84	84	81	76	73	73	80	85	91	96	97	98	98	98	97	97	96	94	**86**	**98**	**73**
27	93	95	97	98	98	92	93	91	82	70	61	54	51	48	47	47	48	51	50	51	49	50	54	57	**68**	**98**	**47**
28	55	57	58	60	61	54	55	52	48	45	44	45	37	34	36	38	41	41	42	44	45	46	48	49	**47**	**61**	**34**
29	50	51	54	54	54	55	56	59	55	49	45	41	35	31	31	32	33	35	39	42	43	44	47	51	**45**	**59**	**31**
30	59	63	64	65	61	63	68	67	56	53	49	42	41	38	43	46	56	60	68	74	78	82	81	80	**61**	**82**	**38**
MEAN	**72**	**72**	**73**	**75**	**75**	**75**	**76**	**75**	**70**	**64**	**59**	**55**	**52**	**53**	**53**	**54**	**57**	**60**	**62**	**65**	**66**	**67**	**68**	**71**	**65**		
MAX	**98**	**98**	**98**	**98**	**98**	**96**	**96**	**97**	**96**	**95**	**87**	**88**	**89**	**89**	**93**	**96**	**97**	**98**	**98**	**98**	**98**	**97**	**97**	**97**		**98**	
MIN	**50**	**49**	**49**	**50**	**52**	**50**	**53**	**52**	**48**	**45**	**42**	**37**	**34**	**31**	**31**	**32**	**33**	**35**	**39**	**42**	**38**	**44**	**47**	**49**			**31**

POSSIBLE NUMBER OF OBSERVATIONS = 720 ACTUAL NUMBER OF OBSERVATIONS = 712 DATA RECOVERY RATE = 98.9%

MONTHLY MEAN = 65 %

MAXIMUM RELATIVE HUMIDITY = 98 % DATE OF OCCURRENCE = 11/26 AT 1900 MAXIMUM DAILY MEAN = 86 % DATE OF OCCURRENCE = 11/26

MINIMUM RELATIVE HUMIDITY = 31 % DATE OF OCCURRENCE = 11/29 AT 1500 MINUMUM DAILY MEAN = 45 % DATE OF OCCURRENCE = 11/29

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

Draft

CSX AQ5

RELATIVE HUMIDITY in % for DECEMBER, 2023

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	81	84	84	85	88	88	89	89	85	76	71	69	67	75	78	87	94	97	98	98	97	97	97	98	**86**	**98**	**67**
2	98	99	99	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	**100**	**100**	**98**
3	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	99	98	97	98	96	91	**99**	**100**	**91**
4	61	56	56	60	59	65	72	73	65	55	53	54	51	48	48	47	51	55	57	62	66	67	70	72	**59**	**73**	**47**
5	69	68	69	71	68	69	71	74	70	68	60	54	52	52	52	53	55	57	58	62	60	65	75	79	**64**	**79**	**52**
6	80	79	77	75	76	75	76	74	73	72	73	69	74	68	57	55	56	58	62	64	62	62	69	66	**69**	**80**	**55**
7	68	70	70	73	75	71	72	72	71	68	64	60	53	52	52	54	56	56	56	59	62	66	67	69	**64**	**75**	**52**
8	75	79	83	85	86	88	88	87	86	83	78	71	69	69	66	59	58	64	75	79	86	90	93	92	**79**	**93**	**58**
9	94	95	97	97	98	98	98	99	99	100	100	99	93	87	88	88	87	87	91	93	94	95	93	93	**94**	**100**	**87**
10	94	93	94	95	94	94	93	93	93	97	99	100	100	100	100	100	100	100	99	100	93	89	91	88	**96**	**100**	**88**
11	91	91	93	94	96	96	94	94	90	80	73	69	58	50	50	50	53	55	56	55	57	62	62	61	**72**	**96**	**50**
12	63	64	68	72	75	77	74	73	67	61	54	47	44	41	39	39	41	47	52	58	61	64	66	67	**59**	**77**	**39**
13	74	77	80	80	82	87	78	71	54	51	43	34	36	34	33	32	33	37	41	43	43	42	46	52	**53**	**87**	**32**
14	53	57	63	68	67	66	67	66	60	54	46	43	41	38	33	50	40	38	49	56	52	54	52	60	**53**	**68**	**33**
15	63	67	67	60	57	56	62	62	52	41	37	36	35	33	32	32	35	38	45	48	52	61	71	73	**50**	**73**	**32**
16	77	79	71	65	73	72	75	78	78	70	58	50	50	60	51	53	57	66	73	76	80	84	87	89	**70**	**89**	**50**
17	90	91	91	93	94	96	97	99	99	100	100	100	98	93	94	97	98	98	99	99	99	99	98	98	**97**	**100**	**90**
18	98	99	98	97	92	91	89	84	79	69	62	57	55	52	52	51	50	51	52	52	49	51	55	58	**68**	**99**	**49**
19	59	60	61	61	62	59	57	58	56	53	53	52	52	52	51	50	50	50	51	53	54	55	59	60	**55**	**62**	**50**
20	66	68	69	69	71	72	70	69	65	60	53	49	42	36	33	32	37	42	46	47	49	52	59	62	**55**	**72**	**32**
21	60	60	67	72	70	69	63	65	59	54	55	54	53	50	50	51	54	57	60	62	64	65	63	61	**60**	**72**	**50**
22	62	62	64	63	63	59	62	56	55	54	54	53	56	58	58	61	63	66	66	68	70	73	73	74	**62**	**74**	**53**
23	75	78	79	81	82	84	85	85	86	85	83	83	83	82	82	82	81	80	84	87	90	87	84	86	**83**	**90**	**75**
24	87	89	91	93	93	91	92	91	91	90	89	87	87	89	90	89	91	92	93	94	93	94	93	91	**91**	**94**	**87**
25	90	88	87	88	87	85	84	88	85	81	81	79	75	78	77	74	80	81	79	82	84	87	91	93	**84**	**93**	**74**
26	94	97	97	96	96	96	97	99	99	99	98	97	97	97	96	96	97	97	96	94	94	94	96	98	**97**	**99**	**94**
27	99	99	99	99	99	99	99	99	99	99	99	100	100	100	100	99	98	99	99	99	100	99	99	99	**99**	**100**	**98**
28	99	99	98	98	96	96	96	96	95	93	91	89	87	86	84	81	83	89	95	94	85	86	84	82	**91**	**99**	**81**
29	83	83	81	78	77	77	83	82	73	69	61	54	48	47	47	48	51	53	54	54	54	50	51	52	**63**	**83**	**47**
30	52	54	56	60	64	68	70	69	64	60	60	59	59	58	57	56	55	56	58	61	59	58	61	62	**60**	**70**	**52**
31	64	63	59	56	53	52	53	52	53	51	50	49	48	48	48	51	66	65	64	66	67	67	70	68	**58**	**70**	**48**
MEAN	**78**	**79**	**80**	**80**	**80**	**81**	**81**	**80**	**77**	**74**	**71**	**68**	**67**	**65**	**64**	**65**	**67**	**69**	**71**	**73**	**73**	**75**	**76**	**77**	**74**		
MAX	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**		**100**	
MIN	**52**	**54**	**56**	**56**	**53**	**52**	**53**	**52**	**52**	**41**	**37**	**34**	**35**	**33**	**32**	**32**	**33**	**37**	**41**	**43**	**43**	**42**	**46**	**52**			**32**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 744 DATA RECOVERY RATE = 100.0%

MONTHLY MEAN = 74 %

MAXIMUM RELATIVE HUMIDITY = 100 % DATE OF OCCURRENCE = 12/2 AT 0500 MAXIMUM DAILY MEAN = 100 % DATE OF OCCURRENCE = 12/2

MINIMUM RELATIVE HUMIDITY = 32 % DATE OF OCCURRENCE = 12/15 AT 1500 MINUMUM DAILY MEAN = 50 % DATE OF OCCURRENCE = 12/15

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

APPENDIX E. HOURLY BAROMETRIC PRESSURE DATA FOR FOURTH QUARTER 2023

Draft

CSX AQ5

PRESSURE in mb for OCTOBER, 2023

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	1023	1022	1022	1022	1022	1022	1023	1024	1024	1024	1024	1023	1022	1022	1021	1021	1021	1021	1021	1022	1022	1022	1022	1022	**1022**	**1024**	**1021**
2	1021	1022	1022	1022	1022	1022	1023	1023	1023	1023	1023	1022	1022	1021	1021	1021	1021	1021	1021	1022	1022	1022	1022	1021	**1022**	**1023**	**1021**
3	1021	1022	1021	1021	1021	1022	1022	1023	1023	1023	1023	1022	1022	1021	1020	1020	1020	1020	1020	1021	1021	1021	1021	1021	**1021**	**1023**	**1020**
4	1021	1021	1021	1021	1021	1022	1022	1023	1023	1024	1023	1023	1022	1022	1022	1021	1021	1021	1021	1022	1022	1023	1023	1023	**1022**	**1024**	**1021**
5	1023	1023	1023	1023	1023	1023	1024	1024	1024	1024	1023	1022	1021	1020	1020	1019	1018	1018	1019	1019	1019	1018	1018	1018	**1021**	**1024**	**1018**
6	1017	1017	1016	1016	1016	1016	1016	1016	1016	1016	1015	1015	1014	1013	1013	1013	1012	1012	1012	1012	1012	1012	1011	1011	**1014**	**1017**	**1011**
7	1010	1009	1008	1008	1008	1008	1008	1008	1009	1010	1009	1009	1008	1008	1007	1007	1008	1008	1009	1009	1009	1010	1009	1009	**1009**	**1010**	**1007**
8	1009	1008	1008	1008	1008	1008	1008	1009	1009	1009	1009	1008	1008	1007	1007	1007	1007	1008	1008	1009	1009	1010	1010	1010	**1008**	**1010**	**1007**
9	1010	1010	1010	1010	1010	1010	1010	1011	1011	1011	1011	1010	1009	1009	1008	1008	1008	1008	1009	1009	1009	1009	1010	1010	**1010**	**1011**	**1008**
10	1010	1010	1010	1010	1010	1010	1010	1011	1011	1011	1011	1010	1009	1009	1009	1008	1009	1009	1009	1010	1010	1010	1010	1010	**1010**	**1011**	**1008**
11	1010	1010	1010	1010	1011	1011	1012	1012	1013	1013	1013	1012	1011	1011	1011	1011	1011	1011	1011	1011	1012	1012	1012	1012	**1011**	**1013**	**1010**
12	1012	1012	1012	1012	1012	1013	1013	1013	1014	1014	1013	1013	1012	1011	1011	1011	1011	1011	1011	1012	1012	1012	1013	1013	**1012**	**1014**	**1011**
13	1013	1013	1013	1013	1014	1014	1015	1016	1017	1017	1017	1016	1016	1015	1014	1014	1014	1014	1015	1015	1015	1015	1015	1015	**1015**	**1017**	**1013**
14	1014	1013	1012	1011	1011	1011	1011	1010	1010	1009	1008	1006	1005	1003	1002	1002	1001	1000	1000	1000	1000	1000	1000	1000	**1006**	**1014**	**1000**
15	1000	1000	1001	1001	1002	1002	1003	1004	1004	1004	1004	1004	1003	1003	1003	1003	1003	1004	1004	1005	1005	1006	1006	1006	**1003**	**1006**	**1000**
16	1006	1006	1006	1005	1005	1006	1006	1006	1006	1007	1007	1006	1006	1006	1006	1006	1006	1007	1007	1008	1009	1009	1010	1010	**1007**	**1010**	**1005**
17	1010	1010	1010	1011	1011	1012	1012	1014	1014	1015	1015	1015	1014	1015	1015	1015	1016	1016	1017	1018	1018	1019	1019	1019	**1015**	**1019**	**1010**
18	1020	1020	1020	1020	1020	1021	1021	1022	1022	1022	1022	1022	1021	1021	1020	1020	1021	1021	1021	1021	1021	1021	1021	1021	**1021**	**1022**	**1020**
19	1022	1022	1021	1021	1021	1021	1021	1021	1021	1020	1020	1019	1018	1017	1016	1016	1015	1015	1015	1015	1015	1014	1014	1013	**1018**	**1022**	**1013**
20	1012	1012	1011	1010	1009	1009	1008	1008	1007	1006	1005	1004	1002	1001	1000	1000	999	999	999	999	998	998	997	996	**1004**	**1012**	**996**
21	996	996	995	996	996	996	996	996	997	997	997	997	997	997	998	999	1000	1001	1002	1003	1003	1003	1004	1004	**998**	**1004**	**995**
22	1003	1003	1004	1004	1005	1005	1006	1007	1007	1008	1008	1008	1008	1008	1008	1009	1010	1011	1012	1013	1014	1015	1016	1017	**1009**	**1017**	**1003**
23	1017	1018	1018	1019	1020	1021	1021	1022	1023	1023	1023	1023	1023	1022	1022	1023	1023	1023	1024	1025	1025	1025	1026	1026	**1022**	**1026**	**1017**
24	1026	1026	1026	1027	1027	1028	1028	1029	1029	1029	1029	1029	1028	1027	1026	1026	1026	1026	1027	1027	1027	1027	1027	1027	**1027**	**1029**	**1026**
25	1027	1027	1026	1026	1027	1027	1027	1027	1027	1027	1027	1026	1025	1025	1024	1024	1024	1025	1025	1025	1025	1025	1025	1025	**1026**	**1027**	**1024**
26	1024	1024	1024	1024	1024	1024	1025	1025	1026	1025	1025	1024	1023	1023	1022	1022	1022	1022	1022	1022	1022	1022	1022	1022	**1023**	**1026**	**1022**
27	1022	1021	1021	1021	1022	1021	1022	1022	1022	1022	1021	1021	1020	1019	1019	1018	1019	1018	1018	1018	1018	1018	1018	1018	**1020**	**1022**	**1018**
28	1018	1017	1017	1017	1017	1018	1018	1019	1019	1019	1019	1018	1017	1017	1016	1016	1016	1017	1017	1017	1017	1018	1018	1018	**1018**	**1019**	**1016**
29	1017	1017	1017	1017	1018	1017	1017	1018	1017	1017	1017	1016	1015	1015	1014	1014	1014	1014	1015	1015	1015	1014	1014	1014	**1016**	**1018**	**1014**
30	1013	1012	1012	1011	1010	1010	1009	1009	1009	1008	1007	1006	1005	1006	1007	1008	1010	1012	1013	1014	1015	1016	1017	1017	**1011**	**1017**	**1005**
31	1017	1018	1018	1019	1019	1020	1020	1021	1021	1020	1020	1019	1018	1017	1017	1016	1016	1016	1016	1016	1016	1016	1015	1015	**1018**	**1021**	**1015**
MEAN	**1015**	**1015**	**1015**	**1015**	**1015**	**1015**	**1015**	**1016**	**1016**	**1016**	**1016**	**1015**	**1014**	**1014**	**1014**	**1013**	**1014**	**1014**	**1014**	**1015**	**1015**	**1015**	**1015**	**1015**	**1015**		
MAX	**1027**	**1027**	**1026**	**1027**	**1027**	**1028**	**1028**	**1029**	**1029**	**1029**	**1029**	**1029**	**1028**	**1027**	**1026**	**1026**	**1026**	**1026**	**1027**	**1027**	**1027**	**1027**	**1027**	**1027**		**1029**	
MIN	**996**	**996**	**995**	**996**	**996**	**996**	**996**	**996**	**997**	**997**	**997**	**997**	**997**	**997**	**998**	**999**	**999**	**999**	**999**	**999**	**998**	**998**	**997**	**996**			**995**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 744 DATA RECOVERY RATE = 100.0%

MONTHLY MEAN = 1015 mb

MAXIMUM PRESSURE = 1029 mb DATE OF OCCURRENCE = 10/24 AT 0900 MAXIMUM DAILY MEAN = 1027 mb DATE OF OCCURRENCE = 10/24

MINIMUM PRESSURE = 995 mb DATE OF OCCURRENCE = 10/21 AT 0300 MINUMUM DAILY MEAN = 998 mb DATE OF OCCURRENCE = 10/21

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

CSX AQ5

PRESSURE in mb for NOVEMBER, 2023

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	1015	1015	1015	1015	1016	1017	1018	1019	1020	1020	1021	1021	1020	1021	1021	1022	1023	1024	1025	1026	1027	1027	1028	1028	**1021**	**1028**	**1015**
2	1029	1029	1030	1030	1031	1032	1032	1033	1034	1034	1034	1033	1032	1032	1032	1031	1031	1031	1032	1032	1032	1032	1032	1032	**1032**	**1034**	**1029**
3	1032	1032	1032	1032	1032	1032	1032	1032	1033	1032	1032	1031	1030	1029	1029	1028	1028	1028	1028	1028	1028	1028	1027	1027	**1030**	**1033**	**1027**
4	1026	1026	1025	1025	1025	1025	1025	1025	1025	1024	1024	1023	1022	1021	1021	1021	1020	1020	1020	1020	1020	1019	1019	1019	**1022**	**1026**	**1019**
5	1018	1018	1018	1017	1017	1017	1017	1018	1017	1017	1017	1016	1016	1015	1015	1015	1016	1016	1017	1018	1018	1019	1019	1020	**1017**	**1020**	**1015**
6	1020	1020	1020	1021	1021	1021	1022	1022	1022	1022	1021	1020	1019	1018	1017	1016	1016	1016	1016	1016	1015	1015	1014	1014	**1018**	**1022**	**1014**
7	1013	1012	1011	1011	1010	1010	1010	1010	1010	1010	1010	1009	1008	1008	1007	1007	1008	1009	1010	1011	1011	1012	1013	1013	**1010**	**1013**	**1007**
8	1014	1015	1015	1016	1016	1018	1019	1019	1020	1020	1020	1020	1019	1018	1018	1017	1017	1017	1017	1017	1017	1016	1016	1015	**1017**	**1020**	**1014**
9	1015	1015	1014	1013	1012	1012	1011	1011	1011	1011	1010	1010	1009	1009	1010	1010	1011	1012	1013	1014	1015	1016	1017	1017	**1012**	**1017**	**1009**
10	1017	1018	1018	1018	1019	1020	1020	1021	1022	1023	1024	1024	1023	1023	1022	1021	1022	1022	1023	1024	1024	1024	1024	1024	**1022**	**1024**	**1017**
11	1024	1024	1025	1025	1025	1026	1026	1027	1028	1028	1028	1028	1027	1027	1027	1027	1027	1028	1028	1029	1029	1030	1030	1030	**1027**	**1030**	**1024**
12	1030	1030	1031	1031	1031	1032	1032	1033	1033	1033	1033	1033	1032	1031	1030	1030	1030	1030	1030	1030	1030	1031	1031	1031	**1031**	**1033**	**1030**
13	1031	1031	1030	1030	1030	1030	1030	1030	1030	1029	1029	1027	1025	1024	1023	1022	1022	1022	1022	1022	1022	1023	1023	1023	**1026**	**1031**	**1022**
14	1023	1023	1023	1023	1024	1025	1026	1027	1028	1028	1028	1028	1027	1027	1027	1027	1027	1028	1028	1029	1029	1029	1029	1030	**1027**	**1030**	**1023**
15	1030	1030	1030	1030	1030	1031	1031	1032	1032	1032	1032	1031	1029	1028	1027	1027	1027	1027	1027	1027	1026	1026	1026	1025	**1029**	**1032**	**1025**
16	1025	1025	1025	1025	1025	1025	1026	1026	1026	1026	1026	1025	1024	1023	1023	1022	1022	1022	1022	1022	1022	1022	1022	1021	**1024**	**1026**	**1021**
17	1021	1021	1020	1020	1020	1020	1020	1020	1019	1018	1017	1016	1014	1013	1013	1012	1012	1011	1011	1010	1010	1010	1009	1009	**1015**	**1021**	**1009**
18	1008	1007	1006	1006	1006	1006	1006	1008	1010	1011	1011	1011	1010	1010	1010	1010	1011	1012	1012	1013	1013	1013	1013	1013	**1010**	**1013**	**1006**
19	1014	1014	1015	1015	1015	1015	1015	1016	1017	1017	1016	1016	1015	1015	1014	1014	1015	1015	1016	1017	1017	1018	1019	1019	**1016**	**1019**	**1014**
20	1020	1021	1022	1023	1024	1025	1026	1027	1028	1028	1028	1028	1028	1028	1028	1028	1029	1029	1030	1030	1031	1030	1031	1031	**1027**	**1031**	**1020**
21	1031	1031	1031	1030	1030	1029	1029	1028	---	---	---	---	---	---	---	---	1019	1018	1017	1016	1014	1012	1011	1011	**---**	**---**	**---**
22	1010	1008	1009	1009	1008	1008	1008	1009	1009	1009	1009	1008	1007	1006	1006	1006	1006	1007	1007	1008	1009	1009	1009	1009	**1008**	**1010**	**1006**
23	1009	1009	1010	1011	1012	1013	1014	1014	1015	1016	1016	1015	1014	1014	1013	1014	1014	1015	1016	1016	1016	1017	1018	1018	**1014**	**1018**	**1009**
24	1019	1019	1020	1020	1020	1021	1021	1022	1022	1022	1022	1022	1021	1021	1021	1021	1021	1022	1023	1024	1025	1025	1027	1028	**1022**	**1028**	**1019**
25	1028	1028	1029	1029	1030	1031	1031	1032	1032	1032	1032	1031	1030	1030	1029	1028	1028	1028	1028	1028	1028	1027	1027	1027	**1029**	**1032**	**1027**
26	1026	1026	1025	1025	1025	1024	1024	1024	1023	1022	1022	1021	1020	1018	1017	1015	1014	1012	1011	1010	1008	1008	1008	1008	**1018**	**1026**	**1008**
27	1008	1008	1008	1007	1007	1008	1009	1009	1010	1011	1011	1011	1011	1011	1011	1011	1012	1013	1013	1013	1014	1014	1014	1014	**1011**	**1014**	**1007**
28	1014	1013	1013	1013	1012	1013	1013	1013	1014	1014	1014	1015	1014	1015	1016	1018	1019	1020	1021	1022	1022	1022	1022	1022	**1016**	**1022**	**1012**
29	1023	1023	1023	1023	1023	1023	1023	1023	1023	1023	1023	1022	1021	1020	1019	1019	1019	1019	1019	1019	1019	1019	1020	1019	**1021**	**1023**	**1019**
30	1019	1020	1020	1020	1021	1021	1022	1022	1022	1022	1022	1022	1021	1020	1020	1020	1020	1020	1020	1020	1021	1021	1021	1021	**1021**	**1022**	**1019**
MEAN	**1020**	**1020**	**1020**	**1020**	**1021**	**1021**	**1021**	**1022**	**1022**	**1022**	**1022**	**1021**	**1020**	**1020**	**1019**	**1019**	**1020**	**1020**	**1020**	**1020**	**1020**	**1020**	**1020**	**1021**	**1021**		
MAX	**1032**	**1032**	**1032**	**1032**	**1032**	**1032**	**1032**	**1033**	**1034**	**1034**	**1034**	**1033**	**1032**	**1032**	**1032**	**1031**	**1031**	**1031**	**1032**	**1032**	**1032**	**1032**	**1032**	**1032**		**1034**	
MIN	**1008**	**1007**	**1006**	**1006**	**1006**	**1006**	**1006**	**1008**	**1009**	**1009**	**1009**	**1008**	**1007**	**1006**	**1006**	**1006**	**1006**	**1007**	**1007**	**1008**	**1008**	**1008**	**1008**	**1008**			**1006**

POSSIBLE NUMBER OF OBSERVATIONS = 720 ACTUAL NUMBER OF OBSERVATIONS = 712 DATA RECOVERY RATE = 98.9%

MONTHLY MEAN = 1021 mb

MAXIMUM PRESSURE = 1034 mb DATE OF OCCURRENCE = 11/2 AT 1000 MAXIMUM DAILY MEAN = 1032 mb DATE OF OCCURRENCE = 11/2

MINIMUM PRESSURE = 1006 mb DATE OF OCCURRENCE = 11/18 AT 0500 MINUMUM DAILY MEAN = 1008 mb DATE OF OCCURRENCE = 11/22

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

CSX AQ5

PRESSURE in mb for DECEMBER, 2023

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	1021	1020	1021	1021	1021	1021	1021	1021	1021	1022	1021	1020	1020	1019	1018	1018	1018	1018	1018	1018	1017	1017	1017	1016	**1019**	**1022**	**1016**
2	1016	1016	1016	1016	1016	1016	1017	1017	1017	1018	1018	1017	1017	1016	1016	1016	1016	1016	1016	1016	1016	1016	1015	1015	**1016**	**1018**	**1015**
3	1014	1013	1013	1011	1011	1010	1009	1008	1008	1007	1007	1006	1005	1004	1004	1004	1004	1005	1005	1006	1006	1006	1007	1007	**1008**	**1014**	**1004**
4	1008	1009	1009	1009	1009	1009	1010	1011	1011	1012	1012	1011	1010	1009	1009	1010	1011	1012	1013	1013	1014	1014	1015	1015	**1011**	**1015**	**1008**
5	1015	1016	1016	1017	1017	1018	1018	1018	1019	1019	1019	1018	1017	1017	1016	1016	1016	1016	1017	1017	1016	1016	1016	1015	**1017**	**1019**	**1015**
6	1015	1015	1015	1015	1015	1015	1016	1017	1017	1018	1018	1018	1017	1017	1017	1017	1018	1018	1019	1019	1019	1020	1020	1020	**1017**	**1020**	**1015**
7	1020	1020	1020	1020	1020	1020	1021	1021	1020	1020	1020	1018	1017	1016	1015	1015	1016	1016	1017	1017	1017	1017	1018	1018	**1018**	**1021**	**1015**
8	1018	1018	1019	1019	1020	1020	1021	1021	1022	1022	1023	1022	1021	1021	1020	1020	1020	1021	1021	1021	1021	1021	1021	1021	**1021**	**1023**	**1018**
9	1021	1021	1021	1021	1021	1021	1021	1022	1022	1023	1023	1022	1021	1021	1020	1020	1020	1020	1020	1020	1020	1019	1019	1018	**1021**	**1023**	**1018**
10	1017	1017	1016	1015	1015	1015	1014	1014	1014	1014	1013	1012	1010	1008	1008	1007	1006	1006	1005	1005	1005	1007	1007	1008	**1011**	**1017**	**1005**
11	1009	1008	1008	1009	1009	1010	1011	1012	1013	1013	1014	1015	1014	1015	1017	1018	1019	1021	1022	1023	1024	1025	1026	1026	**1016**	**1026**	**1008**
12	1027	1027	1028	1028	1029	1029	1030	1031	1031	1032	1032	1031	1031	1030	1030	1029	1030	1030	1031	1031	1031	1031	1031	1031	**1030**	**1032**	**1027**
13	1031	1031	1031	1031	1031	1032	1032	1033	1034	1034	1035	1034	1034	1034	1034	1035	1035	1035	1035	1036	1036	1037	1038	1038	**1034**	**1038**	**1031**
14	1038	1038	1039	1039	1039	1040	1040	1041	1041	1041	1041	1040	1039	1038	1037	1037	1036	1036	1036	1035	1035	1035	1035	1035	**1038**	**1041**	**1035**
15	1034	1034	1034	1033	1033	1033	1033	1033	1034	1034	1033	1032	1031	1030	1030	1029	1029	1029	1030	1030	1030	1030	1030	1031	**1032**	**1034**	**1029**
16	1030	1031	1031	1031	1030	1031	1031	1032	1032	1033	1033	1032	1031	1030	1030	1030	1029	1030	1030	1031	1031	1031	1031	1030	**1031**	**1033**	**1029**
17	1029	1028	1028	1027	1026	1025	1025	1024	1023	1022	1021	1019	1017	1016	1014	1013	1012	1011	1009	1008	1005	1001	998	995	**1016**	**1029**	**995**
18	993	991	988	989	988	989	989	990	991	992	993	993	994	995	996	998	1000	1002	1003	1004	1005	1006	1006	1007	**996**	**1007**	**988**
19	1008	1008	1009	1010	1010	1012	1014	1015	1016	1017	1019	1019	1020	1020	1021	1022	1023	1025	1026	1027	1028	1029	1029	1030	**1019**	**1030**	**1008**
20	1030	1030	1030	1030	1030	1030	1031	1031	1032	1032	1032	1031	1030	1030	1029	1029	1030	1030	1030	1030	1030	1030	1030	1030	**1030**	**1032**	**1029**
21	1030	1030	1030	1030	1030	1031	1031	1032	1032	1032	1032	1031	1030	1030	1030	1030	1030	1030	1030	1030	1030	1030	1030	1031	**1030**	**1032**	**1030**
22	1030	1030	1030	1030	1030	1030	1031	1031	1032	1032	1032	1031	1030	1030	1030	1030	1030	1030	1030	1031	1031	1031	1031	1031	**1031**	**1032**	**1030**
23	1031	1031	1031	1031	1031	1031	1031	1031	1032	1032	1032	1031	1030	1029	1029	1029	1029	1029	1029	1030	1030	1030	1030	1030	**1030**	**1032**	**1029**
24	1029	1029	1029	1029	1029	1029	1029	1029	1030	1030	1030	1030	1029	1029	1028	1028	1028	1028	1029	1029	1029	1029	1029	1029	**1029**	**1030**	**1028**
25	1028	1028	1029	1029	1028	1029	1029	1029	1030	1030	1030	1030	1029	1028	1028	1028	1028	1028	1028	1028	1028	1028	1028	1028	**1028**	**1030**	**1028**
26	1028	1027	1027	1027	1026	1026	1026	1026	1027	1027	1026	1025	1025	1024	1023	1023	1023	1023	1023	1023	1022	1022	1022	1021	**1025**	**1028**	**1021**
27	1021	1020	1020	1019	1019	1019	1018	1018	1018	1017	1016	1015	1014	1012	1011	1010	1010	1009	1009	1009	1008	1007	1007	1007	**1014**	**1021**	**1007**
28	1006	1006	1006	1005	1005	1005	1006	1006	1006	1006	1006	1006	1006	1005	1005	1005	1006	1006	1006	1007	1007	1007	1007	1007	**1006**	**1007**	**1005**
29	1006	1006	1007	1007	1007	1007	1008	1008	1008	1008	1008	1008	1007	1006	1005	1006	1006	1006	1006	1006	1006	1006	1006	1006	**1007**	**1008**	**1005**
30	1007	1007	1007	1007	1007	1007	1008	1008	1008	1008	1008	1008	1007	1007	1007	1008	1008	1009	1010	1011	1011	1012	1012	1013	**1009**	**1013**	**1007**
31	1013	1014	1015	1015	1015	1015	1016	1017	1017	1017	1018	1017	1016	1016	1015	1015	1016	1016	1016	1016	1016	1016	1016	1016	**1016**	**1018**	**1013**
MEAN	**1020**	**1020**	**1020**	**1020**	**1020**	**1020**	**1020**	**1021**	**1021**	**1021**	**1021**	**1021**	**1020**	**1019**	**1019**	**1019**	**1019**	**1020**	**1020**	**1020**	**1020**	**1020**	**1020**	**1020**	**1020**		
MAX	**1038**	**1038**	**1039**	**1039**	**1039**	**1040**	**1040**	**1041**	**1041**	**1041**	**1041**	**1040**	**1039**	**1038**	**1037**	**1037**	**1036**	**1036**	**1036**	**1036**	**1036**	**1037**	**1038**	**1038**		**1041**	
MIN	**993**	**991**	**988**	**989**	**988**	**989**	**989**	**990**	**991**	**992**	**993**	**993**	**994**	**995**	**996**	**998**	**1000**	**1002**	**1003**	**1004**	**1005**	**1001**	**998**	**995**			**988**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 744 DATA RECOVERY RATE = 100.0%

MONTHLY MEAN = 1020 mb

MAXIMUM PRESSURE = 1041 mb DATE OF OCCURRENCE = 12/14 AT 0900 MAXIMUM DAILY MEAN = 1038 mb DATE OF OCCURRENCE = 12/14

MINIMUM PRESSURE = 988 mb DATE OF OCCURRENCE = 12/18 AT 0500 MINUMUM DAILY MEAN = 996 mb DATE OF OCCURRENCE = 12/18

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

APPENDIX F. HOURLY PRECIPITATION DATA FOR FOURTH QUARTER 2023

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CSX AQ5

PRECIPITATION in in for OCTOBER, 2023

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	TOTAL	MAX HR
1																									0.00	0.00
2																									0.00	0.00
3																									0.00	0.00
4																									0.00	0.00
5																									0.00	0.00
6																									0.00	0.00
7										0.02	0.07	0.02	0.01												0.12	0.07
8																									0.00	0.00
9																									0.00	0.00
10																									0.00	0.00
11																									0.00	0.00
12																									0.00	0.00
13																									0.00	0.00
14									0.05	0.02	0.01		0.01	0.07	0.12	0.04	0.01	0.01	0.02	0.01	0.36	0.07	0.01	0.02	0.83	0.36
15	0.01					0.01																			0.02	0.01
16																									0.00	0.00
17																									0.00	0.00
18																									0.00	0.00
19																									0.00	0.00
20																	0.01	0.03	0.05			0.01			0.10	0.05
21																									0.00	0.00
22																									0.00	0.00
23																									0.00	0.00
24																									0.00	0.00
25																									0.00	0.00
26																									0.00	0.00
27																									0.00	0.00
28																									0.00	0.00
29																									0.00	0.00
30																	0.06	0.07	0.03						0.16	0.07
31																									0.00	0.00
TOTAL	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**0.01**	**0.00**	**0.00**	**0.05**	**0.04**	**0.08**	**0.02**	**0.02**	**0.07**	**0.12**	**0.04**	**0.08**	**0.11**	**0.10**	**0.01**	**0.36**	**0.08**	**0.01**	**0.02**	**1.23**	
MAX	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**0.01**	**0.00**	**0.00**	**0.05**	**0.02**	**0.07**	**0.02**	**0.01**	**0.07**	**0.12**	**0.04**	**0.06**	**0.07**	**0.05**	**0.01**	**0.36**	**0.07**	**0.01**	**0.02**		**0.36**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 744 DATA RECOVERY RATE = 100.0%

TOTAL PRECIPITATION FOR MONTH = 1.23 in

MAXIMUM DAILY PRECIPITATION = 0.83 in DATE OF OCCURRENCE = 10/14

MAXIMUM HOURLY PRECIPITATION = 0.36 in DATE OF OCCURRENCE = 10/14 AT 2100

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

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CSX AQ5

PRECIPITATION in in for NOVEMBER, 2023

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	TOTAL	MAX HR
1																									0.00	0.00
2																									0.00	0.00
3																									0.00	0.00
4																									0.00	0.00
5																									0.00	0.00
6																									0.00	0.00
7																									0.00	0.00
8																									0.00	0.00
9																									0.00	0.00
10									0.01	0.04	0.04	0.07	0.02	0.03											0.21	0.07
11																									0.00	0.00
12																									0.00	0.00
13																									0.00	0.00
14																									0.00	0.00
15																									0.00	0.00
16																									0.00	0.00
17																									0.00	0.00
18			0.01																						0.01	0.01
19																									0.00	0.00
20																									0.00	0.00
21									---	---	---	---	---	---	---	---	0.11	0.10	0.11	0.24	0.17	0.24	0.41	0.09	---	---
22	0.08																								0.08	0.08
23																									0.00	0.00
24																									0.00	0.00
25																									0.00	0.00
26																0.04	0.05	0.05	0.06	0.04	0.01				0.25	0.06
27																									0.00	0.00
28																									0.00	0.00
29																									0.00	0.00
30																									0.00	0.00
TOTAL	**0.08**	**0.00**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.01**	**0.04**	**0.04**	**0.07**	**0.02**	**0.03**	**0.00**	**0.04**	**0.16**	**0.15**	**0.17**	**0.28**	**0.18**	**0.24**	**0.41**	**0.09**	**2.02**	
MAX	**0.08**	**0.00**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.01**	**0.04**	**0.04**	**0.07**	**0.02**	**0.03**	**0.00**	**0.04**	**0.11**	**0.10**	**0.11**	**0.24**	**0.17**	**0.24**	**0.41**	**0.09**		**0.41**

POSSIBLE NUMBER OF OBSERVATIONS = 720 ACTUAL NUMBER OF OBSERVATIONS = 712 DATA RECOVERY RATE = 98.9%

TOTAL PRECIPITATION FOR MONTH = 2.02 in

MAXIMUM DAILY PRECIPITATION = 1.47 in DATE OF OCCURRENCE = 11/21

MAXIMUM HOURLY PRECIPITATION = 0.41 in DATE OF OCCURRENCE = 11/21 AT 2300

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

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CSX AQ5

PRECIPITATION in in for DECEMBER, 2023

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	TOTAL	MAX HR
1														0.01	0.01	0.05	0.03	0.06	0.01						0.17	0.06
2									0.01															0.01	0.02	0.01
3	0.01	0.06	0.13	0.05	0.15	0.03	0.04	0.04		0.01															0.52	0.15
4																									0.00	0.00
5																									0.00	0.00
6																									0.00	0.00
7																									0.00	0.00
8																									0.00	0.00
9																									0.00	0.00
10										0.10	0.17	0.05	0.05	0.01	0.01	0.02	0.07	0.15	0.21	0.13	0.18	0.12	0.14	0.12	1.53	0.21
11	0.11	0.09	0.07	0.09	0.11	0.04	0.01																		0.52	0.11
12																									0.00	0.00
13																									0.00	0.00
14																									0.00	0.00
15																									0.00	0.00
16																									0.00	0.00
17																0.04	0.02	0.08	0.11	0.19	0.36	0.48	0.38	0.25	1.91	0.48
18	0.28	0.32	0.08	0.03	0.01				0.02																0.74	0.32
19																									0.00	0.00
20																									0.00	0.00
21																									0.00	0.00
22																									0.00	0.00
23																									0.00	0.00
24																									0.00	0.00
25																									0.00	0.00
26																							0.01	0.01	0.02	0.01
27	0.02	0.02	0.02	0.02	0.01	0.02	0.05	0.05		0.01		0.01	0.02	0.03	0.03		0.27	0.26	0.38	0.27	0.17	0.07	0.02		1.75	0.38
28																									0.00	0.00
29																									0.00	0.00
30																									0.00	0.00
31																									0.00	0.00
TOTAL	**0.42**	**0.49**	**0.30**	**0.19**	**0.28**	**0.09**	**0.10**	**0.09**	**0.03**	**0.12**	**0.17**	**0.06**	**0.07**	**0.05**	**0.05**	**0.11**	**0.39**	**0.55**	**0.71**	**0.59**	**0.71**	**0.67**	**0.55**	**0.39**	**7.18**	
MAX	**0.28**	**0.32**	**0.13**	**0.09**	**0.15**	**0.04**	**0.05**	**0.05**	**0.02**	**0.10**	**0.17**	**0.05**	**0.05**	**0.03**	**0.03**	**0.05**	**0.27**	**0.26**	**0.38**	**0.27**	**0.36**	**0.48**	**0.38**	**0.25**		**0.48**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 744 DATA RECOVERY RATE = 100.0%

TOTAL PRECIPITATION FOR MONTH = 7.18 in

MAXIMUM DAILY PRECIPITATION = 1.91 in DATE OF OCCURRENCE = 12/17

MAXIMUM HOURLY PRECIPITATION = 0.48 in DATE OF OCCURRENCE = 12/17 AT 2200

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

Draft

APPENDIX G. HOURLY AQ5 PM_{10} AND $PM_{2.5}$ CONCENTRATION DATA FOR FOURTH QUARTER 2023

Draft

CSX AQ5

HOURLY AVERAGES of PM10 in µg/m3 for OCTOBER, 2023

Hr Beg Hr End Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	18.6	16.4	14.7	15.4	13.0	14.3	16.4	18.1	21.4	22.5	22.2	22.2	21.3	16.1	15.2	13.0	13.5	15.3	18.3	19.1	19.8	22.3	30.5	21.2	**18.4**	**30.5**	**13.0**
2	22.8	20.7	16.3	15.8	17.8	17.6	25.2	25.5	27.1	22.9	18.7	20.7	22.1	35.4	27.5	25.3	26.3	29.4	27.6	234.3	176.1	32.8	36.0	40.1	**40.2**	**234.3**	**15.8**
3	32.9	44.3	43.0	31.9	41.4	39.2	42.2	44.6	35.1	33.7	28.4	30.3	28.9	29.2	32.9	31.3	24.7	28.4	25.0	24.3	33.7	36.4	36.4	36.1	**33.9**	**44.6**	**24.3**
4	32.4	31.8	40.5	35.5	49.9	53.1	56.3	63.3	75.9	63.4	58.0	28.7	20.2	20.3	25.9	20.5	19.5	27.8	31.6	32.8	25.8	28.9	28.9	22.1	**37.2**	**75.9**	**19.5**
5	32.4	34.8	39.7	31.4	30.9	69.2	71.9	57.9	32.8	21.4	10.8	12.5	12.6	14.8	14.2	12.7	12.3	18.6	13.3	17.5	22.4	15.4	15.3	16.3	**26.3**	**71.9**	**10.8**
6	17.6	16.3	16.4	18.7	18.9	18.3	17.8	22.0	24.3	23.0	18.3	16.5	16.1	18.6	18.8	16.6	20.2	21.4	13.7	14.2	17.0	23.6	22.4	21.5	**18.8**	**24.3**	**13.7**
7	16.6	18.1	18.0	15.5	13.6	10.5	9.5	10.4	12.6	15.7	14.1	14.1	11.6	12.5	15.2	16.0	15.0	12.5	11.4	10.7	10.5	10.7	10.3	8.9	**13.1**	**18.1**	**8.9**
8	8.9	8.7	8.2	8.1	7.6	7.8	9.7	8.3	6.4	5.9	8.1	8.5	9.4	10.0	10.1	8.8	11.0	11.1	8.8	10.2	12.9	8.6	7.9	9.9	**9.0**	**12.9**	**5.9**
9	9.1	8.0	10.9	9.3	9.2	15.1	16.1	14.6	17.5	14.8	22.7	24.9	21.6	17.9	20.9	22.6	16.8	17.5	17.7	17.1	15.8	13.7	10.4	9.4	**15.6**	**24.9**	**8.0**
10	9.2	12.7	12.5	13.6	13.2	11.7	16.1	17.6	22.6	19.8	17.5	18.1	19.4	24.8	15.5	17.1	15.5	23.9	24.3	163.8	72.3	34.9	37.3	36.8	**27.9**	**163.8**	**9.2**
11	30.1	24.7	24.6	25.4	31.2	42.9	31.4	29.1	34.7	29.6	31.3	28.5	27.2	24.7	22.2	27.7	25.5	36.3	26.4	38.0	41.8	41.1	44.0	41.7	**31.7**	**44.0**	**22.2**
12	39.2	27.5	33.0	23.5	36.4	29.4	37.6	48.7	56.4	74.3	41.7	49.7	28.7	23.0	30.7	21.1	24.9	24.8	34.1	44.5	46.5	38.1	29.3	50.6	**37.2**	**74.3**	**21.1**
13	199.0	52.4	34.9	41.6	29.5	34.9	33.1	32.9	30.1	21.6	17.2	19.4	18.8	18.5	17.6	21.5	23.6	21.7	25.5	84.5	58.3	51.1	29.9	32.0	**39.6**	**199.0**	**17.2**
14	23.9	18.4	14.9	27.2	14.8	12.6	12.9	12.9	17.6	13.8	11.5	13.5	14.4	8.8	8.2	6.3	6.8	5.3	5.2	5.6	7.6	6.7	4.4	3.6	**11.5**	**27.2**	**3.6**
15	2.8	2.3	3.8	4.5	5.6	6.3	6.8	8.6	9.1	8.1	6.9	6.5	5.1	4.3	4.9	5.7	5.2	6.4	7.1	11.2	9.9	12.2	10.4	14.7	**7.0**	**14.7**	**2.3**
16	6.4	6.9	8.5	8.7	8.7	9.1	11.3	10.6	10.5	10.8	7.2	10.2	11.3	10.8	10.1	11.6	12.1	10.4	9.2	8.9	10.8	10.3	9.9	10.6	**9.8**	**12.1**	**6.4**
17	9.6	7.9	7.7	7.7	7.6	8.4	16.4	23.8	16.6	11.0	8.8	9.4	10.4	10.8	10.2	9.9	8.9	9.3	10.1	11.5	13.0	16.0	14.7	36.4	**12.3**	**36.4**	**7.6**
18	13.0	10.5	12.8	15.0	19.9	30.1	18.9	26.8	18.2	13.1	12.1	11.1	17.2	17.4	12.5	14.3	16.4	23.4	25.9	28.7	27.3	27.5	25.9	30.9	**19.5**	**30.9**	**10.5**
19	31.4	23.4	22.7	22.4	27.6	30.7	53.9	49.3	28.3	16.7	13.9	14.5	32.8	22.7	16.1	15.6	16.6	13.1	12.0	11.6	12.2	11.4	9.8	10.6	**21.6**	**53.9**	**9.8**
20	11.4	12.7	14.9	14.9	16.4	16.1	12.6	21.5	16.6	16.7	15.0	19.9	26.4	17.1	16.9	20.6	20.2	17.9	19.4	22.8	19.8	21.1	20.8	14.2	**17.7**	**26.4**	**11.4**
21	8.7	8.6	8.8	9.3	10.1	9.5	8.8	9.3	9.9	9.6	10.7	9.1	10.5	10.5	18.4	14.2	9.8	10.1	7.9	8.2	8.1	9.8	13.0	12.2	**10.2**	**18.4**	**7.9**
22	10.8	10.9	11.0	11.6	11.3	10.2	11.1	11.1	9.5	10.9	9.1	13.2	14.6	12.0	10.8	11.3	11.3	9.1	9.6	9.2	9.4	9.7	10.8	8.9	**10.7**	**14.6**	**8.9**
23	7.7	8.8	8.8	9.6	12.3	10.4	12.3	15.9	15.9	10.9	13.9	14.6	10.7	10.2	12.4	12.7	13.4	21.0	33.8	30.2	56.8	41.9	39.5	48.2	**19.7**	**56.8**	**7.7**
24	34.8	27.0	22.9	24.1	21.6	58.8	35.8	37.1	54.6	32.5	20.7	20.4	17.8	20.4	12.0	20.8	20.6	17.5	16.8	22.6	18.3	26.0	24.2	21.1	**26.2**	**58.8**	**12.0**
25	21.7	22.5	25.8	21.0	24.4	38.6	49.9	28.9	---	---	---	34.2	33.5	24.0	25.0	30.7	35.1	28.6	30.6	36.7	35.4	67.9	39.0	41.7	**33.1**	**67.9**	**21.0**
26	41.3	44.6	38.0	48.8	73.5	52.5	77.0	82.5	80.4	61.1	68.5	52.5	58.0	43.5	38.7	36.5	39.4	39.6	26.6	29.7	23.5	26.1	28.9	45.4	**48.2**	**82.5**	**23.5**
27	33.4	33.5	41.4	35.7	40.1	47.6	54.4	70.4	51.7	34.3	26.9	25.9	23.8	25.5	19.4	24.3	19.4	30.4	37.7	39.7	32.1	34.9	32.9	35.8	**35.5**	**70.4**	**19.4**
28	47.1	29.8	30.5	30.2	42.9	33.9	41.4	26.2	19.7	19.9	21.1	18.3	21.4	20.1	17.6	18.8	17.0	27.5	27.3	30.3	30.6	27.1	39.1	63.8	**29.2**	**63.8**	**17.0**
29	26.0	25.5	21.8	18.4	13.7	12.1	10.1	11.3	13.6	12.8	16.7	16.1	17.7	17.5	17.7	18.1	15.9	14.1	12.6	13.4	12.5	13.9	13.5	13.5	**15.8**	**26.0**	**10.1**
30	15.0	15.8	19.8	19.9	26.5	30.6	32.7	61.3	72.3	39.0	27.6	22.8	46.8	59.2	31.1	18.9	20.4	8.9	7.0	4.3	4.0	5.0	4.6	3.9	**24.9**	**72.3**	**3.9**
31	4.5	4.7	5.7	7.0	9.0	9.3	9.0	11.2	10.9	8.5	8.7	8.5	7.9	10.9	8.1	11.2	14.1	14.5	12.2	18.1	23.5	19.4	14.7	14.2	**11.1**	**23.5**	**4.5**
MEAN	**26.4**	**20.3**	**20.4**	**20.1**	**22.5**	**25.5**	**27.7**	**29.4**	**28.4**	**23.3**	**20.3**	**19.8**	**20.6**	**19.7**	**18.0**	**17.9**	**17.8**	**19.2**	**19.0**	**34.0**	**29.3**	**24.0**	**22.4**	**25.0**	**23.0**		
MAX	**199.0**	**52.4**	**43.0**	**48.8**	**73.5**	**69.2**	**77.0**	**82.5**	**80.4**	**74.3**	**68.5**	**52.5**	**58.0**	**59.2**	**38.7**	**36.5**	**39.4**	**39.6**	**37.7**	**234.3**	**176.1**	**67.9**	**44.0**	**63.8**		**234.3**	
MIN	**2.8**	**2.3**	**3.8**	**4.5**	**5.6**	**6.3**	**6.8**	**8.3**	**6.4**	**5.9**	**6.9**	**6.5**	**5.1**	**4.3**	**4.9**	**5.7**	**5.2**	**5.3**	**5.2**	**4.3**	**4.0**	**5.0**	**4.4**	**3.6**			**2.3**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 741 DATA RECOVERY RATE = 99.6% DATA CAPTURE RATE = 100.0%

MONTHLY MEAN = 23.0 µg/m3

MAXIMUM PM10 = 234.3 µg/m3 DATE OF OCCURRENCE = 10/2 at 2000 MAXIMUM DAILY MEAN = 48.2 µg/m3 DATE OF OCCURRENCE = 10/26

SECOND MAXIMUM PM10 = 199.0 µg/m3 DATE OF OCCURRENCE = 10/13 at 100 SECOND MAXIMUM DAILY MEAN = 40.2 µg/m3 DATE OF OCCURRENCE = 10/2

MINIMUM PM10 = 2.3 µg/m3 DATE OF OCCURRENCE = 10/15 at 200 MINUMUM DAILY MEAN = 7.0 µg/m3 DATE OF OCCURRENCE = 10/15

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

CSX AQ5

HOURLY AVERAGES of PM10 in µg/m3 for NOVEMBER, 2023

Hr Beg Hr End Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	13.4	15.4	15.3	17.5	14.7	17.8	38.0	22.2	18.5	25.0	27.3	30.5	32.8	29.5	22.4	27.5	15.2	10.7	13.8	17.2	10.9	14.2	12.0	13.6	**19.8**	**38.0**	**10.7**
2	10.7	10.1	11.7	12.8	12.6	20.6	20.2	26.7	22.9	19.7	12.4	11.1	14.2	13.8	16.7	14.7	11.1	15.6	22.6	18.8	16.7	26.1	21.7	17.3	**16.7**	**26.7**	**10.1**
3	25.9	31.9	24.7	22.6	31.8	35.9	46.4	36.0	25.2	23.4	18.8	20.4	22.2	18.1	18.2	19.3	22.5	20.0	14.2	18.8	21.4	19.3	18.9	30.8	**24.4**	**46.4**	**14.2**
4	36.5	33.7	55.8	27.2	25.5	24.7	28.8	22.0	31.0	32.1	42.0	38.8	23.4	27.0	23.4	27.0	25.4	23.1	24.6	36.1	61.5	69.1	53.3	53.2	**35.2**	**69.1**	**22.0**
5	56.0	57.4	68.3	57.7	58.3	52.2	68.5	46.9	53.2	42.8	40.8	32.3	34.2	26.7	31.6	27.2	31.5	46.9	41.2	36.6	37.7	32.2	30.1	26.0	**43.2**	**68.5**	**26.0**
6	21.3	21.8	20.2	19.4	18.4	19.4	28.9	32.3	17.3	23.0	23.5	21.8	27.9	23.3	29.2	37.6	30.9	33.5	42.3	41.9	44.0	33.6	43.6	44.6	**29.2**	**44.6**	**17.3**
7	38.5	37.0	34.8	34.7	34.4	37.2	41.3	42.8	55.8	51.4	56.9	61.2	60.7	58.6	51.4	60.1	62.8	78.4	53.6	39.8	34.3	59.8	39.3	36.4	**48.4**	**78.4**	**34.3**
8	22.6	24.5	20.4	19.1	17.9	15.3	22.9	39.9	20.5	16.1	15.2	12.5	10.1	16.1	17.4	16.1	20.9	12.6	22.6	26.1	17.2	26.5	15.7	13.8	**19.3**	**39.9**	**10.1**
9	13.4	10.8	11.3	10.5	14.1	32.0	37.9	48.7	31.7	23.9	28.6	37.0	38.1	39.0	68.6	56.6	63.4	22.8	23.6	18.3	78.1	18.8	17.2	18.9	**31.8**	**78.1**	**10.5**
10	13.1	12.2	9.4	11.6	10.7	23.6	22.6	26.7	25.6	14.9	17.3	13.6	10.8	8.6	10.7	10.8	11.4	11.4	12.8	15.1	14.5	14.4	16.2	16.0	**14.8**	**26.7**	**8.6**
11	15.5	15.4	16.9	19.3	15.2	14.7	17.8	25.1	24.7	31.1	25.4	22.2	23.7	29.7	28.8	29.4	24.9	27.2	32.6	36.8	52.2	45.4	28.8	28.9	**26.3**	**52.2**	**14.7**
12	22.6	23.3	19.5	14.2	11.6	10.1	9.0	9.0	9.0	7.7	8.5	8.9	9.8	10.1	10.2	11.9	15.1	13.3	19.2	20.4	18.5	24.3	22.4	17.6	**14.4**	**24.3**	**7.7**
13	17.3	15.2	16.3	15.7	24.8	20.9	18.5	23.9	35.3	34.3	26.5	29.7	26.5	22.2	20.5	25.3	22.7	29.9	28.7	26.7	30.5	40.7	30.6	25.9	**25.4**	**40.7**	**15.2**
14	29.4	20.2	22.1	19.0	21.7	18.9	20.6	26.8	23.9	21.5	12.7	13.9	11.6	14.0	14.3	16.9	17.8	21.0	35.0	45.9	37.5	27.9	36.4	34.0	**23.5**	**45.9**	**11.6**
15	36.7	23.9	22.1	24.7	32.5	34.4	42.9	45.3	53.3	35.5	33.9	23.4	18.3	21.5	38.0	24.2	19.7	20.6	35.7	25.9	23.6	24.5	26.6	27.2	**29.8**	**53.3**	**18.3**
16	23.3	22.9	40.8	40.0	27.0	25.2	37.7	43.7	43.3	39.4	50.5	64.1	65.7	34.0	35.2	41.9	55.2	57.2	67.3	55.5	39.4	41.4	52.3	54.3	**44.1**	**67.3**	**22.9**
17	48.3	45.6	49.0	45.6	49.4	38.6	49.9	75.7	60.0	42.3	30.7	30.5	34.9	42.2	72.2	20.1	20.0	15.3	16.5	18.0	18.2	36.6	31.8	21.5	**38.0**	**75.7**	**15.3**
18	21.4	24.4	28.5	25.7	21.3	24.6	31.1	21.8	11.5	11.6	14.7	16.3	17.8	12.5	11.4	9.5	10.0	11.4	12.6	14.2	14.8	13.6	13.0	14.9	**17.0**	**31.1**	**9.5**
19	15.3	16.5	12.7	19.7	12.4	11.7	15.1	13.7	16.6	12.1	14.7	17.2	18.6	17.6	16.7	14.5	21.3	18.0	19.3	20.9	28.3	21.3	20.8	24.2	**17.5**	**28.3**	**11.7**
20	28.0	29.8	25.7	24.2	19.9	17.3	13.3	13.2	17.2	14.5	16.2	15.2	18.4	16.8	20.4	28.6	19.9	14.6	17.6	22.7	20.4	20.7	19.6	21.0	**19.8**	**29.8**	**13.2**
21	18.6	15.9	14.0	12.4	11.2	13.0	15.0	13.7	---	---	---	---	---	---	---	---	11.1	18.9	13.4	16.7	14.3	14.8	10.9	6.3	**---**	**---**	**---**
22	6.9	3.1	6.5	7.9	7.3	10.2	12.6	12.1	12.9	12.4	9.0	7.0	8.7	8.2	9.2	8.3	8.5	8.7	9.2	10.0	8.6	7.9	6.9	6.1	**8.7**	**12.9**	**3.1**
23	5.4	6.2	7.6	6.5	5.9	6.4	7.0	7.8	8.9	10.3	9.3	8.6	8.6	9.4	9.7	9.2	8.4	20.0	26.1	27.6	30.6	29.9	30.1	27.3	**13.6**	**30.6**	**5.4**
24	25.5	22.5	30.1	29.3	27.1	23.0	20.8	23.7	25.9	23.1	23.6	20.8	21.2	22.0	22.9	22.9	25.8	27.8	18.3	13.6	12.0	12.8	14.3	11.6	**21.7**	**30.1**	**11.6**
25	9.0	9.2	9.0	8.7	9.3	10.7	10.5	13.0	16.4	12.5	9.7	10.3	10.2	10.5	10.7	12.2	12.7	16.0	18.7	18.8	25.6	33.7	41.5	36.0	**15.6**	**41.5**	**8.7**
26	30.9	34.8	33.1	36.4	33.1	23.9	17.8	18.8	24.4	23.5	16.2	14.8	14.5	15.9	17.1	13.8	10.3	8.9	10.2	9.3	8.8	10.4	15.4	20.0	**19.3**	**36.4**	**8.8**
27	18.2	16.7	20.9	19.7	18.0	14.9	15.2	15.0	13.3	10.1	10.0	9.6	10.4	17.0	13.9	13.7	14.8	19.6	18.5	22.3	19.7	42.1	16.2	14.6	**16.9**	**42.1**	**9.6**
28	15.3	15.6	15.5	14.6	15.3	14.6	15.8	18.8	17.5	20.2	17.7	23.7	33.5	28.2	25.8	21.7	22.7	16.0	13.8	14.5	14.6	13.2	12.2	14.2	**18.1**	**33.5**	**12.2**
29	13.9	14.0	12.5	12.5	15.4	14.1	17.8	21.1	18.7	15.7	16.8	16.1	17.2	18.1	19.7	17.5	19.2	18.6	18.3	19.6	19.6	20.3	21.2	23.0	**17.5**	**23.0**	**12.5**
30	31.7	35.2	31.9	28.6	24.6	25.9	56.8	52.7	45.5	44.3	43.3	30.6	20.4	25.3	21.1	21.8	18.9	21.0	19.4	22.5	23.9	28.0	32.6	51.3	**31.6**	**56.8**	**18.9**
MEAN	**22.8**	**22.2**	**23.6**	**21.9**	**21.4**	**21.7**	**26.7**	**28.0**	**26.9**	**23.9**	**23.2**	**22.8**	**22.9**	**21.9**	**24.4**	**22.8**	**22.5**	**22.6**	**24.1**	**24.4**	**26.6**	**27.5**	**25.1**	**25.0**	**23.9**		
MAX	**56.0**	**57.4**	**68.3**	**57.7**	**58.3**	**52.2**	**68.5**	**75.7**	**60.0**	**51.4**	**56.9**	**64.1**	**65.7**	**58.6**	**72.2**	**60.1**	**63.4**	**78.4**	**67.3**	**55.5**	**78.1**	**69.1**	**53.3**	**54.3**		**78.4**	
MIN	**5.4**	**3.1**	**6.5**	**6.5**	**5.9**	**6.4**	**7.0**	**7.8**	**8.9**	**7.7**	**8.5**	**7.0**	**8.6**	**8.2**	**9.2**	**8.3**	**8.4**	**8.7**	**9.2**	**9.3**	**8.6**	**7.9**	**6.9**	**6.1**			**3.1**

POSSIBLE NUMBER OF OBSERVATIONS = 720 ACTUAL NUMBER OF OBSERVATIONS = 712 DATA RECOVERY RATE = 98.9% DATA CAPTURE RATE = 96.7%

MONTHLY MEAN = 23.9 µg/m3

MAXIMUM PM10 = 78.4 µg/m3 DATE OF OCCURRENCE = 11/7 at 1800 MAXIMUM DAILY MEAN = 48.4 µg/m3 DATE OF OCCURRENCE = 11/7

SECOND MAXIMUM PM10 = 78.1 µg/m3 DATE OF OCCURRENCE = 11/9 at 2100 SECOND MAXIMUM DAILY MEAN = 44.1 µg/m3 DATE OF OCCURRENCE = 11/16

MINIMUM PM10 = 3.1 µg/m3 DATE OF OCCURRENCE = 11/22 at 200 MINUMUM DAILY MEAN = 8.7 µg/m3 DATE OF OCCURRENCE = 11/22

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

CSX AQ5

HOURLY AVERAGES of PM10 in µg/m3 for DECEMBER, 2023

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	---	37.6	46.1	47.8	61.7	55.5	51.8	81.6	75.4	53.6	47.1	48.1	55.6	56.6	42.8	40.2	41.3	45.9	28.2	28.6	27.4	27.6	33.3	35.0	**46.5**	**81.6**	**27.4**
2	33.5	34.8	35.2	35.7	44.5	39.3	38.1	41.3	45.4	44.9	39.5	45.8	51.0	66.1	74.9	56.3	27.4	38.4	33.0	44.8	34.0	34.9	31.7	33.5	**41.8**	**74.9**	**27.4**
3	33.4	24.6	19.3	19.6	16.9	15.2	15.2	14.8	12.6	14.5	13.6	13.9	13.5	14.7	15.6	18.3	20.8	18.0	14.1	13.4	15.8	18.3	16.2	14.2	**16.9**	**33.4**	**12.6**
4	12.5	10.8	8.5	9.4	10.1	11.0	15.5	17.7	16.5	14.0	11.8	16.4	19.2	14.1	14.0	16.6	20.8	18.7	16.5	17.9	25.5	19.0	18.3	17.8	**15.5**	**25.5**	**8.5**
5	17.3	15.9	13.5	13.5	12.1	12.2	14.7	21.0	16.3	19.8	19.8	15.2	13.0	12.6	14.4	17.0	13.7	14.6	11.8	11.1	12.9	14.9	14.9	15.1	**14.9**	**21.0**	**11.1**
6	16.7	16.0	18.7	21.4	32.9	21.7	19.6	17.1	18.4	17.3	21.6	19.8	14.8	9.3	9.9	16.6	19.1	18.9	12.4	14.5	11.2	9.3	13.6	12.0	**16.8**	**32.9**	**9.3**
7	10.5	11.4	11.3	12.3	13.2	11.1	13.8	19.6	17.0	22.4	20.9	21.6	21.2	25.0	23.9	21.3	18.4	18.8	17.4	21.4	20.3	19.5	26.3	33.8	**18.9**	**33.8**	**10.5**
8	27.6	28.6	32.7	26.9	30.0	36.9	40.1	70.7	37.9	29.1	51.0	27.2	17.3	15.0	14.8	19.9	16.8	13.5	19.6	21.6	23.9	51.3	63.2	52.7	**32.0**	**70.7**	**13.5**
9	39.4	39.9	25.6	23.7	21.8	22.0	25.3	24.0	21.2	19.0	22.2	42.3	38.8	57.3	57.1	30.0	46.3	44.9	40.3	40.2	50.4	48.8	49.1	60.0	**37.1**	**60.0**	**19.0**
10	56.3	65.3	68.8	63.5	60.2	59.7	61.2	65.5	54.0	54.5	44.9	42.5	20.2	8.4	7.2	6.4	7.4	7.5	8.0	7.4	6.6	4.1	3.0	2.6	**32.7**	**68.8**	**2.6**
11	5.2	4.1	3.1	1.1	0.9	0.8	3.3	5.8	8.5	7.5	7.0	7.8	8.2	10.2	10.0	9.7	10.4	7.0	7.6	8.0	8.0	10.7	9.5	9.0	**6.8**	**10.7**	**0.8**
12	10.1	11.1	12.0	11.3	13.9	12.3	12.0	13.0	11.2	10.4	9.9	8.7	10.9	15.5	12.8	13.2	15.6	14.0	16.2	20.5	16.6	15.1	14.5	18.7	**13.3**	**20.5**	**8.7**
13	14.5	16.4	18.1	19.0	17.6	20.4	27.7	37.4	15.5	17.3	17.4	22.5	14.4	18.4	16.5	18.4	15.1	17.6	24.4	19.6	15.9	16.1	23.3	19.2	**19.3**	**37.4**	**14.4**
14	16.3	16.9	16.5	17.2	18.6	19.5	26.7	30.5	33.1	53.3	33.3	16.2	14.8	14.2	13.2	27.7	30.5	24.8	31.6	26.0	29.3	31.2	30.9	31.6	**25.2**	**53.3**	**13.2**
15	25.8	30.8	27.7	22.7	20.7	24.3	33.8	40.2	32.0	20.4	22.0	19.7	17.6	19.1	22.5	18.1	21.9	26.3	21.8	26.8	25.1	32.1	47.5	40.6	**26.6**	**47.5**	**17.6**
16	31.2	26.2	17.1	16.2	16.8	20.1	22.4	36.4	48.3	38.8	28.4	---	25.7	22.7	25.8	22.2	26.4	30.4	32.9	44.3	34.5	23.6	27.2	27.9	**28.1**	**48.3**	**16.2**
17	27.0	27.3	32.5	29.1	28.1	32.1	33.5	30.9	18.7	17.9	24.8	35.4	31.6	28.4	25.1	20.1	18.0	17.9	14.9	8.7	8.6	6.2	4.4	2.4	**21.8**	**35.4**	**2.4**
18	3.3	4.6	5.3	1.8	1.6	1.3	6.9	3.3	4.3	6.0	6.8	9.5	8.0	6.4	5.1	4.2	6.0	4.4	5.3	3.7	2.8	4.7	4.9	6.0	**4.8**	**9.5**	**1.3**
19	6.2	6.7	5.6	3.7	3.3	3.6	4.5	4.1	8.2	13.1	16.2	9.9	11.7	15.3	15.3	8.9	8.5	8.5	9.4	9.4	10.8	65.0	19.1	11.5	**11.6**	**65.0**	**3.3**
20	12.3	12.7	11.0	10.2	12.8	13.4	14.0	20.1	20.4	20.2	16.2	19.6	16.9	16.6	15.6	15.5	19.1	20.4	26.1	23.9	19.0	23.2	23.3	24.7	**17.8**	**26.1**	**10.2**
21	25.7	22.2	22.0	23.6	30.3	28.9	31.7	33.2	34.5	---	22.4	21.6	20.8	24.2	24.0	24.6	23.4	27.1	28.4	25.1	24.6	26.8	26.0	21.5	**25.8**	**34.5**	**20.8**
22	21.6	21.8	20.9	19.2	13.8	10.3	11.8	12.5	10.8	9.2	11.4	13.0	21.3	36.4	26.9	43.4	42.8	58.6	16.2	14.7	18.2	15.0	13.0	14.5	**20.7**	**58.6**	**9.2**
23	13.6	13.9	16.7	15.2	16.4	15.7	16.1	15.2	18.4	35.6	30.7	13.1	13.5	17.4	14.4	22.6	22.0	19.3	18.2	14.4	17.7	20.0	30.9	47.8	**20.0**	**47.8**	**13.1**
24	13.3	11.7	17.4	32.7	15.5	13.5	23.0	29.1	31.5	24.9	33.0	19.8	13.9	23.1	57.2	45.1	43.6	33.9	38.9	30.1	33.3	26.7	26.5	24.4	**27.6**	**57.2**	**11.7**
25	24.0	23.2	22.6	21.3	20.7	22.2	21.0	23.0	22.1	23.9	22.1	21.3	22.1	22.4	21.7	20.7	21.2	21.5	24.0	25.1	26.0	30.0	27.9	27.9	**23.2**	**30.0**	**20.7**
26	29.3	23.0	14.0	10.4	8.5	8.1	12.2	8.8	5.5	3.0	7.3	5.9	6.4	7.2	9.4	10.7	13.8	14.6	13.0	10.6	10.2	11.1	9.5	10.1	**10.9**	**29.3**	**3.0**
27	10.2	9.1	7.5	6.9	5.9	6.8	6.9	6.3	5.8	5.4	5.9	8.2	9.3	8.2	7.3	7.5	7.0	4.9	5.5	7.8	5.6	3.2	5.4	5.9	**6.8**	**10.2**	**3.2**
28	5.8	6.5	7.2	8.8	9.4	12.0	11.5	14.0	11.2	16.5	9.5	7.2	6.1	6.6	7.6	5.7	7.9	9.9	15.0	11.2	11.3	13.0	11.7	13.1	**9.9**	**16.5**	**5.7**
29	14.4	13.8	12.7	12.2	12.6	12.6	18.8	25.7	16.4	13.8	15.2	12.4	10.1	9.1	9.8	8.6	10.7	14.2	12.8	11.8	11.8	9.0	8.3	9.0	**12.7**	**25.7**	**8.3**
30	8.7	7.2	7.1	6.6	6.9	7.2	7.3	7.0	6.3	6.2	6.0	4.9	5.6	5.4	5.1	5.2	6.0	6.0	6.9	9.9	6.2	4.6	6.2	4.5	**6.4**	**9.9**	**4.5**
31	5.7	6.2	5.8	5.2	6.8	7.3	7.9	8.3	9.2	7.7	7.8	6.4	6.5	6.5	5.7	5.8	8.2	12.6	11.3	14.7	18.6	18.4	13.8	11.9	**9.1**	**18.6**	**5.2**
MEAN	**19.0**	**19.4**	**18.8**	**18.3**	**18.9**	**18.6**	**20.9**	**25.1**	**22.1**	**21.3**	**20.8**	**19.2**	**18.1**	**19.8**	**20.2**	**19.4**	**19.7**	**20.4**	**18.8**	**18.9**	**18.8**	**21.1**	**21.1**	**21.3**	**20.0**		
MAX	**56.3**	**65.3**	**68.8**	**63.5**	**61.7**	**59.7**	**61.2**	**81.6**	**75.4**	**54.5**	**51.0**	**48.1**	**55.6**	**66.1**	**74.9**	**56.3**	**46.3**	**58.6**	**40.3**	**44.8**	**50.4**	**65.0**	**63.2**	**60.0**		**81.6**	
MIN	**3.3**	**4.1**	**3.1**	**1.1**	**0.9**	**0.8**	**3.3**	**3.3**	**4.3**	**3.0**	**5.9**	**4.9**	**5.6**	**5.4**	**5.1**	**4.2**	**6.0**	**4.4**	**5.3**	**3.7**	**2.8**	**3.2**	**3.0**	**2.4**			**0.8**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 741 DATA RECOVERY RATE = 99.6% DATA CAPTURE RATE = 100.0%

MONTHLY MEAN = 20.0 µg/m3

MAXIMUM PM10 = 81.6 µg/m3 DATE OF OCCURRENCE = 12/1 at 800 MAXIMUM DAILY MEAN = 46.5 µg/m3 DATE OF OCCURRENCE = 12/1

SECOND MAXIMUM PM10 = 75.4 µg/m3 DATE OF OCCURRENCE = 12/1 at 900 SECOND MAXIMUM DAILY MEAN = 41.8 µg/m3 DATE OF OCCURRENCE = 12/2

MINIMUM PM10 = 0.8 µg/m3 DATE OF OCCURRENCE = 12/11 at 600 MINUMUM DAILY MEAN = 4.8 µg/m3 DATE OF OCCURRENCE = 12/18

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

CSX AQ5

HOURLY AVERAGES of PM2.5 in µg/m3 for OCTOBER, 2023

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	10.3	9.1	8.3	7.9	6.9	7.1	9.0	9.6	10.1	11.5	11.9	12.1	11.9	9.5	8.0	6.9	7.1	8.1	9.1	10.2	11.5	11.8	13.3	11.3	**9.6**	**13.3**	**6.9**
2	11.3	10.9	9.1	8.7	8.9	9.5	11.2	11.0	10.1	9.5	9.2	9.8	9.6	11.2	10.5	10.7	10.8	11.7	11.7	39.4	41.2	17.1	17.1	16.9	**13.6**	**41.2**	**8.7**
3	16.1	18.6	18.4	17.1	17.4	17.5	17.5	16.9	17.5	15.7	14.6	14.2	13.4	12.5	11.1	11.4	11.2	11.5	11.4	12.8	15.0	16.4	16.0	15.7	**14.9**	**18.6**	**11.1**
4	16.5	17.3	18.7	17.2	20.4	22.0	24.2	21.2	22.4	21.4	19.2	14.4	11.8	11.0	11.8	11.6	8.9	10.4	11.8	13.6	13.3	13.9	12.4	11.1	**15.6**	**24.2**	**8.9**
5	13.4	15.0	15.9	14.0	14.2	24.4	21.8	16.9	14.3	9.7	5.4	5.8	5.6	6.3	6.3	5.9	5.9	7.1	6.3	7.0	8.5	6.8	6.6	6.1	**10.3**	**24.4**	**5.4**
6	7.6	7.1	6.2	7.3	8.6	7.0	7.6	8.3	8.1	7.6	6.7	6.7	7.1	6.9	7.0	6.7	6.9	7.1	6.1	6.3	6.7	7.5	7.9	8.1	**7.2**	**8.6**	**6.1**
7	8.1	8.8	8.9	9.1	8.1	5.0	5.1	5.3	6.5	6.5	6.2	6.5	5.5	5.6	6.2	6.4	4.9	4.2	4.7	4.7	4.7	4.7	4.7	4.2	**6.0**	**9.1**	**4.2**
8	4.1	4.2	3.8	3.7	3.8	3.6	3.8	3.5	2.8	2.3	2.1	2.2	2.5	3.0	3.1	3.4	3.3	3.3	3.4	4.4	5.1	4.2	4.2	4.2	**3.5**	**5.1**	**2.1**
9	4.1	4.0	4.0	3.9	3.9	5.6	5.0	5.3	5.5	4.6	5.5	5.5	5.4	5.1	5.9	6.6	6.1	6.5	7.1	7.8	8.3	6.4	4.8	4.8	**5.4**	**8.3**	**3.9**
10	4.8	5.7	6.0	6.0	6.5	5.8	6.8	7.4	9.0	9.0	7.6	6.7	6.5	7.4	5.8	6.1	6.2	6.9	8.7	31.5	17.6	15.0	15.2	15.6	**9.3**	**31.5**	**4.8**
11	14.8	13.2	13.6	13.0	13.8	14.4	13.4	11.4	9.2	6.6	6.6	6.5	6.3	5.9	5.9	5.8	6.0	7.9	8.0	10.4	12.3	12.6	14.4	14.1	**10.2**	**14.8**	**5.8**
12	14.1	11.7	11.7	10.6	16.5	13.6	11.5	13.8	16.1	18.5	12.5	9.3	6.6	6.2	7.1	6.4	7.2	7.8	9.2	12.2	14.2	15.5	14.4	17.0	**11.8**	**18.5**	**6.2**
13	40.0	17.4	13.8	12.9	10.3	11.1	12.1	11.1	10.3	6.7	6.0	7.4	6.5	6.1	6.2	6.1	6.6	7.8	7.9	15.9	14.5	14.8	14.9	10.4	**11.5**	**40.0**	**6.0**
14	11.0	9.3	7.8	7.5	6.0	6.4	6.9	6.8	8.9	7.7	6.8	7.2	7.6	5.0	4.5	3.4	3.1	3.2	3.1	3.4	3.5	2.1	1.7	1.5	**5.5**	**11.0**	**1.5**
15	0.9	1.0	2.2	2.8	3.2	3.9	4.0	4.2	4.4	3.7	3.1	3.0	2.6	2.6	2.7	2.9	2.8	3.4	3.8	5.5	5.6	6.7	5.5	9.6	**3.7**	**9.6**	**0.9**
16	3.5	3.9	4.1	4.2	4.3	4.2	4.7	4.5	3.8	3.3	2.4	2.8	3.0	2.9	2.5	3.2	3.7	4.4	4.5	4.9	5.5	5.9	6.5	6.0	**4.1**	**6.5**	**2.4**
17	6.2	4.7	4.4	4.1	4.0	4.2	5.1	6.1	4.7	3.4	3.1	3.4	3.3	3.3	3.2	2.7	3.2	3.4	4.1	4.3	5.3	5.7	6.4	8.9	**4.4**	**8.9**	**2.7**
18	6.0	5.6	6.5	7.4	8.1	9.2	8.5	8.6	6.7	6.0	4.9	5.7	7.7	8.5	7.8	8.3	9.2	12.2	13.4	16.1	18.2	16.7	16.0	16.8	**9.7**	**18.2**	**4.9**
19	17.5	15.1	15.1	15.9	16.2	17.1	20.2	20.1	13.9	7.7	6.4	7.1	8.4	7.6	7.0	6.5	6.7	6.0	5.6	5.8	5.3	5.0	4.4	4.8	**10.2**	**20.2**	**4.4**
20	4.8	5.4	5.9	5.8	6.6	6.7	6.0	6.9	6.4	6.3	6.7	8.0	8.7	7.2	7.8	11.0	12.6	11.9	13.4	14.5	14.2	15.0	15.5	10.0	**9.0**	**15.5**	**4.8**
21	5.3	4.9	4.8	5.5	6.0	5.9	5.6	5.6	5.4	4.6	3.9	3.4	3.5	3.1	3.7	3.2	3.0	4.0	3.7	4.0	5.0	5.4	6.1	6.2	**4.6**	**6.2**	**3.0**
22	5.7	6.1	6.6	6.3	6.6	5.8	5.8	5.9	5.5	4.0	3.5	3.1	2.6	2.8	3.1	3.3	3.1	3.2	3.7	4.2	4.3	4.1	4.0	4.0	**4.4**	**6.6**	**2.6**
23	4.0	4.3	4.3	4.4	5.4	4.6	4.9	4.9	4.4	4.1	4.4	4.4	4.1	4.1	4.3	4.3	4.4	7.0	11.5	11.2	18.8	15.6	15.4	15.7	**7.1**	**18.8**	**4.0**
24	14.6	12.5	11.6	11.8	11.4	16.9	13.8	14.7	19.0	14.3	8.9	6.7	6.8	6.5	5.7	6.9	6.7	6.8	7.7	9.9	9.5	11.0	11.6	10.5	**10.6**	**19.0**	**5.7**
25	10.6	13.6	14.8	11.6	14.0	15.1	16.1	12.1	---	---	---	13.1	12.4	11.1	10.6	11.0	11.6	11.1	15.3	18.9	14.5	20.6	16.7	18.4	**13.9**	**20.6**	**10.6**
26	18.6	19.4	19.9	20.9	26.4	21.8	25.4	26.8	27.8	26.0	27.5	24.2	20.1	14.4	13.8	13.9	17.5	14.6	12.8	14.4	13.1	14.3	16.0	19.0	**19.5**	**27.8**	**12.8**
27	18.9	18.6	20.3	19.8	19.3	20.3	20.2	22.1	16.8	12.0	12.0	10.1	9.1	7.4	7.4	8.0	8.5	10.7	15.0	17.2	17.1	18.7	20.0	19.1	**15.3**	**22.1**	**7.4**
28	21.3	19.9	19.7	19.6	20.3	17.8	17.5	11.7	9.2	8.8	9.3	9.5	9.2	10.4	9.8	9.4	9.0	11.3	12.3	16.4	16.3	15.7	20.7	23.7	**14.5**	**23.7**	**8.8**
29	15.4	15.1	14.9	12.1	8.2	7.1	6.2	5.7	6.3	7.8	9.3	9.4	10.7	10.8	10.0	9.7	8.7	7.4	6.8	6.4	6.3	6.3	6.2	7.0	**8.9**	**15.4**	**5.7**
30	7.5	8.2	9.0	9.9	12.6	15.3	16.6	26.7	31.1	17.8	14.3	13.2	14.6	13.7	7.6	5.2	4.0	3.3	2.4	1.6	1.6	1.8	2.1	2.0	**10.0**	**31.1**	**1.6**
31	2.5	3.0	3.4	3.7	4.3	4.3	4.5	5.2	5.5	3.8	4.2	3.9	4.3	4.7	4.5	5.0	5.2	5.7	6.0	10.1	14.6	9.3	8.4	8.1	**5.5**	**14.6**	**2.5**
MEAN	**11.0**	**10.1**	**10.1**	**9.8**	**10.4**	**10.7**	**11.0**	**11.0**	**10.7**	**9.0**	**8.1**	**7.9**	**7.7**	**7.2**	**6.8**	**6.8**	**6.9**	**7.4**	**8.1**	**11.1**	**11.3**	**10.5**	**10.6**	**10.7**	**9.4**		
MAX	**40.0**	**19.9**	**20.3**	**20.9**	**26.4**	**24.4**	**25.4**	**26.8**	**31.1**	**26.0**	**27.5**	**24.2**	**20.1**	**14.4**	**13.8**	**13.9**	**17.5**	**14.6**	**15.3**	**39.4**	**41.2**	**20.6**	**20.7**	**23.7**		**41.2**	
MIN	**0.9**	**1.0**	**2.2**	**2.8**	**3.2**	**3.6**	**3.8**	**3.5**	**2.8**	**2.3**	**2.1**	**2.2**	**2.5**	**2.6**	**2.5**	**2.7**	**2.8**	**3.2**	**2.4**	**1.6**	**1.6**	**1.8**	**1.7**	**1.5**			**0.9**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 741 DATA RECOVERY RATE = 99.6% DATA CAPTURE RATE = 100.0%

MONTHLY MEAN = 9.4 µg/m3

MAXIMUM PM2.5 = 41.2 µg/m3 DATE OF OCCURRENCE = 10/2 at 2100 MAXIMUM DAILY MEAN = 19.5 µg/m3 DATE OF OCCURRENCE = 10/26

SECOND MAXIMUM PM2.5 = 40.0 µg/m3 DATE OF OCCURRENCE = 10/13 at 100 SECOND MAXIMUM DAILY MEAN = 15.6 µg/m3 DATE OF OCCURRENCE = 10/4

MINIMUM PM2.5 = 0.9 µg/m3 DATE OF OCCURRENCE = 10/15 at 100 MINUMUM DAILY MEAN = 3.5 µg/m3 DATE OF OCCURRENCE = 10/8

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

CSX AQ5

HOURLY AVERAGES of PM2.5 in µg/m3 for NOVEMBER, 2023

Hr Beg Hr End Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	8.6	9.0	9.8	11.0	10.5	10.3	12.7	11.0	10.6	10.4	11.3	10.6	11.6	9.5	7.9	7.0	5.6	5.3	5.8	8.8	5.9	6.0	6.0	6.6	**8.8**	**12.7**	**5.3**
2	6.2	6.3	6.7	6.9	6.9	8.2	9.4	9.4	9.0	7.7	6.1	4.9	5.5	5.3	7.1	6.0	5.4	6.4	8.6	9.2	10.1	15.7	12.0	10.4	**7.8**	**15.7**	**4.9**
3	10.3	13.6	13.2	14.2	12.9	14.3	15.5	14.0	12.2	10.4	9.0	8.8	8.9	8.2	7.8	8.0	8.6	8.4	8.3	10.4	11.8	13.0	11.7	19.5	**11.3**	**19.5**	**7.8**
4	21.3	19.3	22.5	16.0	15.9	14.7	14.1	13.7	18.1	18.0	19.6	20.8	14.4	14.1	14.7	16.3	15.4	14.7	16.5	22.4	28.9	34.2	33.3	33.1	**19.6**	**34.2**	**13.7**
5	35.0	39.2	43.3	40.3	39.3	38.2	38.8	32.2	37.0	27.5	30.2	19.3	14.6	13.9	13.6	12.7	14.2	16.9	20.6	21.1	22.2	19.9	16.9	15.8	**25.9**	**43.3**	**12.7**
6	13.9	13.8	12.7	12.3	11.7	11.7	11.6	11.3	9.9	10.1	10.1	10.6	12.5	14.0	14.9	16.6	16.7	18.5	22.7	22.7	24.8	21.4	24.5	27.9	**15.7**	**27.9**	**9.9**
7	23.0	22.6	22.9	24.0	26.0	27.1	27.1	27.9	28.2	26.4	25.3	24.4	23.9	24.2	23.7	23.8	26.3	28.6	21.9	16.7	12.6	10.3	11.6	10.8	**22.4**	**28.6**	**10.3**
8	10.2	10.5	11.0	11.0	8.6	5.5	8.3	9.1	5.2	3.5	3.7	3.7	3.6	4.1	4.4	4.3	4.6	4.3	7.7	7.5	6.4	7.5	6.6	6.4	**6.5**	**11.0**	**3.5**
9	6.7	6.0	6.0	5.9	7.3	12.2	11.3	12.4	10.9	11.5	13.7	16.9	17.5	16.7	22.0	23.2	22.6	15.7	15.1	12.4	18.2	7.5	7.3	7.6	**12.7**	**23.2**	**5.9**
10	6.1	5.7	5.0	5.2	5.2	6.1	6.8	8.0	8.9	7.3	8.1	6.3	5.2	4.4	5.4	5.4	6.7	7.2	8.7	10.4	11.0	10.7	12.6	12.2	**7.4**	**12.6**	**4.4**
11	11.6	11.4	11.9	13.4	10.6	9.9	10.5	10.7	13.5	14.9	12.6	12.5	13.6	15.3	14.4	14.8	14.7	16.1	19.3	21.9	33.5	29.2	19.7	19.0	**15.6**	**33.5**	**9.9**
12	16.6	16.6	14.0	9.7	7.6	6.7	6.3	6.4	5.4	4.6	5.2	5.6	6.2	7.0	7.2	7.2	7.5	8.3	11.1	12.2	11.1	14.5	14.7	11.6	**9.3**	**16.6**	**4.6**
13	11.1	10.4	10.4	10.3	14.5	12.6	12.8	13.3	14.7	14.8	13.6	14.2	12.6	12.1	12.2	13.4	13.2	15.0	15.7	16.4	18.2	20.0	17.5	16.4	**13.9**	**20.0**	**10.3**
14	15.8	11.6	10.2	9.0	9.2	8.2	8.6	9.6	7.6	4.9	4.2	4.2	4.2	4.3	4.4	4.5	4.7	5.9	11.7	12.8	13.9	13.0	15.7	16.1	**8.9**	**16.1**	**4.2**
15	22.2	13.0	13.5	12.1	14.1	15.4	16.9	17.2	19.1	16.1	14.5	11.0	8.9	8.9	10.2	8.9	8.9	8.7	12.3	11.3	10.5	10.8	12.2	12.3	**12.8**	**22.2**	**8.7**
16	11.1	11.7	14.4	14.8	14.8	14.3	15.3	17.8	19.7	20.4	26.4	30.7	28.6	19.4	21.2	21.0	23.5	26.4	33.2	33.3	26.1	25.7	34.7	31.4	**22.3**	**34.7**	**11.1**
17	30.5	27.2	28.9	28.7	27.0	24.3	24.3	27.5	25.6	18.9	13.6	8.7	7.3	9.0	10.6	6.0	5.9	5.9	6.7	7.6	9.0	11.9	11.8	11.0	**16.1**	**30.5**	**5.9**
18	12.0	13.5	15.1	15.4	13.1	16.2	22.2	14.7	5.0	3.5	4.3	4.6	4.5	4.1	4.2	4.2	4.3	5.6	5.9	7.1	7.4	7.6	8.1	9.2	**8.8**	**22.2**	**3.5**
19	8.4	7.8	6.9	8.0	7.7	7.4	8.8	8.7	8.6	6.7	7.9	8.7	8.4	8.4	8.4	7.7	9.1	7.9	9.1	9.5	16.8	12.7	12.0	13.2	**9.1**	**16.8**	**6.7**
20	14.8	13.7	14.5	14.9	13.2	11.3	9.0	8.3	8.2	7.5	7.6	7.5	7.7	8.0	8.5	8.2	7.8	7.8	8.4	10.4	10.1	9.8	8.8	7.7	**9.7**	**14.9**	**7.5**
21	7.0	6.7	5.1	4.6	4.5	5.1	6.1	5.5	---	---	---	---	---	---	---	---	5.0	7.5	5.9	6.6	6.0	5.9	4.6	2.9	**---**	**---**	**---**
22	3.4	1.9	3.7	4.2	4.7	6.2	7.0	7.1	7.2	7.2	5.7	3.8	3.9	3.9	4.3	3.6	4.8	4.5	5.1	6.5	5.2	4.6	4.4	3.7	**4.8**	**7.2**	**1.9**
23	3.0	3.1	3.6	3.7	4.0	4.1	4.5	5.2	6.7	7.9	6.9	6.0	6.0	6.3	6.5	5.7	5.3	9.0	11.8	15.9	22.3	22.5	23.2	20.9	**8.9**	**23.2**	**3.0**
24	18.8	16.9	19.8	20.9	17.6	16.1	16.2	17.6	18.2	17.8	17.5	14.5	14.9	16.1	16.9	16.4	18.8	19.7	12.8	9.0	7.5	7.1	7.2	6.3	**15.1**	**20.9**	**6.3**
25	5.4	5.6	5.7	5.6	6.0	7.0	7.1	9.3	11.5	8.2	6.1	6.4	6.3	6.1	6.6	7.2	7.7	10.5	10.9	12.1	14.1	23.5	27.1	27.9	**10.1**	**27.9**	**5.4**
26	23.0	23.6	24.4	26.0	23.9	16.9	12.0	13.0	14.1	12.9	10.4	9.3	8.6	10.2	10.6	9.5	7.2	6.5	7.7	6.9	6.0	7.5	11.8	15.2	**13.2**	**26.0**	**6.0**
27	12.8	11.9	13.0	12.6	12.0	9.4	9.3	9.1	8.3	5.9	4.4	4.5	5.5	5.9	6.1	6.4	7.4	8.9	9.6	9.8	13.9	14.9	11.3	11.5	**9.3**	**14.9**	**4.4**
28	11.3	11.8	11.3	10.4	10.7	9.1	9.4	8.8	8.6	8.1	7.7	8.4	8.1	7.8	8.0	8.2	8.6	8.4	8.0	8.3	7.8	7.8	7.6	7.8	**8.8**	**11.8**	**7.6**
29	8.0	7.6	7.7	7.9	8.0	8.3	9.2	10.6	11.0	10.7	10.7	10.4	9.3	9.2	9.1	8.2	8.6	8.9	9.2	10.5	11.6	12.2	12.6	15.0	**9.7**	**15.0**	**7.6**
30	19.0	21.4	20.0	17.5	15.1	13.6	17.3	17.6	16.9	17.3	15.4	13.4	8.7	8.2	7.9	8.7	8.9	9.1	10.1	12.1	14.0	16.3	18.2	22.2	**14.5**	**22.2**	**7.9**
MEAN	**13.6**	**13.1**	**13.6**	**13.2**	**12.8**	**12.3**	**12.9**	**12.9**	**13.1**	**11.8**	**11.4**	**10.7**	**10.0**	**9.8**	**10.3**	**10.1**	**10.3**	**10.9**	**12.0**	**12.7**	**13.9**	**14.1**	**14.2**	**14.4**	**12.3**		
MAX	**35.0**	**39.2**	**43.3**	**40.3**	**39.3**	**38.2**	**38.8**	**32.2**	**37.0**	**27.5**	**30.2**	**30.7**	**28.6**	**24.2**	**23.7**	**23.8**	**26.3**	**28.6**	**33.2**	**33.3**	**33.5**	**34.2**	**34.7**	**33.1**		**43.3**	
MIN	**3.0**	**1.9**	**3.6**	**3.7**	**4.0**	**4.1**	**4.5**	**5.2**	**5.0**	**3.5**	**3.7**	**3.7**	**3.6**	**3.9**	**4.2**	**3.6**	**4.3**	**4.3**	**5.1**	**6.5**	**5.2**	**4.6**	**4.4**	**2.9**			**1.9**

POSSIBLE NUMBER OF OBSERVATIONS = 720 ACTUAL NUMBER OF OBSERVATIONS = 712 DATA RECOVERY RATE = 98.9% DATA CAPTURE RATE = 96.7%

MONTHLY MEAN = 12.3 µg/m3

MAXIMUM PM2.5 = 43.3 µg/m3 DATE OF OCCURRENCE = 11/5 at 300 MAXIMUM DAILY MEAN = 25.9 µg/m3 DATE OF OCCURRENCE = 11/5

SECOND MAXIMUM PM2.5 = 40.3 µg/m3 DATE OF OCCURRENCE = 11/5 at 400 SECOND MAXIMUM DAILY MEAN = 22.4 µg/m3 DATE OF OCCURRENCE = 11/7

MINIMUM PM2.5 = 1.9 µg/m3 DATE OF OCCURRENCE = 11/22 at 200 MINUMUM DAILY MEAN = 4.8 µg/m3 DATE OF OCCURRENCE = 11/22

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

CSX AQ5

HOURLY AVERAGES of PM2.5 in µg/m3 for DECEMBER, 2023

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	---	20.5	25.5	27.9	32.0	28.4	26.8	31.2	31.1	27.5	26.1	26.7	29.3	29.7	25.9	26.0	27.7	34.8	22.3	22.5	22.1	22.4	27.6	29.4	**27.1**	**34.8**	**20.5**
2	27.4	28.5	29.2	29.4	33.1	32.3	29.3	31.6	34.0	32.0	28.6	33.3	35.4	43.9	48.3	38.8	19.0	21.6	22.2	31.7	23.9	24.7	22.3	23.7	**30.1**	**48.3**	**19.0**
3	24.1	17.9	14.2	14.9	13.5	12.1	12.1	11.5	10.1	11.0	10.6	10.4	10.4	11.4	12.2	14.0	14.8	11.9	9.1	9.0	10.0	10.9	10.1	8.8	**12.2**	**24.1**	**8.8**
4	6.3	5.9	5.4	5.6	6.4	7.0	8.7	9.7	9.8	8.1	7.1	7.9	8.2	8.2	8.2	8.1	9.1	9.3	10.2	11.6	13.8	12.3	12.3	12.7	**8.8**	**13.8**	**5.4**
5	12.1	10.9	10.1	9.9	8.5	9.0	9.9	11.4	10.2	11.0	11.4	8.6	7.9	7.5	7.8	7.1	7.5	9.0	8.7	8.1	9.2	10.2	11.1	11.8	**9.5**	**12.1**	**7.1**
6	12.4	13.1	14.2	16.3	24.5	15.9	13.8	11.8	11.5	10.7	12.5	11.8	8.3	5.9	5.5	6.4	5.9	6.1	7.1	8.1	7.1	6.0	6.8	6.8	**10.3**	**24.5**	**5.5**
7	6.7	6.8	7.6	8.3	9.1	7.8	8.0	9.6	8.8	9.3	10.0	9.6	8.7	9.5	9.0	7.9	7.9	8.4	7.8	9.4	9.8	10.6	12.3	15.6	**9.1**	**15.6**	**6.7**
8	15.2	17.3	18.5	17.0	18.4	20.4	19.9	24.3	17.5	17.5	19.8	13.6	10.1	8.9	7.7	7.1	7.1	7.6	9.7	10.6	11.4	15.2	17.1	17.3	**14.5**	**24.3**	**7.1**
9	17.9	19.0	16.2	16.3	16.2	16.6	19.2	18.6	16.5	14.7	17.3	26.8	27.7	29.4	25.3	23.1	25.3	28.7	28.2	25.8	28.9	33.0	36.4	42.6	**23.7**	**42.6**	**14.7**
10	42.2	44.2	43.9	41.8	41.3	41.1	40.9	39.6	36.8	37.3	32.5	34.6	15.1	5.2	5.4	3.9	4.1	4.6	5.0	5.0	3.5	1.9	1.7	1.1	**22.1**	**44.2**	**1.1**
11	2.8	2.2	1.7	0.6	0.6	0.5	1.9	3.7	5.2	5.2	4.5	4.3	3.0	2.5	3.3	2.9	4.3	3.0	3.8	4.3	4.8	5.5	5.7	5.8	**3.4**	**5.8**	**0.5**
12	6.6	7.5	7.9	7.6	7.7	6.5	7.0	6.7	6.7	6.5	5.6	4.4	5.2	5.9	5.7	4.8	4.5	5.4	7.8	11.2	9.8	9.7	9.6	8.9	**7.0**	**11.2**	**4.4**
13	9.8	9.9	10.0	10.7	9.2	9.7	10.2	11.2	6.9	7.4	7.3	5.9	6.7	7.6	7.4	7.3	6.8	7.6	9.6	9.5	7.9	7.8	9.8	10.5	**8.6**	**11.2**	**5.9**
14	10.3	11.0	10.9	10.3	10.7	11.0	12.2	12.8	13.7	16.8	12.0	7.5	7.8	7.8	7.3	10.6	9.5	10.2	11.9	13.1	15.0	15.3	14.4	15.2	**11.5**	**16.8**	**7.3**
15	14.2	14.7	14.2	12.7	10.6	10.0	10.9	12.4	10.8	6.6	7.2	7.0	6.9	7.1	6.7	6.3	8.2	7.7	9.1	10.3	12.2	13.0	16.1	17.6	**10.5**	**17.6**	**6.3**
16	16.6	15.0	9.8	8.9	9.8	9.8	10.7	13.2	14.4	16.9	15.8	---	14.0	11.6	13.4	12.2	11.5	13.1	14.7	15.5	15.3	16.5	19.4	21.3	**13.8**	**21.3**	**8.9**
17	19.9	20.1	23.6	20.4	19.1	19.9	20.5	22.2	14.4	13.3	16.7	19.5	16.0	14.3	13.2	9.9	9.2	9.7	8.0	4.9	4.0	2.9	2.0	1.1	**13.5**	**23.6**	**1.1**
18	1.5	2.3	2.2	0.8	0.7	0.4	0.9	1.1	2.1	3.2	4.1	3.4	2.6	1.9	1.5	1.6	2.1	2.2	2.2	2.0	2.1	2.6	3.0	3.5	**2.0**	**4.1**	**0.4**
19	4.2	4.1	3.4	2.8	2.2	2.0	1.8	2.1	2.3	2.8	3.3	3.1	3.1	3.8	3.6	3.1	3.5	4.3	4.6	4.8	5.4	12.3	7.3	7.1	**4.0**	**12.3**	**1.8**
20	8.1	8.5	7.4	7.0	7.9	8.2	8.1	11.7	9.8	10.0	9.8	10.4	9.0	7.5	6.9	6.6	7.8	8.9	12.6	11.8	11.2	13.0	13.7	14.7	**9.6**	**14.7**	**6.6**
21	15.4	14.8	14.5	13.7	15.5	15.5	14.2	15.2	14.3	---	12.8	13.3	14.0	13.4	12.4	13.4	13.8	15.4	17.1	15.9	15.8	18.0	17.7	14.2	**14.7**	**18.0**	**12.4**
22	14.0	13.7	13.9	11.9	8.2	5.6	6.5	6.0	4.5	4.2	4.3	4.6	5.4	7.7	8.3	11.5	12.2	14.5	8.5	7.6	8.9	7.5	6.7	7.1	**8.4**	**14.5**	**4.2**
23	7.1	7.5	8.0	8.4	9.0	8.7	8.6	8.7	8.6	10.3	10.0	7.6	7.9	10.3	8.1	8.9	7.9	8.2	8.3	8.5	7.9	10.6	12.1	12.0	**8.8**	**12.1**	**7.1**
24	8.4	6.9	7.2	9.7	7.8	7.6	8.9	10.3	12.1	11.7	15.5	10.5	8.8	13.3	13.6	12.6	10.4	9.5	11.3	15.3	22.5	17.4	18.4	17.4	**11.9**	**22.5**	**6.9**
25	17.6	17.3	16.4	16.1	15.6	15.4	14.9	15.3	16.4	16.9	16.1	15.1	15.8	16.1	15.6	14.7	14.9	15.2	16.6	18.4	18.9	21.3	20.9	20.9	**16.7**	**21.3**	**14.7**
26	19.8	15.9	10.1	7.6	6.0	5.7	8.1	6.2	3.7	2.6	4.5	4.0	4.5	5.4	6.5	6.9	8.2	9.1	8.7	7.0	6.7	6.7	6.3	7.0	**7.3**	**19.8**	**2.6**
27	7.0	6.0	5.0	4.6	3.8	4.3	4.7	4.2	3.5	3.4	3.7	5.1	6.2	5.4	4.7	4.5	4.0	2.9	2.7	3.8	2.8	1.8	2.8	3.1	**4.1**	**7.0**	**1.8**
28	3.0	4.0	4.5	5.9	5.7	6.8	6.5	7.2	6.6	6.5	5.0	3.9	2.8	3.1	3.9	2.3	3.1	4.2	6.0	6.4	6.8	7.1	6.6	6.9	**5.2**	**7.2**	**2.3**
29	7.6	7.8	7.6	7.3	7.5	7.8	9.6	13.7	8.6	8.2	9.0	7.4	6.1	5.1	5.3	5.2	5.7	6.8	6.7	7.0	5.8	4.6	4.9	5.3	**7.1**	**13.7**	**4.6**
30	5.1	4.5	4.4	4.5	4.7	4.9	4.9	4.4	4.1	3.4	3.3	3.1	3.2	3.2	3.3	3.1	3.3	3.6	4.1	5.8	3.9	2.8	3.8	3.0	**3.9**	**5.8**	**2.8**
31	3.4	3.2	3.2	3.4	4.0	4.5	5.1	5.4	5.4	4.9	5.3	4.4	4.1	3.5	3.2	3.6	6.3	8.1	7.7	9.1	12.3	13.5	10.2	9.2	**5.9**	**13.5**	**3.2**
MEAN	**12.2**	**12.3**	**12.0**	**11.7**	**11.9**	**11.5**	**11.8**	**12.7**	**11.6**	**11.3**	**11.3**	**10.9**	**10.1**	**10.2**	**10.0**	**9.5**	**9.2**	**10.1**	**10.1**	**10.8**	**11.0**	**11.5**	**11.9**	**12.3**	**11.2**		
MAX	**42.2**	**44.2**	**43.9**	**41.8**	**41.3**	**41.1**	**40.9**	**39.6**	**36.8**	**37.3**	**32.5**	**34.6**	**35.4**	**43.9**	**48.3**	**38.8**	**27.7**	**34.8**	**28.2**	**31.7**	**28.9**	**33.0**	**36.4**	**42.6**		**48.3**	
MIN	**1.5**	**2.2**	**1.7**	**0.6**	**0.6**	**0.4**	**0.9**	**1.1**	**2.1**	**2.6**	**3.3**	**3.1**	**2.6**	**1.9**	**1.5**	**1.6**	**2.1**	**2.2**	**2.2**	**2.0**	**2.1**	**1.8**	**1.7**	**1.1**			**0.4**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 741 DATA RECOVERY RATE = 99.6% DATA CAPTURE RATE = 100.0%

MONTHLY MEAN = 11.2 µg/m3

MAXIMUM PM2.5 = 48.3 µg/m3 DATE OF OCCURRENCE = 12/2 at 1500 MAXIMUM DAILY MEAN = 30.1 µg/m3 DATE OF OCCURRENCE = 12/2

SECOND MAXIMUM PM2.5 = 44.2 µg/m3 DATE OF OCCURRENCE = 12/10 at 200 SECOND MAXIMUM DAILY MEAN = 27.1 µg/m3 DATE OF OCCURRENCE = 12/1

MINIMUM PM2.5 = 0.4 µg/m3 DATE OF OCCURRENCE = 12/18 at 600 MINUMUM DAILY MEAN = 2.0 µg/m3 DATE OF OCCURRENCE = 12/18

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

APPENDIX H. HOURLY AQ8 PM_{10} AND $PM_{2.5}$ CONCENTRATION DATA FOR FOURTH QUARTER 2023

Draft

CSX AQ8

HOURLY AVERAGES of PM10 in µg/m3 for OCTOBER, 2023

Hr Beg Hr End Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	19.4	16.6	16.2	13.6	12.5	16.4	26.6	34.9	29.8	21.7	85.6	64.2	49.6	36.3	33.9	32.3	27.7	17.3	17.9	19.4	21.2	20.9	45.1	24.7	**29.3**	**85.6**	**12.5**
2	19.8	18.7	18.1	33.4	20.8	28.7	43.4	58.8	31.2	33.5	26.7	30.1	33.7	54.6	83.4	41.9	39.5	46.6	38.2	179.5	42.0	52.5	36.1	31.4	**43.4**	**179.5**	**18.1**
3	38.0	83.1	126.0	45.7	82.5	81.3	62.3	90.6	68.7	73.5	57.2	44.5	39.5	48.3	46.3	44.3	36.0	33.7	42.0	42.8	54.6	41.7	86.7	50.2	**59.1**	**126.0**	**33.7**
4	28.1	31.9	30.5	48.7	53.6	64.5	79.6	56.8	83.1	74.0	103.9	49.3	46.9	36.4	56.4	31.3	21.5	---	34.5	36.7	26.9	25.0	69.8	21.4	**48.3**	**103.9**	**21.4**
5	37.7	38.2	29.4	23.3	39.4	84.9	240.4	84.9	167.2	34.7	124.8	22.3	51.4	54.6	25.9	37.9	28.7	20.2	23.7	25.8	27.6	16.7	16.2	19.8	**53.2**	**240.4**	**16.2**
6	23.9	20.5	21.5	24.4	22.8	32.0	29.9	31.5	50.0	64.1	40.1	20.7	35.2	40.3	28.6	26.4	39.8	29.9	19.7	31.0	27.0	26.2	21.8	34.1	**30.9**	**64.1**	**19.7**
7	18.0	19.7	19.9	15.6	15.8	11.7	10.5	13.9	15.6	16.3	15.3	14.8	12.3	16.2	14.9	16.9	14.7	11.9	11.3	11.6	9.4	10.6	9.2	8.6	**13.9**	**19.9**	**8.6**
8	8.9	8.1	7.2	7.5	8.9	7.1	7.8	8.2	8.9	8.2	8.9	9.0	12.9	8.9	10.2	21.8	9.7	8.9	8.7	9.0	11.5	16.4	9.3	9.0	**9.8**	**21.8**	**7.1**
9	8.2	9.7	10.1	32.5	10.5	12.1	25.2	23.1	18.1	26.2	23.9	17.4	36.4	19.6	42.6	19.3	30.8	20.3	20.0	15.4	15.2	11.6	9.1	11.6	**19.5**	**42.6**	**8.2**
10	9.8	10.6	13.7	13.5	15.5	13.2	19.8	36.7	45.4	24.5	54.5	27.5	24.1	24.3	34.5	19.6	43.6	44.0	31.8	69.8	119.3	191.7	64.3	49.1	**41.7**	**191.7**	**9.8**
11	42.0	25.1	34.7	25.0	37.0	76.8	42.7	63.3	26.3	39.3	44.0	56.6	27.2	31.3	92.1	26.1	34.5	62.8	42.8	30.9	33.2	39.0	42.0	29.3	**41.8**	**92.1**	**25.0**
12	33.3	32.0	29.0	25.4	29.8	36.2	---	66.2	111.9	140.8	58.9	54.7	54.4	43.4	50.2	56.1	48.4	37.8	47.0	50.4	35.4	41.8	32.9	45.5	**50.5**	**140.8**	**25.4**
13	36.5	69.4	95.2	84.3	41.2	39.4	55.8	92.8	58.9	81.5	45.1	44.7	22.4	41.6	35.1	26.3	24.7	27.9	29.1	28.2	99.2	135.8	57.2	---	**55.3**	**135.8**	**22.4**
14	24.8	18.7	18.1	43.9	16.6	13.5	17.4	26.4	23.2	15.1	15.3	20.3	17.5	13.5	10.6	6.8	6.5	4.5	4.9	6.4	6.9	5.0	3.5	2.9	**14.3**	**43.9**	**2.9**
15	3.1	2.6	3.5	4.7	4.9	7.3	8.0	8.0	8.1	9.0	8.2	7.0	5.9	7.2	5.3	6.2	7.4	9.0	8.1	12.9	9.6	8.3	7.9	7.7	**7.1**	**12.9**	**2.6**
16	6.1	7.9	8.4	8.0	10.9	8.6	10.2	14.8	9.5	10.4	9.0	13.8	12.3	14.2	19.1	7.7	12.0	8.9	8.0	8.0	8.3	11.8	8.3	10.7	**10.3**	**19.1**	**6.1**
17	8.0	8.4	8.7	6.3	7.6	7.0	13.5	15.9	24.9	33.5	12.7	20.2	18.8	32.6	9.4	9.4	16.8	12.9	10.4	9.9	17.1	14.0	11.9	18.9	**14.5**	**33.5**	**6.3**
18	9.4	11.7	17.1	14.1	33.3	22.0	22.8	24.8	41.0	28.5	12.6	20.0	45.5	69.2	11.9	17.5	14.9	51.2	17.3	129.0	49.9	24.0	56.1	---	**32.3**	**129.0**	**9.4**
19	32.7	22.9	56.4	36.0	77.8	67.4	193.1	128.1	37.5	30.0	26.4	32.9	32.2	27.2	27.2	20.9	19.3	20.5	11.5	17.2	13.6	12.6	19.4	9.7	**40.5**	**193.1**	**9.7**
20	16.1	20.3	19.4	49.7	23.5	20.4	25.4	23.8	22.4	21.2	18.0	27.5	51.0	30.6	25.3	21.0	19.7	20.1	21.1	21.7	21.3	21.6	22.3	14.3	**24.1**	**51.0**	**14.3**
21	9.3	9.7	8.4	8.9	11.4	9.7	9.0	9.6	11.1	11.4	10.4	9.2	14.8	20.0	29.2	14.8	8.5	9.0	8.4	7.6	8.2	9.3	10.1	11.0	**11.2**	**29.2**	**7.6**
22	9.4	9.8	10.0	10.3	9.1	9.7	14.4	13.5	9.4	20.9	16.1	28.5	16.8	14.0	15.2	16.8	19.2	12.9	10.3	8.1	7.5	10.5	12.8	8.5	**13.1**	**28.5**	**7.5**
23	10.2	8.6	9.4	17.0	12.3	15.3	17.8	17.9	27.5	31.0	28.8	19.9	13.3	25.0	25.0	14.0	10.7	---	31.0	29.2	58.7	43.7	59.5	158.4	**29.7**	**158.4**	**8.6**
24	32.7	98.6	34.3	22.7	40.8	53.3	105.0	54.1	81.4	47.8	28.8	21.8	47.7	68.4	31.1	26.3	20.6	31.4	16.8	15.4	15.8	34.1	28.2	21.2	**40.8**	**105.0**	**15.4**
25	45.7	127.0	61.7	34.3	24.5	42.9	111.4	37.1	28.7	38.4	64.4	---	42.6	46.0	43.3	33.5	23.6	30.9	26.0	25.1	109.2	133.7	33.5	25.0	**51.7**	**133.7**	**23.6**
26	32.2	66.2	41.3	46.2	152.0	69.3	130.4	99.6	75.0	81.4	51.6	56.4	69.0	70.6	80.2	47.1	49.3	53.1	25.5	27.9	23.2	23.9	23.6	100.7	**62.3**	**152.0**	**23.2**
27	28.4	37.3	48.9	45.8	55.5	46.7	97.1	78.6	35.5	51.5	34.7	28.2	18.6	19.2	20.8	32.2	19.4	71.7	29.4	33.6	26.9	28.1	36.4	83.3	**42.0**	**97.1**	**18.6**
28	35.6	51.1	30.7	38.9	47.8	24.8	75.4	21.8	20.4	20.1	22.3	29.9	19.3	21.6	17.0	47.6	35.2	82.3	38.5	26.7	30.0	23.4	80.0	157.5	**41.6**	**157.5**	**17.0**
29	48.5	27.6	25.2	24.5	17.8	15.3	14.6	17.0	15.9	16.6	18.9	16.7	20.7	20.6	20.0	23.0	21.0	19.6	15.1	15.8	16.9	14.6	14.5	16.6	**19.9**	**48.5**	**14.5**
30	18.1	16.8	21.7	21.8	25.1	32.1	46.7	55.2	57.3	39.9	30.0	30.4	67.8	63.8	40.3	23.8	23.6	10.4	7.2	5.8	6.9	16.5	4.9	5.9	**28.0**	**67.8**	**4.9**
31	3.5	4.3	5.8	6.7	7.1	7.9	8.8	10.6	8.0	7.9	7.5	7.5	10.1	9.7	11.2	11.2	12.3	18.2	12.5	12.5	20.6	17.2	13.4	12.3	**10.3**	**20.6**	**3.5**
MEAN	**22.5**	**30.1**	**28.4**	**26.9**	**31.2**	**31.5**	**52.2**	**42.5**	**40.4**	**37.2**	**35.6**	**28.2**	**31.3**	**33.2**	**32.1**	**25.2**	**23.9**	**28.5**	**21.6**	**31.1**	**31.4**	**34.9**	**30.5**	**34.5**	**31.8**		
MAX	**48.5**	**127.0**	**126.0**	**84.3**	**152.0**	**84.9**	**240.4**	**128.1**	**167.2**	**140.8**	**124.8**	**64.2**	**69.0**	**70.6**	**92.1**	**56.1**	**49.3**	**82.3**	**47.0**	**179.5**	**119.3**	**191.7**	**86.7**	**158.4**		**240.4**	
MIN	**3.1**	**2.6**	**3.5**	**4.7**	**4.9**	**7.0**	**7.8**	**8.0**	**8.0**	**7.9**	**7.5**	**7.0**	**5.9**	**7.2**	**5.3**	**6.2**	**6.5**	**4.5**	**4.9**	**5.8**	**6.9**	**5.0**	**3.5**	**2.9**			**2.6**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 738 DATA RECOVERY RATE = 99.2% DATA CAPTURE RATE = 100.0%

MONTHLY MEAN = 31.8 µg/m3

MAXIMUM PM10 = 240.4 µg/m3 DATE OF OCCURRENCE = 10/5 at 700 MAXIMUM DAILY MEAN = 62.3 µg/m3 DATE OF OCCURRENCE = 10/26

SECOND MAXIMUM PM10 = 193.1 µg/m3 DATE OF OCCURRENCE = 10/19 at 700 SECOND MAXIMUM DAILY MEAN = 59.1 µg/m3 DATE OF OCCURRENCE = 10/3

MINIMUM PM10 = 2.6 µg/m3 DATE OF OCCURRENCE = 10/15 at 200 MINUMUM DAILY MEAN = 7.1 µg/m3 DATE OF OCCURRENCE = 10/15

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

CSX AQ8

HOURLY AVERAGES of PM10 in µg/m3 for NOVEMBER, 2023

Hr Beg Hr End Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	12.4	12.2	14.0	14.0	11.7	13.1	22.4	15.7	15.4	27.8	36.2	34.6	43.8	33.7	48.9	39.9	24.6	12.7	10.0	20.9	12.7	9.9	25.1	16.8	**22.0**	**48.9**	**9.9**
2	9.1	8.3	9.5	23.9	19.0	25.9	29.6	24.8	27.5	21.9	16.5	11.6	12.8	16.0	23.8	25.7	22.2	23.9	19.4	22.7	15.7	44.7	19.7	12.5	**20.3**	**44.7**	**8.3**
3	22.5	22.2	11.6	23.8	23.1	26.8	31.0	40.7	26.6	26.6	24.7	36.5	34.1	40.5	24.0	23.2	16.3	18.0	21.0	55.4	17.3	17.5	87.6	79.1	**31.3**	**87.6**	**11.6**
4	50.4	125.3	67.4	16.9	21.2	16.4	23.2	22.6	36.8	33.7	41.5	41.0	35.7	32.6	34.3	38.5	29.2	23.5	90.5	60.1	41.7	93.3	41.0	42.0	**44.1**	**125.3**	**16.4**
5	49.1	46.1	60.4	44.2	57.9	53.5	70.6	38.2	43.1	58.4	47.2	54.8	38.6	32.7	27.6	29.9	37.8	35.8	91.3	38.7	38.4	44.9	32.6	24.9	**45.7**	**91.3**	**24.9**
6	19.4	24.3	20.6	20.1	18.0	52.1	24.0	28.4	26.4	23.6	25.4	30.3	34.7	37.2	36.7	39.6	32.0	31.3	32.6	41.6	46.1	49.8	---	---	**31.6**	**52.1**	**18.0**
7	51.4	31.6	29.8	31.5	34.3	33.2	37.9	42.3	46.1	46.2	60.8	64.6	54.6	43.2	49.9	72.8	82.1	131.0	76.3	44.4	36.8	81.7	148.6	59.8	**58.0**	**148.6**	**29.8**
8	125.9	51.4	20.6	36.3	126.7	25.5	29.0	20.9	33.9	11.8	38.1	16.3	36.7	30.2	28.1	20.3	25.2	49.1	53.6	29.6	30.7	25.1	28.5	30.8	**38.5**	**126.7**	**11.8**
9	19.7	26.1	16.4	17.2	30.1	13.3	34.4	44.3	41.2	23.9	30.1	40.5	34.9	51.6	72.6	87.4	76.8	23.2	25.1	18.5	50.8	12.7	13.4	56.6	**35.9**	**87.4**	**12.7**
10	30.2	51.1	9.3	9.1	22.2	17.4	25.0	32.0	27.7	19.0	14.1	10.4	9.7	8.5	8.9	9.5	10.2	10.6	12.5	12.8	13.9	14.3	15.9	15.9	**17.1**	**51.1**	**8.5**
11	14.7	13.9	16.2	16.6	16.2	12.8	11.6	14.8	18.4	24.3	25.5	20.0	22.4	30.6	33.7	30.6	25.6	26.4	31.5	29.4	35.9	37.5	26.2	26.6	**23.4**	**37.5**	**11.6**
12	24.6	21.8	18.8	13.3	10.4	8.6	9.2	8.8	8.2	10.0	10.4	10.5	9.9	11.8	10.7	13.0	17.1	16.4	26.0	28.8	15.6	21.7	23.9	16.6	**15.3**	**28.8**	**8.2**
13	18.3	17.6	19.2	18.6	19.5	20.2	15.4	17.4	27.5	27.1	28.6	30.8	26.4	42.1	29.2	39.1	22.6	34.7	28.8	25.6	25.1	27.7	31.0	25.7	**25.8**	**42.1**	**15.4**
14	21.4	17.6	21.9	18.5	16.6	22.1	15.4	41.6	16.4	17.3	18.2	12.8	18.1	17.4	21.5	22.9	17.9	28.5	110.5	41.8	23.6	30.0	49.5	33.6	**27.3**	**110.5**	**12.8**
15	46.1	31.9	28.2	23.4	43.7	59.9	33.6	42.9	58.9	40.2	38.8	35.8	27.4	45.8	29.4	39.7	37.7	37.3	20.4	24.5	17.6	50.7	20.3	21.0	**35.6**	**59.9**	**17.6**
16	55.7	121.9	26.9	44.5	22.5	21.7	36.6	45.7	43.9	41.4	51.6	77.1	62.6	57.1	45.5	45.8	52.2	70.8	55.4	52.4	39.4	69.4	39.9	37.8	**50.7**	**121.9**	**21.7**
17	55.5	---	42.2	44.1	34.0	33.4	66.7	82.3	59.0	41.2	32.8	28.5	26.1	31.4	35.6	24.1	18.1	25.6	21.6	16.1	21.1	64.9	55.3	19.4	**38.2**	**82.3**	**16.1**
18	19.9	29.7	20.2	20.5	17.9	22.1	27.2	19.1	11.5	9.7	11.3	14.4	14.2	18.1	10.3	16.5	11.7	11.7	12.3	19.1	32.6	14.0	38.6	11.5	**18.1**	**38.6**	**9.7**
19	10.7	15.3	9.6	18.7	9.0	9.3	11.0	21.4	13.9	16.4	15.1	17.3	17.0	13.3	17.7	15.9	27.6	18.7	19.7	14.8	22.1	14.4	13.9	17.0	**15.8**	**27.6**	**9.0**
20	46.2	26.3	24.5	22.9	17.1	14.7	12.4	12.4	17.1	14.1	16.5	15.9	20.7	19.0	31.6	31.3	25.8	21.8	17.3	21.2	22.3	32.7	104.3	37.2	**26.1**	**104.3**	**12.4**
21	33.1	30.9	24.0	17.6	17.2	16.3	22.2	19.7	31.0	21.0	---	---	---	---	---	---	---	17.3	13.3	9.9	11.5	13.5	10.3	7.3	**---**	**---**	**---**
22	6.7	6.5	7.9	7.1	5.8	8.3	10.2	10.9	12.2	11.7	8.9	5.9	6.7	6.0	7.6	6.6	6.7	6.8	8.7	8.2	7.0	7.7	6.7	5.9	**7.8**	**12.2**	**5.8**
23	6.0	4.8	6.5	6.7	5.0	7.6	6.8	6.4	10.4	10.7	10.1	8.5	9.5	9.3	8.7	9.0	9.6	18.4	16.2	15.1	23.9	17.1	28.6	24.2	**11.6**	**28.6**	**4.8**
24	27.2	22.7	19.7	21.4	20.4	21.5	19.3	20.4	22.0	21.4	25.2	20.2	21.3	21.3	20.4	24.5	24.3	24.8	22.5	13.8	13.0	17.2	15.3	12.7	**20.5**	**27.2**	**12.7**
25	9.6	10.9	9.4	11.3	10.2	10.9	15.3	12.4	26.3	12.9	11.7	13.5	12.5	14.7	15.9	15.9	14.4	16.6	19.6	17.8	18.7	23.1	28.0	29.7	**15.9**	**29.7**	**9.4**
26	23.3	30.8	29.9	30.0	28.7	23.9	26.2	16.8	22.2	21.4	14.9	16.1	13.2	14.7	16.0	13.5	10.3	8.5	9.2	8.2	8.5	9.7	13.5	17.7	**17.8**	**30.8**	**8.2**
27	14.8	15.3	18.2	17.0	15.5	13.0	12.8	13.0	11.7	9.7	8.1	8.0	9.5	11.5	10.4	10.8	12.6	11.8	12.2	12.3	12.7	12.3	12.8	14.2	**12.5**	**18.2**	**8.0**
28	12.1	13.4	13.4	13.3	14.4	12.6	14.4	13.0	13.5	18.5	14.5	20.3	27.8	24.4	22.6	22.5	21.8	15.9	13.6	11.4	13.4	11.5	12.1	12.4	**16.0**	**27.8**	**11.4**
29	12.1	12.9	11.1	10.6	13.4	11.8	15.2	20.3	25.3	15.2	16.3	17.4	14.1	15.8	18.5	16.3	17.3	17.5	16.7	18.3	17.1	16.5	16.2	20.0	**16.1**	**25.3**	**10.6**
30	25.8	29.9	24.7	25.5	25.0	22.7	31.8	68.0	36.5	38.5	40.3	26.2	15.8	23.8	23.0	28.6	21.6	25.2	20.1	24.3	19.8	23.7	45.7	94.1	**31.7**	**94.1**	**15.8**
MEAN	**29.1**	**30.1**	**21.7**	**21.3**	**24.2**	**21.7**	**24.7**	**27.2**	**27.0**	**23.9**	**25.3**	**25.5**	**24.5**	**26.0**	**26.3**	**28.0**	**25.9**	**27.1**	**30.9**	**25.3**	**23.5**	**30.3**	**34.6**	**28.4**	**26.3**		
MAX	**125.9**	**125.3**	**67.4**	**44.5**	**126.7**	**59.9**	**70.6**	**82.3**	**59.0**	**58.4**	**60.8**	**77.1**	**62.6**	**57.1**	**72.6**	**87.4**	**82.1**	**131.0**	**110.5**	**60.1**	**50.8**	**93.3**	**148.6**	**94.1**		**148.6**	
MIN	**6.0**	**4.8**	**6.5**	**6.7**	**5.0**	**7.6**	**6.8**	**6.4**	**8.2**	**9.7**	**8.1**	**5.9**	**6.7**	**6.0**	**7.6**	**6.6**	**6.7**	**6.8**	**8.7**	**8.2**	**7.0**	**7.7**	**6.7**	**5.9**			**4.8**

POSSIBLE NUMBER OF OBSERVATIONS = 720 ACTUAL NUMBER OF OBSERVATIONS = 710 DATA RECOVERY RATE = 98.6% DATA CAPTURE RATE = 96.7%

MONTHLY MEAN = 26.3 µg/m3

MAXIMUM PM10 = 148.6 µg/m3 DATE OF OCCURRENCE = 11/7 at 2300 MAXIMUM DAILY MEAN = 58.0 µg/m3 DATE OF OCCURRENCE = 11/7

SECOND MAXIMUM PM10 = 131.0 µg/m3 DATE OF OCCURRENCE = 11/7 at 1800 SECOND MAXIMUM DAILY MEAN = 50.7 µg/m3 DATE OF OCCURRENCE = 11/16

MINIMUM PM10 = 4.8 µg/m3 DATE OF OCCURRENCE = 11/23 at 200 MINUMUM DAILY MEAN = 7.8 µg/m3 DATE OF OCCURRENCE = 11/22

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

CSX AQ8

HOURLY AVERAGES of PM10 in µg/m3 for DECEMBER, 2023

Hr Beg Hr End Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	308.4	56.3	33.9	41.7	31.3	31.6	44.6	79.9	58.8	38.3	42.6	51.3	42.1	42.2	38.4	34.7	34.9	40.2	26.7	24.7	25.2	25.6	42.8	35.8	**51.3**	**308.4**	**24.7**
2	29.9	32.6	36.3	37.5	40.2	37.9	38.4	39.1	41.8	41.4	36.8	41.2	47.3	64.2	72.3	58.1	34.1	34.9	35.6	40.3	36.5	30.4	32.2	31.0	**40.4**	**72.3**	**29.9**
3	30.3	23.8	19.1	19.6	16.7	15.7	16.2	14.1	13.3	13.7	14.5	13.8	12.6	14.7	16.0	17.6	22.6	19.6	14.5	14.5	13.5	17.1	15.1	12.3	**16.7**	**30.3**	**12.3**
4	10.5	8.7	8.4	8.2	10.5	11.2	12.4	15.1	15.8	11.7	10.7	14.8	12.6	11.4	13.7	11.1	14.6	16.2	13.4	15.1	15.6	16.5	15.6	16.3	**12.9**	**16.5**	**8.2**
5	14.9	13.3	12.6	11.4	11.6	12.6	16.3	20.3	17.6	16.7	16.5	12.1	10.2	10.9	12.5	13.5	13.8	14.0	12.8	11.5	12.8	12.8	15.2	14.2	**13.8**	**20.3**	**10.2**
6	16.1	52.7	16.3	19.3	25.5	19.3	20.9	16.9	18.9	16.7	16.9	20.0	14.2	8.4	8.8	10.4	9.3	8.4	11.2	14.7	10.7	8.7	8.9	8.2	**15.9**	**52.7**	**8.2**
7	8.6	8.6	9.8	12.6	10.8	9.4	14.4	16.8	15.5	16.8	19.2	18.0	18.0	18.4	15.7	13.3	15.2	13.1	11.4	18.3	19.9	20.4	41.2	29.5	**16.5**	**41.2**	**8.6**
8	26.7	48.6	44.7	22.9	25.8	37.7	45.5	55.5	39.5	31.7	50.3	38.2	23.8	26.9	31.6	32.8	22.3	17.2	17.2	26.7	35.1	51.0	51.9	51.3	**35.6**	**55.5**	**17.2**
9	45.1	58.0	30.8	28.8	21.0	20.4	26.4	22.6	19.0	17.8	25.9	45.9	40.9	51.3	55.0	37.6	40.6	39.5	37.6	36.1	51.8	46.0	62.8	80.5	**39.2**	**80.5**	**17.8**
10	71.1	63.4	62.0	64.6	62.6	72.2	54.6	53.2	55.8	52.6	42.3	34.9	20.3	7.1	7.4	6.0	6.4	6.8	6.7	7.1	6.0	3.7	3.1	2.4	**32.2**	**72.2**	**2.4**
11	4.5	4.4	1.9	0.8	0.7	1.1	2.4	5.1	7.0	7.0	7.0	5.5	5.8	5.2	6.5	6.8	8.7	6.2	5.4	7.0	6.8	7.4	8.0	7.2	**5.4**	**8.7**	**0.7**
12	9.2	8.3	8.9	9.9	10.5	9.8	11.8	17.9	14.0	10.5	7.9	8.2	11.0	13.6	11.9	13.3	11.5	11.5	11.3	13.9	13.6	13.9	11.5	12.1	**11.5**	**17.9**	**7.9**
13	10.2	11.1	10.9	11.5	13.0	19.5	24.3	26.1	16.7	15.4	14.0	11.8	12.0	14.4	16.9	14.2	15.5	21.3	18.9	17.4	11.6	12.6	26.2	16.8	**15.9**	**26.2**	**10.2**
14	13.6	15.3	13.0	17.9	29.7	18.1	20.8	43.7	52.2	40.6	31.3	13.5	11.8	16.2	13.9	28.8	21.3	51.5	41.0	27.7	24.3	33.3	18.7	20.6	**25.8**	**52.2**	**11.8**
15	20.9	23.4	22.9	18.2	18.5	27.3	36.5	52.6	30.6	23.7	19.8	18.3	15.5	15.8	17.2	15.4	28.6	27.5	39.4	27.1	27.0	24.9	39.5	36.1	**26.1**	**52.6**	**15.4**
16	25.0	17.4	10.2	15.8	19.6	19.7	28.0	29.5	29.5	30.9	29.3	27.8	20.5	21.0	21.7	23.0	73.4	54.3	85.9	30.3	28.2	27.6	53.0	25.8	**31.1**	**85.9**	**10.2**
17	25.9	25.3	30.0	26.0	26.1	32.9	35.0	25.2	19.7	20.8	22.0	34.1	33.4	31.2	26.5	22.3	18.9	18.0	14.4	8.0	7.2	5.1	4.1	3.1	**21.5**	**35.0**	**3.1**
18	3.1	3.4	5.2	1.5	1.5	1.8	1.3	2.2	3.5	5.1	5.8	6.4	4.5	5.5	5.6	4.7	5.4	5.2	3.5	2.2	2.8	4.1	3.6	5.3	**3.9**	**6.4**	**1.3**
19	5.6	5.1	4.6	4.0	3.4	2.8	3.3	5.0	7.4	7.6	10.4	8.5	8.5	9.4	10.0	6.4	8.9	7.6	7.0	9.1	9.3	8.5	12.8	10.0	**7.3**	**12.8**	**2.8**
20	10.5	10.0	11.2	10.1	10.6	14.7	11.3	18.4	17.2	14.0	13.2	19.6	15.2	18.2	15.4	22.2	17.2	16.5	21.3	16.8	16.0	19.4	20.7	19.9	**15.8**	**22.2**	**10.0**
21	20.2	16.9	31.9	20.4	44.0	23.9	27.7	34.5	24.4	25.3	18.4	---	20.6	21.3	22.3	22.1	25.3	28.1	21.5	25.3	23.2	25.4	32.2	39.7	**25.9**	**44.0**	**16.9**
22	32.9	19.9	33.1	21.1	19.8	21.1	15.1	14.0	11.6	12.4	17.3	17.6	22.4	35.7	23.0	46.8	50.8	61.2	17.1	14.2	15.8	13.5	14.6	16.1	**23.6**	**61.2**	**11.6**
23	12.8	15.2	13.9	15.4	15.4	18.2	20.9	14.9	23.1	34.3	35.3	18.8	19.0	20.2	23.3	23.6	23.9	18.2	23.2	14.6	46.8	30.6	23.9	38.1	**22.7**	**46.8**	**12.8**
24	29.6	23.0	15.8	24.9	13.9	15.5	36.1	31.5	31.9	25.9	32.9	19.4	13.8	21.5	52.8	63.5	52.8	45.8	31.5	22.7	29.0	29.0	25.7	24.6	**29.7**	**63.5**	**13.8**
25	21.5	21.3	20.6	19.2	18.3	17.9	19.0	18.6	20.9	20.2	19.7	20.4	22.3	21.7	20.3	18.9	19.7	20.4	23.0	23.1	24.2	24.3	25.5	32.5	**21.4**	**32.5**	**17.9**
26	36.1	23.7	14.8	11.8	11.7	9.3	13.9	10.4	8.1	6.5	8.5	7.8	9.1	8.4	10.5	10.2	14.5	14.4	13.8	13.1	9.7	12.3	11.9	14.8	**12.7**	**36.1**	**6.5**
27	10.5	9.9	8.5	6.7	6.1	6.4	6.8	7.2	6.6	6.4	7.1	8.9	9.7	10.7	9.5	8.3	7.6	5.1	5.3	6.7	5.4	5.1	4.7	8.0	**7.4**	**10.7**	**4.7**
28	10.2	7.0	7.9	8.1	8.5	8.7	9.9	10.1	9.9	8.3	7.4	6.7	5.2	8.4	8.5	7.2	9.5	14.3	16.9	11.6	11.5	11.7	9.5	15.2	**9.7**	**16.9**	**5.2**
29	11.1	11.8	10.3	10.9	11.2	11.4	16.6	21.4	15.9	11.9	11.8	11.8	10.0	7.6	8.8	8.9	11.8	18.3	16.9	11.7	9.4	11.6	8.5	7.3	**12.0**	**21.4**	**7.3**
30	7.5	6.6	5.8	5.9	6.4	6.5	6.7	6.1	6.3	5.6	6.4	5.7	5.0	5.1	4.6	5.6	6.2	5.8	5.3	7.6	6.7	6.3	4.6	4.0	**5.9**	**7.6**	**4.0**
31	4.9	6.4	5.8	5.4	5.7	6.2	6.3	10.2	13.4	6.8	7.9	6.8	6.4	5.2	4.2	6.5	14.8	10.3	9.3	9.4	13.7	16.3	13.7	9.7	**8.6**	**16.3**	**4.2**
MEAN	**28.6**	**21.0**	**18.1**	**17.2**	**17.8**	**18.1**	**20.8**	**23.8**	**21.5**	**19.2**	**19.6**	**18.9**	**16.9**	**18.4**	**19.5**	**19.8**	**21.3**	**21.7**	**20.0**	**17.0**	**18.4**	**18.6**	**21.3**	**20.9**	**19.9**		
MAX	**308.4**	**63.4**	**62.0**	**64.6**	**62.6**	**72.2**	**54.6**	**79.9**	**58.8**	**52.6**	**50.3**	**51.3**	**47.3**	**64.2**	**72.3**	**63.5**	**73.4**	**61.2**	**85.9**	**40.3**	**51.8**	**51.0**	**62.8**	**80.5**		**308.4**	
MIN	**3.1**	**3.4**	**1.9**	**0.8**	**0.7**	**1.1**	**1.3**	**2.2**	**3.5**	**5.1**	**5.8**	**5.5**	**4.5**	**5.1**	**4.2**	**4.7**	**5.4**	**5.1**	**3.5**	**2.2**	**2.8**	**3.7**	**3.1**	**2.4**			**0.7**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 743 DATA RECOVERY RATE = 99.9% DATA CAPTURE RATE = 100.0%

MONTHLY MEAN = 19.9 µg/m3

MAXIMUM PM10 = 308.4 µg/m3 DATE OF OCCURRENCE = 12/1 at 100 MAXIMUM DAILY MEAN = 51.3 µg/m3 DATE OF OCCURRENCE = 12/1

SECOND MAXIMUM PM10 = 85.9 µg/m3 DATE OF OCCURRENCE = 12/16 at 1900 SECOND MAXIMUM DAILY MEAN = 40.4 µg/m3 DATE OF OCCURRENCE = 12/2

MINIMUM PM10 = 0.7 µg/m3 DATE OF OCCURRENCE = 12/11 at 500 MINUMUM DAILY MEAN = 3.9 µg/m3 DATE OF OCCURRENCE = 12/18

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

CSX AQ8

HOURLY AVERAGES of PM2.5 in µg/m3 for OCTOBER, 2023

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	10.6	9.3	9.0	7.9	6.7	7.2	9.5	11.4	11.4	11.8	16.5	16.1	14.8	10.8	9.6	8.3	8.4	8.2	9.4	10.6	11.2	11.2	13.3	11.7	**10.6**	**16.5**	**6.7**
2	11.1	10.6	9.7	10.1	9.4	10.7	13.0	13.2	10.9	11.0	10.5	11.3	13.0	15.0	17.8	14.1	13.0	15.4	12.6	22.5	14.6	18.7	16.0	16.2	**13.3**	**22.5**	**9.4**
3	17.6	22.2	26.3	18.6	19.9	20.9	19.7	23.6	24.8	23.5	22.9	18.0	15.6	15.1	15.7	14.0	14.2	14.4	13.9	14.6	16.5	17.6	20.5	15.8	**18.5**	**26.3**	**13.9**
4	16.3	17.8	17.6	18.8	20.8	22.0	24.6	23.4	28.2	27.3	28.7	18.3	16.4	14.7	16.3	13.2	8.9	---	10.8	13.5	13.3	13.1	16.2	12.1	**17.9**	**28.7**	**8.9**
5	13.0	14.4	14.0	13.1	13.9	20.3	37.1	19.6	25.9	13.2	14.3	7.6	10.3	11.0	7.4	9.6	8.9	8.0	7.7	7.8	10.1	6.7	6.7	7.9	**12.8**	**37.1**	**6.7**
6	8.0	8.5	10.0	9.8	9.0	12.1	11.6	9.4	10.5	10.7	8.8	8.3	11.0	9.6	9.0	8.5	10.1	9.6	7.7	9.3	9.4	8.7	8.4	10.4	**9.5**	**12.1**	**7.7**
7	9.0	9.5	10.5	9.6	9.4	5.4	5.2	5.7	7.7	7.1	6.6	6.5	5.9	6.1	6.2	6.4	5.1	4.1	4.5	5.5	4.5	4.5	4.4	4.0	**6.3**	**10.5**	**4.0**
8	4.1	4.1	3.4	3.5	4.3	3.3	3.6	3.3	2.7	2.9	2.6	2.1	2.5	3.0	3.1	3.8	3.1	3.1	3.3	3.6	5.4	4.4	4.1	4.4	**3.4**	**5.4**	**2.1**
9	4.2	3.8	3.8	6.0	4.2	4.6	5.4	5.3	5.1	5.1	4.6	4.3	5.5	5.0	6.3	5.6	6.7	6.2	7.2	7.5	8.3	6.1	4.7	4.8	**5.4**	**8.3**	**3.8**
10	4.8	5.2	5.8	6.1	6.2	5.7	7.0	7.8	9.6	9.6	8.8	7.2	6.2	6.1	6.4	6.1	7.4	8.2	9.2	14.5	20.9	24.7	16.6	15.6	**9.4**	**24.7**	**4.8**
11	15.0	13.2	13.0	12.8	13.6	16.2	11.6	11.0	7.6	6.7	6.6	7.5	5.9	6.0	9.7	5.9	6.2	9.1	8.4	9.2	10.9	11.9	14.1	11.4	**10.1**	**16.2**	**5.9**
12	13.0	12.7	10.4	10.5	12.7	12.5	---	14.9	19.0	21.7	15.2	10.2	10.8	8.8	10.9	12.5	11.3	9.1	10.3	11.2	10.3	14.8	13.8	15.4	**12.6**	**21.7**	**8.8**
13	15.5	15.8	18.3	16.8	10.2	11.3	13.0	15.5	12.6	11.5	7.9	9.1	6.8	8.8	7.8	8.7	9.1	7.4	8.1	9.3	17.1	22.9	15.5	---	**12.1**	**22.9**	**6.8**
14	11.2	9.5	8.4	11.7	6.6	6.4	7.6	8.5	11.6	8.5	8.2	9.4	9.0	7.3	5.6	3.4	3.1	3.1	3.0	3.4	3.5	2.0	1.8	1.6	**6.4**	**11.7**	**1.6**
15	1.2	1.2	2.1	2.9	3.0	3.8	4.2	4.3	4.4	4.1	3.1	3.1	2.5	2.7	2.8	3.2	3.1	4.1	4.1	5.4	5.6	4.4	4.0	3.8	**3.4**	**5.6**	**1.2**
16	3.4	4.1	3.9	3.7	4.0	3.9	4.4	5.3	3.3	2.8	2.2	2.7	3.2	2.6	3.0	2.8	3.5	3.1	3.5	4.3	4.6	5.4	5.0	5.1	**3.7**	**5.4**	**2.2**
17	4.9	4.6	4.6	4.0	3.9	3.8	4.3	4.5	4.7	4.9	3.5	3.9	3.8	4.3	2.9	2.4	3.1	3.3	3.6	4.6	5.4	5.8	5.5	5.4	**4.2**	**5.8**	**2.4**
18	4.9	5.5	6.6	7.2	8.4	8.2	8.0	8.6	8.0	6.6	4.9	5.9	9.4	10.9	7.5	8.2	9.2	12.7	12.3	22.7	17.1	15.0	17.5	---	**9.7**	**22.7**	**4.9**
19	15.6	14.3	17.7	15.7	19.4	20.1	30.4	26.3	15.8	9.0	7.5	7.9	8.0	7.8	7.9	7.0	6.9	6.5	5.7	6.3	5.8	5.2	5.3	4.6	**11.5**	**30.4**	**4.6**
20	5.6	5.5	6.6	8.0	6.7	6.6	6.8	6.8	6.4	6.9	7.6	8.9	9.9	8.2	8.5	12.0	12.5	13.1	15.0	15.2	16.0	16.1	17.2	10.0	**9.8**	**17.2**	**5.5**
21	5.7	5.3	4.8	5.4	6.0	5.8	5.6	5.5	5.3	4.6	4.0	3.3	3.9	3.2	3.8	3.2	3.1	3.6	3.5	4.0	4.5	4.9	5.8	5.8	**4.6**	**6.0**	**3.1**
22	5.3	5.6	5.8	5.8	4.9	5.2	5.7	5.8	5.2	4.8	3.6	3.8	3.0	3.2	3.4	3.5	3.8	3.3	3.6	3.6	3.8	4.2	4.1	3.8	**4.3**	**5.8**	**3.0**
23	4.1	4.3	4.0	4.6	4.5	4.6	4.9	5.1	5.0	5.0	5.3	4.7	4.1	4.9	5.4	4.4	4.1	---	9.6	9.4	14.1	13.5	13.5	22.2	**7.0**	**22.2**	**4.0**
24	13.1	17.8	12.7	11.0	12.5	14.1	19.5	14.8	20.8	14.6	8.4	7.3	10.1	11.4	7.9	7.6	6.3	7.5	6.8	8.4	8.8	11.1	10.9	9.4	**11.3**	**20.8**	**6.3**
25	10.9	18.5	16.9	12.9	12.1	12.4	17.2	11.3	10.9	11.3	12.6	---	9.1	12.0	12.3	10.6	8.3	8.5	8.9	9.6	17.5	21.0	12.4	11.0	**12.5**	**21.0**	**8.3**
26	12.5	16.5	13.6	15.4	24.8	18.8	23.1	21.3	21.8	19.2	19.4	25.8	22.4	18.5	20.1	15.1	16.8	15.4	11.8	13.1	13.2	13.8	14.2	21.8	**17.8**	**25.8**	**11.8**
27	16.3	17.1	19.4	18.3	18.9	18.0	22.9	21.6	13.4	12.9	10.2	8.4	7.4	6.8	6.9	8.3	7.7	12.8	11.8	14.5	15.6	16.8	18.1	22.7	**14.4**	**22.9**	**6.8**
28	17.7	20.2	18.3	18.8	18.0	15.5	17.5	10.0	9.6	8.6	8.9	9.9	8.8	9.8	9.5	10.2	9.3	15.9	12.2	15.0	16.2	14.8	22.7	30.9	**14.5**	**30.9**	**8.6**
29	17.8	16.8	16.0	13.7	9.2	8.1	7.2	7.0	6.9	8.3	9.4	9.9	12.0	11.9	10.6	10.5	10.0	8.2	6.9	7.0	7.5	6.8	6.3	7.3	**9.8**	**17.8**	**6.3**
30	8.3	8.5	9.1	10.3	12.6	15.4	21.4	24.0	25.7	17.9	15.0	13.8	16.4	14.7	7.7	5.2	4.5	3.6	2.5	1.8	1.9	4.0	2.1	2.1	**10.3**	**25.7**	**1.8**
31	2.3	2.7	3.2	3.4	3.9	3.8	3.6	4.0	3.7	3.5	3.7	3.7	4.2	4.5	4.7	4.9	5.2	5.6	5.4	7.7	12.1	8.8	7.6	7.2	**4.9**	**12.1**	**2.3**
MEAN	**9.8**	**10.5**	**10.5**	**10.2**	**10.3**	**10.5**	**12.5**	**11.6**	**11.6**	**10.2**	**9.4**	**8.6**	**8.8**	**8.5**	**8.3**	**7.7**	**7.5**	**8.0**	**7.8**	**9.5**	**10.5**	**10.9**	**10.6**	**10.5**	**9.8**		
MAX	**17.8**	**22.2**	**26.3**	**18.8**	**24.8**	**22.0**	**37.1**	**26.3**	**28.2**	**27.3**	**28.7**	**25.8**	**22.4**	**18.5**	**20.1**	**15.1**	**16.8**	**15.9**	**15.0**	**22.7**	**20.9**	**24.7**	**22.7**	**30.9**		**37.1**	
MIN	**1.2**	**1.2**	**2.1**	**2.9**	**3.0**	**3.3**	**3.6**	**3.3**	**2.7**	**2.8**	**2.2**	**2.1**	**2.5**	**2.6**	**2.8**	**2.4**	**3.1**	**3.1**	**2.5**	**1.8**	**1.9**	**2.0**	**1.8**	**1.6**			**1.2**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 738 DATA RECOVERY RATE = 99.2% DATA CAPTURE RATE = 100.0%

MONTHLY MEAN = 9.8 µg/m3

MAXIMUM PM2.5 = 37.1 µg/m3 DATE OF OCCURRENCE = 10/5 at 700 MAXIMUM DAILY MEAN = 18.5 µg/m3 DATE OF OCCURRENCE = 10/3

SECOND MAXIMUM PM2.5 = 30.9 µg/m3 DATE OF OCCURRENCE = 10/28 at 2400 SECOND MAXIMUM DAILY MEAN = 17.9 µg/m3 DATE OF OCCURRENCE = 10/4

MINIMUM PM2.5 = 1.2 µg/m3 DATE OF OCCURRENCE = 10/15 at 100 MINUMUM DAILY MEAN = 3.4 µg/m3 DATE OF OCCURRENCE = 10/8

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

CSX AQ8

HOURLY AVERAGES of PM2.5 in µg/m3 for NOVEMBER, 2023

Hr Beg Hr End Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	7.6	7.8	9.4	9.2	8.5	8.7	10.6	9.4	9.2	10.2	11.2	10.4	11.3	9.4	8.6	7.5	5.6	5.4	5.0	5.6	5.1	5.2	6.5	6.2	**8.0**	**11.3**	**5.0**
2	5.5	5.4	5.9	6.7	6.3	7.9	7.9	7.9	8.2	7.8	5.5	4.8	5.2	5.2	6.8	7.4	6.5	6.5	6.6	8.4	9.0	18.3	10.1	8.1	**7.4**	**18.3**	**4.8**
3	8.5	10.0	7.5	10.3	7.9	11.6	11.9	13.0	11.5	10.0	8.1	9.1	9.3	9.5	7.8	7.4	6.7	7.1	7.9	12.0	10.3	11.5	15.3	19.2	**10.1**	**19.2**	**6.7**
4	18.0	27.8	20.9	11.0	12.1	10.8	11.6	12.9	16.4	17.0	18.1	18.6	15.1	13.9	14.8	18.5	17.1	14.1	21.8	26.1	25.9	29.0	24.2	26.5	**18.4**	**29.0**	**10.8**
5	30.5	33.4	34.4	33.7	34.2	33.1	31.2	28.7	32.1	24.8	27.9	17.1	13.5	13.3	12.2	12.5	14.1	16.8	26.1	20.2	20.6	20.1	15.6	14.6	**23.3**	**34.4**	**12.2**
6	12.4	13.0	12.0	11.3	10.8	13.0	10.6	10.7	10.6	10.0	10.2	11.6	12.4	15.2	16.5	16.8	14.5	16.2	18.1	21.8	26.2	21.3	---	---	**14.3**	**26.2**	**10.0**
7	23.3	19.8	20.0	22.1	24.3	24.3	25.2	25.9	24.9	24.7	23.8	22.6	21.6	20.4	21.2	23.6	24.7	30.2	20.3	15.8	11.0	13.2	21.7	12.1	**21.5**	**30.2**	**11.0**
8	18.2	11.2	8.6	10.3	18.0	6.5	8.0	6.9	5.8	2.8	5.4	3.7	5.2	6.0	5.9	4.9	5.2	9.7	9.4	7.8	8.0	7.8	9.9	10.4	**8.1**	**18.2**	**2.8**
9	8.4	8.9	6.8	7.9	12.7	6.2	9.9	12.4	11.4	11.5	13.5	15.7	16.4	20.2	24.0	26.0	23.7	15.3	13.9	12.2	12.6	6.3	6.3	9.2	**12.9**	**26.0**	**6.2**
10	6.4	7.2	4.4	4.2	5.4	5.2	6.3	7.3	8.5	8.1	7.2	5.7	4.8	4.1	4.6	5.2	5.9	6.2	8.2	9.1	9.7	10.0	12.0	11.7	**6.9**	**12.0**	**4.1**
11	10.9	9.6	11.5	11.4	11.1	8.1	7.0	8.6	11.4	13.1	11.6	11.4	12.9	15.7	16.1	15.0	14.5	14.5	15.9	19.5	24.0	24.3	17.4	17.0	**13.8**	**24.3**	**7.0**
12	15.1	14.6	12.5	8.6	6.8	6.0	5.8	5.6	5.1	4.7	5.2	5.5	5.9	6.7	6.9	7.3	8.4	9.5	11.7	12.0	10.1	12.4	13.2	10.6	**8.7**	**15.1**	**4.7**
13	10.1	9.6	9.9	10.0	12.5	11.5	10.7	10.4	12.9	12.1	12.1	13.8	12.5	13.8	13.2	12.9	11.9	13.3	13.9	14.7	15.5	16.5	15.9	14.0	**12.6**	**16.5**	**9.6**
14	12.0	9.6	8.8	7.8	7.8	7.4	6.9	8.4	6.1	4.3	4.1	4.0	4.4	4.4	4.4	4.4	4.4	6.3	16.5	10.1	8.4	10.3	15.9	14.9	**7.9**	**16.5**	**4.0**
15	20.1	12.8	12.5	11.5	16.7	16.7	14.6	14.9	17.5	16.1	15.2	13.1	10.5	12.6	7.9	8.5	9.3	9.3	9.0	10.0	8.6	12.0	9.2	10.2	**12.4**	**20.1**	**7.9**
16	12.2	22.6	10.4	12.5	12.0	11.5	12.9	15.0	17.0	19.7	25.5	31.0	26.4	21.7	22.0	20.8	20.8	23.5	25.9	29.9	23.6	24.6	26.4	23.5	**20.4**	**31.0**	**10.4**
17	23.6	---	21.6	20.3	20.7	19.1	22.7	23.3	22.5	16.7	14.0	6.6	6.1	6.3	6.1	5.9	5.6	7.0	6.7	7.4	9.3	16.2	14.9	9.6	**13.5**	**23.6**	**5.6**
18	10.8	13.8	12.0	12.7	10.9	14.2	19.2	13.1	4.5	3.2	4.0	4.3	4.0	4.4	3.9	4.8	4.4	5.4	6.6	7.2	8.1	7.6	8.7	7.4	**8.1**	**19.2**	**3.2**
19	6.6	6.5	6.1	6.5	5.7	6.3	7.3	7.9	6.8	6.5	7.4	8.1	7.5	7.4	7.7	6.7	7.5	6.9	8.2	8.0	11.5	8.8	8.4	9.4	**7.4**	**11.5**	**5.7**
20	12.8	11.3	13.2	13.6	11.1	10.0	8.0	7.4	7.4	6.9	7.1	7.5	7.7	8.6	9.4	9.2	8.8	8.7	8.4	9.6	9.7	10.2	15.1	9.4	**9.6**	**15.1**	**6.9**
21	9.3	8.3	6.7	5.8	5.5	5.9	6.5	6.7	8.5	6.8	---	---	---	---	---	---	---	7.2	5.6	4.6	4.6	5.4	5.0	3.0	**---**	**---**	**---**
22	3.2	2.8	4.4	4.0	4.0	5.6	6.5	6.6	7.5	7.1	5.3	3.3	3.4	3.2	3.7	3.2	3.2	3.4	4.4	5.2	4.3	4.2	3.8	3.3	**4.4**	**7.5**	**2.8**
23	2.8	2.5	2.9	3.2	3.6	3.9	3.9	4.4	6.4	7.2	6.3	5.6	5.7	6.0	5.8	4.9	5.3	7.1	8.9	10.5	16.3	12.0	15.2	17.3	**6.9**	**17.3**	**2.5**
24	17.3	15.0	14.9	15.4	14.1	13.6	13.9	15.3	16.3	15.7	16.0	13.0	13.4	14.5	14.7	14.7	16.8	17.4	13.8	8.1	6.9	6.6	6.7	5.9	**13.3**	**17.4**	**5.9**
25	5.1	5.2	5.3	5.6	5.8	6.5	7.0	8.4	10.8	7.8	6.2	6.7	6.4	6.4	7.5	7.8	7.6	9.4	11.8	11.9	12.4	15.8	20.6	20.2	**9.0**	**20.6**	**5.1**
26	16.9	19.8	20.6	21.2	20.3	16.2	12.2	11.2	12.6	11.7	9.7	8.6	7.8	9.3	9.9	8.8	7.0	6.0	7.0	6.0	5.8	7.1	10.6	13.4	**11.6**	**21.2**	**5.8**
27	10.5	10.7	11.6	10.7	10.2	8.3	8.1	7.9	7.2	5.5	3.7	3.8	4.7	4.8	5.4	5.6	6.6	7.7	7.9	8.7	10.0	9.6	10.0	10.0	**7.8**	**11.6**	**3.7**
28	9.0	10.2	9.8	9.1	8.8	7.9	8.2	7.6	7.7	7.1	6.6	7.6	7.6	6.8	6.8	7.4	7.7	7.3	6.9	6.8	6.9	6.8	6.7	6.6	**7.6**	**10.2**	**6.6**
29	6.9	7.0	6.6	6.6	7.4	7.3	8.1	9.3	10.3	9.5	9.6	9.4	8.2	8.0	7.8	7.3	7.7	7.7	8.1	9.2	9.6	9.7	10.4	13.0	**8.5**	**13.0**	**6.6**
30	16.4	19.0	15.2	14.5	12.7	11.9	12.4	17.3	13.9	14.5	13.5	10.9	7.1	6.6	7.1	8.2	8.3	8.8	9.1	10.6	11.5	14.2	23.4	20.7	**12.8**	**23.4**	**6.6**
MEAN	**12.3**	**12.3**	**11.5**	**11.3**	**11.6**	**10.8**	**11.2**	**11.5**	**11.7**	**10.8**	**10.8**	**10.1**	**9.6**	**9.8**	**10.0**	**10.1**	**10.0**	**10.5**	**11.5**	**11.6**	**11.9**	**12.6**	**13.1**	**12.3**	**11.2**		
MAX	**30.5**	**33.4**	**34.4**	**33.7**	**34.2**	**33.1**	**31.2**	**28.7**	**32.1**	**24.8**	**27.9**	**31.0**	**26.4**	**21.7**	**24.0**	**26.0**	**24.7**	**30.2**	**26.1**	**29.9**	**26.2**	**29.0**	**26.4**	**26.5**		**34.4**	
MIN	**2.8**	**2.5**	**2.9**	**3.2**	**3.6**	**3.9**	**3.9**	**4.4**	**4.5**	**2.8**	**3.7**	**3.3**	**3.4**	**3.2**	**3.7**	**3.2**	**3.2**	**3.4**	**4.4**	**4.6**	**4.3**	**4.2**	**3.8**	**3.0**			**2.5**

POSSIBLE NUMBER OF OBSERVATIONS = 720 ACTUAL NUMBER OF OBSERVATIONS = 710 DATA RECOVERY RATE = 98.6% DATA CAPTURE RATE = 96.7%

MONTHLY MEAN = 11.2 µg/m3

MAXIMUM PM2.5 = 34.4 µg/m3 DATE OF OCCURRENCE = 11/5 at 300 MAXIMUM DAILY MEAN = 23.3 µg/m3 DATE OF OCCURRENCE = 11/5

SECOND MAXIMUM PM2.5 = 34.2 µg/m3 DATE OF OCCURRENCE = 11/5 at 500 SECOND MAXIMUM DAILY MEAN = 21.5 µg/m3 DATE OF OCCURRENCE = 11/7

MINIMUM PM2.5 = 2.5 µg/m3 DATE OF OCCURRENCE = 11/23 at 200 MINUMUM DAILY MEAN = 4.4 µg/m3 DATE OF OCCURRENCE = 11/22

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

CSX AQ8

HOURLY AVERAGES of PM2.5 in µg/m3 for DECEMBER, 2023

Hr Beg Hr End Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	59.5	21.3	19.9	24.3	17.8	16.5	17.0	22.1	20.9	17.9	18.1	20.0	20.8	21.4	20.2	20.9	23.1	30.8	20.5	19.7	20.4	21.0	34.2	27.6	**23.1**	**59.5**	**16.5**
2	24.9	26.7	28.0	28.0	31.1	29.7	29.4	29.1	30.8	28.8	26.6	29.7	32.4	41.2	45.8	39.3	21.7	19.4	22.8	27.9	24.6	21.3	20.9	21.7	**28.4**	**45.8**	**19.4**
3	21.8	16.8	14.2	14.0	13.3	11.8	12.2	11.4	10.1	10.6	10.4	9.7	9.9	11.4	12.3	13.4	15.8	13.4	9.7	9.4	8.7	10.6	9.0	7.7	**11.9**	**21.8**	**7.7**
4	5.3	5.1	5.3	5.0	5.9	6.9	7.0	7.7	8.6	6.8	6.1	6.8	6.9	6.8	7.4	6.5	7.3	8.0	8.4	9.2	10.0	10.3	11.0	11.4	**7.4**	**11.4**	**5.0**
5	10.8	9.4	9.0	8.6	7.8	8.5	8.9	9.8	9.2	9.7	9.8	7.3	6.7	6.4	6.7	6.5	6.8	8.4	8.1	7.9	8.6	9.1	9.8	10.3	**8.5**	**10.8**	**6.4**
6	11.0	18.3	12.5	13.7	19.0	13.8	12.7	10.4	10.3	9.4	11.0	10.8	7.3	5.2	4.9	5.4	5.0	4.9	6.6	7.0	5.8	4.9	5.3	5.6	**9.2**	**19.0**	**4.9**
7	5.5	5.8	6.5	7.0	7.3	6.8	7.3	7.3	7.3	7.4	8.5	8.1	7.6	7.7	6.9	6.4	6.5	6.5	6.3	7.8	8.2	9.0	12.1	12.1	**7.5**	**12.1**	**5.5**
8	13.0	20.1	17.3	13.7	14.2	17.7	19.1	18.5	16.3	16.2	19.4	15.9	11.0	9.8	9.7	7.8	6.9	7.2	8.4	10.8	12.2	14.6	16.1	16.8	**13.8**	**20.1**	**6.9**
9	17.5	24.0	16.5	16.6	14.6	14.6	17.4	17.2	13.7	13.3	17.9	27.5	26.9	27.5	25.1	23.0	22.7	24.8	24.9	23.0	27.0	32.0	33.4	41.0	**22.5**	**41.0**	**13.3**
10	39.9	38.5	37.6	36.9	37.0	36.8	36.4	34.8	31.9	31.7	29.6	26.8	15.7	5.1	5.6	3.9	4.0	4.4	4.3	4.8	3.1	2.0	1.7	1.1	**19.7**	**39.9**	**1.1**
11	2.2	2.2	1.2	0.5	0.4	0.8	1.6	3.3	4.8	4.7	4.1	3.4	2.4	1.9	2.3	2.4	3.6	2.8	3.0	3.6	3.8	4.6	4.9	4.9	**2.8**	**4.9**	**0.4**
12	5.4	6.2	6.0	5.7	5.5	6.0	6.0	6.7	5.9	5.8	4.8	4.1	4.7	5.3	5.0	4.1	3.5	4.1	5.8	7.7	7.6	8.1	7.7	7.1	**5.7**	**8.1**	**3.5**
13	6.6	7.0	7.0	7.2	7.0	7.6	7.7	7.4	6.3	6.8	6.1	4.9	6.2	6.6	6.7	6.4	6.5	7.3	7.6	8.0	6.0	6.7	8.3	8.5	**6.9**	**8.5**	**4.9**
14	7.9	8.3	8.3	8.7	10.2	10.1	10.0	13.0	14.6	14.1	11.3	6.5	6.8	7.4	6.5	9.7	7.5	10.6	10.4	10.8	12.3	12.2	10.8	10.8	**9.9**	**14.6**	**6.5**
15	11.2	11.5	11.8	10.4	8.4	9.1	10.4	11.9	9.5	6.2	6.4	6.8	6.1	6.4	6.5	6.1	8.8	7.7	11.2	8.9	10.7	9.7	11.9	13.6	**9.2**	**13.6**	**6.1**
16	10.5	8.5	5.6	7.1	8.9	8.8	8.7	9.0	9.8	13.5	14.7	13.3	9.6	9.0	9.6	10.4	13.5	14.4	17.4	12.7	13.5	15.3	21.3	19.2	**11.8**	**21.3**	**5.6**
17	18.3	17.9	21.5	17.8	17.6	19.5	21.1	18.1	14.2	14.3	14.9	18.1	15.7	14.6	13.0	11.0	9.6	9.3	7.5	4.4	3.5	2.6	1.9	1.4	**12.8**	**21.5**	**1.4**
18	1.3	1.7	2.2	0.6	0.5	0.5	0.5	0.9	1.8	2.9	3.5	2.9	1.7	1.6	1.6	1.7	1.5	1.8	1.9	1.6	1.7	2.5	2.6	3.2	**1.7**	**3.5**	**0.5**
19	3.7	3.3	3.0	2.5	2.2	1.8	1.5	1.5	3.0	1.9	2.5	2.6	2.6	2.9	2.9	2.5	3.4	2.9	3.4	4.3	5.0	4.8	5.8	5.8	**3.1**	**5.8**	**1.5**
20	6.5	6.5	7.2	6.0	6.4	7.0	7.2	9.8	7.9	8.7	8.1	9.0	7.9	7.0	6.2	6.1	6.4	7.4	10.5	9.5	9.5	11.7	12.8	12.2	**8.2**	**12.8**	**6.0**
21	11.9	11.2	12.9	10.9	13.4	11.8	11.6	12.5	10.3	10.6	11.3	---	12.5	12.0	11.1	11.8	12.1	13.4	14.2	14.3	14.2	16.1	15.7	13.6	**12.5**	**16.1**	**10.3**
22	13.2	12.2	13.8	11.8	8.6	6.9	6.8	5.9	4.8	4.5	5.0	5.0	5.9	8.0	7.3	10.9	13.0	15.0	8.0	7.0	7.2	6.5	6.7	6.4	**8.3**	**15.0**	**4.5**
23	6.5	6.9	7.0	7.7	8.0	8.5	8.5	7.5	9.2	10.9	10.4	9.5	9.8	7.3	7.3	7.5	11.2	8.0	8.7	7.4	10.4	10.9	11.5	10.5	**8.7**	**11.5**	**6.5**
24	8.9	7.4	6.9	8.4	7.5	8.1	10.7	10.5	10.9	11.1	13.7	9.7	7.7	10.9	14.0	12.6	11.7	11.0	9.2	10.0	19.6	17.9	16.6	15.2	**11.2**	**19.6**	**6.9**
25	15.4	15.1	14.8	13.9	13.6	12.7	13.2	13.2	14.7	15.1	14.3	14.1	16.9	15.6	14.3	13.3	13.3	12.8	14.1	16.2	17.0	17.6	18.0	19.6	**14.9**	**19.6**	**12.7**
26	20.0	14.1	9.5	7.8	6.7	5.7	8.6	6.6	4.5	3.3	4.3	4.4	4.9	5.5	6.8	6.4	8.4	8.9	8.1	8.5	6.2	6.8	6.4	7.8	**7.5**	**20.0**	**3.3**
27	7.0	6.3	5.2	4.5	3.7	4.1	4.4	4.4	3.7	3.7	4.4	5.0	5.8	6.0	5.2	4.5	4.1	2.8	2.7	3.4	2.7	2.5	2.8	3.6	**4.2**	**7.0**	**2.5**
28	4.1	3.8	4.2	5.2	4.9	5.4	6.0	6.1	6.0	5.1	4.2	3.5	2.3	3.2	3.9	2.5	3.1	4.5	6.3	6.2	6.3	6.4	5.9	6.0	**4.7**	**6.4**	**2.3**
29	6.3	6.6	6.4	6.2	6.2	6.4	7.5	8.2	7.4	7.1	7.3	6.5	5.4	4.5	4.9	4.7	5.4	6.6	6.9	5.7	4.8	4.3	4.5	4.5	**6.0**	**8.2**	**4.3**
30	4.3	4.0	3.8	3.7	3.9	4.2	4.4	3.9	3.7	3.2	2.9	2.8	2.7	2.9	3.0	3.2	3.4	2.8	3.0	4.1	3.3	2.5	2.7	2.8	**3.3**	**4.4**	**2.5**
31	3.2	2.8	2.6	2.9	3.2	3.5	4.1	4.7	4.5	4.2	4.6	3.9	4.0	3.2	2.6	3.2	7.2	6.4	6.6	6.8	10.1	10.7	10.3	7.3	**5.1**	**10.7**	**2.6**
MEAN	**12.4**	**11.3**	**10.6**	**10.2**	**10.2**	**10.1**	**10.6**	**10.8**	**10.2**	**10.0**	**10.2**	**10.0**	**9.3**	**9.2**	**9.2**	**8.8**	**8.9**	**9.3**	**9.2**	**9.3**	**9.8**	**10.2**	**11.1**	**10.9**	**10.1**		
MAX	**59.5**	**38.5**	**37.6**	**36.9**	**37.0**	**36.8**	**36.4**	**34.8**	**31.9**	**31.7**	**29.6**	**29.7**	**32.4**	**41.2**	**45.8**	**39.3**	**23.1**	**30.8**	**24.9**	**27.9**	**27.0**	**32.0**	**34.2**	**41.0**		**59.5**	
MIN	**1.3**	**1.7**	**1.2**	**0.5**	**0.4**	**0.5**	**0.5**	**0.9**	**1.8**	**1.9**	**2.5**	**2.6**	**1.7**	**1.6**	**1.6**	**1.7**	**1.5**	**1.8**	**1.9**	**1.6**	**1.7**	**2.0**	**1.7**	**1.1**			**0.4**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 743 DATA RECOVERY RATE = 99.9% DATA CAPTURE RATE = 100.0%

MONTHLY MEAN = 10.1 µg/m3

MAXIMUM PM2.5 = 59.5 µg/m3 DATE OF OCCURRENCE = 12/1 at 100 MAXIMUM DAILY MEAN = 28.4 µg/m3 DATE OF OCCURRENCE = 12/2

SECOND MAXIMUM PM2.5 = 45.8 µg/m3 DATE OF OCCURRENCE = 12/2 at 1500 SECOND MAXIMUM DAILY MEAN = 23.1 µg/m3 DATE OF OCCURRENCE = 12/1

MINIMUM PM2.5 = 0.4 µg/m3 DATE OF OCCURRENCE = 12/11 at 500 MINUMUM DAILY MEAN = 1.7 µg/m3 DATE OF OCCURRENCE = 12/18

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

APPENDIX I. MODULAIR PM_{10} AND $PM_{2.5}$ COLLOCATION AND COMPARISON DATA

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MODULAIR PM COLLOCATION & COMPARISON SHEET

As Found

SITE NAME CSX MOD 264 - AQ8A
PROJECT CSX

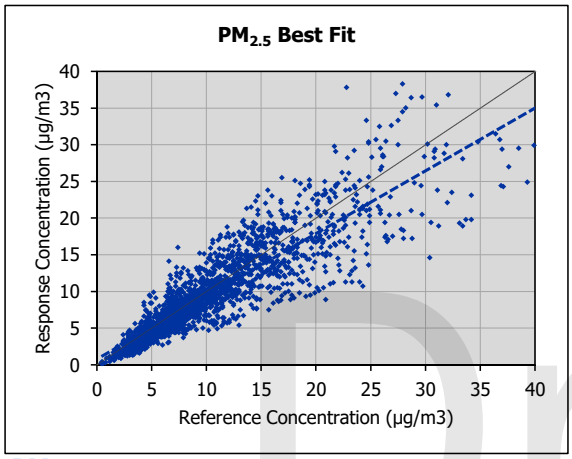
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Date 1/1/2024 **Stop Time** 0:00

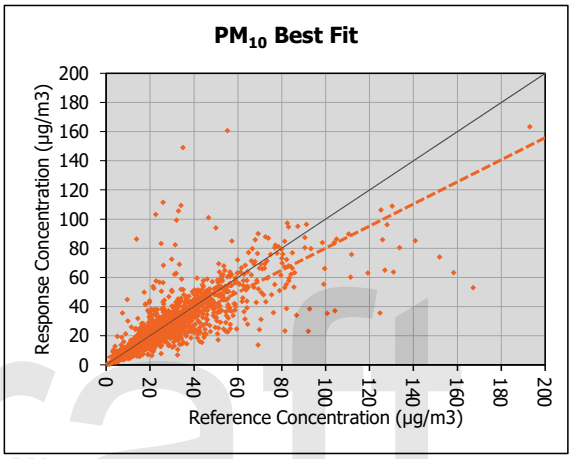
REFERENCE STANDARD:

Reference: AQ8 **Serial #:** 1689
Model: T640X

Analyzer:

Analyzer s/n MOD264
Anal. Range 0- 2000 **µg/m3**



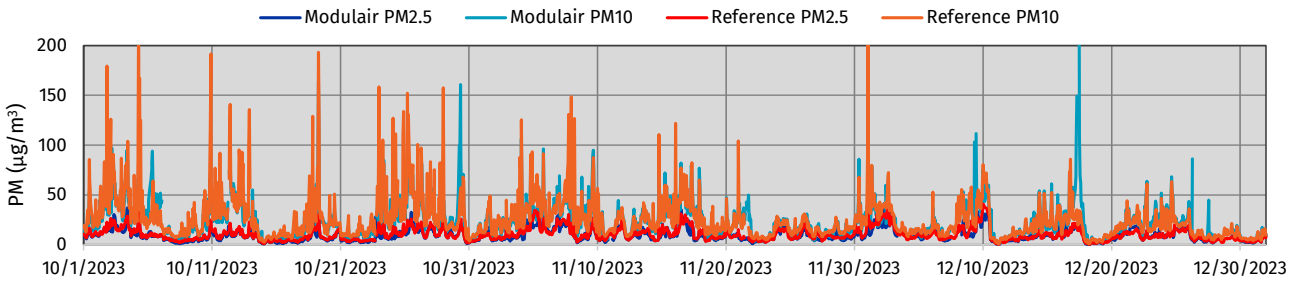


$PM_{2.5}$:

Correlation Coefficent(r2)	0.788	≥ 0.70
Slope(m)	0.855	1.0 ± 0.35
Intercept(b)	0.803	0 ± 5.0
RMSE	3.965	≤ 7.0
Precision CV(%)	18.810	≤ 30.0
Precision SD	3.865	≤ 5.0

PM_{10}:

Correlation Coefficent(r2)	0.619	≥ 0.70
Slope(m)	0.758	1.0 ± 0.35
Intercept(b)	4.381	0 ± 5.0
RMSE	19.252	≤ 7.0
Precision CV(%)	21.790	≤ 30.0
Precision SD	18.916	≤ 5.0



= cell containing equations

Draft

Trinity Consultants

MODULAIR PM COLLOCATION & COMPARISON SHEET

As Found

SITE NAME CSX MOD 266 - AQ5A
PROJECT CSX

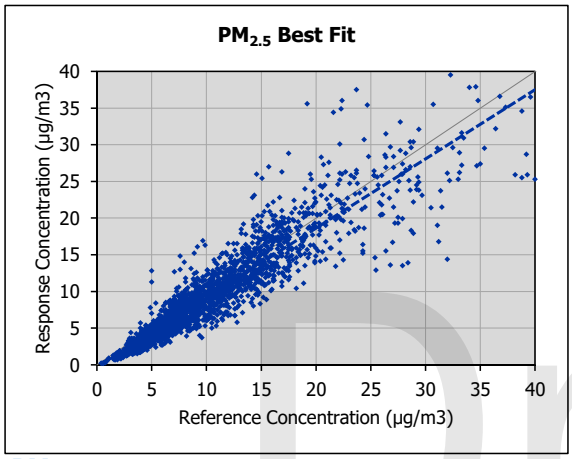
Date 10/1/2023 **Start Time** 1:00
Date 1/1/2024 **Stop Time** 0:00

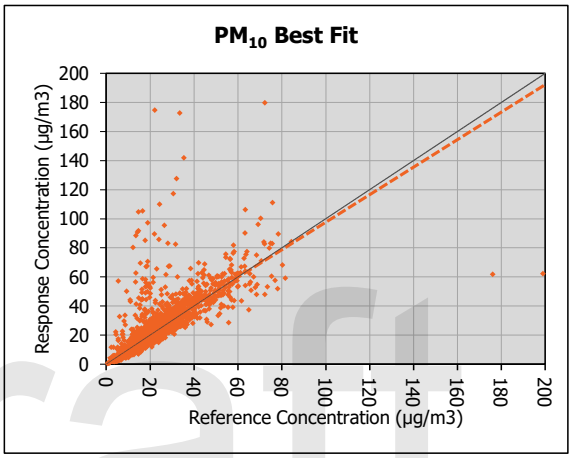
REFERENCE STANDARD:

Reference: AQ5 **Serial #:** 1690
Model: T640X

Analyzer:

Analyzer s/n MOD266
Anal. Range 0- 2000 **µg/m3**



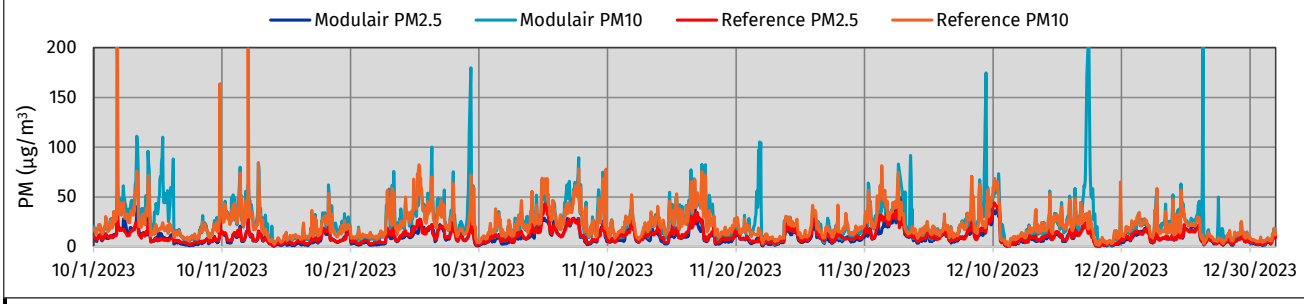


$PM_{2.5}$:

Correlation Coefficent(r2)	0.843	≥ 0.70
Slope(m)	0.945	1.0 ± 0.35
Intercept(b)	-0.265	0 ± 5.0
RMSE	4.139	≤ 7.0
Precision CV(%)	18.260	≤ 30.0
Precision SD	3.979	≤ 5.0

PM_{10}:

Correlation Coefficent(r2)	0.495	≥ 0.70
Slope(m)	0.946	1.0 ± 0.35
Intercept(b)	2.976	0 ± 5.0
RMSE	16.656	≤ 7.0
Precision CV(%)	23.530	≤ 30.0
Precision SD	16.650	≤ 5.0



= cell containing equations

Draft

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MODULAIR PM COLLOCATION & COMPARISON SHEET

As Found

SITE NAME CSX MOD 387 - AQ5B
PROJECT CSX

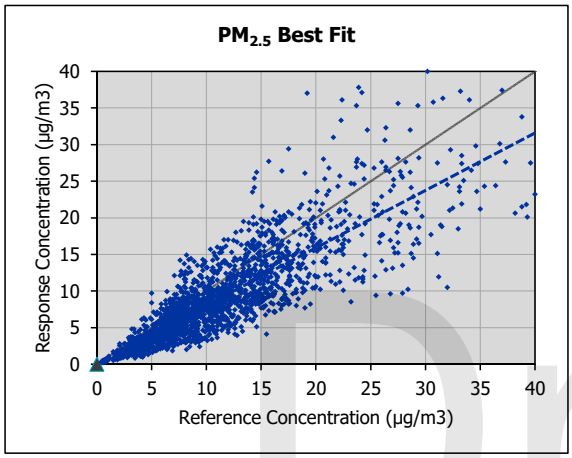
Date 10/1/2023 **Start Time** 1:00
Date 1/1/2024 **Stop Time** 0:00

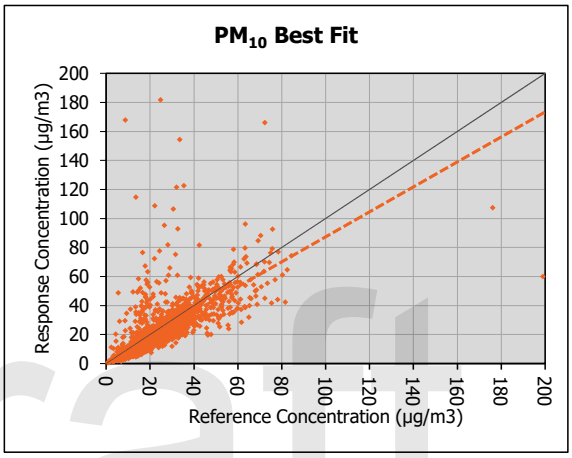
REFERENCE STANDARD:

Reference: AQ5 **Serial #:** 1690
Model: T640X

Analyzer:

Analyzer s/n MOD387
Anal. Range 0- 2000 **µg/m3**



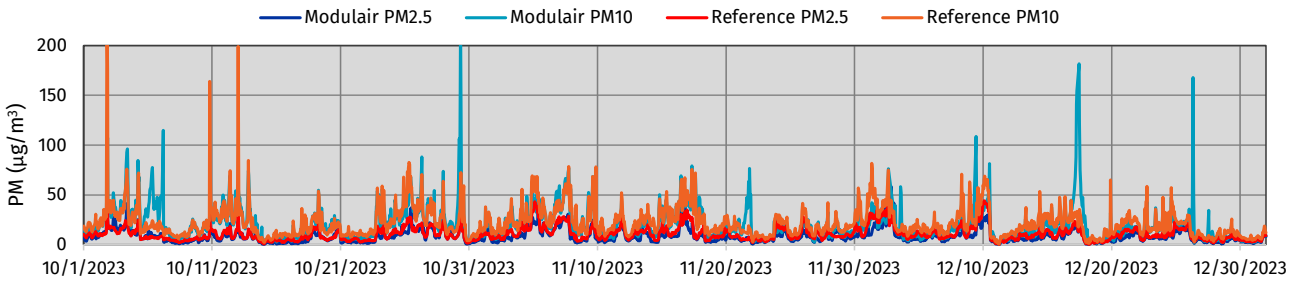


$PM_{2.5}$:

Correlation Coefficent(r2)	0.722	≥ 0.70
Slope(m)	0.785	1.0 ± 0.35
Intercept(b)	0.196	0 ± 5.0
RMSE	4.668	≤ 7.0
Precision CV(%)	23.460	≤ 30.0
Precision SD	4.095	≤ 5.0

PM_{10}:

Correlation Coefficent(r2)	0.528	≥ 0.70
Slope(m)	0.861	1.0 ± 0.35
Intercept(b)	1.285	0 ± 5.0
RMSE	14.678	≤ 7.0
Precision CV(%)	25.420	≤ 30.0
Precision SD	14.461	≤ 5.0



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MODULAIR PM COLLOCATION & COMPARISON SHEET

As Found

SITE NAME CSX MOD 388 - AQ5C
PROJECT CSX

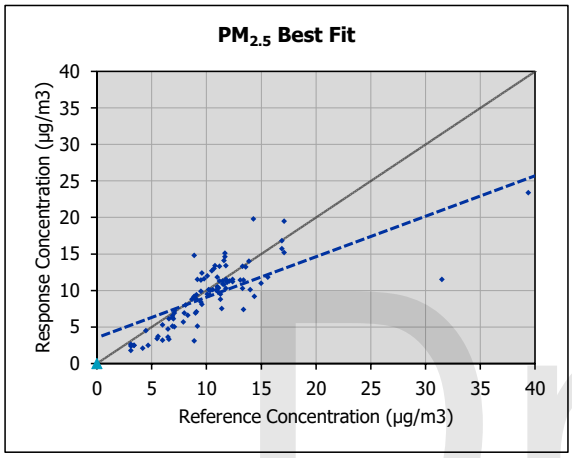
Date 10/1/2023 **Start Time** 1:00
Date 1/1/2024 **Stop Time** 0:00

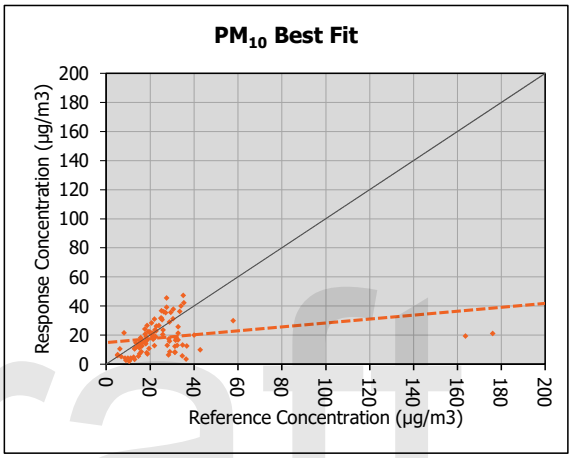
REFERENCE STANDARD:

Reference: AQ5 **Serial #:** 1690
Model: T640X

Analyzer:

Analyzer s/n MOD388
Anal. Range 0- 2000 **µg/m3**



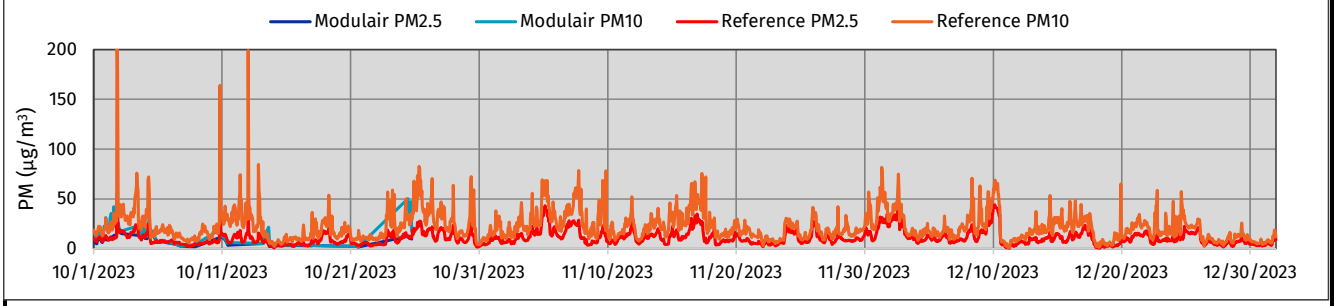


$PM_{2.5}$:

Correlation Coefficent(r2)	0.562	≥ 0.70
Slope(m)	0.555	1.0 ± 0.35
Intercept(b)	3.538	0 ± 5.0
RMSE	12.778	≤ 7.0
Precision CV(%)	20.830	≤ 30.0
Precision SD	7.391	≤ 5.0

PM_{10}:

Correlation Coefficent(r2)	0.136	≥ 0.70
Slope(m)	0.134	1.0 ± 0.35
Intercept(b)	14.932	0 ± 5.0
RMSE	26.490	≤ 7.0
Precision CV(%)	9.830	≤ 30.0
Precision SD	15.770	≤ 5.0



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APPENDIX J. INVALID DATA PERIODS AND CORRECTIVE ACTION FORMS FOR FOURTH QUARTER 2023

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AQS Null Code Description	
BA - Maintenance/Routine Repairs	AV - Power Failure
DA - Aberrant Data (Corrupt Files, Spikes, Shifts)	

CSX AQ5 - Invalid Data Periods

Parameter	Start Date	Start Time	End Date	End Time	Hours Invalid	AQS NULL Code	Description
Precipitation	11/21/2023	08:01	11/21/2023	16:00	8	BA	Maintenance, logger program
Barometric Pressure	11/21/2023	08:01	11/21/2023	16:00	8	BA	Maintenance, logger program
Relative Humidity	11/21/2023	08:01	11/21/2023	16:00	8	BA	Maintenance, logger program
Shelter Temperature	11/21/2023	08:01	11/21/2023	16:00	8	BA	Maintenance, logger program
Temperature	11/21/2023	08:01	11/21/2023	16:00	8	BA	Maintenance, logger program
Wind Speed, Direction, Gust	11/21/2023	08:01	11/21/2023	16:00	8	BA	Maintenance, logger program
$PM_{10/CF/2.5}$	10/25/2023	08:01	10/25/2023	11:00	3	BA	Maintenance, Flow Check
	11/21/2023	08:01	11/21/2023	16:00	8	BA	Maintenance, Flow Check
	12/01/2023	00:01	12/01/2023	01:00	1	DA	Erroneous Data Spike
	12/16/2023	11:01	12/16/2023	12:00	1	AV	Power Outage
	12/21/2023	09:01	12/21/2023	10:00	1	BA	Maintenance, Flow Check

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AQS Null Code Description	
DA - Aberrant Data (Corrupt Files, Spikes, Shifts)	BA - Maintenance/Routine Repairs

CSX AQ8 - Invalid Data Periods

Parameter	Start Date	Start Time	End Date	End Time	Hours Invalid	AQS NULL Code	Description
$PM_{10/CF/2.5}$	10/04/2023	17:01	10/04/2023	18:00	1	DA	Erroneous Data Spike
	10/12/2023	06:01	10/12/2023	07:00	1	DA	Erroneous Data Spike
	10/13/2023	23:01	10/14/2023	00:00	1	DA	Erroneous Data Spike
	10/18/2023	23:01	10/19/2023	00:00	1	DA	Erroneous Data Spike
	10/23/2023	17:01	10/23/2023	18:00	1	DA	Erroneous Data Spike
	10/25/2023	11:01	10/25/2023	12:00	1	BA	Maintenance, Flow check
	11/06/2023	22:01	11/07/2023	00:00	2	DA	Erroneous Data Spike
	11/17/2023	01:01	11/17/2023	02:00	1	DA	Erroneous Data Spike
	11/21/2023	10:01	11/21/2023	17:00	7	BA	Maintenance, Flow check
	12/21/2023	11:01	12/21/2023	12:00	1	BA	Maintenance, Flow check

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CORRECTIVE ACTION REPORT

PROJECT NAME CSX - AQ5 & AQ8 Firmware U

Identification of a Problem or Deficiency:

Created By: Otto AhChing
Assigned To: Field Team
Date: 07/13/2023

Summary: The T640 at both CSX 5 and CSX 8 have been intermittently throwing an OPC error. This error likely caused a PM flatline at AQ5 on 6/22.
Teledyne API did recently release a new firmware for the T640s that should fix the issue. AQ8 has power issues at location prior to getting firmware update (see separate Corrective Action Report).

Corrective Action Taken and Results:

From: Field Team

Corrective Action Description:
07/14 - periods of flatlining increasing in frequency and duration.
07/17 - Rebooting units with the remote webswitch does not correct the issue.
07/27 - AQ5 had firmware update installed.
07/31 - AQ5 has a continuous System Service Warning since 7/29. When connected to the T640, the following alarms also appear: "ByPass Flow Warning" and "Check Ext Pump". These alarms immediately return when cleared.
08/02 - While performing the flow check at AQ5, noted the Bypass Flow and Check EXT Pump warnings are indicated on the analyzer, on the dashboard the Bypass flow was at -3.8 and the sample flow was at 4.99. Pump PWM was 73% and Valve PWM was 100%. During the flow check he said the main sample flow looked good at 5.0 lpm but the Bypass flow did not. The Delta Cal said 15.7 lpm and the T640 said -3.8. API Tech support thinks that the Bypass Flow sensor needs to be replaced. Replacement part was ordered under warranty and shipped to technician to get it installed ASAP. If this fixes the problem he can perform the flow check as well.
08/05 - Trinity technician was on site Saturday 8/5 and installed the new flow sensor in the AQ5 T640. This fixed the Bypass flow issue. Nick ran and recorded an As Found check which showed it needed to be recalibrated. He then documented the After Adjustment check. Sample Flow was within acceptance criteria.
08/17 - "Bypass Flow Warning", "System Fault", and "Check Ext Pump" warnings have returned to the CSX AQ5 T640 since 8/5 and are currently present. Clearing the alarms did not resolve the issue. Sent Teledyne API a support request to understand issue.

Draft

CORRECTIVE ACTION REPORT

PROJECT NAME CSX - AQ5 & AQ8 Firmware

Identification of a Problem or Deficiency:

Created By: Otto AhChing
Assigned To: Field Team
Date: 07/13/2023

Corrective Action Taken and Results:

From: Field Team

Corrective Action Description:

08/22 - As of yesterday, the CSX AQ5 T640 pressure sensor is reading about 100 mb too high. The T640 also has a bypass flow warning, span dust check warning, and external pump check warning.
08/25 - Teledyne API requested more information asking about optical chamber cleaning and when all flows were cleaned. Last maintenance was on 08/05 but did not include optical chamber cleaning.
09/26 - AQ5 still had bypass flow warning, Teledyne API sending another flow sensor that will be replaced on the next visit. DFU filter exchanges will increase frequency to every other month or monthly as needed. The problem of the pressure sensor reading high stopped.
Ticket remains open

10/25 - Bypass flow sensor was replaced in the AQ5 T640. The flow was not within recommended criteria before sensor replacement. The bypass flow slope was set from 0 to 1 in the instrument diag, and then the sample and bypass flows were calibrated. The temperature sensor was also calibrated, as it was also out of the recommended criteria.

12/5/2023 - firmware version 1.4.31.529 was uploaded to the T640X particulate monitors at both the AQ5 and AQ8 monitoring locations. The network data alignment function was then enabled.

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CORRECTIVE ACTION REPORT

PROJECT NAME CSX - AQ8

Identification of a Problem or Deficiency:

Created By: Nick Bratton
Assigned To: Nick Bratton
Date: 12/21/2023

Summary: T640X bypass flow was not withing recommended criteria during the "as found" flow check on 12/21/2023.

Corrective Action Taken and Results:

From: Nick Bratton

Corrective Action Description: 12/21/2023 - The DFU filter was replaced, and the bypass flow was calibrated back within tolerance. Calibrated PMT span dust check also, within tolerance.

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APPENDIX K. CALIBRATION FIELD DATA SHEETS

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CONTINUOUS PARTICULATE SAMPLER
Calibration

SITE NAME	CSX AQ5	**Date**	10/25/2023	**Start Time**	8:15
PROJECT	234501.0038			**Stop Time**	10:18
SITE OPERATOR	Trintiy				

Analyzer Mfg	T-API
Analyzer Model	T640X
Analyzer s/n	1690

= Enter Flow Check Data
= Cell Containing Equations

REFERENCE EQUIPMENT:

	Model	Serial Number
Temperature Standard	Delta Cal	210062
Pressure Standard	Delta Cal	210062
Flow Standard	Delta Cal	210062
Certification Date	6/7/2023	

ZERO TEST / LEAK CHECK

PM Channel	Indicated Conc.	
PM_{10}	0.1	µg/m3
$PM_{2.5}$	0.1	µg/m3

CRITERIA:
PM < 0.2 µg/m3

TEMPERATURE SENSOR CALIBRATION

Indicated Temp.	Ref. Std. Temp.	Difference	
11.3	15.8	4.5	°C
18.4	17.8	-0.6	°C

CRITERIA:
DIFFERENCE < ±2°C

PRESSURE SENSOR CALIBRATION

Indicated Pressure		Ref. Std. Pressure	Difference
kPa	mmHg	mmHg	mmHg
103.1	773.3	771.5	-1.8
102.8	771.1	771.5	0.4

CRITERIA:
DIFFERENCE < ±10 mm Hg

Sample FLOW VERIFICATION

Target Flow L/min	Indicated Flow (I) L/min	Ref. Std. Flow (R) L/min	Difference Ref. Flow %	Difference Design Flow %
5.00	5.11	5.12	-0.2%	2.4%
5.00	5.05	5.04	0.2%	0.8%

CRITERIA:
±4% OF REFERENCE, OR ±5% OF DESIGN FLOW (5.0 L/min)

Bypass FLOW VERIFICATION

Target Flow L/min	Indicated Flow (I) L/min	Ref. Std. Flow (R) L/min	Difference Ref. Flow %	Difference Design Flow %	
11.67	0.00	15.26	-100.0%	30.8%	as found.
11.67	11.68	11.69	-0.1%	0.2%	Calibrated

CRITERIA:
±4% OF REFERENCE, OR ±5% OF DESIGN FLOW (11.7 L/min)

PMT VERIFICATION

Peak Channel	Indicated Value	Difference	
10.9	10.9	0.0	as found.
10.9	10.9	0.0	Calibrated

CRITERIA:
10.9 ±0.5

COMMENTS

Set PM flag to TRUE upon arrival - set to false when leaving

Calibrated by: Nick Bratton

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CONTINUOUS PARTICULATE SAMPLER
CALIBRATION

SITE NAME	CSX AQ5	**Date**	11/21/2023	**Start Time**	8:45
PROJECT	234501.0038			**Stop Time**	15:45
SITE OPERATOR	Trintiy				

Analyzer Mfg	T-API
Analyzer Model	T640X
Analyzer s/n	1690

= Enter Flow Check Data
= Cell Containing Equations

REFERENCE EQUIPMENT:

	Model	Serial Number
Temperature Standard	Delta Cal	210062
Pressure Standard	Delta Cal	210062
Flow Standard	Delta Cal	210062
Certification Date	6/7/2023	

ZERO TEST / LEAK CHECK

PM Channel	Indicated Conc.	
PM_{10}	0.1	µg/m3
$PM_{2.5}$	0.1	µg/m3

CRITERIA:
PM < 0.2 µg/m3

TEMPERATURE SENSOR CALIBRATION

Indicated Temp.	Ref. Std. Temp.	Difference	
7.4	7.3	-0.1	°C
10.0	9.6	-0.4	°C

CRITERIA:
DIFFERENCE < ±2°C

PRESSURE SENSOR CALIBRATION

Indicated Pressure		Ref. Std. Pressure	Difference
kPa	mmHg	mmHg	mmHg
102.9	771.8	770.5	-1.3
102.2	766.6	765.5	-1.1

CRITERIA:
DIFFERENCE < ±10 mm Hg

Sample FLOW VERIFICATION

Target Flow L/min	Indicated Flow (I) L/min	Ref. Std. Flow (R) L/min	Difference Ref. Flow %	Difference Design Flow %
5.00	4.99	4.88	2.3%	-2.4%
5.00	5.01	4.93	1.6%	-1.4%

CRITERIA:
±4% OF REFERENCE, OR ±5% OF DESIGN FLOW (5.0 L/min)

Bypass FLOW VERIFICATION

Target Flow L/min	Indicated Flow (I) L/min	Ref. Std. Flow (R) L/min	Difference Ref. Flow %	Difference Design Flow %	
11.67	11.66	11.63	0.3%	-0.3%	as found.
11.67	11.69	11.49	1.7%	-1.5%	Calibrated

CRITERIA:
±4% OF REFERENCE, OR ±5% OF DESIGN FLOW (11.7 L/min)

PMT VERIFICATION

Peak Channel	Indicated Value	Difference	
10.9	11.2	0.3	as found.
10.9	10.9	0.0	Calibrated

CRITERIA:
10.9 ±0.5

COMMENTS

First reading for each parameter is the as found check. Cleaned unit and optical chamber, changed DFU filters, reinstalled unit and performed second check. Second reading for each parameter is the as-left check.

Calibrated by: Nick Bratton

Draft

CONTINUOUS PARTICULATE SAMPLER
CALIBRATION

SITE NAME	CSX AQ5	**Date**	12/21/2023	**Start Time**	9:00
PROJECT	234501.0038			**Stop Time**	9:45
SITE OPERATOR	Trintiy				

Analyzer Mfg	T-API
Analyzer Model	T640X
Analyzer s/n	1690

= Enter Flow Check Data
= Cell Containing Equations

REFERENCE EQUIPMENT:

	Model	Serial Number
Temperature Standard	Delta Cal	210062
Pressure Standard	Delta Cal	210062
Flow Standard	Delta Cal	210062
Certification Date	6/7/2023	

ZERO TEST / LEAK CHECK

PM Channel	Indicated Conc.	
PM_{10}	0.1	µg/m3
$PM_{2.5}$	0.1	µg/m3

CRITERIA:
PM < 0.2 µg/m3

TEMPERATURE SENSOR CALIBRATION

Indicated Temp.	Ref. Std. Temp.	Difference	
6.1	6.9	0.8	°C
6.1	7	0.9	°C

CRITERIA:
DIFFERENCE < ±2°C

PRESSURE SENSOR CALIBRATION

Indicated Pressure		Ref. Std. Pressure	Difference
kPa	mmHg	mmHg	mmHg
103.3	774.8	774.0	-0.8
103.3	774.8	774.0	-0.8

CRITERIA:
DIFFERENCE < ±10 mm Hg

Sample FLOW VERIFICATION

Target Flow L/min	Indicated Flow (I) L/min	Ref. Std. Flow (R) L/min	Difference Ref. Flow %	Difference Design Flow %
5.00	4.90	4.84	1.2%	-3.2%
5.00	4.95	4.93	0.4%	-1.4%

CRITERIA:
±4% OF REFERENCE, OR ±5% OF DESIGN FLOW (5.0 L/min)

Bypass FLOW VERIFICATION

Target Flow L/min	Indicated Flow (I) L/min	Ref. Std. Flow (R) L/min	Difference Ref. Flow %	Difference Design Flow %	
11.67	11.68	11.63	0.4%	-0.3%	as found.
11.67	11.67	11.68	-0.1%	0.1%	Calibrated

CRITERIA:
±4% OF REFERENCE, OR ±5% OF DESIGN FLOW (11.7 L/min)

PMT VERIFICATION

Peak Channel	Indicated Value	Difference	
10.9	11.0	0.1	as found.
10.9	10.9	0.0	Calibrated

CRITERIA:
10.9 ±0.5

COMMENTS

First reading for each parameter is the as found check. Changed external DFU filter. Cleaned head.
Second reading for each parameter is the as-left check.

Calibrated by: Nick Bratton

Draft

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CONTINUOUS PARTICULATE SAMPLER
CALIBRATION

SITE NAME	CSX AQ8	**Date**	10/25/2023	**Start Time**	11:15
PROJECT	234501.0038			**Stop Time**	12:00
SITE OPERATOR	Trintiy				

Analyzer Mfg	T-API
Analyzer Model	T640X
Analyzer s/n	1689

= Enter Flow Check Data
= Cell Containing Equations

REFERENCE EQUIPMENT:

	Model	Serial Number
Temperature Standard	Delta Cal	210062
Pressure Standard	Delta Cal	210062
Flow Standard	Delta Cal	210062
Certification Date	6/7/2023	

ZERO TEST / LEAK CHECK

PM Channel	Indicated Conc.	
PM_{10}	0.1	µg/m3
$PM_{2.5}$	0.1	µg/m3

CRITERIA:
PM < 0.2 µg/m3

TEMPERATURE SENSOR CALIBRATION

Indicated Temp.	Ref. Std. Temp.	Difference	
21.1	20.8	-0.3	°C
21.9	21.6	-0.3	°C

CRITERIA:
DIFFERENCE < ±2°C

PRESSURE SENSOR CALIBRATION

Indicated Pressure		Ref. Std. Pressure	Difference
kPa	mmHg	mmHg	mmHg
102.6	769.6	770.0	0.4
102.5	768.8	769.5	0.7

CRITERIA:
DIFFERENCE < ±10 mm Hg

Sample FLOW VERIFICATION

Target Flow L/min	Indicated Flow (I) L/min	Ref. Std. Flow (R) L/min	Difference Ref. Flow %	Difference Design Flow %
5.00	4.99	5.16	-3.3%	3.2%
5.00	5.01	5.01	0.0%	0.2%

CRITERIA:
±4% OF REFERENCE, OR ±5% OF DESIGN FLOW (5.0 L/min)

Bypass FLOW VERIFICATION

Target Flow L/min	Indicated Flow (I) L/min	Ref. Std. Flow (R) L/min	Difference Ref. Flow %	Difference Design Flow %	
11.67	11.66	11.90	-2.0%	2.0%	as found.
11.67	11.67	11.64	0.3%	-0.3%	Calibrated

CRITERIA:
±4% OF REFERENCE, OR ±5% OF DESIGN FLOW (11.7 L/min)

PMT VERIFICATION

Peak Channel	Indicated Value	Difference	
10.9	11.2	0.3	as found.
10.9	10.9	0.0	Calibrated

CRITERIA:
10.9 ±0.5

COMMENTS

Calibrated by: Nick Bratton

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CONTINUOUS PARTICULATE SAMPLER
CALIBRATION

SITE NAME	CSX AQ8	**Date**	11/21/2023	**Start Time**	11:15
PROJECT	234501.0038			**Stop Time**	16:30
SITE OPERATOR	Trintiy				

Analyzer Mfg	T-API
Analyzer Model	T640X
Analyzer s/n	1689

= Enter Flow Check Data
= Cell Containing Equations

REFERENCE EQUIPMENT:

	Model	Serial Number
Temperature Standard	Delta Cal	210062
Pressure Standard	Delta Cal	210062
Flow Standard	Delta Cal	210062
Certification Date	6/7/2023	

ZERO TEST / LEAK CHECK

PM Channel	Indicated Conc.	
PM_{10}	0.1	µg/m3
$PM_{2.5}$	0.1	µg/m3

CRITERIA:
PM < 0.2 µg/m3

TEMPERATURE SENSOR CALIBRATION

Indicated Temp.	Ref. Std. Temp.	Difference	
21.1	20.8	-0.3	°C
21.9	21.6	-0.3	°C

CRITERIA:
DIFFERENCE < ±2°C

PRESSURE SENSOR CALIBRATION

Indicated Pressure		Ref. Std. Pressure	Difference
kPa	mmHg	mmHg	mmHg
102.6	769.6	770.0	0.4
102.5	768.8	769.5	0.7

CRITERIA:
DIFFERENCE < ±10 mm Hg

Sample FLOW VERIFICATION

Target Flow L/min	Indicated Flow (I) L/min	Ref. Std. Flow (R) L/min	Difference Ref. Flow %	Difference Design Flow %
5.00	4.99	5.16	-3.3%	3.2%
5.00	5.01	5.01	0.0%	0.2%

CRITERIA:
±4% OF REFERENCE, OR ±5% OF DESIGN FLOW (5.0 L/min)

Bypass FLOW VERIFICATION

Target Flow L/min	Indicated Flow (I) L/min	Ref. Std. Flow (R) L/min	Difference Ref. Flow %	Difference Design Flow %	
11.67	11.66	11.90	-2.0%	2.0%	as found.
11.67	11.67	11.64	0.3%	-0.3%	Calibrated

CRITERIA:
±4% OF REFERENCE, OR ±5% OF DESIGN FLOW (11.7 L/min)

PMT VERIFICATION

Peak Channel	Indicated Value	Difference	
10.9	11.2	0.3	as found.
10.9	10.9	0.0	Calibrated

CRITERIA:
10.9 ± 1.5

COMMENTS

First reading for each parameter is the as found check. Cleaned unit and optical chamber, changed DFU filters, reinstalled unit and performed second check. Second reading for each parameter is the as-left check.

Calibrated by: Nick Bratton

Draft

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CONTINUOUS PARTICULATE SAMPLER
CALIBRATION

SITE NAME	CSX AQ8	**Date**	12/21/2023	**Start Time**	11:15
PROJECT	234501.0038			**Stop Time**	12:00
SITE OPERATOR	Trintiy				

Analyzer Mfg	T-API
Analyzer Model	T640X
Analyzer s/n	1689

= Enter Flow Check Data
= Cell Containing Equations

REFERENCE EQUIPMENT:

	Model	Serial Number
Temperature Standard	Delta Cal	210062
Pressure Standard	Delta Cal	210062
Flow Standard	Delta Cal	210062
Certification Date	6/7/2023	

ZERO TEST / LEAK CHECK

PM Channel	Indicated Conc.	
PM_{10}	0.1	µg/m3
$PM_{2.5}$	0.1	µg/m3

CRITERIA:
PM < 0.2 µg/m3

TEMPERATURE SENSOR CALIBRATION

Indicated Temp.	Ref. Std. Temp.	Difference	
6.5	6.5	0	°C
6.5	6.5	0	°C

CRITERIA:
DIFFERENCE < ±2°C

PRESSURE SENSOR CALIBRATION

Indicated Pressure		Ref. Std. Pressure	Difference
kPa	mmHg	mmHg	mmHg
103.0	772.6	772.5	-0.1
103.0	772.6	773.0	0.4

CRITERIA:
DIFFERENCE < ±10 mm Hg

Sample FLOW VERIFICATION

Target Flow L/min	Indicated Flow (I) L/min	Ref. Std. Flow (R) L/min	Difference Ref. Flow %	Difference Design Flow %
5.00	4.99	5.03	-0.8%	0.6%
5.00	4.98	4.98	0.0%	-0.4%

CRITERIA:
±4% OF REFERENCE, OR ±5% OF DESIGN FLOW (5.0 L/min)

Bypass FLOW VERIFICATION

Target Flow L/min	Indicated Flow (I) L/min	Ref. Std. Flow (R) L/min	Difference Ref. Flow %	Difference Design Flow %	
11.67	11.78	13.74	-14.3%	17.7%	as found.
11.67	11.68	11.68	0.0%	0.1%	Calibrated

CRITERIA:
±4% OF REFERENCE, OR ±5% OF DESIGN FLOW (11.7 L/min)

PMT VERIFICATION

Peak Channel	Indicated Value	Difference	
10.9	11.1	0.2	as found.
10.9	10.9	0.0	Calibrated

CRITERIA:
10.9 ±0.5

COMMENTS

First reading for each parameter is the as found check. Cleaned unit. Changed external DFU filter.
Second reading for each parameter is the as-left check.

Calibrated by: Nick Bratton

Draft

APPENDIX L. $PM_{10}/PM_{2.5}$ FLOW CHECKS AND FLOW CHECK EQUIPMENT CERTIFICATE AND FIELD CALIBRATION SHEETS FOR FOURTH QUARTER 2023

Draft

CONTINUOUS PARTICULATE SAMPLER
FLOW CHECK

SITE NAME	CSX AQ5	**Date**	10/25/2023	**Start Time**	8:15
PROJECT	234501.0038			**Stop Time**	10:18
SITE OPERATOR	Trintiy				

Analyzer Mfg	T-API
Analyzer Model	T640X
Analyzer s/n	1690

= Enter Flow Check Data
= Cell Containing Equations

REFERENCE EQUIPMENT:

	Model	Serial Number
Temperature Standard	Delta Cal	210062
Pressure Standard	Delta Cal	210062
Flow Standard	Delta Cal	210062
Certification Date	6/7/2023	

ZERO TEST / LEAK CHECK

PM Channel	Indicated Conc.	
PM_{10}	0.1	µg/m3
$PM_{2.5}$	0.1	µg/m3

CRITERIA:
PM < 0.2 µg/m3

TEMPERATURE SENSOR CALIBRATION

Indicated Temp.	Ref. Std. Temp.	Difference	
11.3	15.8	4.5	°C
18.4	17.8	-0.6	°C

CRITERIA:
DIFFERENCE < ±2°C

PRESSURE SENSOR CALIBRATION

Indicated Pressure		Ref. Std. Pressure	Difference
kPa	mmHg	mmHg	mmHg
103.1	773.3	771.5	-1.8
102.8	771.1	771.5	0.4

CRITERIA:
DIFFERENCE < ±10 mm Hg

Sample FLOW VERIFICATION

Target Flow L/min	Indicated Flow (I) L/min	Ref. Std. Flow (R) L/min	Difference Ref. Flow %	Difference Design Flow %
5.00	5.11	5.12	-0.2%	2.4%
5.00	5.05	5.04	0.2%	0.8%

CRITERIA:
±4% OF REFERENCE, OR ±5% OF DESIGN FLOW (5.0 L/min)

Bypass FLOW VERIFICATION

Target Flow L/min	Indicated Flow (I) L/min	Ref. Std. Flow (R) L/min	Difference Ref. Flow %	Difference Design Flow %	
11.67	0.00	15.26	-100.0%	30.8%	as found.
11.67	11.68	11.69	-0.1%	0.2%	Calibrated

CRITERIA:
±4% OF REFERENCE, OR ±5% OF DESIGN FLOW (11.7 L/min)

PMT VERIFICATION

Peak Channel	Indicated Value	Difference	
10.9	10.9	0.0	as found.
10.9	10.9	0.0	Calibrated

CRITERIA:
10.9 ±0.5

COMMENTS

Set PM flag to TRUE upon arrival - set to false when leaving. Bypass flow controller replaced. Bypass flow slope set from 0 to 1. Flow calibrated. Temperature and pressure calibrated.

Flow Check by: Nick Bratton

Draft

Trinity Consultants

CONTINUOUS PARTICULATE SAMPLER

FLOW CHECK

SITE NAME	CSX AQ5	**Date**	11/21/2023	**Start Time**	8:45
PROJECT	234501.0038			**Stop Time**	15:45
SITE OPERATOR	Trintiy				

Analyzer Mfg	T-API
Analyzer Model	T640X
Analyzer s/n	1690

= Enter Flow Check Data
= Cell Containing Equations

REFERENCE EQUIPMENT:

	Model	Serial Number
Temperature Standard	Delta Cal	210062
Pressure Standard	Delta Cal	210062
Flow Standard	Delta Cal	210062
Certification Date	6/7/2023	

ZERO TEST / LEAK CHECK

PM Channel	Indicated Conc.	
PM_{10}	0.1	µg/m3
$PM_{2.5}$	0.1	µg/m3

CRITERIA:
PM < 0.2 µg/m3

TEMPERATURE SENSOR CALIBRATION

Indicated Temp.	Ref. Std. Temp.	Difference	
7.4	7.3	-0.1	°C
10.0	9.6	-0.4	°C

CRITERIA:
DIFFERENCE < ±2°C

PRESSURE SENSOR CALIBRATION

Indicated Pressure		Ref. Std. Pressure	Difference
kPa	mmHg	mmHg	mmHg
102.9	771.8	770.5	-1.3
102.2	766.6	765.5	-1.1

CRITERIA:
DIFFERENCE < ±10 mm Hg

Sample FLOW VERIFICATION

Target Flow L/min	Indicated Flow (I) L/min	Ref. Std. Flow (R) L/min	Difference Ref. Flow %	Difference Design Flow %
5.00	4.99	4.88	2.3%	-2.4%
5.00	5.01	4.93	1.6%	-1.4%

CRITERIA:
±4% OF REFERENCE, OR ±5% OF DESIGN FLOW (5.0 L/min)

Bypass FLOW VERIFICATION

Target Flow L/min	Indicated Flow (I) L/min	Ref. Std. Flow (R) L/min	Difference Ref. Flow %	Difference Design Flow %	
11.67	11.66	11.63	0.3%	-0.3%	as found.
11.67	11.69	11.49	1.7%	-1.5%	Calibrated

CRITERIA:
±4% OF REFERENCE, OR ±5% OF DESIGN FLOW (11.7 L/min)

PMT VERIFICATION

Peak Channel	Indicated Value	Difference	
10.9	11.2	0.3	as found.
10.9	10.9	0.0	Calibrated

CRITERIA:
10.9 ±0.5

COMMENTS

First reading for each parameter is the as found check. Cleaned unit and optical chamber, changed DFU filters, reinstalled unit and performed second check. Second reading for each parameter is the as-left check.

Flow Check by: Nick Bratton

Draft

CONTINUOUS PARTICULATE SAMPLER
FLOW CHECK

SITE NAME	CSX AQ5	**Date**	12/21/2023	**Start Time**	9:00
PROJECT	234501.0038			**Stop Time**	9:45
SITE OPERATOR	Trintiy				

Analyzer Mfg	T-API
Analyzer Model	T640X
Analyzer s/n	1690

= Enter Flow Check Data
= Cell Containing Equations

REFERENCE EQUIPMENT:

	Model	Serial Number
Temperature Standard	Delta Cal	210062
Pressure Standard	Delta Cal	210062
Flow Standard	Delta Cal	210062
Certification Date	6/7/2023	

ZERO TEST / LEAK CHECK

PM Channel	Indicated Conc.	
PM_{10}	0.1	µg/m3
$PM_{2.5}$	0.1	µg/m3

CRITERIA:
PM < 0.2 µg/m3

TEMPERATURE SENSOR CALIBRATION

Indicated Temp.	Ref. Std. Temp.	Difference	
6.1	6.9	0.8	°C
6.1	7	0.9	°C

CRITERIA:
DIFFERENCE < ±2°C

PRESSURE SENSOR CALIBRATION

Indicated Pressure		Ref. Std. Pressure	Difference
kPa	mmHg	mmHg	mmHg
103.3	774.8	774.0	-0.8
103.3	774.8	774.0	-0.8

CRITERIA:
DIFFERENCE < ±10 mm Hg

Sample FLOW VERIFICATION

Target Flow L/min	Indicated Flow (I) L/min	Ref. Std. Flow (R) L/min	Difference Ref. Flow %	Difference Design Flow %
5.00	4.90	4.84	1.2%	-3.2%
5.00	4.95	4.93	0.4%	-1.4%

CRITERIA:
±4% OF REFERENCE, OR ±5% OF DESIGN FLOW (5.0 L/min)

Bypass FLOW VERIFICATION

Target Flow L/min	Indicated Flow (I) L/min	Ref. Std. Flow (R) L/min	Difference Ref. Flow %	Difference Design Flow %	
11.67	11.68	11.63	0.4%	-0.3%	as found.
11.67	11.67	11.68	-0.1%	0.1%	Calibrated

CRITERIA:
±4% OF REFERENCE, OR ±5% OF DESIGN FLOW (11.7 L/min)

PMT VERIFICATION

Peak Channel	Indicated Value	Difference	
10.9	11.0	0.1	as found.
10.9	10.9	0.0	Calibrated

CRITERIA:
10.9 ±0.5

COMMENTS

First reading for each parameter is the as found check. Changed external DFU filter. Cleaned head.
Second reading for each parameter is the as-left check.

Flow Check by: Nick Bratton

Draft

Trinity Consultants

CONTINUOUS PARTICULATE SAMPLER

FLOW CHECK

SITE NAME	CSX AQ8	**Date**	10/25/2023	**Start Time**	11:15
PROJECT	234501.0038			**Stop Time**	12:00
SITE OPERATOR	Trintiy				

Analyzer Mfg	T-API
Analyzer Model	T640X
Analyzer s/n	1689

= Enter Flow Check Data
= Cell Containing Equations

REFERENCE EQUIPMENT:

	Model	Serial Number
Temperature Standard	Delta Cal	210062
Pressure Standard	Delta Cal	210062
Flow Standard	Delta Cal	210062
Certification Date	6/7/2023	

ZERO TEST / LEAK CHECK

PM Channel	Indicated Conc.	
PM_{10}	0.1	µg/m3
$PM_{2.5}$	0.1	µg/m3

CRITERIA:
PM < 0.2 µg/m3

TEMPERATURE SENSOR CALIBRATION

Indicated Temp.	Ref. Std. Temp.	Difference	
21.1	20.8	-0.3	°C
21.9	21.6	-0.3	°C

CRITERIA:
DIFFERENCE < ±2°C

PRESSURE SENSOR CALIBRATION

Indicated Pressure		Ref. Std. Pressure	Difference
kPa	mmHg	mmHg	mmHg
102.6	769.6	770.0	0.4
102.5	768.8	769.5	0.7

CRITERIA:
DIFFERENCE < ±10 mm Hg

Sample FLOW VERIFICATION

Target Flow L/min	Indicated Flow (I) L/min	Ref. Std. Flow (R) L/min	Difference Ref. Flow %	Difference Design Flow %
5.00	4.99	5.16	-3.3%	3.2%
5.00	5.01	5.01	0.0%	0.2%

CRITERIA:
±4% OF REFERENCE, OR ±5% OF DESIGN FLOW (5.0 L/min)

Bypass FLOW VERIFICATION

Target Flow L/min	Indicated Flow (I) L/min	Ref. Std. Flow (R) L/min	Difference Ref. Flow %	Difference Design Flow %	
11.67	11.66	11.90	-2.0%	2.0%	as found.
11.67	11.67	11.64	0.3%	-0.3%	Calibrated

CRITERIA:
±4% OF REFERENCE, OR ±5% OF DESIGN FLOW (11.7 L/min)

PMT VERIFICATION

Peak Channel	Indicated Value	Difference	
10.9	11.2	0.3	as found.
10.9	10.9	0.0	Calibrated

CRITERIA:
10.9 ±0.5

COMMENTS

Flow Check by: Nick Bratton

Draft

Trinity Consultants

CONTINUOUS PARTICULATE SAMPLER

FLOW CHECK

SITE NAME	CSX AQ8	**Date**	11/21/2023	**Start Time**	11:15
PROJECT	234501.0038			**Stop Time**	16:30
SITE OPERATOR	Trintiy				

Analyzer Mfg	T-API
Analyzer Model	T640X
Analyzer s/n	1689

= Enter Flow Check Data
= Cell Containing Equations

REFERENCE EQUIPMENT:

	Model	Serial Number
Temperature Standard	Delta Cal	210062
Pressure Standard	Delta Cal	210062
Flow Standard	Delta Cal	210062
Certification Date	6/7/2023	

ZERO TEST / LEAK CHECK

PM Channel	Indicated Conc.	
PM_{10}	0.1	µg/m3
$PM_{2.5}$	0.1	µg/m3

CRITERIA:
PM < 0.2 µg/m3

TEMPERATURE SENSOR CALIBRATION

Indicated Temp.	Ref. Std. Temp.	Difference	
21.1	20.8	-0.3	°C
21.9	21.6	-0.3	°C

CRITERIA:
DIFFERENCE < ±2°C

PRESSURE SENSOR CALIBRATION

Indicated Pressure		Ref. Std. Pressure	Difference
kPa	mmHg	mmHg	mmHg
102.6	769.6	770.0	0.4
102.5	768.8	769.5	0.7

CRITERIA:
DIFFERENCE < ±10 mm Hg

Sample FLOW VERIFICATION

Target Flow L/min	Indicated Flow (I) L/min	Ref. Std. Flow (R) L/min	Difference Ref. Flow %	Difference Design Flow %
5.00	4.99	5.16	-3.3%	3.2%
5.00	5.01	5.01	0.0%	0.2%

CRITERIA:
±4% OF REFERENCE, OR ±5% OF DESIGN FLOW (5.0 L/min)

Bypass FLOW VERIFICATION

Target Flow L/min	Indicated Flow (I) L/min	Ref. Std. Flow (R) L/min	Difference Ref. Flow %	Difference Design Flow %	
11.67	11.66	11.90	-2.0%	2.0%	as found.
11.67	11.67	11.64	0.3%	-0.3%	Calibrated

CRITERIA:
±4% OF REFERENCE, OR ±5% OF DESIGN FLOW (11.7 L/min)

PMT VERIFICATION

Peak Channel	Indicated Value	Difference	
10.9	11.2	0.3	as found.
10.9	10.9	0.0	Calibrated

CRITERIA:
10.9 ±0.5

COMMENTS

First reading for each parameter is the as found check. Cleaned unit and optical chamber, changed DFU filters, reinstalled unit and performed second check. Second reading for each parameter is the as-left check.

Flow Check by: Nick Bratton

Draft

Trinity Consultants

CONTINUOUS PARTICULATE SAMPLER

FLOW CHECK

SITE NAME	CSX AQ8	**Date**	12/21/2023	**Start Time**	11:15
PROJECT	234501.0038			**Stop Time**	12:00
SITE OPERATOR	Trintiy				

Analyzer Mfg	T-API
Analyzer Model	T640X
Analyzer s/n	1689

= Enter Flow Check Data
= Cell Containing Equations

REFERENCE EQUIPMENT:

	Model	Serial Number
Temperature Standard	Delta Cal	210062
Pressure Standard	Delta Cal	210062
Flow Standard	Delta Cal	210062
Certification Date	6/7/2023	

ZERO TEST / LEAK CHECK

PM Channel	Indicated Conc.	
PM_{10}	0.1	µg/m3
$PM_{2.5}$	0.1	µg/m3

CRITERIA:
PM < 0.2 µg/m3

TEMPERATURE SENSOR CALIBRATION

Indicated Temp.	Ref. Std. Temp.	Difference	
6.5	6.5	0	°C
6.5	6.5	0	°C

CRITERIA:
DIFFERENCE < ±2°C

PRESSURE SENSOR CALIBRATION

Indicated Pressure		Ref. Std. Pressure	Difference
kPa	mmHg	mmHg	mmHg
103.0	772.6	772.5	-0.1
103.0	772.6	773.0	0.4

CRITERIA:
DIFFERENCE < ±10 mm Hg

Sample FLOW VERIFICATION

Target Flow L/min	Indicated Flow (I) L/min	Ref. Std. Flow (R) L/min	Difference Ref. Flow %	Difference Design Flow %
5.00	4.99	5.03	-0.8%	0.6%
5.00	4.98	4.98	0.0%	-0.4%

CRITERIA:
±4% OF REFERENCE, OR ±5% OF DESIGN FLOW (5.0 L/min)

Bypass FLOW VERIFICATION

Target Flow L/min	Indicated Flow (I) L/min	Ref. Std. Flow (R) L/min	Difference Ref. Flow %	Difference Design Flow %	
11.67	11.78	13.74	-14.3%	17.7%	as found.
11.67	11.68	11.68	0.0%	0.1%	Calibrated

CRITERIA:
±4% OF REFERENCE, OR ±5% OF DESIGN FLOW (11.7 L/min)

PMT VERIFICATION

Peak Channel	Indicated Value	Difference	
10.9	11.1	0.2	as found.
10.9	10.9	0.0	Calibrated

CRITERIA:
10.9 ±0.5

COMMENTS

First reading for each parameter is the as found check. Cleaned unit. Changed external DFU filter.
Second reading for each parameter is the as-left check.

Flow Check by: Nick Bratton

Draft

MesaLabs

Mesa Labs 12100 W. 6th Ave
Lakewood, CO 80228
NIST Traceable Calibration Facility

CERTIFICATE OF CALIBRATION - NIST TRACEABILITY

Calibration Report #: 210062-07062023
DeltaCal Serial Number: 210062
Calibration Technician: Leigh Clark
Date: 7-Jun-2023
Recommended Recal Date: 7-Jun-2024

Critical Venturi Flow Meter

Max Uncertainty = 0.346%

TE20005	6 - 30.00 LPM	Calibration Due:	11-Jul-2023
TE20007	1.40 - 6.0 LPM	Calibration Due:	11-Jul-2023

Room Temperature: +- 0.03°C from -5°C - 70°C **Room Temperature:** 21.4 °C

Brand: Eutechnics

TE Number:	TE12242	**Serial Number:**	A11441
Std Cal Date:	5-Oct-22	**Std Cal Due Date:**	5-Oct-23

Ambient Temperature (set): 21.2 °C
Aux (filter) Temperature (set): 21.2 °C

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Barometric and Absolute Pressure

Vaisala Model PTB330 (50-1100) Digital Accuracy: 0.03371%

TE Number:	TE12311	**Serial Number:**	H0850001
Std Cal Date:	6-Feb-23	**Std Cal Due Date:**	6-Feb-24

DeltaCal:
Barometric pressure (set): 617.0 mmHg

Results of Venturi Calibration

Flow Rate (Q) vs. Pressure Drop (ΔP). Where: Q=Lpm, ΔP= Cm of H2O

Venturi

TE20005	Q= 3.95970	ΔP ^	0.51615	Overall Uncertainty: 0.35%
TE20007	Q= 3.89503	ΔP ^	0.53776	Overall Uncertainty: 0.35%

Mesa Labs 12100 W. 6th Ave Lakewood, CO 80228
NIST Traceable Calibration Facility

As Shipped Calibration Data for DeltaCal

Unit Type:	DC 1
Flow Range:	1.5-19.5 LPM
Serial No. :	210062
Firmware Version:	4.00P

Date	Technician
07Jun2023	Leigh Clark

Ambient Pressure:	617.0	mmHg
Ambient Temperature:	21.4	°C

Range 1

Venturi	TE20005
Type	1B
Flow range	6 - 30.00 LPM

Test #	Static Pressure mmHg	Barometric Pressure mmHg	Venturi Qa LPM	DUT Qa LPM	% error %
1	134.19	616.5	6.506	6.525	0.292
2	204.74	616.5	9.982	10.004	0.220
3	266.57	616.5	13.021	13.020	-0.008
4	327.72	616.5	16.041	16.047	0.037
5	367.19	616.5	17.984	18.002	0.100
6	394.55	616.5	19.331	19.369	0.197
	Maximum allowable error at any flow rate is 0.75%.			Average	0.140
				Result	PASS

Range 2

Venturi	TE20007
Type	2B
Flow range	1.40 - 6.0 LPM

Test #	Static Pressure mmHg	Barometric Pressure mmHg	Venturi Qa LPM	DUT Qa LPM	% error %
1	145.24	616.5	2.012	2.013	0.050
2	214.80	616.5	3.005	3.010	0.166
3	268.58	616.5	3.772	3.779	0.186
4	322.33	617.0	4.533	4.550	0.375
5	373.87	616.5	5.274	5.279	0.095
6	413.97	616.5	5.846	5.881	0.599
	Maximum allowable error at any flow rate is 0.75%.			Average	0.245
				Result	PASS

Draft

Performed By: Leigh Clark **Date:** 7-Jun-2023

Leigh Clark

Approved By: Norma Aragon QC Inspector **Date:** 08 Jun 2023

Norma Aragon

APPENDIX M. MONITORING ENCLOSURE TEMPERATURES FOR FOURTH QUARTER 2023

Draft

CSX AQ5

SHELTER TEMPERATURE in deg C for OCTOBER, 2023

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	23.5	23.8	23.8	24.1	23.9	24.0	23.2	22.1	21.4	21.2	21.2	21.4	21.5	21.3	21.3	21.5	21.9	22.4	22.7	22.8	23.0	23.4	23.3	23.4	**22.6**	**24.1**	**21.2**
2	23.6	23.5	23.4	23.4	23.6	23.4	23.1	22.0	21.3	21.2	21.3	21.6	22.0	21.9	22.0	22.1	22.3	22.6	22.7	22.8	22.9	23.1	23.1	23.2	**22.6**	**23.6**	**21.2**
3	23.3	23.2	23.5	23.5	23.6	23.8	23.2	22.2	21.9	22.1	22.1	22.0	21.8	21.4	21.6	21.8	22.1	22.4	22.7	22.9	22.9	23.1	23.1	23.2	**22.6**	**23.8**	**21.4**
4	23.2	23.5	23.4	23.6	23.5	23.6	23.3	22.3	22.0	21.8	21.7	21.9	21.9	21.9	21.8	21.9	22.0	22.4	22.9	23.1	23.2	23.5	23.6	23.8	**22.7**	**23.8**	**21.7**
5	23.9	24.0	24.7	24.3	24.2	24.0	23.8	23.0	22.0	21.7	22.2	22.3	22.4	22.0	22.0	22.1	22.4	22.7	22.5	22.6	22.6	22.5	22.7	22.8	**22.9**	**24.7**	**21.7**
6	22.8	22.8	22.8	22.8	22.8	22.8	22.8	22.8	22.5	22.3	22.1	22.1	22.3	22.2	22.2	22.1	22.3	22.6	22.6	22.7	22.7	22.8	22.6	22.7	**22.6**	**22.8**	**22.1**
7	22.8	22.8	22.8	22.9	23.2	24.2	23.7	23.4	24.1	24.6	24.2	24.6	24.3	23.7	24.1	23.7	24.1	24.6	23.7	22.8	21.9	21.4	20.8	20.3	**23.3**	**24.6**	**20.3**
8	20.0	19.9	19.3	19.0	18.9	19.0	19.4	22.6	22.5	23.1	24.0	24.3	23.4	23.7	23.8	24.1	24.9	24.5	22.9	22.0	21.4	20.9	20.4	19.7	**21.8**	**24.9**	**18.9**
9	19.1	18.8	18.5	18.3	18.2	18.1	19.0	21.0	22.9	22.2	22.9	22.9	23.1	23.2	23.3	23.4	23.7	23.9	24.2	24.4	24.6	24.2	22.9	22.5	**21.9**	**24.6**	**18.1**
10	22.8	23.2	23.3	23.3	23.1	22.8	22.9	24.0	24.2	22.6	22.2	22.4	22.3	22.8	22.9	22.8	23.1	23.7	24.3	24.4	25.1	25.0	24.3	23.5	**23.4**	**25.1**	**22.2**
11	22.9	22.4	22.1	21.7	20.8	20.4	20.4	22.6	22.0	21.8	22.1	22.2	22.3	22.3	22.4	22.6	23.1	23.6	24.0	24.3	24.1	24.4	24.4	24.9	**22.7**	**24.9**	**20.4**
12	24.1	23.9	23.0	22.3	22.1	22.0	23.0	22.3	22.5	21.7	22.1	22.5	22.5	22.6	22.5	22.8	22.9	23.5	23.7	24.0	24.4	24.3	24.3	24.2	**23.1**	**24.4**	**21.7**
13	24.0	23.7	24.3	25.0	24.9	24.3	23.8	22.9	22.1	21.9	22.3	22.5	22.4	22.7	22.9	23.1	23.3	23.8	24.0	24.4	25.0	25.0	25.0	24.1	**23.6**	**25.0**	**21.9**
14	24.5	24.6	24.5	24.4	25.0	25.0	24.2	24.5	23.6	23.0	23.1	24.0	24.7	24.6	25.0	24.1	24.0	23.9	23.4	23.1	22.2	21.1	20.9	20.3	**23.7**	**25.0**	**20.3**
15	19.9	19.6	19.4	19.6	19.6	19.3	18.8	20.4	22.9	23.6	23.8	24.0	24.3	24.3	24.3	24.7	24.9	24.0	22.7	22.0	21.5	20.6	19.9	19.0	**21.8**	**24.9**	**18.8**
16	18.6	18.0	17.2	17.0	17.1	17.2	17.3	20.9	23.3	23.8	24.2	23.8	24.0	24.4	24.2	24.7	25.0	24.7	24.3	24.2	23.6	23.2	22.5	22.6	**21.9**	**25.0**	**17.0**
17	22.3	21.9	21.3	21.5	21.4	21.2	21.0	23.1	24.2	23.5	22.6	23.1	23.7	23.9	23.8	24.2	25.1	24.8	24.1	23.3	23.0	22.7	22.2	21.8	**22.9**	**25.1**	**21.0**
18	21.1	20.6	19.7	19.6	20.9	21.7	20.6	22.8	22.4	22.1	22.8	23.3	23.4	23.2	23.2	23.8	24.3	24.4	23.9	23.0	22.7	23.1	22.6	21.6	**22.4**	**24.4**	**19.6**
19	21.3	20.6	20.0	19.9	19.9	19.3	19.6	22.6	22.3	22.0	22.3	22.5	22.4	22.6	22.7	22.9	23.3	24.1	24.2	24.2	24.2	24.1	24.1	24.4	**22.3**	**24.4**	**19.3**
20	24.2	24.3	24.6	24.9	25.1	24.7	24.6	24.3	23.1	22.5	22.8	22.4	22.5	22.7	22.9	23.8	24.0	24.1	24.0	24.2	24.1	23.8	24.0	23.8	**23.8**	**25.1**	**22.4**
21	24.0	24.0	23.9	23.8	23.5	23.4	22.8	22.5	23.5	22.8	23.4	23.7	23.7	23.8	23.5	24.4	24.5	24.3	23.6	23.1	23.0	23.1	22.6	21.6	**23.4**	**24.5**	**21.6**
22	20.9	20.9	20.5	20.3	20.8	21.2	21.4	21.5	22.6	23.5	24.5	24.7	24.1	24.2	24.3	24.8	24.1	23.0	22.2	21.4	20.9	20.1	19.4	18.9	**22.1**	**24.8**	**18.9**
23	18.4	18.0	17.7	17.1	16.8	16.3	16.0	17.9	20.2	22.7	23.9	23.8	23.6	23.3	23.2	23.3	23.7	24.8	24.3	23.0	21.6	20.5	19.7	19.1	**20.8**	**24.8**	**16.0**
24	18.7	18.0	17.6	17.3	17.1	17.2	17.2	20.3	22.9	22.6	22.7	23.2	23.6	23.4	23.3	23.2	23.6	24.5	24.3	24.7	24.5	23.8	23.2	23.2	**21.7**	**24.7**	**17.1**
25	22.6	21.7	20.5	19.7	19.3	19.5	19.9	22.2	22.5	24.3	22.7	22.2	22.3	22.9	22.7	22.8	22.9	23.1	23.4	23.8	24.0	23.8	24.0	24.4	**22.4**	**24.4**	**19.3**
26	24.7	24.9	24.1	23.9	23.1	22.4	22.2	23.1	22.6	21.9	22.2	22.5	22.6	22.7	22.6	22.8	23.2	23.3	23.5	23.6	23.5	23.9	24.3	24.2	**23.2**	**24.9**	**21.9**
27	24.6	24.2	24.3	24.1	23.8	23.9	24.0	22.8	22.2	21.1	21.8	21.7	22.1	21.7	22.1	22.2	22.6	23.1	23.4	23.3	23.4	23.4	23.7	23.8	**23.1**	**24.6**	**21.1**
28	23.9	24.1	23.8	23.8	24.0	24.1	24.1	22.5	22.1	21.4	21.5	21.4	21.2	21.3	21.2	21.2	22.0	22.3	22.8	22.8	22.8	22.7	23.0	22.9	**22.6**	**24.1**	**21.2**
29	22.9	23.3	23.4	23.5	23.9	24.0	24.0	24.1	24.1	23.6	23.5	23.1	22.8	22.8	22.9	23.0	23.5	23.6	23.5	23.9	24.3	24.1	24.2	24.5	**23.6**	**24.5**	**22.8**
30	24.4	24.3	24.2	24.2	24.3	24.3	24.5	23.9	23.4	22.6	22.5	22.4	21.9	22.4	23.0	23.9	24.4	23.0	21.9	21.6	21.2	20.9	20.8	20.6	**22.9**	**24.5**	**20.6**
31	20.6	20.5	20.5	19.9	19.2	18.5	17.9	17.6	19.4	21.6	23.9	24.0	24.5	24.3	25.2	25.0	24.1	22.3	21.6	20.6	19.4	18.9	18.2	17.3	**21.0**	**25.2**	**17.3**
MEAN	**22.4**	**22.2**	**22.0**	**21.9**	**21.9**	**21.8**	**21.7**	**22.3**	**22.5**	**22.5**	**22.7**	**22.9**	**22.9**	**22.9**	**23.0**	**23.2**	**23.5**	**23.5**	**23.4**	**23.2**	**23.0**	**22.8**	**22.6**	**22.3**	**22.6**		
MAX	**24.7**	**24.9**	**24.7**	**25.0**	**25.1**	**25.0**	**24.6**	**24.5**	**24.2**	**24.6**	**24.5**	**24.7**	**24.7**	**24.6**	**25.2**	**25.0**	**25.1**	**24.8**	**24.3**	**24.7**	**25.1**	**25.0**	**25.0**	**24.9**		**25.2**	
MIN	**18.4**	**18.0**	**17.2**	**17.0**	**16.8**	**16.3**	**16.0**	**17.6**	**19.4**	**21.1**	**21.2**	**21.4**	**21.2**	**21.3**	**21.2**	**21.2**	**21.9**	**22.3**	**21.6**	**20.6**	**19.4**	**18.9**	**18.2**	**17.3**			**16.0**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 744 DATA RECOVERY RATE = 100.0%

MONTHLY MEAN = 22.6 deg C

MAXIMUM SHELTER TEMPERATURE = 25.2 deg C DATE OF OCCURRENCE = 10/31 AT 1500 MAXIMUM DAILY MEAN = 23.8 deg C DATE OF OCCURRENCE = 10/20

MINIMUM SHELTER TEMPERATURE = 16.0 deg C DATE OF OCCURRENCE = 10/23 AT 0700 MINUMUM DAILY MEAN = 20.8 deg C DATE OF OCCURRENCE = 10/23

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

CSX AQ5

SHELTER TEMPERATURE in deg C for NOVEMBER, 2023

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	16.5	15.8	15.3	14.3	13.9	13.5	13.4	13.8	15.0	16.4	18.2	19.8	20.7	21.2	21.1	19.7	17.9	16.1	15.5	15.2	14.7	14.0	13.4	12.9	**16.2**	**21.2**	**12.9**
2	12.4	12.1	12.0	12.3	11.9	12.4	12.6	13.9	18.1	22.0	24.1	24.4	24.2	24.4	24.4	22.7	21.0	18.7	17.9	17.3	16.7	16.2	15.8	15.4	**17.6**	**24.4**	**11.9**
3	15.0	13.9	12.9	12.1	12.2	11.8	11.8	15.1	20.2	23.1	23.4	23.7	23.9	23.6	23.7	24.5	23.9	22.0	21.0	20.6	20.0	19.4	18.9	17.7	**18.9**	**24.5**	**11.8**
4	16.5	16.0	15.7	15.9	16.2	16.0	16.1	18.0	21.7	23.1	23.4	23.4	24.4	24.4	24.4	24.8	24.2	24.5	24.6	25.2	24.9	23.3	21.9	20.9	**21.2**	**25.2**	**15.7**
5	20.3	19.6	18.9	18.7	18.3	18.1	17.8	18.8	23.3	22.2	22.7	22.5	22.4	22.4	22.5	22.9	23.6	24.2	24.5	24.7	24.1	23.4	23.0	22.4	**21.7**	**24.7**	**17.8**
6	21.8	21.4	21.2	20.3	19.7	19.3	18.8	20.0	22.9	23.6	23.9	23.9	24.0	24.4	24.2	24.4	24.7	24.6	24.2	24.2	24.2	24.5	24.5	23.8	**22.9**	**24.7**	**18.8**
7	23.8	24.2	24.0	24.3	24.4	24.4	24.6	25.0	24.4	23.8	23.5	23.2	23.2	23.2	23.0	22.6	23.0	23.7	23.7	24.2	24.7	24.8	24.2	23.7	**23.9**	**25.0**	**22.6**
8	23.4	22.9	22.1	21.1	20.4	19.8	18.9	19.9	22.4	23.2	23.3	23.3	23.4	24.2	25.1	24.3	24.4	23.2	22.5	22.2	21.4	20.9	20.8	20.9	**22.3**	**25.1**	**18.9**
9	21.2	21.7	21.9	21.7	21.3	21.8	22.0	22.7	23.2	22.4	22.5	22.6	22.5	23.2	23.6	23.5	23.4	23.5	23.9	24.2	24.5	24.7	24.3	23.6	**22.9**	**24.7**	**21.2**
10	23.2	23.2	23.7	24.6	24.8	24.3	23.6	23.2	21.9	19.6	19.5	17.8	17.1	17.0	18.4	19.5	19.4	18.0	17.2	16.8	16.6	16.4	16.3	16.3	**19.9**	**24.8**	**16.3**
11	16.3	16.3	16.3	16.2	15.9	15.5	15.2	15.6	17.9	20.3	23.8	23.7	23.8	24.5	24.4	24.4	24.4	23.1	22.6	22.1	21.1	20.8	20.1	19.4	**20.2**	**24.5**	**15.2**
12	18.7	18.2	17.6	17.2	16.8	16.6	16.1	15.9	16.9	19.4	21.6	22.4	24.1	24.5	24.6	24.3	22.8	19.8	18.6	17.5	16.9	16.2	15.4	14.6	**19.0**	**24.6**	**14.6**
13	14.0	13.5	13.2	12.6	11.9	12.1	12.7	12.7	16.5	21.8	24.4	25.4	25.6	24.9	25.5	24.9	24.7	22.1	20.5	19.6	18.7	18.2	17.5	17.1	**18.8**	**25.6**	**11.9**
14	16.7	16.4	16.8	16.8	16.3	15.9	15.5	16.4	19.9	23.3	24.4	24.5	24.5	24.1	24.2	24.5	24.2	22.4	21.2	19.9	18.6	17.7	16.7	16.0	**19.9**	**24.5**	**15.5**
15	16.2	16.1	16.0	15.8	15.4	15.0	14.7	15.1	17.9	21.6	24.0	23.9	24.4	24.4	24.1	24.0	23.4	22.4	22.1	21.7	21.3	20.9	20.8	20.7	**20.1**	**24.4**	**14.7**
16	20.5	19.4	18.0	17.1	16.8	16.7	16.2	17.3	21.5	22.7	22.9	23.3	23.2	24.1	24.0	23.9	24.2	24.1	24.1	23.5	22.8	22.1	20.9	20.3	**21.2**	**24.2**	**16.2**
17	19.7	19.2	18.9	18.6	18.4	18.1	18.0	19.6	23.7	23.5	23.2	22.9	22.7	22.6	22.5	23.1	23.5	23.8	24.0	23.6	23.8	23.8	23.8	24.0	**21.9**	**24.0**	**18.0**
18	24.0	24.2	24.1	24.5	24.7	24.7	24.7	23.9	22.8	21.8	22.6	23.7	24.0	24.0	24.6	23.5	21.1	19.4	18.5	17.9	17.4	16.8	16.2	15.7	**21.9**	**24.7**	**15.7**
19	15.4	15.5	15.6	15.4	14.8	14.2	13.8	15.1	19.2	22.9	24.4	24.4	24.1	24.1	23.9	24.8	23.7	22.4	21.3	20.5	19.0	18.0	17.3	16.5	**19.4**	**24.8**	**13.8**
20	16.1	15.6	15.8	15.6	15.2	14.6	14.1	15.2	18.2	21.3	23.0	24.5	24.5	24.3	23.3	20.8	19.1	18.2	18.1	18.1	17.8	16.9	16.2	15.8	**18.4**	**24.5**	**14.1**
21	15.6	15.6	15.6	15.4	15.5	15.6	15.9	15.8	---	---	---	---	---	---	---	---	16.2	18.3	19.3	20.0	20.2	20.4	21.2	21.9	**---**	**---**	**---**
22	21.8	22.2	22.4	21.9	21.2	20.4	20.1	20.1	20.6	21.5	23.7	23.8	24.9	25.1	23.3	22.1	21.1	20.4	19.7	19.3	19.1	18.8	18.6	18.7	**21.3**	**25.1**	**18.6**
23	18.4	17.8	16.8	16.2	15.7	15.2	14.7	15.3	17.2	19.4	21.1	22.6	24.0	24.9	24.8	24.7	23.5	22.2	21.2	20.1	18.8	17.9	16.6	16.1	**19.4**	**24.9**	**14.7**
24	16.2	16.3	16.4	16.0	15.5	15.0	14.8	14.5	16.4	19.9	22.0	23.8	24.8	24.3	22.7	21.0	20.1	19.4	18.2	17.2	16.5	15.7	14.6	13.3	**18.1**	**24.8**	**13.3**
25	12.4	12.0	12.3	12.3	12.5	12.5	12.4	12.1	12.1	14.5	17.0	20.7	22.4	22.3	22.1	20.7	17.7	15.4	14.2	13.5	12.9	12.1	11.7	12.2	**15.0**	**22.4**	**11.7**
26	12.0	12.1	12.5	12.9	13.0	13.5	14.4	14.7	17.0	20.2	20.7	21.3	20.8	20.7	20.4	18.5	17.7	17.5	16.6	16.1	16.4	17.3	17.1	16.5	**16.7**	**21.3**	**12.0**
27	16.3	16.2	16.2	15.9	15.1	14.6	13.9	14.6	17.5	20.8	20.8	18.8	18.5	18.7	19.1	17.2	14.9	13.0	12.3	12.4	12.5	12.6	12.3	12.4	**15.7**	**20.8**	**12.3**
28	12.1	12.0	12.7	13.2	13.3	12.9	12.9	12.5	12.9	14.4	13.6	13.7	14.3	13.0	12.6	12.8	13.2	13.3	13.3	13.2	13.2	13.2	13.1	13.3	**13.1**	**14.4**	**12.0**
29	13.4	13.2	13.2	13.2	13.2	13.1	12.9	12.2	12.0	13.2	14.8	16.4	17.4	18.2	19.1	16.9	14.6	13.6	12.5	11.9	12.4	12.5	12.3	12.4	**13.9**	**19.1**	**11.9**
30	12.4	12.4	12.5	12.4	12.3	12.4	12.4	12.4	13.9	17.5	21.0	23.8	24.0	24.3	24.2	23.7	20.7	18.7	17.5	17.2	16.8	15.6	14.8	14.2	**17.0**	**24.3**	**12.3**
MEAN	**17.4**	**17.2**	**17.0**	**16.8**	**16.6**	**16.3**	**16.2**	**16.7**	**18.9**	**20.7**	**21.8**	**22.4**	**22.7**	**22.8**	**22.8**	**22.2**	**21.2**	**20.3**	**19.7**	**19.3**	**18.9**	**18.5**	**18.0**	**17.6**	**19.2**		
MAX	**24.0**	**24.2**	**24.1**	**24.6**	**24.8**	**24.7**	**24.7**	**25.0**	**24.4**	**23.8**	**24.4**	**25.4**	**25.6**	**25.1**	**25.5**	**24.9**	**24.7**	**24.6**	**24.6**	**25.2**	**24.9**	**24.8**	**24.5**	**24.0**		**25.6**	
MIN	**12.0**	**12.0**	**12.0**	**12.1**	**11.9**	**11.8**	**11.8**	**12.1**	**12.0**	**13.2**	**13.6**	**13.7**	**14.3**	**13.0**	**12.6**	**12.8**	**13.2**	**13.0**	**12.3**	**11.9**	**12.4**	**12.1**	**11.7**	**12.2**			**11.7**

POSSIBLE NUMBER OF OBSERVATIONS = 720 ACTUAL NUMBER OF OBSERVATIONS = 712 DATA RECOVERY RATE = 98.9%

MONTHLY MEAN = 19.2 deg C

MAXIMUM SHELTER TEMPERATURE = 25.6 deg C DATE OF OCCURRENCE = 11/13 AT 1300 MAXIMUM DAILY MEAN = 23.9 deg C DATE OF OCCURRENCE = 11/7

MINIMUM SHELTER TEMPERATURE = 11.7 deg C DATE OF OCCURRENCE = 11/25 AT 2300 MINUMUM DAILY MEAN = 13.1 deg C DATE OF OCCURRENCE = 11/28

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

CSX AQ5

SHELTER TEMPERATURE in deg C for DECEMBER, 2023

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	13.4	12.7	12.3	11.9	11.8	12.1	11.9	12.6	14.7	17.2	18.8	19.7	20.9	19.7	19.3	19.4	18.7	18.1	18.4	19.3	19.3	19.1	19.7	20.3	**16.7**	**20.9**	**11.8**
2	20.4	20.6	20.0	19.1	19.7	20.1	20.4	20.8	21.4	22.0	22.7	24.0	24.7	24.5	23.9	22.9	21.3	20.7	21.2	21.3	21.5	21.7	21.8	21.6	**21.6**	**24.7**	**19.1**
3	21.2	20.7	19.8	19.4	19.0	19.2	18.8	19.1	19.8	21.0	21.8	22.6	23.8	24.8	24.9	24.5	24.7	24.7	24.2	24.0	23.9	23.3	22.4	21.8	**22.1**	**24.9**	**18.8**
4	20.0	19.0	18.6	18.4	17.5	17.1	16.9	17.1	19.5	22.8	21.9	21.2	21.7	22.4	23.0	22.5	19.9	18.4	18.2	17.9	16.9	16.0	15.1	14.4	**19.0**	**23.0**	**14.4**
5	14.1	13.5	13.1	12.8	12.8	12.8	12.4	13.5	15.0	16.1	18.8	20.0	22.0	21.3	20.3	20.0	18.7	17.5	17.6	17.4	17.4	16.9	15.6	14.5	**16.4**	**22.0**	**12.4**
6	14.3	14.2	14.1	13.9	13.7	13.6	13.1	12.5	12.5	13.3	13.8	15.4	15.3	15.1	15.3	14.4	13.6	12.5	12.7	12.7	12.1	11.8	12.3	12.3	**13.5**	**15.4**	**11.8**
7	12.4	12.2	12.3	12.2	12.2	12.2	12.1	12.1	12.6	13.9	14.7	15.5	17.2	17.4	17.0	16.7	16.8	17.1	17.6	18.2	18.5	18.4	18.0	17.6	**15.2**	**18.5**	**12.1**
8	15.9	14.1	12.9	12.2	12.2	12.0	12.0	12.4	15.1	17.6	21.3	21.6	24.5	24.7	24.0	22.3	20.1	18.8	18.5	18.2	17.7	17.7	16.8	16.4	**17.5**	**24.7**	**12.0**
9	15.8	15.3	15.3	15.0	14.9	15.9	16.7	16.6	16.5	17.6	19.2	21.6	23.7	24.7	23.4	20.5	19.6	19.7	19.0	18.4	18.3	18.2	19.1	19.1	**18.5**	**24.7**	**14.9**
10	19.0	18.8	18.7	18.0	19.3	20.0	20.3	21.0	22.3	22.3	21.2	21.8	22.6	23.7	24.5	24.3	24.4	24.5	24.5	24.6	21.8	16.9	15.4	13.9	**21.0**	**24.6**	**13.9**
11	12.1	12.0	12.3	12.6	12.7	12.6	12.4	12.4	13.1	15.3	16.8	16.9	17.1	17.3	17.4	16.4	14.5	12.9	12.3	12.0	11.9	11.9	12.1	12.3	**13.7**	**17.4**	**11.9**
12	12.3	12.3	12.4	12.4	12.3	12.4	12.4	11.9	13.0	16.1	18.6	21.4	23.2	24.1	24.4	22.8	19.5	17.1	15.7	15.0	14.2	13.6	13.1	12.8	**16.0**	**24.4**	**11.9**
13	12.2	12.1	12.1	12.4	12.3	12.3	12.1	12.5	16.5	19.2	21.7	21.5	20.5	19.1	18.4	17.2	16.3	15.5	14.7	13.6	12.5	11.9	12.1	12.1	**15.0**	**21.7**	**11.9**
14	12.3	12.4	12.5	12.6	12.6	12.6	12.6	12.3	13.1	17.1	20.8	21.3	20.9	23.2	24.9	22.8	19.3	16.9	15.4	13.7	12.9	12.6	12.0	12.1	**15.8**	**24.9**	**12.0**
15	12.3	12.2	12.2	12.0	12.2	12.1	12.0	12.3	15.6	20.1	22.4	24.0	25.1	24.5	24.4	24.4	23.6	21.9	20.4	19.0	18.1	16.9	15.5	14.5	**17.8**	**25.1**	**12.0**
16	13.7	13.2	13.1	13.2	12.9	12.4	12.2	12.5	14.6	19.8	23.7	22.3	24.2	24.3	24.9	24.7	24.3	22.4	20.6	19.1	17.9	17.5	17.6	17.7	**18.3**	**24.9**	**12.2**
17	17.5	17.2	17.5	18.0	18.7	18.8	18.8	19.2	19.5	20.0	21.3	22.8	24.3	24.9	24.8	24.1	23.5	23.0	22.1	21.7	21.4	21.4	21.5	21.7	**21.0**	**24.9**	**17.2**
18	22.2	21.9	21.4	21.3	20.7	20.8	20.4	19.9	18.5	18.5	19.6	21.1	21.2	20.3	19.7	19.6	18.2	15.9	15.0	15.7	15.3	14.7	13.3	12.4	**18.7**	**22.2**	**12.4**
19	12.2	12.0	11.9	12.2	12.6	12.5	12.4	12.4	12.9	14.6	14.4	13.6	13.2	13.0	12.6	12.7	12.4	12.6	12.5	12.6	12.7	12.6	12.5	12.7	**12.7**	**14.6**	**11.9**
20	12.7	12.8	12.7	12.7	12.7	12.6	12.8	12.5	12.6	14.4	16.2	17.3	19.1	20.1	21.5	20.9	18.4	16.4	15.4	14.4	13.6	13.3	12.6	12.0	**15.0**	**21.5**	**12.0**
21	12.2	12.0	12.0	11.8	12.0	12.5	12.9	12.0	14.0	14.1	15.8	19.4	21.3	23.3	21.3	18.8	17.5	16.8	16.7	16.6	16.3	16.6	16.9	17.1	**15.8**	**23.3**	**11.8**
22	17.0	17.0	16.7	15.9	14.7	13.3	12.3	12.2	12.7	14.8	18.2	20.2	20.7	20.2	19.8	18.3	17.0	16.2	15.8	15.8	15.3	14.3	14.1	14.0	**16.1**	**20.7**	**12.2**
23	13.8	14.1	14.4	14.9	14.8	14.3	14.7	15.1	15.3	16.5	18.4	18.8	18.8	18.3	17.8	18.0	17.7	17.7	18.9	19.3	19.2	18.8	18.5	18.1	**16.9**	**19.3**	**13.8**
24	17.7	17.1	16.9	16.9	17.5	17.9	17.9	17.8	18.5	19.6	21.1	22.9	22.7	22.2	21.6	21.1	20.3	19.5	18.9	18.9	18.7	19.2	19.5	19.6	**19.3**	**22.9**	**16.9**
25	19.4	19.1	19.1	19.5	19.6	19.0	18.6	18.5	19.3	20.8	22.6	24.8	24.8	24.6	24.3	24.3	23.6	22.2	20.9	20.0	19.5	19.1	18.8	19.1	**20.9**	**24.8**	**18.5**
26	19.3	18.6	18.5	19.2	19.4	19.4	19.4	18.4	17.9	18.6	19.4	19.6	19.7	19.9	20.5	20.7	20.3	20.1	20.3	20.6	20.6	20.2	18.9	18.0	**19.5**	**20.7**	**17.9**
27	18.1	18.1	17.4	17.8	17.9	18.5	18.2	17.7	18.1	18.7	19.2	19.8	20.3	20.3	20.5	21.3	21.3	20.7	20.9	20.8	20.8	20.4	21.1	22.1	**19.6**	**22.1**	**17.4**
28	22.6	23.4	23.9	23.7	23.0	22.7	22.7	22.2	22.2	22.9	23.5	23.6	23.6	24.2	24.6	25.0	25.2	25.0	23.2	21.8	21.5	22.0	21.8	21.6	**23.2**	**25.2**	**21.5**
29	21.0	20.5	20.9	20.5	20.2	19.4	19.3	19.4	20.8	23.0	24.3	24.4	24.1	24.4	24.4	24.3	22.6	22.0	21.5	20.2	18.5	16.7	16.2	16.1	**21.0**	**24.4**	**16.1**
30	16.0	15.7	15.8	15.0	14.0	13.4	13.0	13.0	15.6	17.5	17.1	17.4	17.6	18.2	18.9	19.4	18.9	18.0	17.3	16.8	16.8	16.3	15.6	15.7	**16.4**	**19.4**	**13.0**
31	16.1	16.1	15.9	15.5	15.3	15.1	15.1	15.1	15.7	18.9	21.5	21.9	23.3	23.5	23.6	22.8	19.7	17.8	17.7	17.2	17.6	18.0	16.8	16.7	**18.2**	**23.6**	**15.1**
MEAN	**16.1**	**15.8**	**15.7**	**15.6**	**15.5**	**15.5**	**15.4**	**15.4**	**16.4**	**18.2**	**19.7**	**20.6**	**21.4**	**21.6**	**21.5**	**20.9**	**19.7**	**18.8**	**18.3**	**18.0**	**17.5**	**17.0**	**16.7**	**16.5**	**17.8**		
MAX	**22.6**	**23.4**	**23.9**	**23.7**	**23.0**	**22.7**	**22.7**	**22.2**	**22.3**	**23.0**	**24.3**	**24.8**	**25.1**	**24.9**	**24.9**	**25.0**	**25.2**	**25.0**	**24.5**	**24.6**	**23.9**	**23.3**	**22.4**	**22.1**		**25.2**	
MIN	**12.1**	**12.0**	**11.9**	**11.8**	**11.8**	**12.0**	**11.9**	**11.9**	**12.5**	**13.3**	**13.8**	**13.6**	**13.2**	**13.0**	**12.6**	**12.7**	**12.4**	**12.5**	**12.3**	**12.0**	**11.9**	**11.8**	**12.0**	**12.0**			**11.8**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 744 DATA RECOVERY RATE = 100.0%

MONTHLY MEAN = 17.8 deg C

MAXIMUM SHELTER TEMPERATURE = 25.2 deg C DATE OF OCCURRENCE = 12/28 AT 1700 MAXIMUM DAILY MEAN = 23.2 deg C DATE OF OCCURRENCE = 12/28

MINIMUM SHELTER TEMPERATURE = 11.8 deg C DATE OF OCCURRENCE = 12/1 AT 0500 MINUMUM DAILY MEAN = 12.7 deg C DATE OF OCCURRENCE = 12/19

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

CSX AQ8

SHELTER TEMPERATURE in deg C for OCTOBER, 2023

Hr Beg Hr End Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	28.0	27.8	28.6	28.2	27.9	27.9	28.1	27.9	27.1	26.5	26.0	25.6	25.4	25.2	25.1	25.1	25.2	26.1	26.8	27.0	27.4	27.3	27.7	28.1	**26.9**	**28.6**	**25.1**
2	28.5	27.9	28.1	28.1	28.0	28.9	28.1	27.1	26.8	25.9	25.6	25.4	25.2	25.1	24.9	25.2	25.2	26.1	26.4	26.5	26.8	27.1	27.1	27.2	**26.7**	**28.9**	**24.9**
3	27.2	27.5	27.7	27.7	27.7	28.6	27.5	26.9	26.4	26.0	25.7	25.4	25.2	24.8	24.8	25.1	25.1	26.0	26.4	26.8	26.9	27.1	27.1	27.4	**26.5**	**28.6**	**24.8**
4	27.4	27.7	27.9	27.9	28.2	28.1	28.4	27.1	26.4	25.9	25.6	25.4	25.3	25.1	25.1	25.0	25.3	26.1	26.9	27.6	27.5	28.3	28.8	28.4	**26.9**	**28.8**	**25.0**
5	27.9	27.4	27.3	27.2	27.1	27.1	27.9	27.6	26.6	26.3	25.9	25.5	25.7	25.3	25.3	25.4	25.5	26.5	26.6	26.4	26.5	26.6	26.7	27.0	**26.6**	**27.9**	**25.3**
6	26.7	26.8	26.9	26.8	26.7	26.9	26.7	26.8	26.2	26.0	25.8	25.5	25.8	25.8	25.6	25.7	25.8	26.4	26.4	26.6	26.7	26.7	26.6	26.6	**26.4**	**26.9**	**25.5**
7	26.8	26.6	26.8	27.1	27.3	27.8	28.3	28.1	28.7	26.2	25.1	25.5	26.7	28.3	27.7	27.8	28.0	27.2	25.0	23.7	22.7	22.0	21.5	21.0	**26.1**	**28.7**	**21.0**
8	20.6	19.9	19.6	19.4	19.2	19.0	19.1	20.9	23.6	27.1	28.2	28.2	28.0	27.8	28.1	27.9	27.9	26.0	24.0	22.8	21.9	21.3	20.7	20.0	**23.4**	**28.2**	**19.0**
9	19.6	19.2	18.8	18.6	18.4	18.0	18.4	19.7	22.3	26.7	28.6	28.0	27.6	28.0	27.8	26.9	27.7	27.7	26.8	25.5	24.8	23.9	23.0	23.0	**23.7**	**28.6**	**18.0**
10	23.3	23.0	22.9	22.8	22.5	22.0	21.9	23.0	24.4	27.4	27.3	26.9	26.5	26.8	27.2	26.7	26.9	27.4	27.6	26.8	26.5	26.1	25.3	24.5	**25.2**	**27.6**	**21.9**
11	24.1	23.6	23.2	22.4	21.7	21.2	20.6	22.8	26.1	27.8	27.4	27.1	26.4	26.3	26.3	26.4	27.0	27.6	28.2	27.5	26.3	25.7	24.9	24.7	**25.2**	**28.2**	**20.6**
12	24.7	24.2	23.3	22.5	21.9	22.5	23.2	25.6	28.1	27.0	26.5	26.5	26.1	26.0	25.9	26.1	26.3	27.4	28.4	28.4	27.9	27.7	27.7	27.5	**25.9**	**28.4**	**21.9**
13	28.2	28.6	28.2	26.9	25.4	24.2	23.4	24.7	26.6	27.9	27.4	27.1	26.7	26.3	26.2	26.4	26.8	27.8	27.8	27.2	26.5	25.7	25.6	26.2	**26.6**	**28.6**	**23.4**
14	26.4	25.5	25.2	24.9	25.1	25.1	24.7	25.5	25.1	24.2	24.9	25.5	25.5	25.3	25.6	24.3	23.9	23.7	23.3	22.9	22.0	21.0	20.7	20.0	**24.2**	**26.4**	**20.0**
15	19.6	19.4	19.3	19.6	19.9	19.7	19.4	20.5	22.0	24.7	26.7	27.7	27.8	27.9	27.6	26.7	27.4	25.3	23.5	22.6	21.9	21.0	20.0	19.4	**22.9**	**27.9**	**19.3**
16	19.1	18.7	18.2	18.0	18.0	17.9	17.8	20.6	22.7	25.4	26.7	28.7	28.8	28.5	28.3	27.6	26.5	25.7	25.0	24.9	24.3	23.9	23.3	23.2	**23.4**	**28.8**	**17.8**
17	22.8	22.3	21.8	21.9	21.9	21.7	21.3	22.7	24.0	26.0	28.2	27.8	28.5	28.6	28.2	27.7	27.0	25.8	25.0	24.0	23.5	23.2	22.6	22.1	**24.5**	**28.6**	**21.3**
18	21.6	21.1	20.3	20.0	20.7	21.3	20.8	23.3	25.5	28.3	28.1	28.2	28.0	27.5	27.5	27.4	28.1	26.5	25.0	24.3	24.1	24.2	23.3	22.4	**24.5**	**28.3**	**20.0**
19	21.5	21.0	20.7	20.6	20.6	20.3	20.4	23.0	26.8	27.6	27.1	26.5	26.6	26.4	26.8	26.9	27.6	28.0	27.2	26.9	26.5	26.4	26.4	26.1	**24.9**	**28.0**	**20.3**
20	25.8	25.8	25.3	25.1	24.7	24.3	24.4	25.1	26.7	27.5	27.0	26.3	26.5	26.7	27.2	27.7	27.2	27.1	26.6	26.6	26.8	26.9	26.9	25.9	**26.3**	**27.7**	**24.3**
21	24.7	24.7	24.6	24.5	24.3	24.2	23.6	23.1	25.2	28.1	28.6	28.3	27.8	28.7	28.1	28.7	27.8	26.1	24.6	23.8	23.5	23.2	22.6	21.9	**25.4**	**28.7**	**21.9**
22	21.4	21.6	21.4	21.3	21.8	22.0	22.1	22.0	23.2	26.3	26.1	27.0	28.5	29.3	29.5	28.2	27.9	24.9	23.1	22.1	21.5	20.8	20.0	19.5	**23.8**	**29.5**	**19.5**
23	19.0	18.6	18.3	17.7	17.3	16.8	16.3	16.4	18.6	22.2	25.6	28.3	28.7	28.1	27.6	27.6	28.3	27.6	25.5	23.5	22.0	20.9	20.1	19.4	**22.3**	**28.7**	**16.3**
24	18.8	18.4	18.1	17.9	17.7	17.4	17.5	18.6	22.8	27.6	27.3	27.1	27.0	26.7	26.5	26.6	27.0	27.2	26.3	25.0	24.2	23.6	23.1	22.8	**23.1**	**27.6**	**17.4**
25	22.4	21.7	21.0	20.1	20.0	20.0	19.7	21.2	24.4	27.4	27.0	26.0	25.9	26.2	26.0	26.3	26.9	27.3	27.8	28.3	28.4	28.5	28.3	27.7	**24.9**	**28.5**	**19.7**
26	26.3	25.4	24.4	23.6	23.0	22.6	22.3	23.1	26.8	27.1	26.7	26.3	26.0	26.0	25.9	26.0	26.6	27.4	27.8	28.8	28.7	28.3	27.7	27.0	**26.0**	**28.8**	**22.3**
27	26.8	26.7	27.0	27.6	27.8	28.2	28.4	27.7	26.8	26.1	25.7	25.3	25.6	25.7	25.8	25.8	25.8	26.7	27.0	27.3	27.6	27.5	27.6	27.6	**26.8**	**28.4**	**25.3**
28	28.1	28.3	28.0	28.0	28.2	27.9	27.5	27.6	26.7	26.0	25.6	25.2	25.2	25.1	24.9	25.0	25.4	25.8	26.3	26.4	26.4	26.4	26.7	26.6	**26.6**	**28.3**	**24.9**
29	27.0	26.9	27.4	27.4	27.8	28.0	27.8	27.9	27.6	27.3	27.6	26.7	26.3	26.1	26.2	26.2	26.8	27.5	27.9	27.7	28.3	28.0	27.4	27.2	**27.3**	**28.3**	**26.1**
30	27.2	27.2	27.2	27.1	27.1	27.4	27.9	27.9	27.3	26.8	26.4	25.9	25.7	26.7	27.5	28.0	26.1	23.3	22.1	21.8	21.5	21.3	21.3	21.1	**25.5**	**28.0**	**21.1**
31	21.0	20.8	20.7	20.1	19.3	18.7	18.1	17.6	18.7	20.7	23.5	25.4	27.0	27.3	26.9	26.2	27.1	24.1	21.8	20.7	20.0	19.2	18.0	16.9	**21.7**	**27.3**	**16.9**
MEAN	**24.3**	**24.0**	**23.8**	**23.6**	**23.5**	**23.4**	**23.3**	**23.9**	**25.2**	**26.3**	**26.6**	**26.6**	**26.6**	**26.7**	**26.6**	**26.5**	**26.6**	**26.4**	**25.9**	**25.5**	**25.1**	**24.8**	**24.5**	**24.1**	**25.2**			
MAX	**28.5**	**28.6**	**28.6**	**28.2**	**28.2**	**28.9**	**28.4**	**28.1**	**28.7**	**28.3**	**28.6**	**28.7**	**28.8**	**29.3**	**29.5**	**28.7**	**28.3**	**28.0**	**28.4**	**28.8**	**28.7**	**28.5**	**28.8**	**28.4**		**29.5**	
MIN	**18.8**	**18.4**	**18.1**	**17.7**	**17.3**	**16.8**	**16.3**	**16.4**	**18.6**	**20.7**	**23.5**	**25.2**	**25.2**	**24.8**	**24.8**	**24.3**	**23.9**	**23.3**	**21.8**	**20.7**	**20.0**	**19.2**	**18.0**	**16.9**			**16.3**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 744 DATA RECOVERY RATE = 100.0%

MONTHLY MEAN = 25.2 deg C

MAXIMUM SHELTER TEMPERATURE = 29.5 deg C DATE OF OCCURRENCE = 10/22 AT 1500 MAXIMUM DAILY MEAN = 27.3 deg C DATE OF OCCURRENCE = 10/29

MINIMUM SHELTER TEMPERATURE = 16.3 deg C DATE OF OCCURRENCE = 10/23 AT 0700 MINUMUM DAILY MEAN = 21.7 deg C DATE OF OCCURRENCE = 10/31

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

CSX AQ8

SHELTER TEMPERATURE in deg C for NOVEMBER, 2023

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	16.6	16.0	15.5	14.8	14.2	13.9	14.0	14.1	15.4	17.1	19.1	20.7	21.5	21.9	22.2	21.3	19.3	17.0	16.1	15.6	15.1	14.6	13.9	13.3	**16.8**	**22.2**	**13.3**
2	12.8	12.5	12.2	11.9	11.8	11.8	12.1	12.2	16.3	21.3	24.8	27.0	27.4	27.5	28.1	27.6	26.6	21.8	19.0	17.5	16.6	15.8	15.1	14.6	**18.5**	**28.1**	**11.8**
3	14.3	14.2	14.0	13.2	13.3	12.9	12.6	13.5	16.7	21.1	24.9	27.0	28.2	27.7	27.6	27.7	27.0	23.7	21.6	20.7	19.7	19.0	18.5	17.9	**19.9**	**28.2**	**12.6**
4	17.1	16.5	16.1	15.9	15.7	15.5	15.4	16.0	19.3	23.1	27.5	27.3	27.5	27.2	27.8	27.8	27.9	27.5	27.0	26.5	25.6	23.9	22.4	21.4	**22.4**	**27.9**	**15.4**
5	20.4	19.6	19.0	18.4	17.9	17.9	17.8	17.9	21.4	27.0	27.2	26.8	27.0	26.8	26.8	27.1	27.4	28.1	27.3	26.3	25.3	24.1	23.1	22.3	**23.5**	**28.1**	**17.8**
6	21.6	21.1	20.8	20.0	19.4	18.9	18.4	18.6	21.1	25.4	28.3	27.9	27.5	27.6	27.2	27.8	27.5	26.1	25.1	24.4	24.4	24.8	24.6	24.1	**23.9**	**28.3**	**18.4**
7	24.0	23.6	23.5	23.7	23.5	23.4	23.8	24.1	24.7	25.9	27.7	27.8	27.4	27.6	27.0	26.4	26.9	28.5	28.4	27.4	26.9	26.5	25.5	24.8	**25.8**	**28.5**	**23.4**
8	24.1	23.5	22.8	21.9	21.2	20.2	19.4	19.4	22.0	25.1	27.8	27.8	27.4	27.3	27.6	27.5	28.2	25.5	23.9	23.0	22.2	21.7	21.0	21.0	**23.8**	**28.2**	**19.4**
9	21.4	22.3	22.8	22.8	21.7	22.0	22.3	23.0	26.2	27.8	27.3	26.7	26.4	26.7	27.3	27.4	27.6	27.4	28.4	27.8	27.1	25.7	25.0	24.3	**25.3**	**28.4**	**21.4**
10	23.9	23.7	24.2	24.6	24.4	24.2	23.8	23.5	22.4	20.0	19.3	18.1	17.3	17.3	17.6	18.0	18.6	18.1	17.4	17.0	16.5	15.8	15.6	15.4	**19.9**	**24.6**	**15.4**
11	15.5	15.7	15.5	15.0	15.0	15.0	15.3	15.7	16.5	18.6	23.9	28.1	27.9	27.5	27.8	27.4	26.8	25.4	24.0	23.0	21.9	21.2	20.3	19.6	**20.9**	**28.1**	**15.0**
12	18.7	18.1	17.4	17.0	16.5	16.3	15.8	15.5	16.3	18.6	20.7	21.6	23.8	26.5	28.3	28.0	26.2	21.7	19.6	18.2	17.0	16.2	15.3	14.4	**19.5**	**28.3**	**14.4**
13	13.6	12.9	12.8	12.6	12.2	12.0	12.3	12.5	16.4	21.5	25.1	26.9	28.1	27.9	28.2	27.7	26.1	22.7	20.7	19.7	19.0	18.5	17.9	17.7	**19.4**	**28.2**	**12.0**
14	17.5	17.6	17.6	17.6	17.2	16.7	16.1	16.2	19.5	23.1	24.9	26.2	27.3	28.3	28.8	28.4	26.4	23.3	21.6	20.1	18.8	17.4	16.7	16.3	**21.0**	**28.8**	**16.1**
15	15.9	15.6	15.6	15.6	15.3	14.8	14.7	15.2	17.9	20.9	24.1	27.3	27.6	28.0	27.8	26.7	24.8	23.3	22.5	21.8	21.2	21.0	20.8	20.3	**20.8**	**28.0**	**14.7**
16	19.8	19.2	18.0	16.9	16.3	15.9	15.6	15.8	20.0	25.0	27.9	27.3	27.1	27.0	27.3	26.8	27.2	26.5	24.9	23.5	22.5	21.9	21.1	20.5	**22.3**	**27.9**	**15.6**
17	20.1	19.7	19.3	18.9	18.6	18.3	18.4	19.0	22.6	26.1	27.9	27.5	27.3	26.8	27.2	27.1	28.5	28.2	27.9	27.9	28.0	28.2	28.3	27.3	**24.5**	**28.5**	**18.3**
18	27.0	27.0	26.8	26.5	26.0	25.5	25.3	24.2	22.8	21.9	22.6	23.9	24.4	24.4	25.2	25.2	23.1	20.3	19.1	18.5	17.9	17.2	16.8	16.3	**22.8**	**27.0**	**16.3**
19	15.9	16.0	15.8	15.4	14.9	14.6	13.5	13.6	15.9	21.1	24.4	26.5	27.8	28.3	29.2	28.6	26.8	23.7	21.7	20.3	19.4	18.7	18.3	17.8	**20.3**	**29.2**	**13.5**
20	17.5	16.6	16.1	15.7	15.2	14.6	14.1	14.3	16.9	19.7	22.1	24.9	26.4	26.0	25.5	23.6	21.4	19.8	18.9	18.4	17.9	17.1	16.5	16.3	**19.0**	**26.4**	**14.1**
21	16.4	16.7	17.0	17.0	16.7	16.8	16.8	17.1	17.8	17.8	12.8	12.2	12.4	12.5	12.7	13.1	14.0	18.1	19.9	20.7	21.1	21.5	21.9	22.3	**16.9**	**22.3**	**12.2**
22	22.1	22.7	23.1	22.7	22.0	21.2	20.8	20.4	20.7	21.8	25.5	26.6	26.5	25.9	24.5	23.5	22.2	21.5	20.7	20.2	20.0	19.7	19.5	19.5	**22.2**	**26.6**	**19.5**
23	19.2	18.7	17.6	16.9	16.3	15.9	15.4	15.5	17.5	19.4	21.6	23.3	24.8	25.9	26.9	27.2	25.9	23.5	21.7	20.3	19.4	19.2	18.9	17.7	**20.4**	**27.2**	**15.4**
24	17.4	17.1	16.9	16.0	15.1	14.6	14.9	14.9	16.6	20.1	22.4	24.2	25.4	25.2	23.7	22.2	21.0	20.2	18.9	17.6	16.7	15.9	14.7	13.2	**18.5**	**25.4**	**13.2**
25	12.2	12.3	12.6	12.7	12.8	12.6	12.9	13.0	12.3	13.5	16.0	19.8	22.3	23.0	24.1	24.3	21.2	17.0	15.0	13.8	12.9	12.3	11.9	12.5	**15.5**	**24.3**	**11.9**
26	12.3	13.1	13.6	14.1	14.2	14.2	14.5	14.6	16.2	18.5	19.5	20.5	20.8	20.7	20.1	19.0	18.2	17.6	17.0	16.4	16.7	17.3	16.9	16.3	**16.8**	**20.8**	**12.3**
27	16.1	16.1	16.3	15.9	15.2	15.1	14.6	14.6	17.1	20.3	22.1	20.6	19.7	19.8	20.2	19.0	16.9	14.1	12.7	12.3	12.3	12.5	11.7	11.9	**16.1**	**22.1**	**11.7**
28	11.5	11.6	12.0	12.3	12.4	12.5	12.9	11.8	13.0	15.1	15.0	15.0	15.8	14.4	12.9	12.9	13.4	13.4	13.5	13.7	13.6	13.4	13.3	13.5	**13.3**	**15.8**	**11.5**
29	13.6	13.5	13.4	13.6	13.6	13.5	13.2	13.1	13.0	13.8	15.4	15.8	16.7	17.3	17.8	16.5	14.7	13.8	13.0	12.3	12.5	12.4	11.9	12.4	**14.0**	**17.8**	**11.9**
30	12.2	12.4	12.2	12.8	12.4	12.4	12.4	11.7	12.5	16.4	21.0	24.0	26.2	27.1	27.4	26.8	23.5	20.3	18.6	17.9	17.3	16.4	16.0	15.6	**17.7**	**27.4**	**11.7**
MEAN	**17.7**	**17.5**	**17.4**	**17.1**	**16.7**	**16.4**	**16.3**	**16.4**	**18.2**	**20.9**	**23.0**	**24.0**	**24.5**	**24.7**	**24.8**	**24.4**	**23.5**	**21.9**	**20.9**	**20.1**	**19.5**	**19.0**	**18.4**	**18.0**	**20.1**		
MAX	**27.0**	**27.0**	**26.8**	**26.5**	**26.0**	**25.5**	**25.3**	**24.2**	**26.2**	**27.8**	**28.3**	**28.1**	**28.2**	**28.3**	**29.2**	**28.6**	**28.5**	**28.5**	**28.4**	**27.9**	**28.0**	**28.2**	**28.3**	**27.3**		**29.2**	
MIN	**11.5**	**11.6**	**12.0**	**11.9**	**11.8**	**11.8**	**12.1**	**11.7**	**12.3**	**13.5**	**12.8**	**12.2**	**12.4**	**12.5**	**12.7**	**12.9**	**13.4**	**13.4**	**12.7**	**12.3**	**12.3**	**12.3**	**11.7**	**11.9**			**11.5**

POSSIBLE NUMBER OF OBSERVATIONS = 720 ACTUAL NUMBER OF OBSERVATIONS = 720 DATA RECOVERY RATE = 100.0%

MONTHLY MEAN = 20.1 deg C

MAXIMUM SHELTER TEMPERATURE = 29.2 deg C DATE OF OCCURRENCE = 11/19 AT 1500 MAXIMUM DAILY MEAN = 25.8 deg C DATE OF OCCURRENCE = 11/7

MINIMUM SHELTER TEMPERATURE = 11.5 deg C DATE OF OCCURRENCE = 11/28 AT 0100 MINUMUM DAILY MEAN = 13.3 deg C DATE OF OCCURRENCE = 11/28

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

CSX AQ8

SHELTER TEMPERATURE in deg C for DECEMBER, 2023

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	14.8	13.9	13.1	12.7	12.2	12.4	12.7	13.5	15.3	17.3	18.8	20.4	21.3	21.0	21.0	20.4	19.9	19.4	19.3	20.2	20.3	20.3	20.8	21.2	**17.6**	**21.3**	**12.2**
2	21.4	21.7	21.0	20.4	20.9	21.3	21.7	21.7	22.1	22.8	23.2	24.2	25.1	25.2	25.4	24.8	23.6	22.6	22.3	22.4	22.5	22.5	22.4	22.4	**22.7**	**25.4**	**20.4**
3	22.1	21.4	20.5	20.4	20.3	20.4	20.6	20.7	21.0	21.8	22.2	23.0	24.3	25.2	26.0	26.0	25.9	25.6	25.4	25.1	24.7	23.8	22.7	22.3	**23.0**	**26.0**	**20.3**
4	21.2	20.4	19.9	19.5	18.8	18.5	18.5	18.2	19.5	23.0	22.9	22.6	23.1	23.8	24.6	24.7	21.9	20.3	20.1	19.6	18.8	17.9	17.0	16.4	**20.5**	**24.7**	**16.4**
5	15.8	15.2	15.0	14.5	14.3	14.0	13.8	13.9	15.4	17.0	19.7	21.1	22.9	22.3	21.5	20.9	19.5	18.3	18.4	18.7	18.7	17.8	16.2	15.0	**17.5**	**22.9**	**13.8**
6	15.1	15.2	15.2	14.9	14.5	14.2	13.8	13.3	13.5	14.4	14.9	16.6	16.3	16.0	16.4	15.9	15.4	13.9	14.0	14.1	13.5	12.8	12.2	11.6	**14.5**	**16.6**	**11.6**
7	12.2	11.8	12.3	12.2	12.3	11.6	12.3	11.9	12.0	13.3	14.2	15.1	16.9	17.3	16.8	16.7	16.9	17.5	17.8	18.7	19.3	19.4	19.2	18.8	**15.3**	**19.4**	**11.6**
8	17.4	16.1	15.2	14.3	14.0	13.9	13.7	13.7	15.6	18.0	22.5	26.1	28.2	28.7	28.3	27.3	24.0	21.5	20.5	19.9	19.2	18.5	17.6	17.3	**19.6**	**28.7**	**13.7**
9	16.7	15.8	15.9	15.5	15.5	16.5	17.2	17.5	17.8	18.7	20.5	23.3	25.6	27.0	26.4	23.2	21.6	21.2	20.3	19.5	19.3	19.2	19.9	20.0	**19.8**	**27.0**	**15.5**
10	19.9	20.0	20.1	19.5	20.7	21.3	21.7	22.3	23.5	23.7	22.3	22.6	23.8	25.0	25.7	25.3	25.4	25.4	25.2	25.3	22.4	17.6	16.1	14.5	**22.1**	**25.7**	**14.5**
11	12.8	12.4	12.6	12.8	13.3	12.8	12.1	12.4	13.8	15.4	17.7	18.3	17.9	18.1	18.5	18.1	16.3	14.1	13.1	12.7	12.6	12.5	11.9	12.0	**14.3**	**18.5**	**11.9**
12	12.0	12.2	12.6	12.3	12.7	12.4	12.6	12.1	13.5	15.7	18.8	21.0	21.8	22.5	23.1	23.3	21.1	18.0	16.5	15.7	14.7	14.1	13.6	13.4	**16.1**	**23.3**	**12.0**
13	13.3	13.1	12.7	12.4	12.4	12.4	12.0	13.2	16.8	19.5	22.0	23.0	22.0	20.9	20.1	19.2	18.7	17.2	16.3	15.6	14.5	13.6	13.3	12.8	**16.1**	**23.0**	**12.0**
14	12.4	11.9	11.9	12.3	12.2	13.0	12.0	11.8	13.0	16.8	21.4	22.1	21.5	23.6	24.9	24.7	22.5	18.9	16.5	14.7	13.4	12.9	12.3	12.2	**16.2**	**24.9**	**11.8**
15	11.8	12.0	12.0	12.4	12.2	11.9	12.1	12.2	13.6	18.3	22.1	24.5	26.0	27.2	28.5	28.9	26.9	23.9	22.0	20.1	19.0	17.9	16.5	15.1	**18.6**	**28.9**	**11.8**
16	14.6	15.1	16.0	16.2	15.4	14.6	14.0	13.8	14.8	19.4	25.8	28.1	28.0	28.2	27.9	27.6	26.5	23.8	21.7	20.3	19.3	19.0	19.0	18.5	**20.3**	**28.2**	**13.8**
17	17.7	17.1	17.5	18.0	18.6	19.0	19.3	19.3	19.7	20.8	21.6	22.9	24.6	25.1	25.1	24.7	24.0	23.3	22.3	21.9	21.6	21.6	21.7	21.9	**21.2**	**25.1**	**17.1**
18	22.4	22.2	21.7	21.6	21.0	21.1	20.6	20.1	18.7	18.7	20.0	22.0	22.0	21.2	20.9	21.0	19.8	16.9	15.9	16.4	16.1	15.6	14.4	13.2	**19.3**	**22.4**	**13.2**
19	12.7	12.4	12.2	12.0	12.2	11.7	11.9	12.2	12.1	14.4	15.6	15.0	14.6	14.4	13.9	14.1	13.6	12.5	12.3	12.7	12.9	12.6	12.7	12.8	**13.1**	**15.6**	**11.7**
20	12.8	12.9	12.7	12.4	12.7	12.7	12.7	12.9	12.5	14.4	16.8	18.4	20.3	21.4	22.6	23.0	21.0	18.0	16.7	15.9	15.1	14.6	13.8	12.8	**15.8**	**23.0**	**12.4**
21	12.2	12.9	12.9	12.6	12.4	13.3	13.9	13.2	13.0	15.5	17.6	15.4	17.1	21.7	21.0	19.2	18.1	17.4	17.0	16.7	16.5	16.8	17.0	17.2	**15.9**	**21.7**	**12.2**
22	17.2	17.0	16.8	16.5	15.9	15.2	14.4	13.9	14.0	15.5	19.1	21.8	23.5	23.0	22.6	21.2	19.6	18.5	17.7	16.9	16.1	15.6	15.8	16.2	**17.7**	**23.5**	**13.9**
23	16.2	16.0	15.9	15.6	15.1	14.7	14.9	15.3	16.3	18.0	20.3	22.0	22.9	23.4	22.9	21.7	20.6	20.0	20.2	19.9	19.9	19.6	19.4	19.3	**18.8**	**23.4**	**14.7**
24	18.9	18.3	17.9	17.6	17.9	18.3	18.8	18.8	19.1	20.0	21.9	23.9	23.6	23.6	23.7	23.4	22.4	20.8	19.8	19.7	19.7	19.8	19.9	20.0	**20.3**	**23.9**	**17.6**
25	19.7	19.4	19.7	19.9	19.7	19.2	19.1	19.2	19.6	20.7	23.4	27.5	28.8	27.9	27.8	27.8	27.1	24.4	22.3	21.0	20.1	19.4	19.2	19.8	**22.2**	**28.8**	**19.1**
26	20.6	20.4	20.1	20.3	20.6	20.7	20.3	20.1	20.1	20.7	21.4	22.0	21.6	22.1	22.5	22.4	22.0	21.2	20.7	20.7	20.8	20.8	20.3	20.0	**20.9**	**22.5**	**20.0**
27	19.8	19.9	19.8	19.5	19.2	19.1	18.6	18.5	18.9	19.2	19.8	21.3	22.0	21.7	22.4	22.9	22.4	21.3	21.4	21.3	21.3	21.3	21.8	22.8	**20.7**	**22.9**	**18.5**
28	23.3	23.8	24.1	24.0	23.5	23.3	23.4	23.0	22.9	23.6	24.3	24.5	24.5	25.0	26.0	26.0	25.9	25.7	24.5	23.2	22.4	22.6	22.6	22.5	**23.9**	**26.0**	**22.4**
29	22.0	21.4	21.7	21.2	20.8	20.1	19.8	19.3	20.1	22.2	24.1	24.7	26.3	27.0	27.1	26.7	24.5	22.8	22.3	21.2	19.5	17.5	16.9	17.0	**21.9**	**27.1**	**16.9**
30	17.0	16.7	16.7	15.8	14.7	13.9	13.2	13.0	14.4	16.7	17.1	17.8	18.3	18.8	19.5	20.5	19.8	18.9	18.2	17.7	17.7	17.2	16.5	16.3	**16.9**	**20.5**	**13.0**
31	16.4	16.5	16.6	16.4	16.4	16.2	16.2	16.2	16.8	18.8	21.3	22.1	23.7	24.6	24.5	23.6	22.0	19.7	19.2	18.2	18.1	18.0	16.8	17.3	**19.0**	**24.6**	**16.2**
MEAN	**16.9**	**16.6**	**16.5**	**16.3**	**16.2**	**16.1**	**16.1**	**16.0**	**16.8**	**18.5**	**20.4**	**21.7**	**22.5**	**23.0**	**23.1**	**22.7**	**21.6**	**20.1**	**19.4**	**18.9**	**18.4**	**17.8**	**17.4**	**17.2**	**18.8**		
MAX	**23.3**	**23.8**	**24.1**	**24.0**	**23.5**	**23.3**	**23.4**	**23.0**	**23.5**	**23.7**	**25.8**	**28.1**	**28.8**	**28.7**	**28.5**	**28.9**	**27.1**	**25.7**	**25.4**	**25.3**	**24.7**	**23.8**	**22.7**	**22.8**		**28.9**	
MIN	**11.8**	**11.8**	**11.9**	**12.0**	**12.2**	**11.6**	**11.9**	**11.8**	**12.0**	**13.3**	**14.2**	**15.0**	**14.6**	**14.4**	**13.9**	**14.1**	**13.6**	**12.5**	**12.3**	**12.7**	**12.6**	**12.5**	**11.9**	**11.6**			**11.6**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 744 DATA RECOVERY RATE = 100.0%

MONTHLY MEAN = 18.8 deg C

MAXIMUM SHELTER TEMPERATURE = 28.9 deg C DATE OF OCCURRENCE = 12/15 AT 1600 MAXIMUM DAILY MEAN = 23.9 deg C DATE OF OCCURRENCE = 12/28

MINIMUM SHELTER TEMPERATURE = 11.6 deg C DATE OF OCCURRENCE = 12/6 AT 2400 MINUMUM DAILY MEAN = 13.1 deg C DATE OF OCCURRENCE = 12/19

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

CSX Transportation, Inc. Comments on Renewal of State Permit to Operate No. 510-2263 for CSX Transportation Curtis Bay Piers

Appendix 17c: *2024 Q1 Fenceline Monitoring Report submitted May 2024*

SUMMARY OF METEOROLOGICAL AND CONTINUOUS PM_{10} AND $PM_{2.5}$ MONITORING DATA AT CSXT CURTIS BAY PIERS FACILITY MONITORING STATIONS FIRST QUARTER 2024

CSXT Transportation, Inc.

Draft

TRINITY CONSULTANTS
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May 2024

Project 234501.0038

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1.0 EXECUTIVE SUMMARY

This report, prepared by Trinity Consultants, summarizes the PM_{10} and $PM_{2.5}$ monitoring data collected from January 1 through March 31, 2024 from the monitoring stations. CSXT, Curtis Bay Piers operates a coal, ore, limestone, and other dry material storage, transfer, and shipment terminal (Curtis Bay Piers Facility) pursuant to State Permit to Operate No. 510-2263. To meet the requirements of the Permit, CSXT is operating a fenceline network of continuous particulate matter with a diameter of 10 microns or less (PM_{10}) and particulate matter with a diameter of 2.5 microns or smaller ($PM_{2.5}$) monitors and a weather station. CSX installed Federal Equivalent Method (FEM) monitors at two monitoring stations, identified as AQ5 and AQ8, to measure both PM_{10} and $PM_{2.5}$ at the Curtis Bay Piers Facility, a network of eight (8) non-regulatory, community based PM_{10} and $PM_{2.5}$ monitors along the perimeter of the CSX Curtis Bay Piers facility, and a 10-meter tower to collect continuous wind speed and wind direction, temperature, relative humidity, barometric pressure, and precipitation near AQ5. Wind speed and wind direction measurements are also being collected at the perimeter monitoring locations (AQ1, AQ2, AQ3, AQ4, AQ6, and AQ7).

The equipment being operated in and around the perimeter of the Curtis Bay Piers Facility is presented in Table 1-1. The results of the hourly and 24-hour average PM_{10} and $PM_{2.5}$ concentrations collected from the FEM monitors at AQ5 and AQ8 are presented in Tables 1-2 and 1-3.

Table 1-1 Particulate and Meteorological Instrumentation at CSX Monitoring Stations

Station	Parameter	Equipment Manufacturer	Model Number	Serial Number
AQ1	PM_{10}, $PM_{2.5}$	QuantAQ MODULAIR Aeroqual	MODULAIR-PM	MOD386 21092023-2432
AQ2	PM_{10}, $PM_{2.5}$	QuantAQ MODULAIR	MODULAIR-PM	MOD385
AQ3	PM_{10}, $PM_{2.5}$	QuantAQ MODULAIR	MODULAIR-PM	MOD384
AQ4	PM_{10}, $PM_{2.5}$	QuantAQ MODULAIR	MODULAIR-PM	MOD383
AQ5	PM_{10}, $PM_{2.5}$	Teledyne-API	T640X	1690/CSX5
	Wind Direction	Met One	020D	C21028
	Wind Speed	Met One	010C	C21557
	Temperature	Campbell Scientific Inc.	HygroVUE10	E4240
	Relative Humidity	Campbell Scientific Inc.	HygroVUE10	E4240
	Barometric Pressure	Campbell Scientific Inc.	BaroVUE10	1808
	Precipitation	Texas Electronics	TR-525U	93490-1222
	Data Aq. System	Campbell Scientific Inc.	CR1000X	45777
AQ5A	PM_{10}, $PM_{2.5}$	QuantAQ MODULAIR	MODULAIR-PM	MOD266
AQ5B	PM_{10}, $PM_{2.5}$	QuantAQ MODULAIR	MODULAIR-PM	MOD387
AQ5C	PM_{10}, $PM_{2.5}$	QuantAQ MODULAIR Aeroqual	MODULAIR-PM	MOD388 15062020-1263
AQ6	PM_{10}, $PM_{2.5}$	QuantAQ MODULAIR	MODULAIR-PM	MOD267
AQ7	PM_{10}, $PM_{2.5}$	QuantAQ MODULAIR	MODULAIR-PM	MOD265
AQ8	PM_{10}, $PM_{2.5}$	Teledyne-API	T640X	1689/CSX8
	Data Aq. System	Campbell Scientific Inc.	CR310	16073
AQ8A	PM_{10}, $PM_{2.5}$	QuantAQ MODULAIR	MODULAIR-PM	MOD264

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Table 1-2 AQ5 PM_{10} and $PM_{2.5}$ Concentrations for January 1 – March 31 (First Quarter) 2024 in Micrograms per Cubic Meter

Statistics	January (µg/m³)	February (µg/m³)	March (µg/m³)	First Quarter 2024 (µg/m³)
Monthly Mean PM_{10}	17.8	22.6	17.7	19.4
Maximum Hourly PM_{10}	161.3	172.2	145.3	172.2
Second Highest Hourly PM_{10}	83.9	84.5	139.6	139.6
Maximum 24-hour PM_{10}	42.5	55.9	57.9	57.9
Second Highest 24-hour PM_{10}	40.5	43.7	41.8	43.7
Monthly Mean $PM_{2.5}$	9.7	11.2	6.5	9.1
Maximum Hourly $PM_{2.5}$	47.5	39.1	32.0	47.5
Second Highest Hourly $PM_{2.5}$	45.7	38.4	30.9	45.7
Maximum 24-hour $PM_{2.5}$	28.2	29.1	17.9	29.1
Second Highest 24-hour $PM_{2.5}$	26.5	19.7	11.4	26.5

Table 1-3 AQ8 PM_{10} and $PM_{2.5}$ Concentrations for January 1 – March 31 (First Quarter) 2024 in Micrograms per Cubic Meter

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Statistics	January (µg/m³)	February (µg/m³)	March (µg/m³)	First Quarter 2024 (µg/m³)
Monthly Mean PM_{10}	17.4	24.5	21.3	21.1
Maximum Hourly PM_{10}	90.4	142.9	208.2	208.2
Second Highest Hourly PM_{10}	89.4	119.9	166.0	166.0
Maximum 24-hour PM_{10}	42.8	57.5	80.5	80.5
Second Highest 24-hour PM_{10}	37.0	51.1	55.5	55.5
Monthly Mean $PM_{2.5}$	8.8	10.1	6.5	8.5
Maximum Hourly $PM_{2.5}$	49.6	36.9	36.1	49.6
Second Highest Hourly $PM_{2.5}$	47.9	34.4	34.6	47.9
Maximum 24-hour $PM_{2.5}$	28.0	26.3	18.2	28.0
Second Highest 24-hour $PM_{2.5}$	24.9	16.9	11.0	24.9

MODULAIR samplers are operated around the perimeter of the CSXT Curtis Bay facility to give an indication of the $PM_{10}/PM_{2.5}$ at each network location and to show $PM_{10}/PM_{2.5}$ trends. These data are not intended to be used for compliance with the National Ambient Air Quality Standards (NAAQS). The results of the hourly and 24-hour average PM_{10} and $PM_{2.5}$ concentrations collected from the MODULAIR samplers are presented in Tables 1-4 and 1-5.

Table 1-4 Perimeter Network MODULAIR PM_{10} Concentrations for January 1 – March 31 (First Quarter) 2024 in Micrograms per Cubic Meter

Month	Statistic	Station									
		AQ1	AQ2	AQ3	AQ4	AQ5A	AQ5B	AQ5C	AQ6	AQ7	AQ8
January	Mean	17.1	23.8	31.6	19.5	19.9	15.7	NA	17.8	20.2	18.9
	Hourly Maximum	94.1	158.6	169.4	172.6	136.8	129.8	NA	116.7	158.8	127.8
	Second High	89.8	126.6	141.6	160.9	136.2	110.2	NA	109.1	111.4	100.5
	Maximum 24-hour	39.7	56.2	64.7	50.7	51.6	39.5	NA	22.5	60.0	46.1
	Second High 24-hour	37.7	53.3	14.0	46.9	49.8	34.0	NA	10.0	21.4	39.6
February	Mean	21.5	28.7	18.1	20.4	22.3	17.2	10.6	21.6	21.9	24.2
	Hourly Maximum	136.5	166.2	61.7	182.4	111.0	82.5	44.1	102.9	94.9	107.6
	Second High	103.0	165.6	39.5	116.6	110.8	72.7	27.6	83.2	94.1	103.7
	Maximum 24-hour	49.5	63.4	20.7	48.1	52.4	40.8	11.0	49.1	32.2	51.4
	Second High 24-hour	38.3	60.0	13.1	42.4	49.9	35.2	NA	46.2	23.4	47.4
March	Mean	18.0	21.5	21.7	19.5	18.9	15.4	15.5	17.9	19.8	18.6
	Hourly Maximum	159.8	223.9	137.4	117.1	153.4	134.1	146.3	139.6	113.4	149.0
	Second High	151.6	172.4	136.7	113.0	135.6	124.1	115.1	124.5	112.1	148.2
	Maximum 24-hour	69.7	74.7	75.0	55.5	65.0	58.8	53.1	63.3	47.5	66.2
	Second High 24-hour	42.3	52.4	58.5	38.7	42.2	35.5	30.3	41.5	44.0	41.9

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Table 1-5 Perimeter Network MODULAIR $PM_{2.5}$ Concentrations for January 1 – March 31 (First Quarter) 2024 in Micrograms per Cubic Meter

Month	Statistic	Station									
		AQ1	AQ2	AQ3	AQ4	AQ5A	AQ5B	AQ5C	AQ6	AQ7	AQ8
January	Mean	9.2	10.2	15.6	8.7	9.3	8.1	NA	8.8	7.4	9.8
	Hourly Maximum	60.4	59.2	63.3	53.2	52.1	43.4	NA	44.8	34.1	52.1
	Second High	54.4	57.6	58.9	45.1	47.1	41.9	NA	44.2	28.9	48.5
	Maximum 24-hour	31.9	27.6	38.3	25.0	29.8	22.9	NA	9.6	10.0	30.0
	Second High 24-hour	26.0	22.7	30.5	22.4	26.6	21.2	NA	3.6	8.9	25.4
February	Mean	10.7	10.7	9.6	10.1	10.3	8.6	4.6	9.4	8.1	10.8
	Hourly Maximum	47.2	52.4	23.3	52.3	42.8	37.4	10.2	34.7	18.8	43.3
	Second High	46.0	51.2	20.9	47.7	42.3	36.3	7.9	34.6	17.5	42.0
	Maximum 24-hour	27.5	29.3	10.0	26.8	27.6	22.6	4.3	24.3	10.1	26.1
	Second High 24-hour	18.4	21.5	5.2	22.3	19.9	16.7	NA	16.8	8.8	17.8
March	Mean	7.2	7.5	8.1	7.7	7.0	5.9	6.9	6.7	7.3	7.1
	Hourly Maximum	44.4	48.7	45.8	48.2	39.9	41.7	41.0	33.0	46.1	39.5
	Second High	42.5	46.5	43.5	46.5	37.9	39.8	39.6	31.6	43.2	37.6
	Maximum 24-hour	20.7	22.1	22.7	23.4	20.4	19.7	20.6	16.6	16.4	19.8
	Second High 24-hour	12.1	13.1	13.6	13.3	12.2	11.1	12.2	12.2	13.3	11.6

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Figures 1.1 through 1.4 present the MODULAIR PM sampler PM_{10} and $PM_{2.5}$ concentrations compared with the FEM reference PM_{10} and $PM_{2.5}$ samplers at AQ5 and AQ8 for the first quarter 2024. Tables 1-6 and 1-7 present the EPA performance metrics and target values, and the comparison of the collocated data to the EPA performance target values.

Figure 1.1 AQ5 MODULAIR Serial Number 00266 PM Collocation and Comparison Data for January through March 2024

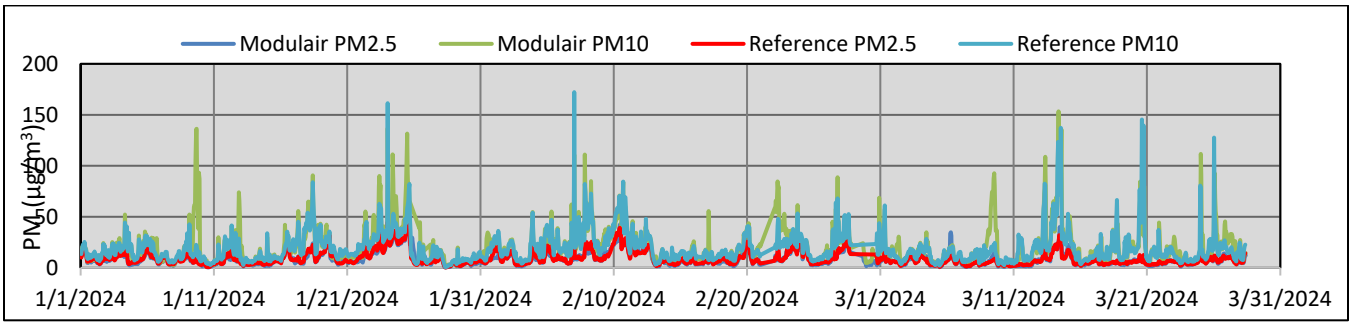
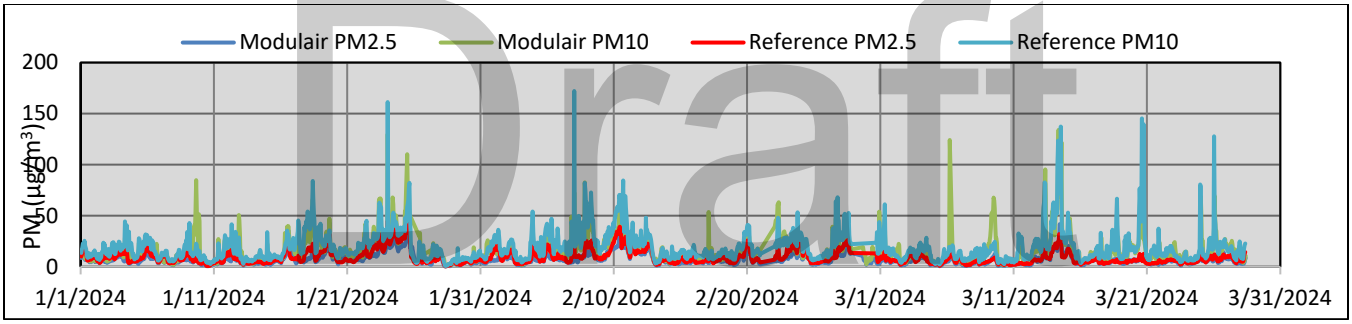


Figure 1.2 AQ5 MODULAIR Serial Number 00387 PM Collocation and Comparison Data for January through March 2024



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Figure 1.3 AQ5 MODULAIR Serial Number 00388 PM Collocation and Comparison Data for January through March 2024

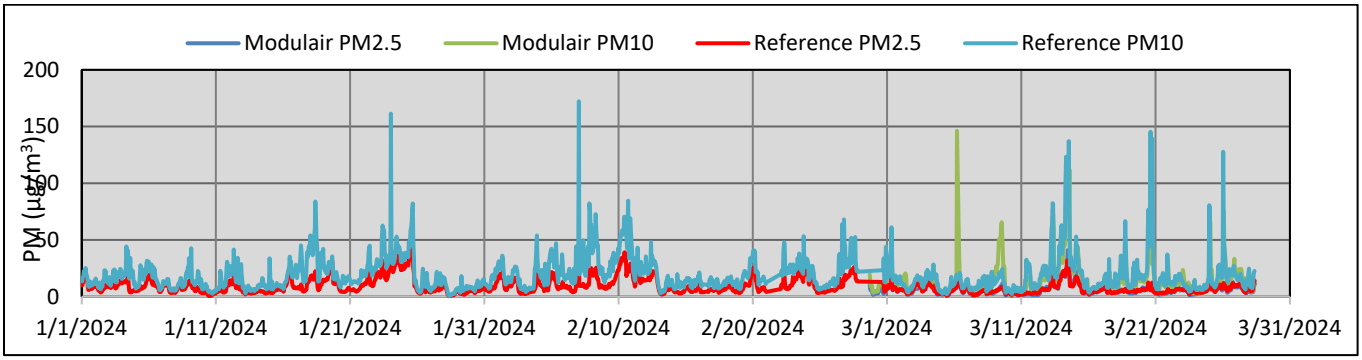


Figure 1.4 AQ8 MODULAIR Serial Number 00264 PM Collocation and Comparison Data for January through March 2024

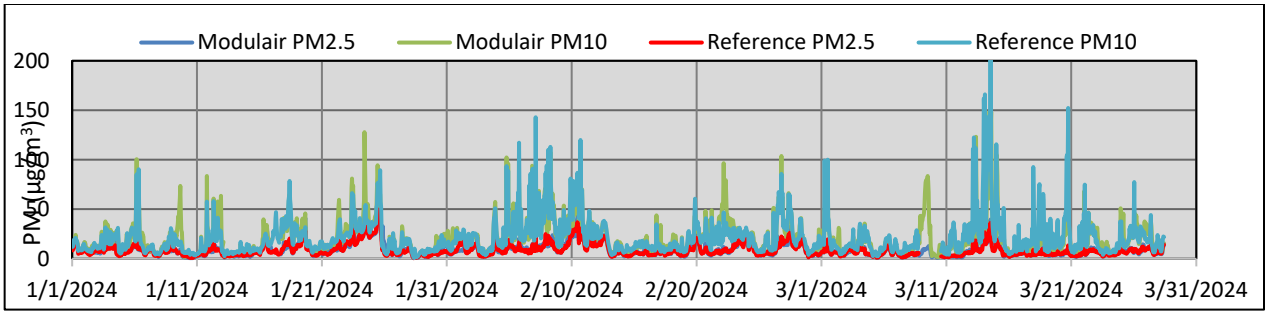


Table 1-6 EPA Recommended Performance Metrics and Target Values for Non-Regulatory PM Monitors

Performance Metric		Target Value
Precision	Standard Deviation	≤5 µg/m^3
	CV	≤30%
Bias	Slope (m)	1.0±0.35
	Intercept (b)	-5 ≤ b ≤ 5 µg/m^3
Linearity	R^2	≥0.70
Error	RSME	≤7 µg/m^3

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Table 1-7 AQ5 and AQ8 MODULAIR and FEM Collocation Statistics for First Quarter 2024

Statistics	AQ5 Modulair 00266		AQ5 Modulair 00387		AQ5 Modulair 00388		AQ8 Modulair 00264	
	$PM_{2.5}$	PM_{10}	$PM_{2.5}$	PM_{10}	$PM_{2.5}$	PM_{10}	$PM_{2.5}$	PM_{10}
Correlation Coefficient (r2)	0.881	0.658	0.773	0.673	0.840	0.568	0.861	0.684
Slope (m)	0.941	0.952	0.746	0.759	1.083	0.667	0.989	0.782
Intercept (b)	0.274	1.944	0.775	1.425	-0.383	3.021	0.776	3.820
RMSW	2.577	10.996	3.644	10.120	10.041	20.603	2.881	13.672
Precision (CV)	18.350	23.880	23.520	23.850	19.860	16.540	19.150	23.440
Precision (SD)	2.573	10.956	3.408	9.652	7.791	15.918	2.789	13.659

From the AQ5 meteorological tower, the most frequent (and predominant) winds during the first quarter were from the northwest followed by the west-northwest. The percentage of winds that were calm was 1.3 percent and the percentage of wind speeds that were not calm and less than or equal to 24.2 miles per hour (mph) was 98.6 percent. Wind speeds measured to be greater than 24.2 mph was 0.1 percent. The peak wind gust for the period was 50.6 mph.

The hourly minimum temperature during the monitoring period was -9.6°C on January 17 at 05:00 and the hourly maximum temperature was 23.7°C on January 26 at 15:00. The mean relative humidity and barometric pressure during the first quarter was 67% and 1016.7 millibars, respectively. 13.22 inches of precipitation was measured by the precipitation gauge at the AQ5 meteorological tower.

PM_{10} and $PM_{2.5}$ concentration and meteorological data collected at the CSX monitoring stations have been subjected to a series of quality control procedures to document the validity of the data and increase the integrity of the data sets. Visual inspection of the meteorological tower, sensors, continuous FEM PM_{10}/$PM_{2.5}$ monitors, and network samplers is performed at least every month or more frequently when problems are indicated. The data loggers at the AQ5 and AQ8 meteorological tower and PM_{10}/$PM_{2.5}$ monitoring stations are interrogated every day to download and process the data. PM_{10} and $PM_{2.5}$ concentration from the MODULAIR samplers are downloaded from the QuantAQ Cloud daily. Abnormal conditions are logged and reported immediately to the program manager for corrective action.

Calibrations of the meteorological equipment are performed every six months or whenever a sensor exceeds specified control limits or undergoes major maintenance or repair. The FEM T640X PM_{10}/$PM_{2.5}$ samplers are calibrated by Trinity personnel every three months or when problems are identified. The AQ5 T640X PM_{10}/$PM_{2.}$sampler was calibrated on February 29; the AQ8 T640X PM_{10}/$PM_{2.}$sampler was calibrated on February 28, 2024. The meteorological equipment was calibrated on February 28, 2024. No calibrations are performed on the MODULAIR samplers. All calibrations are performed using certified reference standards.

In addition, monthly flow rate, temperature, and pressure checks are performed on the FEM PM_{10} and $PM_{2.5}$ samplers. All flow rate and leak checks are performed using certified flow, temperature, and pressure reference standards.

A software program is utilized to perform a series of quality control (QC) checks of the data. When the QC program identifies values that exceed the criteria set for that parameter, the data file is inspected visually by data management specialists. Data failures or discrepancies that would invalidate an hourly average PM_{10} and/or $PM_{2.5}$ concentration are:

- Loss of more than three five-minute average in a one-hour period,
- Visual evidence, on the stacked parameter/time plots for example, that the 5-minute value is an outlier,
- Data collected during calibrations and audits,
- Equipment malfunction,
- T640 reports a status error,
- Shelter temperature less than 0°C,
- $PM_{2.5}$ and PM_{10} concentrations set to missing,
- PM_{10} less than -5 $\mu g/m^3$, concentrations set to missing, and
- $PM_{2.5}$ less than -10 $\mu g/m^3$, concentrations set to missing.

Data recoveries for the meteorological parameters and AQ5 and AQ8 station PM_{10} and $PM_{2.5}$ data for January 1 through March 31, 2024, in percent possible, are provided in Tables 1-8 and 1-9. Table 1-10 presents the data recovery for the perimeter MODULAIR sampling units.

Table 1-8 AQ5 Station – Meteorological, PM_{10}, and $PM_{2.5}$ Data Recovery in Percent for January 1 through March 31, 2024

Month	Level (m)	Wind Speed (%)	Wind Dir. (%)	Wind Gust (%)	Temp. (%)	Rel. Hum. (%)	Bar. Press. (%)	Prec. (%)	PM_{10} (%)[1]	$PM_{2.5}$ (%)[1]
January	1.5	--	--	--	--	--	100	100	99.7	99.7
	2.0	--	--	--	99.6	99.6	--	--		
	10.0	100	100	100	--	--	--	--		
February	1.5	--	--	--	--	--	100	100	88.8	88.8
	2.0	--	--	--	99.6	99.6	--	--		
	10.0	99.6	99.6	99.6	--	--	--	--		
March	1.5	--	--	--	--	--	100	100	99.9	99.9
	2.0	--	--	--	100	100	--	--		
	10.0	100	100	100	--	--	--	--		
First Quarter 2024	1.5	--	--	--	--	--	100	100	96.1	96.1
	2.0	--	--	--	99.9	99.9	--	--		
	10.0	99.9	99.9	99.9	--	--	--	--		

[1] Data capture rate based on valid sample days.

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Table 1-9 AQ8 Station - PM_{10} and $PM_{2.5}$ Measurement Data Recovery in Percent for First Quarter 2024

Month	PM_{10} (%)[1]	$PM_{2.5}$ (%)[1]
January	99.7	99.7
February	99.7	99.7
March	94.4	94.4
First Quarter	97.9	97.9

[1] Data capture rate based on valid sample days.

Table 1-10 MODULAIR Perimeter Stations - PM_{10} and $PM_{2.5}$ Measurement Data Recovery in Percent for First Quarter

Station	January (%)	February (%)	March (%)
AQ1 PM_{10}	93.8	98.0	98.9
AQ1 $PM_{2.5}$	97.3	98.0	99.6
AQ2 PM_{10}	58.9	91.5	85.2
AQ2 $PM_{2.5}$	59.1	91.7	86.2
AQ3 PM_{10}	22.3	10.8	98.4
AQ3 $PM_{2.5}$	23.9	10.8	99.2
AQ4 PM_{10}	83.7	99.3	97.0
AQ4 $PM_{2.5}$	85.6	99.4	99.2
AQ5A PM_{10}	95.7	92.2	99.2
AQ5A $PM_{2.5}$	99.9	92.2	99.9
AQ5B PM_{10}	95.7	92.1	85.8
AQ5B $PM_{2.5}$	100	92.1	87.2
AQ5C PM_{10}	0.0	4.6	94.1
AQ5C $PM_{2.5}$	0.0	4.6	95.3
AQ6 PM_{10}	37.6	89.7	96.5
AQ6 $PM_{2.5}$	39.0	89.7	97.6
AQ7 PM_{10}	50.9	25.4	94.1
AQ7 $PM_{2.5}$	53.1	25.4	95.7
AQ8 PM_{10}	94.1	99.3	97.6
AQ8 $PM_{2.5}$	97.6	99.6	98.7

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2.0 INTRODUCTION

This report, prepared for CSX Transportation, Inc. (CSX) by Trinity Consultants summarizes the first quarter 2024 (January 1 through March 31) meteorological, federal equivalent method (FEM) continuous particulate matter with a diameter of 10 microns or less (PM_{10}) and particulate matter with a diameter of 2.5 microns or smaller ($PM_{2.5}$), being collected at two monitoring stations, identified as AQ5 and AQ8, operated at the Curtis Bay Piers Facility. In addition, a network of eight (8) non-regulatory PM_{10} and $PM_{2.5}$ monitors are being operated along the perimeter of the CSX Curtis Bay Piers facility and these data are presented in this report. The CSX Curtis Bay Piers is a dry material storage, transfer, and shipment terminal located at 1910 Benhill Avenue, in Baltimore, Maryland.

2.1 Background

CSXT, Curtis Bay Piers operates a coal, ore, limestone, and other dry material storage, transfer, and shipment terminal (Curtis Bay Piers Facility) pursuant to State Permit to Operate No. 510-2263. To meet the requirements of the Permit to Construct 510-2263 issued on September 7, 2022, CSXT was required to submit a fenceline monitoring plan to the MDE describing the installation, operation, and maintenance of a network of PM_{10} and $PM_{2.5}$ monitors and a weather station. Per the Permit to Construct, CSX is required to install one FEM monitor to measure both PM_{10} and $PM_{2.5}$, install multiple sensors capable of measuring PM_{10} and $PM_{2.5}$, and operate a 10-meter meteorological tower that meets current U.S. EPA protocols and guidance. Meteorological measurements from a 10-meter tower consist of wind speed and wind direction at 10-meters, temperature at two-meters, relative humidity at two-meters, barometric pressure at 5 feet, and precipitation at 4 feet.

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PM_{10}, $PM_{2.5}$, and meteorological data collection officially began at the CSX monitoring sites on March 24, 2023 at 01:00 Eastern Standard Time (EST). Table 2-1 summarizes the parameters collected at the monitoring sites and the units for each parameter.

Table 2-1 Measured Meteorological and Air Quality Parameters

Parameter	Units
Wind Speed	meters per second (m/s)
Wind Direction	degrees from true north (°)
Temperature	degrees Celsius (°C)
Relative Humidity	percent (%)
Barometric Pressure	millibars (mb)
Precipitation	inches (in)
Continuous PM_{10}	micrograms per cubic meter ($\mu g/m^3$)
Continuous $PM_{2.5}$	micrograms per cubic meter ($\mu g/m^3$)
Time	Eastern Standard Time (EST)

The latitude and longitude coordinates of the monitoring stations are presented in Table 2-2.

Table 2-2 Location of CSX Curtis Bay Piers Facility Monitoring Stations

Site ID	Latitude (Decimal degrees)	Longitude (Decimal degrees)
AQ1	39.22169	-76.58194
AQ2	39.22169	-76.58455
AQ3	39.22710	-76.58483
AQ4	39.22968	-76.58538
AQ5	39.22773	-76.58096
AQ6	39.22485	-76.58015
AQ7	39.22147	-76.57630
AQ8	39.22320	-76.58400
Meteorological Tower (at AQ5)	39.22773	-76.58096

Figure 2.1 presents a Google Earth image showing the location of CSX monitoring stations. Photographs of the AQ5 and AQ8 monitoring stations, where the FEM PM_{10}/$PM_{2.5}$ monitors are located, are presented as Figures 2.2 and 2.3.

Figure 2.1 Google Earth Image Showing Location of CSX Monitoring Stations

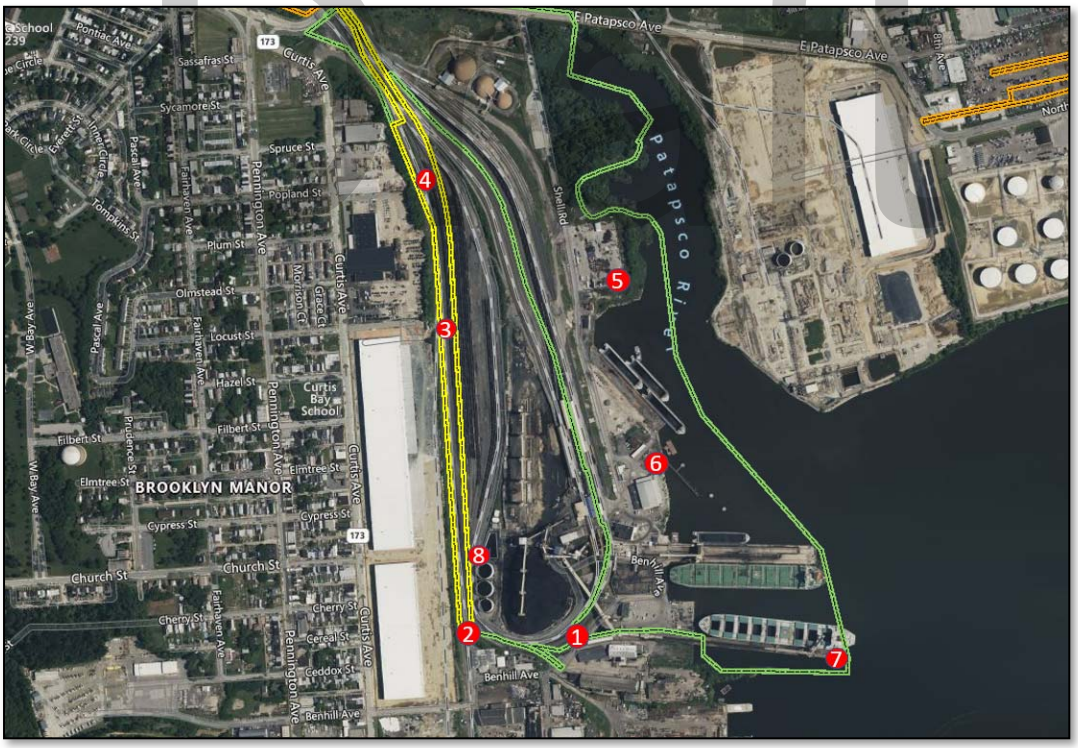


Figure 2.2 Photograph of CSX AQ5 PM and Meteorological Monitoring Station



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Figure 2.3 Photograph of CSX AQ8 PM Monitoring Station



2.2 Meteorological and Particulate Instrumentation

The meteorological parameters provide information on the local meteorology and particulate concentrations at the Curtis Bay Piers Facility. The objective of the particulate and meteorological monitoring is to obtain representative particulate and meteorological information for the Curtis Bay Piers Facility that may be used for informational purposes, including community awareness and comparison with regional air quality. Table 2-3 presents a list of meteorological and PM equipment at the CSX Curtis Bay Piers Facility monitoring stations.

Table 2-3 Particulate and Meteorological Instrumentation at CSX Monitoring Stations

Station	Parameter	Equipment Manufacturer	Model Number	Serial Number
AQ1	PM_{10}, $PM_{2.5}$	QuantAQ MODULAIR GuardAero	MODULAIR-PM	MOD386
AQ2	PM_{10}, $PM_{2.5}$	QuantAQ MODULAIR	MODULAIR-PM	MOD385
AQ3	PM_{10}, $PM_{2.5}$	QuantAQ MODULAIR	MODULAIR-PM	MOD384
AQ4	PM_{10}, $PM_{2.5}$	QuantAQ MODULAIR	MODULAIR-PM	MOD383
AQ5	PM_{10}, $PM_{2.5}$	Teledyne-API	T640X	1690
	Wind Direction	Met One	020D	C21028
	Wind Speed	Met One	010C	C21557
	Temperature	Campbell Scientific Inc.	HygroVUE10	E4240
	Relative Humidity	Campbell Scientific Inc.	HygroVUE10	E4240
	Barometric Pressure	Campbell Scientific Inc.	BaroVUE10	1808
	Precipitation	Texas Electronics	TR-525U	93490-1222
	Data Aq. System	Campbell Scientific Inc.	CR1000X	45777
AQ5A	PM_{10}, $PM_{2.5}$	QuantAQ MODULAIR	MODULAIR-PM	MOD266
AQ5B	PM_{10}, $PM_{2.5}$	QuantAQ MODULAIR	MODULAIR-PM	MOD387
AQ5C	PM_{10}, $PM_{2.5}$	QuantAQ MODULAIR Aeroqual	MODULAIR-PM	MOD388 15062020-1263
AQ6	PM_{10}, $PM_{2.5}$	QuantAQ MODULAIR	MODULAIR-PM	MOD267
AQ7	PM_{10}, $PM_{2.5}$	QuantAQ MODULAIR	MODULAIR-PM	MOD265
AQ8	PM_{10}, $PM_{2.5}$	Teledyne-API	T640X	1689
	Data Aq. System	Campbell Scientific Inc.	CR310	16073
AQ8A	PM_{10}, $PM_{2.5}$	QuantAQ MODULAIR	MODULAIR-PM	MOD264

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2.3 Data Acquisition

Campbell Scientific Inc. (CSI) CR1000x DASs are used to store data from the 10-meter tower meteorological sensors and continuous Teledyne-API (T-API) T640X FEM $PM_{10}/PM_{2.5}$ monitors. Tower meteorological data are sampled every second and recorded as five-minute averages on the data logger. T640X particulate data are stored as five-minute and hourly averages. An hourly average is computed from at least nine five-minute averages that are available for the hour. Data from the QuantAQ MODULAIR samplers are sampled every minute and stored on internal data loggers that send data to a cloud server.

Each CSI CR1000x DAS has the capability of being polled locally through an RS232 connector or remotely via modem. An on-site display allows users to view current values of the parameters being measured.

The CSI CR1000x data loggers are interrogated by Trinity daily via a static IP address and the data are copied to duplicate computer files. Each data logger's telecommunications software performs dynamic error checking during download to ensure that an exact duplicate file is created. Any failures in instrumentation or data acquisition are identified daily so that field personnel can correct problems in a timely manner to prevent excessive data loss. The data collected during each interrogation are checked for consistency and the parameters are plotted for visual inspection.

The MODULAIR produces data which are saved to the onboard µSD card every minute. These values are averaged and pushed to the cloud where they are available on the QuantAQ Cloud for retrieval. Data from the MODULAIR are obtained from the QuantAQ Cloud daily.

The quality assurance stacked parameter/time plots for the first quarter (January through March) 2024 are presented in Appendix A. Data presented in Appendix A represent the final, quality assured data set. Hourly values provided are computed by the data logger. If fewer than 45 minutes are available, the hour is considered "missing".

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3.0 METEOROLOGICAL TOWER AND FEDERAL EQUIVALENT METHOD CONTINUOUS PARTICULATE DATA SUMMARY

This section of the report summarizes the data results and data recovery for the first quarter 2024 (January 1 through March 31). Hourly data for the period are tabulated in the appendices. These appendix tables display the hourly average of measurements recorded in the hour "ending"; that is, the first hour of the day is labeled 01, meaning the hour beginning at 00:00:01 and ending at 01:00:00 a.m. The second hour is labeled 02, meaning the values collected from 01:00:01 a.m. to 02:00:00 a.m.

3.1 Meteorological Data

Meteorological data records from the CSX Curtis Bay Piers Facility meteorological monitoring station consists of wind speed and wind direction at 10-meters, temperature at two-meters, relative humidity at two-meters, barometric pressure at 5 feet, and precipitation at 4 feet.

3.1.1 Wind Direction and Horizontal Wind Speed

The most frequent (and predominant) winds during the first quarter at the 10-meter level were from the northwest followed by the west-northwest. Reported wind directions represent the directions from which the wind is blowing.

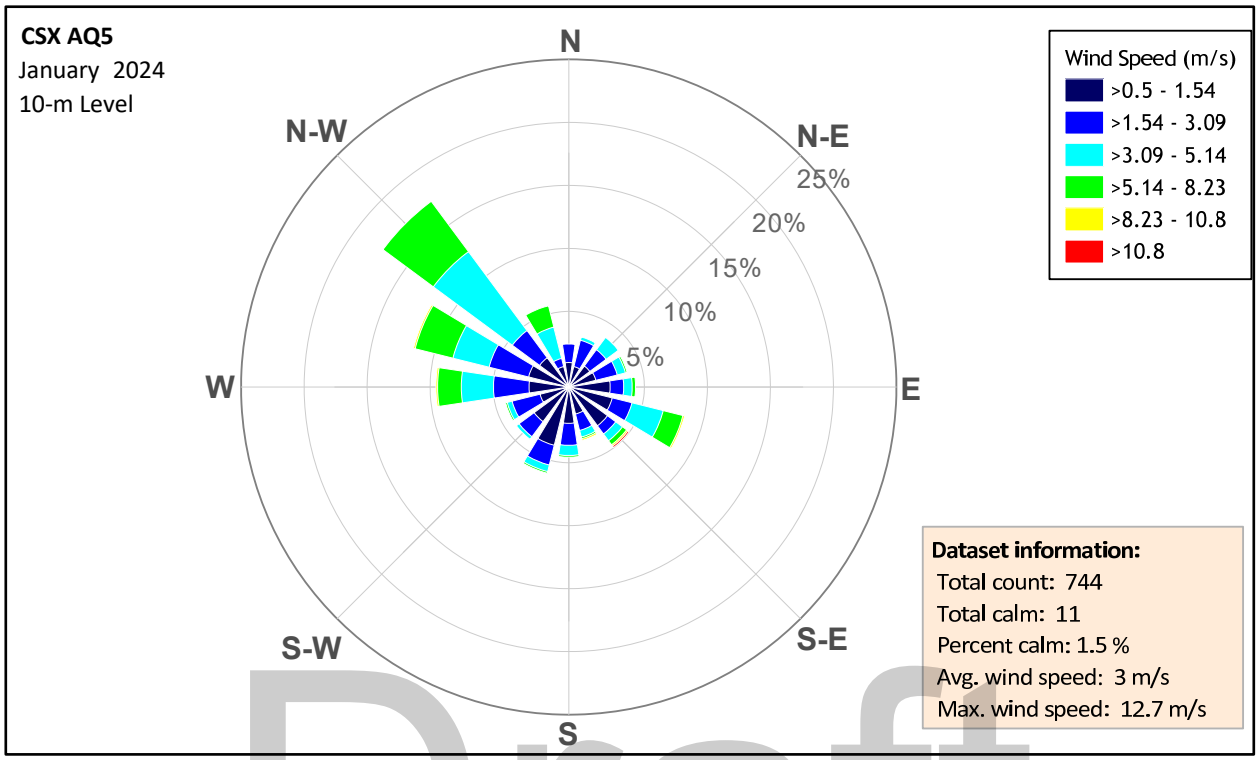
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For the first quarter 2024, the percentage of winds that were calm was 1.3 percent at the 10-meter level. The percentage of wind speeds that were not calm and less than or equal to 10.8 meters per second (m/s), which translates to 24.2 miles per hour (mph), was 98.6 percent at the 10-meter level. For the quarter, the percentage of winds greater than 10.8 m/s was 0.1 percent at the 10-meter level.

The sector with the highest average wind speed for the quarter at the 10-meter level was from the northwest at 4.4 m/s (9.8 mph).

Figures 3.1 through 3.3 provide diagrams of the joint frequency of occurrence distributions (wind rose) of wind speed and wind direction by month for the period for the 10-meter level. Figure 3.4 presents the first quarter 10-meter level wind rose. Summary tables of hourly average wind direction and wind speed for the 10-meter level for the first quarter are presented in Appendix B.

Figure 3.1 10-Meter Level Wind Rose, January 2024.



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Figure 3.2 10-Meter Level Wind Rose, February 2024.

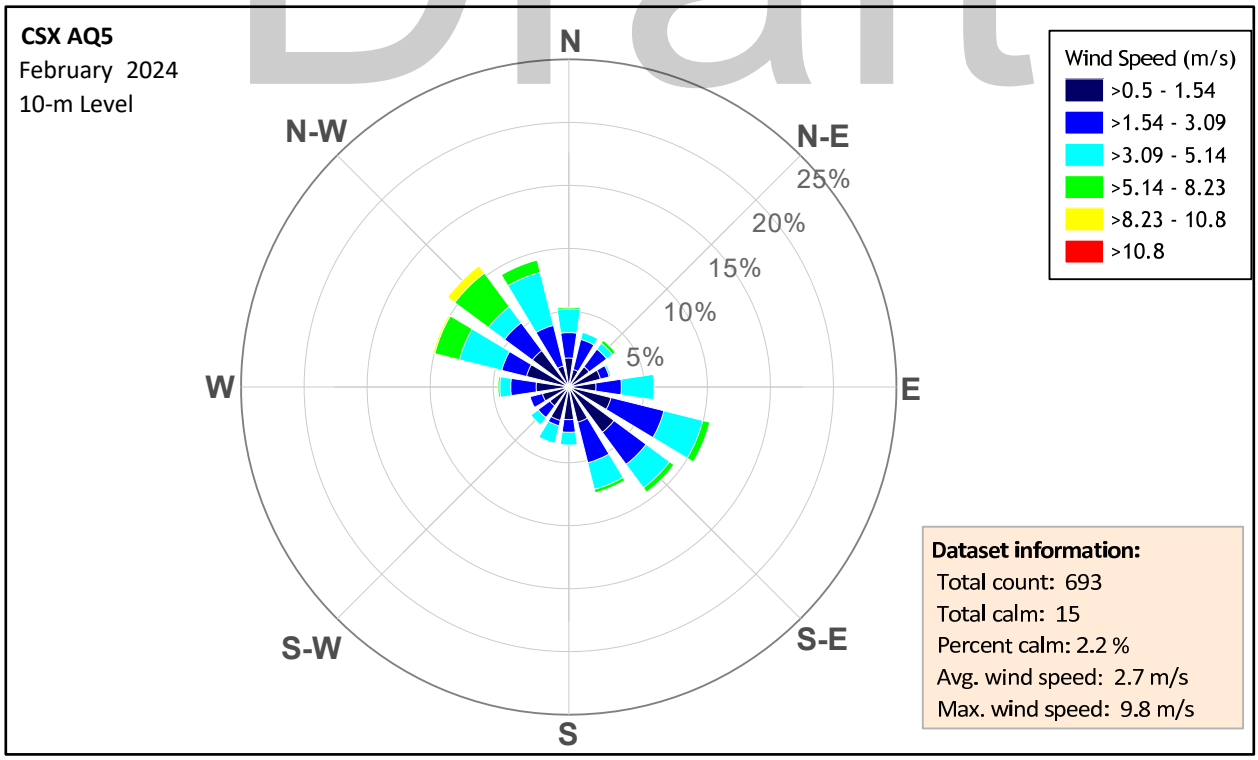
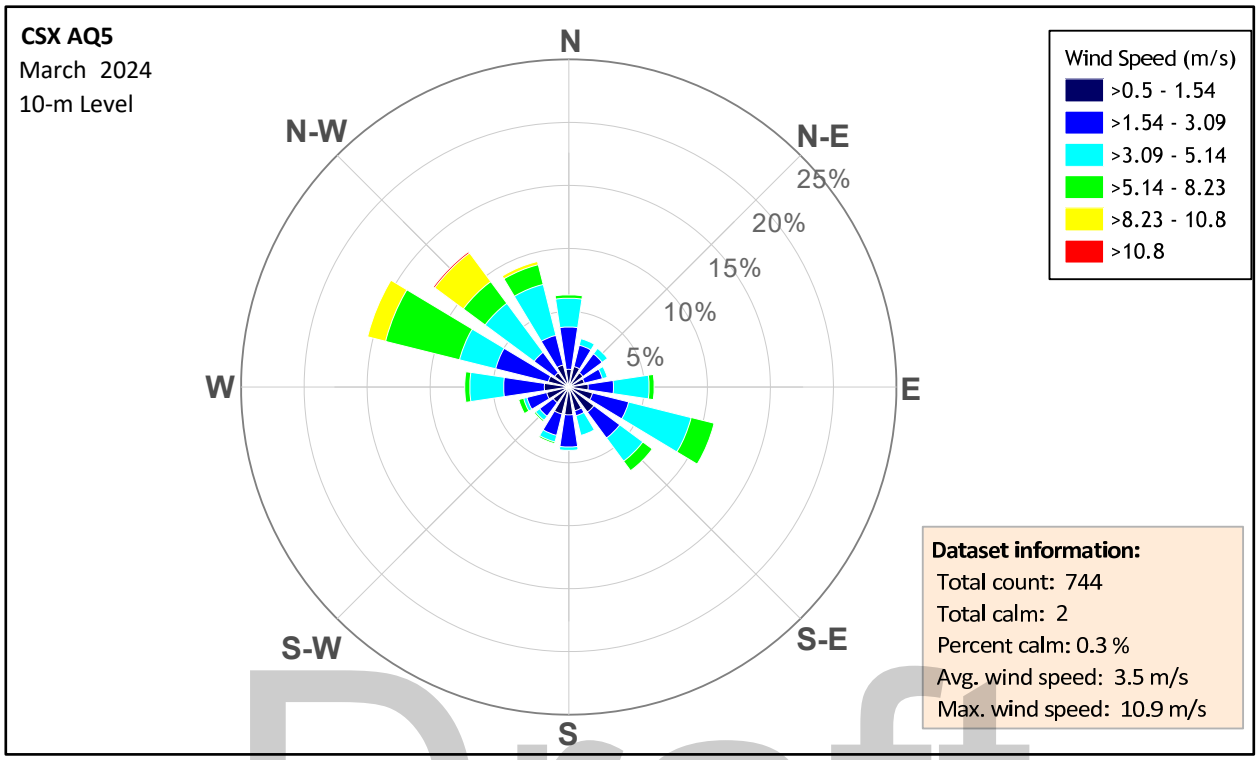
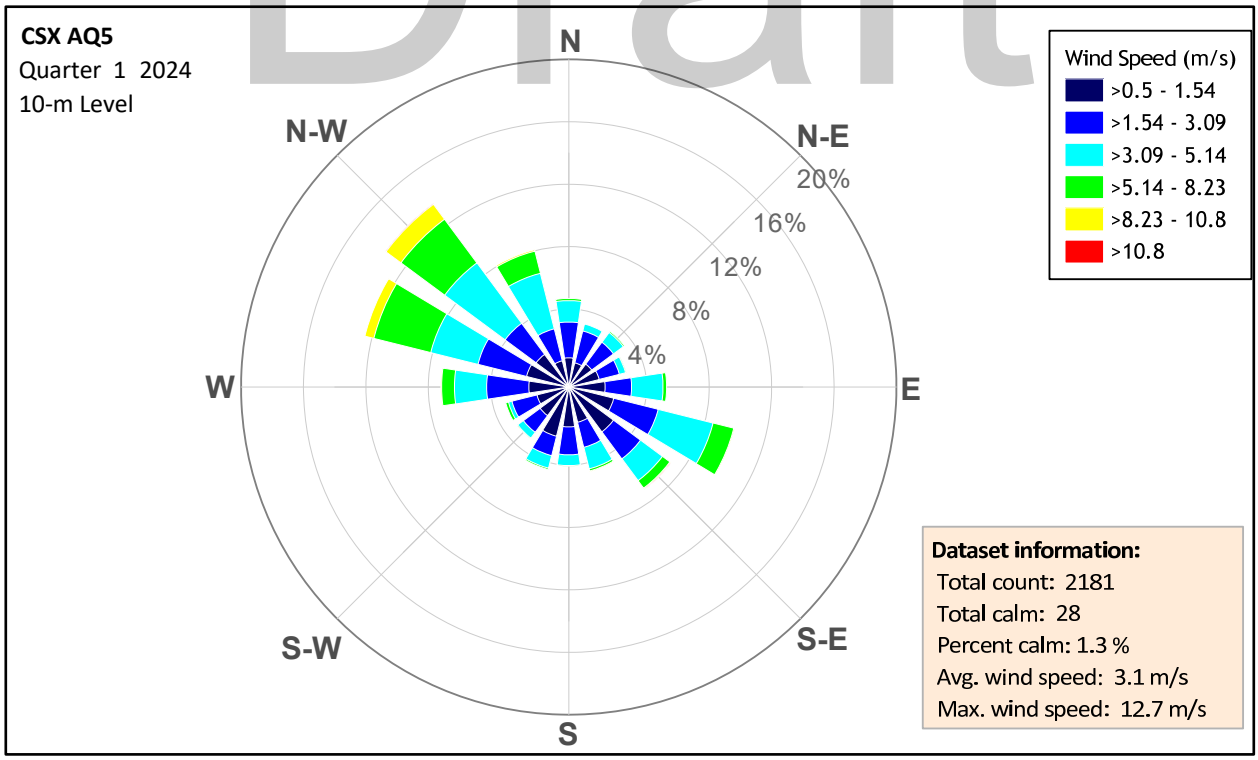


Figure 3.3 10-Meter Level Wind Rose, March 2024.



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Figure 3.4 10-Meter Level Wind Rose, First Quarter 2024.



3.1.2 Wind Gust

At the 10-meter level, the peak wind gust during the period was 22.6 m/s (50.6 mph) which occurred on January 9 at 19:00. Wind gust information is presented in Table 3-1 and in Appendix B.

Table 3-1 Wind Gust Summary in Meters per Second for First Quarter 2024

Month	Monthly Mean (m/s)	Maximum Hour (m/s)	Minimum Hour (m/s)
January	5.7	22.6	0.6
February	5.1	18.7	0.9
March	6.8	21.8	0.8

3.1.3 Temperature

The temperature is measured at the 2-meter level. The ambient daily mean temperatures for the first quarter 2024 ranged from a low of -6.3 degrees centigrade (°C) in January to a high of 18.4°C in March. The hourly minimum temperature was -9.6°C on January 17 at 05:00; the hourly maximum temperature was 23.7°C on January 26 at 15:00. Hourly temperature data for the first quarter 2024 are presented in Appendix C. Temperature data for the period are summarized in Table 3-2.

Table 3-2 Summary of Temperature in Degrees Centigrade (°C) for First Quarter 2024

Month	Monthly Mean (°C)	Maximum Daily Mean (°C)	Minimum Daily Mean (°C)	Maximum Hour (°C)	Minimum Hour (°C)
January	2.9	12.7	-6.3	23.7	-9.6
February	5.1	13.2	1.2	18.2	-3.8
March	9.7	18.4	4.4	23.4	-1.1

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3.1.4 Relative Humidity

Table 3-3 presents the monthly means, maximum and minimum relative humidity information for the first quarter 2024. Relative humidity data are presented in Appendix D.

Table 3-3 Summary of Relative Humidity in Percent for First Quarter 2024

Month	Monthly Mean (%)	Maximum Daily Mean (%)	Minimum Daily Mean (%)	Maximum Hour (%)	Minimum Hour (%)
January	73	98	49	100	24
February	67	88	39	97	24
March	61	96	31	99	19

3.1.5 Barometric Pressure

Barometric pressure data for the first quarter 2024 are presented in Table 3-4 and in Appendix E.

Table 3-4 Barometric Pressure Data in Millibars (mb) for First Quarter 2024

Month	Monthly Mean (mb)	Maximum Daily Mean (mb)	Minimum Daily Mean (mb)	Maximum Hour (mb)	Minimum Hour (mb)
January	1018	1035	997	1037	985
February	1016	1030	1000	1033	996
March	1016	1034	1003	1037	1000

3.1.6 Precipitation

For the first quarter 2024, 13.22 inches of precipitation were measured at the site. The precipitation data are summarized in Table 3-5 and are presented in Appendix F.

Table 3-5 Summary of Precipitation in Inches for First Quarter 2024

Month	Monthly Total (in.)	Maximum Daily Total (in.)	Maximum Hourly Total (in.)
January	5.97	2.49	0.34
February	1.74	0.98	0.27
March	5.51	1.66	0.37

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3.2 Particulate Data

PM_{10} and $PM_{2.5}$ data are measured at the AQ5 and AQ8 monitoring stations using continuous T-API Model T640X samplers. The T-API Model T640X samplers have Federal Equivalent Method (FEM) certifications of EQPM-0516-239 for PM_{10} and EQPM-0516-238 for $PM_{2.5}$.

3.2.1 AQ5 – PM_{10}

Hourly and 24-hour average PM_{10} concentrations collected at the AQ5 station during the first quarter 2024 are presented in Table 3-6. The ten highest 24-hour average PM_{10} concentrations for the 2024 monitoring year at the AQ5 monitoring station are presented in Table 3-7. First quarter AQ5 station PM_{10} data are summarized in Appendix G.

Table 3-6 AQ5 PM_{10} Concentrations First Quarter 2024 in Micrograms per Cubic Meter

AQ5 Statistics	January ($\mu g/m^3$)	February ($\mu g/m^3$)	March ($\mu g/m^3$)	First Quarter 2024 ($\mu g/m^3$)
Monthly Mean	17.8	22.6	17.7	19.4
Maximum Hourly PM_{10}	161.3	172.2	145.3	172.2
Second Highest Hourly PM_{10}	83.9	84.5	139.6	139.6
Maximum 24-hour PM_{10}	42.5	55.9	57.9	57.9
Second Highest 24-hour PM_{10}	40.5	43.7	41.8	43.7

Table 3-7 AQ5 Station Ten Highest 24-Hour Average PM_{10} Concentrations in Micrograms per Cubic Meter for 2024 Monitoring Year

Number	24-hour Concentration (µg/m³)	Date of Occurrence
1	57.8	03/14/2024
2	55.8	02/10/2024
3	43.6	02/07/2024
4	42.4	01/24/2024
5	41.8	03/20/2024
6	40.5	01/18/2024
7	38.4	01/25/2024
8	36.4	03/13/2024
9	36.3	01/23/2024
10	35.0	02/27/2024

3.2.2 AQ5 – $PM_{2.5}$

Hourly and 24-hour average $PM_{2.5}$ concentrations collected at the AQ5 station during the first quarter 2024 are presented in Table 3-8. The ten highest 24-hour average $PM_{2.5}$ concentrations for the 2024 monitoring year at the AQ5 monitoring station are presented in Table 3-9. First quarter AQ5 station $PM_{2.5}$ data are summarized in Appendix G.

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Table 3-8 AQ5 $PM_{2.5}$ Concentrations First Quarter 2024 in Micrograms per Cubic Meter

AQ5 Statistics	January (µg/m³)	February (µg/m³)	March (µg/m³)	First Quarter 2024 (µg/m³)
Monthly Mean	9.7	11.2	6.5	9.1
Maximum Hourly $PM_{2.5}$	47.5	39.1	32.0	47.5
Second Highest Hourly $PM_{2.5}$	45.7	38.4	30.9	45.7
Maximum 24-hour $PM_{2.5}$	28.2	29.1	17.9	29.1
Second Highest 24-hour $PM_{2.5}$	26.5	19.7	11.4	26.5

Table 3-9 AQ5 Station Ten Highest 24-Hour Average $PM_{2.5}$ Concentrations in Micrograms per Cubic Meter for 2024 Monitoring Year

Number	24-hour Concentration ($\mu g/m^3$)	Date of Occurrence
1	29.1	02/10/2024
2	28.2	01/24/2024
3	26.5	01/25/2024
4	21.2	01/23/2024
5	19.7	02/27/2024
6	18.2	02/23/2024
7	17.9	03/14/2024
8	17.4	01/19/2024
9	16.7	02/12/2024
10	15.8	02/11/2024

3.2.3 AQ8 – PM_{10}

Hourly and 24-hour average PM_{10} concentrations for the first quarter 2024 are presented in Table 3-10 for the AQ8 monitoring station. The ten highest 24-hour average PM_{10} concentrations at the AQ8 station for the 2024 monitoring year are presented in Table 3-11. The first quarter AQ8 station PM_{10} data are summarized in Appendix H.

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Table 3-10 AQ8 Station PM_{10} Concentration for First Quarter 2024 in Micrograms per Cubic Meter

AQ8 Statistics	January ($\mu g/m^3$)	February ($\mu g/m^3$)	March ($\mu g/m^3$)	First Quarter 2024 ($\mu g/m^3$)
Monthly Mean	17.4	24.5	21.3	21.1
Maximum Hourly PM_{10}	90.4	142.9	208.2	208.2
Second Highest Hourly PM_{10}	89.4	119.9	166.0	166.0
Maximum 24-hour PM_{10}	42.8	57.5	80.5	80.5
Second Highest 24-hour PM_{10}	37.0	51.1	55.5	55.5

Table 3-11 AQ8 Station Ten Highest 24-Hour Average PM_{10} Concentrations in Micrograms per Cubic Meter for 2024 Monitoring Year

Number	24-hour Concentration ($\mu g/m^3$)	Date of Occurrence
1	80.5	03/14/2024
2	57.5	02/10/2024
3	55.4	03/13/2024
4	51.0	02/07/2024
5	47.4	02/08/2024
6	42.7	01/25/2024
7	40.4	03/20/2024
8	38.1	02/26/2024
9	37.1	02/05/2024
10	36.9	01/18/2024

3.2.4 AQ8 – $PM_{2.5}$

Hourly and 24-hour average $PM_{2.5}$ concentrations for the first quarter 2024 are presented in Table 3-12 for the AQ8 monitoring station. The ten highest 24-hour average $PM_{2.5}$ concentrations at the AQ8 station for the 2024 monitoring year are presented in Table 3-13. The first quarter AQ8 station $PM_{2.5}$ data are summarized in Appendix H.

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Table 3-12 AQ8 Station $PM_{2.5}$ Concentration for First Quarter 2024 in Micrograms per Cubic Meter

AQ8 Statistics	January ($\mu g/m^3$)	February ($\mu g/m^3$)	March ($\mu g/m^3$)	First Quarter 2024 ($\mu g/m^3$)
Monthly Mean	8.8	10.1	6.5	8.5
Maximum Hourly $PM_{2.5}$	49.6	36.9	36.1	49.6
Second Highest Hourly $PM_{2.5}$	47.9	34.4	34.6	47.9
Maximum 24-hour $PM_{2.5}$	28.0	26.3	18.2	28.0
Second Highest 24-hour $PM_{2.5}$	24.9	16.9	11.0	24.9

Table 3-13 AQ8 Station Ten Highest 24-Hour Average $PM_{2.5}$ Concentrations in Micrograms per Cubic Meter for 2024 Monitoring Year

Number	24-hour Concentration ($\mu g/m^3$)	Date of Occurrence
1	28.0	01/25/2024
2	26.3	02/10/2024
3	24.9	01/24/2024
4	18.6	01/23/2024
5	18.2	03/14/2024
6	16.9	02/27/2024
7	16.7	02/12/2024
8	16.1	02/23/2024
9	15.5	01/19/2024
10	15.2	02/11/2024

3.3 Data Recovery

Data recoveries for the meteorological parameters and AQ5 and AQ8 station PM_{10} and $PM_{2.5}$ data for the first quarter 2024 in percent possible are provided in Tables 3-14 and 3-15.

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Table 3-14 AQ5 Station – Meteorological, PM_{10}, and $PM_{2.5}$ Measurement Data Recovery in Percent for First Quarter 2024

Month	Level (m)	Wind Speed (%)	Wind Dir. (%)	Wind Gust (%)	Temp. (%)	Rel. Hum. (%)	Bar. Press. (%)	Prec. (%)	PM_{10} (%)[1]	$PM_{2.5}$ (%)[1]
January	1.5	--	--	--	--	--	100	100	99.7	99.7
	2.0	--	--	--	99.6	99.6	--	--		
	10.0	100	100	100	--	--	--	--		
February	1.5	--	--	--	--	--	100	100	88.8	88.8
	2.0	--	--	--	99.6	99.6	--	--		
	10.0	99.6	99.6	99.6	--	--	--	--		
March	1.5	--	--	--	--	--	100	100	99.9	99.9
	2.0	--	--	--	100	100	--	--		
	10.0	100	100	100	--	--	--	--		
First Quarter 2024	1.5	--	--	--	--	--	100	100	96.1	96.1
	2.0	--	--	--	99.9	99.9	--	--		
	10.0	99.9	99.9	99.9	--	--	--	--		

[1] Data capture rate based on valid sample days.

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Table 3-15 AQ8 Station - PM_{10} and $PM_{2.5}$ Measurement Data Recovery in Percent for First Quarter 2024

Month	PM_{10} (%)[1]	$PM_{2.5}$ (%)[1]
January	99.7	99.7
February	99.7	99.7
March	94.4	94.4
First Quarter	97.9	97.9

[1] Data capture rate based on valid sample days.

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4.0 PM_{10} AND $PM_{2.5}$ PERIMETER NETWORK MONITORING

At eight locations around the perimeter of the at the Curtis Bay Piers Facility, QuantAQ MODULAIR non-regulatory, community based $PM_{10}/PM_{2.5}$ samplers are operated. Three (3) MODULAIR samplers are being operated at AQ5 and one (1) MODULAIR sampler is operated at AQ8. These samplers are operated to give an indication of the $PM_{10}/PM_{2.5}$ at each network location and to show $PM_{10}/PM_{2.5}$ trends. These data are not intended to be used for compliance with the National Ambient Air Quality Standards (NAAQS). Summaries of the first quarter 2024 MODULAIR PM_{10} and $PM_{2.5}$ data, in micrograms per cubic meter, are presented in Tables 4-1 and 4-2.

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Table 4-1 First Quarter 2024 MODULAIR PM_{10} Data in Micrograms per Cubic Meter

Month	Statistics (µg/m³)	Station									
		AQ1	AQ2	AQ3	AQ4	AQ5A	AQ5B	AQ5C	AQ6	AQ7	AQ8A
January	Mean	17.1	23.8	31.6	19.5	19.9	15.7	NA	17.8	20.2	18.9
	Hourly Maximum	94.1	158.6	169.4	172.6	136.8	129.8	NA	116.7	158.8	127.8
	Second High	89.8	126.6	141.6	160.9	136.2	110.2	NA	109.1	111.4	100.5
	Maximum 24-hour	39.7	56.2	64.7	50.7	51.6	39.5	NA	22.5	60.0	46.1
	Second High 24-hour	37.7	53.3	14.0	46.9	49.8	34.0	NA	10.0	21.4	39.6
February	Mean	21.5	28.7	18.1	20.4	22.3	17.2	10.6	21.6	21.9	24.2
	Hourly Maximum	136.5	166.2	61.7	182.4	111.0	82.5	44.1	102.9	94.9	107.6
	Second High	103.0	165.6	39.5	116.6	110.8	72.7	27.6	83.2	94.1	103.7
	Maximum 24-hour	49.5	63.4	20.7	48.1	52.4	40.8	11.0	49.1	32.2	51.4
	Second High 24-hour	38.3	60.0	13.1	42.4	49.9	35.2	NA	46.2	23.4	47.4
March	Mean	18.0	21.5	21.7	19.5	18.9	15.4	15.5	17.9	19.8	18.6
	Hourly Maximum	159.8	223.9	137.4	117.1	153.4	134.1	146.3	139.6	113.4	149.0
	Second High	151.6	172.4	136.7	113.0	135.6	124.1	115.1	124.5	112.1	148.2
	Maximum 24-hour	69.7	74.7	75.0	55.5	65.0	58.8	53.1	63.3	47.5	66.2
	Second High 24-hour	42.3	µ52.4	58.5	38.7	42.2	35.5	30.3	41.5	44.0	41.9

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Table 4-2 First Quarter 2024 MODULAIR $PM_{2.5}$ Data in Micrograms per Cubic Meter

Month	Statistics (µg/m³)	Station									
		AQ1	AQ2	AQ3	AQ4	AQ5A	AQ5B	AQ5C	AQ6	AQ7	AQ8A
January	Mean	9.2	10.2	15.6	8.7	9.3	8.1	NA	8.8	7.4	9.8
	Hourly Maximum	60.4	59.2	63.3	53.2	52.1	43.4	NA	44.8	34.1	52.1
	Second High	54.4	57.6	58.9	45.1	47.1	41.9	NA	44.2	28.9	48.5
	Maximum 24-hour	31.9	27.6	38.3	25.0	29.8	22.9	NA	9.6	10.0	30.0
	Second High 24-hour	26.0	22.7	30.5	22.4	26.6	21.2	NA	3.6	8.9	25.4
February	Mean	10.7	10.7	9.6	10.1	10.3	8.6	4.6	9.4	8.1	10.8
	Hourly Maximum	47.2	52.4	23.3	52.3	42.8	37.4	10.2	34.7	18.8	43.3
	Second High	46.0	51.2	20.9	47.7	42.3	36.3	7.9	34.6	17.5	42.0
	Maximum 24-hour	27.5	29.3	10.0	26.8	27.6	22.6	4.3	24.3	10.1	26.1
	Second High 24-hour	18.4	21.5	5.2	22.3	19.9	16.7	NA	16.8	8.8	17.8
March	Mean	7.2	7.5	8.1	7.7	7.0	5.9	6.9	6.7	7.3	7.1
	Hourly Maximum	44.4	48.7	45.8	48.2	39.9	41.7	41.0	33.0	46.1	39.5
	Second High	42.5	46.5	43.5	46.5	37.9	39.8	39.6	31.6	43.2	37.6
	Maximum 24-hour	20.7	22.1	22.7	23.4	20.4	19.7	20.6	16.6	16.4	19.8
	Second High 24-hour	12.1	13.1	13.6	13.3	12.2	11.1	12.2	12.2	13.3	11.6

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4.1 Data Recovery

Data recoveries for the MODULAIR PM_{10} and $PM_{2.5}$ sampler data for the first quarter 2024 in percent possible are provided in Table 4-3.

Table 4-3 First Quarter 2024 MODULAIR PM_{10} and $PM_{2.5}$ Data Recovery in Percent

Station	January (%)	February (%)	March (%)
AQ1 PM_{10}	93.8	98.0	98.9
AQ1 $PM_{2.5}$	97.3	98.0	99.6
AQ2 PM_{10}	58.9	91.5	85.2
AQ2 $PM_{2.5}$	59.1	91.7	86.2
AQ3 PM_{10}	22.3	10.8	98.4
AQ3 $PM_{2.5}$	23.9	10.8	99.2
AQ4 PM_{10}	83.7	99.3	97.0
AQ4 $PM_{2.5}$	85.6	99.4	99.2
AQ5A PM_{10}	95.7	92.2	99.2
AQ5A $PM_{2.5}$	99.9	92.2	99.9
AQ5B PM_{10}	95.7	92.1	85.8
AQ5B $PM_{2.5}$	100	92.1	87.2
AQ5C PM_{10}	0.0	4.6	94.1
AQ5C $PM_{2.5}$	0.0	4.6	95.3
AQ6 PM_{10}	37.6	89.7	96.5
AQ6 $PM_{2.5}$	39.0	89.7	97.6
AQ7 PM_{10}	50.9	25.4	94.1
AQ7 $PM_{2.5}$	53.1	25.4	95.7
AQ8 PM_{10}	94.1	99.3	97.6
AQ8 $PM_{2.5}$	97.6	99.6	98.7

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4.2 MODULAIR Sampler PM_{10} and $PM_{2.5}$ Concentration Comparison with FEM reference PM_{10} and $PM_{2.5}$ Samplers

Figures 4.1 through 4.4 present the perimeter network MODULAIR sampler PM_{10} and $PM_{2.5}$ concentrations compared with the FEM reference PM_{10} and $PM_{2.5}$ samplers at AQ5 and AQ8 for the first quarter 2024. QuantAQ MODULAIR hourly sampler data, and network collocation and comparison data are presented in Appendix I.

Figure 4.1 AQ5 MODULAIR Serial Number 00266 PM Collocation and Comparison Data for January – March 2024

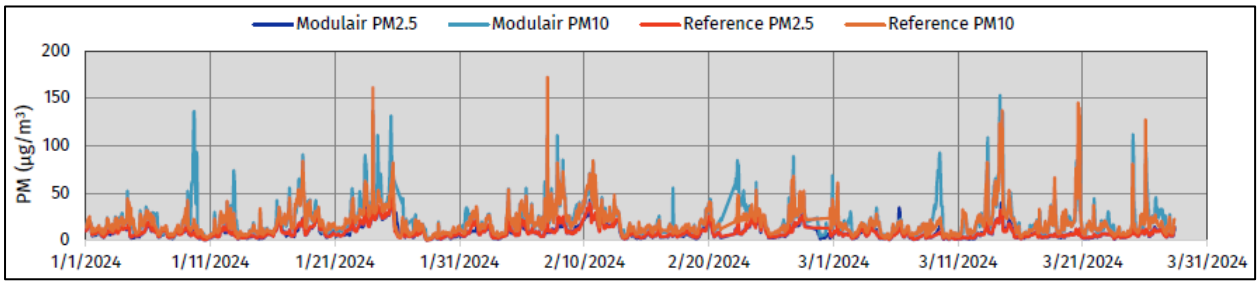
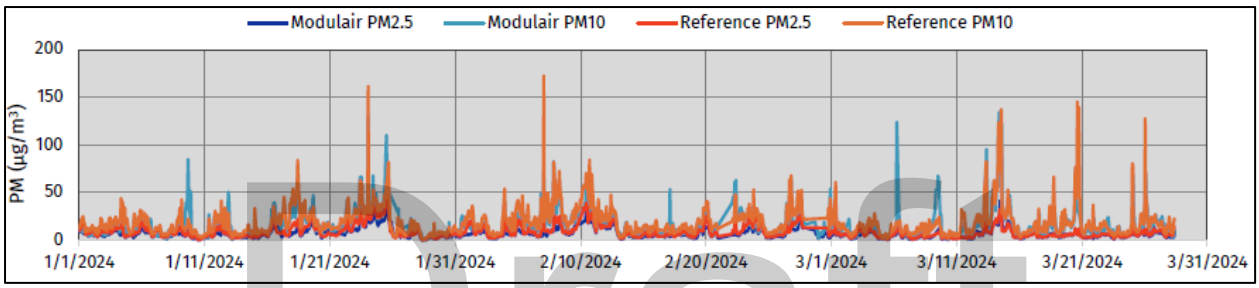


Figure 4.2 AQ5 MODULAIR Serial Number 00387 PM Collocation and Comparison Data for January – March 2024



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Figure 4.3 AQ5 MODULAIR Serial Number 00388 PM Collocation and Comparison Data for January – March 2024

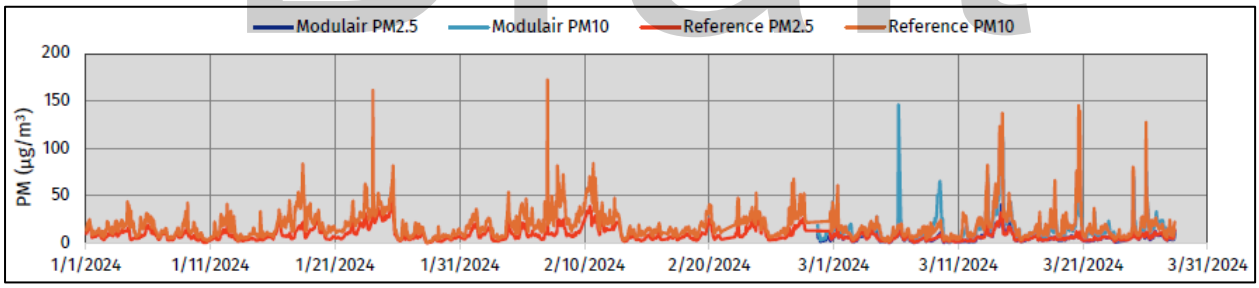
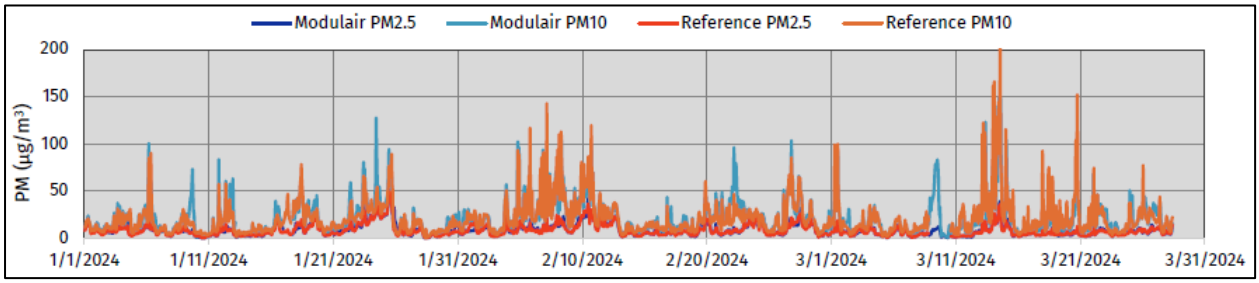


Figure 4.4 AQ8 MODULAIR Serial Number 00264 PM Collocation and Comparison Data for January – March 2024



Measurement error statistics were calculated via co-location of the MODULAIR and the FEM samplers at AQ5 and AQ8. The bias is determined from the slope and intercept measurements; the linearity is determined from the coefficient of determination (R^2). The root-mean-square error (RSME) is a measure of the expected error. Precision is the degree of agreement within a set of observations, and it is presented as the standard deviation (SD) or coefficient of determination (CV). The EPA recommended performance metrics for the non-regulatory MODULAIR sensors are presented in Table 4-4. The performance metric results of the first quarter collocation of the MODULAIR and FEM samplers at AQ5 and AQ8 are presented in Table 4-5.

Table 4-4 EPA Recommended Performance Metrics and Target Values

Performance Metric		Target Value
Precision	Standard Deviation	≤5 µg/m^3
	CV	≤30%
Bias	Slope (m)	1.0±0.35
	Intercept (b)	-5 ≤ b ≤ 5 µg/m^3
Linearity	R^2	≥0.70
Error	RSME	≤7 µg/m^3

Table 4-5 AQ5 and AQ8 MODULAIR and FEM Collocation Statistics for First Quarter 2024

Statistics	AQ5 Modulair 00266		AQ5 Modulair 00387		AQ5 Modulair 00388		AQ8 Modulair 00264	
	$PM_{2.5}$	PM_{10}	$PM_{2.5}$	PM_{10}	$PM_{2.5}$	PM_{10}	$PM_{2.5}$	PM_{10}
Correlation Coefficient (r2)	0.88	0.66	0.77	0.67	0.84	0.57	0.86	0.68
Slope (m)	0.94	0.95	0.75	0.76	1.08	0.67	0.99	0.78
Intercept (b)	0.27	1.94	0.78	1.43	-0.38	3.02	0.78	3.82
RMSW	2.58	11.00	3.64	10.12	10.04	20.60	2.88	13.67
Precision (CV)	18.35	23.88	23.52	23.85	19.86	16.54	19.15	23.40
Precision (SD)	2.57	10.96	3.41	9.65	7.79	15.92	2.79	13.66

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5.0 QUALITY CONTROL

Meteorological, and PM_{10} and $PM_{2.5}$ concentration data collected at CSX monitoring stations have been subjected to a series of quality control procedures to document the validity of the data and increase the integrity of the data sets. The quality control performed for these data is described in this section.

5.1 Visual Inspection of Equipment

Visual inspection of the meteorological tower, sensors, continuous FEM PM_{10}/$PM_{2.5}$ monitors, and network samplers is performed at least every month or more frequently when problems are indicated. Abnormal conditions are logged and reported immediately to the program manager for corrective action.

5.2 Remote Interrogation of the Monitoring Stations

The data loggers at the AQ5 and AQ8 meteorological tower and PM_{10}/$PM_{2.5}$ monitoring stations are interrogated every day to download and process the data. PM_{10} and $PM_{2.5}$ concentration from the MODULAIR samplers are downloaded from the QuantAQ Cloud daily. Abnormal data values or apparent problems are reported immediately to the program manager who initiates corrective action and determines if a special visit to the site is required.

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5.3 Quality Control Data Inspections

During data acquisition, the data loggers at AQ5 and AQ8 collect and save 5-minute averages of each measured meteorological parameter, and PM_{10} and $PM_{2.5}$ concentrations. These values are stored in memory for subsequent retrieval via telephone, modem, and internet. Minutely MODULAIR data are downloaded daily. After the AQ5 and AQ8 data loggers are interrogated and MODULAIR data are downloaded from the Cloud, collecting all data since the last interrogation, the data are stored on Trinity computers in Salt Lake City.

The meteorological, PM_{10}, and $PM_{2.5}$ data files are input to a program which performs a series of quality control (QC) tests as listed in Table 5-1. The QC program produces a report that identifies each value in the data file that fails one or more of the listed tests. This report also provides means, maxima, and minima for each variable.

Table 5-1 Quality Control Checks Imposed by Data QC Program

Parameter	Less Than	Greater Than	Constant For
Wind Speed	0 m/s	35 m/s	2 hours
Wind Direction	0 deg	360 deg	2 hours
Temperature	-30 deg C	45 deg C	30 minutes
Relative Humidity	3%	102%	16 hours
Barometric Pressure	-20 mb < 7 day Avg.	20 mb > 7 day Avg.	2 hours
Precipitation	0 inches	1 inch in 24 hours	N/A
PM_{10}	-5 ug/m^3	150 ug/m^3	4 hours
$PM_{2.5}$	-10 ug/m^3	35 ug/m^3	4 hours
Shelter Temperature	20 deg C	30 deg C	N/A
Battery Voltage	11.5 V	16 V	N/A

5.4 Data Validation

When the QC program identifies values that exceed the criteria set for that parameter, the data file is inspected visually. In most cases, a flagged value is not invalid; it merely fell outside of expected ranges or "normal" rates of change for that parameter. If, after investigation, an air quality meteorologist determines that the value is reasonable, the value is not invalidated. If there is a reason to suspect the data point, the value is reset to "missing" (This is done on the data management file only, not on the raw data file collected from the data logger; the raw data file is never manipulated).

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For the purposes of this data report, data failures or discrepancies that would invalidate an hourly average for the meteorological sensors, T640x analyzers, and MODULAIR samplers are listed below:

- Loss of more than three five-minute average in a one-hour period,
- Visual evidence, on the stacked parameter/time plots for example, that the 5-minute value is an outlier,
- Data collected during calibrations and audits,
- Equipment malfunction,
- T640 reports a status error,
- Shelter temperature less than 0°C, $PM_{2.5}$ and PM_{10} concentrations set to missing,
- PM_{10} less than -5 µg/m^3, concentrations set to missing, and
- $PM_{2.5}$ less than -10 µg/m^3, concentrations set to missing.

On January 23, 2024, the internal pump was replaced on the T640x at the AQ5 monitoring location. As found, and after maintenance checks were conducted and showed the sampler operating within all criteria.

On March 20, a local fire was noted by CSXT personnel at a nearby facility called BERG Recycling. All particulate data from all samplers were flagged with the "IP" identifier for structure fire.

Invalid data parameters and the corrective action reports for the first quarter 2024 and corresponding times are presented in Appendix J.

5.5 Equipment Calibration

Calibrations of the meteorological equipment are performed every six months or whenever a sensor exceeds specified control limits or undergoes major maintenance or repair. The FEM T640X $PM_{10}/PM_{2.5}$ samplers are calibrated by Trinity personnel every three months or when problems are identified. The AQ5 T640X $PM_{10}/PM_{2.}$sampler was calibrated on February 29; the AQ8 T640X $PM_{10}/PM_{2.}$sampler was calibrated on February 28, 2024. The meteorological equipment was calibrated on February 28, 2024. No calibrations are performed on the MODULAIR samplers. All calibrations are performed using certified reference standards. Copies of the field calibration data sheets are presented in Appendix K.

5.6 T-API T640X PM_{10} and $PM_{2.5}$ Flow and Leak Checks

Field quality control activities for the T-API Model T640X samplers include flow rate, temperature, and pressure checks. The T640X $PM_{2.5}/PM_{10}$ continuous samplers quality control checks and calibrations are performed using a certified flow transfer standard**.**

Monthly flow checks are performed on the T-API T640x continuous $PM_{10}/PM_{2.5}$. Copies of the monthly flow checks are included in Appendix L. The results of the monthly flow checks are presented in Table 5-2. The measured flow rates of the particulate samplers should not exceed ±4 percent of the sampler flow rate or within ±5 percent of the design flow rate of 16.7 L/min. Flow rate difference is calculated using the following equation:

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$$d_i = \frac{Y_i - X_i}{(X_i)} x100$$

Where d_i is the percent difference, Y_i is the sampler indicated flow, and X_i is the flow as measured by the reference flow standard.

Table 5-2 AQ5 and AQ8 $PM_{10}/PM_{2.5}$ T640X Monthly Flow Check Results

Month	Target Flow Rate (L/min)	Sampler Indicated Flow (L/min)	Reference Flow (L/min)	Percent Difference Ref. Flow (%)	Percent Difference Design Flow (%)
AQ5 PM_{10}/ $PM_{2.5}$					
January	5.00	5.16	5.17	-0.2	3.4
	11.67	11.76	11.72	0.3	0.4
February	5.00	4.98	4.91	1.4	-1.8
	11.67	11.67	11.63	0.3	-0.3
March	5.00	5.03	4.88	3.1	-2.4
	11.67	11.67	11.59	0.7	-0.7
AQ8 PM_{10}/ $PM_{2.5}$					
January	5.00	4.98	4.97	0.2	-0.6
	11.67	11.78	11.70	0.7	0.3
February	5.00	4.88	4.96	-1.6	-0.8
	11.67	11.60	11.58	0.2	-0.8
March	5.00	4.99	5.00	-0.2	0.0
	11.67	11.75	11.69	0.5	0.2

5.7 T-API T640X PM_{10} and $PM_{2.5}$ Statistics for Assessment

Calculations for the PM_{10} and $PM_{2.5}$ T-API T640X data quality assessment were made based 40 CFR 58 Appendix A.

The bias estimator is an upper bound on the mean absolute value of the percent differences. The bias estimate equation is presented as equation (2).

$$|AB| = AB + t_{0.95,n-1}\frac{AS}{\sqrt{n}} \quad (2)$$

Where: *n* is the number of single point checks being aggregated; $t_{0.95, n-1}$ is the 95th quantile of a T-distribution with *n-1* degrees of freedom.

The quantity *AB* is the mean of the absolute values of the *d* i's and is calculated for PM_{10} and $PM_{2.5}$ using equation (3).

$$AB = \frac{1}{n}\sum_{i=0}^{n}|d_i| \quad (3)$$

The standard deviation of the absolute value of the *d*i's is calculated for PM_{10} using equation 4.

$$AS = \sqrt{\frac{n\sum_{i=0}^{n}|d_i^2| - \left(\sum_{i=0}^{n}|d_i|\right)^2}{n(n-1)}} \quad (4)$$

The mean percent difference, precision, and bias estimates limits for PM_{10} and $PM_{2.5}$ for the first quarter 2024 are presented in Table 5-3.

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Table 5-3 First Quarter 2024 Bias Statistics for T-API T640X Continuous $PM_{10}/PM_{2.5}$ Samplers

Statistics	AQ5 $PM_{10}/PM_{2.5}$	AQ8 $PM_{10}/PM_{2.5}$
Mean Percent Difference	0.947	-0.040
AB	1.011	0.564
AS	1.104	0.554
Bias Estimate	+1.92	±1.02

NA = Not available.

5.8 T-API T640X Monitoring Enclosure Temperature

The T-API T640X enclosure's role in quality control is to provide a temperature-controlled environment in which the continuous particulate monitoring equipment can operate at optimum performance. The mean enclosure temperature should be approximately 25°C. Enclosure interior temperature is monitored by the datalogger and reported along with other measurements. Deviations greater than ±5°C from the 25°C optimum shelter temperatures indicate a need to readjust the temperature control system. Table 5-4 presents the average, maximum, and minimum interior shelter temperatures for the monitoring period. Figures 5.1 and 5.2 present plots of the internal enclosure temperatures and a running 24-hour standard deviations of the enclosure temperatures for AQ5 and AQ8. Appendix M contains the hourly shelter temperatures for the first quarter 2024.

Table 5-4 Monitoring Enclosure Interior Temperature in Degrees Centigrade for First Quarter 2024 – AQ5 and AQ8 Monitoring Stations

Month	Average Temperature	Maximum Temperature	Minimum Temperature	ABS Deviation from 25°C
		AQ5		
January	15.5	25.2	9.6	15.4
February	16.5	26.0	-2.8	27.8
March	19.7	25.5	11.9	13.1
		AQ8		
January	16.4	28.5	10.8	14.2
February	18.3	28.5	11.3	13.7
March	21.3	29.2	11.1	13.9

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Figure 5.1 AQ5 Enclosure Temperature and Temperature Standard Deviation

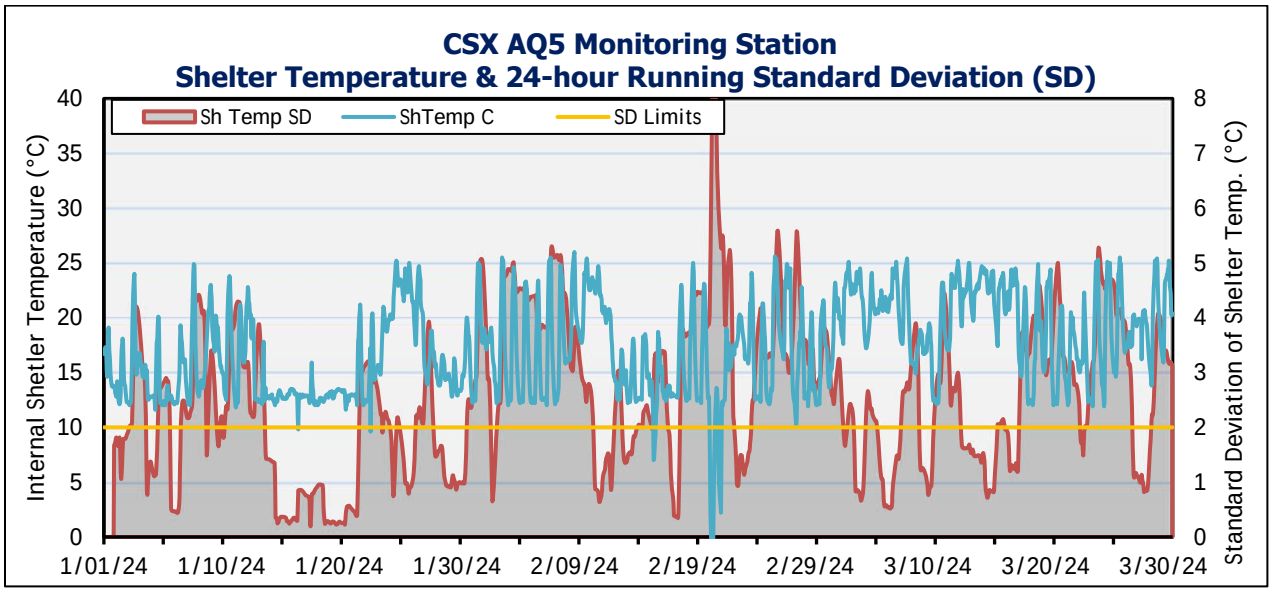
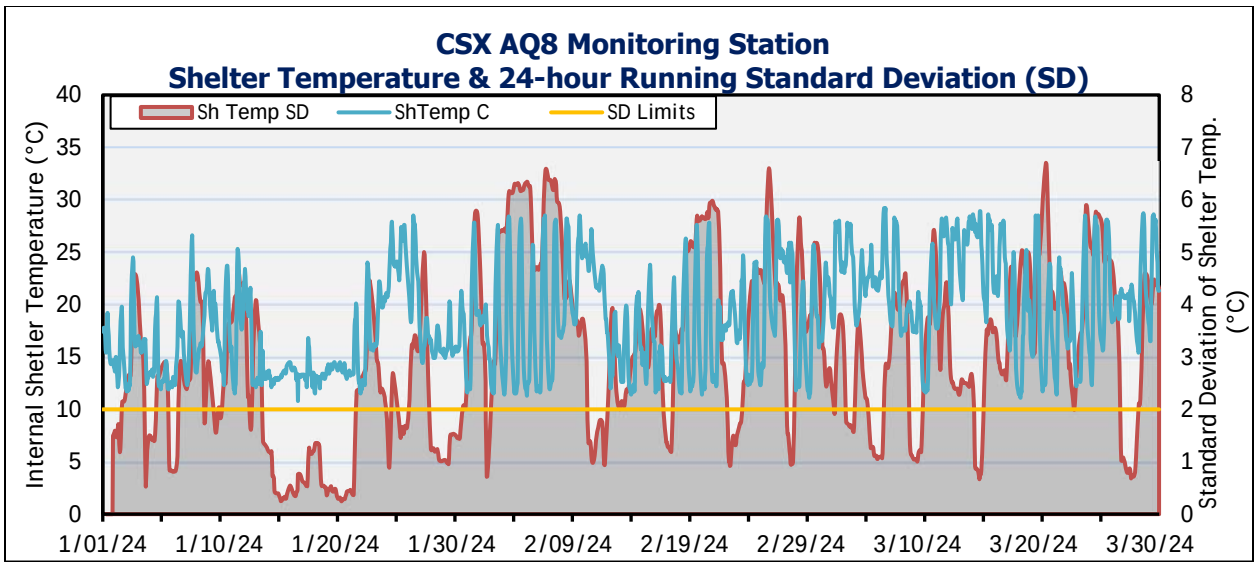


Figure 5.2 AQ8 Enclosure Temperature and Temperature Standard Deviation



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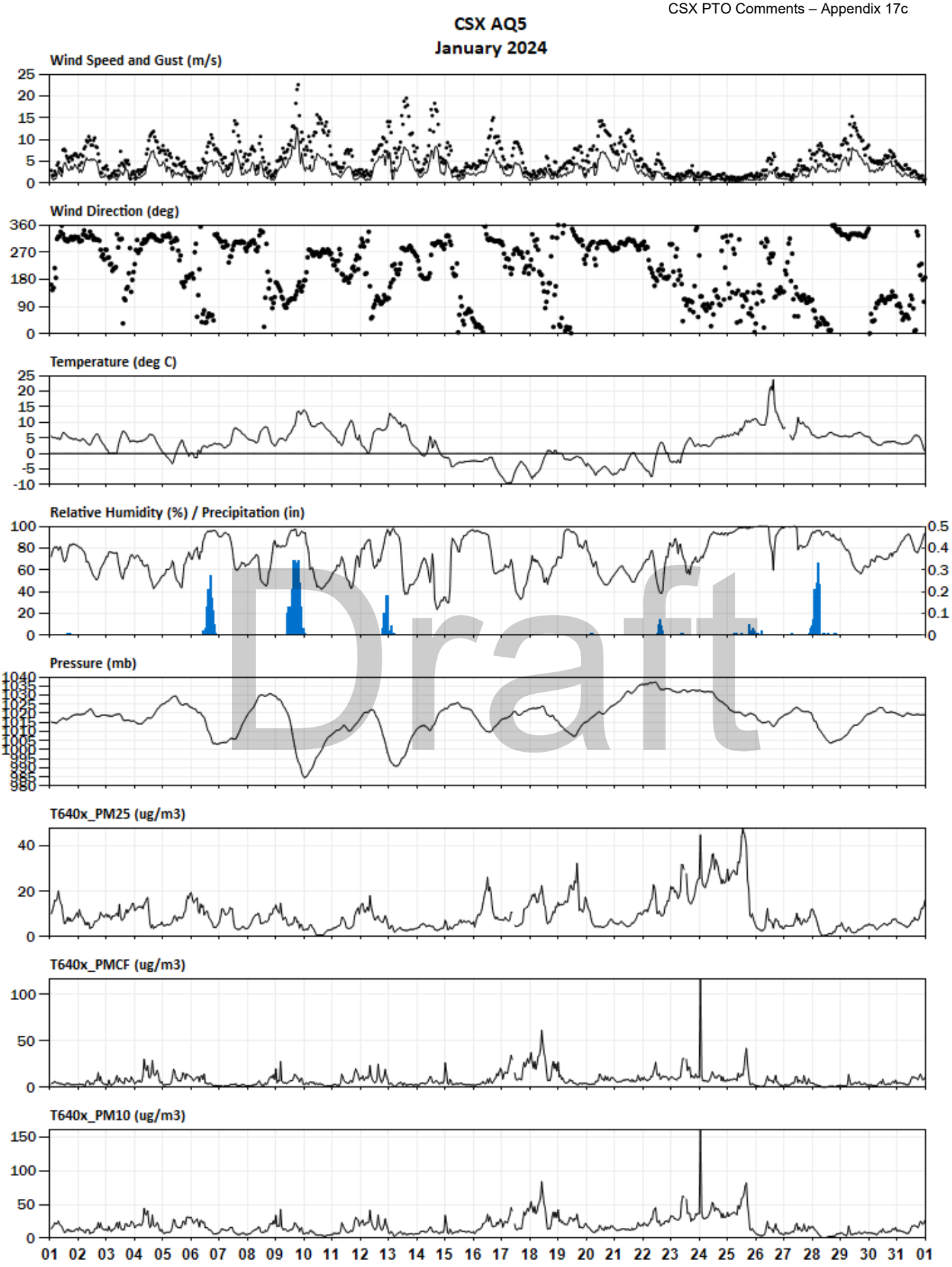
6.0 QUALITY ASSURANCE AUDITS

To comply with EPA requirements, a performance audit of meteorological instrumentation is conducted every six months, every three months for the particulate sampling equipment, or within 60 days after installation. Reference standards used in performance audits are independent of those used for calibration checks. Audits will be performed once the quality assurance project plan developed for this project has been approved.

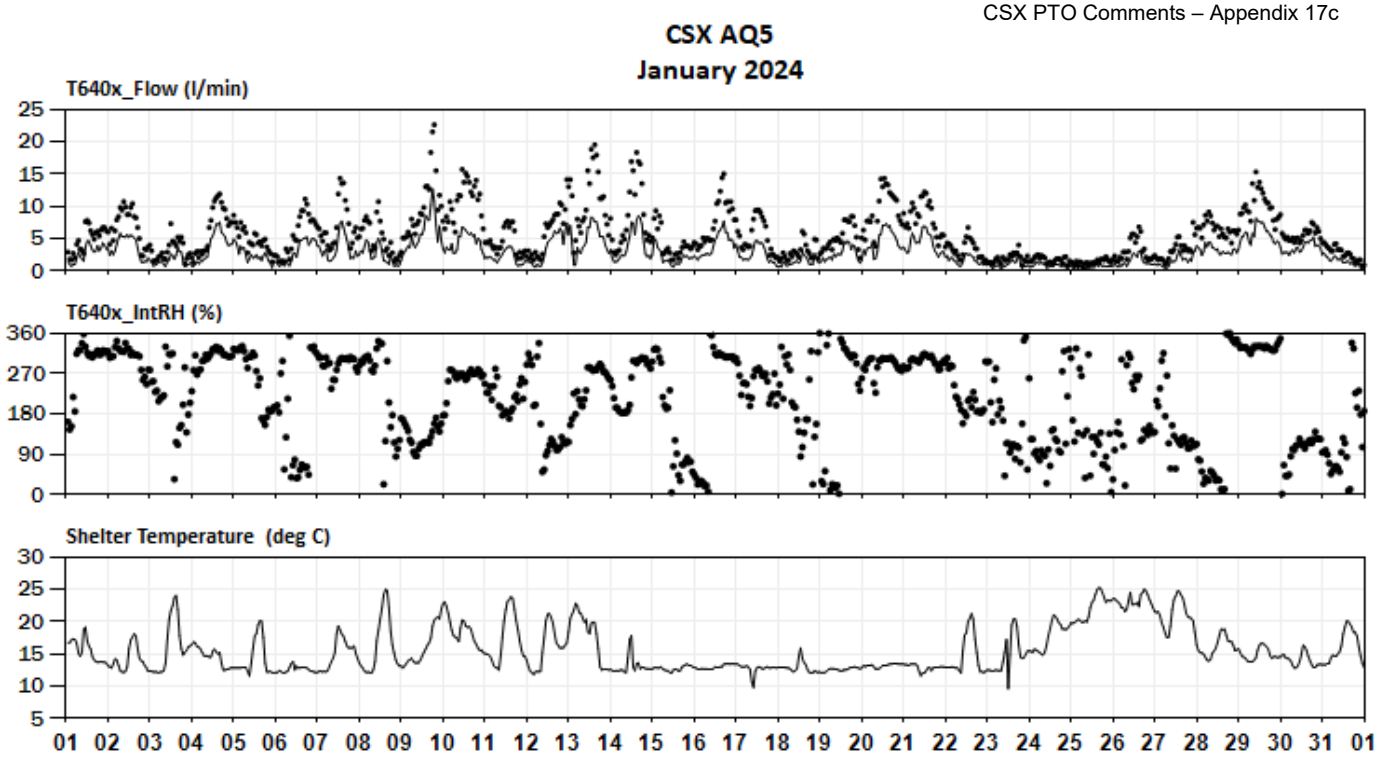
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APPENDIX A. STACKED PARAMETER PLOTS FOR FIRST QUARTER 2024

Draft

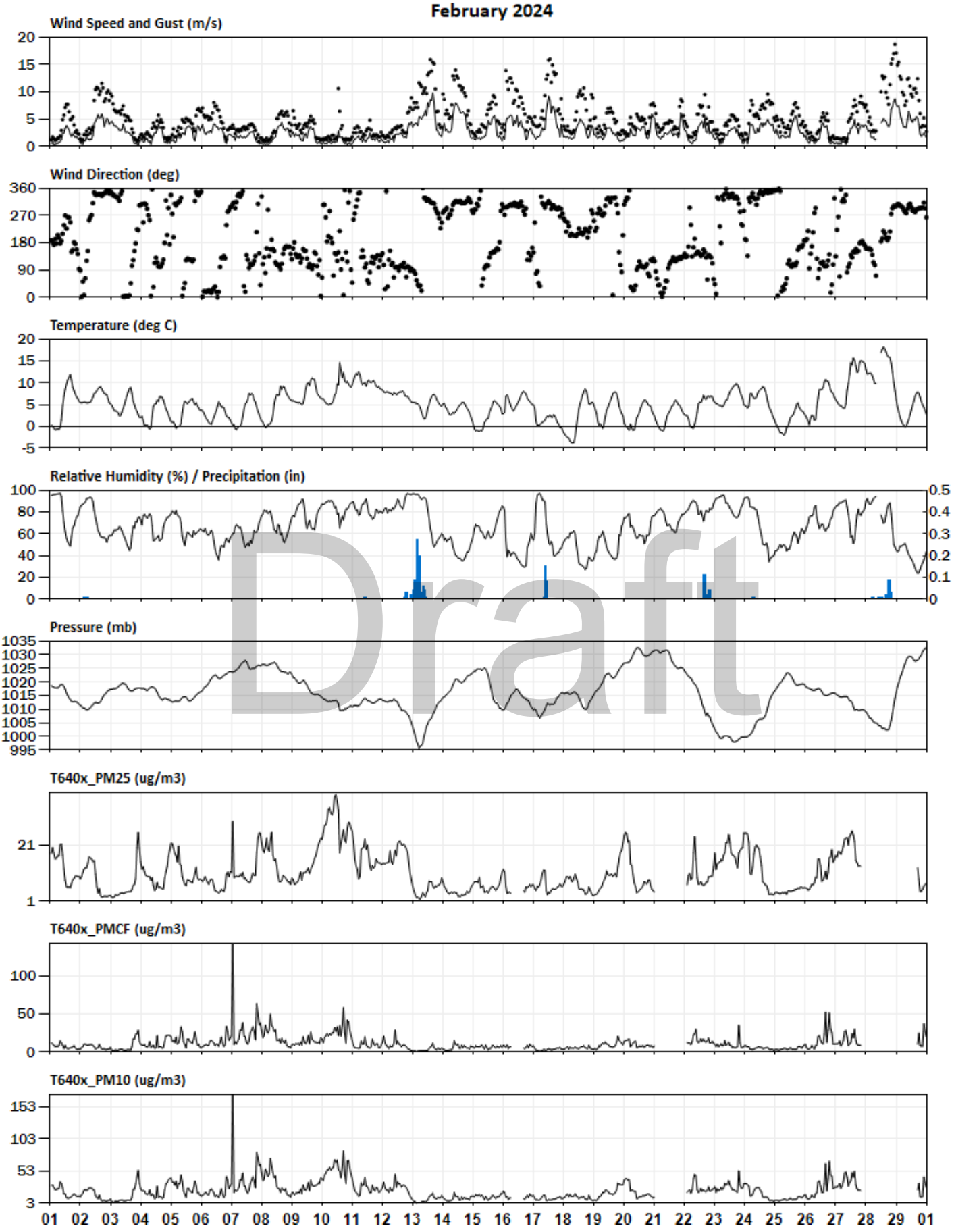

CSX AQ5
January 2024
Wind Speed and Gust (m/s)
Wind Direction (deg)
Temperature (deg C)
Relative Humidity (%) / Precipitation (in)
Pressure (mb)
T640x_PM25 (ug/m3)
T640x_PMCF (ug/m3)
T640x_PM10 (ug/m3)
01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 01

Draft

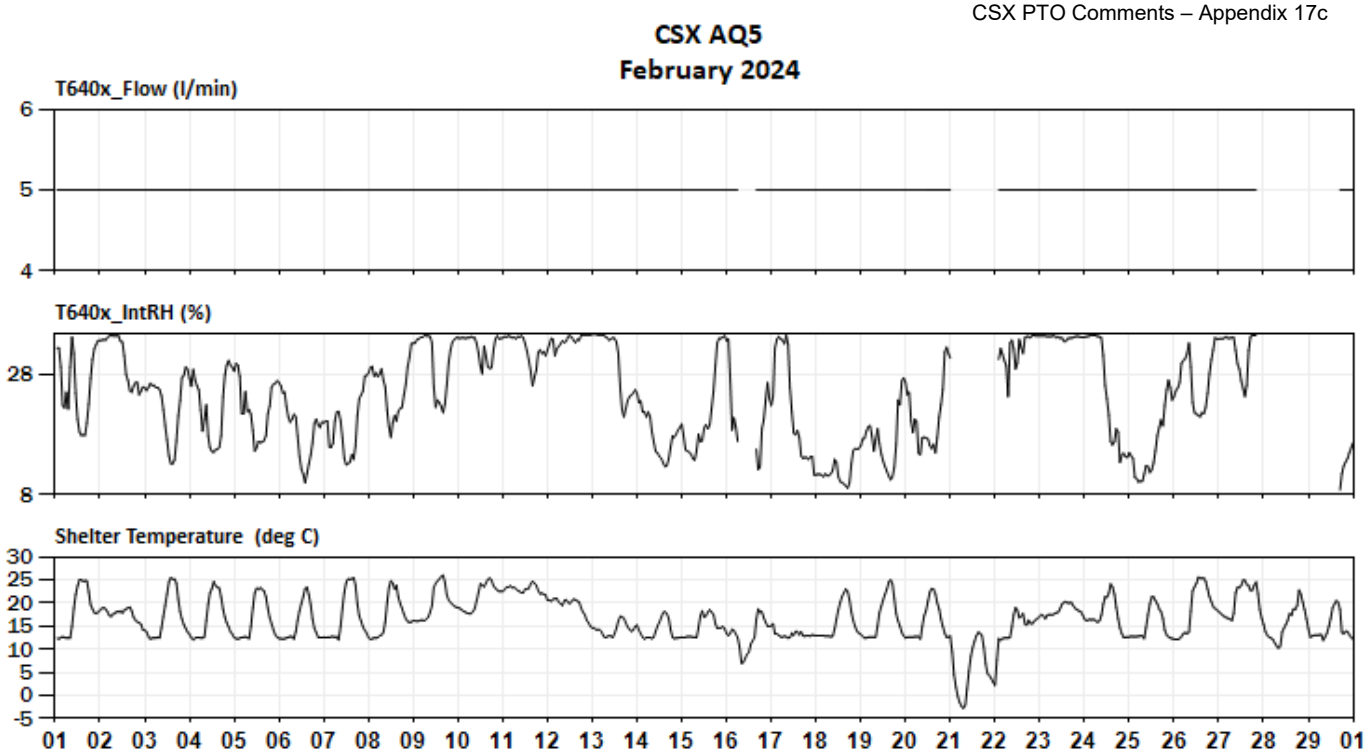

CSX AQ5
January 2024
T640x_Flow (l/min)
25
20
15
10
5
0
T640x_IntRH (%)
360
270
180
90
0
Shelter Temperature (deg C)
30
25
20
15
10
5
01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 01

Draft

CSX AQ5
February 2024



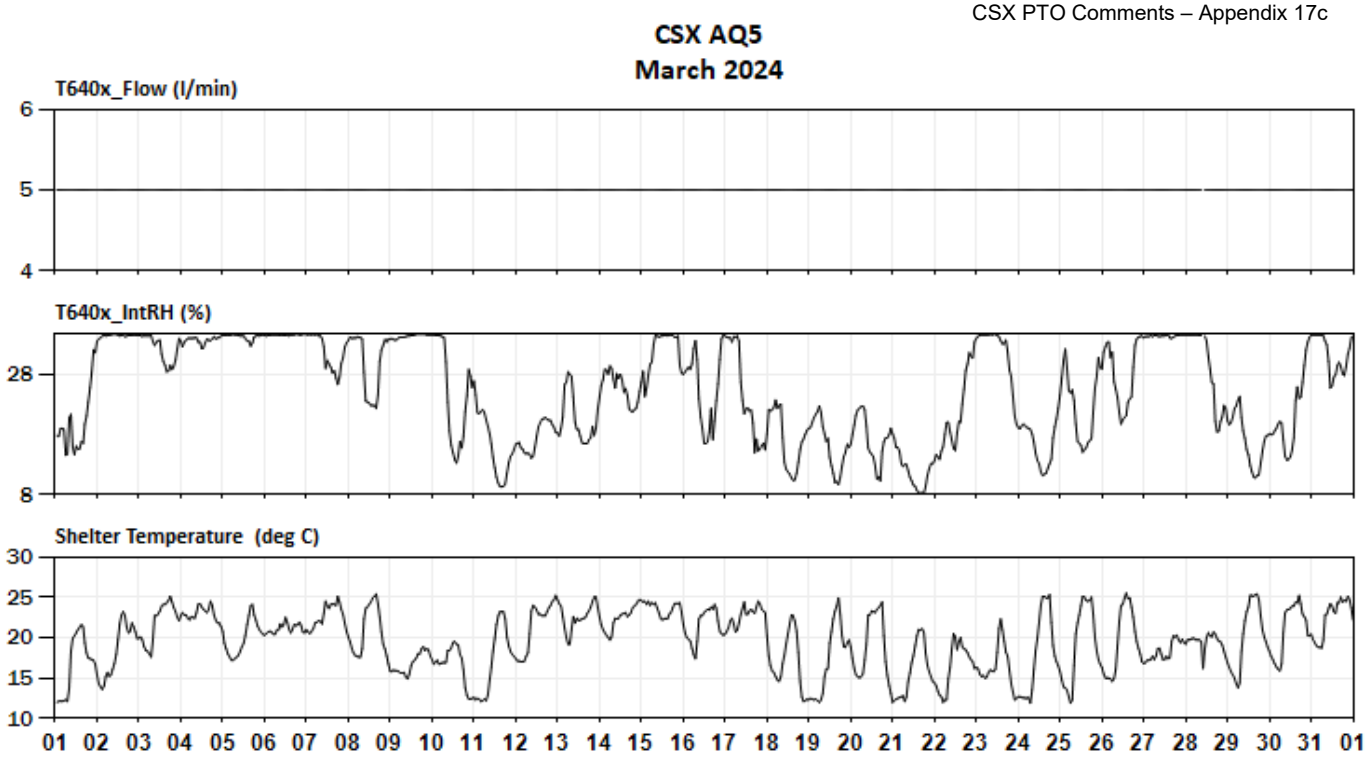
Draft


CSX AQ5
February 2024
T640x_Flow (l/min)
6
5
4
T640x_IntRH (%)
28
8
Shelter Temperature (deg C)
30
25
20
15
10
5
0
-5
01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 01

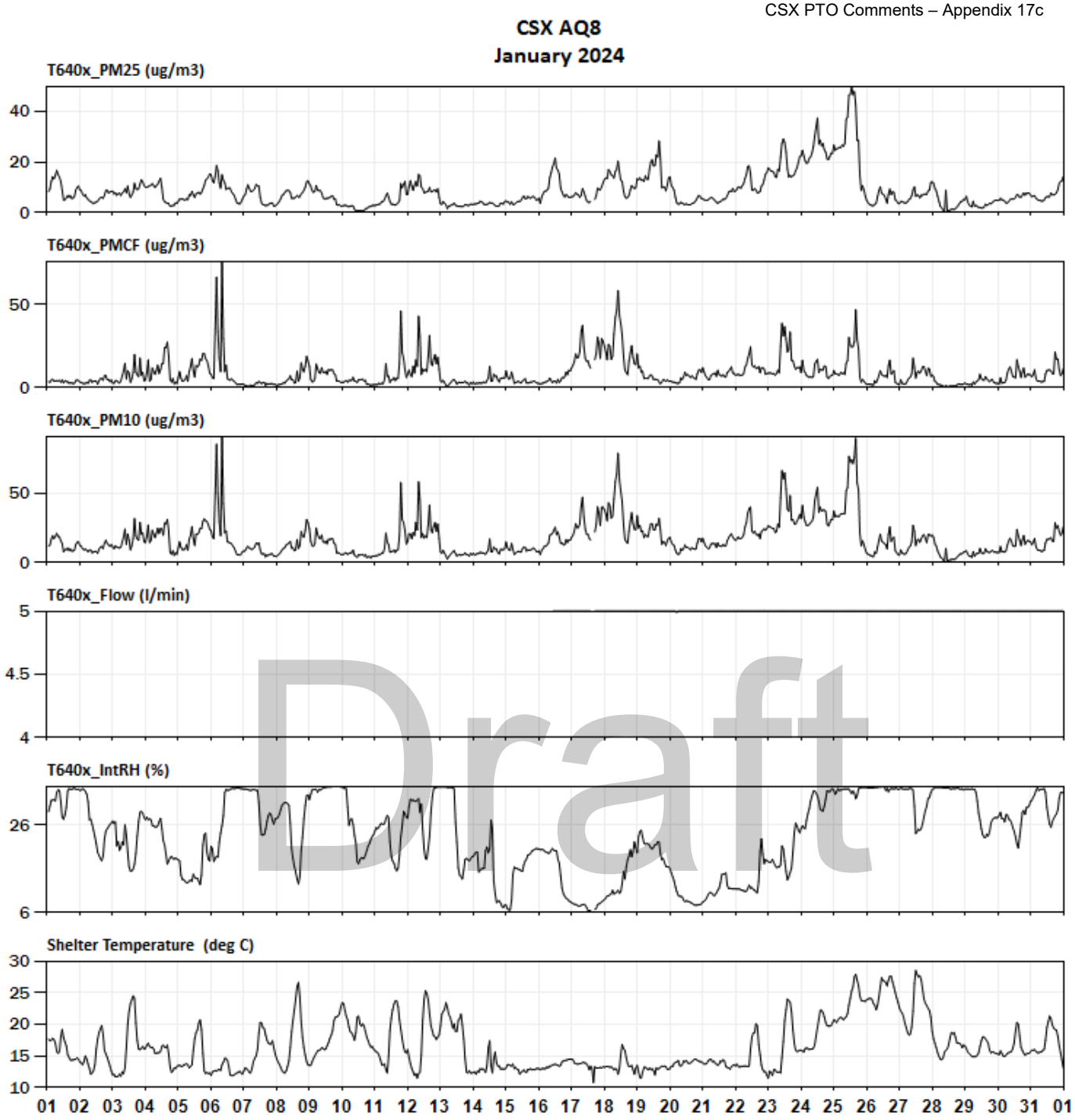
Draft


CSX AQ5
March 2024
Wind Speed and Gust (m/s)
25
20
15
10
5
0
Wind Direction (deg)
360
270
180
90
0
Temperature (deg C)
25
20
15
10
5
0
-5
Relative Humidity (%) / Precipitation (in)
100
80
60
40
20
0
0.5
0.4
0.3
0.2
0.1
0
Pressure (mb)
1040
1035
1030
1025
1020
1015
1010
1005
1000
995
T640x_PM25 (ug/m3)
20
0
T640x_PMCF (ug/m3)
100
50
0
T640x_PM10 (ug/m3)
102
52
2
01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 01

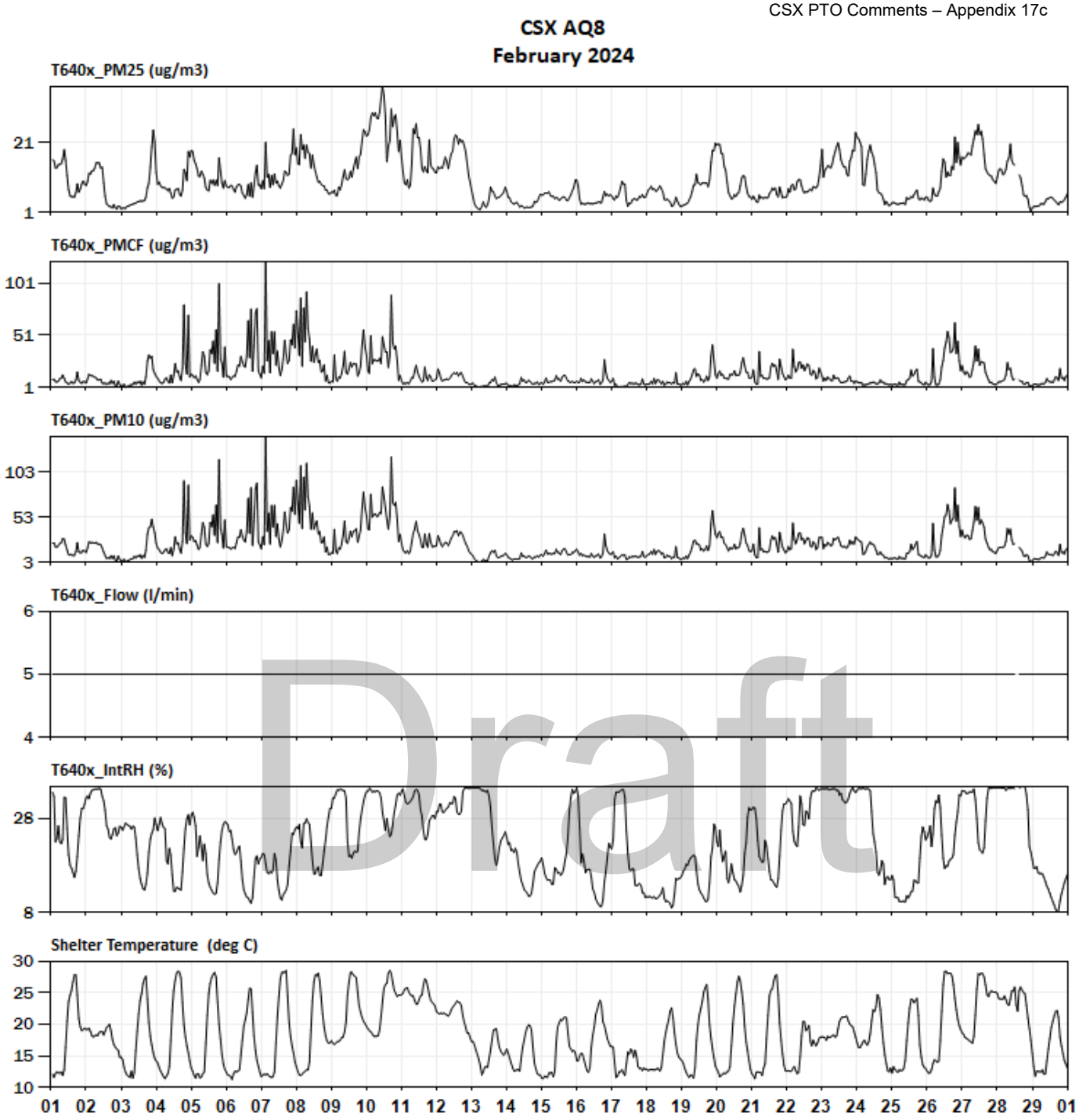
Draft


CSX AQ5
March 2024
T640x_Flow (l/min)
6
5
4
T640x_IntRH (%)
28
8
Shelter Temperature (deg C)
30
25
20
15
10
01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 01

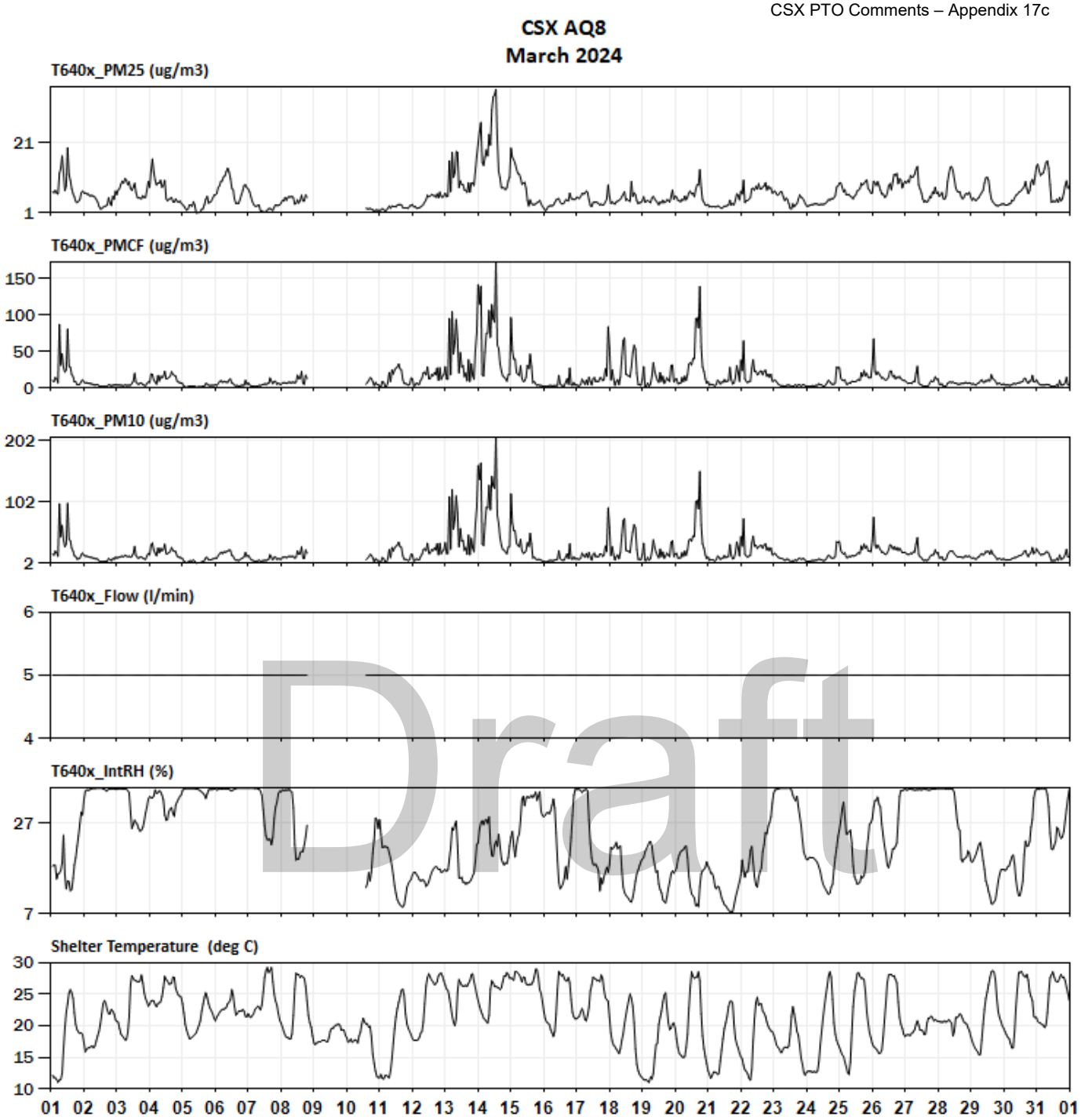
Draft


CSX AQ8
January 2024
T640x_PM25 (ug/m3)
40
20
0
T640x_PMCF (ug/m3)
50
0
T640x_PM10 (ug/m3)
50
0
T640x_Flow (l/min)
5
4.5
4
T640x_IntRH (%)
26
6
Shelter Temperature (deg C)
30
25
20
15
10
01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 01

Draft


CSX AQ8
February 2024
T640x_PM25 (ug/m3)
21
1
T640x_PMCF (ug/m3)
101
51
1
T640x_PM10 (ug/m3)
103
53
3
T640x_Flow (l/min)
6
5
4
T640x_IntRH (%)
28
8
Shelter Temperature (deg C)
30
25
20
15
10
01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 01

Draft


CSX AQ8
March 2024
T640x_PM25 (ug/m3)
21
1
T640x_PMCF (ug/m3)
150
100
50
0
T640x_PM10 (ug/m3)
202
102
2
T640x_Flow (l/min)
6
5
4
T640x_IntRH (%)
27
7
Shelter Temperature (deg C)
30
25
20
15
10
01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 01

Draft

APPENDIX B. HOURLY WIND DATA FOR FIRST QUARTER 2024

Draft

CSX AQ5

Unit Vector Wind Speed and Direction in mps for January, 2024

Hr Beg Hr End Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13
1	162/01.4	145/01.0	152/00.7	217/01.0	185/01.0	314/02.1	322/02.9	322/02.2	337/01.8	357/01.5	330/03.6	316/04.6	309/04.6
2	305/02.4	309/03.1	308/02.5	328/03.1	342/04.1	326/05.1	320/05.8	319/05.3	318/05.3	338/05.2	326/05.6	325/05.2	311/05.5
3	251/01.4	253/00.8	229/00.9	232/01.0	208/01.4	216/01.4	217/01.5	221/00.9	329/00.7	286/01.4	313/01.7	312/02.6	314/02.3
4	277/00.7	310/01.1	268/01.4	277/01.1	279/01.5	298/01.5	299/01.8	312/02.0	303/02.2	308/03.9	315/05.0	324/05.4	325/06.2
5	322/04.6	322/04.0	322/02.6	329/03.8	331/03.4	320/03.6	302/02.4	282/01.3	306/01.9	307/02.5	316/02.0	310/02.1	275/02.5
6	199/01.2	183/00.7	270/00.9	298/01.0	056/00.8	128/01.7	214/01.1	354/00.8	039/01.5	066/02.6	078/02.8	037/02.1	038/03.4
7	304/03.8	305/03.1	287/02.3	286/03.0	306/03.3	292/01.7	293/01.5	236/01.6	256/02.0	255/02.3	278/03.2	292/05.5	302/07.3
8	298/03.1	294/02.8	305/03.8	305/04.8	309/04.5	299/03.3	277/01.8	273/02.0	287/02.1	325/04.4	342/05.0	338/04.4	336/03.1
9	167/02.5	159/02.9	151/03.4	142/03.8	122/03.6	116/05.3	095/04.2	087/03.6	086/04.1	102/04.6	112/05.7	110/05.6	117/06.4
10	177/02.8	204/03.7	253/03.3	278/03.2	277/04.2	274/02.7	262/02.8	258/03.2	269/05.4	263/05.3	269/06.8	267/06.6	256/06.3
11	227/02.2	226/02.0	241/02.2	211/02.0	242/01.7	280/01.7	262/01.2	198/01.8	195/02.1	176/02.6	181/03.0	186/03.4	182/03.7
12	314/01.5	303/01.2	289/01.3	198/00.7	201/00.6	307/01.0	337/00.8	157/00.7	051/01.2	056/02.2	088/03.5	097/04.4	111/04.7
13	155/07.0	169/04.2	225/00.9	179/00.9	230/03.6	212/02.9	199/02.7	197/03.6	212/03.9	232/04.4	283/06.8	284/06.7	281/08.3
14	241/02.0	215/01.4	194/01.4	193/01.5	186/01.9	183/02.3	182/02.5	184/02.3	182/02.9	188/04.2	200/05.3	261/07.5	298/07.4
15	323/04.8	326/04.8	323/03.6	306/03.3	294/02.9	217/01.3	199/01.5	191/01.6	194/01.7	233/01.2	005/00.8	063/00.6	121/01.0
16	037/02.0	023/01.7	026/02.1	031/02.3	027/02.5	019/02.4	021/02.7	007/02.6	359/02.5	354/02.7	329/03.8	314/04.8	310/05.2
17	293/03.1	265/02.1	222/02.1	248/01.7	249/01.8	246/01.8	218/01.7	198/02.0	215/02.4	263/03.5	278/04.6	278/04.7	282/04.3
18	245/00.8	329/00.6	214/01.3	308/01.2	290/00.8	312/00.9	278/01.0	206/01.1	197/01.2	194/01.4	167/01.5	140/01.2	085/01.5
19	030/01.5	024/02.0	053/01.4	333/01.8	359/02.0	010/02.1	023/01.7	022/02.6	015/02.2	021/02.6	002/02.6	347/02.5	338/03.1
20	282/03.2	278/02.5	292/03.4	300/03.6	303/03.6	304/04.1	248/01.8	227/01.9	283/03.0	299/05.5	299/05.6	304/07.0	303/07.0
21	282/03.2	280/02.8	284/02.9	299/04.7	303/05.8	302/05.3	300/04.3	297/04.5	295/04.3	303/05.4	311/06.8	314/06.9	311/06.7
22	305/02.3	281/01.6	288/02.0	286/02.0	244/01.6	218/01.4	214/01.0	201/00.8	189/00.8	159/01.3	183/02.3	175/02.7	209/02.5
23	296/01.0	205/00.7	162/00.4	256/00.6	281/00.8	178/00.9	209/00.6	192/00.4	165/00.6	042/00.7	114/00.9	115/01.0	094/01.4
24	123/00.6	124/00.7	092/00.9	097/01.4	083/01.2	076/01.1	099/01.3	090/01.1	087/01.1	025/00.5	101/00.6	064/00.7	142/00.7
25	166/00.5	118/00.4	325/00.8	138/00.3	281/00.7	264/00.8	133/00.2	037/00.4	143/00.6	312/00.2	042/00.5	128/00.7	091/00.5
26	099/01.0	139/00.8	162/00.6	135/01.0	301/00.7	108/01.1	021/01.2	289/00.7	314/01.2	305/01.6	249/02.4	235/02.8	264/02.4
27	209/00.9	197/00.9	237/01.0	298/00.8	315/00.6	175/00.5	265/00.5	114/00.7	058/01.4	154/01.5	131/01.4	058/01.6	122/02.4
28	079/03.6	076/03.3	052/02.4	025/02.9	037/04.4	035/03.7	032/04.4	053/04.4	050/03.6	043/03.5	032/03.2	035/03.4	032/02.6
29	327/04.5	329/05.3	328/05.4	329/06.0	324/05.8	321/04.5	313/04.0	323/05.8	331/05.3	329/08.1	330/07.7	331/07.7	329/07.4
30	002/02.6	066/02.9	042/02.8	042/02.9	045/02.4	086/02.9	102/03.2	100/02.8	109/03.5	111/03.6	125/02.9	115/03.1	110/03.6
31	094/02.8	099/02.3	089/02.2	070/01.7	046/01.5	054/01.9	062/02.3	064/02.1	059/01.7	051/01.9	094/01.7	126/01.3	115/01.3
MEAN	**271/02.4**	**259/02.2**	**269/02.0**	**284/02.2**	**298/02.4**	**287/02.4**	**273/02.1**	**243/02.2**	**306/02.4**	**321/03.0**	**335/03.5**	**337/03.8**	**324/04.0**
MAX	**155/07.0**	**329/05.3**	**328/05.4**	**329/06.0**	**303/05.8**	**116/05.3**	**320/05.8**	**323/05.8**	**269/05.4**	**329/08.1**	**330/07.7**	**331/07.7**	**281/08.3**
MIN	**166/00.5**	**118/00.4**	**162/00.4**	**138/00.3**	**201/00.6**	**175/00.5**	**133/00.2**	**192/00.4**	**165/00.6**	**312/00.2**	**042/00.5**	**063/00.6**	**091/00.5**

MEANS REQUIRE 75% VALID DATA

MISSING DATA DENOTED BY ---

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CSX AQ5

Unit Vector Wind Speed and Direction in mps for January, 2024

Hr Beg / Hr End / Day	13 / 14	14 / 15	15 / 16	16 / 17	17 / 18	18 / 19	19 / 20	20 / 21	21 / 22	22 / 23	23 / 24	MEAN	MAX SPD	MIN SPD
1	312/03.9	306/03.2	313/02.9	312/03.1	321/03.9	312/03.1	312/03.5	321/04.3	320/04.0	316/03.4	319/03.5	**310/02.8**	**316/04.6**	**152/00.7**
2	316/05.4	311/05.1	312/04.8	311/03.5	308/02.3	278/01.4	255/01.3	262/01.5	246/01.4	278/02.0	278/01.7	**306/03.7**	**320/05.8**	**255/01.3**
3	035/01.8	117/02.4	111/03.6	149/03.0	155/02.9	200/01.6	283/00.7	139/00.8	178/01.0	205/01.2	230/00.8	**226/01.6**	**111/03.6**	**329/00.7**
4	329/07.2	321/07.2	326/07.5	320/05.9	312/05.7	311/05.3	310/04.4	307/03.9	308/04.1	309/04.1	325/04.9	**307/03.9**	**326/07.5**	**277/00.7**
5	243/01.9	259/02.2	170/01.6	165/02.3	155/02.8	173/02.3	189/01.5	185/01.3	187/00.5	195/01.4	196/01.4	**264/02.3**	**322/04.6**	**187/00.5**
6	055/04.8	067/04.7	064/05.0	060/05.1	062/05.2	045/04.0	328/04.4	325/05.0	330/04.9	317/04.8	312/03.9	**028/03.0**	**062/05.2**	**183/00.7**
7	305/07.7	302/06.7	302/05.7	304/04.7	300/03.4	306/01.9	303/02.1	302/02.0	283/03.1	274/02.3	287/02.5	**290/03.4**	**305/07.7**	**293/01.5**
8	023/01.6	119/01.5	297/01.3	205/01.0	150/02.6	177/01.5	116/00.7	085/01.0	102/00.7	122/00.9	170/01.6	**302/02.5**	**342/05.0**	**116/00.7**
9	117/08.5	118/08.1	115/07.8	128/10.1	141/12.7	158/10.8	171/07.1	152/04.5	141/06.9	158/04.7	177/03.4	**131/05.8**	**141/12.7**	**167/02.5**
10	259/05.9	271/05.6	279/05.9	269/05.4	269/05.6	270/04.2	279/05.0	276/04.8	262/03.3	267/02.7	247/01.9	**262/04.4**	**269/06.8**	**247/01.9**
11	169/03.7	186/03.8	193/03.4	217/02.3	223/01.1	208/00.8	245/00.9	259/00.9	214/01.0	251/01.5	290/01.5	**218/02.1**	**186/03.8**	**208/00.8**
12	124/05.0	118/05.3	109/06.2	099/05.8	100/05.9	106/06.6	128/06.1	116/04.1	113/06.0	119/07.4	117/05.6	**107/03.7**	**119/07.4**	**201/00.6**
13	276/08.1	278/07.6	277/07.6	285/06.5	291/05.3	286/05.3	273/05.2	273/04.0	266/03.3	259/02.7	256/03.3	**248/04.8**	**281/08.3**	**225/00.9**
14	297/05.6	293/07.9	300/08.5	301/08.2	305/07.2	302/04.5	304/02.6	290/02.2	293/02.4	280/01.9	296/02.5	**251/04.0**	**300/08.5**	**215/01.4**
15	091/01.3	043/01.0	031/01.2	067/02.0	067/02.4	074/02.2	082/02.3	072/01.9	074/02.0	051/02.0	045/02.3	**050/02.1**	**323/04.8**	**063/00.6**
16	315/06.1	314/06.3	310/06.8	309/07.7	306/06.0	306/05.9	308/04.7	306/04.9	308/04.7	300/03.5	304/04.1	**337/04.1**	**309/07.7**	**023/01.7**
17	275/04.3	265/04.3	263/03.7	269/02.9	252/01.8	203/01.3	216/01.7	224/01.3	269/01.3	199/00.8	225/00.6	**247/02.5**	**278/04.7**	**225/00.6**
18	106/03.0	138/02.4	168/02.2	167/01.7	256/01.0	320/01.1	023/01.0	129/02.7	157/01.8	317/01.4	360/01.2	**216/01.4**	**106/03.0**	**329/00.6**
19	326/04.6	323/04.2	315/04.6	310/04.4	304/03.3	311/04.0	310/03.8	292/02.6	247/01.6	232/01.2	259/01.6	**338/02.7**	**326/04.6**	**232/01.2**
20	303/07.3	302/06.8	304/07.0	305/06.1	300/05.8	295/05.4	287/04.8	280/03.9	279/03.5	275/03.4	286/03.7	**290/04.6**	**303/07.3**	**248/01.8**
21	308/05.8	306/05.6	310/05.4	301/03.9	292/03.1	291/02.7	278/02.1	279/02.7	292/02.9	298/02.9	294/02.1	**297/04.3**	**314/06.9**	**278/02.1**
22	214/02.6	195/02.3	228/02.1	211/01.5	185/01.5	186/01.1	182/01.0	184/01.3	190/00.9	296/01.0	296/00.9	**218/01.6**	**175/02.7**	**201/00.8**
23	104/01.5	112/01.6	080/01.2	108/01.7	105/02.8	072/00.9	158/00.4	343/00.7	351/00.7	056/00.9	259/00.6	**130/01.0**	**105/02.8**	**162/00.4**
24	146/00.7	124/01.0	120/01.0	098/00.9	094/00.8	275/00.6	319/01.3	113/00.6	219/00.2	323/01.0	304/00.7	**097/00.9**	**097/01.4**	**219/00.2**
25	128/00.9	118/00.9	111/00.7	138/01.1	068/00.7	067/00.8	085/00.7	059/00.7	136/00.7	006/00.7	034/00.8	**095/00.6**	**138/01.1**	**133/00.2**
26	256/02.1	265/03.1	120/02.9	124/01.7	144/01.2	142/01.2	133/01.1	153/01.2	142/01.0	138/01.0	139/01.1	**166/01.5**	**265/03.1**	**162/00.6**
27	116/03.2	111/02.4	127/01.7	128/01.9	116/01.9	103/01.3	104/01.8	120/01.5	109/02.7	110/03.1	113/03.9	**128/01.7**	**113/03.9**	**175/00.5**
28	012/02.6	009/03.0	012/02.7	359/02.7	356/02.9	360/02.7	349/02.5	342/03.3	337/03.4	345/02.8	335/03.3	**021/03.2**	**037/04.4**	**052/02.4**
29	330/07.5	326/06.8	331/06.1	328/06.1	325/05.5	323/05.4	321/04.4	322/04.2	333/04.6	340/04.4	348/03.7	**328/05.7**	**329/08.1**	**348/03.7**
30	103/04.4	113/04.5	118/04.3	122/04.7	115/04.8	124/05.2	140/03.8	124/04.0	125/03.9	124/03.5	094/02.5	**101/03.5**	**124/05.2**	**045/02.4**
31	084/01.4	009/01.5	012/01.1	338/01.2	325/00.9	226/00.8	194/00.9	231/01.1	179/00.5	106/00.3	186/00.4	**082/01.5**	**094/02.8**	**106/00.3**
MEAN	**341/04.2**	**319/04.2**	**333/04.1**	**278/03.8**	**295/03.6**	**270/03.1**	**270/02.7**	**264/02.5**	**238/02.5**	**282/02.4**	**280/02.3**	**287/02.9**		
MAX	**117/08.5**	**118/08.1**	**300/08.5**	**128/10.1**	**141/12.7**	**158/10.8**	**171/07.1**	**325/05.0**	**141/06.9**	**119/07.4**	**117/05.6**		**141/12.7**	
MIN	**146/00.7**	**118/00.9**	**111/00.7**	**098/00.9**	**068/00.7**	**275/00.6**	**158/00.4**	**113/00.6**	**219/00.2**	**106/00.3**	**186/00.4**			**219/00.2**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 744 DATA RECOVERY RATE = 100.0%

MONTHLY MEAN = 287/02.9 MAXIMUM WIND SPEED = 12.7 AT 141 DEGREES DATE OF OCCURRENCE = 1/9 AT 1800

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

Draft

CSX AQ5

Unit Vector Wind Speed and Direction in mps for February, 2024

Hr Beg Hr End Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13
1	188/00.5	182/00.8	173/00.3	192/00.4	177/00.5	206/00.6	196/00.7	178/00.9	186/01.2	209/02.4	238/02.4	270/03.3	227/03.8
2	001/00.5	052/00.4	007/01.0	063/01.0	120/01.7	153/01.3	255/01.2	264/01.2	271/01.3	311/02.0	346/04.2	338/04.6	339/05.1
3	343/04.6	338/04.2	336/03.7	333/03.8	330/03.5	328/03.3	318/02.9	340/03.0	350/03.0	002/04.1	002/03.4	005/02.5	003/02.7
4	307/01.6	247/00.8	309/00.9	306/01.3	292/01.4	270/00.8	255/01.0	004/00.4	356/01.2	033/02.0	113/02.5	130/02.4	115/03.1
5	275/01.1	198/01.2	309/00.7	303/00.9	310/02.0	316/02.4	316/01.4	328/01.7	004/02.4	029/02.4	047/02.1	122/03.4	127/03.5
6	002/04.0	020/03.0	019/02.3	017/02.2	021/02.7	023/02.5	018/02.9	014/02.5	025/03.2	030/04.1	035/04.0	017/03.6	001/03.5
7	308/01.7	313/01.8	294/01.1	314/01.9	335/01.7	341/01.5	332/02.0	339/01.7	349/01.5	036/01.8	018/01.5	139/01.8	124/01.9
8	109/00.4	132/00.5	080/00.4	161/00.5	288/00.4	136/00.5	159/00.7	189/00.9	159/01.3	153/01.5	115/01.7	107/02.8	108/03.5
9	161/02.6	181/01.8	143/02.3	133/02.0	133/02.0	139/02.1	115/01.2	128/01.1	159/01.0	154/02.2	154/02.3	127/01.5	099/02.6
10	305/00.8	305/00.5	264/00.6	184/00.5	201/00.9	284/00.8	195/00.6	179/00.7	072/00.9	146/00.7	142/00.9	120/00.9	148/02.8
11	256/00.9	276/01.3	299/01.4	322/01.7	343/01.9	345/01.2	132/01.4	155/00.8	133/01.4	098/00.9	110/00.9	056/01.5	046/01.5
12	106/00.8	027/00.7	349/00.8	035/01.0	124/00.7	154/01.5	107/01.3	113/01.5	066/00.8	098/02.1	100/02.2	098/02.2	089/02.2
13	085/04.0	077/04.2	056/04.2	042/03.8	036/05.4	039/05.3	021/05.0	360/05.5	328/05.7	328/06.5	319/05.6	324/08.0	322/07.2
14	286/04.2	288/02.9	295/03.1	262/02.6	273/02.6	272/02.6	287/03.2	305/05.8	313/07.2	317/07.9	317/07.8	315/07.3	316/06.8
15	290/01.3	289/01.2	308/01.5	302/01.4	325/01.6	351/01.2	039/01.6	062/01.5	095/01.8	103/01.9	106/03.1	104/04.7	131/04.1
16	272/01.3	297/04.3	297/05.2	301/05.2	304/05.5	306/05.7	303/05.5	307/03.8	312/04.7	301/04.3	308/05.6	298/03.6	308/04.4
17	247/01.7	078/01.3	086/01.8	046/01.7	037/01.9	332/02.6	311/03.4	305/03.0	296/03.1	308/06.3	311/07.8	317/09.2	310/08.5
18	253/01.8	216/01.6	247/01.8	234/01.4	203/01.6	209/01.3	205/01.4	204/01.5	203/02.4	202/03.3	209/04.0	227/04.2	212/05.0
19	219/02.1	229/01.8	276/01.4	293/01.7	286/01.8	272/01.6	269/01.2	276/01.6	302/02.1	324/03.3	328/03.3	326/03.4	314/03.4
20	318/01.7	329/01.6	328/01.8	352/01.7	034/03.2	031/02.5	022/02.0	024/02.0	039/01.9	091/03.5	100/03.3	118/03.1	107/02.9
21	085/03.4	062/02.1	040/01.7	041/01.6	014/01.3	002/01.8	015/01.7	030/02.4	054/02.4	053/02.2	096/02.3	108/02.7	116/03.0
22	132/02.8	136/02.2	167/01.1	296/00.9	239/00.7	135/00.5	165/01.0	193/01.1	142/01.2	149/02.6	150/03.6	143/03.9	137/04.3
23	011/01.3	330/01.8	325/01.3	234/00.4	179/00.9	334/00.6	322/01.2	341/02.0	356/02.1	341/02.0	329/02.8	332/02.9	340/03.2
24	188/01.1	137/00.5	327/01.8	315/03.8	331/04.0	343/03.9	328/03.0	324/02.4	305/02.5	327/03.3	341/02.6	349/03.9	344/04.3
25	353/03.1	005/02.2	358/01.6	350/01.4	020/02.0	034/01.9	026/01.8	044/01.5	063/01.7	110/01.9	123/01.6	104/02.8	100/03.8
26	191/01.2	219/00.9	095/00.6	144/01.3	169/01.0	214/01.0	278/00.6	294/00.7	127/01.1	063/01.2	093/01.4	114/02.8	111/04.0
27	222/00.7	265/00.4	068/00.7	355/00.4	316/00.9	325/00.8	317/01.0	338/00.4	083/00.7	100/02.4	111/02.3	140/03.3	131/03.4
28	161/03.2	160/02.7	161/03.0	157/01.7	140/01.5	115/01.7	106/01.2	071/01.2	---	---	---	184/04.3	194/04.6
29	307/07.3	307/07.4	302/06.1	301/05.1	297/04.3	287/03.5	281/03.6	277/03.4	292/04.9	305/06.4	309/05.7	298/04.8	286/04.4
MEAN	**273/02.1**	**285/01.9**	**332/01.9**	**321/01.8**	**317/02.1**	**323/02.0**	**313/01.9**	**333/01.9**	**017/02.3**	**041/03.0**	**059/03.2**	**081/03.6**	**084/03.9**
MAX	**307/07.3**	**307/07.4**	**302/06.1**	**301/05.2**	**304/05.5**	**306/05.7**	**303/05.5**	**305/05.8**	**313/07.2**	**317/07.9**	**317/07.8**	**317/09.2**	**310/08.5**
MIN	**109/00.4**	**052/00.4**	**173/00.3**	**192/00.4**	**288/00.4**	**136/00.5**	**195/00.6**	**004/00.4**	**083/00.7**	**146/00.7**	**142/00.9**	**120/00.9**	**046/01.5**

MEANS REQUIRE 75% VALID DATA

MISSING DATA DENOTED BY ---

Draft

CSX AQ5

Unit Vector Wind Speed and Direction in mps for February, 2024

Hr Beg Hr End Day	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX SPD	MIN SPD
1	264/03.4	263/03.0	248/02.2	150/01.8	157/02.3	181/01.9	176/01.6	158/01.8	143/01.4	093/01.2	089/00.7	**190/01.6**	**227/03.8**	**173/00.3**
2	339/05.8	340/05.2	339/05.3	336/05.9	341/05.2	342/03.6	346/04.4	352/05.1	353/04.9	342/04.1	349/04.4	**343/03.3**	**336/05.9**	**052/00.4**
3	003/02.5	006/02.4	046/02.0	104/02.1	123/01.1	153/00.6	178/00.5	224/00.6	222/00.2	303/00.9	305/01.1	**344/02.4**	**343/04.6**	**222/00.2**
4	101/04.1	100/03.3	101/03.6	111/03.0	124/01.7	179/00.7	319/00.8	205/00.6	294/01.1	175/00.6	338/01.0	**316/01.7**	**101/04.1**	**004/00.4**
5	126/03.7	125/03.6	123/03.4	118/02.9	124/01.4	318/01.0	348/02.4	340/03.7	337/03.6	345/02.9	348/03.4	**356/02.4**	**126/03.7**	**309/00.7**
6	018/03.0	100/03.3	130/03.3	129/02.9	136/02.3	128/00.8	238/00.6	282/01.9	287/02.2	298/02.1	299/02.0	**019/02.7**	**030/04.1**	**238/00.6**
7	096/02.3	110/02.6	107/02.6	109/02.8	120/02.1	136/01.3	215/00.8	308/00.9	145/00.5	041/00.6	333/00.6	**021/01.6**	**109/02.8**	**145/00.5**
8	102/03.8	092/03.8	110/04.4	144/03.6	160/03.1	168/02.9	168/03.3	166/03.2	167/02.2	143/01.7	125/02.4	**139/02.1**	**110/04.4**	**109/00.4**
9	110/03.4	099/03.6	094/03.1	105/03.3	148/02.4	143/00.9	103/00.6	075/00.7	123/00.7	004/00.6	065/00.4	**124/01.9**	**099/03.6**	**065/00.4**
10	219/01.7	092/01.6	126/01.7	007/00.8	354/00.5	149/00.8	117/00.3	313/00.6	350/00.5	091/00.4	048/00.5	**144/00.9**	**148/02.8**	**117/00.3**
11	083/02.4	115/01.4	134/01.2	112/01.4	128/01.1	134/01.5	139/01.3	099/00.9	121/00.9	138/01.3	145/01.1	**112/01.3**	**083/02.4**	**155/00.8**
12	103/02.4	106/02.4	100/01.9	113/01.6	097/01.7	067/01.5	102/03.1	099/04.2	087/04.0	093/04.5	089/03.5	**092/02.0**	**093/04.5**	**027/00.7**
13	315/08.5	312/08.4	312/09.8	309/08.1	294/04.9	283/03.0	275/02.8	261/02.2	228/01.9	246/01.8	279/03.3	**327/05.2**	**312/09.8**	**246/01.8**
14	318/06.1	310/06.1	311/06.3	311/06.1	314/05.4	317/03.2	328/03.6	324/02.6	314/01.7	286/01.4	278/01.6	**303/04.5**	**317/07.9**	**286/01.4**
15	146/04.0	146/05.0	150/05.4	149/05.6	158/04.3	162/02.0	158/01.6	182/01.9	285/01.5	307/01.0	295/01.8	**136/02.5**	**149/05.6**	**307/01.0**
16	316/04.7	301/03.5	284/03.4	272/02.7	293/01.2	124/01.4	147/02.7	123/03.2	137/03.3	163/02.3	148/02.2	**289/03.7**	**306/05.7**	**293/01.2**
17	291/06.1	303/07.3	303/07.2	295/06.1	292/04.4	290/03.4	296/03.1	267/01.7	292/04.0	276/02.4	260/01.7	**306/04.2**	**317/09.2**	**078/01.3**
18	213/04.8	208/04.4	213/04.0	226/03.5	222/02.4	197/01.5	216/01.6	230/02.6	287/03.9	276/03.6	253/02.1	**223/02.7**	**212/05.0**	**209/01.3**
19	328/02.9	007/02.3	328/02.4	329/02.0	306/02.1	277/01.4	149/01.0	106/00.9	084/01.1	204/01.1	306/01.2	**296/02.0**	**326/03.4**	**106/00.9**
20	100/03.5	101/03.6	097/03.6	103/02.5	109/01.5	078/01.4	069/02.5	124/04.2	120/05.9	128/05.4	118/05.2	**074/02.9**	**120/05.9**	**078/01.4**
21	121/02.5	132/01.9	120/02.3	119/02.2	128/02.0	126/01.6	133/03.7	127/06.1	134/05.3	134/03.7	144/03.0	**092/02.6**	**127/06.1**	**014/01.3**
22	141/04.6	158/03.4	149/05.0	131/02.7	058/02.5	140/04.0	136/02.3	131/02.7	112/02.3	060/01.6	043/01.3	**139/02.4**	**149/05.0**	**135/00.5**
23	341/03.2	328/03.4	329/03.5	333/02.5	325/03.1	308/01.9	282/01.4	241/01.4	237/00.6	285/00.6	191/01.2	**315/01.9**	**329/03.5**	**234/00.4**
24	339/03.6	345/04.3	351/03.9	350/04.5	344/04.9	352/04.3	347/04.1	347/03.8	354/04.1	350/02.9	354/02.4	**339/03.3**	**344/04.9**	**137/00.5**
25	110/04.6	108/05.2	105/05.6	115/05.1	157/03.7	167/03.0	168/02.4	166/02.4	173/02.4	187/01.7	187/02.0	**098/02.7**	**105/05.6**	**350/01.4**
26	116/04.3	103/03.6	102/03.5	104/03.8	121/02.5	141/00.7	015/00.5	042/00.7	107/00.8	327/00.5	135/00.6	**119/01.6**	**116/04.3**	**015/00.5**
27	151/03.8	148/04.9	160/03.6	150/03.4	153/02.3	178/03.3	182/03.7	185/03.9	177/03.5	171/03.9	161/03.8	**155/02.4**	**148/04.9**	**265/00.4**
28	219/05.1	211/04.8	196/04.6	188/03.9	197/03.6	217/04.1	274/06.8	294/07.2	302/08.2	299/08.7	301/07.6	**193/04.3**	**299/08.7**	**106/01.2**
29	289/05.0	281/04.8	289/05.4	290/05.2	294/04.0	293/02.2	295/01.8	296/02.1	312/02.4	293/02.0	264/01.6	**294/04.3**	**307/07.4**	**264/01.6**
MEAN	**083/04.0**	**096/03.9**	**113/03.9**	**115/03.5**	**140/02.7**	**167/02.1**	**186/02.3**	**206/02.5**	**194/02.6**	**288/02.3**	**311/02.2**	**010/02.7**		
MAX	**315/08.5**	**312/08.4**	**312/09.8**	**309/08.1**	**314/05.4**	**352/04.3**	**274/06.8**	**294/07.2**	**302/08.2**	**299/08.7**	**301/07.6**		**312/09.8**	
MIN	**219/01.7**	**115/01.4**	**134/01.2**	**007/00.8**	**354/00.5**	**153/00.6**	**117/00.3**	**224/00.6**	**222/00.2**	**091/00.4**	**065/00.4**			**222/00.2**

POSSIBLE NUMBER OF OBSERVATIONS = 696 ACTUAL NUMBER OF OBSERVATIONS = 693 DATA RECOVERY RATE = 99.6%

MONTHLY MEAN = 010/02.7 MAXIMUM WIND SPEED = 09.8 AT 312 DEGREES DATE OF OCCURRENCE = 2/13 AT 1600

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

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CSX AQ5

Unit Vector Wind Speed and Direction in mps for March, 2024

Hr Beg Hr End Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13
1	281/01.8	273/01.3	268/01.2	190/01.3	211/01.2	321/01.1	289/01.1	050/00.7	069/02.1	120/05.2	119/05.7	107/05.6	098/06.2
2	110/03.7	086/03.1	082/02.9	069/02.3	039/02.0	031/02.7	055/03.6	064/03.4	075/03.0	075/03.0	004/02.8	004/02.0	342/02.6
3	235/01.6	210/01.6	207/02.1	228/01.5	212/01.3	195/01.0	237/00.8	240/01.4	166/01.4	141/01.6	122/01.9	109/02.7	100/03.1
4	113/00.7	134/00.9	115/00.7	101/00.6	290/00.4	145/00.6	141/01.0	095/01.3	111/01.3	106/01.1	131/01.0	140/01.3	131/01.5
5	064/03.0	053/04.4	042/03.9	030/04.1	029/04.1	030/03.6	035/02.6	022/02.7	356/02.7	348/03.3	359/03.4	359/03.3	344/02.3
6	129/00.6	345/00.6	117/01.9	098/01.8	098/02.3	078/01.5	073/01.5	064/01.8	096/01.6	103/02.8	093/02.1	083/02.9	059/03.1
7	324/04.0	310/03.2	315/03.7	310/03.0	309/03.1	308/03.0	322/03.6	325/04.5	335/06.5	355/04.5	359/05.6	345/05.2	356/04.5
8	352/02.1	343/02.4	352/02.5	013/01.8	003/01.9	010/01.9	032/02.1	037/02.2	084/03.1	099/03.4	120/02.9	117/02.8	114/03.2
9	132/04.8	129/05.1	135/04.6	126/05.2	116/06.1	115/06.6	116/05.4	110/04.7	099/05.0	098/05.3	100/05.9	095/04.7	105/04.3
10	277/02.8	268/02.5	277/03.2	274/02.8	284/02.7	289/02.9	278/02.8	295/05.6	294/07.5	292/10.5	283/10.0	287/07.9	286/08.8
11	291/05.4	301/08.2	301/08.8	301/07.3	300/06.4	302/07.5	300/08.1	299/08.6	302/10.0	305/09.1	309/08.8	308/08.5	300/07.4
12	232/02.1	231/01.8	255/02.1	263/02.4	278/04.2	272/03.9	273/03.3	278/04.2	282/05.1	285/05.4	287/05.6	292/05.4	286/04.8
13	267/01.9	231/00.8	300/01.2	173/00.5	289/01.1	188/01.1	182/00.5	089/00.5	157/01.3	278/03.0	275/03.3	264/02.9	276/02.4
14	346/00.9	076/00.5	174/00.5	171/00.7	279/00.7	216/00.6	183/00.7	324/00.8	161/01.1	127/01.2	139/01.4	119/02.2	110/03.9
15	344/00.6	300/02.6	263/01.0	201/02.0	200/01.9	204/01.8	234/02.3	261/02.4	207/02.1	227/02.0	266/03.3	291/05.8	297/06.1
16	351/04.5	349/03.4	345/02.8	344/02.4	321/02.2	291/01.6	302/02.8	318/03.7	322/03.2	335/02.5	304/02.4	301/02.6	294/02.5
17	185/01.8	200/01.5	256/00.6	208/00.8	202/01.5	213/02.0	199/02.0	252/02.3	340/03.2	328/04.2	307/03.5	282/03.6	236/04.4
18	330/06.2	328/06.0	327/05.3	325/04.5	312/03.3	310/05.0	310/04.5	301/03.4	297/05.9	288/07.0	289/06.8	293/06.0	301/05.6
19	296/04.1	286/03.5	263/02.4	256/02.4	255/02.9	265/02.5	293/05.3	301/06.6	302/06.2	304/06.6	291/05.0	281/05.0	254/05.3
20	196/02.0	197/02.6	190/02.6	191/02.5	189/01.8	203/01.9	211/02.1	203/02.2	202/03.8	204/04.8	200/05.2	220/05.3	239/05.8
21	313/04.3	325/04.7	330/04.7	325/04.3	324/05.0	312/03.2	304/02.8	308/04.1	306/05.1	306/05.7	311/05.3	316/06.2	312/05.7
22	023/01.0	011/02.2	006/02.5	034/01.9	036/02.6	046/02.7	042/02.6	078/04.1	097/04.9	102/04.4	118/04.1	101/04.5	107/04.0
23	059/02.6	052/02.8	045/02.4	030/02.3	358/02.4	004/02.2	357/02.9	342/02.4	340/03.7	338/04.3	339/04.9	344/04.9	332/04.8
24	340/05.8	342/04.5	336/03.7	338/03.5	341/03.1	341/03.3	342/03.3	353/04.1	001/04.4	355/04.1	349/04.0	360/03.3	358/03.2
25	345/01.8	081/02.9	029/01.6	037/02.2	044/03.1	030/02.8	032/02.8	038/02.8	057/02.9	088/04.0	115/03.6	126/03.5	124/03.8
26	346/01.1	321/01.1	288/00.8	312/00.5	090/02.2	060/01.7	091/03.2	092/03.7	089/02.2	124/02.2	026/01.4	119/02.5	115/04.3
27	127/04.3	134/03.7	130/03.7	140/03.0	141/02.5	130/03.7	133/02.0	108/02.2	112/02.8	120/03.6	118/03.2	121/02.9	140/01.8
28	049/01.6	178/01.2	032/01.5	034/01.4	008/01.4	348/02.0	315/02.1	326/03.2	332/03.7	332/03.7	329/04.0	332/05.5	328/05.6
29	302/03.7	303/04.6	303/03.0	293/02.0	278/01.9	280/01.9	285/01.7	275/02.2	289/02.8	305/05.4	311/08.3	307/07.9	302/07.8
30	296/02.6	292/02.3	273/02.0	266/02.0	223/02.0	225/02.4	242/02.9	263/03.3	275/04.0	290/05.1	287/04.0	267/03.8	261/04.0
31	269/01.7	275/02.1	293/02.3	298/02.2	310/02.4	317/01.9	323/02.0	321/02.6	313/02.6	288/02.4	318/02.3	349/02.1	006/02.3
MEAN	**323/02.7**	**306/02.8**	**309/02.7**	**307/02.4**	**305/02.6**	**306/02.6**	**304/02.7**	**339/03.2**	**355/03.7**	**345/04.2**	**331/04.2**	**335/04.3**	**327/04.4**
MAX	**330/06.2**	**301/08.2**	**301/08.8**	**301/07.3**	**300/06.4**	**302/07.5**	**300/08.1**	**299/08.6**	**302/10.0**	**292/10.5**	**283/10.0**	**308/08.5**	**286/08.8**
MIN	**129/00.6**	**076/00.5**	**174/00.5**	**173/00.5**	**290/00.4**	**145/00.6**	**182/00.5**	**089/00.5**	**161/01.1**	**106/01.1**	**131/01.0**	**140/01.3**	**131/01.5**

MEANS REQUIRE 75% VALID DATA

MISSING DATA DENOTED BY ---

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CSX AQ5

Unit Vector Wind Speed and Direction in mps for March, 2024

Hr Beg / Hr End / Day	13 / 14	14 / 15	15 / 16	16 / 17	17 / 18	18 / 19	19 / 20	20 / 21	21 / 22	22 / 23	23 / 24	MEAN	MAX SPD	MIN SPD
1	113/05.8	130/04.9	151/05.0	151/04.7	157/04.6	155/04.1	149/03.8	150/03.7	122/03.9	118/04.7	123/04.0	**141/03.5**	**098/06.2**	**050/00.7**
2	326/03.3	317/04.4	302/04.7	312/04.8	314/03.5	257/01.4	281/01.9	288/02.6	302/03.4	302/02.2	266/01.5	**357/03.0**	**312/04.8**	**257/01.4**
3	105/03.7	111/03.8	116/04.0	121/03.4	141/02.0	171/02.2	191/02.2	241/01.6	281/01.1	152/00.5	334/00.4	**175/02.0**	**116/04.0**	**334/00.4**
4	130/01.7	127/01.8	117/03.6	117/04.4	113/04.0	116/03.4	092/04.0	090/03.1	090/03.0	087/02.7	084/03.2	**114/02.0**	**117/04.4**	**290/00.4**
5	289/02.0	298/01.3	326/01.9	116/02.1	127/02.2	121/02.1	153/02.4	133/01.8	149/01.5	200/01.4	175/01.6	**041/02.7**	**053/04.4**	**298/01.3**
6	048/02.5	016/02.7	352/02.1	355/02.0	344/02.4	344/02.4	344/02.8	334/03.7	323/03.9	333/03.2	318/04.0	**040/02.3**	**318/04.0**	**129/00.6**
7	353/05.4	348/05.1	345/05.0	353/04.9	009/04.1	002/03.1	002/02.1	349/02.0	343/02.5	359/02.8	010/02.2	**341/03.9**	**335/06.5**	**349/02.0**
8	109/03.4	107/02.9	094/02.5	095/02.6	115/03.1	125/05.8	133/05.2	120/06.2	122/07.3	123/07.1	129/06.5	**085/03.5**	**122/07.3**	**013/01.8**
9	097/04.2	089/03.6	086/04.0	103/05.2	119/03.7	332/03.5	323/04.1	341/02.0	310/03.3	303/03.1	291/03.3	**097/04.5**	**115/06.6**	**341/02.0**
10	289/07.5	282/07.6	291/08.5	287/08.3	283/08.3	288/07.9	289/05.8	278/07.2	285/06.3	289/06.2	283/05.8	**285/06.2**	**292/10.5**	**268/02.5**
11	299/08.1	302/08.5	299/08.3	304/07.3	290/06.9	284/04.5	278/03.6	273/03.1	256/02.8	222/02.4	218/02.0	**291/06.7**	**302/10.0**	**218/02.0**
12	296/06.1	290/05.7	297/05.6	285/04.5	278/03.4	249/02.2	235/01.8	255/02.1	282/02.0	286/02.1	293/01.9	**274/03.7**	**296/06.1**	**231/01.8**
13	292/02.6	251/03.2	260/02.9	264/02.3	215/01.5	210/01.4	187/01.8	190/01.8	241/00.8	342/00.8	006/00.6	**245/01.7**	**275/03.3**	**173/00.5**
14	107/04.3	097/04.2	142/04.0	155/05.0	156/04.1	167/02.7	173/02.7	174/02.4	169/02.6	180/01.4	161/00.5	**154/02.0**	**155/05.0**	**076/00.5**
15	281/05.3	274/05.2	276/04.3	299/03.9	317/03.0	311/03.5	307/03.3	308/02.4	005/03.9	002/04.9	356/04.8	**282/03.3**	**297/06.1**	**344/00.6**
16	281/03.5	273/03.3	119/02.9	247/03.3	184/03.4	161/03.1	168/03.8	175/02.9	174/02.4	169/02.3	193/01.4	**282/02.9**	**351/04.5**	**193/01.4**
17	242/03.0	246/02.9	227/03.5	308/04.8	346/04.1	344/03.1	347/02.8	359/02.6	348/01.3	351/03.1	335/07.0	**278/02.9**	**335/07.0**	**256/00.6**
18	290/05.5	295/05.8	294/06.6	310/07.8	320/09.7	315/08.3	313/07.6	310/06.9	305/05.7	307/05.2	299/03.6	**307/05.9**	**320/09.7**	**312/03.3**
19	264/05.0	263/04.8	221/04.1	208/04.1	199/03.3	185/03.4	175/02.2	165/01.2	169/01.3	183/01.3	189/01.8	**247/03.8**	**301/06.6**	**165/01.2**
20	254/06.0	290/07.8	286/06.8	291/07.5	322/10.9	320/09.7	319/09.0	325/08.7	324/08.8	327/07.3	311/05.4	**247/05.4**	**322/10.9**	**189/01.8**
21	305/05.5	292/05.2	297/05.3	302/04.6	306/03.9	323/02.7	323/02.4	300/01.8	291/01.7	341/02.1	353/01.3	**313/04.1**	**316/06.2**	**353/01.3**
22	120/03.7	107/04.6	100/03.9	101/03.3	112/04.0	129/05.4	123/05.8	115/05.2	101/04.7	083/03.5	070/02.9	**084/03.7**	**123/05.8**	**023/01.0**
23	325/07.5	326/08.8	323/09.7	327/09.1	325/09.2	326/10.7	326/08.3	325/09.6	327/09.7	333/07.7	334/07.3	**346/05.8**	**326/10.7**	**004/02.2**
24	009/02.8	005/02.9	021/02.7	040/02.3	069/02.2	029/02.3	031/02.2	007/01.8	007/01.6	024/01.4	348/01.7	**002/03.1**	**340/05.8**	**024/01.4**
25	126/03.2	132/02.3	121/02.1	126/02.1	120/02.1	130/02.1	133/02.6	137/03.5	126/03.2	178/01.8	273/01.1	**096/02.7**	**088/04.0**	**273/01.1**
26	115/05.0	111/04.0	105/03.9	099/03.6	119/03.6	158/03.8	139/04.9	145/04.5	126/05.7	124/06.7	128/05.6	**103/03.3**	**124/06.7**	**312/00.5**
27	143/01.7	086/02.2	041/01.1	112/01.4	155/00.6	116/01.5	125/01.7	098/01.4	128/01.2	127/01.8	022/01.2	**119/02.3**	**127/04.3**	**155/00.6**
28	319/04.8	334/04.3	341/03.4	326/03.9	339/03.4	341/02.4	295/01.7	280/01.9	293/02.4	300/03.1	301/03.3	**331/03.0**	**328/05.6**	**178/01.2**
29	307/09.1	309/09.5	313/10.2	310/09.9	307/08.9	309/05.8	309/04.5	306/03.1	302/02.5	302/02.7	291/02.0	**300/05.1**	**313/10.2**	**285/01.7**
30	243/02.3	118/02.6	104/01.5	085/02.4	103/02.2	138/02.1	111/01.7	114/02.4	023/03.2	101/01.2	245/01.4	**242/02.6**	**290/05.1**	**101/01.2**
31	022/02.0	111/04.5	121/04.2	129/04.0	148/03.1	176/01.6	147/01.1	183/00.6	129/01.3	105/01.7	156/02.5	**299/02.3**	**111/04.5**	**183/00.6**
MEAN	**311/04.4**	**326/04.5**	**346/04.5**	**349/04.5**	**125/04.2**	**232/03.8**	**228/03.5**	**258/03.3**	**307/03.4**	**340/03.2**	**306/03.0**	**318/03.5**		
MAX	**307/09.1**	**309/09.5**	**313/10.2**	**310/09.9**	**322/10.9**	**326/10.7**	**319/09.0**	**325/09.6**	**327/09.7**	**333/07.7**	**334/07.3**		**322/10.9**	
MIN	**130/01.7**	**298/01.3**	**041/01.1**	**112/01.4**	**155/00.6**	**257/01.4**	**147/01.1**	**183/00.6**	**241/00.8**	**152/00.5**	**334/00.4**			**334/00.4**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 744 DATA RECOVERY RATE = 100.0%

MONTHLY MEAN = 318/03.5 MAXIMUM WIND SPEED = 10.9 AT 322 DEGREES DATE OF OCCURRENCE = 3/20 AT 1800

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

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CSX AQ5

Joint Frequency Distribution for January, 2024

Percentage frequency of occurence of hourly wind velocities for all stability classes

Wind Direction		Wind Speed (mps) 0.5 - 1.54	1.54 - 3.09	3.09 - 5.14	5.14 - 8.23	8.23 - 10.8	OVER 10.8	TOTAL	AVG SPEED
N	348.75 - 11.25	0.9	1.5	0.0	0.0	0.0	0.0	**2.4**	**2.0**
NNE	11.25 - 33.75	0.8	2.2	0.3	0.0	0.0	0.0	**3.2**	**2.1**
NE	33.75 - 56.25	1.2	1.6	1.2	0.0	0.0	0.0	**4.0**	**2.4**
ENE	56.25 - 78.75	1.2	1.7	0.7	0.1	0.0	0.0	**3.8**	**2.2**
E	78.75 - 101.25	2.4	1.1	0.7	0.3	0.0	0.0	**4.4**	**2.1**
ESE	101.25 - 123.75	2.6	1.6	2.6	1.6	0.1	0.0	**8.5**	**3.2**
SE	123.75 - 146.25	2.8	0.8	0.7	0.4	0.1	0.1	**5.0**	**2.6**
SSE	146.25 - 168.75	1.3	1.3	0.5	0.1	0.1	0.0	**3.5**	**2.7**
S	168.75 - 191.25	2.3	1.7	0.8	0.1	0.0	0.0	**5.0**	**2.1**
SSW	191.25 - 213.75	3.8	1.6	0.5	0.1	0.0	0.0	**6.0**	**1.7**
SW	213.75 - 236.25	2.4	1.5	0.3	0.0	0.0	0.0	**4.2**	**1.6**
WSW	236.25 - 258.75	1.3	2.3	0.4	0.1	0.0	0.0	**4.2**	**1.9**
W	258.75 - 281.25	2.3	2.8	2.6	1.9	0.1	0.0	**9.7**	**3.3**
WNW	281.25 - 303.75	2.3	3.2	3.0	3.1	0.1	0.0	**11.7**	**3.6**
NW	303.75 - 326.25	1.9	2.7	7.8	5.0	0.0	0.0	**17.3**	**4.1**
NNW	326.25 - 348.75	0.7	0.7	2.6	1.7	0.0	0.0	**5.6**	**4.1**
	CALM							**1.5**	
	TOTAL	**30.2**	**28.4**	**24.5**	**14.7**	**0.7**	**0.1**	**100.0**	**3.0**

TOTAL NUMBER OF OBSERVATIONS = 744

POSSIBLE NUMBER OF OBSERVATIONS = 744

DATA RECOVERY = 100.0%

Draft

CSX AQ5

Joint Frequency Distribution for February, 2024

Percentage frequency of occurence of hourly wind velocities for all stability classes

Wind Direction		Wind Speed (mps) 0.5 - 1.54	1.54 - 3.09	3.09 - 5.14	5.14 - 8.23	8.23 - 10.8	OVER 10.8	TOTAL	AVG SPEED
N	348.75 - 11.25	1.7	2.0	1.9	0.1	0.0	0.0	**5.8**	**2.6**
NNE	11.25 - 33.75	0.6	2.5	0.6	0.0	0.0	0.0	**3.6**	**2.4**
NE	33.75 - 56.25	1.2	1.7	0.6	0.3	0.0	0.0	**3.8**	**2.2**
ENE	56.25 - 78.75	1.6	0.7	0.1	0.0	0.0	0.0	**2.5**	**1.6**
E	78.75 - 101.25	1.2	2.0	2.6	0.0	0.0	0.0	**5.8**	**2.6**
ESE	101.25 - 123.75	2.5	4.3	3.2	0.6	0.0	0.0	**10.5**	**2.7**
SE	123.75 - 146.25	4.2	3.2	2.3	0.4	0.0	0.0	**10.1**	**2.2**
SSE	146.25 - 168.75	2.0	3.3	2.2	0.3	0.0	0.0	**7.8**	**2.5**
S	168.75 - 191.25	2.2	1.0	1.0	0.0	0.0	0.0	**4.2**	**1.8**
SSW	191.25 - 213.75	1.7	0.4	1.4	0.0	0.0	0.0	**3.6**	**2.5**
SW	213.75 - 236.25	0.9	1.2	0.7	0.0	0.0	0.0	**2.7**	**2.2**
WSW	236.25 - 258.75	1.2	1.0	0.0	0.0	0.0	0.0	**2.2**	**1.4**
W	258.75 - 281.25	1.6	2.0	0.9	0.1	0.0	0.0	**4.6**	**2.2**
WNW	281.25 - 303.75	2.5	2.0	3.5	2.0	0.1	0.0	**10.1**	**3.4**
NW	303.75 - 326.25	2.7	2.7	1.6	3.3	0.7	0.0	**11.1**	**3.9**
NNW	326.25 - 348.75	0.9	3.3	4.3	1.0	0.0	0.0	**9.5**	**3.2**
	CALM							**2.2**	
	TOTAL	**28.4**	**33.5**	**26.8**	**8.2**	**0.9**	**0.0**	**100.0**	**2.7**

TOTAL NUMBER OF OBSERVATIONS = 693

POSSIBLE NUMBER OF OBSERVATIONS = 696

DATA RECOVERY = 99.6%

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CSX AQ5

Joint Frequency Distribution for March, 2024

Percentage frequency of occurence of hourly wind velocities for all stability classes

Wind Direction		Wind Speed (mps) 0.5 - 1.54	1.54 - 3.09	3.09 - 5.14	5.14 - 8.23	8.23 - 10.8	OVER 10.8	TOTAL	AVG SPEED
N	348.75 - 11.25	0.4	3.4	2.3	0.3	0.0	0.0	**6.3**	**3.0**
NNE	11.25 - 33.75	0.7	1.7	0.5	0.0	0.0	0.0	**3.0**	**2.4**
NE	33.75 - 56.25	0.4	1.9	0.5	0.0	0.0	0.0	**2.8**	**2.4**
ENE	56.25 - 78.75	0.4	1.5	0.4	0.0	0.0	0.0	**2.3**	**2.4**
E	78.75 - 101.25	0.7	2.0	2.8	0.4	0.0	0.0	**5.9**	**3.2**
ESE	101.25 - 123.75	0.9	3.0	5.1	1.9	0.0	0.0	**10.9**	**3.6**
SE	123.75 - 146.25	1.5	2.6	2.3	0.9	0.0	0.0	**7.3**	**3.0**
SSE	146.25 - 168.75	1.2	0.4	1.6	0.0	0.0	0.0	**3.2**	**2.7**
S	168.75 - 191.25	1.6	2.6	0.3	0.0	0.0	0.0	**4.4**	**1.8**
SSW	191.25 - 213.75	1.2	1.7	0.5	0.1	0.0	0.0	**3.6**	**2.2**
SW	213.75 - 236.25	0.5	1.3	0.4	0.1	0.0	0.0	**2.4**	**2.3**
WSW	236.25 - 258.75	0.8	1.6	0.3	0.4	0.0	0.0	**3.1**	**2.6**
W	258.75 - 281.25	0.9	3.2	2.7	0.4	0.0	0.0	**7.3**	**2.9**
WNW	281.25 - 303.75	0.7	4.3	3.0	6.0	1.5	0.0	**15.5**	**4.9**
NW	303.75 - 326.25	0.5	2.0	4.8	2.2	2.8	0.1	**12.5**	**5.2**
NNW	326.25 - 348.75	0.8	2.4	4.2	1.6	0.3	0.0	**9.3**	**3.8**
	CALM							**0.3**	
	TOTAL	**13.3**	**35.6**	**31.7**	**14.4**	**4.6**	**0.1**	**100.0**	**3.5**

TOTAL NUMBER OF OBSERVATIONS = 744

POSSIBLE NUMBER OF OBSERVATIONS = 744

DATA RECOVERY = 100.0%

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10M Joint Frequency Distribution for January - March 2024

Percentage frequency of occurence of hourly wind velocities for all stability classes

Wind Direction		Wind Speed (mps) 0.5 - 1.54	1.54 - 3.09	3.09 - 5.14	5.14 - 8.23	8.23 - 10.8	OVER 10.8	TOTAL	AVG SPEED
N	348.75 - 11.25	1.0	2.3	1.4	0.1	0.0	0.0	**4.8**	**2.6**
NNE	11.25 - 33.75	0.7	2.1	0.5	0.0	0.0	0.0	**3.3**	**2.3**
NE	33.75 - 56.25	0.9	1.7	0.8	0.1	0.0	0.0	**3.5**	**2.3**
ENE	56.25 - 78.75	1.1	1.3	0.4	0.0	0.0	0.0	**2.8**	**2.1**
E	78.75 - 101.25	1.4	1.7	2.0	0.2	0.0	0.0	**5.4**	**2.7**
ESE	101.25 - 123.75	2.0	2.9	3.6	1.4	0.0	0.0	**9.9**	**3.2**
SE	123.75 - 146.25	2.8	2.2	1.7	0.6	0.0	0.0	**7.4**	**2.5**
SSE	146.25 - 168.75	1.5	1.7	1.4	0.1	0.0	0.0	**4.8**	**2.6**
S	168.75 - 191.25	2.0	1.8	0.7	0.0	0.0	0.0	**4.5**	**1.9**
SSW	191.25 - 213.75	2.2	1.3	0.8	0.1	0.0	0.0	**4.4**	**2.0**
SW	213.75 - 236.25	1.3	1.3	0.5	0.0	0.0	0.0	**3.1**	**2.0**
WSW	236.25 - 258.75	1.1	1.7	0.2	0.2	0.0	0.0	**3.2**	**2.0**
W	258.75 - 281.25	1.6	2.7	2.1	0.8	0.0	0.0	**7.2**	**2.9**
WNW	281.25 - 303.75	1.8	3.2	3.1	3.8	0.6	0.0	**12.5**	**4.1**
NW	303.75 - 326.25	1.7	2.5	4.8	3.5	1.2	0.0	**13.7**	**4.4**
NNW	326.25 - 348.75	0.8	2.1	3.7	1.5	0.1	0.0	**8.1**	**3.7**
	CALM							**1.3**	
	TOTAL	**23.9**	**32.5**	**27.7**	**12.5**	**2.1**	**0.1**	**100.0**	**3.1**

TOTAL NUMBER OF OBSERVATIONS = 2181

POSSIBLE NUMBER OF OBSERVATIONS = 2184

DATA RECOVERY = 99.9%

Draft

CSX AQ5

WIND GUST in mps for JANUARY, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	2.9	1.8	1.7	2.7	2.0	4.1	4.7	3.4	3.2	2.7	7.6	7.8	7.4	6.2	5.6	4.9	5.9	6.1	5.4	6.3	6.7	6.7	6.2	6.0	**4.9**	**7.8**	**1.7**
2	4.1	6.6	4.7	6.2	7.9	8.4	9.8	9.4	10.7	9.9	8.7	8.7	9.8	10.4	8.4	8.2	6.7	5.0	2.4	2.3	3.4	3.3	3.7	4.0	**6.8**	**10.7**	**2.3**
3	3.1	1.5	1.6	1.7	2.2	2.3	2.8	1.9	1.8	2.9	4.0	7.3	4.6	4.4	3.9	5.2	4.6	5.2	4.3	1.1	1.9	2.5	2.7	2.0	**3.1**	**7.3**	**1.1**
4	1.3	2.7	3.0	2.1	3.0	2.6	3.1	3.2	3.8	6.7	7.8	9.8	10.8	11.3	11.6	11.9	10.6	9.7	9.5	8.1	7.0	7.5	7.5	8.6	**6.8**	**11.9**	**1.3**
5	7.5	6.7	5.3	7.5	6.4	6.8	5.9	2.8	4.4	4.2	4.0	5.8	5.6	4.3	4.5	3.9	4.7	4.9	3.7	3.1	2.7	1.4	2.4	2.4	**4.6**	**7.5**	**1.4**
6	2.2	1.4	1.5	1.5	1.4	3.4	2.9	1.8	3.4	5.5	4.9	4.7	7.0	8.4	9.3	9.3	11.1	10.3	8.8	7.7	7.9	7.8	7.3	6.8	**5.7**	**11.1**	**1.4**
7	6.5	5.4	4.6	5.9	5.9	3.9	3.2	3.5	4.2	4.4	6.7	11.9	14.3	13.5	13.6	10.9	9.5	7.3	3.5	4.3	6.0	6.7	5.1	5.3	**6.9**	**14.3**	**3.2**
8	6.5	6.6	7.8	8.4	7.7	7.4	3.1	3.9	3.5	9.1	10.7	7.7	5.9	4.9	3.1	3.5	2.4	4.4	2.8	1.5	1.9	1.6	2.4	2.9	**5.0**	**10.7**	**1.5**
9	5.1	5.1	5.3	6.0	5.5	8.0	7.0	5.7	7.2	7.7	8.9	8.7	9.8	13.0	13.1	12.6	18.3	21.5	22.6	15.5	9.4	11.7	10.0	7.7	**10.2**	**22.6**	**5.1**
10	6.5	8.4	7.6	10.7	9.5	7.4	6.0	10.9	11.7	11.6	15.7	13.7	15.1	14.6	13.7	12.2	11.6	13.1	14.0	11.0	11.9	8.5	6.5	4.4	**10.7**	**15.7**	**4.4**
11	4.3	4.4	4.7	3.9	3.4	3.7	2.6	3.5	3.6	4.6	6.8	7.4	7.7	6.8	7.5	7.6	6.2	2.5	1.9	2.9	2.0	2.7	3.1	2.2	**4.4**	**7.7**	**1.9**
12	3.1	1.9	2.5	1.7	2.9	2.2	2.0	1.7	2.6	5.3	7.3	6.7	7.0	7.5	7.9	8.6	8.8	8.8	10.5	10.2	7.3	9.5	14.1	13.0	**6.4**	**14.1**	**1.7**
13	14.1	11.6	2.8	4.7	8.0	6.9	5.9	7.7	8.2	9.4	15.5	13.5	18.8	17.5	19.5	17.9	15.3	11.2	11.2	11.5	8.6	7.2	5.5	8.1	**10.9**	**19.5**	**2.8**
14	4.8	2.9	2.5	3.0	3.2	4.4	5.5	4.9	6.3	8.6	12.2	16.9	15.5	11.8	18.3	16.9	16.5	13.5	8.7	5.9	4.8	5.5	4.5	5.1	**8.4**	**18.3**	**2.5**
15	8.1	9.3	6.5	8.5	7.5	2.6	2.8	3.2	3.5	2.8	1.7	1.7	2.5	2.7	1.9	2.8	3.6	4.5	3.8	3.9	3.7	3.4	3.8	4.4	**4.1**	**9.3**	**1.7**
16	4.2	3.3	3.8	3.9	5.1	4.5	5.0	5.0	4.7	4.8	6.5	7.7	10.4	10.8	12.3	14.4	15.0	10.5	10.7	9.2	10.7	9.6	7.9	7.9	**7.8**	**15.0**	**3.3**
17	6.1	5.4	3.6	3.3	4.1	4.0	3.7	3.8	6.3	8.0	9.3	9.4	9.4	9.0	8.3	7.7	6.9	4.7	2.4	3.4	2.6	2.3	2.0	2.1	**5.3**	**9.4**	**2.0**
18	1.5	1.9	2.8	2.2	1.6	1.6	2.7	2.2	3.1	2.9	2.6	2.1	3.3	6.1	5.7	4.0	3.1	2.7	2.0	2.1	4.9	4.8	1.9	2.6	**2.9**	**6.1**	**1.5**
19	2.9	3.5	3.4	3.5	4.1	4.5	3.3	4.9	4.7	5.1	4.8	4.4	5.8	7.9	7.9	7.7	7.6	8.4	8.4	7.0	5.2	3.3	2.0	5.1	**5.2**	**8.4**	**2.0**
20	6.3	4.8	7.7	7.8	7.6	8.5	4.4	3.8	7.7	10.8	14.2	13.0	14.3	13.5	13.3	12.1	11.8	11.5	11.2	10.9	8.5	7.8	7.2	8.9	**9.5**	**14.3**	**3.8**
21	6.8	7.3	6.6	9.2	10.5	9.7	7.3	8.8	8.4	11.5	11.6	12.2	12.0	10.1	10.8	9.7	7.3	6.6	5.2	3.9	5.2	5.6	5.5	3.7	**8.1**	**12.2**	**3.7**
22	4.3	4.2	3.9	3.3	2.8	3.1	2.4	1.7	1.7	2.5	4.4	5.3	6.7	5.1	4.8	4.3	3.5	3.4	2.1	2.1	2.2	1.5	1.7	1.4	**3.3**	**6.7**	**1.4**
23	1.3	1.3	1.0	1.4	1.9	2.1	1.5	1.0	2.1	1.7	1.6	1.8	2.5	2.2	2.8	2.5	2.8	4.0	2.2	0.9	1.7	1.5	2.3	1.5	**1.9**	**4.0**	**0.9**
24	1.4	1.6	2.1	2.3	2.5	1.9	2.4	2.2	2.0	1.1	1.3	1.4	1.2	1.2	1.7	1.9	1.9	1.7	1.2	2.1	2.2	0.8	1.5	1.4	**1.7**	**2.5**	**0.8**
25	1.1	0.9	1.5	0.8	1.4	1.3	0.6	1.1	1.3	0.9	1.2	1.1	1.3	1.2	1.7	1.3	1.8	1.8	1.7	2.2	1.8	1.4	1.3	1.8	**1.4**	**2.2**	**0.6**
26	2.3	1.5	1.5	2.1	1.9	2.9	2.9	1.8	3.0	5.1	5.7	5.7	4.4	5.3	6.8	6.1	3.0	3.4	2.1	1.7	1.9	1.8	2.1	2.4	**3.2**	**6.8**	**1.5**
27	2.0	1.7	1.9	1.9	1.6	1.0	1.3	1.9	3.0	2.9	3.3	4.1	5.2	5.3	3.9	3.1	3.9	3.5	3.1	3.3	3.0	7.5	5.6	6.6	**3.4**	**7.5**	**1.0**
28	6.7	6.6	5.1	7.1	8.6	7.7	9.1	8.5	7.4	6.3	6.9	6.9	5.3	6.5	5.7	5.2	5.1	6.5	6.0	4.3	6.2	6.2	5.7	6.3	**6.5**	**9.1**	**4.3**
29	8.8	8.9	9.8	10.2	9.3	9.1	7.7	13.5	10.9	15.3	12.9	13.7	12.7	12.0	11.1	10.6	10.5	9.7	9.8	7.8	6.4	8.0	8.3	8.7	**10.2**	**15.3**	**6.4**
30	5.8	5.3	4.9	5.2	4.7	4.7	5.1	4.4	5.0	5.1	4.3	4.7	5.5	6.3	6.3	5.8	6.2	7.5	7.2	5.9	6.7	6.1	5.0	4.3	**5.5**	**7.5**	**4.3**
31	4.4	4.1	3.7	3.5	3.1	3.1	4.1	4.2	3.3	3.3	3.2	2.2	2.3	2.7	2.8	2.6	2.0	1.9	1.3	1.4	1.7	1.7	0.8	0.9	**2.7**	**4.4**	**0.8**
MEAN	**4.7**	**4.5**	**4.0**	**4.6**	**4.8**	**4.6**	**4.2**	**4.4**	**4.9**	**5.9**	**7.0**	**7.4**	**7.9**	**7.8**	**8.0**	**7.6**	**7.4**	**7.0**	**6.1**	**5.3**	**5.0**	**5.0**	**4.7**	**4.8**	**5.7**		
MAX	**14.1**	**11.6**	**9.8**	**10.7**	**10.5**	**9.7**	**9.8**	**13.5**	**11.7**	**15.3**	**15.7**	**16.9**	**18.8**	**17.5**	**19.5**	**17.9**	**18.3**	**21.5**	**22.6**	**15.5**	**11.9**	**11.7**	**14.1**	**13.0**		**22.6**	
MIN	**1.1**	**0.9**	**1.0**	**0.8**	**1.4**	**1.0**	**0.6**	**1.0**	**1.3**	**0.9**	**1.2**	**1.1**	**1.2**	**1.2**	**1.7**	**1.3**	**1.8**	**1.7**	**1.2**	**0.9**	**1.7**	**0.8**	**0.8**	**0.9**			**0.6**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 744 DATA RECOVERY RATE = 100.0%

MONTHLY MEAN = 5.7 mps

MAXIMUM WIND GUST = 22.6 mps DATE OF OCCURRENCE = 1/9 AT 1900 MAXIMUM DAILY MEAN = 10.9 mps DATE OF OCCURRENCE = 1/13

MINIMUM WIND GUST = 0.6 mps DATE OF OCCURRENCE = 1/25 AT 0700 MINUMUM DAILY MEAN = 1.4 mps DATE OF OCCURRENCE = 1/25

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

Draft

CSX AQ5

WIND GUST in mps for FEBRUARY, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	1.2	1.7	1.4	1.1	1.2	1.5	1.5	1.9	2.9	4.9	5.7	7.1	7.7	7.7	6.3	4.9	5.0	5.4	3.9	2.6	2.9	2.3	2.2	1.4	**3.5**	**7.7**	**1.1**
2	1.0	1.2	2.1	2.1	2.8	2.1	3.3	2.4	3.0	3.5	8.4	10.4	10.8	10.6	9.5	10.1	11.5	10.7	8.2	8.7	9.8	10.2	8.4	9.7	**6.7**	**11.5**	**1.0**
3	9.2	7.8	6.7	6.4	6.2	6.3	6.4	5.9	6.7	7.4	5.7	4.7	5.5	5.3	4.8	4.7	3.2	2.5	1.5	1.2	1.0	1.1	1.6	2.1	**4.7**	**9.2**	**1.0**
4	2.2	1.8	1.5	2.2	2.6	2.2	1.9	1.7	3.3	4.3	3.7	3.4	4.7	5.7	4.4	4.9	4.4	3.4	1.6	1.5	1.2	1.6	1.3	1.6	**2.8**	**5.7**	**1.2**
5	2.1	3.2	1.7	1.7	2.8	3.5	2.1	3.3	4.9	4.5	4.4	5.1	5.0	4.7	4.8	4.3	4.1	3.3	2.8	5.6	6.7	6.9	6.5	6.3	**4.2**	**6.9**	**1.7**
6	7.0	5.7	5.3	5.5	5.5	4.9	5.3	5.0	6.1	8.0	7.3	7.4	6.7	6.6	5.4	4.5	4.3	3.3	1.7	1.2	3.0	3.2	3.5	3.3	**5.0**	**8.0**	**1.2**
7	3.9	3.3	2.3	2.9	3.1	2.7	3.1	2.9	3.4	3.6	3.1	3.5	3.2	3.9	3.9	4.1	3.9	3.5	2.9	1.5	2.1	0.9	1.5	1.5	**2.9**	**4.1**	**0.9**
8	1.0	1.1	1.0	1.5	1.0	1.1	1.3	1.7	2.4	2.8	2.6	5.1	5.1	5.8	6.1	6.4	5.7	5.6	6.1	6.3	5.6	4.3	2.8	3.9	**3.6**	**6.4**	**1.0**
9	6.5	5.2	3.9	3.3	3.7	4.1	2.9	2.4	3.3	3.9	4.2	3.6	4.3	4.8	5.5	4.6	4.9	4.2	1.6	1.4	1.4	1.4	1.1	1.2	**3.5**	**6.5**	**1.1**
10	1.4	1.2	1.5	1.2	1.8	1.6	1.2	2.0	2.0	1.3	1.5	1.7	10.6	6.4	3.2	3.8	1.3	1.1	1.4	1.2	1.3	1.1	1.3	1.7	**2.2**	**10.6**	**1.1**
11	2.5	3.3	2.5	3.7	3.4	2.6	2.7	1.7	2.2	2.0	2.8	3.2	3.3	4.8	3.0	1.8	2.1	1.9	2.1	2.0	1.7	1.7	2.6	2.0	**2.6**	**4.8**	**1.7**
12	1.9	1.5	1.6	2.0	1.7	2.5	2.5	3.0	1.7	3.4	3.2	3.7	3.5	3.6	3.8	2.9	2.5	2.5	2.5	6.1	6.3	7.1	8.9	6.7	**3.5**	**8.9**	**1.5**
13	8.0	7.1	8.0	7.1	11.6	11.3	10.9	9.7	10.2	10.7	9.7	13.1	13.5	15.9	13.8	15.4	15.1	10.5	6.3	6.4	4.0	3.4	3.5	9.6	**9.8**	**15.9**	**3.4**
14	8.6	5.9	6.6	5.9	5.1	5.4	7.6	12.9	12.2	14.0	12.9	12.5	11.1	11.0	10.3	10.7	9.8	9.2	5.7	6.5	4.2	4.0	2.7	2.4	**8.2**	**14.0**	**2.4**
15	2.2	1.8	2.7	2.6	3.1	2.6	4.0	3.8	3.5	3.4	5.8	6.7	7.7	6.9	8.1	9.3	9.0	7.7	4.7	4.5	4.1	2.4	3.4	4.0	**4.8**	**9.3**	**1.8**
16	2.9	13.9	11.9	10.4	12.5	12.5	11.6	7.9	8.4	10.4	10.2	7.3	9.0	9.0	7.9	6.8	5.9	2.9	4.5	5.3	5.3	5.1	4.5	4.0	**7.9**	**13.9**	**2.9**
17	5.4	3.7	3.6	3.7	3.9	5.2	6.5	5.0	9.3	12.3	13.1	15.8	16.0	11.7	14.9	13.6	13.1	13.3	6.5	6.8	5.9	8.7	5.0	3.7	**8.6**	**16.0**	**3.6**
18	3.1	2.9	3.7	2.8	2.6	2.3	2.5	2.9	4.8	6.3	9.1	9.7	10.2	9.3	9.5	10.7	8.7	6.6	3.2	3.7	4.8	9.5	8.9	5.1	**6.0**	**10.7**	**2.3**
19	5.3	3.2	2.4	3.7	3.0	2.7	2.2	3.9	3.3	6.1	6.9	6.2	7.0	6.3	6.1	5.0	4.3	4.6	2.4	2.2	2.1	2.8	2.9	2.3	**4.0**	**7.0**	**2.1**
20	2.6	2.0	2.2	4.1	5.3	4.1	3.6	3.6	3.1	5.9	5.4	4.9	4.7	5.3	4.8	5.0	4.2	2.3	2.7	5.3	7.6	7.7	7.9	7.4	**4.7**	**7.9**	**2.0**
21	6.0	4.0	3.5	2.6	3.1	3.1	3.4	4.1	4.2	4.3	4.2	4.7	4.6	4.5	3.1	3.6	3.2	3.3	2.3	7.3	8.6	8.2	5.6	4.6	**4.4**	**8.6**	**2.3**
22	4.1	3.6	1.9	1.6	1.7	1.6	2.5	2.1	2.7	5.9	5.9	7.5	7.1	7.4	5.6	9.5	5.1	4.1	7.2	4.5	4.5	4.5	2.9	3.0	**4.4**	**9.5**	**1.6**
23	2.3	3.0	2.1	1.1	2.3	1.3	2.2	3.8	4.3	3.8	4.7	4.8	5.7	5.7	5.5	5.1	4.7	4.9	3.7	2.1	2.3	1.9	1.2	2.4	**3.4**	**5.7**	**1.1**
24	2.2	1.4	4.2	6.5	8.4	7.6	5.7	5.5	6.0	5.6	5.1	6.7	7.4	7.7	7.0	6.9	8.1	9.6	8.4	7.7	8.0	7.8	5.2	4.7	**6.4**	**9.6**	**1.4**
25	5.5	4.9	3.7	2.6	4.9	4.3	3.5	2.5	3.3	3.8	3.2	4.7	5.9	6.4	7.7	8.0	7.1	7.0	5.6	3.9	4.1	4.6	3.5	3.8	**4.8**	**8.0**	**2.5**
26	2.8	2.3	1.5	2.5	1.8	1.6	1.2	1.2	2.3	2.7	3.0	4.6	5.3	6.1	5.4	4.8	6.0	4.7	1.5	1.1	1.6	1.9	1.4	1.4	**2.9**	**6.1**	**1.1**
27	1.5	1.4	1.4	1.3	1.3	1.5	1.5	0.9	1.4	4.5	5.0	5.2	5.9	7.3	8.5	7.5	6.3	4.0	8.0	9.2	7.9	7.7	7.1	7.6	**4.7**	**9.2**	**0.9**
28	6.4	4.5	5.3	4.0	2.7	2.9	2.7	2.8	---	---	---	10.0	12.9	12.4	12.7	9.9	8.9	7.7	11.3	15.1	16.0	17.0	18.7	17.1	**9.6**	**18.7**	**2.7**
29	14.9	15.4	12.8	12.3	9.9	9.4	7.5	8.3	12.3	12.5	11.0	9.6	9.1	10.5	10.6	9.8	12.4	8.4	6.0	3.5	3.8	5.2	3.7	2.7	**9.2**	**15.4**	**2.7**
MEAN	**4.3**	**4.1**	**3.8**	**3.7**	**4.1**	**3.9**	**3.9**	**4.0**	**4.8**	**5.8**	**6.0**	**6.7**	**7.4**	**7.4**	**7.0**	**6.8**	**6.4**	**5.5**	**4.4**	**4.6**	**4.8**	**5.0**	**4.5**	**4.4**	**5.1**		
MAX	**14.9**	**15.4**	**12.8**	**12.3**	**12.5**	**12.5**	**11.6**	**12.9**	**12.3**	**14.0**	**13.1**	**15.8**	**16.0**	**15.9**	**14.9**	**15.4**	**15.1**	**13.3**	**11.3**	**15.1**	**16.0**	**17.0**	**18.7**	**17.1**		**18.7**	
MIN	**1.0**	**1.1**	**1.0**	**1.1**	**1.0**	**1.1**	**1.2**	**0.9**	**1.4**	**1.3**	**1.5**	**1.7**	**3.2**	**3.6**	**3.0**	**1.8**	**1.3**	**1.1**	**1.4**	**1.1**	**1.0**	**0.9**	**1.1**	**1.2**			**0.9**

POSSIBLE NUMBER OF OBSERVATIONS = 696 ACTUAL NUMBER OF OBSERVATIONS = 693 DATA RECOVERY RATE = 99.6%

MONTHLY MEAN = 5.1 mps

MAXIMUM WIND GUST = 18.7 mps DATE OF OCCURRENCE = 2/28 AT 2300 MAXIMUM DAILY MEAN = 9.8 mps DATE OF OCCURRENCE = 2/13

MINIMUM WIND GUST = 0.9 mps DATE OF OCCURRENCE = 2/7 AT 2200 MINUMUM DAILY MEAN = 2.2 mps DATE OF OCCURRENCE = 2/10

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

Draft

CSX AQ5

WIND GUST in mps for MARCH, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	2.9	2.3	2.0	3.0	3.1	1.8	1.7	1.1	6.1	7.3	8.6	8.4	8.8	9.3	8.6	10.3	8.7	7.9	7.7	6.5	6.5	6.5	7.3	5.5	**5.9**	**10.3**	**1.1**
2	5.5	5.3	4.8	5.0	4.0	5.1	6.1	6.1	6.1	5.7	5.1	4.3	4.3	4.8	7.3	8.1	8.6	6.7	2.9	4.2	5.0	7.7	4.8	3.1	**5.4**	**8.6**	**2.9**
3	2.6	3.3	4.0	3.4	2.9	2.6	1.9	2.8	2.5	2.8	2.9	3.7	4.7	5.1	5.9	5.7	5.5	3.5	4.1	3.6	3.2	1.7	0.8	1.0	**3.3**	**5.9**	**0.8**
4	1.5	1.7	2.0	1.3	1.2	1.5	1.9	2.2	2.2	2.2	1.5	2.1	2.0	3.1	3.4	7.1	6.4	6.1	5.8	7.1	6.4	5.7	4.9	6.6	**3.6**	**7.1**	**1.2**
5	6.7	9.5	7.8	8.9	8.6	7.3	5.7	5.3	5.3	6.2	6.1	6.3	4.1	4.0	2.9	3.5	3.5	3.3	3.6	3.7	3.8	3.0	2.7	3.3	**5.2**	**9.5**	**2.7**
6	1.3	1.4	3.3	2.9	4.2	2.8	2.9	2.9	2.9	4.4	4.8	5.5	6.1	5.1	5.1	3.9	4.4	4.6	3.9	5.9	6.8	6.2	6.2	6.7	**4.3**	**6.8**	**1.3**
7	6.3	4.7	6.2	6.5	5.4	5.4	7.7	8.6	13.1	9.5	10.5	8.7	8.6	9.3	9.1	10.2	8.4	9.4	7.1	4.8	3.4	5.4	5.8	4.3	**7.4**	**13.1**	**3.4**
8	4.0	4.5	4.4	4.0	4.0	3.5	4.0	4.0	6.7	5.6	4.3	4.0	4.6	4.9	4.3	4.1	3.8	4.3	8.7	8.0	8.9	9.6	9.4	9.3	**5.5**	**9.6**	**3.5**
9	7.0	7.4	7.1	7.0	9.0	10.1	8.3	7.0	7.8	8.4	8.6	8.2	7.6	6.6	6.3	7.4	8.6	7.5	6.6	8.4	4.8	6.3	5.7	6.2	**7.4**	**10.1**	**4.8**
10	5.7	5.3	7.3	6.2	5.7	5.5	6.3	12.6	18.2	21.8	18.9	16.5	17.3	17.2	16.5	17.3	18.0	18.2	18.2	16.7	15.9	12.4	12.5	11.9	**13.4**	**21.8**	**5.3**
11	14.8	21.2	16.9	15.1	13.1	15.4	16.3	17.4	20.1	15.7	16.1	16.9	15.6	15.3	17.0	16.4	14.3	15.1	9.4	8.7	6.3	5.6	4.6	4.1	**13.8**	**21.2**	**4.1**
12	4.7	3.9	5.3	6.7	10.6	9.2	6.7	8.3	12.7	10.4	10.1	10.4	9.7	11.2	11.1	11.5	9.1	6.8	5.8	3.7	4.2	4.0	4.0	3.8	**7.7**	**12.7**	**3.7**
13	3.5	2.1	2.1	1.7	2.1	3.1	1.5	1.0	4.2	6.1	6.1	5.9	5.9	8.0	6.0	6.5	4.3	3.3	2.5	3.7	3.1	1.9	1.5	1.6	**3.7**	**8.0**	**1.0**
14	1.7	1.3	1.3	1.6	2.1	1.8	2.2	1.5	2.1	1.9	2.1	4.7	5.9	6.9	7.1	8.0	9.1	7.7	5.6	5.4	4.7	4.6	3.7	1.7	**3.9**	**9.1**	**1.3**
15	1.2	15.0	2.3	4.3	3.7	4.5	5.9	6.9	4.1	5.3	7.8	13.3	12.5	12.2	11.2	9.4	7.7	6.5	7.7	6.7	6.2	7.6	9.5	9.9	**7.6**	**15.0**	**1.2**
16	8.8	6.1	5.5	4.7	4.7	2.7	5.4	5.9	5.3	6.1	6.2	6.1	5.9	9.6	8.5	7.3	7.3	7.6	5.1	6.8	6.2	4.7	5.7	4.0	**6.1**	**9.6**	**2.7**
17	4.2	3.3	1.9	2.0	4.3	5.4	4.2	6.9	6.4	7.9	7.8	7.3	9.7	8.2	7.3	9.4	10.1	9.5	6.2	5.6	5.9	2.3	12.0	13.3	**6.7**	**13.3**	**1.9**
18	11.0	10.3	9.7	9.1	8.4	8.3	8.1	7.3	12.6	14.1	13.1	11.5	10.3	10.9	10.9	13.1	14.8	15.5	15.4	13.2	12.4	12.5	11.6	8.0	**11.3**	**15.5**	**7.3**
19	8.3	8.1	4.6	4.9	5.7	6.3	10.8	12.4	13.1	13.0	9.4	10.2	10.3	10.8	11.5	9.0	9.3	8.3	6.5	5.0	2.4	2.2	2.6	3.1	**7.8**	**13.1**	**2.2**
20	3.7	4.6	4.8	4.5	3.5	3.9	4.9	6.3	11.7	10.7	11.3	11.4	13.7	13.1	16.4	15.5	16.0	18.2	17.1	16.4	15.6	14.7	14.8	11.0	**11.0**	**18.2**	**3.5**
21	8.5	9.2	8.9	8.0	9.2	6.7	5.7	7.6	9.3	10.2	10.5	10.7	11.3	10.6	11.3	10.4	9.6	7.2	5.1	4.2	4.1	3.7	4.1	2.9	**7.9**	**11.3**	**2.9**
22	2.2	4.7	5.1	4.6	4.8	6.1	4.8	7.9	7.9	6.5	6.1	6.7	5.9	7.3	6.8	5.6	4.9	7.3	8.3	7.9	7.3	6.6	5.9	5.9	**6.1**	**8.3**	**2.2**
23	4.7	5.3	5.4	3.8	4.3	4.5	5.6	4.7	6.4	8.0	9.8	9.7	9.8	12.6	16.9	16.1	16.5	15.7	18.4	14.3	15.8	15.9	13.9	14.3	**10.5**	**18.4**	**3.8**
24	12.0	8.9	7.7	7.1	7.1	6.9	6.2	8.2	8.4	7.7	8.5	7.6	6.9	6.1	6.5	5.1	5.2	4.7	4.3	4.7	3.4	3.5	2.5	2.5	**6.3**	**12.0**	**2.5**
25	3.2	5.5	2.9	5.5	6.1	5.0	4.9	5.1	6.3	7.3	6.0	5.0	5.2	5.5	4.0	3.8	3.3	2.9	3.1	3.5	6.5	5.1	3.1	2.9	**4.7**	**7.3**	**2.9**
26	1.5	1.5	2.0	1.6	6.0	4.0	5.3	5.7	4.4	3.8	3.2	4.9	6.2	7.5	5.4	5.7	5.3	5.3	6.7	7.9	7.7	10.1	9.6	7.7	**5.4**	**10.1**	**1.5**
27	6.1	5.9	5.8	4.7	4.9	5.3	3.9	3.9	4.4	5.5	5.5	4.4	4.9	3.6	7.3	2.1	2.7	1.5	2.9	3.4	2.9	2.1	3.4	2.6	**4.2**	**7.3**	**1.5**
28	3.6	3.0	4.1	3.7	2.8	4.3	4.1	6.0	7.0	6.6	7.2	10.3	10.3	8.0	7.9	7.3	7.0	6.7	5.3	3.8	3.2	3.9	5.3	5.5	**5.7**	**10.3**	**2.8**
29	5.9	8.4	5.8	3.4	3.5	2.9	2.5	3.9	7.7	12.0	15.9	13.3	16.1	17.7	17.9	18.8	16.5	15.9	11.2	7.8	5.8	4.6	5.5	4.5	**9.5**	**18.8**	**2.5**
30	4.8	4.7	3.3	2.9	3.2	4.8	5.9	6.9	8.4	9.2	7.6	7.4	8.6	4.3	5.1	3.4	5.9	4.3	4.3	3.3	12.2	12.7	2.7	2.3	**5.8**	**12.7**	**2.3**
31	3.2	3.7	3.7	3.1	4.0	2.8	3.2	3.7	4.1	4.4	6.1	3.7	5.3	5.6	6.5	5.6	5.8	5.0	4.1	2.1	1.7	3.0	4.5	4.9	**4.2**	**6.5**	**1.7**
MEAN	**5.2**	**5.9**	**5.1**	**4.9**	**5.2**	**5.1**	**5.3**	**6.1**	**7.7**	**7.9**	**8.0**	**8.0**	**8.3**	**8.5**	**8.8**	**8.6**	**8.4**	**8.0**	**7.2**	**6.7**	**6.5**	**6.3**	**6.1**	**5.6**	**6.8**		
MAX	**14.8**	**21.2**	**16.9**	**15.1**	**13.1**	**15.4**	**16.3**	**17.4**	**20.1**	**21.8**	**18.9**	**16.9**	**17.3**	**17.7**	**17.9**	**18.8**	**18.0**	**18.2**	**18.4**	**16.7**	**15.9**	**15.9**	**14.8**	**14.3**		**21.8**	
MIN	**1.2**	**1.3**	**1.3**	**1.3**	**1.2**	**1.5**	**1.5**	**1.0**	**2.1**	**1.9**	**1.5**	**2.1**	**2.0**	**3.1**	**2.9**	**2.1**	**2.7**	**1.5**	**2.5**	**2.1**	**1.7**	**1.7**	**0.8**	**1.0**			**0.8**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 744 DATA RECOVERY RATE = 100.0%

MONTHLY MEAN = 6.8 mps

MAXIMUM WIND GUST = 21.8 mps DATE OF OCCURRENCE = 3/10 AT 1000 MAXIMUM DAILY MEAN = 13.8 mps DATE OF OCCURRENCE = 3/11

MINIMUM WIND GUST = 0.8 mps DATE OF OCCURRENCE = 3/3 AT 2300 MINUMUM DAILY MEAN = 3.3 mps DATE OF OCCURRENCE = 3/3

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

Draft

APPENDIX C. HOURLY TEMPERATURE DATA FOR FIRST QUARTER 2024

Draft

CSX AQ5

TEMPERATURE in Deg C for JANUARY, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	5.7	5.2	5.0	5.1	5.0	4.7	5.0	4.5	4.7	5.9	6.7	6.6	6.2	5.9	5.4	5.2	4.9	4.9	4.7	4.5	4.6	4.7	4.4	4.3	**5.2**	**6.7**	**4.3**
2	4.1	4.1	4.5	4.7	4.4	4.1	3.6	3.2	2.9	2.7	3.2	4.2	4.9	5.5	6.1	6.3	6.0	5.2	4.2	3.7	3.1	2.7	2.0	1.3	**4.0**	**6.3**	**1.3**
3	1.1	0.1	0.0	0.0	0.1	0.0	0.1	-0.1	0.4	2.5	4.0	5.2	6.4	7.2	7.0	6.7	6.1	5.3	4.6	3.7	3.9	4.1	4.0	4.0	**3.2**	**7.2**	**-0.1**
4	3.8	3.7	3.8	3.9	4.1	3.8	4.2	4.3	4.5	4.8	5.2	5.8	6.2	6.0	6.0	5.7	5.1	4.2	3.4	2.7	2.1	1.4	0.8	0.4	**4.0**	**6.2**	**0.4**
5	0.0	-0.4	-1.0	-1.3	-1.7	-2.2	-2.7	-3.3	-2.6	-1.1	0.0	1.0	2.0	2.9	3.6	4.3	3.9	2.4	1.8	0.7	0.3	-0.9	-0.2	0.1	**0.2**	**4.3**	**-3.3**
6	0.1	-0.6	-1.4	-1.4	-1.3	1.0	0.7	0.3	1.7	2.2	2.5	2.2	2.1	1.9	2.4	2.6	2.6	2.7	3.1	3.3	3.1	3.0	3.0	3.2	**1.6**	**3.3**	**-1.4**
7	2.9	2.8	2.2	1.8	1.8	2.1	2.5	2.6	3.0	4.0	5.9	7.5	8.1	8.1	8.0	7.6	7.4	7.2	6.5	6.3	6.0	5.7	5.1	4.7	**5.0**	**8.1**	**1.8**
8	4.5	4.4	4.2	4.3	4.0	3.9	3.4	3.5	4.0	5.8	7.0	7.5	7.9	8.4	8.5	8.5	8.2	6.8	5.6	3.9	3.2	2.9	2.4	2.7	**5.2**	**8.5**	**2.4**
9	3.4	4.1	4.6	4.8	4.8	4.8	4.4	4.1	4.4	5.4	6.1	6.4	6.9	7.7	8.6	8.9	10.4	13.1	13.5	13.4	12.6	12.8	13.7	13.9	**8.0**	**13.9**	**3.4**
10	13.5	13.0	12.0	10.6	9.9	9.0	8.7	8.7	8.6	8.8	9.3	9.5	9.6	9.8	9.9	9.5	9.0	8.4	8.0	7.6	7.3	7.0	6.4	5.9	**9.2**	**13.5**	**5.9**
11	5.6	5.2	5.0	4.1	3.6	3.7	3.0	2.5	3.3	4.6	6.4	7.7	8.3	9.0	10.0	10.6	10.3	9.1	7.3	5.2	4.6	4.4	5.9	4.0	**6.0**	**10.6**	**2.5**
12	2.6	2.2	2.1	1.5	1.0	0.2	0.3	0.9	3.0	4.7	6.6	7.2	7.5	7.9	7.8	7.8	7.8	7.4	7.4	7.6	7.7	8.2	9.0	11.3	**5.4**	**11.3**	**0.2**
13	12.9	12.4	11.9	11.4	11.7	10.9	10.5	9.8	9.4	10.0	8.5	8.7	9.3	9.2	8.7	7.5	6.1	4.3	3.4	2.9	2.5	2.2	1.8	1.6	**7.8**	**12.9**	**1.6**
14	1.2	0.7	0.2	-0.5	-0.6	-0.9	-0.6	-0.1	0.9	3.0	5.5	4.9	1.8	2.2	4.2	3.7	2.5	1.4	0.6	-0.2	-0.7	-0.9	-1.2	-1.3	**1.1**	**5.5**	**-1.3**
15	-1.3	-1.5	-1.5	-2.1	-4.0	-4.3	-4.2	-3.8	-3.5	-3.2	-3.1	-2.8	-2.8	-3.0	-2.8	-2.8	-2.6	-2.6	-2.6	-2.5	-2.5	-2.4	-2.4	-2.4	**-2.8**	**-1.3**	**-4.3**
16	-2.3	-2.4	-2.5	-2.5	-2.6	-2.6	-2.6	-2.5	-2.1	-1.8	-1.9	-2.0	-1.5	-1.3	-1.2	-1.4	-2.5	-3.3	-4.4	-5.1	-5.7	-6.4	-7.0	-7.3	**-3.1**	**-1.2**	**-7.3**
17	-7.8	-8.4	-9.0	-9.5	-9.6	-9.4	-9.3	-9.6	-8.7	-7.5	-6.2	-5.4	-4.5	-4.0	-3.3	-2.7	-2.6	-3.1	-3.6	-3.9	-4.5	-5.3	-5.9	-6.8	**-6.3**	**-2.6**	**-9.6**
18	-7.4	-8.1	-7.2	-7.3	-6.5	-6.3	-6.0	-5.5	-4.8	-3.7	-2.7	-1.5	-0.8	-0.2	0.9	0.9	0.9	0.6	0.1	0.2	0.9	1.0	0.0	0.0	**-2.6**	**1.0**	**-8.1**
19	0.0	0.0	0.0	-0.5	-1.6	-1.9	-1.9	-1.9	-2.0	-2.1	-2.0	-1.8	-1.5	-1.4	-1.1	-0.9	-1.0	-1.3	-1.4	-1.6	-2.3	-3.0	-3.6	-4.1	**-1.6**	**0.0**	**-4.1**
20	-3.2	-3.7	-4.0	-4.5	-5.1	-5.5	-6.4	-7.0	-6.2	-5.7	-5.6	-5.2	-4.8	-4.5	-4.2	-4.2	-4.5	-4.9	-5.3	-5.9	-6.4	-6.7	-6.9	-6.4	**-5.3**	**-3.2**	**-7.0**
21	-6.6	-6.4	-6.0	-5.3	-4.9	-5.1	-5.3	-5.3	-4.7	-3.5	-2.5	-1.6	-1.0	-0.3	0.1	0.3	0.1	-0.8	-1.4	-2.2	-2.7	-3.1	-3.3	-4.0	**-3.1**	**0.3**	**-6.6**
22	-4.6	-4.9	-5.5	-5.6	-5.7	-6.5	-7.4	-7.3	-5.5	-2.9	-1.2	0.2	1.6	2.6	3.4	3.6	3.3	2.4	1.0	0.0	0.3	-1.1	-2.3	-2.6	**-1.9**	**3.6**	**-7.4**
23	-2.8	-2.7	-2.5	-2.9	-2.8	-2.0	-2.8	-3.0	-0.8	0.4	1.5	2.6	3.3	4.0	4.5	5.1	4.7	4.0	3.3	2.4	2.3	2.7	3.1	2.8	**1.0**	**5.1**	**-3.0**
24	2.3	2.4	2.7	2.7	2.7	2.6	2.4	2.2	2.3	2.7	3.2	3.8	4.3	4.7	5.0	5.0	5.2	5.2	5.0	5.7	5.6	5.2	5.6	6.0	**3.9**	**6.0**	**2.2**
25	5.5	5.8	6.2	5.8	6.1	6.8	6.4	6.5	6.0	7.0	8.0	7.3	8.2	8.7	10.2	10.6	10.0	10.5	10.0	10.3	10.9	10.7	11.2	11.2	**8.3**	**11.2**	**5.5**
26	10.7	10.0	9.7	9.3	9.1	9.1	9.2	9.1	11.0	12.7	18.1	20.6	21.5	20.3	23.7	15.9	13.4	13.0	12.1	10.8	10.0	9.4	8.2	7.9	**12.7**	**23.7**	**7.9**
27	8.5	---	---	---	5.9	5.4	4.5	4.6	5.9	6.6	8.7	11.6	10.1	9.5	9.5	10.1	9.5	8.9	8.5	8.6	8.2	7.6	6.7	5.9	**7.8**	**11.6**	**4.5**
28	5.9	5.7	5.3	5.1	5.0	5.0	5.1	5.4	5.5	5.4	5.5	5.7	6.1	6.5	6.7	6.8	6.6	6.2	6.1	6.0	5.9	5.7	5.6	5.4	**5.8**	**6.8**	**5.0**
29	5.5	5.4	5.6	5.7	5.6	5.5	5.3	5.4	5.5	5.5	6.0	6.3	6.4	6.4	6.6	6.7	6.8	6.4	6.1	5.8	5.6	5.5	5.4	5.3	**5.8**	**6.8**	**5.3**
30	5.2	4.4	3.8	3.6	3.5	3.2	2.9	2.8	2.7	2.7	2.8	3.2	3.6	3.6	3.7	3.7	3.8	3.7	3.8	3.8	3.9	3.8	3.7	3.4	**3.6**	**5.2**	**2.7**
31	3.3	3.3	3.2	3.0	3.0	3.1	3.2	3.2	3.3	3.4	3.7	4.0	4.5	5.2	5.7	5.8	5.8	5.7	5.4	4.7	3.9	2.6	1.3	0.7	**3.8**	**5.8**	**0.7**
MEAN	**2.3**	**1.9**	**1.7**	**1.5**	**1.4**	**1.4**	**1.2**	**1.1**	**1.7**	**2.6**	**3.5**	**4.2**	**4.5**	**4.8**	**5.3**	**5.1**	**4.7**	**4.3**	**3.8**	**3.3**	**3.0**	**2.7**	**2.5**	**2.3**	**2.9**		
MAX	**13.5**	**13.0**	**12.0**	**11.4**	**11.7**	**10.9**	**10.5**	**9.8**	**11.0**	**12.7**	**18.1**	**20.6**	**21.5**	**20.3**	**23.7**	**15.9**	**13.4**	**13.1**	**13.5**	**13.4**	**12.6**	**12.8**	**13.7**	**13.9**		**23.7**	
MIN	**-7.8**	**-8.4**	**-9.0**	**-9.5**	**-9.6**	**-9.4**	**-9.3**	**-9.6**	**-8.7**	**-7.5**	**-6.2**	**-5.4**	**-4.8**	**-4.5**	**-4.2**	**-4.2**	**-4.5**	**-4.9**	**-5.3**	**-5.9**	**-6.4**	**-6.7**	**-7.0**	**-7.3**			**-9.6**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 741 DATA RECOVERY RATE = 99.6%

MONTHLY MEAN = 2.9 Deg C

MAXIMUM TEMPERATURE = 23.7 Deg C DATE OF OCCURRENCE = 1/26 AT 1500 MAXIMUM DAILY MEAN = 12.7 Deg C DATE OF OCCURRENCE = 1/26

MINIMUM TEMPERATURE = -9.6 Deg C DATE OF OCCURRENCE = 1/17 AT 0500 MINUMUM DAILY MEAN = -6.3 Deg C DATE OF OCCURRENCE = 1/17

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

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CSX AQ5

TEMPERATURE in Deg C for FEBRUARY, 2024

Hr Beg Hr End Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	0.3	0.1	-0.4	-0.7	-0.7	-0.5	-0.7	-0.3	1.5	4.8	6.9	8.5	9.7	10.7	11.3	11.9	10.6	9.0	8.2	7.4	6.8	6.4	5.8	5.5	**5.1**	**11.9**	**-0.7**
2	5.4	5.5	5.6	5.6	5.4	5.4	5.5	5.6	6.0	6.7	7.5	7.7	8.2	8.6	8.9	9.1	8.6	8.0	7.5	7.4	7.2	6.4	5.4	5.2	**6.8**	**9.1**	**5.2**
3	4.9	4.2	3.6	3.6	3.4	3.1	2.4	2.5	3.3	4.1	5.0	6.1	7.0	7.9	8.7	8.9	7.6	5.8	5.0	4.0	3.5	2.7	2.1	2.0	**4.6**	**8.9**	**2.0**
4	2.3	1.3	0.2	0.2	0.3	-0.2	-0.6	-0.2	2.2	4.7	5.1	5.2	6.0	5.7	6.8	6.8	6.7	6.0	5.1	4.1	3.4	2.7	1.9	1.1	**3.2**	**6.8**	**-0.6**
5	1.0	1.0	0.5	-0.4	-0.1	0.1	0.0	0.7	3.1	4.9	5.8	5.5	5.2	5.5	5.9	6.2	6.4	5.6	5.0	5.4	4.8	4.2	3.7	3.7	**3.5**	**6.4**	**-0.4**
6	3.6	3.1	2.4	1.8	1.4	0.9	0.7	0.5	1.2	2.0	2.9	3.6	4.7	5.7	5.1	4.5	4.5	4.3	3.4	2.4	2.1	2.0	1.4	0.9	**2.7**	**5.7**	**0.5**
7	0.4	0.4	-0.5	-0.7	-0.3	0.0	0.0	0.7	2.2	4.0	5.1	5.5	6.2	7.5	7.2	7.5	7.2	6.1	5.6	4.5	3.5	2.7	1.9	1.2	**3.2**	**7.5**	**-0.7**
8	1.0	0.3	-0.2	-0.1	0.4	0.5	0.7	1.2	2.6	5.1	6.5	7.3	7.1	7.2	9.2	8.5	9.1	9.0	8.2	7.4	6.9	6.5	6.1	5.9	**4.9**	**9.2**	**-0.2**
9	5.9	5.8	5.6	5.5	5.4	5.5	5.3	5.0	5.3	6.6	8.6	9.8	10.0	9.4	10.6	11.1	10.8	10.8	9.2	7.6	7.2	6.8	6.5	6.3	**7.5**	**11.1**	**5.0**
10	6.3	5.9	5.4	5.2	5.0	5.1	5.1	5.4	6.0	7.2	7.6	9.7	9.5	14.6	13.0	11.2	12.3	10.5	10.0	10.3	9.7	9.2	9.0	9.6	**8.5**	**14.6**	**5.0**
11	10.5	11.5	12.1	11.8	12.5	11.9	10.3	9.6	9.9	10.0	9.2	10.3	10.6	10.2	10.0	10.3	10.5	10.0	9.2	8.9	9.2	8.7	8.5	8.4	**10.2**	**12.5**	**8.4**
12	7.9	7.7	7.9	7.9	7.7	7.6	7.5	7.2	7.7	7.5	7.3	7.4	7.8	7.9	7.9	8.1	7.8	7.0	6.9	6.9	6.4	6.0	5.6	5.5	**7.3**	**8.1**	**5.5**
13	5.5	5.4	5.3	5.2	4.9	4.3	3.2	2.4	1.7	1.8	2.6	4.3	5.0	6.1	6.8	7.2	7.3	7.0	6.3	5.7	5.2	4.8	4.7	5.1	**4.9**	**7.3**	**1.7**
14	5.3	4.5	4.1	3.4	2.8	2.6	2.8	3.2	3.0	3.3	3.8	4.3	4.8	5.0	5.4	5.5	5.4	4.8	4.2	3.8	3.1	2.4	1.5	0.6	**3.7**	**5.5**	**0.6**
15	-0.5	-1.0	-0.9	-1.0	-1.1	-0.9	-1.0	-0.4	0.9	1.3	1.7	1.8	3.2	4.0	4.7	5.7	5.9	5.6	5.3	4.9	4.7	4.1	2.9	2.9	**2.2**	**5.9**	**-1.1**
16	3.2	6.9	7.2	6.4	5.6	4.7	4.0	3.6	4.0	4.6	5.1	5.7	6.4	7.1	7.7	8.0	7.8	7.4	6.5	6.1	5.7	5.4	5.0	5.0	**5.8**	**8.0**	**3.2**
17	4.2	1.1	0.2	0.3	0.4	0.7	1.0	1.1	1.4	2.1	2.3	2.2	2.6	2.2	2.1	2.7	2.3	1.6	0.9	0.5	-0.2	-0.2	-0.8	-1.4	**1.2**	**4.2**	**-1.4**
18	-1.9	-2.2	-2.5	-2.7	-3.4	-3.7	-3.8	-3.7	-2.3	0.1	2.1	4.0	5.3	6.2	7.2	8.0	8.6	8.1	6.6	5.2	5.1	5.5	5.5	4.8	**2.3**	**8.6**	**-3.8**
19	3.9	3.0	1.1	0.3	0.6	0.1	-0.4	0.7	2.3	3.7	4.3	5.2	5.9	6.6	7.5	7.7	7.9	7.5	6.4	4.6	3.7	3.0	2.4	0.7	**3.7**	**7.9**	**-0.4**
20	0.1	-0.1	-0.5	-0.9	0.5	-0.4	-0.9	-0.8	0.5	1.9	2.5	3.2	4.2	5.0	5.6	6.0	6.0	5.6	5.0	4.8	4.6	3.5	2.8	2.4	**2.5**	**6.0**	**-0.9**
21	1.4	0.7	0.1	-0.4	-0.8	-0.9	-1.0	-0.4	1.0	2.3	2.9	3.4	4.0	4.7	4.9	5.7	6.0	5.6	5.0	4.9	4.3	3.5	3.0	2.7	**2.6**	**6.0**	**-1.0**
22	2.5	2.5	1.7	0.4	-0.1	-0.3	-0.4	0.6	1.7	3.2	5.2	5.6	5.5	6.2	7.1	6.5	6.2	6.8	7.0	6.7	7.0	6.8	5.9	5.5	**4.2**	**7.1**	**-0.4**
23	5.3	5.2	4.9	4.8	4.8	4.5	4.8	5.5	6.0	6.2	7.2	7.9	8.4	8.8	9.3	9.4	9.8	9.6	8.9	7.8	7.1	6.4	5.0	4.8	**6.8**	**9.8**	**4.5**
24	4.6	4.2	4.7	7.4	7.6	6.9	6.5	6.4	6.7	7.6	8.1	8.4	8.7	9.1	8.9	8.2	7.1	5.7	4.5	3.9	3.2	2.4	1.7	1.0	**6.0**	**9.1**	**1.0**
25	0.4	-0.2	-0.8	-1.4	-1.4	-1.7	-2.0	-1.4	-0.3	0.1	1.0	2.0	2.3	2.6	3.3	4.1	5.1	5.4	4.4	3.9	3.6	3.4	2.9	2.5	**1.6**	**5.4**	**-2.0**
26	1.9	1.3	0.4	1.9	2.5	2.4	1.4	1.6	4.5	6.5	8.5	8.4	8.5	8.9	10.2	10.8	10.4	10.3	9.5	8.3	7.8	7.5	6.7	6.2	**6.1**	**10.8**	**0.4**
27	5.7	5.2	4.8	4.8	4.5	4.2	4.2	5.1	8.3	9.8	12.0	14.6	14.0	15.7	15.1	13.9	12.4	12.6	14.6	15.1	14.9	14.7	14.4	13.0	**10.6**	**15.7**	**4.2**
28	12.0	12.1	12.2	12.2	11.7	10.8	9.9	9.8	---	---	---	16.9	17.7	18.2	17.8	17.1	16.2	15.9	15.8	14.5	12.5	10.1	8.2	6.2	**13.2**	**18.2**	**6.2**
29	4.5	3.3	2.2	1.3	0.7	0.3	-0.1	0.1	0.8	1.6	2.6	3.7	4.8	5.8	6.9	7.5	7.9	7.6	6.7	5.7	5.0	4.4	3.6	2.8	**3.7**	**7.9**	**-0.1**
MEAN	**3.7**	**3.4**	**3.0**	**2.8**	**2.8**	**2.5**	**2.2**	**2.5**	**3.3**	**4.4**	**5.3**	**6.5**	**7.0**	**7.7**	**8.1**	**8.2**	**8.1**	**7.6**	**6.9**	**6.3**	**5.8**	**5.2**	**4.6**	**4.1**	**5.1**		
MAX	**12.0**	**12.1**	**12.2**	**12.2**	**12.5**	**11.9**	**10.3**	**9.8**	**9.9**	**10.0**	**12.0**	**16.9**	**17.7**	**18.2**	**17.8**	**17.1**	**16.2**	**15.9**	**15.8**	**15.1**	**14.9**	**14.7**	**14.4**	**13.0**		**18.2**	
MIN	**-1.9**	**-2.2**	**-2.5**	**-2.7**	**-3.4**	**-3.7**	**-3.8**	**-3.7**	**-2.3**	**0.1**	**1.0**	**1.8**	**2.3**	**2.2**	**2.1**	**2.7**	**2.3**	**1.6**	**0.9**	**0.5**	**-0.2**	**-0.2**	**-0.8**	**-1.4**			**-3.8**

POSSIBLE NUMBER OF OBSERVATIONS = 696 ACTUAL NUMBER OF OBSERVATIONS = 693 DATA RECOVERY RATE = 99.6%

MONTHLY MEAN = 5.1 Deg C

MAXIMUM TEMPERATURE = 18.2 Deg C DATE OF OCCURRENCE = 2/28 AT 1400 MAXIMUM DAILY MEAN = 13.2 Deg C DATE OF OCCURRENCE = 2/28

MINIMUM TEMPERATURE = -3.8 Deg C DATE OF OCCURRENCE = 2/18 AT 0700 MINUMUM DAILY MEAN = 1.2 Deg C DATE OF OCCURRENCE = 2/17

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

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CSX AQ5

TEMPERATURE in Deg C for MARCH, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	1.7	1.4	0.6	0.4	0.2	-1.1	-1.0	1.2	3.9	4.9	5.3	5.7	6.5	7.3	8.0	8.9	8.7	8.5	8.4	8.2	8.0	7.4	6.6	5.9	**4.8**	**8.9**	**-1.1**
2	5.0	4.5	4.4	4.6	5.0	5.2	5.9	6.6	7.4	8.0	8.7	10.0	11.1	12.1	12.7	11.9	11.0	10.7	10.5	10.7	10.5	10.7	9.8	9.1	**8.6**	**12.7**	**4.4**
3	8.8	7.8	7.2	6.8	6.8	6.0	5.5	6.5	8.6	10.7	11.2	13.1	14.1	13.8	14.1	14.3	13.7	13.6	15.0	14.1	12.9	11.4	9.6	9.6	**10.6**	**15.0**	**5.5**
4	10.1	10.0	9.8	9.3	9.2	9.3	9.3	9.8	10.0	10.8	11.5	12.5	13.6	14.9	16.1	15.8	13.9	13.1	12.2	12.5	11.8	11.5	11.2	10.6	**11.6**	**16.1**	**9.2**
5	9.6	9.2	8.7	8.3	8.2	8.2	8.1	8.0	8.1	8.3	8.7	9.0	9.4	10.3	10.8	11.5	10.8	10.3	10.2	10.3	9.9	9.3	9.2	9.1	**9.3**	**11.5**	**8.0**
6	8.6	8.3	8.5	8.6	8.7	9.0	9.1	9.2	9.5	9.4	9.9	10.5	10.5	10.5	10.6	11.2	11.6	11.5	11.6	11.7	11.8	11.7	11.6	11.8	**10.2**	**11.8**	**8.3**
7	11.9	11.9	12.1	12.3	12.5	12.7	12.8	12.7	12.2	13.3	14.3	15.3	15.7	15.9	15.6	16.2	15.8	15.4	14.5	13.7	12.9	12.3	11.5	10.5	**13.5**	**16.2**	**10.5**
8	9.6	9.1	8.6	8.0	7.6	7.4	7.1	7.5	8.6	9.0	9.1	9.7	10.4	10.6	11.1	11.5	11.5	11.1	10.6	10.3	9.5	8.3	7.2	6.6	**9.2**	**11.5**	**6.6**
9	6.4	6.5	6.4	6.5	6.4	6.3	6.3	6.3	6.2	6.4	6.9	7.5	8.1	8.5	8.6	9.0	9.7	10.1	10.2	9.8	9.4	9.0	8.3	7.8	**7.8**	**10.2**	**6.2**
10	7.3	7.3	7.7	7.6	7.8	8.1	7.9	7.8	8.5	8.1	8.0	8.0	8.2	8.2	8.4	7.3	7.0	6.2	5.4	4.7	3.3	3.2	3.3	2.8	**6.8**	**8.5**	**2.8**
11	3.4	3.9	4.0	4.2	4.2	4.1	4.0	4.4	5.2	6.5	7.8	9.1	10.5	11.4	12.1	12.5	12.6	12.3	11.4	10.7	10.1	9.6	8.7	8.1	**8.0**	**12.6**	**3.4**
12	8.1	7.9	8.3	8.5	10.1	10.3	10.1	11.5	13.6	14.6	15.7	17.4	19.2	20.4	21.4	21.9	22.3	22.0	20.7	19.2	18.6	17.7	16.6	15.7	**15.5**	**22.3**	**7.9**
13	15.5	13.9	11.2	9.5	8.9	8.7	8.0	8.9	12.2	18.1	19.7	20.8	21.6	22.1	22.2	22.4	21.9	21.0	19.5	17.3	16.8	14.4	11.9	10.8	**15.7**	**22.4**	**8.0**
14	10.2	9.7	9.3	9.0	9.1	8.6	8.5	10.2	13.4	14.0	14.7	16.9	18.7	19.1	19.9	22.6	23.0	22.1	20.8	19.6	18.9	18.3	16.6	15.2	**15.4**	**23.0**	**8.5**
15	14.1	17.2	16.7	17.3	17.5	16.9	17.4	17.4	17.4	18.8	21.2	22.8	23.1	23.3	23.4	22.9	21.7	19.6	18.4	17.0	15.7	15.1	13.5	12.2	**18.4**	**23.4**	**12.2**
16	11.4	10.8	10.4	10.1	9.4	8.3	8.2	8.9	10.0	11.1	12.5	14.0	15.1	15.9	16.4	15.3	17.7	16.4	14.4	12.8	12.1	11.6	11.0	10.5	**12.3**	**17.7**	**8.2**
17	10.5	11.0	11.0	10.7	10.3	10.7	10.3	11.3	12.5	13.6	14.5	16.6	17.8	18.3	18.3	19.5	20.4	18.3	16.9	15.5	14.5	13.4	13.0	10.5	**14.1**	**20.4**	**10.3**
18	9.1	8.4	8.0	7.4	6.8	6.6	6.3	6.2	6.6	6.6	7.3	7.8	8.4	9.2	9.7	9.8	8.9	7.1	5.6	4.8	4.2	3.7	3.4	3.0	**6.9**	**9.8**	**3.0**
19	2.6	2.5	2.0	1.6	1.8	2.3	2.7	3.4	4.1	4.7	5.1	6.3	6.7	8.0	9.0	9.8	10.3	10.0	9.7	9.3	9.0	8.8	8.3	7.8	**6.1**	**10.3**	**1.6**
20	7.1	6.5	6.1	6.1	5.8	5.4	5.5	6.9	9.4	12.3	14.6	16.0	17.1	18.5	18.8	18.3	18.1	13.8	10.3	8.1	7.3	6.3	5.1	4.1	**10.3**	**18.8**	**4.1**
21	3.5	2.9	2.2	1.5	0.8	0.3	0.0	0.7	1.4	2.3	3.4	4.3	5.5	6.6	7.3	7.8	8.3	8.3	7.8	7.3	6.5	5.8	5.5	5.0	**4.4**	**8.3**	**0.0**
22	3.9	4.2	4.2	3.3	2.4	1.7	1.5	2.4	2.8	3.5	4.0	4.5	5.2	6.6	7.4	7.7	7.9	8.4	8.7	8.3	7.8	7.4	6.8	6.7	**5.3**	**8.7**	**1.5**
23	6.3	5.7	5.4	5.2	5.2	5.7	6.3	6.7	6.8	7.3	8.0	9.9	11.9	11.6	10.4	9.7	9.3	8.8	7.5	6.5	5.7	4.2	3.0	2.1	**7.1**	**11.9**	**2.1**
24	1.4	1.1	1.0	0.8	0.6	0.5	0.5	1.2	2.3	3.4	4.4	5.7	6.5	7.7	8.6	9.2	9.4	8.7	8.3	7.8	7.3	6.8	6.0	5.0	**4.8**	**9.4**	**0.5**
25	4.2	4.9	4.4	3.8	3.6	2.7	2.7	3.8	5.2	5.8	6.0	6.3	7.4	8.3	9.1	9.9	10.3	10.3	9.8	9.4	9.2	8.3	7.3	5.9	**6.6**	**10.3**	**2.7**
26	4.9	4.7	4.5	4.0	5.0	5.2	5.7	5.9	6.4	6.6	8.1	8.7	8.8	9.1	10.2	10.6	10.8	10.5	10.7	9.9	9.1	8.1	7.4	7.1	**7.6**	**10.8**	**4.0**
27	6.9	6.8	6.8	6.6	6.5	6.6	6.7	6.9	7.0	6.8	6.8	7.0	7.3	7.4	7.7	8.0	8.1	8.0	8.0	8.2	8.2	8.4	8.4	8.4	**7.4**	**8.4**	**6.5**
28	8.5	8.6	8.6	8.6	8.6	8.7	9.0	9.3	9.6	10.0	10.3	10.7	10.9	10.9	10.7	10.8	11.0	10.8	10.3	9.6	8.9	8.3	8.5	8.6	**9.6**	**11.0**	**8.3**
29	8.2	7.9	7.1	5.7	5.1	4.4	4.4	6.4	7.9	9.8	11.4	12.3	13.7	14.8	15.4	15.5	15.3	14.6	13.6	12.7	11.7	10.7	10.3	9.3	**10.3**	**15.5**	**4.4**
30	9.0	8.5	7.8	7.1	6.6	6.5	7.3	8.7	11.1	12.8	14.5	15.9	16.5	16.7	13.7	13.7	13.5	12.4	12.4	11.7	11.1	10.8	10.1	9.5	**11.2**	**16.7**	**6.5**
31	8.9	9.1	9.0	8.7	8.6	8.3	9.1	10.2	12.2	13.6	14.1	14.5	15.8	17.1	14.7	13.9	14.1	15.6	15.7	14.7	13.1	12.4	11.5	11.2	**12.3**	**17.1**	**8.3**
MEAN	**7.6**	**7.5**	**7.2**	**6.8**	**6.8**	**6.6**	**6.6**	**7.3**	**8.4**	**9.4**	**10.2**	**11.3**	**12.1**	**12.7**	**13.0**	**13.2**	**13.2**	**12.6**	**11.9**	**11.2**	**10.5**	**9.8**	**9.1**	**8.4**	**9.7**		
MAX	**15.5**	**17.2**	**16.7**	**17.3**	**17.5**	**16.9**	**17.4**	**17.4**	**17.4**	**18.8**	**21.2**	**22.8**	**23.1**	**23.3**	**23.4**	**22.9**	**23.0**	**22.1**	**20.8**	**19.6**	**18.9**	**18.3**	**16.6**	**15.7**		**23.4**	
MIN	**1.4**	**1.1**	**0.6**	**0.4**	**0.2**	**-1.1**	**-1.0**	**0.7**	**1.4**	**2.3**	**3.4**	**4.3**	**5.2**	**6.6**	**7.3**	**7.3**	**7.0**	**6.2**	**5.4**	**4.7**	**3.3**	**3.2**	**3.0**	**2.1**			**-1.1**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 744 DATA RECOVERY RATE = 100.0%

MONTHLY MEAN = 9.7 Deg C

MAXIMUM TEMPERATURE = 23.4 Deg C DATE OF OCCURRENCE = 3/15 AT 1500 MAXIMUM DAILY MEAN = 18.4 Deg C DATE OF OCCURRENCE = 3/15

MINIMUM TEMPERATURE = -1.1 Deg C DATE OF OCCURRENCE = 3/1 AT 0600 MINUMUM DAILY MEAN = 4.4 Deg C DATE OF OCCURRENCE = 3/21

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

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APPENDIX D. HOURLY RELATIVE HUMIDITY DATA FOR FIRST QUARTER 2024

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RELATIVE HUMIDITY in % for JANUARY, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	72	77	80	81	81	81	78	81	81	76	70	68	68	71	77	81	83	82	84	84	83	83	83	81	**79**	**84**	**68**
2	81	80	80	78	77	74	67	68	66	63	60	57	54	53	51	51	53	57	61	63	65	67	69	72	**65**	**81**	**51**
3	72	76	77	76	76	76	75	76	76	67	62	56	53	52	57	61	61	64	67	72	74	74	72	70	**68**	**77**	**52**
4	72	74	73	71	68	69	65	64	63	64	65	60	53	51	47	43	44	46	47	49	50	52	54	55	**58**	**74**	**43**
5	55	57	60	60	61	61	63	68	66	57	53	50	49	48	45	44	53	65	66	71	72	76	74	70	**60**	**76**	**44**
6	70	74	78	79	81	73	70	76	77	86	89	93	94	96	95	96	96	96	96	96	96	94	92	91	**87**	**96**	**70**
7	91	91	92	94	94	94	93	92	90	85	79	70	63	60	60	61	62	64	67	66	66	63	64	65	**76**	**94**	**60**
8	65	67	68	69	71	72	74	74	72	61	51	49	48	47	46	45	48	58	60	67	75	84	87	83	**64**	**87**	**45**
9	81	83	82	81	82	82	82	82	83	89	91	94	96	97	96	98	97	91	91	92	94	96	95	94	**89**	**98**	**81**
10	94	84	82	75	61	61	62	58	52	50	45	45	44	43	42	44	44	46	48	48	50	52	54	56	**56**	**94**	**42**
11	58	59	60	64	64	63	67	72	69	65	58	53	51	50	46	43	44	49	58	69	73	72	63	72	**60**	**73**	**43**
12	79	80	79	84	85	87	88	87	79	72	64	62	64	64	70	67	69	75	79	84	90	94	97	96	**79**	**97**	**62**
13	92	95	97	98	96	94	93	92	90	84	68	51	41	38	39	38	43	46	46	47	47	49	51	52	**66**	**98**	**38**
14	55	59	62	66	69	71	70	66	63	56	49	58	75	66	34	28	24	26	27	31	32	32	35	35	**49**	**75**	**24**
15	32	30	30	42	78	89	88	86	84	81	77	77	82	88	89	92	92	92	94	95	96	96	97	97	**79**	**97**	**30**
16	95	96	96	96	95	95	94	94	94	94	93	93	91	82	77	68	60	57	57	57	58	59	60	60	**80**	**96**	**57**
17	60	61	65	63	63	62	65	69	66	56	48	41	38	37	35	33	34	36	43	45	47	52	59	61	**52**	**69**	**33**
18	66	73	68	70	67	69	67	65	63	62	56	49	49	53	47	52	55	57	62	63	64	64	70	72	**62**	**73**	**47**
19	72	71	71	79	93	96	97	97	97	96	95	95	95	94	93	91	84	81	83	81	80	83	87	86	**87**	**97**	**71**
20	78	76	74	70	66	63	66	68	63	56	54	53	51	49	47	47	46	47	48	49	52	53	55	56	**58**	**78**	**46**
21	58	59	61	62	63	64	63	60	59	57	56	55	53	51	49	49	49	52	54	57	58	60	61	64	**57**	**64**	**49**
22	66	67	69	69	70	73	77	78	73	65	56	49	45	40	39	39	42	57	66	72	72	79	85	83	**64**	**85**	**39**
23	82	82	88	89	84	75	83	84	78	73	70	68	59	57	60	56	62	67	67	70	72	68	67	68	**72**	**89**	**56**
24	71	73	71	75	77	80	83	87	90	93	93	95	94	94	93	93	93	92	94	93	92	94	94	92	**88**	**95**	**71**
25	94	94	94	94	95	96	96	97	98	99	99	98	99	99	99	99	98	99	98	99	99	99	100	100	**98**	**100**	**94**
26	100	100	100	100	100	100	100	100	100	100	99	86	81	76	60	81	91	93	94	96	98	98	99	99	**94**	**100**	**60**
27	99	---	---	---	99	100	100	100	100	100	98	79	82	83	82	81	81	81	82	83	86	89	92	94	**90**	**100**	**79**
28	95	94	95	96	96	96	96	93	92	93	95	95	95	95	93	91	91	93	91	89	88	88	87	89	**93**	**96**	**87**
29	86	84	82	80	78	78	77	75	71	67	64	62	61	59	59	58	57	57	60	63	64	63	63	63	**68**	**86**	**57**
30	64	69	69	69	67	71	73	72	73	72	71	71	70	70	70	70	71	75	75	73	75	76	77	77	**72**	**77**	**64**
31	80	82	84	86	87	88	91	91	92	93	92	89	86	83	78	77	76	76	80	82	84	88	92	94	**85**	**94**	**76**
MEAN	**75**	**76**	**76**	**77**	**79**	**79**	**79**	**80**	**78**	**75**	**72**	**68**	**67**	**66**	**64**	**64**	**65**	**67**	**69**	**71**	**73**	**74**	**75**	**76**	**73**		
MAX	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**99**	**98**	**99**	**99**	**99**	**99**	**98**	**99**	**98**	**99**	**99**	**99**	**100**	**100**		**100**	
MIN	**32**	**30**	**30**	**42**	**61**	**61**	**62**	**58**	**52**	**50**	**45**	**41**	**38**	**37**	**34**	**28**	**24**	**26**	**27**	**31**	**32**	**32**	**35**	**35**			**24**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 741 DATA RECOVERY RATE = 99.6%

MONTHLY MEAN = 73 %

MAXIMUM RELATIVE HUMIDITY = 100 % DATE OF OCCURRENCE = 1/26 AT 0300 MAXIMUM DAILY MEAN = 98 % DATE OF OCCURRENCE = 1/25

MINIMUM RELATIVE HUMIDITY = 24 % DATE OF OCCURRENCE = 1/14 AT 1700 MINUMUM DAILY MEAN = 49 % DATE OF OCCURRENCE = 1/14

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

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RELATIVE HUMIDITY in % for FEBRUARY, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	95	96	96	96	96	97	97	97	94	81	70	62	56	53	50	49	58	66	67	72	75	77	81	85	**78**	**97**	**49**
2	86	87	88	89	92	92	93	94	93	90	81	75	69	63	61	58	57	56	57	56	52	55	59	59	**73**	**94**	**52**
3	59	61	64	63	64	64	67	66	63	60	57	54	50	48	45	47	58	67	65	71	71	75	76	73	**62**	**76**	**45**
4	68	77	78	76	74	76	78	76	68	54	54	55	57	59	53	55	56	66	70	73	75	75	77	78	**68**	**78**	**53**
5	81	80	78	81	77	76	75	70	58	53	49	57	61	61	59	58	57	63	60	60	62	63	65	64	**65**	**81**	**49**
6	63	62	65	62	59	59	61	63	61	54	46	42	39	36	45	49	49	48	52	56	53	52	56	58	**54**	**65**	**36**
7	60	61	66	68	67	66	66	63	57	51	47	50	51	49	54	51	56	63	61	62	64	71	73	77	**61**	**77**	**47**
8	78	82	81	81	79	80	81	76	70	64	63	61	68	68	59	61	55	52	55	58	62	65	71	75	**68**	**82**	**52**
9	77	75	79	83	87	88	89	91	91	84	70	65	69	72	67	65	65	64	71	78	81	83	85	87	**78**	**91**	**64**
10	87	88	89	89	90	90	90	90	88	84	85	78	79	65	71	76	73	79	83	83	84	87	88	89	**84**	**90**	**65**
11	89	84	82	82	77	78	84	87	88	90	92	86	79	77	76	73	74	77	83	82	79	81	80	79	**82**	**92**	**73**
12	82	83	83	79	82	82	81	84	83	85	88	92	90	86	85	83	86	93	96	97	96	96	96	97	**88**	**97**	**79**
13	97	96	96	96	95	93	92	92	93	92	91	82	74	65	60	52	48	50	52	55	56	58	60	59	**75**	**97**	**48**
14	54	56	53	55	55	57	55	48	44	41	40	38	38	37	36	35	37	40	43	43	46	50	54	58	**46**	**58**	**35**
15	65	68	67	67	66	63	62	60	57	56	59	62	58	56	57	60	64	68	73	77	81	83	86	85	**67**	**86**	**56**
16	81	54	39	45	44	40	42	43	42	41	37	36	34	32	31	30	30	31	47	50	55	61	56	54	**44**	**81**	**30**
17	60	88	95	96	97	95	91	91	89	69	61	52	50	53	50	40	40	41	43	43	46	46	50	53	**64**	**97**	**40**
18	55	56	57	56	61	61	61	63	60	49	42	34	32	31	31	29	27	28	34	39	37	35	35	38	**44**	**63**	**27**
19	42	44	53	58	57	59	62	58	53	48	45	43	41	39	38	37	37	38	42	59	58	67	70	75	**51**	**75**	**37**
20	75	76	78	78	66	68	66	63	58	56	57	60	59	58	59	51	53	59	58	60	71	76	77	77	**65**	**78**	**51**
21	78	80	82	82	83	82	81	77	72	68	68	68	66	63	64	61	61	66	71	73	75	78	77	79	**73**	**83**	**61**
22	80	81	83	86	88	90	91	90	89	86	78	78	81	76	72	78	81	81	80	83	82	83	88	90	**83**	**91**	**72**
23	92	93	93	94	95	95	95	92	88	88	86	83	82	79	77	76	75	75	77	82	85	87	91	93	**86**	**95**	**75**
24	93	94	92	85	85	84	84	82	82	76	70	64	58	51	50	50	52	47	34	37	39	39	40	44	**64**	**94**	**34**
25	44	45	48	50	47	49	50	48	44	46	45	49	54	58	62	60	58	51	56	61	65	63	60	63	**53**	**65**	**44**
26	67	70	75	76	76	78	84	86	75	69	65	67	69	68	64	63	65	66	69	74	75	81	83	85	**73**	**86**	**63**
27	86	87	89	88	89	90	90	91	85	78	70	57	58	51	55	67	77	83	78	77	80	81	83	90	**78**	**91**	**51**
28	92	89	87	88	90	92	93	94	---	---	---	77	74	69	71	77	84	87	89	78	65	50	48	45	**78**	**94**	**45**
29	44	45	48	49	49	50	51	48	44	41	39	37	35	32	29	26	24	24	27	31	33	36	39	44	**39**	**51**	**24**
MEAN	**73**	**74**	**75**	**76**	**75**	**76**	**76**	**75**	**71**	**66**	**63**	**61**	**60**	**57**	**56**	**56**	**57**	**59**	**62**	**64**	**66**	**67**	**69**	**71**	**67**		
MAX	**97**	**96**	**96**	**96**	**97**	**97**	**97**	**97**	**94**	**92**	**92**	**92**	**90**	**86**	**85**	**83**	**86**	**93**	**96**	**97**	**96**	**96**	**96**	**97**		**97**	
MIN	**42**	**44**	**39**	**45**	**44**	**40**	**42**	**43**	**42**	**41**	**37**	**34**	**32**	**31**	**29**	**26**	**24**	**24**	**27**	**31**	**33**	**35**	**35**	**38**			**24**

POSSIBLE NUMBER OF OBSERVATIONS = 696 ACTUAL NUMBER OF OBSERVATIONS = 693 DATA RECOVERY RATE = 99.6%

MONTHLY MEAN = 67 %

MAXIMUM RELATIVE HUMIDITY = 97 % DATE OF OCCURRENCE = 2/1 AT 0800 MAXIMUM DAILY MEAN = 88 % DATE OF OCCURRENCE = 2/12

MINIMUM RELATIVE HUMIDITY = 24 % DATE OF OCCURRENCE = 2/29 AT 1700 MINUMUM DAILY MEAN = 39 % DATE OF OCCURRENCE = 2/29

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

Draft

CSX AQ5

RELATIVE HUMIDITY in % for MARCH, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	49	50	56	57	57	65	67	66	62	50	47	51	48	47	49	46	50	49	52	56	62	71	72	77	**56**	**77**	**46**
2	81	83	86	89	91	94	95	96	96	96	97	97	97	97	96	90	87	85	86	87	90	88	89	90	**91**	**97**	**81**
3	91	93	95	95	94	95	96	96	89	83	82	75	69	69	67	64	67	69	62	63	68	74	83	84	**80**	**96**	**62**
4	84	84	86	88	89	90	90	87	87	86	83	77	72	68	65	68	75	77	80	76	78	79	81	85	**81**	**90**	**65**
5	92	91	91	92	93	94	95	96	96	95	94	93	92	85	84	82	85	88	90	89	89	92	92	93	**91**	**96**	**82**
6	94	95	96	97	97	98	98	99	99	99	99	99	97	96	96	95	94	95	94	93	91	92	92	91	**96**	**99**	**91**
7	91	92	91	89	88	87	84	82	79	72	65	63	60	59	59	57	57	57	61	64	67	69	70	72	**72**	**92**	**57**
8	74	75	76	78	79	80	80	79	74	68	69	68	66	66	65	63	65	73	73	71	75	79	83	83	**73**	**83**	**63**
9	82	82	81	82	84	85	86	87	89	91	90	90	91	93	94	96	96	97	98	96	95	94	92	93	**90**	**98**	**81**
10	93	92	88	88	86	81	79	68	54	45	40	39	35	34	35	42	39	43	50	56	69	67	63	67	**61**	**93**	**34**
11	60	52	52	52	52	52	49	46	43	38	34	30	27	25	23	23	23	24	26	28	30	31	34	36	**37**	**60**	**23**
12	36	36	34	33	29	29	31	30	30	31	33	32	31	30	29	28	28	28	31	33	34	35	37	38	**32**	**38**	**28**
13	36	42	51	64	63	65	65	65	56	32	29	27	25	23	23	22	23	25	28	36	35	43	55	60	**41**	**65**	**22**
14	62	64	67	67	65	68	68	62	54	58	55	51	44	41	40	33	29	30	32	35	37	41	48	55	**50**	**68**	**29**
15	62	46	49	51	53	55	58	65	67	61	54	49	48	48	48	49	55	69	68	71	76	65	62	61	**58**	**76**	**46**
16	61	61	62	62	64	69	69	66	59	52	44	36	35	34	36	47	32	41	50	57	62	69	77	81	**55**	**81**	**32**
17	80	77	76	78	79	77	79	76	60	52	47	42	39	37	38	32	23	30	30	33	35	37	35	42	**51**	**80**	**23**
18	48	45	45	47	49	46	48	49	40	33	31	31	31	30	29	28	31	35	37	38	40	43	45	47	**39**	**49**	**28**
19	49	51	54	57	57	57	54	48	45	43	43	37	37	34	29	30	29	31	32	33	35	38	39	41	**42**	**57**	**29**
20	43	45	47	48	49	51	51	49	42	35	31	29	27	22	19	20	19	36	41	40	37	38	42	42	**38**	**51**	**19**
21	42	40	42	42	38	38	39	38	35	31	29	28	27	25	24	23	23	23	24	26	28	30	30	31	**31**	**42**	**23**
22	36	34	33	38	41	47	53	53	51	51	52	50	52	53	53	56	59	63	63	67	66	66	74	78	**54**	**78**	**33**
23	84	90	92	94	96	96	96	97	97	97	96	93	86	81	77	75	72	68	63	59	54	50	51	52	**80**	**97**	**50**
24	53	56	57	57	56	56	55	52	49	46	44	43	41	39	39	38	40	45	42	45	46	48	53	59	**48**	**59**	**38**
25	65	66	71	68	61	62	62	60	58	54	56	57	53	53	51	51	51	52	62	62	60	65	63	66	**59**	**71**	**51**
26	72	73	76	79	73	70	59	58	61	64	61	63	65	68	68	67	65	72	72	77	80	84	87	87	**71**	**87**	**58**
27	87	88	89	91	94	94	93	93	92	95	96	95	95	96	95	94	93	95	95	96	96	96	97	97	**94**	**97**	**87**
28	97	97	97	97	97	97	95	93	91	89	85	78	70	63	59	59	46	41	42	46	49	53	49	43	**72**	**97**	**41**
29	41	42	44	50	52	55	57	50	48	44	39	36	32	28	25	25	26	26	30	32	35	38	38	39	**39**	**57**	**25**
30	38	39	41	42	44	44	43	40	36	32	30	29	30	34	54	59	57	60	61	67	73	75	84	88	**50**	**88**	**29**
31	91	88	90	91	91	92	88	82	75	65	58	57	54	51	62	67	67	58	57	62	73	77	83	85	**73**	**92**	**51**
MEAN	**67**	**67**	**68**	**70**	**70**	**71**	**70**	**69**	**65**	**61**	**58**	**56**	**54**	**53**	**53**	**53**	**52**	**54**	**56**	**58**	**60**	**62**	**64**	**67**	**61**		
MAX	**97**	**97**	**97**	**97**	**97**	**98**	**98**	**99**	**99**	**99**	**99**	**99**	**97**	**97**	**96**	**96**	**96**	**97**	**98**	**96**	**96**	**96**	**97**	**97**		**99**	
MIN	**36**	**34**	**33**	**33**	**29**	**29**	**31**	**30**	**30**	**31**	**29**	**27**	**25**	**22**	**19**	**20**	**19**	**23**	**24**	**26**	**28**	**30**	**30**	**31**			**19**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 744 DATA RECOVERY RATE = 100.0%

MONTHLY MEAN = 61 %

MAXIMUM RELATIVE HUMIDITY = 99 % DATE OF OCCURRENCE = 3/6 AT 1100 MAXIMUM DAILY MEAN = 96 % DATE OF OCCURRENCE = 3/6

MINIMUM RELATIVE HUMIDITY = 19 % DATE OF OCCURRENCE = 3/20 AT 1500 MINUMUM DAILY MEAN = 31 % DATE OF OCCURRENCE = 3/21

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

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APPENDIX E. HOURLY BAROMETRIC PRESSURE DATA FOR FIRST QUARTER 2024

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PRESSURE in mb for JANUARY, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	1015	1015	1015	1015	1015	1015	1016	1016	1016	1017	1018	1017	1017	1017	1017	1017	1018	1018	1019	1019	1019	1019	1019	1020	**1017**	**1020**	**1015**
2	1019	1019	1020	1020	1020	1020	1021	1021	1022	1022	1022	1021	1020	1019	1019	1018	1018	1018	1019	1019	1019	1019	1019	1019	**1020**	**1022**	**1018**
3	1019	1019	1019	1019	1019	1019	1019	1019	1019	1020	1020	1019	1018	1017	1016	1016	1016	1016	1016	1016	1016	1016	1016	1016	**1018**	**1020**	**1016**
4	1015	1015	1014	1014	1014	1014	1015	1016	1016	1017	1018	1018	1017	1018	1018	1019	1020	1021	1022	1023	1024	1024	1025	1025	**1018**	**1025**	**1014**
5	1025	1026	1026	1027	1027	1028	1028	1029	1029	1030	1030	1029	1027	1026	1025	1025	1025	1025	1025	1025	1025	1024	1024	1023	**1026**	**1030**	**1023**
6	1023	1023	1022	1022	1021	1020	1021	1020	1019	1018	1018	1016	1013	1011	1010	1009	1007	1004	1003	1004	1003	1003	1003	1003	**1013**	**1023**	**1003**
7	1004	1004	1004	1004	1004	1004	1005	1005	1006	1006	1006	1006	1006	1006	1007	1009	1010	1012	1013	1015	1016	1017	1018	1019	**1008**	**1019**	**1004**
8	1020	1021	1022	1023	1023	1025	1026	1027	1029	1030	1030	1030	1030	1030	1029	1030	1030	1031	1031	1031	1030	1030	1030	1029	**1028**	**1031**	**1020**
9	1028	1028	1028	1027	1026	1025	1023	1023	1021	1020	1018	1016	1013	1009	1005	1002	999	996	993	992	991	987	986	985	**1010**	**1028**	**985**
10	985	985	986	987	988	989	990	992	994	995	996	997	998	999	1000	1001	1003	1004	1005	1006	1007	1008	1008	1009	**997**	**1009**	**985**
11	1009	1010	1010	1011	1011	1011	1012	1012	1013	1014	1013	1012	1011	1010	1010	1011	1012	1013	1013	1014	1015	1016	1016	1018	**1012**	**1018**	**1009**
12	1018	1019	1020	1021	1021	1021	1021	1022	1022	1022	1022	1021	1019	1018	1017	1015	1013	1011	1008	1006	1004	1001	998	997	**1015**	**1022**	**997**
13	994	993	993	992	991	991	991	991	992	993	995	996	996	997	999	1001	1003	1005	1006	1008	1008	1009	1010	1011	**999**	**1011**	**991**
14	1012	1012	1013	1013	1013	1014	1013	1013	1012	1011	1011	1011	1013	1014	1014	1016	1018	1019	1020	1021	1022	1022	1022	1023	**1015**	**1023**	**1011**
15	1022	1023	1024	1025	1025	1025	1025	1025	1025	1026	1026	1025	1024	1023	1023	1023	1023	1023	1023	1022	1022	1022	1021	1020	**1024**	**1026**	**1020**
16	1019	1018	1017	1016	1015	1014	1013	1012	1011	1011	1010	1010	1010	1010	1010	1011	1012	1013	1013	1014	1014	1015	1016	1017	**1013**	**1019**	**1010**
17	1017	1017	1017	1017	1018	1018	1018	1019	1020	1021	1021	1021	1020	1019	1019	1019	1020	1020	1021	1021	1021	1022	1022	1022	**1020**	**1022**	**1017**
18	1023	1023	1023	1023	1023	1023	1023	1023	1023	1024	1024	1023	1022	1020	1019	1019	1018	1018	1019	1019	1017	1016	1016	1016	**1021**	**1024**	**1016**
19	1014	1013	1013	1012	1012	1011	1010	1010	1009	1009	1009	1008	1008	1007	1008	1009	1010	1011	1012	1013	1014	1015	1015	1015	**1011**	**1015**	**1007**
20	1016	1016	1017	1018	1018	1018	1019	1019	1020	1021	1021	1020	1020	1020	1020	1020	1021	1022	1023	1023	1024	1024	1025	1025	**1020**	**1025**	**1016**
21	1025	1026	1026	1027	1027	1028	1029	1030	1031	1032	1032	1032	1032	1031	1031	1032	1033	1033	1034	1035	1035	1036	1036	1036	**1031**	**1036**	**1025**
22	1036	1036	1036	1036	1036	1037	1037	1037	1037	1037	1037	1036	1035	1034	1033	1033	1033	1033	1034	1034	1034	1034	1033	1033	**1035**	**1037**	**1033**
23	1033	1032	1032	1032	1032	1032	1032	1032	1032	1033	1033	1033	1032	1032	1032	1032	1033	1033	1033	1033	1033	1033	1032	1033	**1032**	**1033**	**1032**
24	1033	1032	1032	1032	1032	1032	1032	1032	1032	1032	1032	1031	1030	1029	1028	1028	1027	1027	1026	1026	1025	1025	1024	1024	**1029**	**1033**	**1024**
25	1023	1022	1022	1021	1021	1021	1021	1021	1021	1021	1021	1020	1019	1019	1019	1019	1019	1020	1020	1020	1020	1019	1019	1019	**1020**	**1023**	**1019**
26	1017	1016	1016	1016	1015	1015	1015	1015	1015	1016	1016	1015	1014	1013	1013	1013	1014	1015	1016	1017	1018	1018	1018	1019	**1016**	**1019**	**1013**
27	1019	1019	1020	1020	1020	1021	1022	1022	1023	1023	1023	1023	1022	1022	1021	1021	1021	1021	1021	1021	1021	1020	1020	1019	**1021**	**1023**	**1019**
28	1017	1016	1016	1014	1012	1011	1011	1009	1009	1008	1007	1006	1005	1004	1004	1004	1004	1004	1005	1005	1005	1005	1005	1006	**1008**	**1017**	**1004**
29	1006	1006	1007	1008	1008	1009	1010	1011	1012	1012	1013	1014	1014	1014	1014	1015	1015	1016	1017	1018	1018	1019	1020	1020	**1013**	**1020**	**1006**
30	1020	1020	1021	1021	1021	1021	1022	1023	1023	1023	1023	1023	1022	1021	1020	1020	1021	1021	1021	1021	1020	1020	1020	1020	**1021**	**1023**	**1020**
31	1020	1019	1019	1019	1019	1019	1019	1020	1020	1020	1020	1020	1019	1019	1019	1019	1019	1019	1019	1019	1019	1019	1019	1019	**1019**	**1020**	**1019**
MEAN	**1018**	**1018**	**1018**	**1018**	**1018**	**1018**	**1018**	**1018**	**1019**	**1019**	**1019**	**1018**	**1018**	**1017**	**1017**	**1017**	**1017**	**1017**	**1018**	**1018**	**1018**	**1018**	**1018**	**1018**	**1018**		
MAX	**1036**	**1036**	**1036**	**1036**	**1036**	**1037**	**1037**	**1037**	**1037**	**1037**	**1037**	**1036**	**1035**	**1034**	**1033**	**1033**	**1033**	**1033**	**1034**	**1035**	**1035**	**1036**	**1036**	**1036**		**1037**	
MIN	**985**	**985**	**986**	**987**	**988**	**989**	**990**	**991**	**992**	**993**	**995**	**996**	**996**	**997**	**999**	**1001**	**999**	**996**	**993**	**992**	**991**	**987**	**986**	**985**			**985**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 744 DATA RECOVERY RATE = 100.0%

MONTHLY MEAN = 1018 mb

MAXIMUM PRESSURE = 1037 mb DATE OF OCCURRENCE = 1/22 AT 1100 MAXIMUM DAILY MEAN = 1035 mb DATE OF OCCURRENCE = 1/22

MINIMUM PRESSURE = 985 mb DATE OF OCCURRENCE = 1/9 AT 2400 MINUMUM DAILY MEAN = 997 mb DATE OF OCCURRENCE = 1/10

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

Draft

CSX AQ5

PRESSURE in mb for FEBRUARY, 2024

Hr Beg Hr End Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	1019	1018	1018	1018	1018	1018	1018	1019	1019	1019	1018	1017	1016	1015	1014	1014	1013	1013	1013	1013	1013	1012	1012	1012	**1016**	**1019**	**1012**
2	1011	1011	1011	1010	1010	1010	1010	1011	1011	1012	1012	1013	1012	1012	1012	1013	1014	1015	1015	1016	1016	1017	1017	1017	**1013**	**1017**	**1010**
3	1017	1018	1018	1018	1018	1018	1019	1019	1020	1020	1019	1019	1018	1018	1017	1017	1017	1017	1017	1018	1018	1018	1018	1018	**1018**	**1020**	**1017**
4	1018	1018	1018	1017	1017	1017	1018	1018	1018	1018	1018	1017	1016	1015	1014	1014	1013	1014	1014	1014	1014	1014	1013	1013	**1016**	**1018**	**1013**
5	1013	1013	1013	1013	1013	1013	1013	1014	1014	1015	1015	1014	1014	1013	1013	1013	1014	1014	1015	1015	1016	1016	1016	1017	**1014**	**1017**	**1013**
6	1017	1018	1018	1019	1019	1020	1021	1021	1022	1022	1023	1022	1022	1021	1021	1022	1022	1022	1023	1023	1023	1024	1024	1024	**1021**	**1024**	**1017**
7	1024	1024	1024	1024	1025	1025	1026	1027	1027	1028	1028	1028	1027	1025	1025	1025	1025	1025	1025	1026	1026	1026	1026	1026	**1026**	**1028**	**1024**
8	1027	1026	1026	1026	1026	1026	1027	1027	1027	1027	1027	1026	1025	1025	1024	1024	1024	1024	1024	1023	1023	1024	1024	1023	**1025**	**1027**	**1023**
9	1022	1022	1021	1020	1020	1020	1020	1020	1021	1020	1020	1019	1018	1017	1016	1016	1016	1015	1015	1016	1015	1015	1015	1014	**1018**	**1022**	**1014**
10	1014	1014	1013	1013	1013	1013	1013	1013	1013	1013	1013	1013	1012	1010	1010	1010	1010	1010	1010	1011	1011	1011	1011	1011	**1012**	**1014**	**1010**
11	1011	1011	1011	1011	1011	1012	1012	1013	1014	1014	1014	1013	1013	1013	1013	1012	1012	1013	1013	1013	1014	1014	1014	1013	**1013**	**1014**	**1011**
12	1013	1013	1013	1013	1013	1013	1013	1013	1014	1013	1013	1013	1011	1011	1010	1010	1010	1009	1009	1008	1008	1006	1005	1004	**1011**	**1014**	**1004**
13	1002	1000	998	997	996	997	997	998	1000	1002	1004	1005	1006	1006	1007	1008	1009	1010	1011	1012	1013	1013	1014	1014	**1005**	**1014**	**996**
14	1015	1015	1016	1016	1016	1017	1018	1019	1020	1021	1021	1021	1020	1020	1020	1020	1020	1021	1022	1022	1022	1023	1023	1024	**1020**	**1024**	**1015**
15	1024	1024	1025	1025	1025	1025	1024	1025	1025	1025	1024	1023	1020	1018	1016	1014	1013	1012	1012	1011	1010	1010	1010	1010	**1019**	**1025**	**1010**
16	1010	1011	1012	1013	1014	1015	1016	1016	1017	1017	1017	1017	1016	1015	1015	1014	1014	1014	1013	1013	1012	1011	1010	1010	**1014**	**1017**	**1010**
17	1010	1010	1008	1008	1007	1008	1008	1009	1010	1011	1012	1012	1012	1012	1012	1012	1013	1014	1014	1015	1015	1016	1016	1016	**1012**	**1016**	**1007**
18	1016	1016	1016	1016	1016	1016	1016	1016	1016	1016	1015	1014	1013	1012	1011	1010	1010	1010	1011	1012	1013	1014	1015	1016	**1014**	**1016**	**1010**
19	1016	1017	1017	1018	1018	1019	1020	1021	1022	1023	1023	1023	1023	1022	1021	1021	1022	1023	1024	1025	1025	1026	1027	1027	**1022**	**1027**	**1016**
20	1027	1027	1027	1027	1028	1029	1030	1031	1032	1032	1033	1032	1032	1031	1030	1030	1030	1030	1030	1030	1030	1031	1031	1032	**1030**	**1033**	**1027**
21	1032	1032	1031	1031	1031	1031	1031	1031	1032	1032	1031	1031	1029	1028	1027	1026	1026	1025	1025	1025	1025	1025	1025	1024	**1029**	**1032**	**1024**
22	1023	1023	1022	1022	1021	1021	1020	1019	1019	1018	1016	1015	1014	1012	1011	1009	1008	1009	1008	1007	1006	1005	1004	1003	**1014**	**1023**	**1003**
23	1002	1001	1000	1000	999	999	1000	1000	1000	1000	1000	1000	999	998	998	998	998	999	999	999	1000	1000	1000	1000	**1000**	**1002**	**998**
24	1000	1000	1000	1001	1001	1002	1003	1004	1005	1006	1006	1007	1006	1007	1007	1008	1009	1011	1013	1014	1015	1016	1016	1017	**1007**	**1017**	**1000**
25	1018	1018	1019	1020	1020	1021	1022	1022	1023	1023	1023	1023	1022	1021	1020	1019	1019	1019	1019	1019	1019	1019	1019	1019	**1020**	**1023**	**1018**
26	1018	1018	1018	1017	1017	1017	1017	1017	1017	1018	1018	1017	1017	1016	1015	1015	1015	1015	1016	1016	1016	1016	1016	1016	**1017**	**1018**	**1015**
27	1015	1015	1015	1014	1014	1015	1015	1015	1015	1014	1013	1013	1012	1011	1010	1010	1010	1010	1010	1010	1010	1010	1010	1009	**1012**	**1015**	**1009**
28	1008	1008	1007	1007	1006	1005	1005	1005	1005	1004	1004	1004	1003	1003	1003	1002	1002	1003	1004	1006	1009	1012	1014	1016	**1006**	**1016**	**1002**
29	1018	1020	1021	1023	1024	1025	1027	1028	1029	1029	1029	1029	1029	1028	1028	1028	1028	1029	1029	1030	1031	1032	1032	1032	**1027**	**1032**	**1018**
MEAN	**1016**	**1016**	**1016**	**1016**	**1016**	**1016**	**1016**	**1017**	**1017**	**1018**	**1018**	**1017**	**1016**	**1016**	**1015**	**1015**	**1015**	**1015**	**1016**	**1016**	**1016**	**1016**	**1016**	**1016**	**1016**		
MAX	**1032**	**1032**	**1031**	**1031**	**1031**	**1031**	**1031**	**1031**	**1032**	**1032**	**1033**	**1032**	**1032**	**1031**	**1030**	**1030**	**1030**	**1030**	**1030**	**1030**	**1031**	**1032**	**1032**	**1032**		**1033**	
MIN	**1000**	**1000**	**998**	**997**	**996**	**997**	**997**	**998**	**1000**	**1000**	**1000**	**1000**	**999**	**998**	**998**	**998**	**998**	**999**	**999**	**999**	**1000**	**1000**	**1000**	**1000**			**996**

POSSIBLE NUMBER OF OBSERVATIONS = 696 ACTUAL NUMBER OF OBSERVATIONS = 696 DATA RECOVERY RATE = 100.0%

MONTHLY MEAN = 1016 mb

MAXIMUM PRESSURE = 1033 mb DATE OF OCCURRENCE = 2/20 AT 1100 MAXIMUM DAILY MEAN = 1030 mb DATE OF OCCURRENCE = 2/20

MINIMUM PRESSURE = 996 mb DATE OF OCCURRENCE = 2/13 AT 0500 MINUMUM DAILY MEAN = 1000 mb DATE OF OCCURRENCE = 2/23

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

Draft

CSX AQ5

PRESSURE in mb for MARCH, 2024

Hr Beg Hr End Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	1032	1033	1033	1033	1034	1035	1036	1036	1037	1037	1037	1037	1036	1035	1034	1034	1033	1033	1033	1033	1032	1032	1032	1032	**1034**	**1037**	**1032**
2	1031	1031	1029	1028	1028	1027	1025	1025	1024	1023	1022	1020	1019	1018	1017	1018	1018	1019	1019	1019	1020	1020	1020	1021	**1022**	**1031**	**1017**
3	1021	1021	1021	1021	1022	1023	1023	1023	1024	1024	1024	1024	1023	1023	1022	1022	1022	1022	1023	1023	1023	1023	1024	1024	**1023**	**1024**	**1021**
4	1024	1025	1025	1025	1025	1025	1026	1026	1027	1027	1027	1026	1026	1025	1025	1024	1025	1025	1025	1025	1025	1025	1025	1024	**1025**	**1027**	**1024**
5	1024	1023	1021	1020	1019	1019	1019	1019	1019	1019	1019	1018	1018	1018	1017	1017	1017	1018	1018	1018	1018	1018	1018	1018	**1019**	**1024**	**1017**
6	1018	1017	1017	1016	1016	1016	1016	1016	1016	1016	1016	1015	1014	1013	1012	1011	1010	1010	1009	1009	1009	1009	1008	1008	**1013**	**1018**	**1008**
7	1008	1008	1008	1008	1008	1009	1010	1011	1012	1013	1014	1014	1014	1014	1014	1015	1015	1016	1017	1018	1018	1019	1020	1021	**1014**	**1021**	**1008**
8	1021	1022	1022	1022	1023	1024	1025	1025	1026	1026	1026	1026	1025	1025	1024	1024	1024	1023	1023	1025	1025	1024	1024	1024	**1024**	**1026**	**1021**
9	1024	1024	1024	1023	1021	1020	1020	1019	1018	1017	1016	1014	1013	1011	1009	1007	1004	1002	1002	1001	1000	1000	1000	1000	**1012**	**1024**	**1000**
10	1000	1000	1001	1001	1001	1001	1002	1002	1003	1003	1004	1004	1004	1003	1002	1003	1003	1004	1005	1006	1007	1007	1007	1008	**1003**	**1008**	**1000**
11	1008	1008	1008	1009	1010	1010	1011	1012	1013	1014	1014	1014	1014	1013	1013	1013	1013	1014	1014	1015	1015	1015	1015	1015	**1013**	**1015**	**1008**
12	1015	1015	1014	1014	1014	1014	1014	1015	1015	1014	1014	1013	1012	1011	1011	1010	1010	1010	1010	1011	1011	1012	1012	1012	**1013**	**1015**	**1010**
13	1012	1012	1012	1013	1013	1013	1014	1014	1014	1014	1014	1014	1013	1013	1012	1012	1012	1012	1013	1013	1014	1014	1014	1015	**1013**	**1015**	**1012**
14	1015	1015	1015	1015	1015	1016	1017	1017	1017	1018	1018	1017	1017	1016	1015	1014	1014	1014	1014	1013	1013	1012	1012	1011	**1015**	**1018**	**1011**
15	1011	1012	1011	1010	1010	1009	1009	1009	1009	1009	1008	1008	1007	1007	1007	1006	1006	1006	1007	1007	1007	1009	1010	1010	**1008**	**1012**	**1006**
16	1011	1011	1012	1011	1012	1012	1013	1013	1013	1013	1013	1012	1011	1010	1009	1008	1008	1007	1008	1007	1007	1007	1006	1005	**1010**	**1013**	**1005**
17	1004	1004	1003	1002	1002	1003	1003	1004	1004	1004	1004	1003	1002	1001	1000	1000	1000	1001	1002	1003	1004	1004	1005	1006	**1003**	**1006**	**1000**
18	1007	1007	1008	1008	1009	1009	1009	1010	1010	1010	1010	1009	1009	1008	1007	1008	1008	1009	1010	1011	1011	1011	1012	1012	**1009**	**1012**	**1007**
19	1012	1012	1011	1011	1011	1012	1013	1013	1014	1014	1013	1012	1011	1010	1008	1007	1006	1006	1005	1005	1006	1006	1006	1006	**1010**	**1014**	**1005**
20	1006	1006	1006	1006	1006	1006	1006	1006	1006	1005	1004	1003	1002	1001	1001	1001	1002	1005	1008	1010	1011	1013	1015	1016	**1006**	**1016**	**1001**
21	1017	1018	1019	1019	1020	1021	1022	1023	1024	1024	1024	1024	1023	1023	1022	1022	1022	1022	1023	1023	1025	1026	1026	1027	**1022**	**1027**	**1017**
22	1027	1027	1027	1028	1028	1028	1029	1029	1029	1029	1028	1028	1027	1026	1025	1024	1023	1023	1023	1022	1022	1021	1020	1019	**1025**	**1029**	**1019**
23	1018	1017	1016	1014	1013	1012	1011	1010	1009	1007	1006	1004	1004	1005	1006	1007	1008	1009	1011	1014	1015	1016	1017	1018	**1011**	**1018**	**1004**
24	1019	1019	1020	1021	1022	1023	1024	1025	1026	1026	1027	1027	1027	1026	1025	1025	1025	1025	1026	1027	1027	1028	1028	1028	**1025**	**1028**	**1019**
25	1028	1028	1028	1029	1029	1030	1030	1030	1030	1030	1030	1030	1029	1029	1028	1027	1027	1026	1026	1026	1026	1026	1026	1026	**1028**	**1030**	**1026**
26	1025	1024	1024	1024	1023	1023	1023	1023	1023	1023	1023	1022	1022	1021	1020	1019	1018	1018	1019	1019	1019	1019	1018	1018	**1021**	**1025**	**1018**
27	1019	1018	1018	1018	1019	1018	1019	1019	1019	1019	1019	1020	1020	1020	1018	1018	1018	1018	1018	1018	1018	1018	1018	1017	**1018**	**1020**	**1017**
28	1017	1018	1016	1016	1016	1015	1016	1016	1016	1017	1017	1015	1014	1015	1014	1012	1013	1013	1013	1013	1013	1013	1013	1014	**1015**	**1018**	**1012**
29	1014	1013	1013	1013	1013	1013	1013	1014	1013	1013	1012	1011	1010	1009	1009	1009	1009	1010	1011	1011	1012	1012	1013	1013	**1012**	**1014**	**1009**
30	1013	1013	1013	1013	1013	1013	1014	1014	1014	1014	1013	1012	1012	1011	1009	1008	1008	1008	1008	1007	1006	1009	1008	1008	**1011**	**1014**	**1006**
31	1008	1008	1008	1009	1010	1012	1013	1014	1014	1015	1015	1014	1013	1013	1013	1013	1013	1013	1014	1014	1014	1015	1015	1015	**1013**	**1015**	**1008**
MEAN	**1016**	**1016**	**1016**	**1016**	**1016**	**1016**	**1017**	**1017**	**1017**	**1017**	**1017**	**1016**	**1016**	**1015**	**1014**	**1014**	**1014**	**1014**	**1015**	**1015**	**1015**	**1016**	**1016**	**1016**	**1016**		
MAX	**1032**	**1033**	**1033**	**1033**	**1034**	**1035**	**1036**	**1036**	**1037**	**1037**	**1037**	**1037**	**1036**	**1035**	**1034**	**1034**	**1033**	**1033**	**1033**	**1033**	**1032**	**1032**	**1032**	**1032**		**1037**	
MIN	**1000**	**1000**	**1001**	**1001**	**1001**	**1001**	**1002**	**1002**	**1003**	**1003**	**1004**	**1003**	**1002**	**1001**	**1000**	**1000**	**1000**	**1001**	**1002**	**1001**	**1000**	**1000**	**1000**	**1000**			**1000**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 744 DATA RECOVERY RATE = 100.0%

MONTHLY MEAN = 1016 mb

MAXIMUM PRESSURE = 1037 mb DATE OF OCCURRENCE = 3/1 AT 1000 MAXIMUM DAILY MEAN = 1034 mb DATE OF OCCURRENCE = 3/1

MINIMUM PRESSURE = 1000 mb DATE OF OCCURRENCE = 3/17 AT 1700 MINUMUM DAILY MEAN = 1003 mb DATE OF OCCURRENCE = 3/17

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

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APPENDIX F. HOURLY PRECIPITATION DATA FOR FIRST QUARTER 2024

Draft

CSX AQ5

PRECIPITATION in in for JANUARY, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	TOTAL	MAX HR
1																0.01	0.01								0.02	0.01
2																									0.00	0.00
3																									0.00	0.00
4																									0.00	0.00
5																									0.00	0.00
6											0.02		0.03	0.13	0.21	0.21	0.27	0.17	0.11	0.05	0.01				1.21	0.27
7																									0.00	0.00
8																									0.00	0.00
9										0.04	0.10	0.13	0.12	0.12	0.21	0.34	0.22	0.14	0.33	0.34	0.24	0.13		0.03	2.49	0.34
10	0.01																								0.01	0.01
11																									0.00	0.00
12																				0.03	0.10	0.10	0.18	0.02	0.43	0.18
13		0.02	0.04		0.01																				0.07	0.04
14																									0.00	0.00
15																									0.00	0.00
16																									0.00	0.00
17																									0.00	0.00
18																									0.00	0.00
19																									0.00	0.00
20					0.01																				0.01	0.01
21																									0.00	0.00
22													0.01	0.05	0.07	0.04	0.02								0.19	0.07
23										0.01															0.01	0.01
24																									0.00	0.00
25						0.01	0.01	0.01					0.01						0.05		0.02	0.03	0.02		0.16	0.05
26		0.01				0.02																			0.03	0.02
27							0.01																0.01	0.03	0.05	0.03
28	0.04	0.07	0.21	0.13	0.24	0.33	0.23			0.01	0.01			0.01						0.01					1.29	0.33
29																									0.00	0.00
30																									0.00	0.00
31																									0.00	0.00
TOTAL	**0.05**	**0.10**	**0.25**	**0.13**	**0.26**	**0.36**	**0.25**	**0.01**	**0.00**	**0.06**	**0.13**	**0.13**	**0.17**	**0.31**	**0.49**	**0.60**	**0.52**	**0.31**	**0.49**	**0.43**	**0.37**	**0.26**	**0.21**	**0.08**	**5.97**	
MAX	**0.04**	**0.07**	**0.21**	**0.13**	**0.24**	**0.33**	**0.23**	**0.01**	**0.00**	**0.04**	**0.10**	**0.13**	**0.12**	**0.13**	**0.21**	**0.34**	**0.27**	**0.17**	**0.33**	**0.34**	**0.24**	**0.13**	**0.18**	**0.03**		**0.34**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 744 DATA RECOVERY RATE = 100.0%

TOTAL PRECIPITATION FOR MONTH = 5.97 in

MAXIMUM DAILY PRECIPITATION = 2.49 in DATE OF OCCURRENCE = 1/9

MAXIMUM HOURLY PRECIPITATION = 0.34 in DATE OF OCCURRENCE = 1/9 AT 1600

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

Draft

CSX AQ5

PRECIPITATION in in for FEBRUARY, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	TOTAL	MAX HR
1																									0.00	0.00
2				0.01		0.01																			0.02	0.01
3																									0.00	0.00
4																									0.00	0.00
5																									0.00	0.00
6																									0.00	0.00
7																									0.00	0.00
8																									0.00	0.00
9																									0.00	0.00
10																									0.00	0.00
11										0.01	0.01														0.02	0.01
12																		0.01	0.03	0.03			0.02	0.02	0.11	0.03
13	0.04	0.09	0.04	0.27	0.19	0.20	0.03	0.01	0.06	0.04	0.01														0.98	0.27
14																									0.00	0.00
15																									0.00	0.00
16																									0.00	0.00
17									0.01	0.15	0.08														0.24	0.15
18																									0.00	0.00
19																									0.00	0.00
20																									0.00	0.00
21																									0.00	0.00
22																0.11		0.01	0.02	0.04					0.18	0.11
23																									0.00	0.00
24							0.01																		0.01	0.01
25																									0.00	0.00
26																									0.00	0.00
27																									0.00	0.00
28						0.01					0.01		0.01				0.02	0.01	0.09	0.03					0.18	0.09
29																									0.00	0.00
TOTAL	0.04	0.09	0.04	0.28	0.19	0.22	0.04	0.01	0.07	0.20	0.11	0.00	0.01	0.00	0.00	0.11	0.02	0.03	0.14	0.10	0.00	0.00	0.02	0.02	1.74	
MAX	0.04	0.09	0.04	0.27	0.19	0.20	0.03	0.01	0.06	0.15	0.08	0.00	0.01	0.00	0.00	0.11	0.02	0.01	0.09	0.04	0.00	0.00	0.02	0.02		0.27

POSSIBLE NUMBER OF OBSERVATIONS = 696 ACTUAL NUMBER OF OBSERVATIONS = 696 DATA RECOVERY RATE = 100.0%

TOTAL PRECIPITATION FOR MONTH = 1.74 in

MAXIMUM DAILY PRECIPITATION = 0.98 in DATE OF OCCURRENCE = 2/13

MAXIMUM HOURLY PRECIPITATION = 0.27 in DATE OF OCCURRENCE = 2/13 AT 0400

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

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CSX AQ5

PRECIPITATION in in for MARCH, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	TOTAL	MAX HR
1																								0.01	0.01	0.01
2	0.01	0.01		0.01		0.03	0.12	0.15	0.18	0.19	0.14	0.09	0.03		0.01										0.97	0.19
3																									0.00	0.00
4																									0.00	0.00
5	0.04	0.01	0.01	0.05	0.05	0.09	0.03	0.09	0.02	0.01	0.01	0.02	0.01												0.44	0.09
6													0.02	0.14	0.08	0.01	0.03	0.02				0.02			0.32	0.14
7	0.03	0.02																							0.05	0.03
8																									0.00	0.00
9									0.02	0.01			0.02	0.06	0.10	0.05	0.11	0.22	0.37	0.11	0.04			0.03	1.14	0.37
10				0.01																					0.01	0.01
11																									0.00	0.00
12																									0.00	0.00
13																									0.00	0.00
14																									0.00	0.00
15																				0.02	0.01				0.03	0.02
16																									0.00	0.00
17																									0.00	0.00
18																									0.00	0.00
19																									0.00	0.00
20																									0.00	0.00
21																									0.00	0.00
22																									0.00	0.00
23	0.08	0.05	0.07	0.09	0.16	0.07	0.09	0.18	0.27	0.32	0.25	0.03													1.66	0.32
24																									0.00	0.00
25																									0.00	0.00
26																									0.00	0.00
27										0.05	0.13	0.04	0.12	0.22	0.09			0.01		0.03	0.01	0.01	0.03		0.74	0.22
28	0.03	0.01	0.01		0.02					0.01															0.08	0.03
29																									0.00	0.00
30																						0.03	0.03		0.06	0.03
31																									0.00	0.00
TOTAL	**0.19**	**0.10**	**0.09**	**0.16**	**0.23**	**0.19**	**0.24**	**0.42**	**0.49**	**0.59**	**0.53**	**0.18**	**0.20**	**0.42**	**0.28**	**0.06**	**0.14**	**0.25**	**0.37**	**0.16**	**0.06**	**0.06**	**0.06**	**0.04**	**5.51**	
MAX	**0.08**	**0.05**	**0.07**	**0.09**	**0.16**	**0.09**	**0.12**	**0.18**	**0.27**	**0.32**	**0.25**	**0.09**	**0.12**	**0.22**	**0.10**	**0.05**	**0.11**	**0.22**	**0.37**	**0.11**	**0.04**	**0.03**	**0.03**	**0.03**		**0.37**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 744 DATA RECOVERY RATE = 100.0%

TOTAL PRECIPITATION FOR MONTH = 5.51 in

MAXIMUM DAILY PRECIPITATION = 1.66 in DATE OF OCCURRENCE = 3/23

MAXIMUM HOURLY PRECIPITATION = 0.37 in DATE OF OCCURRENCE = 3/9 AT 1900

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

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APPENDIX G. HOURLY AQ5 PM_{10} AND $PM_{2.5}$ CONCENTRATION DATA FOR FIRST QUARTER 2024

Draft

CSX AQ5

HOURLY AVERAGES of PM10 in µg/m3 for JANUARY, 2024

Hr Beg Hr End Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	13.5	16.6	18.5	22.7	21.3	21.2	25.4	20.6	18.9	17.5	12.8	9.0	8.6	11.3	13.3	10.6	12.2	9.7	10.1	10.6	11.2	13.1	14.0	11.2	**14.7**	**25.4**	**8.6**
2	16.0	13.0	11.7	11.8	9.1	7.7	12.3	12.5	12.4	6.5	8.2	8.5	8.7	13.7	14.8	14.8	23.4	15.6	22.4	15.1	13.6	12.4	12.6	13.3	**12.9**	**23.4**	**6.5**
3	11.0	17.3	12.8	9.7	12.4	13.1	14.4	19.3	23.4	14.8	24.0	16.1	12.7	13.1	12.5	20.6	21.5	17.9	18.0	18.2	24.5	24.1	21.5	15.6	**17.0**	**24.5**	**9.7**
4	16.9	19.4	19.4	21.3	18.4	19.9	24.8	44.3	35.8	34.8	40.6	22.9	15.9	19.2	34.3	19.2	17.1	18.8	23.1	19.8	12.7	10.4	12.8	8.7	**22.1**	**44.3**	**8.7**
5	7.1	7.5	8.8	8.6	8.5	9.0	10.7	17.7	27.8	26.6	18.2	16.8	15.3	16.4	14.9	18.3	24.5	24.7	20.2	30.2	31.7	30.0	30.7	30.8	**19.0**	**31.7**	**7.1**
6	25.4	22.0	24.3	26.5	28.4	22.8	16.7	25.9	25.7	22.4	23.9	15.5	15.6	15.0	12.4	12.4	11.0	8.6	6.0	6.5	6.0	7.0	7.4	8.1	**16.5**	**28.4**	**6.0**
7	10.8	13.8	13.2	12.6	11.9	11.1	11.8	12.6	15.6	15.6	15.5	10.4	7.8	7.5	5.7	5.3	5.2	5.7	7.2	7.3	7.5	5.2	5.5	5.5	**9.6**	**15.6**	**5.2**
8	6.3	6.7	7.9	9.7	11.2	11.9	12.9	13.6	16.5	16.3	10.0	8.3	8.7	8.4	11.7	9.7	11.6	16.4	20.8	21.8	20.5	25.9	21.4	33.9	**14.3**	**33.9**	**6.3**
9	17.1	18.6	17.3	42.7	17.5	12.8	12.8	13.9	11.6	10.3	10.8	12.6	12.7	12.9	16.6	22.6	21.5	17.0	16.5	9.7	14.0	15.4	7.0	6.3	**15.4**	**42.7**	**6.3**
10	7.0	8.5	7.0	7.5	11.0	11.2	8.9	9.2	6.2	4.7	5.2	3.8	4.8	4.8	3.9	4.0	2.9	2.7	4.0	4.7	4.3	4.6	5.5	4.6	**5.9**	**11.2**	**2.7**
11	7.1	7.3	7.0	6.8	7.3	7.0	10.6	22.8	19.4	14.6	12.5	9.3	8.6	7.9	10.3	11.5	9.8	14.3	25.1	30.8	28.7	26.5	17.9	23.5	**14.4**	**30.8**	**6.8**
12	24.0	26.9	19.2	20.3	23.0	22.7	23.5	41.5	26.6	19.5	15.9	12.7	13.3	17.4	34.2	20.5	15.9	11.6	13.9	19.6	28.7	20.2	14.9	7.8	**20.6**	**41.5**	**7.8**
13	7.1	9.6	8.5	4.1	2.8	4.2	6.0	7.6	8.1	9.9	7.2	5.4	7.7	6.7	5.1	5.4	6.0	6.4	6.5	6.8	4.9	6.4	6.6	6.5	**6.5**	**9.9**	**2.8**
14	6.5	7.1	9.7	10.0	10.5	10.0	8.9	9.1	10.2	13.0	16.4	16.0	10.2	9.2	8.9	10.5	9.5	8.1	6.5	8.6	9.2	7.9	11.9	33.8	**10.9**	**33.8**	**6.5**
15	22.7	8.0	6.6	13.3	10.5	6.3	7.8	8.8	9.2	9.7	8.8	11.3	12.1	10.3	10.1	10.4	9.7	8.8	9.8	10.2	9.3	8.2	8.4	9.4	**10.0**	**22.7**	**6.3**
16	6.7	9.3	11.6	12.9	12.8	14.1	16.2	21.0	22.0	23.8	25.8	35.4	25.3	31.6	25.0	17.6	16.8	17.4	18.5	23.6	20.4	24.0	28.1	25.3	**20.2**	**35.4**	**6.7**
17	16.3	21.3	25.1	23.4	22.6	29.3	34.3	45.2	40.8	---	21.0	13.9	12.4	13.4	15.1	14.1	13.8	26.6	39.0	34.6	38.6	44.1	40.4	45.9	**27.4**	**45.9**	**12.4**
18	54.0	45.0	38.6	46.8	36.5	39.9	48.5	53.2	60.2	83.9	67.4	51.4	45.0	27.1	13.2	14.3	14.1	19.7	32.6	38.9	30.9	38.5	30.9	42.1	**40.5**	**83.9**	**13.2**
19	25.2	27.5	22.7	24.4	20.8	20.8	19.9	20.8	24.7	30.7	29.6	28.3	25.4	29.1	28.0	35.5	26.3	15.8	17.0	15.7	15.1	17.2	21.8	20.5	**23.5**	**35.5**	**15.1**
20	17.0	15.6	14.4	11.5	9.9	8.9	8.1	11.0	11.1	11.6	18.4	18.1	13.7	13.1	11.5	16.8	13.2	16.5	14.4	15.0	18.2	18.2	16.1	14.4	**14.0**	**18.4**	**8.1**
21	12.8	11.3	11.3	12.2	12.6	13.3	13.8	13.5	13.0	13.1	12.9	13.1	12.0	11.7	14.8	12.4	13.6	13.9	16.3	23.4	19.1	17.6	20.1	18.4	**14.4**	**23.4**	**11.3**
22	22.6	20.4	19.9	18.0	21.0	22.8	28.1	27.9	39.3	43.1	44.9	25.1	23.0	26.2	18.4	19.4	21.5	21.4	25.2	25.2	25.9	23.6	28.6	33.1	**26.0**	**44.9**	**18.0**
23	32.5	31.8	28.8	28.7	26.8	27.3	28.3	31.3	53.9	62.7	60.6	---	58.1	37.1	37.5	36.3	25.1	28.2	27.6	28.7	36.1	34.7	37.0	36.3	**36.3**	**62.7**	**25.1**
24	161.3	39.2	30.5	28.9	28.8	30.5	30.7	33.9	37.9	43.8	53.0	50.9	40.5	44.9	42.6	43.6	40.7	37.8	30.6	36.5	30.4	31.8	31.9	38.4	**42.5**	**161.3**	**28.8**
25	32.3	34.0	36.0	36.5	38.7	37.9	36.5	34.8	48.3	43.7	48.0	58.6	60.6	65.5	76.9	82.1	49.8	34.8	13.2	11.7	14.6	11.1	9.1	6.9	**38.4**	**82.1**	**6.9**
26	5.7	5.1	4.6	3.7	3.5	4.0	4.5	7.4	16.5	24.6	14.9	15.6	13.8	12.7	8.6	15.4	21.0	12.9	12.3	8.2	6.4	7.3	5.5	4.7	**10.0**	**24.6**	**3.5**
27	8.1	7.4	7.4	6.9	7.4	8.5	10.0	8.9	12.2	19.4	22.0	12.3	16.3	13.2	10.7	11.6	20.7	14.2	10.1	11.2	17.8	14.3	16.3	17.0	**12.7**	**22.0**	**6.9**
28	16.2	12.8	11.4	9.5	7.1	4.7	3.4	1.1	0.7	0.9	0.9	1.0	1.5	2.6	2.4	2.4	2.6	3.5	2.7	3.8	6.4	6.3	6.8	7.5	**4.9**	**16.2**	**0.7**
29	7.8	6.8	5.2	4.5	3.5	6.7	18.1	10.5	5.4	5.1	5.9	6.4	7.4	6.4	8.0	9.5	7.0	7.1	7.0	8.8	9.1	7.7	7.5	8.2	**7.5**	**18.1**	**3.5**
30	7.4	8.4	6.9	7.2	6.6	5.6	4.8	7.2	9.1	11.0	8.9	14.3	10.1	8.6	8.5	8.8	10.0	9.2	10.1	12.9	14.6	12.4	15.8	10.9	**9.6**	**15.8**	**4.8**
31	11.1	11.2	10.9	10.5	9.6	9.1	8.5	7.0	7.5	7.4	10.1	14.4	18.2	17.8	19.4	17.6	17.2	15.4	20.1	24.8	23.7	20.5	22.7	27.0	**15.1**	**27.0**	**7.0**
MEAN	**20.5**	**16.4**	**15.4**	**16.6**	**15.2**	**15.3**	**16.8**	**19.8**	**21.6**	**22.0**	**21.8**	**17.9**	**17.6**	**17.3**	**17.7**	**17.8**	**16.6**	**15.5**	**16.3**	**17.5**	**17.9**	**17.6**	**17.3**	**18.6**	**17.8**		
MAX	**161.3**	**45.0**	**38.6**	**46.8**	**38.7**	**39.9**	**48.5**	**53.2**	**60.2**	**83.9**	**67.4**	**58.6**	**60.6**	**65.5**	**76.9**	**82.1**	**49.8**	**37.8**	**39.0**	**38.9**	**38.6**	**44.1**	**40.4**	**45.9**		**161.3**	
MIN	**5.7**	**5.1**	**4.6**	**3.7**	**2.8**	**4.0**	**3.4**	**1.1**	**0.7**	**0.9**	**0.9**	**1.0**	**1.5**	**2.6**	**2.4**	**2.4**	**2.6**	**2.7**	**2.7**	**3.8**	**4.3**	**4.6**	**5.5**	**4.6**			**0.7**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 742 DATA RECOVERY RATE = 99.7% DATA CAPTURE RATE = 100.0%

MONTHLY MEAN = 17.8 µg/m3

MAXIMUM PM10 = 161.3 µg/m3 DATE OF OCCURRENCE = 1/24 at 100 MAXIMUM DAILY MEAN = 42.5 µg/m3 DATE OF OCCURRENCE = 1/24

SECOND MAXIMUM PM10 = 83.9 µg/m3 DATE OF OCCURRENCE = 1/18 at 1000 SECOND MAXIMUM DAILY MEAN = 40.5 µg/m3 DATE OF OCCURRENCE = 1/18

MINIMUM PM10 = 0.7 µg/m3 DATE OF OCCURRENCE = 1/28 at 900 MINUMUM DAILY MEAN = 4.9 µg/m3 DATE OF OCCURRENCE = 1/28

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

Draft

CSX AQ5

HOURLY AVERAGES of PM10 in µg/m3 for FEBRUARY, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	30.3	31.2	27.0	23.9	24.3	24.7	25.8	36.2	33.8	26.4	17.3	17.3	11.8	10.7	11.1	11.7	13.4	15.7	17.5	15.8	14.1	13.4	14.5	12.8	**20.0**	**36.2**	**10.7**
2	16.0	18.4	22.8	24.1	22.3	23.9	26.6	26.1	26.4	24.3	22.7	14.9	11.7	10.0	15.6	9.6	6.7	6.9	7.6	6.2	6.4	7.2	7.0	9.7	**15.5**	**26.6**	**6.2**
3	5.5	4.1	4.4	6.7	5.2	5.9	7.4	7.8	8.2	6.8	6.7	6.8	7.5	7.7	7.6	7.2	12.4	24.2	24.3	32.5	44.0	54.0	33.8	25.3	**14.8**	**54.0**	**4.1**
4	22.0	22.3	21.5	17.8	16.6	18.0	23.6	14.7	17.1	15.9	9.8	11.6	29.1	12.2	13.6	12.9	10.4	11.8	23.2	32.7	34.9	39.0	40.9	42.2	**21.4**	**42.2**	**9.8**
5	36.0	35.4	30.7	36.9	25.6	33.3	33.9	47.0	36.4	21.7	17.5	12.2	25.8	25.9	22.0	20.8	19.3	26.8	37.4	29.7	18.7	18.9	15.5	14.5	**26.7**	**47.0**	**12.2**
6	15.3	16.8	19.2	19.0	16.5	16.4	22.8	24.7	22.4	19.0	13.2	15.4	14.4	11.4	17.1	24.8	16.9	12.1	15.7	44.2	38.8	25.4	29.9	32.8	**21.0**	**44.2**	**11.4**
7	172.2	19.5	23.1	21.2	24.0	27.5	39.8	38.7	49.8	29.7	29.4	21.1	18.3	22.5	33.5	38.5	44.1	38.1	26.8	82.1	74.1	61.2	63.3	50.2	**43.7**	**172.2**	**18.3**
8	38.2	39.9	55.7	52.7	44.7	48.5	72.7	60.3	50.2	42.7	45.5	29.1	25.8	24.9	20.0	26.5	24.2	22.1	25.3	17.7	15.0	14.9	12.6	19.0	**34.5**	**72.7**	**12.6**
9	19.2	16.1	18.5	18.5	19.8	19.0	24.6	17.8	31.2	24.1	22.7	26.9	34.7	22.3	38.8	30.7	29.7	29.6	30.4	31.3	34.1	33.9	42.6	40.4	**27.4**	**42.6**	**16.1**
10	38.3	46.8	49.5	54.3	55.1	58.4	54.4	57.6	58.5	70.4	66.6	69.8	54.9	52.9	42.5	60.3	84.5	47.7	33.6	68.7	69.1	58.0	48.5	41.0	**55.9**	**84.5**	**33.6**
11	31.5	21.9	19.6	18.0	13.9	15.2	34.4	30.5	31.1	43.2	29.6	28.2	24.4	19.0	19.3	30.7	24.3	21.9	27.0	26.3	20.1	20.7	23.4	26.9	**25.0**	**43.2**	**13.9**
12	35.5	26.8	23.2	22.8	19.9	27.2	22.5	22.1	28.1	48.0	27.7	36.1	32.8	32.6	28.3	30.1	31.3	29.4	26.8	23.4	18.3	14.0	10.7	7.9	**26.1**	**48.0**	**7.9**
13	6.2	4.9	3.1	4.0	3.8	3.7	4.9	6.1	5.5	4.6	6.4	7.5	13.0	14.5	16.3	18.5	11.4	10.7	9.5	12.2	11.3	11.5	15.0	11.9	**9.0**	**18.5**	**3.1**
14	9.6	8.5	6.9	6.5	6.6	7.1	7.4	9.9	19.8	14.2	13.8	13.4	8.0	7.8	12.8	9.1	11.9	10.4	10.1	9.8	8.2	13.5	14.0	14.0	**10.6**	**19.8**	**6.5**
15	13.1	16.4	15.1	14.9	16.5	13.8	15.7	12.8	8.6	13.8	11.0	7.3	9.8	10.9	14.8	14.9	12.2	10.3	13.4	12.9	13.6	18.1	17.6	21.4	**13.7**	**21.4**	**7.3**
16	19.5	12.7	13.4	8.8	10.8	11.1	---	---	---	---	---	---	---	---	---	10.3	8.9	12.6	15.2	12.2	17.3	15.3	14.2	15.0	**---**	**---**	**---**
17	10.7	7.9	8.6	7.7	8.5	10.2	13.6	15.6	15.1	7.3	7.2	8.8	8.1	8.2	8.8	9.5	9.3	10.4	11.6	11.6	13.8	10.6	10.3	11.1	**10.2**	**15.6**	**7.2**
18	12.6	15.6	16.9	13.0	16.5	13.4	13.4	14.4	17.9	14.3	12.9	10.2	11.4	12.9	12.3	13.3	9.5	8.9	8.8	15.3	10.3	8.3	7.0	7.4	**12.4**	**17.9**	**7.0**
19	8.3	6.9	9.2	13.5	13.4	16.6	19.6	19.3	22.7	22.7	21.1	18.4	17.9	17.5	16.5	17.3	19.6	23.1	34.0	32.0	32.1	31.2	31.4	38.9	**21.0**	**38.9**	**6.9**
20	40.8	40.9	38.5	39.8	21.6	23.0	22.6	20.8	21.2	10.5	10.7	12.9	13.0	13.3	15.1	14.4	15.6	16.4	17.7	16.5	14.4	13.4	11.0	12.5	**19.9**	**40.9**	**10.5**
21	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
22	---	19.8	22.0	23.4	18.5	23.4	41.2	47.9	45.9	24.0	19.5	21.2	25.5	21.1	23.6	21.3	20.8	22.7	28.4	21.7	22.2	24.5	24.9	28.5	**25.7**	**47.9**	**18.5**
23	19.9	25.0	22.2	23.3	27.2	24.0	26.3	33.9	30.9	32.7	38.0	30.9	27.0	23.4	24.2	22.4	21.0	20.0	53.3	30.8	26.3	26.1	33.1	33.6	**28.1**	**53.3**	**19.9**
24	33.4	31.8	29.5	14.7	14.4	16.6	22.1	25.1	27.1	26.7	27.1	22.8	20.5	12.9	12.3	12.5	12.8	11.7	7.6	6.8	7.8	7.1	6.0	7.7	**17.4**	**33.4**	**6.0**
25	8.0	7.2	6.7	7.1	8.0	8.4	9.1	9.4	7.3	8.3	9.3	10.8	9.0	8.3	9.4	8.5	9.5	12.9	13.1	12.9	11.2	13.2	15.5	16.3	**10.0**	**16.3**	**6.7**
26	11.1	9.0	9.7	11.8	15.6	13.1	11.7	18.1	18.7	36.0	37.7	29.3	20.2	19.5	32.7	64.0	21.7	40.3	68.0	47.4	45.1	25.5	26.3	28.5	**27.5**	**68.0**	**9.0**
27	27.6	30.2	33.5	25.9	29.5	36.4	50.1	51.8	43.5	29.4	34.8	38.1	50.4	43.4	52.6	31.3	24.9	22.5	23.4	22.0	---	---	---	---	**35.1**	**52.6**	**22.0**
28	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
29	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	23.4	33.8	13.0	12.7	13.2	43.7	34.6	27.2	**---**	**---**	**---**
MEAN	**27.2**	**20.6**	**21.2**	**20.4**	**19.2**	**20.7**	**25.8**	**26.7**	**27.1**	**24.7**	**22.3**	**20.8**	**21.0**	**18.6**	**20.8**	**22.0**	**20.4**	**20.5**	**23.1**	**25.5**	**24.4**	**23.9**	**23.2**	**23.0**	**22.6**		
MAX	**172.2**	**46.8**	**55.7**	**54.3**	**55.1**	**58.4**	**72.7**	**60.3**	**58.5**	**70.4**	**66.6**	**69.8**	**54.9**	**52.9**	**52.6**	**64.0**	**84.5**	**47.7**	**68.0**	**82.1**	**74.1**	**61.2**	**63.3**	**50.2**		**172.2**	
MIN	**5.5**	**4.1**	**3.1**	**4.0**	**3.8**	**3.7**	**4.9**	**6.1**	**5.5**	**4.6**	**6.4**	**6.8**	**7.5**	**7.7**	**7.6**	**7.2**	**6.7**	**6.9**	**7.6**	**6.2**	**6.4**	**7.1**	**6.0**	**7.4**			**3.1**

POSSIBLE NUMBER OF OBSERVATIONS = 696 ACTUAL NUMBER OF OBSERVATIONS = 618 DATA RECOVERY RATE = 88.8% DATA CAPTURE RATE = 86.2%

MONTHLY MEAN = 22.6 µg/m3

MAXIMUM PM10 = 172.2 µg/m3 DATE OF OCCURRENCE = 2/7 at 100 MAXIMUM DAILY MEAN = 55.9 µg/m3 DATE OF OCCURRENCE = 2/10

SECOND MAXIMUM PM10 = 84.5 µg/m3 DATE OF OCCURRENCE = 2/10 at 1700 SECOND MAXIMUM DAILY MEAN = 43.7 µg/m3 DATE OF OCCURRENCE = 2/7

MINIMUM PM10 = 3.1 µg/m3 DATE OF OCCURRENCE = 2/13 at 300 MINUMUM DAILY MEAN = 9.0 µg/m3 DATE OF OCCURRENCE = 2/13

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

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CSX AQ5

HOURLY AVERAGES of PM10 in µg/m3 for MARCH, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	32.3	16.6	19.0	25.1	25.0	34.7	42.0	61.1	31.1	14.2	15.5	15.8	14.4	14.0	18.7	17.4	15.8	11.2	11.6	13.3	16.9	16.9	18.0	14.8	**21.5**	**61.1**	**11.2**
2	12.8	11.0	11.6	10.3	9.9	11.1	9.8	9.6	8.6	7.3	6.5	4.4	6.2	3.7	5.2	5.4	5.9	8.3	8.6	6.6	9.7	8.4	9.6	11.8	**8.4**	**12.8**	**3.7**
3	13.0	15.0	16.1	15.8	14.6	18.8	16.7	14.7	17.2	15.4	14.3	17.1	14.3	9.8	9.3	8.7	8.1	12.3	11.4	16.9	12.7	21.7	18.9	23.6	**14.9**	**23.6**	**8.1**
4	20.4	21.7	19.1	15.5	16.9	15.7	14.6	20.9	16.9	25.1	28.3	16.6	19.2	19.3	15.6	19.7	15.3	11.1	11.2	5.8	5.2	5.4	4.3	5.4	**15.4**	**28.3**	**4.3**
5	4.5	3.2	2.5	4.1	5.4	5.6	3.6	7.6	6.3	2.3	2.2	3.2	3.7	5.0	5.3	8.6	7.9	14.0	17.4	9.3	9.1	9.5	11.4	11.4	**6.8**	**17.4**	**2.2**
6	11.4	14.0	14.2	19.4	16.3	17.2	15.9	18.0	19.2	20.9	19.3	12.4	10.7	7.5	7.5	7.6	7.5	8.1	10.5	11.6	14.0	15.1	13.2	15.6	**13.6**	**20.9**	**7.5**
7	12.4	9.4	7.5	5.9	5.6	6.2	7.1	8.2	5.4	6.6	7.5	6.4	6.7	7.6	8.4	8.9	6.8	7.9	8.2	14.0	12.9	10.8	10.7	8.8	**8.3**	**14.0**	**5.4**
8	13.0	10.0	17.3	12.5	15.7	18.4	12.4	13.3	9.9	4.4	7.9	18.0	10.4	6.3	11.1	8.3	7.4	7.4	22.0	9.0	16.2	18.0	15.0	10.8	**12.3**	**22.0**	**4.4**
9	12.3	13.0	12.9	13.7	16.0	15.3	17.4	20.6	19.2	17.5	20.3	22.4	21.5	24.4	17.4	13.8	12.5	11.2	5.6	3.5	3.6	5.8	6.7	7.7	**13.9**	**24.4**	**3.5**
10	7.4	7.1	5.3	3.9	3.8	4.7	2.4	3.8	6.6	10.3	9.6	6.8	7.6	4.7	6.6	8.2	6.7	5.5	7.9	4.4	7.5	5.0	4.4	4.6	**6.0**	**10.3**	**2.4**
11	4.1	7.0	7.5	5.8	5.5	7.3	14.3	14.2	32.6	25.2	30.3	24.0	23.4	29.2	26.4	19.6	11.6	7.3	8.1	7.2	6.9	7.8	11.3	12.1	**14.5**	**32.6**	**4.1**
12	7.2	7.4	7.3	7.6	10.1	8.5	9.4	9.6	15.7	16.1	19.3	21.3	18.9	25.5	25.9	27.4	19.4	21.7	22.3	27.2	22.9	19.6	16.8	22.2	**17.1**	**27.4**	**7.2**
13	14.3	15.6	18.4	33.2	41.2	58.9	63.9	82.5	81.4	20.1	20.7	17.1	18.2	18.5	21.0	16.6	23.6	26.0	27.9	45.0	39.9	49.2	57.5	63.0	**36.4**	**82.5**	**14.3**
14	37.6	42.5	49.9	54.5	55.4	51.8	98.1	123.4	92.7	119.5	103.0	71.8	137.2	70.6	27.8	35.5	32.6	30.0	28.4	23.4	25.6	22.6	26.3	29.0	**57.9**	**137.2**	**22.6**
15	36.9	53.0	29.7	44.6	32.0	33.3	24.9	23.0	22.4	23.1	20.3	23.1	19.4	14.0	14.3	8.2	12.1	11.0	8.0	13.7	15.3	8.0	6.6	3.9	**20.9**	**53.0**	**3.9**
16	3.5	3.7	4.8	5.5	6.5	7.1	7.0	8.4	8.6	8.2	8.3	7.1	6.7	7.5	7.4	7.6	11.3	10.6	10.0	11.1	11.3	9.9	9.8	11.9	**8.1**	**11.9**	**3.5**
17	11.7	12.1	12.0	14.5	18.2	15.5	20.3	15.7	8.1	7.9	7.6	10.0	33.2	14.0	12.8	14.3	11.6	10.3	8.6	10.8	8.7	10.1	15.2	20.6	**13.5**	**33.2**	**7.6**
18	9.4	8.8	10.0	8.3	11.0	16.5	19.9	16.6	26.3	36.2	28.3	21.3	20.8	15.9	16.1	23.6	47.9	66.5	41.6	25.2	16.2	10.5	9.2	8.0	**21.4**	**66.5**	**8.0**
19	9.9	7.4	8.6	10.5	7.6	8.9	14.0	25.6	19.2	30.1	11.5	10.6	14.5	16.2	32.7	24.2	22.4	21.7	16.0	16.3	16.4	19.4	17.6	19.2	**16.7**	**32.7**	**7.4**
20	18.4	14.3	15.5	15.0	18.9	18.2	18.9	19.4	25.9	51.5	76.6	62.0	56.2	44.2	145.3	46.1	46.1	139.6	81.9	32.3	19.8	17.2	9.5	11.1	**41.8**	**145.3**	**9.5**
21	7.3	8.4	6.6	7.6	6.3	12.4	11.7	16.2	14.6	16.7	14.3	18.4	20.8	17.9	10.6	13.3	12.4	9.4	14.3	12.3	37.2	25.5	17.6	11.9	**14.3**	**37.2**	**6.3**
22	13.9	11.6	10.9	10.5	11.9	11.5	13.3	11.7	10.3	10.8	18.1	11.9	16.3	18.0	15.7	14.8	16.0	20.3	14.8	20.0	17.9	16.8	14.0	14.0	**14.4**	**20.3**	**10.3**
23	12.6	10.1	9.9	9.6	11.0	9.8	8.3	7.2	8.1	8.7	6.7	4.4	6.8	6.5	4.8	6.1	6.4	8.0	9.7	9.1	12.8	14.8	9.3	6.6	**8.6**	**14.8**	**4.4**
24	5.9	5.8	6.6	6.0	7.6	7.6	8.9	7.0	6.0	7.0	6.7	5.9	7.0	6.5	10.5	8.1	7.5	8.0	7.9	8.8	12.2	14.8	17.3	80.6	**11.3**	**80.6**	**5.8**
25	78.7	14.1	17.7	17.9	10.7	11.9	11.9	11.5	8.8	8.0	8.7	9.5	10.7	15.1	17.3	27.2	21.6	28.3	27.1	17.2	19.9	16.6	17.3	37.5	**19.4**	**78.7**	**8.0**
26	127.7	50.6	42.6	38.0	23.9	20.9	15.0	13.7	12.4	13.6	20.0	24.4	23.9	20.7	18.9	18.9	21.2	23.4	25.2	27.0	19.1	20.9	20.9	18.4	**27.6**	**127.7**	**12.4**
27	15.8	16.0	14.4	16.4	16.2	16.4	17.4	20.2	18.3	13.9	14.3	10.8	8.7	8.5	8.4	6.7	6.3	14.8	15.3	12.4	14.0	20.2	24.8	20.5	**14.6**	**24.8**	**6.3**
28	9.0	8.3	11.3	8.0	7.5	9.5	17.3	21.2	22.7	---	22.7	21.3	16.4	17.7	17.1	14.4	15.7	12.9	14.4	14.6	14.2	16.1	15.7	103.5	**18.8**	**103.5**	**7.5**
29	13.6	10.7	10.3	10.2	11.6	14.8	18.7	14.2	17.1	27.4	43.6	31.0	31.4	29.9	49.9	33.9	27.3	14.1	12.1	9.4	11.7	10.0	9.7	9.2	**19.7**	**49.9**	**9.2**
30	8.7	9.4	9.6	8.0	8.8	12.4	13.2	10.0	13.1	13.7	15.6	16.5	16.1	16.6	17.4	18.8	14.6	14.1	16.8	18.1	24.8	20.1	23.1	31.3	**15.5**	**31.3**	**8.0**
31	24.5	20.6	18.5	19.4	18.9	20.4	22.8	24.0	20.7	14.3	6.8	7.3	7.1	7.3	7.3	6.2	7.2	9.1	9.3	11.0	12.0	19.1	10.7	13.9	**14.1**	**24.5**	**6.2**
MEAN	**19.7**	**14.8**	**14.4**	**15.4**	**15.2**	**16.8**	**19.1**	**21.7**	**20.2**	**19.9**	**20.5**	**17.8**	**20.3**	**16.9**	**19.8**	**16.1**	**15.8**	**19.5**	**17.2**	**15.0**	**15.7**	**15.7**	**15.2**	**21.4**	**17.7**		
MAX	**127.7**	**53.0**	**49.9**	**54.5**	**55.4**	**58.9**	**98.1**	**123.4**	**92.7**	**119.5**	**103.0**	**71.8**	**137.2**	**70.6**	**145.3**	**46.1**	**47.9**	**139.6**	**81.9**	**45.0**	**39.9**	**49.2**	**57.5**	**103.5**		**145.3**	
MIN	**3.5**	**3.2**	**2.5**	**3.9**	**3.8**	**4.7**	**2.4**	**3.8**	**5.4**	**2.3**	**2.2**	**3.2**	**3.7**	**3.7**	**4.8**	**5.4**	**5.9**	**5.5**	**5.6**	**3.5**	**3.6**	**5.0**	**4.3**	**3.9**			**2.2**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 743 DATA RECOVERY RATE = 99.9% DATA CAPTURE RATE = 100.0%

MONTHLY MEAN = 17.7 µg/m3

MAXIMUM PM10 = 145.3 µg/m3 DATE OF OCCURRENCE = 3/20 at 1500 MAXIMUM DAILY MEAN = 57.9 µg/m3 DATE OF OCCURRENCE = 3/14

SECOND MAXIMUM PM10 = 139.6 µg/m3 DATE OF OCCURRENCE = 3/20 at 1800 SECOND MAXIMUM DAILY MEAN = 41.8 µg/m3 DATE OF OCCURRENCE = 3/20

MINIMUM PM10 = 2.2 µg/m3 DATE OF OCCURRENCE = 3/5 at 1100 MINUMUM DAILY MEAN = 6.0 µg/m3 DATE OF OCCURRENCE = 3/10

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

UNDERLINED DATA ARE SUSPECT

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CSX AQ5

HOURLY AVERAGES of PM2.5 in µg/m3 for JANUARY, 2024

Hr Beg Hr End Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	10.0	11.6	13.5	16.0	15.8	16.8	20.1	16.8	14.7	13.8	9.3	6.0	5.9	7.1	8.5	7.0	8.2	6.9	7.0	7.7	8.5	9.7	10.5	8.6	**10.8**	**20.1**	**5.9**
2	12.0	9.7	8.7	8.2	6.9	5.3	6.3	5.2	6.2	3.6	4.0	4.2	5.3	6.6	6.9	7.0	7.4	8.2	10.7	9.6	9.2	8.6	9.4	9.9	**7.4**	**12.0**	**3.6**
3	8.7	9.5	8.7	7.6	9.1	9.0	9.2	9.9	10.4	9.0	14.2	8.8	7.2	7.7	8.4	10.4	12.0	10.5	11.6	12.1	13.2	14.7	14.6	11.6	**10.3**	**14.7**	**7.2**
4	11.9	12.7	13.0	13.4	12.8	13.4	12.4	14.1	15.1	16.5	17.2	11.7	5.6	3.9	5.3	3.6	4.3	4.3	4.8	5.3	5.2	5.5	6.5	5.3	**9.3**	**17.2**	**3.6**
5	4.8	4.9	5.3	5.4	5.1	5.4	5.7	6.6	8.3	9.3	8.2	7.0	8.4	8.7	8.2	8.2	8.6	10.5	11.3	15.6	17.9	17.0	19.0	19.4	**9.5**	**19.4**	**4.8**
6	16.8	14.9	15.8	16.4	17.1	11.6	10.4	14.4	12.9	13.8	9.5	10.7	11.2	11.0	8.5	7.8	6.9	5.9	4.2	4.2	4.0	4.9	5.5	6.4	**10.2**	**17.1**	**4.0**
7	8.8	12.1	12.3	11.2	9.8	9.6	10.2	10.8	12.8	12.3	12.2	7.0	4.3	3.6	3.4	3.2	3.2	3.5	4.2	4.5	4.3	3.4	3.7	3.5	**7.2**	**12.8**	**3.2**
8	4.3	5.0	6.0	7.3	8.4	9.0	9.7	9.7	10.4	9.2	5.9	5.9	6.0	6.2	6.8	6.4	6.8	7.7	10.1	9.8	10.2	12.2	12.6	13.9	**8.3**	**13.9**	**4.3**
9	12.1	11.1	10.4	14.8	10.4	7.4	7.9	8.6	7.5	5.3	4.8	5.4	5.5	5.5	6.3	8.7	8.3	6.4	6.7	3.8	5.4	5.3	3.0	2.9	**7.2**	**14.8**	**2.9**
10	3.2	3.4	3.0	3.9	5.2	5.3	4.1	3.5	2.5	1.1	0.8	0.6	0.9	0.8	0.7	0.8	1.1	1.8	2.4	2.9	2.8	3.0	3.2	3.2	**2.5**	**5.3**	**0.6**
11	3.9	3.8	4.0	4.4	4.8	4.9	5.6	8.5	8.4	7.4	6.4	4.1	3.7	3.6	3.7	3.9	4.4	4.9	9.0	10.7	12.0	12.7	10.0	13.4	**6.5**	**13.4**	**3.6**
12	14.4	14.5	11.5	10.8	11.9	13.0	11.5	18.1	13.6	11.1	9.2	7.5	7.6	8.7	9.1	7.5	7.0	6.4	6.3	7.7	9.3	8.0	5.9	3.8	**9.7**	**18.1**	**3.8**
13	3.5	4.7	4.9	3.0	1.9	2.5	3.1	3.4	3.8	4.0	3.2	3.0	2.8	2.8	2.7	2.8	2.9	3.2	3.3	3.2	3.2	3.4	3.7	3.7	**3.2**	**4.9**	**1.9**
14	4.0	4.2	5.2	5.4	5.8	5.5	5.2	4.4	4.7	4.9	4.9	4.5	4.5	4.4	3.2	3.1	2.7	2.9	3.0	3.7	3.7	3.6	4.6	7.2	**4.3**	**7.2**	**2.7**
15	6.1	3.2	3.2	4.4	3.6	3.4	4.3	5.1	5.3	5.2	5.6	6.9	7.4	6.1	6.5	7.1	6.6	6.2	6.7	7.0	6.5	5.6	5.7	6.6	**5.5**	**7.4**	**3.2**
16	4.3	6.6	8.4	9.8	9.4	10.2	11.7	14.5	17.2	19.8	21.2	26.2	20.1	21.8	19.0	13.0	10.1	8.7	7.8	8.7	7.9	7.4	7.5	7.5	**12.4**	**26.2**	**4.3**
17	7.3	7.3	8.6	7.8	7.3	6.9	7.5	10.7	10.8	---	5.1	4.5	4.6	4.6	5.2	5.5	5.6	6.7	12.1	12.4	12.9	13.1	14.1	15.6	**8.5**	**15.6**	**4.5**
18	16.5	18.4	17.7	18.9	17.0	15.0	15.4	18.7	19.2	22.5	18.9	14.1	13.4	8.0	5.6	6.4	6.5	7.7	9.6	11.1	10.5	13.2	13.2	15.0	**13.8**	**22.5**	**5.6**
19	13.8	14.1	14.3	14.0	14.5	15.7	15.3	15.4	18.4	22.2	22.7	21.1	20.6	24.5	23.8	32.3	23.6	11.6	12.2	11.6	10.9	12.7	17.4	16.3	**17.4**	**32.3**	**10.9**
20	13.4	12.1	11.1	8.0	6.1	5.3	4.5	4.4	4.6	4.5	4.4	4.5	4.2	4.2	4.2	4.7	4.9	5.4	6.5	7.2	7.8	7.3	6.3	6.1	**6.3**	**13.4**	**4.2**
21	5.8	5.6	5.5	5.7	6.5	6.7	6.1	5.5	5.2	4.7	4.4	4.7	4.7	5.4	6.1	6.0	6.7	7.5	8.8	10.2	10.2	10.6	9.6	10.2	**6.7**	**10.6**	**4.4**
22	11.5	11.5	11.9	11.0	12.6	14.1	16.1	16.6	22.9	22.0	17.8	10.4	10.3	11.3	9.9	9.1	9.4	10.2	13.3	13.8	15.7	15.7	19.2	22.1	**14.1**	**22.9**	**9.1**
23	21.1	21.7	19.7	20.2	18.8	16.8	18.1	20.1	31.8	31.7	29.6	---	27.8	18.9	15.8	15.0	14.4	15.5	16.7	18.4	21.6	24.0	25.4	25.6	**21.2**	**31.8**	**14.4**
24	44.8	26.3	23.0	22.1	21.6	23.3	24.7	27.1	29.4	31.4	36.2	36.5	29.7	33.9	32.5	30.7	27.5	25.8	23.4	25.1	23.8	23.8	25.3	29.7	**28.2**	**44.8**	**21.6**
25	24.7	26.0	27.5	28.4	29.3	28.8	27.5	27.5	33.0	32.6	35.9	44.1	47.5	45.7	43.9	40.2	24.9	21.1	9.5	8.7	10.1	7.9	6.3	4.9	**26.5**	**47.5**	**4.9**
26	3.9	3.5	3.3	2.8	2.7	2.7	3.1	4.1	8.9	12.4	7.2	7.4	6.5	5.9	3.8	6.6	7.9	7.1	6.9	5.0	4.2	4.7	3.6	3.6	**5.3**	**12.4**	**2.7**
27	4.8	4.9	4.8	4.6	4.6	4.8	4.8	4.9	6.4	8.0	10.3	7.1	8.3	6.0	5.3	6.8	7.8	6.7	6.4	7.0	8.4	8.7	11.8	12.2	**6.8**	**12.2**	**4.6**
28	11.5	9.6	8.6	6.8	4.9	2.8	1.7	0.7	0.4	0.5	0.6	0.6	0.9	1.3	1.4	1.2	1.3	2.2	2.0	3.0	4.5	4.6	4.8	4.8	**3.3**	**11.5**	**0.4**
29	6.2	4.8	3.4	2.9	2.3	3.6	4.3	3.6	2.4	1.9	1.8	1.7	1.9	2.3	3.2	3.0	3.3	3.7	3.8	4.6	4.9	4.9	5.0	5.6	**3.5**	**6.2**	**1.7**
30	5.4	5.1	5.0	5.0	4.5	3.6	3.1	3.5	4.2	4.6	4.9	5.4	5.8	5.6	5.2	5.0	5.7	5.9	6.1	7.4	7.8	7.5	7.9	6.9	**5.4**	**7.9**	**3.1**
31	6.2	6.2	5.9	5.8	5.3	5.1	4.7	4.3	4.4	4.5	5.0	6.1	7.0	6.9	8.5	7.5	7.5	7.2	8.2	10.5	12.6	12.5	13.6	16.2	**7.5**	**16.2**	**4.3**
MEAN	**10.5**	**10.0**	**9.8**	**9.9**	**9.5**	**9.3**	**9.5**	**10.3**	**11.5**	**11.7**	**11.0**	**9.6**	**9.7**	**9.5**	**9.1**	**9.0**	**8.3**	**7.8**	**8.2**	**8.8**	**9.3**	**9.6**	**10.0**	**10.4**	**9.7**		
MAX	**44.8**	**26.3**	**27.5**	**28.4**	**29.3**	**28.8**	**27.5**	**27.5**	**33.0**	**32.6**	**36.2**	**44.1**	**47.5**	**45.7**	**43.9**	**40.2**	**27.5**	**25.8**	**23.4**	**25.1**	**23.8**	**24.0**	**25.4**	**29.7**		**47.5**	
MIN	**3.2**	**3.2**	**3.0**	**2.8**	**1.9**	**2.5**	**1.7**	**0.7**	**0.4**	**0.5**	**0.6**	**0.6**	**0.9**	**0.8**	**0.7**	**0.8**	**1.1**	**1.8**	**2.0**	**2.9**	**2.8**	**3.0**	**3.0**	**2.9**			**0.4**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 742 DATA RECOVERY RATE = 99.7% DATA CAPTURE RATE = 100.0%

MONTHLY MEAN = 9.7 µg/m3

MAXIMUM PM2.5 = 47.5 µg/m3 DATE OF OCCURRENCE = 1/25 at 1300 MAXIMUM DAILY MEAN = 28.2 µg/m3 DATE OF OCCURRENCE = 1/24

SECOND MAXIMUM PM2.5 = 45.7 µg/m3 DATE OF OCCURRENCE = 1/25 at 1400 SECOND MAXIMUM DAILY MEAN = 26.5 µg/m3 DATE OF OCCURRENCE = 1/25

MINIMUM PM2.5 = 0.4 µg/m3 DATE OF OCCURRENCE = 1/28 at 900 MINUMUM DAILY MEAN = 2.5 µg/m3 DATE OF OCCURRENCE = 1/10

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

Draft

CSX AQ5

HOURLY AVERAGES of PM2.5 in µg/m3 for FEBRUARY, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	18.0	20.2	18.1	16.2	16.3	17.2	17.2	21.2	21.4	17.5	12.6	8.4	6.2	5.9	6.3	5.8	7.3	8.6	9.1	10.0	10.0	9.7	9.9	8.9	**12.5**	**21.4**	**5.8**
2	9.7	11.2	12.5	13.0	12.9	14.6	16.8	16.4	16.0	15.3	15.4	10.6	6.2	3.9	5.5	3.0	2.4	2.6	2.8	2.8	2.6	2.8	2.9	3.1	**8.5**	**16.8**	**2.4**
3	2.4	2.3	2.5	3.3	3.0	3.2	3.6	3.9	4.0	3.8	3.9	4.2	4.3	4.4	4.4	4.4	5.1	6.6	6.9	9.0	20.1	25.5	19.9	15.0	**6.9**	**25.5**	**2.3**
4	12.4	13.4	11.4	10.2	9.9	9.7	9.7	8.4	9.4	6.6	4.8	5.4	7.7	5.9	6.1	5.8	5.4	5.4	9.2	11.4	13.3	16.9	19.1	21.7	**9.9**	**21.7**	**4.8**
5	21.6	19.9	18.0	17.2	15.0	20.7	14.2	13.9	9.8	8.2	7.1	6.5	8.6	8.4	8.2	7.8	7.6	9.1	10.9	13.1	9.4	8.6	8.9	8.5	**11.7**	**21.6**	**6.5**
6	8.0	8.6	9.7	8.7	7.7	7.0	8.2	8.9	8.5	6.6	4.7	4.6	4.3	3.8	4.3	5.2	4.8	4.5	5.9	10.6	11.4	9.7	11.6	11.3	**7.4**	**11.6**	**3.8**
7	29.5	9.5	9.6	10.0	9.7	9.7	10.5	9.9	11.3	9.0	9.3	8.4	8.0	7.7	7.8	9.5	11.0	10.2	10.2	18.3	23.5	25.3	25.2	22.0	**13.1**	**29.5**	**7.7**
8	19.1	18.4	20.5	23.6	19.8	18.7	22.9	25.6	17.4	15.5	16.0	13.8	10.2	7.9	8.0	8.3	10.1	9.8	9.2	8.6	7.8	7.8	7.0	9.2	**13.9**	**25.6**	**7.0**
9	8.8	7.0	7.2	7.7	8.2	9.6	11.4	8.4	11.2	11.2	11.3	12.1	12.9	10.9	12.4	13.4	14.6	16.2	17.1	19.2	21.0	22.3	23.5	23.1	**13.3**	**23.5**	**7.0**
10	25.6	28.0	28.2	30.0	34.0	34.3	32.5	31.9	33.3	38.4	39.1	36.9	33.4	18.2	21.5	24.4	26.5	22.8	21.9	26.8	29.2	28.9	26.9	26.0	**29.1**	**39.1**	**18.2**
11	22.5	16.1	13.7	12.4	8.9	9.7	19.5	19.9	20.3	23.3	19.5	21.1	17.8	13.6	12.0	13.8	12.9	13.5	16.1	15.1	14.6	14.8	14.1	14.4	**15.8**	**23.3**	**8.9**
12	14.5	14.4	14.7	14.8	15.0	19.0	15.2	14.3	16.4	19.1	17.2	21.5	22.3	22.5	21.2	21.1	21.4	20.6	19.6	18.4	14.3	10.8	8.5	6.3	**16.7**	**22.5**	**6.3**
13	4.6	3.2	2.3	2.4	1.9	1.8	2.8	4.1	3.3	2.5	4.0	4.8	8.1	7.9	8.0	6.5	5.6	6.4	6.2	6.7	6.8	7.5	9.3	7.8	**5.1**	**9.3**	**1.8**
14	6.2	5.8	4.5	4.0	3.7	4.0	4.3	3.9	4.4	4.0	4.0	2.8	2.8	2.7	3.3	3.1	3.3	3.4	4.6	4.1	4.2	5.5	6.6	7.1	**4.2**	**7.1**	**2.7**
15	7.8	8.0	7.9	7.7	9.5	5.9	6.1	6.5	4.2	4.3	4.7	4.0	5.0	5.8	6.3	6.1	5.4	4.9	5.5	6.4	7.1	9.5	11.3	12.3	**6.7**	**12.3**	**4.0**
16	11.4	6.3	3.8	4.1	4.2	3.8	---	---	---	---	---	---	---	---	---	4.7	4.2	6.2	5.8	6.2	6.9	6.2	6.8	6.8	**---**	**---**	**---**
17	5.5	4.9	6.3	6.0	7.1	8.6	11.0	12.1	12.0	4.8	3.3	4.2	3.9	4.9	5.4	5.4	5.2	5.5	6.0	6.4	7.2	6.4	6.2	7.0	**6.4**	**12.1**	**3.3**
18	8.1	9.6	9.8	9.0	9.8	8.2	8.0	9.3	10.7	9.1	7.8	5.5	5.2	5.5	5.1	5.0	3.6	3.6	4.2	6.1	4.9	3.8	3.1	3.1	**6.5**	**10.7**	**3.1**
19	3.4	3.5	4.1	5.0	5.7	6.0	7.5	8.4	9.5	11.8	10.6	10.2	10.4	10.6	9.8	10.3	10.9	9.6	13.2	16.2	18.3	19.1	21.7	24.5	**10.8**	**24.5**	**3.4**
20	25.6	25.1	22.1	22.6	14.3	13.8	10.5	7.4	6.3	4.1	4.3	4.9	5.3	5.8	6.6	8.0	7.6	7.2	8.4	8.5	6.4	5.3	4.7	4.2	**9.9**	**25.6**	**4.1**
21	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
22	---	6.8	10.3	10.9	8.6	9.3	18.3	24.1	15.9	9.3	7.0	7.2	7.9	6.9	6.7	6.9	7.7	7.8	9.8	9.6	10.0	9.9	13.3	18.2	**10.5**	**24.1**	**6.7**
23	12.3	14.4	14.8	15.0	15.9	15.4	17.4	18.3	21.9	22.0	24.8	22.0	18.2	17.5	17.2	16.8	14.6	12.9	18.2	19.1	19.8	20.0	25.3	25.2	**18.2**	**25.3**	**12.3**
24	25.3	24.9	22.1	10.9	10.5	13.1	17.9	20.3	21.1	20.3	19.6	16.8	13.8	8.0	7.5	6.8	6.7	5.4	3.4	3.4	3.7	3.3	3.4	4.1	**12.1**	**25.3**	**3.3**
25	4.3	4.0	3.8	3.7	3.9	4.2	3.8	4.3	3.5	4.6	4.8	4.4	4.7	4.7	5.0	5.1	5.3	5.8	5.4	6.0	6.0	5.6	5.9	5.8	**4.7**	**6.0**	**3.5**
26	5.6	5.0	5.2	6.1	7.0	6.8	7.5	9.5	9.4	15.9	16.0	13.6	8.1	8.5	9.5	11.7	8.8	11.3	16.6	16.7	19.4	14.9	15.8	17.3	**11.0**	**19.4**	**5.0**
27	16.7	18.7	18.5	17.7	18.9	20.6	23.2	23.5	23.8	21.0	24.1	25.0	26.1	24.6	22.4	15.5	14.8	13.5	13.8	13.4	---	---	---	---	**19.7**	**26.1**	**13.4**
28	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
29	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	13.0	8.7	4.5	4.5	5.2	6.4	6.9	7.4	**---**	**---**	**---**
MEAN	**13.2**	**11.9**	**11.6**	**11.2**	**10.8**	**11.3**	**12.8**	**13.4**	**13.0**	**12.3**	**11.8**	**11.2**	**10.5**	**9.1**	**9.2**	**9.0**	**9.1**	**9.0**	**9.8**	**11.0**	**11.7**	**11.8**	**12.2**	**12.3**	**11.2**		
MAX	**29.5**	**28.0**	**28.2**	**30.0**	**34.0**	**34.3**	**32.5**	**31.9**	**33.3**	**38.4**	**39.1**	**36.9**	**33.4**	**24.6**	**22.4**	**24.4**	**26.5**	**22.8**	**21.9**	**26.8**	**29.2**	**28.9**	**26.9**	**26.0**		**39.1**	
MIN	**2.4**	**2.3**	**2.3**	**2.4**	**1.9**	**1.8**	**2.8**	**3.9**	**3.3**	**2.5**	**3.3**	**2.8**	**2.8**	**2.7**	**3.3**	**3.0**	**2.4**	**2.6**	**2.8**	**2.8**	**2.6**	**2.8**	**2.9**	**3.1**			**1.8**

POSSIBLE NUMBER OF OBSERVATIONS = 696 ACTUAL NUMBER OF OBSERVATIONS = 618 DATA RECOVERY RATE = 88.8% DATA CAPTURE RATE = 86.2%

MONTHLY MEAN = 11.2 µg/m3

MAXIMUM PM2.5 = 39.1 µg/m3 DATE OF OCCURRENCE = 2/10 at 1100 MAXIMUM DAILY MEAN = 29.1 µg/m3 DATE OF OCCURRENCE = 2/10

SECOND MAXIMUM PM2.5 = 38.4 µg/m3 DATE OF OCCURRENCE = 2/10 at 1000 SECOND MAXIMUM DAILY MEAN = 19.7 µg/m3 DATE OF OCCURRENCE = 2/27

MINIMUM PM2.5 = 1.8 µg/m3 DATE OF OCCURRENCE = 2/13 at 600 MINUMUM DAILY MEAN = 4.2 µg/m3 DATE OF OCCURRENCE = 2/14

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

Draft

CSX AQ5

HOURLY AVERAGES of PM2.5 in µg/m3 for MARCH, 2024

Hr Beg Hr End Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	10.0	7.6	7.8	10.2	9.6	10.2	13.0	19.1	10.8	5.8	6.6	8.0	8.1	7.8	8.1	7.0	6.5	4.6	4.6	5.4	6.2	6.5	6.7	6.5	**8.1**	**19.1**	**4.6**
2	6.2	6.0	6.3	5.3	5.3	6.1	5.6	5.7	4.9	3.6	3.0	1.9	2.6	2.3	2.7	2.9	3.3	4.3	4.4	3.6	6.0	5.3	5.7	6.9	**4.5**	**6.9**	**1.9**
3	8.0	9.4	10.8	11.0	10.2	13.5	12.0	10.5	12.1	10.4	8.3	8.5	7.7	5.7	4.5	4.5	5.1	6.1	5.9	7.4	6.7	10.8	10.2	10.8	**8.7**	**13.5**	**4.5**
4	11.2	14.1	12.6	10.2	10.5	9.6	9.2	8.8	7.8	8.8	9.1	5.2	4.9	4.8	4.3	4.5	3.1	2.5	2.8	2.7	2.8	2.8	2.4	2.6	**6.5**	**14.1**	**2.4**
5	2.6	2.2	1.9	2.2	3.2	3.1	2.8	4.4	3.5	1.3	0.8	1.3	1.9	2.4	2.4	3.9	4.4	5.8	5.1	4.9	4.8	5.6	6.4	6.5	**3.4**	**6.5**	**0.8**
6	7.0	8.2	7.9	9.4	9.6	10.4	10.7	12.0	12.6	11.9	9.5	7.4	6.6	4.7	3.9	3.8	3.8	4.9	6.6	7.6	9.7	9.7	8.4	8.0	**8.0**	**12.6**	**3.8**
7	7.8	5.8	4.4	3.4	3.1	3.3	3.3	3.8	1.6	1.4	1.2	1.2	1.7	1.8	2.2	1.9	1.9	1.7	2.4	3.2	3.4	3.7	3.7	4.2	**3.0**	**7.8**	**1.2**
8	4.8	4.7	5.4	5.0	5.8	6.2	5.8	6.1	4.6	2.2	2.7	4.1	3.0	2.9	3.7	3.9	3.8	3.6	5.1	3.5	4.2	4.5	4.5	4.6	**4.3**	**6.2**	**2.2**
9	4.7	4.9	5.4	5.3	5.8	5.6	6.1	6.7	7.0	6.8	7.4	8.1	8.2	8.9	7.5	6.3	5.6	4.4	3.2	2.1	2.0	3.2	4.4	5.1	**5.6**	**8.9**	**2.0**
10	5.6	5.0	3.4	2.4	2.3	1.9	1.5	2.4	3.6	4.1	4.0	3.3	2.6	2.2	2.3	2.0	1.5	1.5	1.7	2.0	1.8	2.0	1.8	1.9	**2.6**	**5.6**	**1.5**
11	2.0	2.0	2.0	1.9	2.1	2.4	2.8	2.5	3.9	3.1	3.3	3.2	3.3	3.7	3.4	2.9	2.4	2.3	2.5	2.7	2.6	2.6	4.6	4.1	**2.8**	**4.6**	**1.9**
12	3.1	2.9	2.5	2.7	2.8	2.6	3.0	3.2	4.4	5.3	5.8	6.1	6.9	7.4	6.6	6.4	5.8	6.0	6.4	6.9	6.8	6.0	5.7	6.5	**5.0**	**7.4**	**2.5**
13	5.9	6.3	7.8	10.5	12.3	14.4	14.0	18.8	19.4	9.1	9.4	8.8	8.5	8.4	7.9	7.5	7.4	9.7	9.8	14.0	14.4	14.2	17.5	19.8	**11.4**	**19.8**	**5.9**
14	18.2	18.7	22.7	22.4	19.8	18.0	23.8	24.1	23.7	32.0	30.9	27.4	27.5	17.8	9.4	11.8	9.1	9.6	9.1	8.9	9.7	10.5	12.1	13.6	**17.9**	**32.0**	**8.9**
15	17.1	17.7	15.9	16.9	14.8	14.4	11.5	10.0	10.5	10.6	8.5	4.1	3.5	3.4	3.0	3.2	4.1	4.0	4.0	4.5	5.4	3.7	3.0	2.2	**8.1**	**17.7**	**2.2**
16	1.8	2.1	2.8	3.1	3.3	3.4	3.6	4.6	5.2	5.4	4.7	4.3	4.0	3.9	4.0	4.6	4.7	4.9	5.1	5.5	5.7	5.4	5.7	6.3	**4.3**	**6.3**	**1.8**
17	6.6	6.5	6.7	7.4	8.0	8.1	9.0	8.2	4.0	3.2	3.5	3.8	6.3	4.6	4.2	4.3	3.0	3.3	3.0	3.4	3.3	4.1	3.9	3.7	**5.0**	**9.0**	**3.0**
18	3.4	3.5	3.6	3.7	4.5	4.7	5.0	5.3	5.4	5.5	5.3	4.9	5.7	5.0	4.3	4.5	5.6	7.0	5.7	5.1	4.5	3.9	4.1	4.3	**4.7**	**7.0**	**3.4**
19	4.1	4.4	4.7	4.9	4.6	4.3	4.8	5.6	4.9	5.6	4.2	3.6	4.1	4.7	6.0	5.4	5.4	5.8	5.4	4.8	5.0	5.6	6.2	7.0	**5.0**	**7.0**	**3.6**
20	7.0	6.2	5.7	5.7	6.9	6.3	6.1	6.1	6.9	9.2	12.5	9.4	8.0	6.2	10.7	5.5	5.8	12.5	9.8	5.0	3.9	3.6	3.2	3.4	**6.9**	**12.5**	**3.2**
21	3.1	2.9	2.8	3.0	2.7	3.5	3.3	3.6	3.3	3.3	2.9	3.1	3.8	3.4	3.3	3.7	3.3	3.3	3.7	3.6	5.9	6.7	5.1	4.8	**3.6**	**6.7**	**2.7**
22	5.4	4.9	3.8	4.5	4.3	4.8	5.0	4.6	4.3	4.7	5.8	6.3	6.9	6.4	6.2	6.6	6.8	6.9	6.5	7.1	6.4	6.5	6.5	6.5	**5.7**	**7.1**	**3.8**
23	5.9	5.5	5.9	6.2	7.3	6.9	5.6	4.7	5.1	4.6	3.6	2.0	2.2	3.9	2.9	3.3	3.6	5.2	6.6	6.0	5.9	5.0	3.9	3.3	**4.7**	**7.3**	**2.0**
24	3.2	3.2	3.3	3.5	3.9	4.1	4.0	3.5	3.3	3.4	3.5	3.6	3.7	3.7	4.1	4.2	4.4	4.6	4.6	5.1	6.0	6.8	8.1	12.8	**4.6**	**12.8**	**3.2**
25	13.3	7.7	7.1	7.9	6.1	6.3	6.2	5.4	4.6	4.1	4.6	5.4	5.6	6.7	7.7	8.8	8.1	8.4	10.7	8.0	7.4	6.8	7.0	8.1	**7.1**	**13.3**	**4.1**
26	11.6	12.1	11.6	11.2	8.4	7.4	5.3	5.2	5.1	5.5	6.8	8.7	8.3	6.5	8.3	10.3	11.3	12.1	10.5	10.7	8.7	9.0	9.5	10.2	**8.9**	**12.1**	**5.1**
27	9.3	9.9	9.2	11.0	10.5	10.1	11.3	11.9	9.7	8.1	8.4	6.6	5.6	4.8	4.7	3.8	3.3	5.4	5.2	7.1	6.1	6.9	6.6	6.7	**7.5**	**11.9**	**3.3**
28	5.2	5.2	6.4	5.0	4.9	6.0	10.3	12.8	14.2	---	14.5	12.4	9.2	8.2	7.8	8.0	6.0	5.5	6.0	6.7	6.7	7.3	8.2	18.7	**8.4**	**18.7**	**4.9**
29	5.5	5.1	5.2	5.3	5.6	6.1	6.9	6.8	8.1	11.2	13.1	12.5	11.9	8.2	6.6	5.3	4.4	3.6	3.5	3.3	3.9	4.0	4.0	4.0	**6.4**	**13.1**	**3.3**
30	4.0	3.7	3.7	3.8	4.3	5.1	5.1	5.6	6.5	6.8	7.4	7.7	8.0	8.4	8.0	8.8	7.6	6.6	8.2	9.5	11.2	10.1	13.0	15.3	**7.4**	**15.3**	**3.7**
31	16.1	14.1	13.9	14.3	14.3	15.7	17.0	18.5	15.8	10.0	4.4	5.0	4.4	4.6	4.7	3.8	5.0	5.4	5.6	6.8	8.2	10.0	7.6	9.2	**9.7**	**18.5**	**3.8**
MEAN	**7.1**	**6.9**	**6.9**	**7.1**	**7.0**	**7.2**	**7.5**	**8.1**	**7.6**	**6.9**	**7.0**	**6.4**	**6.3**	**5.6**	**5.3**	**5.3**	**5.0**	**5.5**	**5.6**	**5.7**	**6.0**	**6.2**	**6.4**	**7.3**	**6.5**		
MAX	**18.2**	**18.7**	**22.7**	**22.4**	**19.8**	**18.0**	**23.8**	**24.1**	**23.7**	**32.0**	**30.9**	**27.4**	**27.5**	**17.8**	**10.7**	**11.8**	**11.3**	**12.5**	**10.7**	**14.0**	**14.4**	**14.2**	**17.5**	**19.8**		**32.0**	
MIN	**1.8**	**2.0**	**1.9**	**1.9**	**2.1**	**1.9**	**1.5**	**2.4**	**1.6**	**1.3**	**0.8**	**1.2**	**1.7**	**1.8**	**2.2**	**1.9**	**1.5**	**1.5**	**1.7**	**2.0**	**1.8**	**2.0**	**1.8**	**1.9**			**0.8**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 743 DATA RECOVERY RATE = 99.9% DATA CAPTURE RATE = 100.0%

MONTHLY MEAN = 6.5 µg/m3

MAXIMUM PM2.5 = 32.0 µg/m3 DATE OF OCCURRENCE = 3/14 at 1000 MAXIMUM DAILY MEAN = 17.9 µg/m3 DATE OF OCCURRENCE = 3/14

SECOND MAXIMUM PM2.5 = 30.9 µg/m3 DATE OF OCCURRENCE = 3/14 at 1100 SECOND MAXIMUM DAILY MEAN = 11.4 µg/m3 DATE OF OCCURRENCE = 3/13

MINIMUM PM2.5 = 0.8 µg/m3 DATE OF OCCURRENCE = 3/5 at 1100 MINUMUM DAILY MEAN = 2.6 µg/m3 DATE OF OCCURRENCE = 3/10

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

UNDERLINED DATA ARE SUSPECT

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APPENDIX H. HOURLY AQ8 PM_{10} AND $PM_{2.5}$ CONCENTRATION DATA FOR FIRST QUARTER 2024

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CSX AQ8

HOURLY AVERAGES of PM10 in µg/m3 for JANUARY, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	11.9	12.5	16.7	19.3	17.2	18.9	21.0	18.8	18.6	15.6	13.6	7.8	9.3	9.3	10.5	8.5	9.9	8.4	8.3	8.8	13.1	14.6	14.8	12.4	**13.3**	**21.0**	**7.8**
2	11.8	10.0	9.1	9.7	9.0	7.7	9.0	9.0	7.1	7.6	8.0	8.0	6.6	9.6	11.2	11.5	10.1	14.0	16.0	13.7	12.6	11.7	13.0	11.4	**10.3**	**16.0**	**6.6**
3	10.0	12.1	11.2	10.8	10.5	11.0	15.0	18.5	24.1	13.1	20.5	16.2	9.2	12.4	17.3	31.6	19.0	17.0	16.1	29.0	20.6	21.3	14.9	14.5	**16.5**	**31.6**	**9.2**
4	18.8	27.0	14.5	15.8	23.2	20.3	17.9	21.1	24.7	20.9	24.3	24.2	19.8	28.3	28.0	31.1	22.7	7.3	6.1	8.5	5.2	7.3	6.0	10.6	**18.1**	**31.1**	**5.2**
5	14.9	11.1	9.3	9.3	9.7	12.8	9.0	16.7	19.7	25.9	17.1	12.4	20.6	20.3	21.5	24.6	24.4	29.6	31.4	30.3	29.5	27.3	24.0	23.1	**19.8**	**31.4**	**9.0**
6	18.5	17.2	49.7	85.1	50.1	29.4	19.4	90.4	42.4	21.5	22.8	14.9	14.6	14.2	13.6	12.0	10.5	8.1	5.8	5.8	5.4	6.1	7.6	8.4	**23.9**	**90.4**	**5.4**
7	8.4	10.5	11.7	10.5	10.1	9.4	10.2	11.2	14.1	13.3	14.3	9.3	6.3	6.2	6.3	4.1	5.5	5.2	6.0	6.2	6.2	4.5	4.6	4.4	**8.3**	**14.3**	**4.1**
8	5.4	6.3	7.5	9.2	10.2	10.7	12.6	13.4	14.1	15.2	10.5	10.6	8.5	9.2	16.6	10.2	12.2	22.3	19.1	18.3	23.1	30.9	28.5	24.2	**14.5**	**30.9**	**5.4**
9	15.5	12.3	11.7	13.7	24.9	20.4	17.8	17.4	19.8	15.0	14.3	15.6	13.5	16.8	16.3	17.4	17.3	14.0	13.3	6.9	7.2	6.9	5.7	5.9	**14.2**	**24.9**	**5.7**
10	5.8	7.0	6.9	5.8	6.7	7.2	7.0	9.0	5.3	4.8	3.8	5.7	5.4	5.7	5.9	4.7	5.9	3.5	4.3	4.2	3.2	4.8	4.6	4.5	**5.5**	**9.0**	**3.2**
11	5.1	5.0	6.1	5.7	7.1	6.9	10.1	21.1	14.6	13.1	7.5	7.9	8.1	9.1	7.3	9.0	9.3	19.4	57.6	30.8	28.8	23.0	13.4	15.2	**14.2**	**57.6**	**5.0**
12	20.8	20.5	17.2	21.7	19.5	29.0	23.4	58.1	45.2	18.0	20.9	17.7	19.0	17.9	27.2	41.3	23.5	21.5	26.1	28.8	22.5	27.8	17.3	7.9	**24.7**	**58.1**	**7.9**
13	6.6	8.8	6.7	4.7	2.5	4.3	5.4	6.6	7.9	8.6	6.5	4.7	5.5	6.0	5.2	5.7	5.6	7.1	5.9	5.6	4.5	6.6	5.5	6.8	**6.0**	**8.8**	**2.5**
14	5.4	6.1	6.4	6.4	7.6	6.8	7.1	6.6	6.0	7.4	9.3	16.9	7.8	7.7	11.3	9.8	9.6	7.0	6.2	9.5	9.4	9.2	10.1	14.8	**8.5**	**16.9**	**5.4**
15	10.7	9.3	8.8	13.8	9.7	5.9	6.6	7.7	8.2	7.7	7.6	10.0	11.2	10.8	8.2	9.4	8.7	9.2	9.6	10.5	9.7	8.1	7.7	8.4	**9.1**	**13.8**	**5.9**
16	5.9	8.7	10.1	11.7	11.8	12.6	14.0	19.7	20.3	21.0	23.3	25.4	20.1	22.0	18.4	13.8	14.2	12.7	13.0	16.6	14.4	16.4	16.0	18.2	**15.8**	**25.4**	**5.9**
17	19.6	22.5	28.1	25.2	25.2	27.8	40.7	47.0	32.5	24.0	20.5	20.2	17.4	16.1	---	---	22.0	27.3	40.1	35.7	26.6	39.7	39.8	38.0	**28.9**	**47.0**	**16.1**
18	35.1	30.1	43.0	40.9	32.0	33.4	45.8	58.3	63.7	78.6	59.7	51.5	44.0	27.7	16.8	14.8	13.9	22.8	30.1	35.9	28.1	24.0	23.8	33.7	**37.0**	**78.6**	**13.9**
19	24.9	26.8	22.3	22.8	17.9	20.1	19.0	18.7	24.2	27.9	27.9	23.5	23.7	27.7	26.7	31.8	23.5	13.2	14.9	14.6	12.3	15.7	17.6	18.1	**21.5**	**31.8**	**12.3**
20	14.6	13.1	12.4	8.9	6.6	6.0	6.3	10.1	8.7	10.1	12.6	10.8	11.1	10.1	9.2	10.7	10.0	9.7	9.8	14.3	17.2	17.3	14.9	17.5	**11.3**	**17.5**	**6.0**
21	14.5	12.1	10.9	10.0	10.5	13.4	13.8	13.6	13.6	10.9	14.2	12.0	12.0	11.6	13.2	11.9	12.0	15.9	17.9	19.7	20.8	18.3	16.9	15.9	**14.0**	**20.8**	**10.0**
22	16.9	18.5	17.1	17.3	18.2	20.1	25.9	28.8	35.7	38.9	39.9	22.7	21.2	22.7	20.5	19.5	20.7	17.3	22.3	23.2	24.3	23.2	24.5	26.4	**23.6**	**39.9**	**16.9**
23	25.9	25.3	24.5	24.6	21.8	22.2	27.8	25.4	46.9	66.2	60.2	64.6	53.2	38.7	37.0	48.3	30.5	31.0	28.1	27.6	29.8	31.7	34.6	31.6	**35.7**	**66.2**	**21.8**
24	41.1	32.6	29.4	26.7	26.6	27.5	28.8	29.7	32.6	44.7	49.7	54.3	36.2	39.9	37.1	37.8	37.8	36.8	27.8	26.3	28.6	30.8	30.8	37.1	**34.6**	**54.3**	**26.3**
25	33.0	33.5	33.3	33.3	35.0	35.1	35.2	35.3	51.8	54.0	76.5	72.2	74.2	71.2	75.6	89.4	57.5	52.2	21.1	12.1	15.7	12.8	9.3	6.7	**42.8**	**89.4**	**6.7**
26	6.1	5.6	4.8	4.9	4.1	7.6	6.6	11.2	16.0	20.4	15.5	14.6	13.7	12.9	9.9	20.5	25.8	15.3	17.3	18.2	8.5	7.2	5.9	5.3	**11.6**	**25.8**	**4.1**
27	9.2	7.0	6.3	6.1	6.6	8.8	10.9	12.0	14.9	26.8	22.5	12.3	15.9	16.8	14.6	17.0	19.5	20.0	17.3	14.4	20.1	20.2	18.9	19.9	**14.9**	**26.8**	**6.1**
28	18.2	13.5	12.0	8.4	6.4	4.1	3.3	1.9	0.9	10.2	1.3	1.4	2.1	2.1	2.6	2.1	2.7	3.8	4.8	5.9	6.3	6.4	7.5	7.9	**5.7**	**18.2**	**0.9**
29	8.5	6.3	4.7	4.6	3.8	7.9	4.5	6.3	6.4	6.8	10.2	7.3	6.5	6.6	9.9	8.2	7.5	7.2	8.0	9.0	7.6	7.7	7.3	7.4	**7.1**	**10.2**	**3.8**
30	7.3	11.6	7.6	8.1	7.5	8.4	12.6	15.6	17.6	15.4	12.0	11.8	11.9	23.9	19.4	16.2	12.3	16.4	19.5	13.2	14.9	16.0	15.5	14.8	**13.7**	**23.9**	**7.3**
31	12.8	14.6	17.3	11.2	9.3	8.8	8.9	7.8	8.5	8.7	14.2	16.7	16.7	17.0	17.9	15.6	15.3	28.6	24.9	26.4	22.4	19.6	21.1	25.7	**16.3**	**28.6**	**7.8**
MEAN	**14.9**	**14.8**	**15.4**	**16.3**	**14.9**	**15.0**	**16.0**	**21.5**	**21.5**	**21.7**	**21.3**	**19.5**	**17.6**	**17.8**	**17.8**	**19.6**	**16.8**	**16.9**	**17.7**	**17.1**	**16.1**	**16.7**	**15.6**	**16.0**	**17.4**		
MAX	**41.1**	**33.5**	**49.7**	**85.1**	**50.1**	**35.1**	**45.8**	**90.4**	**63.7**	**78.6**	**76.5**	**72.2**	**74.2**	**71.2**	**75.6**	**89.4**	**57.5**	**52.2**	**57.6**	**35.9**	**29.8**	**39.7**	**39.8**	**38.0**		**90.4**	
MIN	**5.1**	**5.0**	**4.7**	**4.6**	**2.5**	**4.1**	**3.3**	**1.9**	**0.9**	**4.8**	**1.3**	**1.4**	**2.1**	**2.1**	**2.6**	**2.1**	**2.7**	**3.5**	**4.3**	**4.2**	**3.2**	**4.5**	**4.6**	**4.4**			**0.9**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 742 DATA RECOVERY RATE = 99.7% DATA CAPTURE RATE = 100.0%

MONTHLY MEAN = 17.4 µg/m3

MAXIMUM PM10 = 90.4 µg/m3 DATE OF OCCURRENCE = 1/6 at 800 MAXIMUM DAILY MEAN = 42.8 µg/m3 DATE OF OCCURRENCE = 1/25

SECOND MAXIMUM PM10 = 89.4 µg/m3 DATE OF OCCURRENCE = 1/25 at 1600 SECOND MAXIMUM DAILY MEAN = 37.0 µg/m3 DATE OF OCCURRENCE = 1/18

MINIMUM PM10 = 0.9 µg/m3 DATE OF OCCURRENCE = 1/28 at 900 MINUMUM DAILY MEAN = 5.5 µg/m3 DATE OF OCCURRENCE = 1/10

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

Draft

CSX AQ8

HOURLY AVERAGES of PM10 in µg/m3 for FEBRUARY, 2024

Hr Beg Hr End Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	24.8	24.8	20.4	20.2	22.1	24.2	25.2	29.5	28.9	22.5	16.9	11.9	11.3	12.4	10.8	11.0	14.9	25.2	14.8	13.9	14.3	16.8	15.8	14.1	**18.6**	**29.5**	**10.8**
2	19.1	26.0	24.5	25.5	24.8	24.6	25.5	23.4	23.7	22.8	19.0	14.5	11.0	7.6	8.5	7.5	10.6	7.4	10.6	5.7	5.1	10.3	6.7	4.4	**15.4**	**26.0**	**4.4**
3	5.6	6.5	3.5	5.1	4.7	6.5	6.9	7.4	9.9	7.9	10.6	9.6	11.6	7.7	11.0	8.7	16.6	34.5	41.5	42.9	50.9	42.5	35.8	24.3	**17.2**	**50.9**	**3.5**
4	19.0	17.4	14.4	13.1	14.3	17.2	18.2	14.1	13.3	19.5	10.8	18.1	31.6	23.7	25.0	17.8	13.5	26.7	93.5	35.9	24.1	88.8	28.0	32.5	**26.3**	**93.5**	**10.8**
5	31.1	26.5	27.2	22.5	17.5	20.1	34.9	47.3	41.9	23.6	20.8	24.1	47.5	42.9	56.0	33.3	66.7	25.2	117.1	41.3	34.0	19.1	50.1	20.7	**37.1**	**117.1**	**17.5**
6	20.1	19.8	17.7	19.3	19.9	18.6	25.1	31.6	30.8	39.4	32.3	27.7	25.8	37.1	74.1	35.5	85.8	22.1	48.8	84.6	91.0	25.6	22.7	18.2	**36.4**	**91.0**	**17.7**
7	31.8	22.7	142.9	37.8	57.8	23.6	66.2	42.4	66.3	32.0	45.9	28.9	20.5	27.6	38.7	59.0	45.3	35.7	39.2	64.1	59.9	86.4	56.5	94.0	**51.1**	**142.9**	**20.5**
8	68.6	46.5	110.0	40.7	97.4	61.3	112.9	75.7	65.3	40.0	57.9	40.0	45.2	49.2	34.9	37.2	25.3	25.4	31.5	14.8	20.2	12.2	11.8	14.1	**47.4**	**112.9**	**11.8**
9	13.2	39.8	16.1	12.8	19.2	17.8	23.5	33.4	49.1	26.2	24.2	29.3	37.8	31.7	37.6	38.6	40.4	25.6	32.1	39.2	63.0	80.9	63.8	55.2	**35.4**	**80.9**	**12.8**
10	40.2	39.2	78.6	53.2	56.0	57.0	54.3	54.7	58.5	57.3	86.7	76.3	63.6	50.8	40.0	53.6	119.9	69.7	66.3	69.5	51.0	26.4	34.0	24.2	**57.5**	**119.9**	**24.2**
11	17.4	14.5	13.9	16.0	12.9	15.6	25.4	35.3	39.9	48.5	38.4	34.0	28.3	20.2	19.8	34.8	23.4	20.0	35.1	26.0	20.7	20.8	21.1	21.9	**25.2**	**48.5**	**12.9**
12	32.9	28.7	23.6	20.6	23.4	25.4	24.9	22.0	25.5	30.1	32.4	37.1	37.1	38.3	32.8	36.7	36.4	32.9	28.1	23.9	21.0	16.2	13.5	12.3	**27.3**	**38.3**	**12.3**
13	10.6	6.8	5.3	4.3	3.6	3.8	4.8	6.2	5.7	4.9	5.3	10.2	14.1	16.0	14.3	16.6	10.8	8.3	8.7	9.8	10.6	11.1	13.0	12.1	**9.0**	**16.6**	**3.6**
14	9.1	7.9	6.7	5.9	7.0	7.0	7.0	6.9	7.5	13.8	9.9	10.5	8.3	9.0	10.5	9.6	8.0	7.2	9.3	9.0	10.7	9.1	11.1	12.1	**8.9**	**13.8**	**5.9**
15	10.1	12.9	16.9	12.7	12.8	13.0	12.3	13.3	12.9	17.6	14.4	13.9	11.7	16.2	17.9	18.1	14.3	11.4	12.0	11.8	14.4	14.1	16.1	17.7	**14.1**	**18.1**	**10.1**
16	14.3	11.0	13.1	10.5	11.7	10.1	9.7	9.8	9.2	13.0	10.4	8.5	10.6	11.1	12.5	8.1	9.3	13.5	34.7	21.9	16.1	13.7	12.2	12.9	**12.8**	**34.7**	**8.1**
17	14.8	8.0	10.1	7.1	8.2	10.1	11.7	11.1	11.5	6.5	6.8	9.5	8.5	9.8	9.5	10.1	9.7	8.9	9.4	9.8	15.3	9.8	8.8	10.7	**9.8**	**15.3**	**6.5**
18	12.0	12.6	15.4	12.4	17.5	12.0	15.2	16.5	15.3	12.5	13.9	8.3	8.7	11.3	9.9	10.0	7.4	9.0	9.0	20.7	8.6	8.1	6.4	6.6	**11.6**	**20.7**	**6.4**
19	8.4	7.2	10.4	7.4	11.5	14.8	20.1	26.7	28.0	23.7	23.8	22.5	16.9	18.4	15.8	17.4	21.5	16.3	21.4	46.3	60.6	44.7	34.3	30.3	**22.9**	**60.6**	**7.2**
20	35.1	37.3	30.8	31.5	24.6	23.0	19.3	15.9	19.4	18.6	18.6	23.3	18.1	19.8	19.4	24.4	35.6	40.9	33.3	24.7	22.1	16.1	15.4	15.8	**24.3**	**40.9**	**15.4**
21	23.5	11.4	8.8	8.6	41.5	17.0	18.1	14.7	15.6	14.5	14.5	16.8	27.9	32.4	28.8	30.6	22.7	14.5	36.6	28.0	20.0	16.9	13.9	15.3	**20.5**	**41.5**	**8.6**
22	20.8	17.2	18.6	46.7	28.6	23.8	28.2	35.2	36.1	28.2	30.0	23.8	27.5	30.3	29.5	21.8	20.3	26.0	24.3	17.4	19.5	30.7	30.7	31.1	**26.9**	**46.7**	**17.2**
23	18.5	23.3	21.7	25.4	23.8	21.8	22.4	29.8	27.9	29.7	31.3	26.5	21.8	20.6	20.4	20.8	18.9	21.6	27.7	23.6	26.2	23.5	31.5	29.1	**24.5**	**31.5**	**18.5**
24	28.0	26.6	25.7	12.4	12.6	15.6	20.6	23.2	25.7	23.6	23.4	21.0	16.9	12.2	12.2	14.8	12.2	11.1	8.0	9.1	7.8	6.5	7.8	7.1	**16.0**	**28.0**	**6.5**
25	7.7	8.4	7.2	6.6	9.7	7.6	7.9	7.3	7.0	13.2	13.2	15.1	23.4	17.3	19.7	23.5	26.2	12.0	11.1	10.4	9.3	8.3	11.7	10.1	**12.2**	**26.2**	**6.6**
26	8.0	8.2	11.1	46.4	17.1	9.5	9.4	11.4	16.7	33.5	43.1	54.2	55.7	67.4	60.6	46.1	49.9	51.8	85.6	48.9	66.5	43.1	31.8	38.9	**38.1**	**85.6**	**8.0**
27	32.4	30.3	33.5	32.7	28.7	29.4	38.4	48.0	65.1	49.7	64.1	45.7	50.1	47.1	42.1	28.6	24.7	20.2	17.2	17.6	15.0	14.3	13.0	16.0	**33.5**	**65.1**	**13.0**
28	19.5	19.8	20.2	19.4	21.2	26.7	40.6	34.6	40.1	27.8	23.1	24.1	---	---	20.1	17.8	15.7	10.6	9.8	11.9	10.7	5.4	3.9	4.8	**19.4**	**40.6**	**3.9**
29	7.1	7.1	6.9	6.3	6.6	8.5	8.3	7.9	10.4	14.7	12.3	11.8	12.2	10.7	12.6	15.6	14.2	11.0	23.3	14.0	14.8	12.5	17.2	19.0	**11.9**	**23.3**	**6.3**
MEAN	**20.8**	**19.6**	**26.0**	**20.1**	**22.6**	**19.5**	**25.4**	**25.4**	**27.8**	**24.7**	**26.0**	**24.0**	**25.1**	**25.0**	**25.7**	**24.4**	**28.3**	**22.2**	**32.4**	**27.5**	**27.7**	**25.3**	**22.0**	**21.6**	**24.5**		
MAX	**68.6**	**46.5**	**142.9**	**53.2**	**97.4**	**61.3**	**112.9**	**75.7**	**66.3**	**57.3**	**86.7**	**76.3**	**63.6**	**67.4**	**74.1**	**59.0**	**119.9**	**69.7**	**117.1**	**84.6**	**91.0**	**88.8**	**63.8**	**94.0**		**142.9**	
MIN	**5.6**	**6.5**	**3.5**	**4.3**	**3.6**	**3.8**	**4.8**	**6.2**	**5.7**	**4.9**	**5.3**	**8.3**	**8.3**	**7.6**	**8.5**	**7.5**	**7.4**	**7.2**	**8.0**	**5.7**	**5.1**	**5.4**	**3.9**	**4.4**			**3.5**

POSSIBLE NUMBER OF OBSERVATIONS = 696 ACTUAL NUMBER OF OBSERVATIONS = 694 DATA RECOVERY RATE = 99.7% DATA CAPTURE RATE = 100.0%

MONTHLY MEAN = 24.5 µg/m3

MAXIMUM PM10 = 142.9 µg/m3 DATE OF OCCURRENCE = 2/7 at 300 MAXIMUM DAILY MEAN = 57.5 µg/m3 DATE OF OCCURRENCE = 2/10

SECOND MAXIMUM PM10 = 119.9 µg/m3 DATE OF OCCURRENCE = 2/10 at 1700 SECOND MAXIMUM DAILY MEAN = 51.1 µg/m3 DATE OF OCCURRENCE = 2/7

MINIMUM PM10 = 3.5 µg/m3 DATE OF OCCURRENCE = 2/3 at 300 MINUMUM DAILY MEAN = 8.9 µg/m3 DATE OF OCCURRENCE = 2/14

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

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HOURLY AVERAGES of PM10 in µg/m3 for MARCH, 2024

Hr Beg Hr End Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	17.9	15.4	22.1	19.5	13.8	99.3	45.3	64.1	40.5	29.2	33.6	100.0	41.7	38.9	26.4	22.2	14.2	13.2	8.8	9.4	10.3	16.2	18.8	15.0	**30.7**	**100.0**	**8.8**
2	13.9	14.0	13.1	12.2	12.2	11.1	11.0	9.5	9.4	9.1	6.4	4.5	4.8	4.8	5.5	5.1	5.9	10.1	7.9	6.4	10.0	8.6	12.5	10.0	**9.1**	**14.0**	**4.5**
3	12.1	11.9	13.2	13.8	12.8	15.5	14.0	12.9	13.8	12.0	13.7	17.9	29.7	14.9	11.7	10.0	12.3	12.3	10.6	9.5	8.6	14.1	18.3	16.1	**13.8**	**29.7**	**8.6**
4	32.3	35.3	23.6	18.4	14.4	27.0	19.1	26.7	22.2	24.5	33.3	18.2	17.5	19.6	21.3	27.9	23.2	21.5	21.3	14.0	12.0	12.0	10.8	9.7	**21.1**	**35.3**	**9.7**
5	5.9	4.3	2.6	4.3	6.1	6.3	5.7	7.4	5.6	2.5	2.7	3.3	2.9	4.5	4.5	6.6	11.1	11.6	7.9	7.6	8.1	9.1	9.8	10.8	**6.3**	**11.6**	**2.5**
6	10.2	14.5	17.6	20.3	17.8	20.9	19.8	21.4	21.5	23.8	23.3	15.1	13.8	9.2	7.0	7.5	6.5	8.1	9.8	11.0	12.9	19.8	13.4	15.4	**15.0**	**23.8**	**6.5**
7	11.8	8.6	7.1	6.3	5.3	5.7	6.0	7.2	4.8	6.3	6.1	7.5	5.9	8.3	8.6	16.1	11.5	7.8	11.7	12.6	8.6	9.8	9.1	8.7	**8.4**	**16.1**	**4.8**
8	11.8	11.9	12.9	10.9	13.0	13.7	13.2	13.3	13.7	10.7	11.9	22.5	17.1	18.1	28.7	10.8	9.9	23.8	18.5	---	---	---	---	---	**15.1**	**28.7**	**9.9**
9	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
10	---	---	---	---	---	---	---	---	---	---	---	---	---	7.6	10.1	12.3	16.4	15.5	11.0	5.1	9.6	6.8	6.8	4.1	**---**	**---**	**---**
11	4.4	11.4	9.9	4.3	4.0	10.1	24.4	11.4	27.9	22.3	27.5	30.2	32.2	36.6	29.5	28.2	14.3	8.8	8.5	8.1	6.3	8.4	16.8	16.3	**16.7**	**36.6**	**4.0**
12	6.0	7.1	9.5	8.0	7.8	13.3	16.6	24.2	26.0	22.9	34.9	18.6	18.7	24.8	22.8	27.3	23.7	34.0	16.1	34.9	17.7	21.6	24.5	35.9	**20.7**	**35.9**	**6.0**
13	18.2	18.3	110.9	25.4	122.5	57.9	73.0	112.1	84.3	29.1	58.7	38.1	39.8	23.2	28.1	16.8	48.3	16.1	42.9	27.2	20.9	65.4	92.5	161.8	**55.5**	**161.8**	**16.1**
14	139.2	166.0	33.5	31.1	66.5	93.4	92.7	129.5	89.7	144.2	128.8	124.8	208.2	81.1	67.5	44.6	31.8	24.5	23.3	20.8	17.6	28.3	30.1	115.6	**80.5**	**208.2**	**17.6**
15	68.5	56.0	54.8	35.1	31.3	29.5	41.4	22.7	18.5	19.8	22.7	35.8	29.9	51.2	33.6	10.8	12.5	9.4	7.7	8.6	8.4	7.2	6.0	4.7	**26.1**	**68.5**	**4.7**
16	4.6	4.3	5.2	6.8	6.3	6.6	6.0	7.7	8.1	8.7	22.7	9.9	7.5	6.9	7.4	12.6	17.5	9.8	34.1	10.0	8.5	12.8	9.2	9.8	**10.1**	**34.1**	**4.3**
17	9.2	8.5	10.5	18.7	15.3	12.0	18.1	11.6	19.9	12.3	7.2	16.3	18.8	12.7	13.8	12.4	17.2	17.5	13.5	15.0	30.4	21.3	92.6	60.8	**20.2**	**92.6**	**7.2**
18	15.1	29.2	16.2	7.3	13.0	16.0	9.5	20.1	47.3	71.4	75.3	23.4	22.8	21.4	19.6	38.8	53.9	65.4	59.5	24.6	8.6	8.8	8.0	16.4	**28.8**	**75.3**	**7.3**
19	35.0	6.8	6.9	11.8	7.1	9.8	22.0	40.4	28.1	20.5	15.0	11.1	25.4	13.0	20.8	10.3	13.8	18.8	15.4	13.4	36.7	39.1	13.2	17.8	**18.8**	**40.4**	**6.8**
20	18.4	10.7	10.9	11.3	19.3	13.5	22.2	15.1	24.2	39.8	41.9	38.2	46.9	45.8	102.6	104.9	91.1	152.2	64.2	33.5	27.2	15.9	9.7	12.4	**40.5**	**152.2**	**9.7**
21	6.7	8.4	7.7	7.3	5.7	7.7	14.0	12.2	8.2	10.8	10.5	14.9	11.3	12.8	13.4	32.9	15.1	9.5	10.3	19.1	37.0	28.1	14.1	45.5	**15.1**	**45.5**	**5.7**
22	30.3	74.8	16.3	14.1	12.0	14.1	14.9	35.2	46.6	30.4	31.9	26.1	29.0	31.1	31.1	26.7	32.1	34.0	23.6	27.9	22.9	27.3	16.5	16.3	**27.7**	**74.8**	**12.0**
23	18.6	15.6	12.1	11.2	10.3	10.1	8.8	6.8	8.4	9.0	7.7	6.1	3.9	6.5	5.9	8.3	6.3	9.3	10.8	8.6	9.6	9.6	6.9	5.5	**9.0**	**18.6**	**3.9**
24	5.3	5.4	5.7	6.5	6.6	6.3	7.6	7.2	9.3	8.2	8.0	6.5	6.5	8.2	11.7	15.6	13.6	11.0	10.5	10.7	13.5	37.5	36.1	37.6	**12.3**	**37.6**	**5.3**
25	23.6	19.2	17.4	19.1	11.9	11.4	13.8	12.2	15.0	14.0	14.5	15.1	17.9	19.5	18.3	30.5	25.1	33.3	27.1	30.3	22.5	21.8	21.0	39.0	**20.6**	**39.0**	**11.4**
26	77.4	31.8	27.1	32.1	28.7	24.3	20.1	20.6	17.7	16.4	18.9	24.3	32.6	30.8	25.5	29.5	24.3	27.9	23.1	26.7	23.5	19.6	19.7	20.2	**26.8**	**77.4**	**16.4**
27	17.9	16.5	16.5	18.7	17.5	20.7	20.6	33.9	44.1	16.2	13.0	11.2	7.9	6.5	7.6	6.4	7.7	12.5	15.4	15.9	16.4	23.9	18.6	19.6	**16.9**	**44.1**	**6.4**
28	11.2	10.9	12.9	7.4	7.3	9.0	16.2	19.9	22.5	21.9	21.4	17.7	15.3	12.9	12.4	12.5	12.3	11.6	11.7	14.1	14.0	12.6	14.2	11.9	**13.9**	**22.5**	**7.3**
29	10.0	11.3	9.3	8.7	11.8	12.7	16.1	18.3	15.7	17.3	21.6	20.6	22.0	16.9	23.3	17.7	15.5	13.1	8.9	9.2	10.5	8.3	8.7	9.4	**14.0**	**23.3**	**8.3**
30	7.8	7.3	7.8	7.7	7.5	9.7	10.3	11.6	11.5	13.1	14.2	14.8	15.9	17.3	21.7	23.0	16.2	13.1	17.3	19.7	28.0	17.9	20.1	25.8	**15.0**	**28.0**	**7.3**
31	22.6	18.9	16.2	16.5	16.6	17.9	20.6	20.8	18.6	12.6	6.2	6.8	6.8	6.9	10.0	6.9	15.9	8.8	9.4	11.6	16.8	24.9	12.4	13.1	**14.1**	**24.9**	**6.2**
MEAN	**23.0**	**22.6**	**18.3**	**14.3**	**18.1**	**20.9**	**21.5**	**26.1**	**24.9**	**23.4**	**25.3**	**24.1**	**26.0**	**20.4**	**21.7**	**21.2**	**20.6**	**22.2**	**18.7**	**16.1**	**16.5**	**19.2**	**20.4**	**27.1**	**21.3**		
MAX	**139.2**	**166.0**	**110.9**	**35.1**	**122.5**	**99.3**	**92.7**	**129.5**	**89.7**	**144.2**	**128.8**	**124.8**	**208.2**	**81.1**	**102.6**	**104.9**	**91.1**	**152.2**	**64.2**	**34.9**	**37.0**	**65.4**	**92.6**	**161.8**		**208.2**	
MIN	**4.4**	**4.3**	**2.6**	**4.3**	**4.0**	**5.7**	**5.7**	**6.8**	**4.8**	**2.5**	**2.7**	**3.3**	**2.9**	**4.5**	**4.5**	**5.1**	**5.9**	**7.8**	**7.7**	**5.1**	**6.3**	**6.8**	**6.0**	**4.1**			**2.5**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 702 DATA RECOVERY RATE = 94.4% DATA CAPTURE RATE = 93.5%

MONTHLY MEAN = 21.3 µg/m3

MAXIMUM PM10 = 208.2 µg/m3 DATE OF OCCURRENCE = 3/14 at 1300 MAXIMUM DAILY MEAN = 80.5 µg/m3 DATE OF OCCURRENCE = 3/14

SECOND MAXIMUM PM10 = 166.0 µg/m3 DATE OF OCCURRENCE = 3/14 at 200 SECOND MAXIMUM DAILY MEAN = 55.5 µg/m3 DATE OF OCCURRENCE = 3/13

MINIMUM PM10 = 2.5 µg/m3 DATE OF OCCURRENCE = 3/5 at 1000 MINUMUM DAILY MEAN = 6.3 µg/m3 DATE OF OCCURRENCE = 3/5

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

UNDERLINED DATA ARE SUSPECT

Draft

CSX AQ8

HOURLY AVERAGES of PM2.5 in µg/m3 for JANUARY, 2024

Hr Beg Hr End Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	8.3	9.3	12.2	14.2	13.3	14.8	16.7	15.0	14.1	12.3	8.9	5.0	5.1	5.8	6.8	6.0	6.8	5.7	5.7	6.3	8.9	10.0	10.5	9.0	**9.6**	**16.7**	**5.0**
2	8.7	7.3	6.6	7.1	5.8	5.2	4.7	4.3	4.0	3.5	4.0	4.1	4.5	5.3	5.9	6.0	5.7	6.9	8.7	8.8	7.7	8.2	8.3	8.5	**6.2**	**8.8**	**3.5**
3	7.4	7.9	6.9	7.4	7.7	6.8	7.8	8.2	9.4	7.9	10.5	7.4	6.0	7.0	8.1	11.6	9.5	9.1	9.4	11.3	13.0	12.1	10.7	10.0	**8.8**	**13.0**	**6.0**
4	10.0	10.3	10.6	10.9	11.5	10.7	9.9	10.7	11.3	12.4	13.6	9.9	5.3	4.2	4.0	3.7	3.6	2.5	2.6	2.9	2.9	3.9	3.6	4.5	**7.3**	**13.6**	**2.5**
5	5.3	5.3	5.4	5.2	4.8	5.6	5.1	7.0	6.8	8.4	7.0	6.0	7.4	7.8	8.0	7.3	8.0	9.3	10.8	12.8	13.3	14.1	15.3	15.0	**8.3**	**15.3**	**4.8**
6	12.6	11.8	14.3	18.6	16.5	11.7	9.7	15.0	12.8	11.9	9.2	9.6	9.7	9.7	8.2	7.5	6.8	5.3	3.9	3.6	3.4	4.1	5.3	6.5	**9.4**	**18.6**	**3.4**
7	7.0	9.3	11.0	9.6	8.5	8.3	8.8	9.5	11.1	10.6	10.5	6.2	3.9	3.2	3.1	2.7	3.0	3.0	3.6	3.8	3.8	2.5	2.7	3.1	**6.2**	**11.1**	**2.5**
8	3.6	4.5	5.4	6.8	7.1	8.0	8.6	8.8	8.7	8.0	5.7	5.7	5.7	6.1	6.8	6.2	6.3	7.4	8.0	8.8	10.1	12.1	12.6	11.4	**7.6**	**12.6**	**3.6**
9	10.5	8.7	8.0	8.4	10.7	8.8	8.7	8.7	7.8	5.9	5.3	5.7	5.5	5.9	5.9	6.5	6.7	5.3	5.5	3.1	3.0	3.1	2.6	2.6	**6.3**	**10.7**	**2.6**
10	2.8	2.9	2.8	2.5	2.3	2.7	2.6	2.7	1.3	0.8	0.8	0.8	0.8	0.8	0.7	0.7	1.6	1.6	2.1	2.4	2.4	2.9	2.8	2.8	**1.9**	**2.9**	**0.7**
11	3.0	3.2	3.3	3.5	4.4	4.4	5.2	6.7	7.7	6.2	4.4	3.3	3.4	3.1	3.0	3.3	3.9	4.6	11.5	9.8	11.2	12.3	7.2	7.2	**5.6**	**12.3**	**3.0**
12	10.2	12.6	10.5	8.8	10.8	12.3	10.5	15.1	14.5	10.1	9.5	7.9	8.0	8.2	8.5	9.9	8.2	8.3	8.8	9.0	8.1	9.4	6.1	3.6	**9.5**	**15.1**	**3.6**
13	3.2	4.4	3.8	3.1	1.6	2.6	2.7	3.0	3.3	3.7	2.9	2.7	2.4	2.6	2.4	2.4	2.5	3.2	3.1	2.8	2.9	3.4	3.2	3.3	**2.9**	**4.4**	**1.6**
14	3.4	3.4	3.7	3.8	4.5	4.3	3.9	3.2	3.2	3.2	3.5	4.0	3.8	3.8	3.3	2.8	2.6	2.5	2.8	3.8	3.6	3.4	4.3	4.7	**3.5**	**4.7**	**2.5**
15	4.1	4.1	3.3	4.3	3.3	3.2	3.7	4.2	4.5	4.4	4.9	6.0	6.6	5.5	5.5	6.4	5.9	5.7	6.2	6.4	6.0	5.0	5.1	5.7	**5.0**	**6.6**	**3.2**
16	3.7	6.1	7.4	8.4	8.5	8.8	9.7	13.9	15.7	18.0	19.4	21.5	17.4	16.9	15.1	9.7	8.1	6.9	6.2	7.2	6.7	6.0	6.0	6.3	**10.5**	**21.5**	**3.7**
17	6.3	6.9	7.9	7.3	7.0	6.0	6.9	9.5	8.1	6.4	4.8	4.1	4.0	4.5	---	---	5.2	6.7	9.7	9.2	9.0	10.2	11.8	13.1	**7.4**	**13.1**	**4.0**
18	13.7	13.4	17.0	16.2	15.0	14.6	13.7	16.3	17.2	20.3	16.2	12.8	12.4	8.6	6.3	5.7	6.0	6.9	9.0	10.7	9.9	9.6	9.8	13.4	**12.2**	**20.3**	**5.7**
19	12.9	13.8	12.8	12.9	12.3	14.5	13.3	13.2	17.2	20.1	20.9	18.5	18.6	22.8	21.9	28.3	21.1	9.8	10.2	10.1	8.6	10.9	13.8	14.1	**15.5**	**28.3**	**8.6**
20	10.8	9.9	8.9	6.0	3.9	3.4	3.4	4.1	3.7	3.4	3.2	3.5	3.1	3.2	3.1	3.6	3.8	4.1	4.8	5.8	6.8	6.4	5.6	5.5	**4.9**	**10.8**	**3.1**
21	5.1	4.9	4.8	5.1	5.6	6.0	5.8	5.3	4.7	4.1	3.7	4.1	4.4	4.8	5.4	5.2	5.7	6.7	8.1	8.5	8.3	9.6	8.2	8.6	**5.9**	**9.6**	**3.7**
22	9.1	10.2	9.9	9.7	10.7	11.5	13.6	15.0	18.2	18.4	15.4	8.9	8.8	9.6	8.9	7.8	8.0	8.4	10.5	11.1	13.0	15.2	15.9	17.7	**11.8**	**18.4**	**7.8**
23	17.2	16.4	16.3	16.0	14.3	13.9	17.2	16.5	21.9	27.5	29.1	27.8	24.1	17.3	14.0	14.8	14.0	14.6	15.0	16.6	17.7	19.8	22.2	22.5	**18.6**	**29.1**	**13.9**
24	24.6	22.4	20.4	19.5	19.8	21.4	22.0	23.6	26.0	30.4	33.9	37.4	27.1	28.7	26.4	27.3	24.8	24.0	21.3	20.9	22.2	23.5	23.4	26.7	**24.9**	**37.4**	**19.5**
25	24.7	25.2	25.4	25.8	25.7	26.7	26.2	27.3	36.9	37.8	46.3	46.8	49.6	46.6	47.9	42.6	28.6	28.7	14.8	8.7	10.6	9.0	6.5	4.8	**28.0**	**49.6**	**4.8**
26	3.9	3.3	3.0	2.8	2.7	3.3	3.6	6.3	8.6	10.2	7.6	7.3	6.8	5.4	3.8	7.3	9.3	7.1	8.2	8.0	5.1	4.6	3.8	3.5	**5.6**	**10.2**	**2.7**
27	4.4	4.4	4.0	3.9	3.9	4.3	5.2	5.6	6.7	9.0	10.2	6.4	7.0	6.8	5.8	6.9	6.9	7.3	7.3	7.2	8.6	8.9	12.0	12.1	**6.8**	**12.1**	**3.9**
28	11.6	9.6	8.6	6.5	4.4	2.5	1.8	1.0	0.5	8.8	0.7	0.8	1.0	1.3	1.4	1.2	1.6	2.2	2.8	3.6	4.4	4.5	5.2	5.1	**3.7**	**11.6**	**0.5**
29	6.4	4.3	3.0	2.6	2.3	4.5	2.5	2.9	2.4	2.0	2.1	1.8	1.8	2.2	3.3	2.9	3.1	3.7	3.5	4.0	4.5	4.9	4.8	4.9	**3.3**	**6.4**	**1.8**
30	4.9	5.7	5.0	5.0	4.5	3.9	3.8	4.4	5.1	5.5	5.3	5.5	6.0	7.2	6.9	6.1	6.1	7.0	7.8	6.9	7.7	7.6	7.7	7.0	**5.9**	**7.8**	**3.8**
31	6.3	6.6	6.7	5.7	5.2	4.9	4.9	4.5	4.6	5.0	5.9	6.3	6.3	6.3	7.8	7.1	7.0	7.3	7.8	9.2	11.6	12.3	12.6	14.3	**7.3**	**14.3**	**4.5**
MEAN	**8.6**	**8.6**	**8.7**	**8.6**	**8.3**	**8.4**	**8.5**	**9.4**	**10.3**	**10.8**	**10.5**	**9.6**	**8.9**	**8.7**	**8.6**	**8.7**	**7.8**	**7.5**	**7.7**	**7.8**	**8.2**	**8.7**	**8.7**	**9.0**	**8.8**		
MAX	**24.7**	**25.2**	**25.4**	**25.8**	**25.7**	**26.7**	**26.2**	**27.3**	**36.9**	**37.8**	**46.3**	**46.8**	**49.6**	**46.6**	**47.9**	**42.6**	**28.6**	**28.7**	**21.3**	**20.9**	**22.2**	**23.5**	**23.4**	**26.7**		**49.6**	
MIN	**2.8**	**2.9**	**2.8**	**2.5**	**1.6**	**2.5**	**1.8**	**1.0**	**0.5**	**0.8**	**0.7**	**0.8**	**0.8**	**0.8**	**0.7**	**0.7**	**1.6**	**1.6**	**2.1**	**2.4**	**2.4**	**2.5**	**2.6**	**2.6**			**0.5**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 742 DATA RECOVERY RATE = 99.7% DATA CAPTURE RATE = 100.0%

MONTHLY MEAN = 8.8 µg/m3

MAXIMUM PM2.5 = 49.6 µg/m3 DATE OF OCCURRENCE = 1/25 at 1300 MAXIMUM DAILY MEAN = 28.0 µg/m3 DATE OF OCCURRENCE = 1/25

SECOND MAXIMUM PM2.5 = 47.9 µg/m3 DATE OF OCCURRENCE = 1/25 at 1500 SECOND MAXIMUM DAILY MEAN = 24.9 µg/m3 DATE OF OCCURRENCE = 1/24

MINIMUM PM2.5 = 0.5 µg/m3 DATE OF OCCURRENCE = 1/28 at 900 MINUMUM DAILY MEAN = 1.9 µg/m3 DATE OF OCCURRENCE = 1/10

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

Draft

CSX AQ8

HOURLY AVERAGES of PM2.5 in µg/m3 for FEBRUARY, 2024

Hr Beg Hr End Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	16.1	15.7	13.7	13.8	14.7	14.7	15.0	16.3	18.9	15.9	11.5	7.5	5.8	5.5	5.6	5.4	6.7	9.2	6.8	7.7	9.2	10.0	9.2	8.7	**10.9**	**18.9**	**5.4**
2	9.8	12.2	12.0	12.9	12.9	13.7	15.2	15.1	15.2	13.7	13.9	9.5	5.6	3.5	3.1	2.7	2.7	2.3	3.3	2.4	2.0	2.9	2.7	2.1	**7.9**	**15.2**	**2.0**
3	2.3	2.3	2.2	2.8	2.9	3.1	3.3	3.4	3.6	3.7	4.1	4.1	4.4	4.2	4.4	4.4	5.4	8.1	9.3	13.9	19.7	24.5	21.1	12.5	**7.0**	**24.5**	**2.2**
4	9.1	9.7	8.7	8.1	8.2	8.0	7.7	7.2	7.9	6.5	5.1	5.5	7.5	7.6	7.9	6.3	5.7	7.4	13.3	12.4	10.1	18.4	16.8	18.7	**9.3**	**18.7**	**5.1**
5	18.4	15.9	14.9	13.5	11.4	11.3	12.8	11.9	10.8	8.1	7.4	7.2	10.2	9.3	10.3	8.8	10.2	8.7	16.6	12.9	9.4	8.0	10.1	8.6	**11.1**	**18.4**	**7.2**
6	8.2	8.1	8.8	8.5	7.6	6.8	8.4	8.9	9.0	8.6	6.5	5.9	5.1	6.1	9.0	5.7	9.5	5.4	8.6	12.3	14.5	8.8	8.9	7.8	**8.2**	**14.5**	**5.1**
7	10.1	7.8	21.0	11.1	11.9	8.2	11.6	8.9	12.0	9.4	10.0	8.6	8.0	9.1	10.1	12.8	12.5	11.6	12.0	17.3	17.9	24.8	17.5	19.4	**12.6**	**24.8**	**7.8**
8	14.9	14.7	23.2	19.0	20.2	16.4	20.2	18.2	17.8	13.7	17.4	14.6	12.8	11.2	9.7	9.9	9.1	8.7	8.6	7.4	7.4	6.4	6.4	6.8	**13.1**	**23.2**	**6.4**
9	6.7	7.4	5.9	5.9	8.3	7.5	9.0	11.3	13.2	10.7	10.3	10.8	12.7	11.1	13.4	15.2	16.8	13.5	16.9	17.6	21.4	24.6	24.0	22.8	**13.2**	**24.6**	**5.9**
10	23.1	24.6	28.0	29.4	28.6	29.4	28.0	27.7	29.5	33.3	36.9	34.4	28.4	15.5	19.7	21.6	30.5	25.5	28.2	28.8	24.0	18.4	21.6	16.7	**26.3**	**36.9**	**15.5**
11	12.7	9.4	8.9	10.4	8.0	8.7	14.7	24.8	23.5	26.3	22.3	22.4	19.3	13.6	12.6	14.1	12.8	12.3	21.7	14.6	13.6	13.4	12.5	12.3	**15.2**	**26.3**	**8.0**
12	14.0	13.5	13.9	13.6	15.0	16.8	15.6	13.5	15.8	17.8	18.4	22.0	23.1	22.7	20.5	22.0	21.2	21.4	20.0	18.2	14.9	11.5	9.6	7.4	**16.7**	**23.1**	**7.4**
13	5.4	3.5	2.7	2.3	1.9	1.9	2.8	4.0	3.0	2.5	3.3	4.9	8.3	7.2	6.9	5.7	5.0	5.3	5.4	5.8	6.3	6.8	8.2	7.1	**4.8**	**8.3**	**1.9**
14	5.4	5.2	4.1	3.7	3.4	3.7	3.9	3.3	2.6	3.0	2.8	2.3	2.4	2.6	2.4	2.5	2.6	2.8	4.2	3.9	4.2	5.2	6.2	6.0	**3.6**	**6.2**	**2.3**
15	6.0	6.5	6.6	6.5	6.9	5.9	5.6	5.7	5.0	5.3	5.1	4.5	4.8	5.3	5.5	5.3	4.5	4.4	5.3	6.1	7.2	8.1	10.2	10.3	**6.1**	**10.3**	**4.4**
16	8.5	4.8	3.4	3.7	3.4	3.4	3.6	3.8	3.5	3.6	3.5	3.6	3.8	3.8	4.1	3.9	3.8	5.5	7.0	5.8	6.3	5.7	6.1	5.8	**4.5**	**8.5**	**3.4**
17	5.0	4.6	5.7	5.3	6.6	8.1	9.9	9.2	9.1	4.4	2.8	3.7	3.6	4.6	4.8	5.0	4.5	4.8	5.6	5.4	6.1	5.3	5.3	6.3	**5.6**	**9.9**	**2.8**
18	7.4	7.8	8.5	7.6	7.8	7.2	7.2	7.9	8.6	7.8	6.9	4.8	4.5	4.9	4.4	4.1	2.9	2.9	3.8	5.4	4.2	3.4	2.7	2.9	**5.6**	**8.6**	**2.7**
19	3.1	3.2	3.5	3.7	4.6	5.5	7.0	8.8	8.9	11.9	9.6	9.3	8.9	9.5	9.4	9.4	9.5	8.4	10.3	15.2	18.7	18.6	20.8	20.2	**9.9**	**20.8**	**3.1**
20	20.5	20.4	17.9	17.8	14.2	13.1	9.7	6.7	5.8	5.0	5.1	6.1	5.6	6.4	6.7	8.6	10.9	11.5	11.3	8.5	6.5	5.6	5.5	4.8	**9.7**	**20.5**	**4.8**
21	5.7	4.9	4.2	3.9	6.0	5.1	5.4	5.0	5.4	5.2	5.2	6.4	7.0	8.0	7.4	8.0	6.1	5.5	8.3	6.8	5.2	5.5	5.3	5.6	**5.8**	**8.3**	**3.9**
22	7.8	6.8	8.7	9.1	7.5	7.7	9.8	10.4	10.4	8.6	7.2	6.6	7.0	6.8	7.3	7.7	7.2	8.4	8.3	8.0	8.7	11.0	14.3	19.0	**8.9**	**19.0**	**6.6**
23	11.1	13.0	13.6	14.3	14.2	13.7	14.8	16.9	18.4	19.7	20.9	18.9	16.0	14.8	14.0	14.0	12.1	11.4	15.6	16.7	18.8	18.5	23.8	22.5	**16.1**	**23.8**	**11.1**
24	22.1	21.1	19.8	9.0	8.7	12.0	16.2	18.5	20.2	18.2	17.1	14.8	12.3	7.3	6.7	6.5	6.0	4.8	3.3	4.2	3.5	3.0	3.2	3.8	**10.9**	**22.1**	**3.0**
25	3.9	3.7	3.5	3.3	3.5	3.7	3.6	3.8	3.3	5.3	4.8	5.0	5.6	5.2	6.1	6.8	7.4	5.1	4.6	5.1	5.0	4.6	5.4	5.4	**4.7**	**7.4**	**3.3**
26	4.5	4.2	4.5	8.0	6.3	5.7	5.8	7.0	8.0	12.7	16.3	15.4	11.1	12.6	11.5	11.6	14.2	13.3	22.5	15.3	21.0	16.7	14.6	16.8	**11.6**	**22.5**	**4.2**
27	16.3	16.7	17.2	18.0	17.8	17.4	20.0	22.0	24.3	23.2	26.1	23.2	24.2	22.0	17.5	13.4	12.6	11.9	11.5	11.4	10.4	9.9	9.3	11.0	**16.9**	**26.1**	**9.3**
28	13.0	13.5	13.1	11.8	12.2	13.4	15.7	16.5	20.5	15.9	14.8	14.6	---	---	11.8	10.9	8.7	6.0	5.6	5.9	4.8	2.5	1.3	2.4	**10.6**	**20.5**	**1.3**
29	2.7	2.7	2.9	2.8	3.1	3.6	3.4	3.4	4.2	5.0	4.9	5.3	5.4	5.1	4.6	4.2	3.7	3.2	4.1	3.9	4.2	4.7	5.4	6.4	**4.1**	**6.4**	**2.7**
MEAN	**10.1**	**9.8**	**10.4**	**9.6**	**9.6**	**9.5**	**10.5**	**11.0**	**11.7**	**11.2**	**11.0**	**10.4**	**9.8**	**8.8**	**8.9**	**8.8**	**9.1**	**8.6**	**10.4**	**10.3**	**10.5**	**10.6**	**10.6**	**10.3**	**10.1**		
MAX	**23.1**	**24.6**	**28.0**	**29.4**	**28.6**	**29.4**	**28.0**	**27.7**	**29.5**	**33.3**	**36.9**	**34.4**	**28.4**	**22.7**	**20.5**	**22.0**	**30.5**	**25.5**	**28.2**	**28.8**	**24.0**	**24.8**	**24.0**	**22.8**		**36.9**	
MIN	**2.3**	**2.3**	**2.2**	**2.3**	**1.9**	**1.9**	**2.8**	**3.3**	**2.6**	**2.5**	**2.8**	**2.3**	**2.4**	**2.6**	**2.4**	**2.5**	**2.6**	**2.3**	**3.3**	**2.4**	**2.0**	**2.5**	**1.3**	**2.1**			**1.3**

POSSIBLE NUMBER OF OBSERVATIONS = 696 ACTUAL NUMBER OF OBSERVATIONS = 694 DATA RECOVERY RATE = 99.7% DATA CAPTURE RATE = 100.0%

MONTHLY MEAN = 10.1 µg/m3

MAXIMUM PM2.5 = 36.9 µg/m3 DATE OF OCCURRENCE = 2/10 at 1100 MAXIMUM DAILY MEAN = 26.3 µg/m3 DATE OF OCCURRENCE = 2/10

SECOND MAXIMUM PM2.5 = 34.4 µg/m3 DATE OF OCCURRENCE = 2/10 at 1200 SECOND MAXIMUM DAILY MEAN = 16.9 µg/m3 DATE OF OCCURRENCE = 2/27

MINIMUM PM2.5 = 1.3 µg/m3 DATE OF OCCURRENCE = 2/28 at 2300 MINUMUM DAILY MEAN = 3.6 µg/m3 DATE OF OCCURRENCE = 2/14

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

Draft

CSX AQ8

HOURLY AVERAGES of PM2.5 in µg/m3 for MARCH, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	7.1	6.7	7.4	6.7	6.4	12.2	13.8	17.2	12.4	7.3	8.7	19.5	11.9	10.2	7.9	6.4	5.6	4.3	3.9	4.3	4.8	6.7	7.2	6.7	**8.5**	**19.5**	**3.9**
2	6.7	6.4	6.4	5.9	5.9	5.9	5.8	5.5	4.8	4.2	2.9	2.2	2.2	2.6	2.9	3.0	3.2	5.3	3.9	3.1	5.7	4.9	7.2	6.2	**4.7**	**7.2**	**2.2**
3	7.5	7.9	9.2	10.0	9.5	10.8	10.4	9.0	9.8	8.0	7.4	8.3	9.4	6.8	5.4	5.2	5.3	5.0	5.9	5.4	5.4	7.5	9.9	8.3	**7.8**	**10.8**	**5.0**
4	13.0	16.3	12.6	10.2	8.9	9.6	9.4	10.3	8.3	8.8	10.2	5.1	4.4	4.8	5.1	5.4	4.2	4.1	5.0	4.3	4.0	4.4	3.8	3.4	**7.3**	**16.3**	**3.4**
5	3.0	2.3	1.8	2.1	3.2	3.2	2.9	4.2	3.1	1.0	1.1	1.1	1.3	2.1	2.2	3.4	4.9	5.7	3.8	4.0	4.3	5.2	6.0	6.1	**3.2**	**6.1**	**1.0**
6	6.5	8.2	8.7	10.0	10.1	11.3	11.5	12.8	13.7	12.6	10.8	8.0	7.6	5.0	3.7	3.8	3.7	4.8	6.1	7.3	8.8	9.0	8.2	7.8	**8.3**	**13.7**	**3.7**
7	7.1	5.6	4.3	3.4	3.0	2.9	3.1	3.2	1.5	1.5	1.3	1.2	1.4	1.8	2.2	2.2	2.1	1.7	2.6	3.3	3.1	3.1	3.3	3.8	**2.8**	**7.1**	**1.2**
8	4.6	4.4	5.4	4.6	5.4	5.7	5.4	5.8	5.3	3.5	3.7	4.7	3.8	4.5	6.0	4.4	4.4	6.1	5.4	---	---	---	---	---	**4.9**	**6.1**	**3.5**
9	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
10	---	---	---	---	---	---	---	---	---	---	---	---	---	2.3	2.2	2.1	2.3	2.0	1.9	1.4	1.8	1.8	1.7	1.7	**---**	**---**	**---**
11	1.8	2.2	2.0	1.5	1.8	2.3	3.0	2.3	3.0	2.8	2.9	2.7	3.2	3.4	3.3	3.3	2.5	2.4	2.4	2.4	2.3	3.0	3.1	3.4	**2.6**	**3.4**	**1.5**
12	2.7	2.9	2.3	2.4	2.4	2.7	3.0	3.4	4.1	4.7	6.0	5.6	5.8	6.3	6.0	5.9	5.5	6.4	5.3	6.9	5.7	5.4	5.9	6.6	**4.7**	**6.9**	**2.3**
13	5.6	5.8	15.8	7.1	18.2	11.1	12.4	18.4	18.2	8.2	10.1	9.1	9.0	7.5	7.4	6.8	9.6	6.9	9.4	9.6	8.8	13.0	17.1	20.5	**11.0**	**20.5**	**5.6**
14	24.1	26.7	15.4	14.5	16.8	18.9	17.2	23.3	20.3	30.2	34.0	34.6	36.1	22.2	12.8	11.0	8.1	8.2	8.0	7.6	8.1	10.1	11.1	19.4	**18.2**	**36.1**	**7.6**
15	16.8	16.1	15.1	13.5	12.2	12.1	11.0	9.2	9.4	9.7	8.0	4.5	3.0	4.7	3.7	3.3	3.4	3.5	3.9	4.1	4.6	3.6	2.9	2.3	**7.5**	**16.8**	**2.3**
16	1.7	1.9	2.7	3.0	3.0	3.0	3.2	3.9	4.7	4.9	5.1	4.0	3.6	3.6	3.9	4.7	4.6	4.4	6.6	5.2	4.8	5.0	4.8	5.4	**4.0**	**6.6**	**1.7**
17	5.4	5.1	5.7	6.5	6.4	6.5	7.2	6.8	4.8	3.1	2.8	3.9	4.1	4.0	4.0	3.7	3.2	3.5	3.2	3.4	4.1	4.9	8.9	5.6	**4.8**	**8.9**	**2.8**
18	3.7	4.2	3.7	3.5	4.2	4.3	4.6	4.9	5.6	6.3	7.0	4.6	4.9	4.5	4.3	9.9	5.7	6.7	6.2	4.4	3.6	4.0	3.9	4.5	**4.9**	**9.9**	**3.5**
19	5.6	4.0	4.3	4.6	4.2	3.9	5.3	5.7	5.0	4.4	3.9	3.3	4.2	3.8	4.6	3.9	4.1	4.7	4.6	4.1	5.7	7.5	4.9	5.8	**4.6**	**7.5**	**3.3**
20	5.5	4.6	4.4	4.2	4.9	4.6	5.8	4.7	5.5	6.7	7.2	6.4	6.6	5.6	7.7	9.0	8.9	13.3	8.1	4.7	4.0	3.3	3.1	3.4	**5.9**	**13.3**	**3.1**
21	2.7	2.9	2.7	2.9	2.7	2.7	3.0	2.9	2.5	2.3	2.6	3.0	2.8	3.1	3.2	4.6	3.2	3.6	3.3	4.6	6.4	6.0	4.7	7.2	**3.5**	**7.2**	**2.3**
22	6.4	10.3	3.9	4.5	4.5	4.9	5.4	7.8	8.0	7.5	8.5	7.8	9.3	7.8	7.8	8.4	8.6	9.6	7.5	8.6	7.9	8.1	6.7	6.8	**7.3**	**10.3**	**3.9**
23	7.2	6.4	6.0	6.4	7.1	6.9	5.6	4.5	5.2	4.8	3.7	2.3	2.2	3.6	2.7	3.3	3.6	4.9	6.1	5.5	5.2	4.6	3.7	3.0	**4.7**	**7.2**	**2.2**
24	2.9	3.1	3.3	3.3	3.4	3.6	3.6	3.5	3.3	3.4	3.4	3.4	3.5	3.8	4.2	4.8	4.6	5.1	4.9	5.3	5.9	8.4	8.7	9.4	**4.5**	**9.4**	**2.9**
25	9.6	8.3	7.0	7.6	6.1	6.2	6.3	5.7	5.5	5.0	5.7	6.2	7.2	7.5	7.9	9.4	8.9	9.4	10.0	10.4	7.8	7.5	6.6	6.7	**7.4**	**10.4**	**5.0**
26	10.0	9.4	8.8	9.9	8.8	7.5	6.4	6.4	5.5	5.6	6.6	8.7	9.3	7.6	9.8	12.0	11.6	12.2	9.3	10.7	10.4	8.1	9.3	10.0	**8.9**	**12.2**	**5.5**
27	9.5	10.2	9.7	11.7	11.1	11.3	12.0	13.4	14.2	8.9	7.8	6.7	4.9	4.0	4.5	4.0	4.4	5.6	5.3	6.9	6.5	8.3	6.5	6.9	**8.0**	**14.2**	**4.0**
28	5.7	6.2	6.8	5.1	4.9	5.8	9.8	12.1	13.9	14.2	13.0	10.6	8.2	7.2	6.9	7.0	5.6	5.0	5.4	6.3	6.5	6.3	6.8	5.5	**7.7**	**14.2**	**4.9**
29	4.6	5.2	4.7	4.5	5.1	5.4	6.2	6.8	7.4	9.5	10.9	11.2	10.2	7.1	5.0	4.2	3.8	3.2	3.1	3.0	3.2	3.4	3.5	3.6	**5.6**	**11.2**	**3.0**
30	3.3	3.2	3.3	3.6	3.6	4.6	4.4	5.3	6.0	6.3	6.8	7.1	7.4	8.0	8.5	9.9	7.8	6.5	7.3	9.7	10.5	9.1	11.5	14.2	**6.9**	**14.2**	**3.2**
31	14.8	13.1	11.7	12.1	12.3	13.7	15.3	15.8	13.6	8.9	4.0	4.3	4.3	4.2	4.9	4.0	5.4	4.4	5.0	6.7	8.8	10.1	8.0	8.7	**8.9**	**15.8**	**4.0**
MEAN	**7.1**	**7.2**	**6.7**	**6.4**	**6.8**	**7.0**	**7.3**	**8.1**	**7.7**	**7.0**	**7.1**	**6.9**	**6.6**	**5.7**	**5.4**	**5.6**	**5.3**	**5.6**	**5.4**	**5.6**	**5.8**	**6.3**	**6.5**	**7.0**	**6.5**		
MAX	**24.1**	**26.7**	**15.8**	**14.5**	**18.2**	**18.9**	**17.2**	**23.3**	**20.3**	**30.2**	**34.0**	**34.6**	**36.1**	**22.2**	**12.8**	**12.0**	**11.6**	**13.3**	**10.0**	**10.7**	**10.5**	**13.0**	**17.1**	**20.5**		**36.1**	
MIN	**1.7**	**1.9**	**1.8**	**1.5**	**1.8**	**2.3**	**2.9**	**2.3**	**1.5**	**1.0**	**1.1**	**1.1**	**1.3**	**1.8**	**2.2**	**2.1**	**2.1**	**1.7**	**1.9**	**1.4**	**1.8**	**1.8**	**1.7**	**1.7**			**1.0**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 702 DATA RECOVERY RATE = 94.4% DATA CAPTURE RATE = 93.5%

MONTHLY MEAN = 6.5 µg/m3

MAXIMUM PM2.5 = 36.1 µg/m3 DATE OF OCCURRENCE = 3/14 at 1300 MAXIMUM DAILY MEAN = 18.2 µg/m3 DATE OF OCCURRENCE = 3/14

SECOND MAXIMUM PM2.5 = 34.6 µg/m3 DATE OF OCCURRENCE = 3/14 at 1200 SECOND MAXIMUM DAILY MEAN = 11.0 µg/m3 DATE OF OCCURRENCE = 3/13

MINIMUM PM2.5 = 1.0 µg/m3 DATE OF OCCURRENCE = 3/5 at 1000 MINUMUM DAILY MEAN = 2.6 µg/m3 DATE OF OCCURRENCE = 3/11

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

UNDERLINED DATA ARE SUSPECT

Draft

APPENDIX I. MODULAIR PM_{10} AND $PM_{2.5}$ COLLOCATION AND COMPARISON DATA

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MODULAIR PM COLLOCATION & COMPARISON SHEET

As Found

SITE NAME	AQ8A	**Date**	1/1/2024	**Start Time**	1:00
PROJECT	CSX	**Date**	3/28/2024	**Stop Time**	10:00

REFERENCE STANDARD:

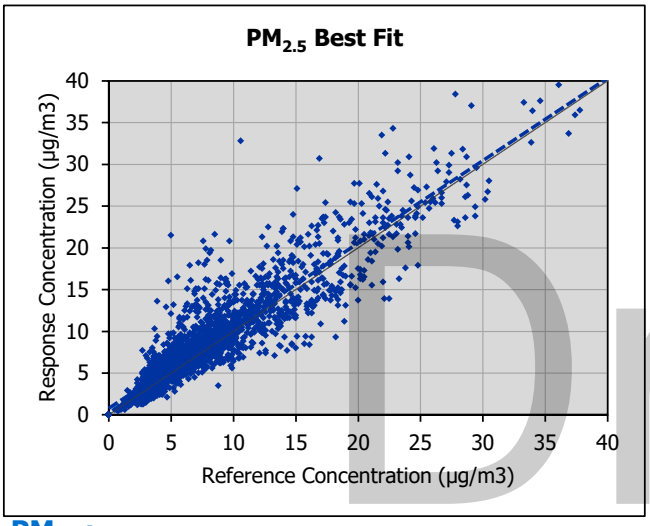
Reference: AQ8 **Serial #:** 1689

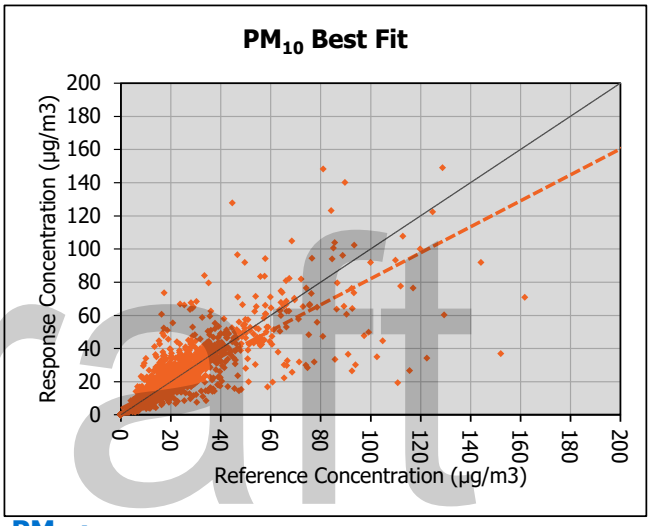
Model: T640X

Analyzer:

Analyzer s/n MOD264

Anal. Range 0- 2000 **µg/m3**





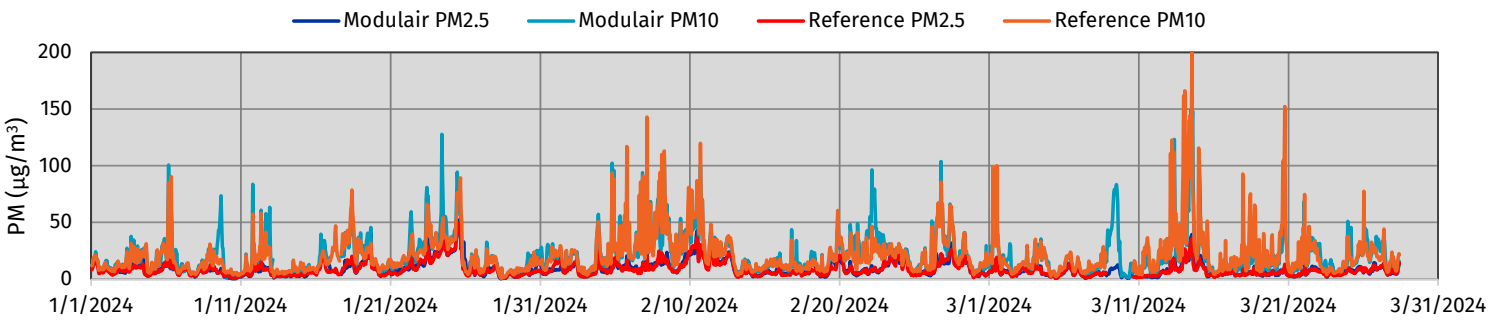
Draft

$PM_{2.5}$:

Correlation Coefficent(r2)	0.861	≥ 0.70
Slope(m)	0.989	1.0 ± 0.35
Intercept(b)	0.776	0 ± 5.0
RMSE	2.881	≤ 7.0
Precision CV(%)	19.150	≤ 30.0
Precision SD	2.789	≤ 5.0

PM_{10}:

Correlation Coefficent(r2)	0.684	≥ 0.70
Slope(m)	0.782	1.0 ± 0.35
Intercept(b)	3.820	0 ± 5.0
RMSE	13.672	≤ 7.0
Precision CV(%)	23.440	≤ 30.0
Precision SD	13.659	≤ 5.0



= cell containing equations

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MODULAIR PM COLLOCATION & COMPARISON SHEET

As Found

SITE NAME	AQ5A	**Date**	1/1/2024	**Start Time**	1:00
PROJECT	CSX	**Date**	3/28/2024	**Stop Time**	10:00

REFERENCE STANDARD:

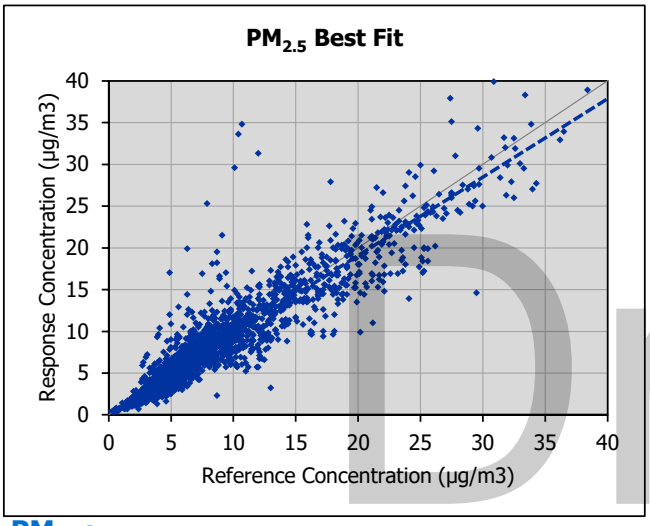
Reference: AQ5 **Serial #:** 1690

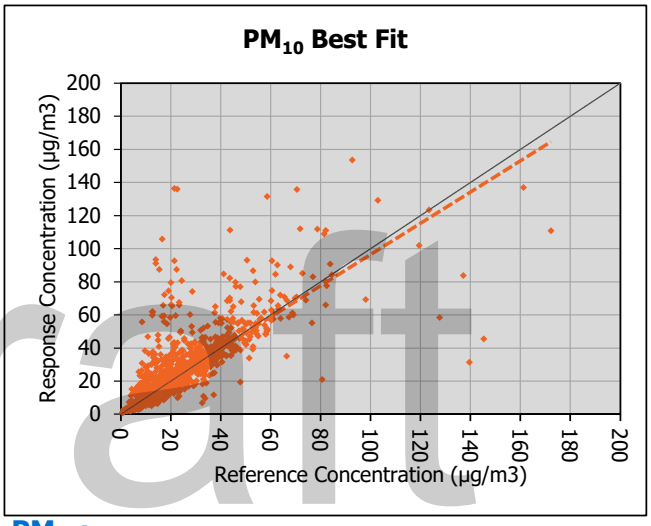
Model: T640X

Analyzer:

Analyzer s/n MOD266

Anal. Range 0- 2000 **µg/m3**





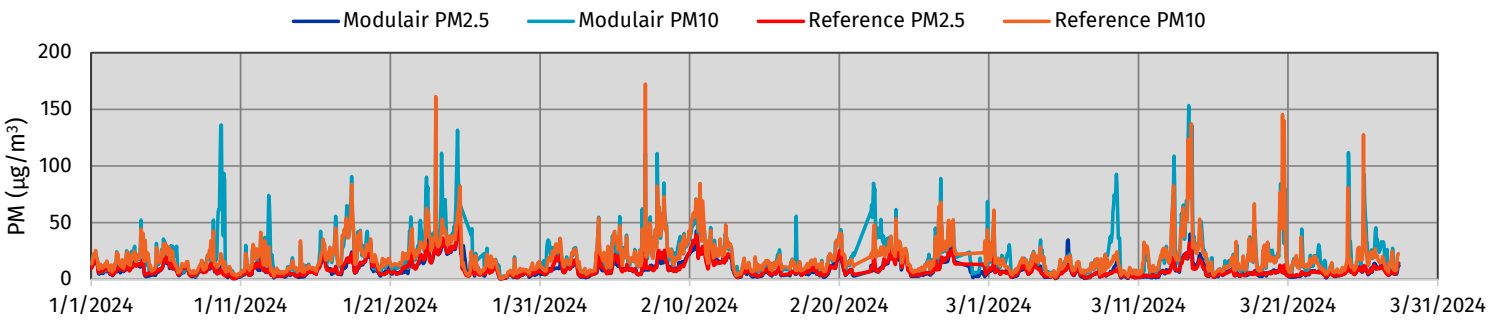
Draft

$PM_{2.5}$:

Correlation Coefficent(r2)	0.881	≥ 0.70
Slope(m)	0.941	1.0 ± 0.35
Intercept(b)	0.274	0 ± 5.0
RMSE	2.577	≤ 7.0
Precision CV(%)	18.350	≤ 30.0
Precision SD	2.573	≤ 5.0

PM_{10}:

Correlation Coefficent(r2)	0.658	≥ 0.70
Slope(m)	0.952	1.0 ± 0.35
Intercept(b)	1.944	0 ± 5.0
RMSE	10.996	≤ 7.0
Precision CV(%)	23.880	≤ 30.0
Precision SD	10.956	≤ 5.0



= cell containing equations

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MODULAIR PM COLLOCATION & COMPARISON SHEET

As Found

SITE NAME	AQ5B	**Date**	1/1/2024	**Start Time**	1:00
PROJECT	CSX	**Date**	3/28/2024	**Stop Time**	10:00

REFERENCE STANDARD:

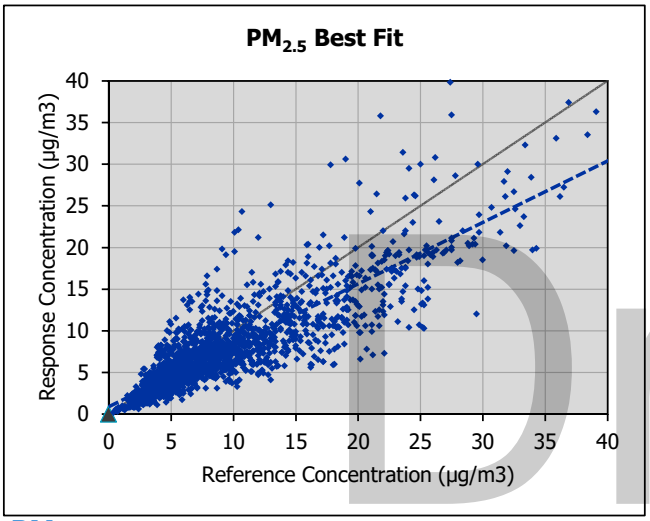
Reference: AQ5 **Serial #:** 1690

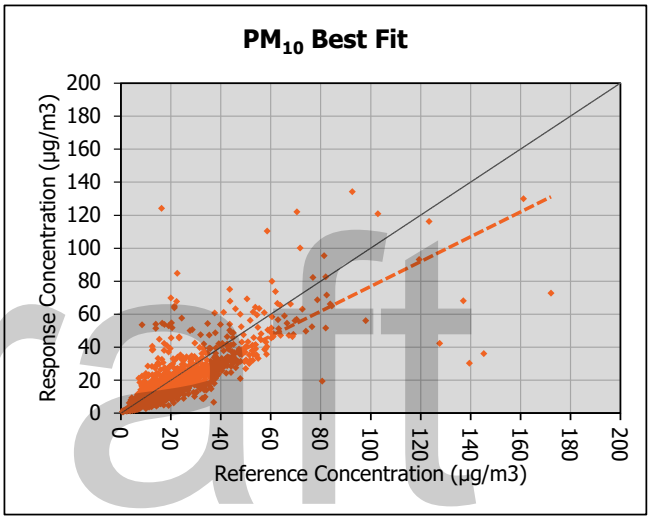
Model: T640X

Analyzer:

Analyzer s/n MOD387

Anal. Range 0- 2000 **µg/m3**





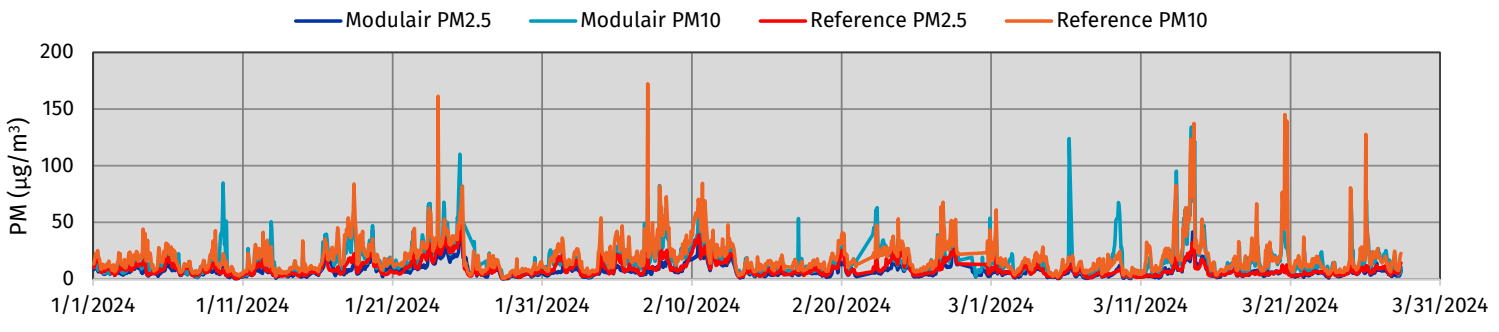
Draft

$PM_{2.5}$:

Correlation Coefficent(r2)	0.773	≥ 0.70
Slope(m)	0.746	1.0 ± 0.35
Intercept(b)	0.775	0 ± 5.0
RMSE	3.644	≤ 7.0
Precision CV(%)	23.520	≤ 30.0
Precision SD	3.408	≤ 5.0

PM_{10}:

Correlation Coefficent(r2)	0.673	≥ 0.70
Slope(m)	0.759	1.0 ± 0.35
Intercept(b)	1.425	0 ± 5.0
RMSE	10.120	≤ 7.0
Precision CV(%)	23.850	≤ 30.0
Precision SD	9.652	≤ 5.0



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MODULAIR PM COLLOCATION & COMPARISON SHEET

As Found

SITE NAME	AQ5C	**Date**	1/1/2024	**Start Time**	1:00
PROJECT	CSX	**Date**	3/28/2024	**Stop Time**	10:00

REFERENCE STANDARD:

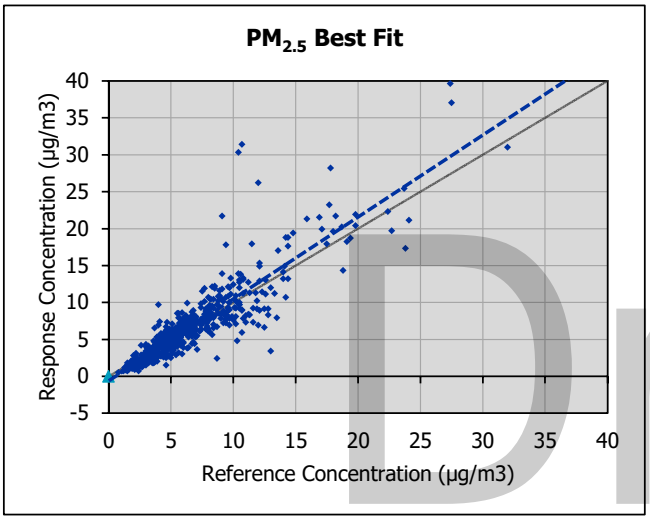
Reference: AQ5 **Serial #:** 1690

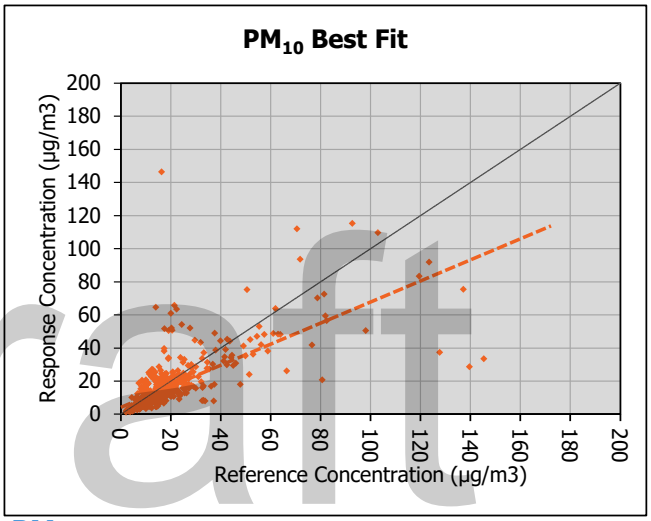
Model: T640X

Analyzer:

Analyzer s/n MOD388

Anal. Range 0- 2000 **µg/m3**





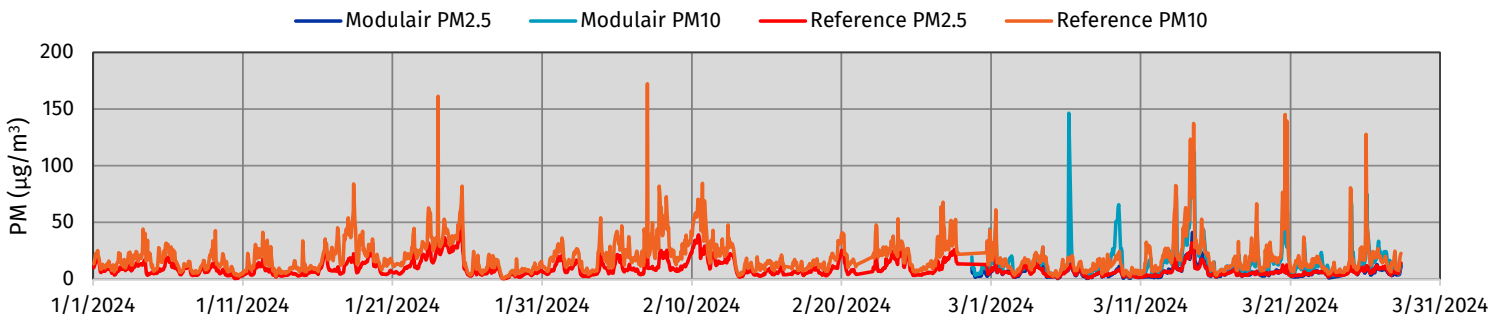
Draft

$PM_{2.5}$:

Correlation Coefficent(r2)	0.840	≥ 0.70
Slope(m)	1.083	1.0 ± 0.35
Intercept(b)	-0.383	0 ± 5.0
RMSE	10.041	≤ 7.0
Precision CV(%)	19.860	≤ 30.0
Precision SD	7.791	≤ 5.0

PM_{10}:

Correlation Coefficent(r2)	0.568	≥ 0.70
Slope(m)	0.667	1.0 ± 0.35
Intercept(b)	3.021	0 ± 5.0
RMSE	20.603	≤ 7.0
Precision CV(%)	16.540	≤ 30.0
Precision SD	15.918	≤ 5.0



= cell containing equations

CSX AQ5A Modulair

HOURLY AVERAGES of PM10 in µg/m3 for JANUARY, 2024

Hr Beg Hr End Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	13.3	17.6	20.6	20.6	19.2	16.3	19.0	16.4	16.8	18.7	10.3	6.4	5.5	6.6	6.6	7.4	8.6	7.0	6.5	6.7	8.7	9.1	9.3	7.5	**11.9**	**20.6**	**5.5**
2	9.1	7.9	8.0	9.1	7.6	5.8	10.3	10.3	9.3	4.9	7.7	6.3	8.2	12.1	14.4	14.8	24.3	15.2	19.4	12.2	10.0	9.6	8.9	8.4	**10.6**	**24.3**	**4.9**
3	8.9	15.5	10.3	8.4	10.0	11.5	13.3	18.2	25.2	15.2	23.4	15.6	13.5	17.0	15.2	22.2	24.6	20.1	24.3	21.5	27.0	29.2	19.6	16.4	**17.8**	**29.2**	**8.4**
4	17.8	21.4	18.2	17.5	17.2	17.8	29.3	52.2	30.8	30.1	31.4	20.2	16.3	14.8	18.8	12.2	13.7	15.3	22.3	18.4	6.8	7.2	8.0	7.0	**19.4**	**52.2**	**6.8**
5	5.1	5.6	6.4	6.8	6.6	6.8	9.3	13.8	31.7	20.7	12.6	13.7	13.4	17.5	15.1	17.1	26.2	25.9	21.7	35.5	31.4	32.9	28.6	28.4	**18.0**	**35.5**	**5.1**
6	20.6	20.6	23.0	23.2	25.1	18.6	16.0	29.6	23.2	24.1	29.2	19.4	20.3	21.7	24.1	23.4	29.2	17.4	7.0	5.9	4.3	5.3	5.1	5.0	**18.4**	**29.6**	**4.3**
7	6.7	8.3	7.0	6.1	6.5	7.3	8.3	8.9	8.5	9.7	9.9	7.9	6.7	5.6	4.5	3.0	3.5	3.9	5.4	5.2	6.1	3.1	2.3	3.2	**6.2**	**9.9**	**2.3**
8	3.5	4.1	5.5	6.7	8.1	7.5	8.2	9.1	11.0	13.5	8.9	8.2	9.3	10.7	13.7	12.1	14.9	19.2	21.5	19.9	17.5	24.1	17.7	26.0	**12.5**	**26.0**	**3.5**
9	14.7	28.9	19.0	52.2	16.4	14.2	16.8	16.4	17.4	22.2	46.8	59.6	61.8	61.6	105.7	135.8	136.2	65.6	59.1	38.3	93.3	87.3	16.3	10.5	**49.8**	**136.2**	**10.5**
10	9.0	6.1	4.0	5.3	8.5	7.7	6.7	7.5	4.3	6.1	7.4	2.0	3.5	4.1	2.4	2.1	2.2	2.9	2.6	3.8	3.2	2.8	3.2	2.7	**4.6**	**9.0**	**2.0**
11	6.4	8.0	3.8	6.2	5.7	4.7	9.9	29.9	20.7	14.6	10.7	9.8	7.8	8.9	10.0	12.1	11.1	13.0	26.8	26.9	27.0	21.9	18.6	21.3	**14.0**	**29.9**	**3.8**
12	19.3	19.4	14.4	16.2	18.4	18.4	16.6	41.0	27.6	22.7	16.9	11.8	15.1	16.9	36.9	14.8	17.1	13.6	20.6	46.4	74.0	66.0	47.8	15.0	**26.1**	**74.0**	**11.8**
13	17.1	21.6	---	---	2.2	3.5	5.6	6.4	7.0	6.8	6.2	4.2	6.0	5.3	5.1	5.9	5.0	5.7	5.7	4.3	3.5	3.6	3.3	4.0	**6.3**	**21.6**	**2.2**
14	4.5	5.7	11.1	8.9	9.2	10.8	7.0	10.8	12.1	15.3	18.8	13.9	8.3	7.3	8.7	5.9	8.0	5.3	4.9	5.4	8.0	6.4	9.0	30.0	**9.8**	**30.0**	**4.5**
15	9.8	4.7	4.7	8.2	---	7.1	12.0	12.1	10.3	8.4	11.4	12.7	13.2	9.2	9.0	10.0	9.0	9.2	10.3	9.2	10.0	7.6	7.5	8.2	**9.3**	**13.2**	**4.7**
16	7.2	10.1	10.1	11.7	11.7	18.9	24.6	42.2	24.8	22.8	31.0	35.0	26.0	30.6	23.9	19.4	17.5	13.4	17.1	21.0	18.3	18.6	25.5	25.4	**21.1**	**42.2**	**7.2**
17	16.0	14.8	18.7	23.1	24.9	28.5	41.2	55.7	46.8	21.6	17.9	13.8	12.2	12.0	12.6	10.7	11.1	19.6	34.3	27.9	30.0	35.5	35.7	41.2	**25.2**	**55.7**	**10.7**
18	52.2	64.9	46.1	54.6	37.4	45.5	56.6	65.4	68.4	90.6	58.6	45.0	40.7	21.1	10.4	12.1	11.7	18.8	33.0	42.1	30.4	29.6	31.9	43.2	**42.1**	**90.6**	**10.4**
19	25.7	30.2	20.5	29.7	24.4	23.4	18.5	21.4	33.1	39.8	42.3	32.3	27.2	32.8	31.2	34.5	23.8	14.6	15.4	13.9	9.3	13.4	16.1	14.0	**24.5**	**42.3**	**9.3**
20	12.1	8.3	10.5	9.4	7.1	7.0	5.9	7.7	6.7	12.2	15.9	15.4	12.3	11.1	12.1	9.7	13.1	11.8	15.3	16.8	15.8	14.0	13.0	13.3	**11.5**	**16.8**	**5.9**
21	10.4	10.0	7.9	10.4	12.9	12.1	12.9	10.4	9.6	11.0	11.9	10.5	10.0	10.8	11.4	10.7	11.7	12.1	10.5	15.6	11.1	12.9	15.1	12.8	**11.4**	**15.6**	**7.9**
22	16.4	13.5	14.1	9.7	18.7	27.7	42.5	39.5	55.1	45.9	41.1	20.8	21.6	21.4	18.5	16.8	20.9	19.7	25.3	29.5	28.2	32.1	49.2	51.9	**28.3**	**55.1**	**9.7**
23	45.9	43.1	35.6	30.5	27.7	25.8	36.2	40.3	79.8	90.0	74.5	81.2	48.3	37.8	40.9	37.4	25.9	25.6	29.3	30.2	40.7	33.6	35.7	35.5	**43.0**	**90.0**	**25.6**
24	136.8	34.6	28.9	30.5	35.1	39.0	39.3	46.4	65.0	111.2	86.5	55.1	43.1	57.8	57.2	70.2	57.7	41.7	32.6	34.0	31.4	31.0	35.3	38.5	**51.6**	**136.8**	**28.9**
25	33.6	36.4	40.1	38.9	41.4	46.5	38.2	53.1	67.8	82.1	---	131.5	92.6	70.7	82.8	65.8	---	---	---	---	---	---	---	---	**---**	**---**	**---**
26	---	---	---	---	---	---	---	---	---	38.6	44.7	19.0	14.4	14.9	5.8	17.4	22.8	16.4	---	---	---	---	---	---	**---**	**---**	**---**
27	---	---	---	---	---	22.7	8.0	8.4	10.7	23.6	27.3	15.2	18.3	12.1	9.0	15.5	18.4	13.6	11.2	11.1	15.0	13.2	14.6	16.0	**14.9**	**27.3**	**8.0**
28	17.6	14.3	14.3	10.8	11.1	12.3	7.3	1.1	0.8	0.9	1.2	1.6	2.5	3.2	3.2	1.9	2.4	2.5	1.9	2.6	5.0	5.9	6.1	6.5	**5.7**	**17.6**	**0.8**
29	6.0	4.8	3.2	3.1	2.1	3.3	19.8	8.6	4.3	4.3	5.1	3.8	4.2	5.3	6.8	5.9	5.2	6.6	4.8	5.7	6.1	6.4	5.9	7.1	**5.8**	**19.8**	**2.1**
30	7.0	6.2	7.1	6.9	6.6	3.4	3.8	7.6	6.3	10.0	7.4	9.8	6.9	6.1	6.0	5.8	6.1	7.0	8.2	13.4	11.4	9.5	11.5	9.2	**7.6**	**13.4**	**3.4**
31	9.6	11.8	11.1	14.8	12.8	16.4	12.3	10.0	14.0	15.4	28.7	32.6	34.6	33.6	32.3	25.2	21.6	17.9	24.5	27.8	25.7	20.7	23.8	27.9	**21.0**	**34.6**	**9.6**
MEAN	**19.4**	**17.2**	**15.2**	**17.1**	**15.5**	**16.4**	**18.5**	**23.3**	**25.0**	**27.5**	**24.9**	**23.7**	**20.1**	**19.4**	**21.1**	**21.2**	**20.1**	**16.0**	**18.0**	**19.0**	**21.0**	**20.4**	**18.1**	**18.5**	**19.9**		
MAX	**136.8**	**64.9**	**46.1**	**54.6**	**41.4**	**46.5**	**56.6**	**65.4**	**79.8**	**111.2**	**86.5**	**131.5**	**92.6**	**70.7**	**105.7**	**135.8**	**136.2**	**65.6**	**59.1**	**46.4**	**93.3**	**87.3**	**49.2**	**51.9**		**136.8**	
MIN	**3.5**	**4.1**	**3.2**	**3.1**	**2.1**	**3.3**	**3.8**	**1.1**	**0.8**	**0.9**	**1.2**	**1.6**	**2.5**	**3.2**	**2.4**	**1.9**	**2.2**	**2.5**	**1.9**	**2.6**	**3.2**	**2.8**	**2.3**	**2.7**			**0.8**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 712 DATA RECOVERY RATE = 95.7% DATA CAPTURE RATE = 93.5%

MONTHLY MEAN = 19.9 µg/m3

MAXIMUM PM10 = 136.8 µg/m3 DATE OF OCCURRENCE = 1/24 at 100 MAXIMUM DAILY MEAN = 51.6 µg/m3 DATE OF OCCURRENCE = 1/24

SECOND MAXIMUM PM10 = 136.2 µg/m3 DATE OF OCCURRENCE = 1/9 at 1700 SECOND MAXIMUM DAILY MEAN = 49.8 µg/m3 DATE OF OCCURRENCE = 1/9

MINIMUM PM10 = 0.8 µg/m3 DATE OF OCCURRENCE = 1/28 at 900 MINUMUM DAILY MEAN = 4.6 µg/m3 DATE OF OCCURRENCE = 1/10

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

Draft

CSX AQ5A Modulair

HOURLY AVERAGES of PM10 in µg/m3 for FEBRUARY, 2024

Hr Beg Hr End Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	26.9	27.8	20.2	18.0	18.0	21.6	23.3	30.4	27.9	22.7	16.2	14.7	10.2	9.5	8.7	11.2	16.1	17.1	19.8	16.7	14.1	12.8	12.7	11.7	**17.8**	**30.4**	**8.7**
2	15.2	17.4	23.0	21.8	21.1	27.2	27.3	27.6	27.9	22.7	21.4	13.9	9.9	9.4	13.9	6.6	4.0	5.3	5.5	5.2	5.2	5.2	5.0	8.0	**14.6**	**27.9**	**4.0**
3	3.1	2.9	3.7	4.4	2.9	3.8	7.1	7.2	5.8	6.2	5.8	6.3	6.1	6.7	7.1	8.4	12.2	20.5	24.5	30.1	43.2	54.7	27.3	21.0	**13.4**	**54.7**	**2.9**
4	17.0	16.0	15.1	12.8	11.9	17.2	23.2	13.4	15.4	15.9	7.9	16.2	28.0	9.1	10.1	9.2	9.2	11.4	26.1	38.3	34.7	34.7	36.8	35.2	**19.4**	**38.3**	**7.9**
5	28.5	23.3	25.2	24.5	21.0	26.9	36.3	55.2	34.2	22.1	18.0	15.3	28.0	24.7	18.9	20.2	19.5	22.8	38.9	27.2	14.9	13.5	13.5	12.4	**24.4**	**55.2**	**12.4**
6	14.9	16.4	18.7	16.5	15.8	15.7	17.5	26.1	20.7	19.4	12.8	13.4	16.8	11.0	18.1	25.6	12.5	11.7	19.6	62.1	34.8	23.6	28.4	46.4	**21.6**	**62.1**	**11.0**
7	110.8	16.1	22.1	18.1	23.2	29.9	41.7	42.8	54.9	30.4	36.8	21.2	19.2	21.4	29.2	37.3	35.3	40.2	30.8	111.0	68.7	60.4	63.8	42.0	**42.0**	**111.0**	**16.1**
8	36.1	37.1	57.2	52.0	46.6	50.9	85.0	56.6	54.3	44.6	47.6	30.3	21.9	25.6	17.0	20.9	25.5	22.4	26.6	15.2	12.6	13.7	13.2	19.4	**34.7**	**85.0**	**12.6**
9	23.3	19.5	22.0	23.0	28.3	29.8	33.8	30.3	37.8	24.6	24.1	27.9	34.3	23.6	40.3	27.0	29.0	29.4	28.8	30.4	34.1	32.5	41.6	35.0	**29.6**	**41.6**	**19.5**
10	39.3	39.8	43.0	50.4	47.1	51.6	48.4	53.7	50.0	70.8	68.5	69.9	54.8	39.2	47.7	62.8	84.1	45.6	35.4	61.1	59.9	48.2	45.7	40.1	**52.4**	**84.1**	**35.4**
11	29.4	20.9	17.9	17.2	13.8	17.3	29.9	28.6	33.5	45.7	29.2	29.4	25.5	20.3	19.2	34.3	24.6	22.6	25.2	23.4	21.1	20.5	22.6	25.7	**24.9**	**45.7**	**13.8**
12	32.1	25.7	23.8	24.6	21.4	28.0	21.0	26.2	39.9	38.6	27.5	35.9	33.1	28.1	26.0	28.4	30.5	29.2	28.1	16.0	12.1	9.9	7.0	5.7	**25.0**	**39.9**	**5.7**
13	5.6	6.0	3.2	11.2	6.9	6.9	5.3	5.2	4.4	3.3	6.7	6.8	11.5	14.1	18.2	16.6	11.1	8.4	6.6	7.0	7.5	10.2	12.4	9.2	**8.5**	**18.2**	**3.2**
14	5.9	4.7	4.2	4.1	3.6	4.6	5.8	8.5	14.7	9.1	11.8	8.6	6.3	6.7	10.5	8.4	7.6	9.2	7.4	5.8	5.9	11.7	11.3	11.8	**7.8**	**14.7**	**3.6**
15	10.4	14.4	11.6	10.7	14.7	11.7	12.5	12.4	6.7	14.1	9.0	4.5	8.4	10.4	13.7	14.0	13.1	11.1	15.3	17.7	21.1	22.7	21.2	26.0	**13.6**	**26.0**	**4.5**
16	21.4	14.2	10.0	6.9	8.2	8.8	---	---	---	---	---	---	---	---	---	8.5	7.5	14.9	14.2	13.2	17.9	16.5	12.9	15.7	**---**	**---**	**---**
17	8.9	16.4	55.6	23.2	7.2	12.9	15.6	15.4	13.0	5.9	5.7	6.7	6.6	8.3	9.3	8.6	9.6	8.7	6.8	9.5	9.7	8.5	6.2	6.8	**11.9**	**55.6**	**5.7**
18	7.3	12.5	10.2	9.8	11.5	8.4	10.0	11.0	11.5	10.6	11.4	7.0	11.8	12.4	12.7	13.1	9.5	7.4	10.1	16.7	7.9	6.8	5.2	4.6	**10.0**	**16.7**	**4.6**
19	7.5	4.8	7.9	12.0	9.5	12.9	20.2	17.5	21.6	20.8	21.2	17.2	15.9	19.0	18.2	17.4	18.5	32.8	28.7	34.4	34.5	33.2	36.0	38.7	**20.9**	**38.7**	**4.8**
20	40.7	40.5	43.8	39.2	19.8	22.2	20.8	20.7	18.3	7.7	8.9	13.5	12.9	13.7	15.8	11.9	16.5	17.9	19.7	17.8	21.0	20.8	23.0	20.9	**21.2**	**43.8**	**7.7**
21	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
22	---	58.4	59.5	65.8	54.4	67.4	84.7	76.9	79.6	50.2	35.6	40.4	45.5	38.6	37.2	43.2	37.3	43.1	52.9	40.6	35.8	33.1	38.2	29.2	**49.9**	**84.7**	**29.2**
23	25.7	34.7	33.3	29.7	35.9	29.8	36.0	36.7	29.2	26.7	32.3	23.9	21.8	22.4	24.1	22.3	22.0	21.2	61.4	27.8	23.8	21.6	24.8	23.7	**28.8**	**61.4**	**21.2**
24	23.1	24.3	18.2	10.4	11.2	15.3	19.7	21.9	20.8	23.8	26.0	23.9	18.4	12.6	12.8	12.4	10.9	9.3	5.6	5.3	5.9	4.5	4.1	5.3	**14.4**	**26.0**	**4.1**
25	5.8	4.9	5.6	4.3	7.2	5.8	7.2	7.7	5.5	7.8	8.2	8.1	6.8	5.0	5.6	6.8	7.5	12.8	11.3	14.3	12.8	17.2	16.5	22.1	**9.0**	**22.1**	**4.3**
26	12.0	6.2	7.0	10.0	17.4	10.2	9.6	15.9	18.7	45.1	40.0	30.3	15.1	20.0	35.8	57.7	15.1	54.9	88.8	50.2	44.7	24.1	26.8	28.0	**28.5**	**88.8**	**6.2**
27	25.5	25.1	31.1	24.2	26.4	29.8	42.3	46.8	40.6	29.6	38.4	42.7	48.9	49.3	49.6	31.1	27.2	23.5	24.1	19.6	---	---	---	---	**33.8**	**49.6**	**19.6**
28	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	24.1	17.3	14.3	13.5	10.1	4.6	5.0	5.9	**---**	**---**	**---**
29	5.9	5.0	6.0	6.3	5.8	5.9	6.0	7.0	9.8	18.7	13.4	12.6	12.3	12.2	13.5	11.3	10.8	9.4	13.7	11.0	12.0	68.6	40.2	26.0	**14.3**	**68.6**	**5.0**
MEAN	**22.4**	**19.8**	**22.2**	**20.4**	**18.9**	**21.2**	**26.5**	**27.0**	**26.8**	**24.5**	**22.5**	**20.8**	**20.4**	**18.2**	**20.5**	**21.3**	**19.7**	**20.7**	**24.7**	**26.5**	**23.2**	**23.5**	**22.3**	**21.4**	**22.3**		
MAX	**110.8**	**58.4**	**59.5**	**65.8**	**54.4**	**67.4**	**85.0**	**76.9**	**79.6**	**70.8**	**68.5**	**69.9**	**54.8**	**49.3**	**49.6**	**62.8**	**84.1**	**54.9**	**88.8**	**111.0**	**68.7**	**68.6**	**63.8**	**46.4**		**111.0**	
MIN	**3.1**	**2.9**	**3.2**	**4.1**	**2.9**	**3.8**	**5.3**	**5.2**	**4.4**	**3.3**	**5.7**	**4.5**	**6.1**	**5.0**	**5.6**	**6.6**	**4.0**	**5.3**	**5.5**	**5.2**	**5.2**	**4.5**	**4.1**	**4.6**			**2.9**

POSSIBLE NUMBER OF OBSERVATIONS = 696 ACTUAL NUMBER OF OBSERVATIONS = 642 DATA RECOVERY RATE = 92.2% DATA CAPTURE RATE = 89.7%

MONTHLY MEAN = 22.3 µg/m3

MAXIMUM PM10 = 111.0 µg/m3 DATE OF OCCURRENCE = 2/7 at 2000 MAXIMUM DAILY MEAN = 52.4 µg/m3 DATE OF OCCURRENCE = 2/10

SECOND MAXIMUM PM10 = 110.8 µg/m3 DATE OF OCCURRENCE = 2/7 at 100 SECOND MAXIMUM DAILY MEAN = 49.9 µg/m3 DATE OF OCCURRENCE = 2/22

MINIMUM PM10 = 2.9 µg/m3 DATE OF OCCURRENCE = 2/3 at 200 MINUMUM DAILY MEAN = 7.8 µg/m3 DATE OF OCCURRENCE = 2/14

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

Draft

CSX AQ5A Modulair

HOURLY AVERAGES of PM10 in µg/m3 for MARCH, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	25.0	14.9	16.5	28.9	22.0	31.2	44.1	57.3	25.3	11.7	12.3	11.2	11.8	14.0	16.2	17.1	14.4	10.1	13.2	15.5	21.2	18.9	18.8	18.3	**20.4**	**57.3**	**10.1**
2	15.2	14.0	16.1	18.7	21.1	23.2	23.4	23.5	30.6	25.5	15.9	4.0	4.9	3.6	4.0	3.7	3.7	6.3	6.3	5.7	8.2	5.1	7.4	8.5	**12.4**	**30.6**	**3.6**
3	9.6	10.9	11.9	11.1	10.4	14.8	11.8	13.1	18.7	16.2	15.2	16.2	12.9	9.8	8.5	7.8	8.3	15.0	11.8	18.7	12.9	21.1	19.0	24.6	**13.8**	**24.6**	**7.8**
4	19.4	19.2	15.4	13.0	14.8	14.5	12.8	18.8	19.4	27.5	34.8	16.9	26.3	18.5	15.9	19.6	13.2	7.8	9.3	4.9	6.6	5.8	6.4	5.6	**15.3**	**34.8**	**4.9**
5	6.1	3.3	3.0	5.2	6.2	5.3	4.1	6.7	4.9	2.5	2.3	3.0	2.3	3.8	3.8	5.7	7.6	14.1	11.9	10.3	9.5	10.6	13.5	12.3	**6.6**	**14.1**	**2.3**
6	12.2	16.1	15.8	19.3	---	---	---	---	---	22.2	20.6	8.8	8.1	9.5	10.8	7.5	6.3	7.7	9.3	10.4	11.5	10.2	10.2	12.9	**12.1**	**22.2**	**6.3**
7	8.7	6.4	4.7	4.7	4.2	5.1	5.1	6.6	2.6	3.7	5.6	5.8	5.6	5.8	7.6	6.6	5.4	5.0	11.3	13.9	10.9	14.3	10.8	8.3	**7.0**	**14.3**	**2.6**
8	12.8	8.9	17.6	10.5	14.3	16.6	11.8	13.2	8.3	3.7	5.1	15.3	6.8	4.9	9.9	6.8	6.9	8.3	21.9	15.1	19.2	21.5	21.3	25.9	**12.8**	**25.9**	**3.7**
9	30.0	34.2	37.7	32.7	35.9	40.8	59.4	65.3	74.4	72.1	70.4	87.3	92.6	80.5	55.8	36.1	36.4	36.5	13.4	3.7	4.1	3.6	4.2	5.0	**42.2**	**92.6**	**3.6**
10	4.1	3.8	---	2.4	1.9	2.9	2.0	1.6	3.2	6.8	8.2	8.0	5.3	6.2	3.8	5.8	7.3	4.5	3.2	8.0	4.2	4.2	3.8	3.5	**4.6**	**8.2**	**1.6**
11	3.4	2.7	4.7	4.9	5.0	3.7	6.6	10.8	6.8	19.1	20.0	22.8	18.6	17.0	22.8	18.9	10.7	6.5	4.1	5.8	5.1	5.1	5.6	9.9	**10.0**	**22.8**	**2.7**
12	9.6	5.8	6.5	5.1	5.0	7.8	8.1	8.1	8.0	15.2	16.7	18.5	17.9	19.1	23.0	20.4	21.9	14.1	20.8	22.0	29.1	22.7	21.3	17.1	**15.2**	**29.1**	**5.0**
13	22.6	14.0	18.1	21.0	40.4	51.0	71.9	77.4	108.8	79.5	19.2	17.7	14.8	15.8	18.0	17.7	13.6	19.9	29.0	37.6	57.9	51.3	61.6	65.4	**39.3**	**108.8**	**13.6**
14	61.3	35.4	44.3	60.9	69.3	55.1	69.1	123.3	153.4	101.9	129.1	111.9	83.6	135.6	60.1	30.9	38.1	32.9	31.9	25.2	23.8	27.3	25.9	28.7	**65.0**	**153.4**	**23.8**
15	33.0	40.8	43.7	38.4	50.7	43.6	34.7	26.8	23.2	25.5	23.1	16.8	18.7	18.2	13.2	10.5	5.6	8.8	11.7	7.2	19.0	18.8	8.3	5.1	**22.7**	**50.7**	**5.1**
16	3.2	3.0	2.5	3.9	4.5	5.0	5.5	5.1	6.7	7.6	9.3	7.0	5.7	5.7	6.1	6.1	8.7	8.9	16.4	10.2	11.8	11.8	12.7	15.1	**7.6**	**16.4**	**2.5**
17	16.3	15.5	13.1	12.3	18.1	18.1	16.3	21.9	15.9	6.3	5.8	6.1	10.8	30.5	13.2	10.8	12.0	10.3	8.2	7.0	9.5	7.4	11.5	16.1	**13.0**	**30.5**	**5.8**
18	16.0	7.4	7.7	7.9	6.8	10.7	15.8	22.4	16.8	30.5	37.5	25.6	17.5	18.2	16.8	14.9	19.3	34.9	43.7	32.5	20.3	14.1	8.5	8.2	**18.9**	**43.7**	**6.8**
19	6.7	7.4	4.0	7.3	7.1	5.3	7.6	15.0	22.9	18.3	22.1	9.9	10.0	21.0	18.2	31.5	24.0	25.7	23.3	19.6	17.2	21.2	25.8	19.4	**16.3**	**31.5**	**4.0**
20	20.3	20.2	14.8	17.7	16.0	19.9	21.2	23.4	19.8	33.8	55.1	84.5	57.9	55.6	45.4	77.1	38.7	31.2	80.3	42.0	25.5	13.0	14.0	7.5	**34.8**	**84.5**	**7.5**
21	7.4	5.1	5.7	4.8	6.0	5.0	11.5	12.1	18.1	15.2	15.7	14.7	17.5	17.4	17.5	11.7	11.3	12.3	10.1	15.3	11.6	44.4	32.3	17.2	**14.2**	**44.4**	**4.8**
22	10.5	11.9	11.1	7.1	10.9	10.0	11.6	12.3	10.4	8.2	10.4	21.2	11.6	13.3	16.2	11.4	13.7	21.0	20.7	15.3	20.4	18.9	19.1	25.7	**14.3**	**25.7**	**7.1**
23	30.6	28.1	22.8	16.4	12.3	14.5	11.1	10.0	11.9	15.9	16.5	15.1	4.1	3.6	5.6	4.6	5.3	5.4	8.4	11.9	8.0	11.2	13.6	6.4	**12.2**	**30.6**	**3.6**
24	4.4	4.2	3.5	3.2	3.9	6.0	5.4	7.2	4.5	4.7	4.9	5.8	5.2	6.0	6.9	9.5	7.2	7.4	7.6	7.7	8.2	10.8	14.6	20.8	**7.1**	**20.8**	**3.2**
25	111.7	91.0	18.0	33.2	24.4	10.3	10.8	11.7	11.7	9.9	7.0	8.5	9.8	9.5	16.0	16.7	24.6	19.9	25.4	22.7	12.9	18.6	22.2	24.9	**23.8**	**111.7**	**7.0**
26	58.3	92.9	68.3	55.4	49.2	32.6	32.1	12.5	13.0	15.1	17.7	23.4	21.6	25.9	19.8	18.2	21.1	22.3	28.9	42.3	45.5	32.4	35.3	26.9	**33.8**	**92.9**	**12.5**
27	27.6	23.6	28.0	25.9	28.8	32.9	30.1	30.1	33.1	30.5	21.1	20.7	11.3	12.0	26.2	11.2	6.4	6.3	14.3	13.2	13.0	14.7	19.4	27.3	**21.2**	**33.1**	**6.3**
28	19.2	7.7	8.4	10.0	5.2	6.5	8.4	12.4	13.4	14.4	17.3	22.2	20.6	18.2	18.6	19.2	18.8	14.7	13.4	14.7	14.9	14.6	16.0	15.0	**14.3**	**22.2**	**5.2**
29	107.2	10.9	10.2	8.3	7.9	11.8	17.8	25.7	12.5	13.9	28.8	33.8	32.7	27.7	25.5	31.2	24.1	18.2	11.3	9.7	8.1	11.0	8.9	9.6	**21.1**	**107.2**	**7.9**
30	11.8	7.6	6.9	8.1	7.2	8.7	12.5	9.8	9.1	10.0	11.8	12.4	11.4	14.4	18.0	17.6	20.6	16.0	13.5	19.2	22.5	25.3	25.6	36.8	**14.9**	**36.8**	**6.9**
31	38.4	29.5	19.1	16.3	19.0	18.5	21.3	23.8	25.7	21.6	11.3	6.1	7.9	7.0	7.6	7.4	6.3	9.2	9.8	11.4	13.5	18.1	24.7	14.3	**16.2**	**38.4**	**6.1**
MEAN	**24.6**	**19.2**	**16.7**	**16.6**	**17.6**	**17.7**	**20.1**	**23.6**	**24.4**	**22.2**	**22.3**	**22.0**	**18.9**	**20.9**	**17.8**	**16.6**	**14.9**	**14.9**	**17.6**	**16.1**	**16.3**	**17.0**	**17.5**	**17.5**	**18.9**		
MAX	**111.7**	**92.9**	**68.3**	**60.9**	**69.3**	**55.1**	**71.9**	**123.3**	**153.4**	**101.9**	**129.1**	**111.9**	**92.6**	**135.6**	**60.1**	**77.1**	**38.7**	**36.5**	**80.3**	**42.3**	**57.9**	**51.3**	**61.6**	**65.4**		**153.4**	
MIN	**3.2**	**2.7**	**2.5**	**2.4**	**1.9**	**2.9**	**2.0**	**1.6**	**2.6**	**2.5**	**2.3**	**3.0**	**2.3**	**3.6**	**3.8**	**3.7**	**3.7**	**4.5**	**3.2**	**3.7**	**4.1**	**3.6**	**3.8**	**3.5**			**1.6**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 738 DATA RECOVERY RATE = 99.2% DATA CAPTURE RATE = 100.0%

MONTHLY MEAN = 18.9 µg/m3

MAXIMUM PM10 = 153.4 µg/m3 DATE OF OCCURRENCE = 3/14 at 900 MAXIMUM DAILY MEAN = 65.0 µg/m3 DATE OF OCCURRENCE = 3/14

SECOND MAXIMUM PM10 = 135.6 µg/m3 DATE OF OCCURRENCE = 3/14 at 1400 SECOND MAXIMUM DAILY MEAN = 42.2 µg/m3 DATE OF OCCURRENCE = 3/9

MINIMUM PM10 = 1.6 µg/m3 DATE OF OCCURRENCE = 3/10 at 800 MINUMUM DAILY MEAN = 4.6 µg/m3 DATE OF OCCURRENCE = 3/10

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

UNDERLINED DATA ARE SUSPECT

Draft

CSX AQ5A Modulair

HOURLY AVERAGES of PM2.5 in µg/m3 for JANUARY, 2024

Hr Beg Hr End Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	10.7	11.8	13.8	15.1	14.7	13.9	16.9	14.4	14.2	16.6	9.1	5.0	4.6	5.4	5.4	5.6	6.5	5.5	5.2	5.9	7.5	8.2	7.8	6.8	**9.6**	**16.9**	**4.6**
2	7.9	6.9	6.8	7.6	6.5	4.5	5.2	4.3	5.2	3.2	3.5	4.1	5.5	7.2	6.9	6.9	6.4	7.6	9.5	8.9	7.0	6.5	5.7	6.5	**6.2**	**9.5**	**3.2**
3	6.8	7.9	7.2	6.7	7.5	7.6	7.9	8.6	10.7	9.6	15.2	9.4	9.5	11.8	11.9	13.2	13.9	11.8	13.2	13.1	13.9	15.9	14.3	12.6	**10.8**	**15.9**	**6.7**
4	12.6	13.2	13.1	12.9	11.2	12.3	10.6	12.9	11.2	12.9	15.0	11.2	5.2	3.4	3.3	2.3	2.5	2.7	3.1	2.9	2.9	3.2	3.8	4.2	**7.8**	**15.0**	**2.3**
5	3.8	3.7	3.9	4.4	4.0	4.0	3.5	4.7	6.9	6.3	6.6	6.3	7.7	8.8	7.7	9.7	9.3	10.0	10.8	13.5	14.9	14.8	15.5	16.8	**8.2**	**16.8**	**3.5**
6	14.2	13.9	13.8	13.8	14.5	9.6	9.6	14.2	12.4	12.5	8.9	11.1	12.1	13.9	10.5	10.0	9.5	7.2	4.5	3.4	3.1	4.0	4.3	4.6	**9.8**	**14.5**	**3.1**
7	6.0	7.5	6.7	5.7	6.0	7.0	8.0	8.3	8.0	8.9	9.0	7.1	5.0	4.0	3.4	2.6	2.4	2.3	4.2	3.6	3.8	2.4	1.8	2.6	**5.2**	**9.0**	**1.8**
8	2.9	3.7	4.9	6.4	7.5	6.6	7.2	6.9	8.1	9.5	7.0	7.1	7.6	9.1	9.7	9.1	9.0	9.2	11.6	9.6	8.9	9.0	9.4	10.6	**7.9**	**11.6**	**2.9**
9	10.4	10.9	10.3	14.8	10.1	6.4	7.6	8.7	7.4	4.7	5.4	7.1	8.6	9.6	12.0	18.2	18.1	12.6	12.3	5.1	9.0	8.1	3.9	2.8	**9.3**	**18.2**	**2.8**
10	2.6	2.2	1.4	3.0	4.7	4.0	2.9	2.5	2.3	1.4	0.7	0.5	0.6	0.5	0.5	0.7	0.9	1.4	1.6	2.3	2.1	2.0	2.1	2.2	**1.8**	**4.7**	**0.5**
11	3.2	3.5	3.1	4.2	4.1	3.8	5.2	7.8	9.1	8.6	5.6	4.0	3.9	3.7	3.6	4.0	4.7	5.2	8.6	10.3	10.6	10.8	10.4	13.0	**6.2**	**13.0**	**3.1**
12	10.9	11.3	8.9	8.0	8.1	8.9	7.8	12.0	15.0	15.2	11.9	8.8	9.1	9.5	8.9	6.3	6.2	5.9	6.2	8.2	10.6	10.3	8.0	5.3	**9.2**	**15.2**	**5.3**
13	5.3	8.8	12.0	6.9	1.2	1.9	2.9	2.9	3.0	2.8	3.2	3.0	3.2	3.1	2.7	3.0	2.9	3.0	2.9	2.9	2.4	2.1	2.1	2.7	**3.6**	**12.0**	**1.2**
14	2.7	3.4	4.9	4.6	4.6	4.3	3.7	3.4	4.6	4.4	4.3	4.5	5.4	4.1	3.4	3.0	2.5	2.5	1.9	2.1	1.8	1.8	2.4	4.2	**3.5**	**5.4**	**1.8**
15	3.5	2.0	1.9	2.6	---	2.3	3.2	4.1	4.3	4.5	5.7	7.7	8.5	6.2	7.1	8.0	7.5	6.7	6.9	7.1	6.3	5.3	6.0	6.8	**5.4**	**8.5**	**1.9**
16	4.6	6.7	8.2	9.7	9.6	10.5	11.3	13.1	14.5	15.8	16.7	20.2	18.0	23.7	20.1	17.3	14.9	10.9	10.2	9.5	9.2	8.4	7.2	9.3	**12.4**	**23.7**	**4.6**
17	6.1	4.2	5.7	6.2	5.6	5.7	7.5	11.2	11.0	6.6	5.2	4.4	4.1	4.5	5.1	4.6	3.9	4.7	10.1	9.8	9.4	9.2	10.8	10.8	**6.9**	**11.2**	**3.9**
18	11.0	16.7	16.1	16.3	16.7	15.2	15.6	20.3	20.8	23.9	20.4	14.5	14.4	6.9	5.3	6.0	6.2	6.9	8.6	9.4	9.5	11.5	12.3	13.5	**13.2**	**23.9**	**5.3**
19	12.4	13.8	13.1	12.6	14.5	16.1	14.9	16.0	20.3	23.6	22.1	20.2	19.4	22.1	21.6	27.9	18.8	8.9	10.4	9.5	6.8	8.9	11.8	9.6	**15.6**	**27.9**	**6.8**
20	10.1	7.1	8.9	7.3	5.4	5.1	3.5	2.8	3.5	5.3	5.3	6.2	5.6	5.7	5.7	6.6	6.4	8.0	9.4	10.5	9.9	7.9	7.6	6.5	**6.6**	**10.5**	**2.8**
21	5.2	4.7	4.5	6.7	8.8	8.5	6.5	6.1	5.1	4.6	4.8	5.5	5.5	5.7	6.4	5.9	5.4	5.3	5.9	5.9	6.1	6.9	6.6	6.9	**5.9**	**8.8**	**4.5**
22	7.7	7.9	5.7	5.2	7.8	10.6	11.5	12.6	22.5	26.6	18.5	11.4	11.8	11.4	11.6	9.2	10.3	10.9	12.3	12.9	13.9	13.9	16.3	16.8	**12.4**	**26.6**	**5.2**
23	16.0	16.7	15.2	14.6	13.8	14.4	15.4	17.1	32.0	33.2	34.3	38.9	31.0	23.2	18.6	17.9	16.4	14.8	16.6	17.1	19.7	22.8	23.9	24.3	**21.1**	**38.9**	**13.8**
24	35.7	23.8	22.8	22.2	21.8	23.2	22.9	24.1	25.6	28.4	32.9	33.9	29.5	34.8	33.1	30.8	26.5	24.2	22.1	22.3	23.1	22.8	24.8	27.6	**26.6**	**35.7**	**21.8**
25	23.8	24.9	26.0	27.5	27.4	27.0	26.3	26.6	30.1	31.9	41.5	47.1	52.1	45.4	43.7	40.2	22.7	24.9	15.4	19.5	29.6	25.3	19.9	17.0	**29.8**	**52.1**	**15.4**
26	9.3	5.1	5.0	6.3	4.3	5.9	7.2	10.4	16.3	13.2	9.1	7.3	6.7	7.2	2.8	10.0	10.5	8.7	10.0	10.9	5.5	7.1	4.2	4.2	**7.7**	**16.3**	**2.8**
27	6.0	5.3	5.5	4.3	5.1	3.1	2.9	3.5	5.9	10.5	14.5	10.8	12.5	7.1	6.4	10.2	9.5	8.3	8.0	8.7	10.1	9.4	10.4	9.5	**7.8**	**14.5**	**2.9**
28	11.2	10.1	9.4	6.6	4.7	2.3	1.2	0.4	0.3	0.6	0.6	0.8	0.8	1.0	1.0	0.8	0.7	1.5	1.4	2.3	3.9	3.9	4.3	4.4	**3.0**	**11.2**	**0.3**
29	5.3	4.2	2.8	2.5	1.5	2.3	2.1	2.2	1.7	1.5	1.5	1.4	1.5	2.0	3.0	2.8	3.1	3.3	3.3	3.7	3.9	4.8	5.0	6.0	**2.9**	**6.0**	**1.4**
30	5.9	5.1	5.6	5.4	4.7	2.7	1.7	2.3	2.8	3.0	4.2	5.3	4.8	4.2	3.6	3.5	3.8	4.1	4.3	7.4	6.4	6.7	6.9	5.7	**4.5**	**7.4**	**1.7**
31	4.6	4.9	4.6	4.7	4.4	4.5	4.3	3.8	4.1	4.5	5.1	5.8	6.5	7.4	9.5	7.7	7.6	7.3	7.8	9.0	9.5	9.1	9.0	9.7	**6.4**	**9.7**	**3.8**
MEAN	**9.0**	**8.8**	**8.8**	**8.9**	**8.7**	**8.2**	**8.3**	**9.3**	**10.9**	**11.4**	**11.2**	**10.7**	**10.3**	**10.1**	**9.5**	**9.8**	**8.7**	**7.9**	**8.3**	**8.6**	**9.1**	**9.1**	**9.0**	**9.1**	**9.3**		
MAX	**35.7**	**24.9**	**26.0**	**27.5**	**27.4**	**27.0**	**26.3**	**26.6**	**32.0**	**33.2**	**41.5**	**47.1**	**52.1**	**45.4**	**43.7**	**40.2**	**26.5**	**24.9**	**22.1**	**22.3**	**29.6**	**25.3**	**24.8**	**27.6**		**52.1**	
MIN	**2.6**	**2.0**	**1.4**	**2.5**	**1.2**	**1.9**	**1.2**	**0.4**	**0.3**	**0.6**	**0.6**	**0.5**	**0.6**	**0.5**	**0.5**	**0.7**	**0.7**	**1.4**	**1.4**	**2.1**	**1.8**	**1.8**	**1.8**	**2.2**			**0.3**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 743 DATA RECOVERY RATE = 99.9% DATA CAPTURE RATE = 100.0%

MONTHLY MEAN = 9.3 µg/m3

MAXIMUM PM2.5 = 52.1 µg/m3 DATE OF OCCURRENCE = 1/25 at 1300 MAXIMUM DAILY MEAN = 29.8 µg/m3 DATE OF OCCURRENCE = 1/25

SECOND MAXIMUM PM2.5 = 47.1 µg/m3 DATE OF OCCURRENCE = 1/25 at 1200 SECOND MAXIMUM DAILY MEAN = 26.6 µg/m3 DATE OF OCCURRENCE = 1/24

MINIMUM PM2.5 = 0.3 µg/m3 DATE OF OCCURRENCE = 1/28 at 900 MINUMUM DAILY MEAN = 1.8 µg/m3 DATE OF OCCURRENCE = 1/10

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

Draft

CSX AQ5A Modulair

HOURLY AVERAGES of PM2.5 in µg/m3 for FEBRUARY, 2024

Hr Beg Hr End Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	9.6	9.9	10.0	10.0	9.9	9.4	10.0	11.0	18.2	17.3	12.5	7.6	6.5	5.9	6.1	6.8	10.8	10.7	10.5	11.0	10.5	10.3	10.0	9.0	**10.1**	**18.2**	**5.9**
2	9.8	11.4	12.1	12.0	11.4	13.4	14.7	15.4	13.6	13.6	15.9	11.0	6.4	3.9	5.8	2.7	1.9	2.0	2.2	2.2	2.0	2.3	1.9	2.1	**7.9**	**15.9**	**1.9**
3	1.5	1.3	1.6	2.0	2.1	2.1	2.2	3.2	3.7	3.8	4.3	4.9	5.3	5.4	5.4	5.5	5.7	6.1	5.7	7.4	20.9	25.1	16.7	11.7	**6.3**	**25.1**	**1.3**
4	10.5	10.2	8.4	7.5	7.7	8.0	7.6	7.2	10.8	8.1	5.7	6.4	7.5	5.0	5.9	5.3	5.2	5.8	9.9	11.1	12.1	14.7	15.5	16.2	**8.8**	**16.2**	**5.0**
5	15.3	13.5	14.4	12.6	11.6	15.3	11.4	11.3	10.7	10.6	9.5	7.7	9.5	9.1	9.2	9.0	8.3	9.8	10.3	13.0	8.8	8.2	8.5	8.1	**10.6**	**15.3**	**7.7**
6	8.0	9.1	9.3	8.1	6.8	6.7	7.5	8.4	9.5	7.6	5.4	5.0	4.5	3.9	4.3	4.8	4.6	4.2	6.1	9.8	7.5	7.5	8.9	9.9	**6.9**	**9.9**	**3.9**
7	14.6	8.2	8.6	9.0	8.2	8.1	8.2	9.1	12.1	11.5	12.4	11.3	10.9	10.1	8.9	11.5	11.7	10.3	10.7	17.0	18.5	19.9	18.4	15.9	**11.8**	**19.9**	**8.1**
8	14.4	13.8	14.4	17.2	15.2	14.4	20.5	18.4	17.8	19.5	21.2	17.7	11.3	7.7	8.4	7.8	11.0	10.5	8.8	8.2	7.7	8.4	7.1	10.2	**12.9**	**21.2**	**7.1**
9	8.6	6.7	7.2	8.0	9.1	11.5	14.9	9.2	11.1	11.8	14.1	15.6	15.5	13.0	13.7	15.4	16.7	18.6	19.2	19.9	21.2	21.4	22.5	22.1	**14.4**	**22.5**	**6.7**
10	24.3	24.5	24.2	25.0	27.0	27.7	26.0	26.3	29.5	38.9	42.3	42.8	38.3	19.8	27.2	26.2	26.4	23.6	21.9	23.5	25.0	25.2	24.7	24.3	**27.6**	**42.8**	**19.8**
11	20.4	17.4	14.9	13.0	10.1	12.5	19.7	20.5	21.5	24.5	21.4	23.4	20.9	15.9	15.4	16.5	16.0	16.5	18.1	16.8	16.7	16.4	15.5	15.2	**17.4**	**24.5**	**10.1**
12	14.5	14.9	15.5	16.2	16.1	19.7	15.2	14.8	18.1	17.9	16.5	19.5	21.7	21.4	21.0	21.4	21.2	18.7	18.7	13.3	8.8	8.4	6.0	4.8	**16.0**	**21.7**	**4.8**
13	3.7	2.9	2.3	2.1	1.6	1.4	2.2	3.4	2.1	1.6	3.2	5.6	9.7	10.5	10.8	8.8	6.9	6.2	4.5	4.3	4.7	7.6	7.4	6.9	**5.0**	**10.8**	**1.4**
14	5.0	3.6	2.7	2.5	1.9	2.1	2.9	3.4	3.5	3.3	3.1	2.0	2.1	1.9	2.6	2.5	2.8	2.5	3.6	2.9	3.5	4.4	5.0	5.8	**3.1**	**5.8**	**1.9**
15	6.8	6.8	6.8	6.3	10.3	5.1	6.4	6.7	3.9	4.3	4.0	2.9	4.8	5.7	6.3	5.6	4.8	4.4	5.4	7.4	7.3	8.9	9.7	8.8	**6.2**	**10.3**	**2.9**
16	8.9	4.9	3.1	3.8	3.8	3.3	---	---	---	---	---	---	---	---	---	3.9	3.2	6.8	5.9	6.3	6.6	6.1	7.0	6.6	**---**	**---**	**---**
17	5.1	4.2	4.7	4.9	5.8	6.4	6.2	6.7	5.7	4.4	3.5	5.0	4.7	5.7	6.8	6.8	6.0	5.3	4.1	4.4	4.9	5.6	3.8	4.9	**5.2**	**6.8**	**3.5**
18	5.7	7.5	6.0	6.7	7.3	6.2	5.9	7.3	8.3	8.1	6.7	4.5	4.8	5.1	4.6	4.7	3.0	3.4	3.8	5.6	3.5	2.2	1.6	1.7	**5.1**	**8.3**	**1.6**
19	2.3	2.2	2.7	3.6	3.8	4.4	6.4	6.8	8.6	11.7	12.0	11.9	11.0	12.0	13.9	13.4	13.6	10.4	13.4	16.1	17.5	17.6	18.9	20.0	**10.5**	**20.0**	**2.2**
20	19.9	18.8	17.8	16.9	13.7	12.8	9.2	6.9	6.8	3.3	3.8	4.8	5.4	5.8	6.5	7.8	8.0	8.0	8.8	8.2	5.1	3.3	3.0	2.7	**8.6**	**19.9**	**2.7**
21	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
22	---	7.1	12.0	11.4	7.2	7.9	14.6	13.9	13.5	8.4	6.7	7.3	8.1	6.4	6.1	7.2	9.4	8.7	10.4	10.6	10.6	9.7	15.8	15.0	**9.9**	**15.8**	**6.1**
23	12.6	13.6	14.0	13.6	14.0	13.8	15.5	16.7	20.4	20.7	23.3	20.8	18.5	18.9	18.2	17.7	16.6	14.4	18.4	19.0	18.7	18.0	20.0	17.0	**17.2**	**23.3**	**12.6**
24	17.2	17.7	14.8	8.2	10.0	14.5	16.7	19.0	16.9	20.0	22.3	20.0	15.8	10.1	9.6	8.8	7.5	5.0	2.6	2.7	2.8	2.4	2.4	3.3	**11.2**	**22.3**	**2.4**
25	3.2	2.9	2.8	2.4	2.7	3.2	2.9	3.4	3.1	5.2	4.5	4.2	3.8	3.5	3.7	3.8	4.1	5.4	4.6	5.5	5.3	4.9	5.3	4.8	**3.9**	**5.5**	**2.4**
26	4.7	3.7	3.9	4.9	6.1	5.5	6.2	8.4	11.4	22.8	21.5	17.1	9.0	9.8	10.3	11.3	9.5	13.5	17.7	16.9	19.2	14.7	15.7	15.6	**11.6**	**22.8**	**3.7**
27	15.1	15.8	15.2	15.3	15.8	15.7	16.9	19.7	27.4	24.5	29.0	29.9	29.2	28.5	22.2	17.1	15.7	15.1	15.2	14.9	---	---	---	---	**19.9**	**29.9**	**14.9**
28	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	11.2	7.2	6.0	7.4	6.5	2.4	1.5	2.6	**---**	**---**	**---**
29	2.9	2.8	3.0	2.5	2.7	3.1	2.6	2.6	4.5	6.3	6.0	6.0	6.7	5.4	4.9	4.0	3.2	2.3	3.6	4.0	4.1	5.1	5.3	6.4	**4.1**	**6.7**	**2.3**
MEAN	**10.2**	**9.5**	**9.3**	**9.1**	**9.0**	**9.4**	**10.5**	**10.8**	**12.0**	**12.7**	**12.7**	**12.1**	**11.2**	**9.6**	**9.9**	**9.5**	**9.5**	**9.1**	**9.6**	**10.3**	**10.4**	**10.4**	**10.3**	**10.1**	**10.3**		
MAX	**24.3**	**24.5**	**24.2**	**25.0**	**27.0**	**27.7**	**26.0**	**26.3**	**29.5**	**38.9**	**42.3**	**42.8**	**38.3**	**28.5**	**27.2**	**26.2**	**26.4**	**23.6**	**21.9**	**23.5**	**25.0**	**25.2**	**24.7**	**24.3**		**42.8**	
MIN	**1.5**	**1.3**	**1.6**	**2.0**	**1.6**	**1.4**	**2.2**	**2.6**	**2.1**	**1.6**	**3.1**	**2.0**	**2.1**	**1.9**	**2.6**	**2.5**	**1.9**	**2.0**	**2.2**	**2.2**	**2.0**	**2.2**	**1.5**	**1.7**			**1.3**

POSSIBLE NUMBER OF OBSERVATIONS = 696 ACTUAL NUMBER OF OBSERVATIONS = 642 DATA RECOVERY RATE = 92.2% DATA CAPTURE RATE = 89.7%

MONTHLY MEAN = 10.3 µg/m3

MAXIMUM PM2.5 = 42.8 µg/m3 DATE OF OCCURRENCE = 2/10 at 1200 MAXIMUM DAILY MEAN = 27.6 µg/m3 DATE OF OCCURRENCE = 2/10

SECOND MAXIMUM PM2.5 = 42.3 µg/m3 DATE OF OCCURRENCE = 2/10 at 1100 SECOND MAXIMUM DAILY MEAN = 19.9 µg/m3 DATE OF OCCURRENCE = 2/27

MINIMUM PM2.5 = 1.3 µg/m3 DATE OF OCCURRENCE = 2/3 at 200 MINUMUM DAILY MEAN = 3.1 µg/m3 DATE OF OCCURRENCE = 2/14

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

Draft

CSX AQ5A Modulair

HOURLY AVERAGES of PM2.5 in µg/m3 for MARCH, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	7.8	7.0	6.9	9.0	8.2	9.3	10.9	17.7	12.7	5.8	6.7	8.3	8.6	8.5	9.3	7.9	6.4	4.4	4.7	6.0	7.1	7.0	6.3	6.7	**8.0**	**17.7**	**4.4**
2	6.4	6.7	7.3	6.5	6.7	8.2	9.1	9.3	7.8	5.8	3.7	2.1	2.9	2.1	1.7	2.3	2.6	3.8	4.2	2.6	4.5	3.4	5.3	6.2	**5.0**	**9.3**	**1.7**
3	7.2	8.0	8.8	8.2	8.1	9.7	8.4	10.3	15.3	13.4	11.7	11.5	9.4	6.2	4.6	4.9	6.8	7.6	7.4	9.6	8.4	13.0	10.4	11.3	**9.1**	**15.3**	**4.6**
4	12.6	14.7	12.9	11.0	11.9	10.8	10.2	9.7	9.2	10.8	11.5	5.9	5.6	4.6	4.9	4.4	2.3	1.8	2.2	2.1	2.4	2.4	2.0	2.1	**7.0**	**14.7**	**1.8**
5	2.5	2.1	2.0	2.3	3.1	2.7	2.6	4.2	3.3	1.2	0.6	1.1	1.3	1.4	2.2	3.7	5.0	6.7	5.6	5.4	5.3	6.7	7.1	6.8	**3.5**	**7.1**	**0.6**
6	7.9	9.3	8.0	8.5	13.5	33.6	34.8	31.3	12.8	10.3	8.8	7.4	6.8	4.9	3.8	3.3	3.5	4.9	6.6	8.0	9.1	7.8	7.4	6.1	**10.7**	**34.8**	**3.3**
7	6.4	4.1	2.9	2.4	2.0	2.3	2.7	3.0	0.9	0.9	0.8	0.9	1.4	1.5	1.8	1.4	1.5	1.4	2.1	3.0	3.4	3.6	3.6	4.1	**2.4**	**6.4**	**0.8**
8	4.6	4.5	5.0	4.8	5.6	5.8	5.7	6.9	4.6	1.9	2.6	3.7	2.6	2.9	4.0	4.5	4.2	3.6	4.1	2.8	3.3	3.5	4.1	4.5	**4.1**	**6.9**	**1.9**
9	5.1	5.0	6.7	6.3	6.8	7.3	8.2	9.5	11.0	11.6	12.2	13.3	14.8	16.6	16.9	14.4	12.9	7.5	2.9	1.1	1.3	1.9	2.7	2.9	**8.2**	**16.9**	**1.1**
10	3.1	2.5	---	1.6	1.0	1.0	0.7	0.7	2.3	4.3	6.3	5.6	3.9	2.6	2.1	2.1	1.7	1.4	1.5	1.7	1.5	1.5	1.8	1.6	**2.2**	**6.3**	**0.7**
11	1.7	1.5	1.9	1.9	1.8	1.7	2.3	2.6	2.0	2.8	2.2	2.2	2.4	2.0	2.8	3.1	2.2	1.7	1.8	1.5	1.5	1.3	1.6	4.6	**2.1**	**4.6**	**1.3**
12	4.2	2.2	2.1	1.4	1.7	2.0	1.6	1.8	2.4	4.2	5.1	6.2	6.3	6.4	7.9	6.4	5.8	5.2	4.7	6.6	8.5	7.4	6.7	7.1	**4.7**	**8.5**	**1.4**
13	8.2	6.9	8.2	9.7	11.5	13.5	13.5	14.5	19.3	21.5	7.6	7.3	7.5	8.4	8.3	7.2	6.7	6.3	12.6	13.6	17.7	18.6	17.8	20.3	**11.9**	**21.5**	**6.3**
14	21.6	19.9	19.4	23.0	22.9	20.0	18.0	22.5	25.6	29.9	39.9	37.9	35.1	27.9	17.0	10.5	13.6	9.6	10.5	10.4	11.7	12.7	14.4	16.3	**20.4**	**39.9**	**9.6**
15	18.8	22.6	20.0	20.6	18.9	18.3	17.2	11.7	8.8	13.4	11.6	6.5	3.3	3.8	2.7	2.5	2.5	3.4	4.4	4.0	3.8	6.1	3.9	2.9	**9.6**	**22.6**	**2.5**
16	1.9	1.6	1.9	2.6	2.8	3.1	2.8	2.2	4.2	5.7	6.6	5.0	4.2	3.9	3.4	3.9	5.4	4.2	5.6	6.3	6.4	6.8	6.3	7.0	**4.3**	**7.0**	**1.6**
17	7.7	7.6	7.8	7.7	8.7	8.1	8.0	9.9	9.6	3.9	3.1	3.3	3.4	6.2	4.5	4.5	4.2	2.4	3.2	2.9	3.4	4.0	5.3	4.5	**5.5**	**9.9**	**2.4**
18	3.4	3.4	3.3	3.2	3.4	3.5	3.8	4.0	4.2	5.2	6.0	5.3	4.9	5.7	4.8	4.1	4.6	6.2	7.5	5.8	5.8	4.7	3.9	3.7	**4.6**	**7.5**	**3.2**
19	2.7	3.1	3.1	2.6	3.1	3.0	2.5	5.0	5.8	5.4	5.6	3.8	2.9	4.0	4.7	6.0	5.3	6.0	6.5	5.8	5.4	5.7	6.9	7.2	**4.6**	**7.2**	**2.5**
20	8.2	8.3	7.1	5.5	5.6	7.4	6.3	6.2	7.3	7.8	9.5	11.6	8.9	8.0	6.0	9.3	5.5	6.6	12.4	9.0	5.2	3.7	3.3	2.9	**7.1**	**12.4**	**2.9**
21	2.7	2.0	2.1	2.0	2.3	1.8	2.0	1.7	2.6	2.5	2.6	2.0	2.3	2.8	2.7	2.7	3.0	2.6	2.5	3.4	3.0	5.5	6.3	4.7	**2.8**	**6.3**	**1.7**
22	5.0	5.3	4.4	3.2	4.2	3.9	5.3	5.0	4.3	3.8	4.7	6.2	7.3	7.4	7.1	6.5	7.2	7.7	7.3	6.2	6.5	6.1	5.9	7.1	**5.7**	**7.7**	**3.2**
23	7.3	7.0	7.1	7.2	7.2	7.5	6.9	5.2	4.4	4.9	4.1	2.8	1.2	1.3	4.6	3.0	4.5	4.6	7.4	10.5	7.6	8.1	6.2	3.8	**5.5**	**10.5**	**1.2**
24	3.0	2.5	2.4	2.4	2.4	2.8	3.0	3.0	3.0	3.0	3.3	3.4	4.0	4.1	4.6	5.0	5.7	5.9	6.2	5.8	6.3	7.1	7.7	9.5	**4.4**	**9.5**	**2.4**
25	12.0	12.3	8.2	6.8	7.9	7.0	6.6	6.6	6.7	5.6	4.2	5.3	6.4	6.8	8.7	10.3	10.5	10.4	9.5	11.5	8.1	7.0	6.3	6.8	**7.9**	**12.3**	**4.2**
26	7.9	9.9	10.5	10.0	9.3	7.2	7.0	3.9	4.1	4.6	5.3	7.2	10.0	8.4	6.2	10.5	11.8	13.7	14.1	10.5	12.3	10.4	10.1	9.9	**8.9**	**14.1**	**3.9**
27	10.3	9.7	10.8	10.0	12.3	11.5	10.7	12.5	12.2	10.3	8.4	9.8	5.8	6.4	5.4	5.0	4.2	3.4	5.5	4.4	8.3	5.4	7.0	5.6	**8.1**	**12.5**	**3.4**
28	5.6	4.5	4.8	5.6	4.5	4.6	5.7	9.8	11.3	12.2	14.1	15.5	15.2	12.5	10.1	10.7	11.4	6.5	6.7	7.8	8.2	6.7	7.0	6.8	**8.6**	**15.5**	**4.5**
29	17.7	4.2	4.3	4.0	5.1	5.0	5.8	7.5	5.4	8.1	14.9	19.2	19.2	17.1	12.2	8.0	6.6	5.5	4.0	3.0	2.6	3.3	3.8	3.5	**7.9**	**19.2**	**2.6**
30	3.6	2.9	2.9	2.8	3.3	4.2	4.8	4.2	5.0	6.6	8.0	7.5	7.6	8.7	9.9	11.6	13.7	11.2	9.7	12.6	14.0	15.1	13.7	19.6	**8.4**	**19.6**	**2.8**
31	20.0	16.9	11.6	13.1	15.5	15.2	17.7	20.2	22.3	18.7	9.1	5.4	7.2	6.2	6.7	5.8	5.0	8.1	7.9	9.1	11.4	13.6	14.9	12.0	**12.2**	**22.3**	**5.0**
MEAN	**7.6**	**7.0**	**6.8**	**6.6**	**7.1**	**7.8**	**7.9**	**8.5**	**8.1**	**7.9**	**7.8**	**7.5**	**7.2**	**6.8**	**6.2**	**6.0**	**6.0**	**5.6**	**6.2**	**6.2**	**6.6**	**6.8**	**6.8**	**7.0**	**7.0**		
MAX	**21.6**	**22.6**	**20.0**	**23.0**	**22.9**	**33.6**	**34.8**	**31.3**	**25.6**	**29.9**	**39.9**	**37.9**	**35.1**	**27.9**	**17.0**	**14.4**	**13.7**	**13.7**	**14.1**	**13.6**	**17.7**	**18.6**	**17.8**	**20.3**		**39.9**	
MIN	**1.7**	**1.5**	**1.9**	**1.4**	**1.0**	**1.0**	**0.7**	**0.7**	**0.9**	**0.9**	**0.6**	**0.9**	**1.2**	**1.3**	**1.7**	**1.4**	**1.5**	**1.4**	**1.5**	**1.1**	**1.3**	**1.3**	**1.6**	**1.6**			**0.6**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 743 DATA RECOVERY RATE = 99.9% DATA CAPTURE RATE = 100.0%

MONTHLY MEAN = 7.0 µg/m3

MAXIMUM PM2.5 = 39.9 µg/m3 DATE OF OCCURRENCE = 3/14 at 1100 MAXIMUM DAILY MEAN = 20.4 µg/m3 DATE OF OCCURRENCE = 3/14

SECOND MAXIMUM PM2.5 = 37.9 µg/m3 DATE OF OCCURRENCE = 3/14 at 1200 SECOND MAXIMUM DAILY MEAN = 12.2 µg/m3 DATE OF OCCURRENCE = 3/31

MINIMUM PM2.5 = 0.6 µg/m3 DATE OF OCCURRENCE = 3/5 at 1100 MINUMUM DAILY MEAN = 2.1 µg/m3 DATE OF OCCURRENCE = 3/11

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

UNDERLINED DATA ARE SUSPECT

Draft

CSX AQ5B Modulair

HOURLY AVERAGES of PM10 in µg/m3 for JANUARY, 2024

Hr Beg Hr End Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	10.2	13.4	14.7	15.8	13.9	9.8	11.2	7.7	10.5	13.9	9.3	7.3	8.0	7.6	7.6	5.3	7.2	6.1	5.0	6.7	8.8	8.8	8.3	6.8	**9.3**	**15.8**	**5.0**
2	5.6	7.2	5.1	5.8	6.3	6.2	9.9	9.7	10.8	4.4	7.0	7.2	10.6	12.5	13.2	13.3	16.2	10.1	13.7	8.3	6.4	6.0	6.0	5.0	**8.6**	**16.2**	**4.4**
3	5.6	11.1	7.7	6.1	7.7	7.9	10.1	14.5	17.1	8.6	15.3	9.8	9.5	12.4	12.3	17.0	16.8	12.7	16.7	14.6	17.9	19.4	14.8	12.0	**12.4**	**19.4**	**5.6**
4	12.0	14.1	12.3	12.2	9.0	9.4	14.3	28.4	15.8	25.8	30.2	18.9	15.0	11.4	13.9	4.6	9.5	10.6	13.5	11.3	8.7	8.2	8.8	8.2	**13.6**	**30.2**	**4.6**
5	6.4	5.9	6.7	8.2	6.3	6.9	6.6	10.7	23.0	15.4	9.0	8.6	10.4	12.2	10.1	14.1	19.8	18.1	15.7	24.8	22.1	25.3	22.4	23.1	**13.8**	**25.3**	**5.9**
6	16.3	15.7	16.8	15.9	19.2	14.7	12.1	20.9	17.9	20.0	21.9	14.8	17.3	18.4	19.6	19.0	22.4	13.7	5.4	4.6	4.0	5.0	6.3	6.3	**14.5**	**22.4**	**4.0**
7	9.6	8.8	5.5	7.6	7.7	4.3	4.1	6.3	6.5	7.9	10.8	9.8	9.2	6.1	5.5	4.5	4.3	2.8	3.4	3.6	3.0	2.4	1.7	2.1	**5.7**	**10.8**	**1.7**
8	3.9	3.6	6.8	10.9	11.5	8.7	5.1	5.5	6.1	10.8	8.7	6.9	6.6	7.9	10.8	7.9	10.6	13.4	15.8	13.9	12.5	16.9	12.6	17.1	**9.8**	**17.1**	**3.6**
9	10.4	17.9	13.4	32.2	11.8	10.4	13.4	13.5	13.2	16.1	28.4	38.2	40.6	38.6	54.5	84.8	63.7	30.6	32.6	22.0	51.4	44.8	9.6	7.9	**29.2**	**84.8**	**7.9**
10	6.7	5.2	3.7	4.8	9.8	6.8	6.3	7.2	5.6	3.2	3.0	1.6	2.9	4.0	1.7	3.7	1.8	2.9	2.2	4.3	3.0	2.4	2.9	2.4	**4.1**	**9.8**	**1.6**
11	5.6	6.7	3.4	5.3	4.4	3.0	7.8	27.1	18.4	13.8	10.0	9.0	6.8	7.2	8.4	11.5	9.1	13.4	25.1	26.6	23.9	20.3	14.3	18.0	**12.5**	**27.1**	**3.0**
12	14.4	15.0	11.6	12.5	16.5	14.1	12.3	28.3	21.5	17.3	13.8	10.9	11.3	12.4	25.4	11.3	13.2	13.0	15.2	28.2	50.6	45.5	30.4	9.3	**18.9**	**50.6**	**9.3**
13	9.8	15.2	---	---	1.8	2.5	4.0	4.6	5.5	5.5	6.2	6.6	6.1	6.1	5.0	4.7	5.2	5.3	5.5	4.3	3.6	2.8	2.9	3.4	**5.3**	**15.2**	**1.8**
14	3.9	4.5	6.4	8.2	6.4	10.0	5.3	8.0	9.2	12.2	15.7	13.4	8.4	7.4	6.6	6.9	5.0	5.2	5.6	4.2	5.0	4.1	5.9	22.5	**7.9**	**22.5**	**3.9**
15	9.0	4.8	4.3	7.6	6.1	4.6	7.8	9.0	8.3	7.1	7.8	10.4	9.9	7.7	7.3	8.0	7.5	7.8	8.6	7.8	8.3	6.3	6.3	6.3	**7.4**	**10.4**	**4.3**
16	5.0	7.3	8.0	8.6	8.4	14.9	18.6	33.0	18.7	18.8	25.9	39.3	32.1	39.7	33.7	27.5	22.5	19.8	20.6	20.8	21.5	21.9	22.8	21.0	**21.3**	**39.7**	**5.0**
17	14.8	12.0	14.4	14.2	14.4	17.9	25.1	41.6	28.3	17.0	14.2	10.4	10.0	10.5	10.5	10.4	8.5	18.4	26.2	23.8	22.7	24.7	28.1	32.8	**18.8**	**41.6**	**8.5**
18	38.9	48.6	33.1	31.4	23.7	30.0	43.0	45.8	48.9	66.0	47.1	35.3	31.1	15.2	8.5	9.6	9.3	13.4	23.8	31.4	23.0	23.4	21.8	33.0	**30.6**	**66.0**	**8.5**
19	20.9	23.0	17.9	21.2	19.7	18.2	13.9	16.7	26.5	30.3	34.4	24.5	22.3	33.6	31.3	47.2	34.2	16.8	19.0	19.6	11.5	9.4	11.4	11.1	**22.3**	**47.2**	**9.4**
20	17.2	11.0	16.6	12.6	10.0	9.7	5.1	6.3	8.8	13.7	15.8	16.1	13.1	11.9	---	17.6	12.6	15.9	18.0	19.3	16.9	15.2	13.1	13.0	**13.5**	**19.3**	**5.1**
21	11.5	10.0	9.8	13.6	16.8	15.0	14.5	11.8	10.0	9.5	11.0	11.8	11.1	13.4	12.4	11.8	12.0	11.6	11.5	13.7	12.5	15.7	15.1	9.7	**12.3**	**16.8**	**9.5**
22	12.5	9.6	11.4	8.9	15.0	23.5	33.0	32.7	42.1	38.7	30.1	14.7	16.6	17.5	15.1	13.0	16.4	15.8	19.1	22.6	22.7	26.5	33.8	39.2	**22.1**	**42.1**	**8.9**
23	36.0	32.4	27.5	22.3	22.1	20.3	28.8	31.8	64.2	66.5	58.4	66.9	43.1	30.9	33.8	29.7	22.1	22.6	22.5	24.0	29.5	25.0	27.7	26.9	**34.0**	**66.9**	**20.3**
24	129.8	27.2	24.2	25.3	28.7	30.2	32.4	36.7	48.6	67.9	61.2	43.2	33.2	45.7	41.8	50.2	42.2	31.2	23.2	22.3	23.7	23.1	26.1	29.0	**39.5**	**129.8**	**22.3**
25	26.0	27.1	29.0	30.0	30.3	34.5	29.5	54.3	52.4	75.0	---	110.2	79.9	58.9	82.1	51.6	---	---	---	---	---	---	---	---	**---**	**---**	**---**
26	---	---	---	---	---	---	---	---	---	29.4	33.1	17.1	12.9	11.9	5.6	15.7	18.4	11.8	---	---	---	---	---	---	**---**	**---**	**---**
27	---	---	---	---	---	16.0	5.1	8.1	6.9	17.3	23.0	12.5	15.2	10.2	7.7	12.6	14.2	10.3	8.7	9.9	13.2	11.5	11.2	13.4	**11.9**	**23.0**	**5.1**
28	14.5	11.6	10.1	7.0	8.5	8.5	6.1	0.8	0.7	0.9	1.0	1.1	1.5	2.6	2.2	1.3	1.5	2.2	1.4	1.9	3.4	3.5	4.3	4.4	**4.2**	**14.5**	**0.7**
29	5.6	4.6	3.4	2.9	2.0	3.2	13.7	7.0	3.2	3.4	3.7	4.2	3.3	3.9	6.3	5.5	5.1	4.8	5.4	5.4	6.2	5.9	5.3	5.7	**5.0**	**13.7**	**2.0**
30	5.2	5.9	5.6	5.5	4.3	3.3	2.9	5.2	5.9	8.1	5.9	19.0	6.7	6.2	5.1	4.8	5.0	5.6	6.0	9.8	8.1	7.5	8.7	8.7	**6.6**	**19.0**	**2.9**
31	8.5	9.1	9.7	9.8	9.2	11.2	9.4	7.4	10.2	11.5	22.2	24.3	25.9	24.6	24.0	19.8	15.5	12.6	18.3	19.6	16.5	14.1	16.2	17.8	**15.3**	**25.9**	**7.4**
MEAN	**16.4**	**13.4**	**12.1**	**13.1**	**12.1**	**12.5**	**13.7**	**18.0**	**18.8**	**21.2**	**19.5**	**20.1**	**17.1**	**16.4**	**17.4**	**17.6**	**15.1**	**12.6**	**14.1**	**14.8**	**15.9**	**15.4**	**13.8**	**14.3**	**15.7**		
MAX	**129.8**	**48.6**	**33.1**	**32.2**	**30.3**	**34.5**	**43.0**	**54.3**	**64.2**	**75.0**	**61.2**	**110.2**	**79.9**	**58.9**	**82.1**	**84.8**	**63.7**	**31.2**	**32.6**	**31.4**	**51.4**	**45.5**	**33.8**	**39.2**		**129.8**	
MIN	**3.9**	**3.6**	**3.4**	**2.9**	**1.8**	**2.5**	**2.9**	**0.8**	**0.7**	**0.9**	**1.0**	**1.1**	**1.5**	**2.6**	**1.7**	**1.3**	**1.5**	**2.2**	**1.4**	**1.9**	**3.0**	**2.4**	**1.7**	**2.1**			**0.7**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 712 DATA RECOVERY RATE = 95.7% DATA CAPTURE RATE = 93.5%

MONTHLY MEAN = 15.7 µg/m3

MAXIMUM PM10 = 129.8 µg/m3 DATE OF OCCURRENCE = 1/24 at 100 MAXIMUM DAILY MEAN = 39.5 µg/m3 DATE OF OCCURRENCE = 1/24

SECOND MAXIMUM PM10 = 110.2 µg/m3 DATE OF OCCURRENCE = 1/25 at 1200 SECOND MAXIMUM DAILY MEAN = 34.0 µg/m3 DATE OF OCCURRENCE = 1/23

MINIMUM PM10 = 0.7 µg/m3 DATE OF OCCURRENCE = 1/28 at 900 MINUMUM DAILY MEAN = 4.1 µg/m3 DATE OF OCCURRENCE = 1/10

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

Draft

CSX AQ5B Modulair

HOURLY AVERAGES of PM10 in µg/m3 for FEBRUARY, 2024

Hr Beg Hr End Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	18.7	19.8	13.7	13.3	12.4	14.9	16.4	21.8	18.8	18.5	13.8	10.8	9.5	9.3	7.9	9.2	13.3	13.3	15.0	13.4	10.9	10.4	10.3	9.3	**13.5**	**21.8**	**7.9**
2	10.7	13.2	17.6	16.3	16.2	19.4	18.9	19.3	16.4	14.3	16.4	10.8	8.1	7.7	10.4	6.5	4.2	3.9	3.8	3.9	4.2	4.7	3.2	5.7	**10.7**	**19.4**	**3.2**
3	2.6	1.7	2.5	2.6	2.2	2.1	4.7	4.3	4.3	4.4	4.3	5.1	5.4	5.6	5.8	6.3	10.8	15.6	16.2	22.6	32.4	41.4	20.3	15.1	**9.9**	**41.4**	**1.7**
4	13.5	11.9	11.8	11.0	9.5	13.4	17.6	9.4	11.4	13.6	6.1	12.6	20.1	8.9	9.5	9.3	8.1	8.8	18.8	26.4	24.0	23.4	28.9	24.3	**14.7**	**28.9**	**6.1**
5	21.2	18.0	21.8	21.2	14.7	15.0	29.6	37.2	25.5	17.4	13.8	11.4	21.5	18.2	14.2	15.4	13.9	18.5	24.5	18.0	11.3	10.0	9.6	9.7	**18.0**	**37.2**	**9.6**
6	12.5	12.4	15.4	13.1	11.9	12.3	15.6	21.6	17.6	14.2	10.3	10.8	12.1	8.9	13.8	19.2	10.1	9.3	15.6	49.1	23.9	14.1	19.0	17.2	**15.8**	**49.1**	**8.9**
7	72.7	12.4	17.6	14.3	16.6	20.1	28.0	32.4	37.0	22.6	25.2	17.4	15.8	18.1	22.7	28.7	28.5	31.7	22.1	82.5	49.6	48.0	51.2	32.1	**31.1**	**82.5**	**12.4**
8	26.9	29.4	45.1	41.0	37.3	38.3	63.0	45.6	40.4	34.2	36.6	26.2	19.1	19.1	16.6	16.4	17.7	16.4	18.3	10.6	9.0	10.7	10.1	16.7	**26.9**	**63.0**	**9.0**
9	16.0	16.2	19.2	18.0	20.4	23.0	27.3	22.0	25.9	19.1	18.8	23.7	28.8	18.8	32.3	24.5	24.4	23.4	25.5	25.3	26.7	25.5	28.6	25.7	**23.3**	**32.3**	**16.0**
10	28.5	30.3	31.2	34.6	33.2	35.7	35.2	38.6	40.3	56.7	54.5	56.0	52.0	32.0	40.8	51.5	65.0	35.7	28.5	46.3	47.7	39.0	35.4	30.3	**40.8**	**65.0**	**28.5**
11	21.0	15.6	14.5	12.3	9.4	13.4	24.6	22.1	25.4	33.7	22.0	24.1	21.1	16.7	16.2	26.2	20.6	18.7	20.9	19.4	17.3	16.7	18.0	19.9	**19.6**	**33.7**	**9.4**
12	24.8	19.0	16.9	19.6	16.5	20.6	17.5	20.9	29.9	31.4	23.9	31.4	28.9	23.8	23.3	24.9	25.4	24.9	21.3	15.1	12.9	10.7	7.5	5.4	**20.7**	**31.4**	**5.4**
13	4.8	5.1	2.4	7.9	4.6	3.9	3.0	3.9	3.7	3.1	5.7	7.6	13.6	18.2	18.6	19.1	12.8	10.4	6.1	6.6	5.3	8.8	8.5	9.4	**8.0**	**19.1**	**2.4**
14	8.8	4.7	4.4	3.4	2.9	3.6	5.7	7.4	11.8	9.1	7.9	7.4	7.9	5.0	9.3	7.5	7.9	7.1	5.8	4.0	4.0	9.1	7.4	6.9	**6.6**	**11.8**	**2.9**
15	8.6	11.5	9.1	7.2	9.4	8.5	9.7	10.6	6.2	11.6	6.9	4.9	6.5	7.9	9.2	10.3	8.8	7.5	12.0	11.6	15.3	14.4	16.1	17.5	**10.1**	**17.5**	**4.9**
16	15.1	9.8	10.4	8.2	7.9	7.5	---	---	---	---	---	---	---	---	---	8.1	6.9	12.3	12.6	12.2	17.2	14.2	12.4	14.4	**---**	**---**	**---**
17	8.7	12.0	53.5	18.6	6.2	9.1	14.4	18.3	12.7	7.1	7.3	8.3	8.3	10.0	11.6	10.1	10.5	10.6	8.6	9.7	9.4	12.7	8.0	6.5	**12.2**	**53.5**	**6.2**
18	6.1	10.1	7.7	7.0	9.6	7.0	7.9	8.4	10.9	10.2	10.8	6.9	9.3	10.1	10.8	10.0	6.8	7.0	7.1	11.0	5.8	5.8	4.9	3.5	**8.1**	**11.0**	**3.5**
19	5.0	4.0	5.6	8.3	7.7	8.3	13.1	11.4	13.8	16.0	16.0	13.1	13.4	12.8	15.1	14.9	13.2	21.9	22.2	26.0	26.8	27.2	25.5	26.4	**15.3**	**27.2**	**4.0**
20	29.2	30.8	32.7	29.0	19.9	21.0	15.1	15.6	15.1	7.1	7.7	10.6	10.8	11.2	14.5	13.0	12.7	14.7	17.9	15.4	15.0	14.1	13.7	16.4	**16.8**	**32.7**	**7.1**
21	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
22	---	39.1	---	45.5	40.8	46.1	61.0	59.8	63.1	33.2	22.4	24.3	29.3	21.5	24.5	27.4	29.8	34.0	34.6	32.1	26.8	26.9	29.8	22.9	**35.2**	**63.1**	**21.5**
23	20.5	20.3	22.8	22.6	24.2	21.1	22.3	24.4	21.1	18.5	21.1	16.0	16.4	16.3	15.3	14.8	14.6	12.0	35.8	17.3	17.4	15.3	15.9	14.4	**19.2**	**35.8**	**12.0**
24	14.2	14.6	10.0	8.2	8.2	11.7	11.5	14.0	11.7	16.9	18.3	18.8	16.8	9.9	10.6	9.2	8.5	7.1	4.3	3.2	4.7	3.5	3.1	4.5	**10.1**	**18.8**	**3.1**
25	3.8	6.3	4.4	3.9	5.7	6.1	5.3	7.6	4.5	5.8	7.0	7.5	7.3	5.2	5.7	6.5	7.3	8.2	7.9	10.4	10.3	13.8	14.8	17.1	**7.6**	**17.1**	**3.8**
26	10.1	5.6	5.3	9.3	12.1	8.7	7.3	11.8	15.4	39.2	33.6	25.2	15.1	14.2	29.5	47.1	16.5	40.9	66.1	38.8	34.7	19.5	20.9	18.8	**22.7**	**66.1**	**5.3**
27	17.0	18.6	19.1	15.1	17.1	19.3	26.9	31.9	32.2	28.8	36.3	39.5	40.1	40.1	37.8	24.2	19.8	19.4	20.7	16.7	---	---	---	---	**26.0**	**40.1**	**15.1**
28	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	19.3	14.9	12.3	11.4	12.6	5.8	2.3	5.3	**---**	**---**	**---**
29	5.3	7.1	7.4	8.5	5.8	6.6	8.1	7.3	10.5	19.4	13.0	12.3	11.5	11.2	11.7	10.7	14.0	9.8	10.5	9.5	10.5	53.9	32.2	28.5	**13.6**	**53.9**	**5.3**
MEAN	**16.4**	**14.8**	**16.2**	**15.6**	**14.2**	**15.4**	**19.6**	**20.3**	**20.2**	**19.5**	**17.7**	**17.0**	**17.3**	**14.6**	**16.8**	**17.4**	**16.1**	**16.4**	**18.4**	**20.3**	**18.0**	**18.5**	**16.9**	**15.7**	**17.2**		
MAX	**72.7**	**39.1**	**53.5**	**45.5**	**40.8**	**46.1**	**63.0**	**59.8**	**63.1**	**56.7**	**54.5**	**56.0**	**52.0**	**40.1**	**40.8**	**51.5**	**65.0**	**40.9**	**66.1**	**82.5**	**49.6**	**53.9**	**51.2**	**32.1**		**82.5**	
MIN	**2.6**	**1.7**	**2.4**	**2.6**	**2.2**	**2.1**	**3.0**	**3.9**	**3.7**	**3.1**	**4.3**	**4.9**	**5.4**	**5.0**	**5.7**	**6.3**	**4.2**	**3.9**	**3.8**	**3.2**	**4.0**	**3.5**	**2.3**	**3.5**			**1.7**

POSSIBLE NUMBER OF OBSERVATIONS = 696 ACTUAL NUMBER OF OBSERVATIONS = 641 DATA RECOVERY RATE = 92.1% DATA CAPTURE RATE = 89.7%

MONTHLY MEAN = 17.2 µg/m3

MAXIMUM PM10 = 82.5 µg/m3 DATE OF OCCURRENCE = 2/7 at 2000 MAXIMUM DAILY MEAN = 40.8 µg/m3 DATE OF OCCURRENCE = 2/10

SECOND MAXIMUM PM10 = 72.7 µg/m3 DATE OF OCCURRENCE = 2/7 at 100 SECOND MAXIMUM DAILY MEAN = 35.2 µg/m3 DATE OF OCCURRENCE = 2/22

MINIMUM PM10 = 1.7 µg/m3 DATE OF OCCURRENCE = 2/3 at 200 MINUMUM DAILY MEAN = 6.6 µg/m3 DATE OF OCCURRENCE = 2/14

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

Draft

CSX AQ5B Modulair

HOURLY AVERAGES of PM10 in µg/m3 for MARCH, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	25.4	13.5	14.8	26.5	17.7	25.7	33.0	46.4	22.5	9.4	9.3	11.7	13.2	12.5	12.3	12.5	9.1	7.6	8.3	11.4	14.7	13.7	11.0	13.0	**16.5**	**46.4**	**7.6**
2	11.9	12.7	13.0	14.9	15.6	17.6	17.8	18.2	22.4	21.2	10.2	3.0	3.6	2.5	2.8	3.8	3.9	4.2	5.2	3.3	5.3	4.1	4.1	5.8	**9.5**	**22.4**	**2.5**
3	6.7	7.9	7.8	7.5	---	---	---	---	---	13.8	13.3	15.4	12.3	9.7	6.7	7.2	7.1	10.7	8.8	15.8	9.4	16.2	14.4	16.9	**10.9**	**16.9**	**6.7**
4	15.5	15.1	12.8	10.2	12.1	10.5	9.2	14.4	14.1	19.6	21.2	11.0	15.9	13.0	12.2	15.7	9.0	4.9	7.3	4.0	4.6	4.1	6.1	5.0	**11.1**	**21.2**	**4.0**
5	4.9	2.6	2.3	3.6	4.5	4.1	2.8	4.8	4.3	1.7	1.4	1.7	1.5	2.5	3.0	4.5	5.7	11.1	9.8	7.7	6.6	7.5	9.3	8.7	**4.9**	**11.1**	**1.4**
6	8.5	10.7	11.8	15.0	124.1	---	---	---	37.1	19.5	14.3	7.0	6.2	7.3	7.2	4.7	4.2	4.9	5.8	7.0	7.4	7.8	6.1	8.8	**15.5**	**124.1**	**4.2**
7	5.9	4.7	3.4	2.8	2.4	3.1	3.1	4.8	2.3	3.6	3.5	4.3	4.5	4.3	4.8	4.8	4.5	5.3	9.0	10.6	7.6	8.4	7.5	5.8	**5.0**	**10.6**	**2.3**
8	9.1	5.9	11.5	8.3	10.7	11.5	7.7	8.8	6.3	3.1	5.1	12.5	5.8	3.8	8.1	6.2	6.5	6.0	14.2	8.8	12.5	13.2	14.8	13.8	**8.9**	**14.8**	**3.1**
9	18.1	19.8	22.6	20.2	26.4	29.6	37.9	51.7	52.9	53.7	54.6	67.6	64.7	57.5	42.3	27.3	28.2	23.2	8.4	2.0	2.5	3.2	3.2	4.0	**30.1**	**67.6**	**2.0**
10	3.2	2.5	---	2.3	1.5	1.5	1.4	1.3	3.6	8.2	---	---	8.6	5.9	3.5	4.9	4.1	5.9	3.1	4.4	3.3	3.3	3.2	2.6	**3.7**	**8.6**	**1.3**
11	2.7	2.7	3.9	5.6	6.8	3.1	4.2	---	9.0	8.9	12.6	12.1	11.0	12.6	20.0	16.0	9.8	4.4	9.3	5.8	4.4	3.9	3.7	7.8	**7.8**	**20.0**	**2.7**
12	6.4	3.5	5.1	3.1	2.8	6.2	5.2	5.7	7.5	13.7	13.5	16.2	18.7	14.0	19.6	18.3	19.9	14.6	16.0	18.5	26.3	18.4	15.6	14.0	**12.6**	**26.3**	**2.8**
13	19.2	11.4	15.4	17.1	37.7	50.3	65.4	71.5	95.3	69.8	14.9	15.9	14.5	13.5	14.6	18.0	12.2	17.4	26.6	33.9	53.7	47.4	60.8	56.6	**35.5**	**95.3**	**11.4**
14	60.7	30.7	40.0	59.5	63.3	56.3	56.0	116.1	134.1	93.0	120.8	100.0	68.0	121.9	50.1	27.0	33.7	27.9	28.8	22.5	21.1	26.0	25.7	26.9	**58.8**	**134.1**	**21.1**
15	29.3	35.7	42.4	37.2	47.5	41.8	31.9	25.6	19.2	22.7	20.3	15.1	11.4	11.3	10.7	8.6	5.5	9.3	8.4	7.1	14.8	14.1	6.1	4.7	**20.0**	**47.5**	**4.7**
16	2.6	2.7	2.5	3.8	3.3	3.6	3.7	4.4	6.6	6.4	6.7	7.1	5.5	5.1	5.9	5.9	9.2	9.7	14.6	7.7	10.9	10.8	9.9	11.5	**6.7**	**14.6**	**2.5**
17	14.1	13.3	11.2	11.0	14.5	15.2	14.5	18.8	13.3	5.6	5.3	7.5	8.8	28.7	11.2	11.6	11.7	9.3	6.7	6.6	8.2	7.2	9.3	16.8	**11.7**	**28.7**	**5.3**
18	19.4	7.5	7.1	7.4	6.5	8.7	16.9	17.1	14.6	14.8	30.8	20.8	20.3	19.3	11.4	13.3	20.9	---	---	28.8	---	12.8	13.5	10.8	**15.4**	**30.8**	**6.5**
19	6.9	7.9	6.5	6.2	9.1	4.8	6.2	15.7	---	12.4	17.2	9.8	9.6	16.9	17.0	27.0	21.8	23.4	20.8	17.9	19.4	19.9	21.1	17.9	**14.6**	**27.0**	**4.8**
20	18.5	18.5	13.0	14.7	14.8	20.3	15.8	19.6	21.2	30.1	52.4	73.6	48.1	41.3	36.0	---	27.6	30.2	---	---	18.5	12.9	10.1	8.3	**26.0**	**73.6**	**8.3**
21	8.4	5.9	5.3	5.6	6.3	3.9	9.3	8.3	13.7	13.5	11.5	9.8	11.5	---	12.3	7.1	11.3	8.2	8.9	10.9	6.5	23.4	23.3	10.9	**10.3**	**23.4**	**3.9**
22	7.4	11.0	9.4	6.3	8.2	7.9	8.8	12.0	8.8	6.2	7.8	12.9	10.9	13.3	12.7	10.1	12.5	15.7	14.2	9.8	13.0	12.4	15.6	20.1	**11.1**	**20.1**	**6.2**
23	23.3	24.1	18.6	13.5	9.1	9.2	7.2	5.5	7.2	9.8	11.5	9.2	2.7	2.1	5.9	4.0	6.0	5.9	9.8	14.3	11.6	14.5	14.7	7.3	**10.3**	**24.1**	**2.1**
24	4.6	3.8	3.4	3.1	3.0	4.6	4.4	5.8	3.7	4.3	4.2	4.1	4.2	4.9	5.0	8.6	6.9	6.9	6.8	6.1	7.8	10.1	14.1	19.3	**6.2**	**19.3**	**3.0**
25	68.7	53.8	13.7	26.2	16.3	9.2	7.8	9.1	8.3	8.3	6.2	6.5	7.4	7.5	11.4	15.3	21.4	17.4	19.6	19.0	10.3	13.8	16.0	18.1	**17.1**	**68.7**	**6.2**
26	42.3	69.2	46.4	36.2	35.3	23.1	23.9	9.6	10.4	11.8	13.2	17.4	17.9	17.5	14.8	16.2	18.7	21.1	20.5	24.1	27.1	21.7	22.4	19.8	**24.2**	**69.2**	**9.6**
27	18.3	17.2	18.1	16.9	19.2	22.2	19.3	23.1	25.4	21.9	16.6	15.0	6.9	8.1	16.9	6.4	4.8	5.0	9.5	9.5	8.8	10.5	15.0	18.1	**14.7**	**25.4**	**4.8**
28	12.0	5.7	5.2	6.2	3.7	4.4	4.8	6.1	8.4	10.4	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
29	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
30	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
31	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
MEAN	**16.9**	**15.0**	**13.6**	**14.0**	**19.3**	**15.3**	**16.1**	**21.0**	**22.0**	**18.5**	**19.2**	**18.7**	**15.3**	**17.6**	**14.0**	**11.7**	**12.5**	**11.9**	**12.0**	**12.2**	**12.9**	**13.4**	**13.9**	**13.8**	**15.4**		
MAX	**68.7**	**69.2**	**46.4**	**59.5**	**124.1**	**56.3**	**65.4**	**116.1**	**134.1**	**93.0**	**120.8**	**100.0**	**68.0**	**121.9**	**50.1**	**27.3**	**33.7**	**30.2**	**28.8**	**33.9**	**53.7**	**47.4**	**60.8**	**56.6**		**134.1**	
MIN	**2.6**	**2.5**	**2.3**	**2.3**	**1.5**	**1.5**	**1.4**	**1.3**	**2.3**	**1.7**	**1.4**	**1.7**	**1.5**	**2.1**	**2.8**	**3.8**	**3.9**	**4.2**	**3.1**	**2.0**	**2.5**	**3.2**	**3.2**	**2.6**			**1.3**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 638 DATA RECOVERY RATE = 85.8% DATA CAPTURE RATE = 87.1%

MONTHLY MEAN = 15.4 µg/m3

MAXIMUM PM10 = 134.1 µg/m3 DATE OF OCCURRENCE = 3/14 at 900 MAXIMUM DAILY MEAN = 58.8 µg/m3 DATE OF OCCURRENCE = 3/14

SECOND MAXIMUM PM10 = 124.1 µg/m3 DATE OF OCCURRENCE = 3/6 at 500 SECOND MAXIMUM DAILY MEAN = 35.5 µg/m3 DATE OF OCCURRENCE = 3/13

MINIMUM PM10 = 1.3 µg/m3 DATE OF OCCURRENCE = 3/10 at 800 MINUMUM DAILY MEAN = 3.7 µg/m3 DATE OF OCCURRENCE = 3/10

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

UNDERLINED DATA ARE SUSPECT

Draft

CSX AQ5B Modulair

HOURLY AVERAGES of PM2.5 in µg/m3 for JANUARY, 2024

Hr Beg Hr End Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	8.5	9.3	10.8	11.7	11.5	8.7	9.8	6.5	9.3	12.8	8.2	6.7	7.2	7.0	6.9	4.4	5.8	5.2	4.4	6.3	8.3	8.0	7.5	6.0	**7.9**	**12.8**	**4.4**
2	4.9	6.6	4.5	5.1	5.4	5.3	7.5	6.2	7.8	3.3	4.8	5.1	8.3	9.1	9.4	9.0	6.2	5.0	6.2	6.3	4.5	4.8	3.9	3.7	**5.9**	**9.4**	**3.3**
3	4.5	5.8	5.4	4.9	5.8	5.7	6.1	6.2	7.7	5.9	11.0	7.0	7.0	9.9	10.2	11.3	10.1	8.7	10.2	10.0	10.4	12.4	11.1	9.7	**8.2**	**12.4**	**4.5**
4	9.3	9.7	9.6	8.7	5.9	6.3	4.9	5.8	6.6	17.7	21.5	14.3	6.5	3.9	4.6	2.7	3.1	3.8	4.4	4.4	4.5	5.3	6.3	5.7	**7.3**	**21.5**	**2.7**
5	5.5	4.9	5.1	6.6	4.6	5.3	3.3	2.4	4.5	5.3	4.6	4.9	7.2	7.2	6.7	8.4	7.4	7.3	8.1	10.8	11.4	11.6	12.7	13.7	**7.0**	**13.7**	**2.4**
6	11.2	10.8	10.0	9.5	10.7	7.5	7.6	11.0	9.8	11.2	7.5	8.3	9.3	10.6	9.5	8.6	7.2	6.0	3.5	3.4	3.3	4.0	5.6	5.7	**7.9**	**11.2**	**3.3**
7	9.2	8.4	5.3	7.2	7.4	4.1	3.8	5.9	6.2	7.4	9.9	9.5	7.1	5.8	4.9	3.7	3.4	2.5	2.2	2.1	2.3	2.3	1.4	1.8	**5.1**	**9.9**	**1.4**
8	3.5	3.1	6.6	10.7	10.8	8.3	3.9	4.0	4.0	7.9	6.6	6.3	5.6	7.3	8.5	6.4	6.9	6.9	9.4	7.1	6.5	6.2	6.2	7.4	**6.6**	**10.8**	**3.1**
9	7.4	7.4	6.9	9.8	6.9	5.0	7.6	8.6	8.1	4.2	4.1	5.1	5.7	6.0	7.1	10.7	9.5	8.4	8.7	3.7	6.3	5.3	2.7	2.0	**6.5**	**10.7**	**2.0**
10	1.9	2.0	1.3	2.5	5.2	3.4	2.7	2.2	2.3	0.7	0.6	0.4	0.6	0.6	0.5	0.8	1.0	1.6	1.7	2.9	2.6	2.1	2.0	1.8	**1.8**	**5.2**	**0.4**
11	2.7	2.9	2.5	3.5	3.3	2.2	3.9	6.4	7.7	7.2	5.0	3.5	3.5	3.2	3.4	3.8	4.5	4.6	7.3	8.3	8.5	8.7	7.4	9.9	**5.1**	**9.9**	**2.2**
12	7.7	8.8	6.3	6.0	6.0	6.2	5.1	7.8	11.9	12.9	10.9	8.7	7.7	7.1	6.9	5.9	6.8	6.3	5.9	6.0	7.3	7.1	5.1	3.3	**7.2**	**12.9**	**3.3**
13	3.7	6.1	7.5	4.7	0.9	1.5	2.2	2.3	2.8	2.5	3.7	3.8	3.7	3.5	3.4	3.6	3.8	4.0	4.1	3.3	2.9	2.4	2.2	2.7	**3.3**	**7.5**	**0.9**
14	2.2	2.9	3.5	5.3	3.7	3.6	3.0	2.6	3.3	3.5	3.8	5.3	7.2	6.1	4.7	4.2	3.5	3.7	3.1	2.2	2.0	2.0	2.6	4.8	**3.7**	**7.2**	**2.0**
15	4.6	2.9	2.8	4.0	2.9	1.7	2.5	3.3	3.3	3.5	4.3	6.1	6.6	5.0	5.6	6.1	6.2	5.8	5.6	6.3	5.3	4.3	4.5	4.9	**4.5**	**6.6**	**1.7**
16	3.4	4.9	6.1	7.2	7.2	8.0	8.7	10.1	10.6	11.8	17.5	30.8	27.7	35.8	30.6	25.1	21.8	17.4	15.6	14.8	14.7	12.8	11.2	13.0	**15.2**	**35.8**	**3.4**
17	9.9	5.4	4.3	3.1	4.7	4.6	5.2	6.3	6.9	7.7	7.2	6.1	5.9	6.0	5.8	5.1	5.0	4.0	8.2	8.4	7.3	5.5	8.0	7.2	**6.1**	**9.9**	**3.1**
18	6.9	8.1	7.5	8.4	7.6	7.9	8.8	11.6	12.5	15.5	13.7	11.5	13.1	5.9	4.4	4.8	4.9	5.3	6.2	7.5	7.2	9.1	8.2	9.9	**8.6**	**15.5**	**4.4**
19	10.1	11.3	11.0	8.8	10.9	12.2	11.5	12.4	15.6	19.0	17.5	15.0	16.3	26.3	25.9	43.4	31.4	13.5	15.6	15.8	9.6	6.8	8.5	7.9	**15.6**	**43.4**	**6.8**
20	15.3	10.1	15.5	11.5	8.7	8.2	2.8	2.1	4.7	7.7	7.6	8.9	8.2	8.3	8.2	10.0	9.8	11.5	14.0	14.4	13.6	10.4	8.3	9.2	**9.5**	**15.5**	**2.1**
21	7.5	6.5	6.5	10.1	13.5	13.5	10.5	9.8	7.8	7.0	7.1	8.0	8.3	9.0	9.9	8.7	8.5	8.6	8.4	6.2	9.5	11.7	10.2	6.0	**8.8**	**13.5**	**6.0**
22	6.4	6.0	6.0	5.3	6.4	8.5	8.5	8.9	17.3	22.0	15.2	9.6	10.7	10.7	10.9	8.5	9.1	9.2	10.2	10.3	11.7	11.2	10.7	11.9	**10.2**	**22.0**	**5.3**
23	10.7	12.5	11.0	9.8	9.8	11.4	11.1	12.9	26.1	27.9	30.0	34.0	28.6	21.2	16.6	16.3	14.8	13.5	14.9	13.6	15.5	18.4	19.7	19.4	**17.4**	**34.0**	**9.8**
24	29.3	19.7	19.0	18.5	18.1	19.4	19.1	19.7	20.4	21.8	26.1	27.2	23.9	28.4	26.7	24.8	21.1	19.1	16.8	14.8	17.5	17.6	19.0	21.8	**21.2**	**29.3**	**14.8**
25	18.8	19.4	19.7	22.0	21.1	20.5	20.0	20.8	22.6	24.6	33.1	38.1	41.9	36.4	35.2	33.0	18.9	19.0	12.7	13.6	19.5	16.6	13.1	11.1	**22.9**	**41.9**	**11.1**
26	7.1	4.2	4.1	5.4	3.6	3.9	4.5	6.6	9.7	9.0	7.8	7.6	5.9	7.1	2.8	10.1	9.1	6.7	7.4	7.4	4.9	5.7	3.2	4.0	**6.1**	**10.1**	**2.8**
27	4.7	4.2	4.2	2.5	3.2	2.0	1.8	2.0	3.8	8.5	13.2	9.9	11.5	6.3	5.5	8.9	8.1	7.1	6.9	7.6	8.3	8.6	8.4	7.9	**6.4**	**13.2**	**1.8**
28	10.2	8.6	6.6	4.6	3.2	1.6	0.8	0.3	0.2	0.4	0.4	0.6	0.6	0.8	0.8	0.6	0.5	1.1	1.0	1.6	2.6	2.5	2.9	2.8	**2.3**	**10.2**	**0.2**
29	5.1	4.1	2.8	2.5	1.7	2.6	2.4	2.7	1.6	1.7	1.5	1.5	1.6	2.3	3.5	3.0	3.4	3.6	4.1	3.8	4.1	4.5	4.6	4.7	**3.0**	**5.1**	**1.5**
30	4.7	4.7	4.3	4.2	3.7	2.6	1.8	2.5	2.7	2.9	3.3	4.4	4.8	5.3	3.8	3.2	3.4	4.0	4.0	5.5	5.6	5.4	5.7	5.8	**4.0**	**5.8**	**1.8**
31	4.6	4.4	4.2	3.9	3.3	3.3	3.3	2.8	3.0	3.2	3.9	4.4	5.0	5.9	7.5	6.2	5.3	5.3	6.1	6.7	6.5	6.2	5.8	5.6	**4.8**	**7.5**	**2.8**
MEAN	**7.8**	**7.3**	**7.1**	**7.4**	**7.0**	**6.6**	**6.3**	**6.9**	**8.4**	**9.6**	**10.1**	**10.1**	**9.9**	**9.9**	**9.4**	**9.7**	**8.4**	**7.4**	**7.6**	**7.6**	**7.9**	**7.7**	**7.4**	**7.5**	**8.1**		
MAX	**29.3**	**19.7**	**19.7**	**22.0**	**21.1**	**20.5**	**20.0**	**20.8**	**26.1**	**27.9**	**33.1**	**38.1**	**41.9**	**36.4**	**35.2**	**43.4**	**31.4**	**19.1**	**16.8**	**15.8**	**19.5**	**18.4**	**19.7**	**21.8**		**43.4**	
MIN	**1.9**	**2.0**	**1.3**	**2.5**	**0.9**	**1.5**	**0.8**	**0.3**	**0.2**	**0.4**	**0.4**	**0.4**	**0.6**	**0.6**	**0.5**	**0.6**	**0.5**	**1.1**	**1.0**	**1.6**	**2.0**	**2.0**	**1.4**	**1.8**			**0.2**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 744 DATA RECOVERY RATE = 100.0% DATA CAPTURE RATE = 100.0%

MONTHLY MEAN = 8.1 µg/m3

MAXIMUM PM2.5 = 43.4 µg/m3 DATE OF OCCURRENCE = 1/19 at 1600 MAXIMUM DAILY MEAN = 22.9 µg/m3 DATE OF OCCURRENCE = 1/25

SECOND MAXIMUM PM2.5 = 41.9 µg/m3 DATE OF OCCURRENCE = 1/25 at 1300 SECOND MAXIMUM DAILY MEAN = 21.2 µg/m3 DATE OF OCCURRENCE = 1/24

MINIMUM PM2.5 = 0.2 µg/m3 DATE OF OCCURRENCE = 1/28 at 900 MINUMUM DAILY MEAN = 1.8 µg/m3 DATE OF OCCURRENCE = 1/10

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

Draft

CSX AQ5B Modulair

HOURLY AVERAGES of PM2.5 in µg/m3 for FEBRUARY, 2024

Hr Beg Hr End Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	5.9	6.6	6.0	6.0	5.9	6.3	6.3	7.1	12.3	15.0	11.2	7.4	6.8	6.5	6.2	6.3	9.8	8.7	8.7	9.1	8.6	8.5	8.2	7.1	**7.9**	**15.0**	**5.9**
2	7.5	8.7	9.3	9.1	8.4	9.8	10.3	10.8	8.6	7.6	13.3	9.2	5.9	3.9	5.3	2.4	1.8	1.8	1.7	1.9	1.8	2.0	1.6	1.8	**6.0**	**13.3**	**1.6**
3	1.4	1.0	1.6	1.6	1.5	1.4	1.6	2.6	3.0	3.3	3.5	3.9	4.2	4.6	4.7	4.9	5.1	5.1	4.5	5.6	16.6	20.2	13.2	9.0	**5.1**	**20.2**	**1.0**
4	7.3	8.0	6.4	7.2	5.8	6.9	6.8	5.6	8.2	7.0	4.9	5.2	6.9	6.3	6.7	6.1	5.2	4.8	7.6	8.4	9.2	11.0	12.5	10.6	**7.2**	**12.5**	**4.8**
5	11.7	10.6	10.6	10.5	8.2	7.8	8.2	7.4	8.2	9.2	8.8	6.5	7.8	7.6	7.9	7.7	7.2	8.0	7.3	9.5	6.7	6.2	6.1	6.4	**8.1**	**11.7**	**6.1**
6	7.0	7.5	7.6	6.5	5.6	5.6	6.3	6.5	7.7	6.5	4.8	4.6	3.7	3.4	3.9	4.0	4.0	3.5	5.3	7.5	5.1	4.1	6.1	7.1	**5.5**	**7.7**	**3.4**
7	12.0	6.2	7.5	7.5	6.2	4.8	4.1	5.0	8.5	10.2	10.5	9.8	9.7	9.7	8.3	10.9	11.3	8.8	9.0	13.3	13.5	16.0	13.3	12.3	**9.5**	**16.0**	**4.1**
8	11.3	10.5	11.9	14.7	11.8	11.5	16.3	15.2	14.5	17.0	18.9	17.1	11.4	8.3	10.4	8.2	8.7	8.4	7.1	6.3	6.0	7.0	5.9	8.5	**11.1**	**18.9**	**5.9**
9	7.0	5.6	5.8	6.5	7.1	8.8	11.1	6.8	8.5	9.5	12.4	14.5	15.0	13.0	14.7	16.8	16.8	16.1	16.7	16.5	17.3	17.4	17.5	17.1	**12.4**	**17.5**	**5.6**
10	18.0	18.2	18.4	18.5	19.7	19.9	19.6	20.2	23.7	33.5	36.3	37.4	32.3	18.0	26.4	23.0	23.1	20.7	18.3	19.3	20.4	20.2	19.4	18.9	**22.6**	**37.4**	**18.0**
11	15.6	13.2	11.8	9.6	7.5	10.0	16.5	16.7	17.2	19.1	17.1	20.1	18.1	13.7	13.1	14.2	13.9	14.1	15.4	13.9	14.0	13.6	12.6	12.5	**14.3**	**20.1**	**7.5**
12	11.8	11.7	11.9	13.3	13.0	16.0	12.7	12.0	14.7	15.4	15.1	17.1	19.4	19.2	19.0	19.1	17.3	15.2	13.7	11.7	9.8	9.1	6.7	4.8	**13.7**	**19.4**	**4.8**
13	3.7	2.9	1.8	1.5	1.1	1.1	1.7	3.0	2.3	1.6	4.1	7.0	12.8	14.3	14.9	12.5	10.2	9.6	5.1	4.6	3.9	6.6	6.1	7.4	**5.8**	**14.9**	**1.1**
14	7.6	4.1	3.4	2.7	2.1	2.4	3.7	5.1	5.3	4.6	4.5	2.7	2.9	2.7	3.5	3.5	3.9	3.7	3.1	2.4	2.1	2.9	3.0	3.2	**3.5**	**7.6**	**2.1**
15	5.0	5.7	4.7	4.1	6.4	3.7	5.0	6.3	3.4	3.9	4.3	3.6	4.1	4.3	4.8	4.3	3.7	3.3	4.2	4.8	5.4	5.5	6.8	5.2	**4.6**	**6.8**	**3.3**
16	6.4	5.7	4.4	5.6	5.5	4.7	---	---	---	---	---	---	---	---	---	3.9	3.1	5.3	5.3	5.3	5.7	4.9	5.8	5.8	**---**	**---**	**---**
17	4.2	3.6	4.1	3.6	4.2	4.3	8.6	9.2	7.0	6.5	5.0	7.0	6.8	8.0	9.8	9.1	8.8	7.3	7.0	6.6	5.7	10.7	6.5	5.3	**6.6**	**10.7**	**3.6**
18	4.6	5.9	5.2	5.0	6.0	5.2	5.1	5.8	7.4	7.1	6.8	4.5	4.7	5.5	4.7	4.5	2.8	3.1	3.4	4.7	3.5	3.1	2.1	1.5	**4.6**	**7.4**	**1.5**
19	2.0	1.8	1.9	2.3	2.3	2.5	4.3	4.5	5.5	10.3	10.0	9.5	9.8	9.9	12.1	10.8	9.8	5.7	10.4	13.4	14.2	14.1	15.0	12.5	**8.1**	**15.0**	**1.8**
20	13.8	13.2	14.4	12.9	13.1	13.5	7.7	5.7	5.7	3.5	3.7	4.0	5.2	6.3	7.3	9.7	8.1	6.6	7.6	7.8	4.0	2.9	2.5	2.3	**7.5**	**14.4**	**2.3**
21	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
22	---	5.5	---	8.0	5.3	5.7	10.4	10.4	10.8	6.4	5.0	5.4	5.9	4.7	4.5	5.1	7.3	6.5	7.8	8.2	8.2	8.1	12.2	11.4	**7.4**	**12.2**	**4.5**
23	9.2	7.5	8.9	9.5	9.6	9.3	9.3	10.4	15.2	13.1	15.0	13.5	13.6	13.3	12.0	11.7	10.8	8.2	10.5	12.8	13.5	13.0	13.1	10.4	**11.3**	**15.2**	**7.5**
24	10.3	10.7	7.3	6.9	7.5	10.8	9.5	11.7	9.9	14.9	15.8	16.6	14.1	8.3	8.6	7.2	6.7	4.6	2.4	2.2	2.4	2.1	1.9	2.6	**8.1**	**16.6**	**1.9**
25	2.7	4.0	3.3	1.9	2.4	2.7	2.6	3.4	2.8	4.4	3.9	4.0	4.5	3.9	4.4	4.7	4.5	4.2	3.6	4.5	4.2	3.9	4.4	3.9	**3.7**	**4.7**	**1.9**
26	3.9	3.0	2.9	3.9	4.9	4.4	4.4	6.1	9.4	20.3	20.4	15.9	9.4	9.2	10.9	11.6	10.5	11.8	14.5	13.3	15.2	11.7	11.8	11.5	**10.0**	**20.4**	**2.9**
27	10.5	11.6	10.4	10.6	11.0	10.6	11.1	13.8	22.0	24.3	29.5	30.0	28.1	26.2	19.6	14.7	12.9	12.5	13.1	13.4	---	---	---	---	**16.7**	**30.0**	**10.4**
28	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	10.4	6.7	5.9	8.2	8.4	3.3	1.9	3.3	**---**	**---**	**---**
29	4.1	3.9	4.0	3.5	3.7	4.3	3.7	3.2	6.5	8.8	8.1	8.1	7.6	6.9	6.0	5.4	4.1	3.1	2.5	2.5	2.8	3.6	3.6	5.0	**4.7**	**8.8**	**2.5**
MEAN	**7.9**	**7.3**	**7.1**	**7.1**	**6.9**	**7.2**	**8.0**	**8.3**	**9.6**	**10.9**	**11.3**	**10.9**	**10.4**	**9.1**	**9.6**	**9.0**	**8.6**	**7.8**	**7.9**	**8.5**	**8.5**	**8.6**	**8.1**	**7.7**	**8.6**		
MAX	**18.0**	**18.2**	**18.4**	**18.5**	**19.7**	**19.9**	**19.6**	**20.2**	**23.7**	**33.5**	**36.3**	**37.4**	**32.3**	**26.2**	**26.4**	**23.0**	**23.1**	**20.7**	**18.3**	**19.3**	**20.4**	**20.2**	**19.4**	**18.9**		**37.4**	
MIN	**1.4**	**1.0**	**1.6**	**1.5**	**1.1**	**1.1**	**1.6**	**2.6**	**2.3**	**1.6**	**3.5**	**2.7**	**2.9**	**2.7**	**3.5**	**2.4**	**1.8**	**1.8**	**1.7**	**1.9**	**1.8**	**2.0**	**1.6**	**1.5**			**1.0**

POSSIBLE NUMBER OF OBSERVATIONS = 696 ACTUAL NUMBER OF OBSERVATIONS = 641 DATA RECOVERY RATE = 92.1% DATA CAPTURE RATE = 89.7%

MONTHLY MEAN = 8.6 µg/m3

MAXIMUM PM2.5 = 37.4 µg/m3 DATE OF OCCURRENCE = 2/10 at 1200 MAXIMUM DAILY MEAN = 22.6 µg/m3 DATE OF OCCURRENCE = 2/10

SECOND MAXIMUM PM2.5 = 36.3 µg/m3 DATE OF OCCURRENCE = 2/10 at 1100 SECOND MAXIMUM DAILY MEAN = 16.7 µg/m3 DATE OF OCCURRENCE = 2/27

MINIMUM PM2.5 = 1.0 µg/m3 DATE OF OCCURRENCE = 2/3 at 200 MINUMUM DAILY MEAN = 3.5 µg/m3 DATE OF OCCURRENCE = 2/14

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

Draft

CSX AQ5B Modulair

HOURLY AVERAGES of PM2.5 in µg/m3 for MARCH, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	5.3	5.6	5.7	7.7	6.8	6.2	8.7	14.8	11.2	4.7	5.5	8.8	11.0	8.3	7.5	6.0	4.8	3.4	3.7	4.7	5.4	5.6	4.8	4.9	**6.7**	**14.8**	**3.4**
2	5.3	6.6	6.6	5.4	4.9	5.8	6.3	6.5	5.7	4.2	2.4	1.5	1.8	1.2	1.4	2.9	2.9	2.7	3.2	1.6	3.2	3.3	2.4	4.5	**3.8**	**6.6**	**1.2**
3	4.8	5.3	5.6	5.2	5.0	5.7	4.7	6.2	11.7	11.5	11.0	11.6	10.2	6.9	4.9	4.8	6.2	6.4	6.3	8.6	6.8	10.4	8.0	8.8	**7.3**	**11.7**	**4.7**
4	10.2	12.0	10.4	8.6	9.1	8.4	7.9	7.9	7.6	9.0	10.1	5.5	5.4	4.6	5.0	4.5	2.1	1.4	1.9	2.0	2.2	2.1	1.8	1.9	**5.9**	**12.0**	**1.4**
5	1.9	1.6	1.5	1.6	2.1	1.9	1.7	2.9	2.4	0.8	0.4	0.9	0.9	1.1	1.6	2.7	4.2	5.3	4.4	4.1	4.1	5.0	5.0	4.8	**2.6**	**5.3**	**0.4**
6	5.2	5.7	5.2	6.0	10.1	22.1	24.3	21.2	9.6	7.8	6.5	6.0	5.2	3.5	2.7	2.2	2.4	3.1	4.2	5.0	5.4	5.7	4.4	4.8	**7.4**	**24.3**	**2.2**
7	4.2	2.7	2.1	1.4	1.3	1.2	1.7	2.5	0.8	0.8	0.7	0.8	1.3	1.5	1.6	1.3	1.5	1.3	1.9	2.7	2.6	2.7	2.9	3.6	**1.8**	**4.2**	**0.7**
8	3.3	3.2	3.7	4.0	4.1	4.6	4.4	5.6	4.1	1.8	2.3	3.3	2.4	2.7	3.7	4.4	4.0	3.0	3.1	2.0	2.6	2.7	3.1	3.3	**3.3**	**5.6**	**1.8**
9	3.5	3.5	4.8	4.5	5.3	5.4	6.1	7.3	8.5	9.0	9.6	10.2	11.0	12.4	12.3	10.5	8.3	4.3	1.6	0.8	0.8	1.9	2.2	3.3	**6.1**	**12.4**	**0.8**
10	2.6	1.9	---	1.6	0.9	0.9	0.8	0.6	2.9	5.6	8.2	---	4.8	3.3	2.6	2.5	2.2	1.7	1.8	2.0	2.0	1.9	2.1	2.0	**2.4**	**8.2**	**0.6**
11	2.2	1.9	2.5	2.4	2.5	2.4	3.1	---	2.8	3.2	2.9	2.8	2.4	2.6	3.8	4.1	2.9	2.4	2.5	2.0	1.8	1.3	1.4	4.2	**2.6**	**4.2**	**1.3**
12	3.1	2.0	2.0	1.2	1.1	2.3	1.6	1.8	2.8	4.8	6.7	8.1	8.3	8.0	10.1	7.7	7.7	6.1	4.5	7.2	8.8	6.9	5.3	5.1	**5.1**	**10.1**	**1.1**
13	6.2	5.0	7.4	7.6	9.7	11.4	11.7	12.6	16.7	19.8	7.9	8.4	8.3	8.2	8.4	8.2	7.4	6.4	13.5	14.1	17.0	17.9	16.1	17.8	**11.1**	**19.8**	**5.0**
14	18.7	17.0	17.1	19.6	19.9	16.6	15.4	19.7	21.6	29.1	41.7	39.8	35.9	29.9	19.1	12.2	14.2	9.7	10.6	11.0	12.1	12.9	14.2	15.8	**19.7**	**41.7**	**9.7**
15	17.4	20.2	18.1	20.0	18.2	18.4	17.0	12.3	8.4	13.9	12.6	7.4	4.2	4.1	3.3	2.9	2.9	3.5	2.8	3.4	3.0	4.2	3.7	2.8	**9.3**	**20.2**	**2.8**
16	1.7	1.4	1.6	2.0	2.1	1.8	1.6	2.1	3.7	4.1	5.1	4.6	3.9	4.0	3.7	4.2	5.8	4.9	5.8	5.7	5.5	5.9	5.4	5.8	**3.8**	**5.9**	**1.4**
17	6.5	6.6	6.9	6.7	7.6	7.1	7.1	8.5	7.4	3.0	2.7	3.0	3.7	6.7	4.7	4.2	4.6	2.7	3.0	2.6	3.0	3.5	4.6	4.0	**5.0**	**8.5**	**2.6**
18	3.6	3.8	3.9	3.6	3.4	3.5	6.0	6.0	5.0	6.6	6.9	6.4	6.7	7.5	5.9	5.5	6.3	7.9	---	7.8	---	7.0	5.9	5.6	**5.6**	**7.9**	**3.4**
19	4.5	5.0	4.6	2.8	3.3	3.1	2.7	7.1	---	8.0	7.8	5.0	3.7	4.0	4.5	6.2	5.4	6.0	6.4	5.2	4.8	5.1	6.2	6.6	**5.1**	**8.0**	**2.7**
20	7.4	7.3	6.3	4.8	5.0	6.7	5.7	5.5	6.8	7.4	9.3	11.4	9.4	8.3	6.0	9.0	6.2	7.9	---	---	7.0	4.7	4.5	4.0	**6.8**	**11.4**	**4.0**
21	4.0	3.0	2.8	2.5	2.7	2.3	2.9	2.0	3.8	3.5	3.5	2.6	2.9	---	3.5	3.5	4.1	3.4	3.1	2.5	1.7	3.1	4.7	3.4	**3.1**	**4.7**	**1.7**
22	3.9	4.0	3.7	2.9	3.5	3.0	4.3	4.0	4.3	4.1	4.6	5.2	7.8	7.1	5.9	6.7	7.7	7.6	6.7	5.0	5.4	5.2	6.5	7.0	**5.2**	**7.8**	**2.9**
23	6.2	5.6	5.4	5.3	5.0	4.8	4.4	3.4	2.5	3.0	2.8	2.1	1.0	1.1	5.4	3.6	5.5	5.5	9.2	13.7	10.2	10.8	8.0	5.0	**5.3**	**13.7**	**1.0**
24	3.7	3.0	2.5	2.2	2.2	2.3	2.5	2.5	2.9	2.9	2.9	3.3	3.3	3.5	3.9	4.6	5.2	5.5	5.9	5.1	5.4	6.0	6.6	7.9	**3.9**	**7.9**	**2.2**
25	7.5	7.7	7.4	5.4	5.8	5.6	5.3	4.9	5.6	4.9	4.3	4.8	5.2	5.7	7.6	9.3	9.7	9.5	8.4	9.6	6.6	5.5	4.9	5.7	**6.5**	**9.7**	**4.3**
26	5.9	6.5	7.6	8.2	10.4	7.1	5.5	3.6	3.9	3.9	4.4	6.0	9.1	7.5	5.4	10.1	11.8	14.2	11.8	8.2	9.3	7.8	8.3	8.7	**7.7**	**14.2**	**3.6**
27	8.1	7.2	7.6	7.2	8.6	8.1	7.3	9.1	9.6	8.0	6.0	7.2	4.1	4.4	3.8	3.6	3.1	2.6	3.9	3.1	5.7	3.7	4.6	3.7	**5.8**	**9.6**	**2.6**
28	3.4	2.8	2.9	3.7	2.9	2.8	3.3	4.7	7.0	8.5	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
29	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
30	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
31	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
MEAN	**5.7**	**5.6**	**5.8**	**5.5**	**5.8**	**6.1**	**6.2**	**6.9**	**6.6**	**6.9**	**7.0**	**6.8**	**6.4**	**6.1**	**5.5**	**5.5**	**5.5**	**5.1**	**5.2**	**5.4**	**5.5**	**5.7**	**5.5**	**5.7**	**5.9**		
MAX	**18.7**	**20.2**	**18.1**	**20.0**	**19.9**	**22.1**	**24.3**	**21.2**	**21.6**	**29.1**	**41.7**	**39.8**	**35.9**	**29.9**	**19.1**	**12.2**	**14.2**	**14.2**	**13.5**	**14.1**	**17.0**	**17.9**	**16.1**	**17.8**		**41.7**	
MIN	**1.7**	**1.4**	**1.5**	**1.2**	**0.9**	**0.9**	**0.8**	**0.6**	**0.8**	**0.8**	**0.4**	**0.8**	**0.9**	**1.1**	**1.4**	**1.3**	**1.5**	**1.3**	**1.6**	**0.8**	**0.8**	**1.3**	**1.4**	**1.9**			**0.4**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 649 DATA RECOVERY RATE = 87.2% DATA CAPTURE RATE = 87.1%

MONTHLY MEAN = 5.9 µg/m3

MAXIMUM PM2.5 = 41.7 µg/m3 DATE OF OCCURRENCE = 3/14 at 1100 MAXIMUM DAILY MEAN = 19.7 µg/m3 DATE OF OCCURRENCE = 3/14

SECOND MAXIMUM PM2.5 = 39.8 µg/m3 DATE OF OCCURRENCE = 3/14 at 1200 SECOND MAXIMUM DAILY MEAN = 11.1 µg/m3 DATE OF OCCURRENCE = 3/13

MINIMUM PM2.5 = 0.4 µg/m3 DATE OF OCCURRENCE = 3/5 at 1100 MINUMUM DAILY MEAN = 1.8 µg/m3 DATE OF OCCURRENCE = 3/7

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

UNDERLINED DATA ARE SUSPECT

Draft

CSX AQ5C Modulair

HOURLY AVERAGES of PM10 in µg/m3 for JANUARY, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
2	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
3	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
4	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
5	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
6	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
7	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
8	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
9	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
10	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
11	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
12	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
13	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
14	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
15	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
16	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
17	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
18	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
19	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
20	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
21	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
22	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
23	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
24	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
25	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
26	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
27	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
28	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
29	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
30	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
31	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MEAN	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---		
MAX	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---		---	
MIN	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---			---

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 0 DATA RECOVERY RATE = 0.0% DATA CAPTURE RATE = 0.0%

MONTHLY MEAN = --- µg/m3

MAXIMUM PM10 = --- µg/m3 DATE OF OCCURRENCE = --- MAXIMUM DAILY MEAN = --- µg/m3 DATE OF OCCURRENCE = ---

SECOND MAXIMUM PM10 = --- µg/m3 DATE OF OCCURRENCE = --- SECOND MAXIMUM DAILY MEAN = --- µg/m3 DATE OF OCCURRENCE = ---

MINIMUM PM10 = --- µg/m3 DATE OF OCCURRENCE = --- MINUMUM DAILY MEAN = --- µg/m3 DATE OF OCCURRENCE = ---

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

Draft

CSX AQ5C Modulair

HOURLY AVERAGES of PM10 in µg/m3 for FEBRUARY, 2024

Hr Beg Hr End Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
2	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
3	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
4	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
5	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
6	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
7	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
8	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
9	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
10	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
11	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
12	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
13	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
14	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
15	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
16	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
17	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
18	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
19	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
20	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
21	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
22	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
23	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
24	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
25	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
26	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
27	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
28	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	19.7	12.9	9.0	10.2	9.8	4.2	3.4	4.6	---	---	---
29	5.0	4.3	5.0	4.5	4.4	5.5	6.3	4.9	9.9	12.4	11.9	11.1	10.8	10.8	11.1	9.7	9.1	7.9	9.5	8.8	8.9	44.1	27.6	21.4	**11.0**	**44.1**	**4.3**
MEAN	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**10.6**		
MAX	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---		**44.1**	
MIN	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---			**3.4**

POSSIBLE NUMBER OF OBSERVATIONS = 696 ACTUAL NUMBER OF OBSERVATIONS = 32 DATA RECOVERY RATE = 4.6% DATA CAPTURE RATE = 3.4%

MONTHLY MEAN = 10.6 µg/m3

MAXIMUM PM10 = 44.1 µg/m3 DATE OF OCCURRENCE = 2/29 at 2200 MAXIMUM DAILY MEAN = 11.0 µg/m3 DATE OF OCCURRENCE = 2/29

SECOND MAXIMUM PM10 = 27.6 µg/m3 DATE OF OCCURRENCE = 2/29 at 2300 SECOND MAXIMUM DAILY MEAN = -1000.0 µg/m3 DATE OF OCCURRENCE = 2/0

MINIMUM PM10 = 3.4 µg/m3 DATE OF OCCURRENCE = 2/28 at 2300 MINUMUM DAILY MEAN = 11.0 µg/m3 DATE OF OCCURRENCE = 2/29

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

Draft

CSX AQ5C Modulair

HOURLY AVERAGES of PM10 in µg/m3 for MARCH, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	19.5	13.8	15.6	24.7	20.7	31.3	39.0	48.6	22.5	9.4	9.8	12.4	11.8	12.8	13.5	14.4	10.8	8.3	9.9	11.6	17.4	15.0	14.6	15.0	**17.6**	**48.6**	**8.3**
2	12.7	11.9	12.1	14.2	16.2	18.6	16.9	18.9	20.5	18.7	10.4	3.0	4.7	3.4	3.6	3.7	3.9	5.1	5.4	4.5	6.7	4.9	6.3	7.2	**9.7**	**20.5**	**3.0**
3	8.1	9.3	9.5	8.8	---	---	---	---	---	16.1	14.0	16.1	12.6	8.6	6.9	7.9	8.4	12.2	9.4	15.5	11.6	19.3	16.6	20.1	**12.2**	**20.1**	**6.9**
4	17.3	17.4	14.7	12.0	14.3	12.2	11.6	15.8	17.2	20.8	28.2	14.1	20.7	13.6	14.0	13.5	11.4	5.8	6.6	4.3	4.7	3.7	4.7	5.6	**12.7**	**28.2**	**3.7**
5	5.1	3.0	2.7	3.5	4.9	3.9	3.0	5.8	5.0	1.9	1.1	1.7	2.1	3.5	3.5	5.1	7.2	11.9	10.7	8.5	7.8	9.0	10.8	9.5	**5.5**	**11.9**	**1.1**
6	9.7	13.5	13.1	14.9	146.3	---	---	---	34.0	15.8	14.4	7.7	7.5	6.9	7.3	6.5	4.9	6.5	8.0	9.4	10.3	9.9	8.9	10.2	**17.4**	**146.3**	**4.9**
7	7.7	6.3	4.0	3.9	3.6	4.2	4.1	5.4	2.2	3.6	3.5	4.0	5.0	5.5	6.5	4.5	4.9	4.2	9.0	10.8	8.2	9.3	8.9	7.4	**5.7**	**10.8**	**2.2**
8	10.4	8.1	11.4	8.8	10.9	12.3	8.6	10.7	6.6	2.5	4.5	11.5	5.7	5.7	8.8	6.4	6.6	6.2	16.4	9.2	13.6	15.6	15.7	18.1	**9.8**	**18.1**	**2.5**
9	22.6	21.5	26.8	22.0	26.5	28.5	39.5	50.6	50.4	51.6	51.9	63.3	65.6	54.1	38.1	25.2	27.1	25.0	9.0	2.6	3.3	3.2	4.0	4.3	**29.9**	**65.6**	**2.6**
10	4.0	3.2	---	2.2	1.5	1.6	1.9	1.3	2.9	5.5	8.2	---	5.5	3.9	2.5	5.8	6.7	4.4	4.0	3.7	2.8	3.7	---	---	**3.8**	**8.2**	**1.3**
11	---	---	---	---	3.4	---	4.4	---	8.1	---	---	12.0	---	16.5	16.5	18.5	10.5	5.0	5.6	4.5	3.7	3.2	4.4	8.6	**---**	**---**	**---**
12	8.3	4.3	5.0	4.3	3.3	5.9	4.5	5.5	6.7	10.7	14.1	15.5	17.3	15.2	---	---	19.3	14.2	17.8	17.9	26.3	17.1	16.0	15.0	**12.0**	**26.3**	**3.3**
13	17.7	13.3	14.9	16.9	32.0	38.0	48.0	56.5	72.5	60.9	14.5	15.6	13.3	14.0	15.3	15.7	12.7	18.5	24.6	29.3	44.3	41.1	48.1	48.3	**30.3**	**72.5**	**12.7**
14	48.9	29.7	35.1	46.9	53.0	45.0	50.5	91.8	115.1	83.3	109.6	93.6	75.3	111.9	52.0	27.3	33.5	28.6	28.3	23.8	20.1	23.1	23.0	25.4	**53.1**	**115.1**	**20.1**
15	30.1	36.2	44.7	35.6	43.3	37.0	31.2	23.6	18.4	20.7	18.3	13.7	13.9	11.8	8.4	6.8	6.0	10.7	9.7	6.8	13.7	15.3	6.2	4.1	**19.4**	**44.7**	**4.1**
16	3.0	2.0	2.2	3.8	4.0	4.1	4.6	4.4	6.5	7.6	8.6	6.5	5.5	5.4	5.9	6.3	8.0	7.5	11.8	8.8	10.9	10.4	10.1	11.4	**6.6**	**11.8**	**2.0**
17	11.6	11.4	10.3	10.7	14.3	13.2	12.7	17.6	13.6	5.6	4.6	7.0	8.3	21.5	11.1	8.4	12.7	7.5	7.4	6.5	7.4	7.9	9.2	13.4	**10.6**	**21.5**	**4.6**
18	12.3	7.1	6.2	6.1	5.7	7.9	13.2	16.0	12.7	16.7	29.9	23.3	13.9	15.4	11.7	10.9	18.0	26.0	34.6	23.4	---	12.8	9.7	6.8	**14.8**	**34.6**	**5.7**
19	4.8	7.3	4.9	5.5	5.7	4.4	4.4	12.7	---	15.6	24.2	9.0	8.1	16.2	16.0	21.4	18.8	17.4	17.3	14.4	13.3	15.6	19.2	14.1	**12.6**	**24.2**	**4.4**
20	15.8	14.8	12.8	12.5	12.5	17.8	15.1	17.4	17.4	24.0	41.8	63.7	41.9	34.2	33.4	---	30.6	28.5	59.4	---	19.7	---	---	5.3	**25.9**	**63.7**	**5.3**
21	6.1	4.4	4.0	3.9	4.4	3.7	7.0	9.3	14.3	10.2	13.6	10.7	12.8	---	12.5	9.2	9.2	8.3	8.6	12.0	7.8	33.0	24.1	12.7	**10.5**	**33.0**	**3.7**
22	9.0	10.7	9.6	6.1	7.7	7.8	8.1	10.0	7.6	5.9	8.0	14.1	10.0	12.4	13.1	10.7	12.2	14.3	16.6	10.9	14.7	13.4	15.5	19.4	**11.2**	**19.4**	**5.9**
23	23.6	20.6	16.4	12.4	9.3	10.3	8.9	6.8	7.7	10.6	12.4	10.0	3.2	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
24	---	---	---	3.2	3.2	4.9	4.7	5.7	4.0	3.8	4.1	4.3	4.8	5.1	6.0	7.6	6.8	7.0	7.2	6.9	8.0	10.6	15.3	20.6	**6.8**	**20.6**	**3.2**
25	70.1	64.5	13.5	24.3	18.2	9.8	8.7	9.6	9.2	8.0	5.7	6.8	8.7	8.4	14.0	15.4	22.8	17.4	22.5	20.0	11.2	14.0	15.5	18.0	**18.2**	**70.1**	**5.7**
26	37.2	75.2	45.2	38.7	34.1	22.1	21.2	9.7	8.5	11.5	13.6	19.0	19.4	19.3	15.0	16.8	17.0	20.1	22.3	29.4	33.4	25.0	25.4	22.1	**25.1**	**75.2**	**8.5**
27	19.7	19.2	20.9	19.0	22.1	24.3	22.3	22.2	24.5	22.6	16.4	14.7	7.9	8.7	16.5	8.0	4.8	4.7	10.0	10.2	9.8	10.6	15.6	17.7	**15.5**	**24.5**	**4.7**
28	13.4	5.2	6.1	7.2	4.5	5.1	6.6	10.5	12.5	13.2	16.5	21.2	21.6	19.9	18.2	18.5	17.1	12.6	12.1	14.5	14.3	13.2	13.1	12.6	**12.9**	**21.6**	**4.5**
29	81.7	8.9	9.5	8.0	8.3	8.7	18.8	21.4	9.3	12.3	24.6	34.5	27.3	29.0	26.1	30.7	20.1	18.1	10.2	9.3	8.1	9.4	8.9	8.4	**18.8**	**81.7**	**8.0**
30	7.8	6.9	7.4	6.3	6.9	8.0	11.1	9.1	6.5	9.2	10.3	10.0	9.8	11.3	14.4	14.6	18.3	14.6	12.6	16.4	16.9	19.5	19.3	25.0	**12.2**	**25.0**	**6.3**
31	26.2	19.2	11.5	13.0	14.0	13.8	15.5	18.0	22.4	20.0	10.2	6.0	7.8	7.5	8.1	7.0	5.7	8.5	9.4	11.0	12.7	14.5	19.2	11.2	**13.0**	**26.2**	**5.7**
MEAN	**19.5**	**16.2**	**13.9**	**13.3**	**18.5**	**14.4**	**15.4**	**19.1**	**19.3**	**17.3**	**18.2**	**18.2**	**15.7**	**17.3**	**14.4**	**12.4**	**13.2**	**12.6**	**14.5**	**12.3**	**13.2**	**13.9**	**14.6**	**14.4**	**15.5**		
MAX	**81.7**	**75.2**	**45.2**	**46.9**	**146.3**	**45.0**	**50.5**	**91.8**	**115.1**	**83.3**	**109.6**	**93.6**	**75.3**	**111.9**	**52.0**	**30.7**	**33.5**	**28.6**	**59.4**	**29.4**	**44.3**	**41.1**	**48.1**	**48.3**		**146.3**	
MIN	**3.0**	**2.0**	**2.2**	**2.2**	**1.5**	**1.6**	**1.9**	**1.3**	**2.2**	**1.9**	**1.1**	**1.7**	**2.1**	**3.4**	**2.5**	**3.7**	**3.9**	**4.2**	**4.0**	**2.6**	**2.8**	**3.2**	**4.0**	**4.1**			**1.1**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 700 DATA RECOVERY RATE = 94.1% DATA CAPTURE RATE = 93.5%

MONTHLY MEAN = 15.5 µg/m3

MAXIMUM PM10 = 146.3 µg/m3 DATE OF OCCURRENCE = 3/6 at 500 MAXIMUM DAILY MEAN = 53.1 µg/m3 DATE OF OCCURRENCE = 3/14

SECOND MAXIMUM PM10 = 115.1 µg/m3 DATE OF OCCURRENCE = 3/14 at 900 SECOND MAXIMUM DAILY MEAN = 30.3 µg/m3 DATE OF OCCURRENCE = 3/13

MINIMUM PM10 = 1.1 µg/m3 DATE OF OCCURRENCE = 3/5 at 1100 MINUMUM DAILY MEAN = 3.8 µg/m3 DATE OF OCCURRENCE = 3/10

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

UNDERLINED DATA ARE SUSPECT

Draft

CSX AQ5C Modulair

HOURLY AVERAGES of PM2.5 in µg/m3 for JANUARY, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
2	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
3	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
4	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
5	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
6	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
7	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
8	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
9	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
10	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
11	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
12	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
13	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
14	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
15	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
16	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
17	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
18	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
19	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
20	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
21	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
22	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
23	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
24	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
25	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
26	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
27	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
28	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
29	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
30	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
31	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MEAN	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---		
MAX	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---		---	
MIN	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---			---

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 0 DATA RECOVERY RATE = 0.0% DATA CAPTURE RATE = 0.0%

MONTHLY MEAN = --- µg/m3

MAXIMUM PM2.5 = --- µg/m3 DATE OF OCCURRENCE = --- MAXIMUM DAILY MEAN = --- µg/m3 DATE OF OCCURRENCE = ---

SECOND MAXIMUM PM2.5 = --- µg/m3 DATE OF OCCURRENCE = --- SECOND MAXIMUM DAILY MEAN = --- µg/m3 DATE OF OCCURRENCE = ---

MINIMUM PM2.5 = --- µg/m3 DATE OF OCCURRENCE = --- MINUMUM DAILY MEAN = --- µg/m3 DATE OF OCCURRENCE = ---

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

Draft

CSX AQ5C Modulair

HOURLY AVERAGES of PM2.5 in µg/m3 for FEBRUARY, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
2	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
3	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
4	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
5	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
6	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
7	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
8	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
9	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
10	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
11	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
12	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
13	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
14	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
15	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
16	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
17	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
18	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
19	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
20	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
21	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
22	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
23	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
24	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
25	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
26	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
27	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
28	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	10.2	6.2	5.3	7.9	6.8	2.5	1.5	2.7	---	---	---
29	2.9	2.8	3.1	2.6	2.7	3.3	3.0	2.8	4.7	6.3	6.2	6.7	7.2	5.9	5.3	4.4	3.4	2.4	3.9	4.0	4.3	5.4	5.7	6.4	**4.3**	**7.2**	**2.4**
MEAN	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**4.6**		
MAX	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---		**10.2**	
MIN	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---			**1.5**

POSSIBLE NUMBER OF OBSERVATIONS = 696 ACTUAL NUMBER OF OBSERVATIONS = 32 DATA RECOVERY RATE = 4.6% DATA CAPTURE RATE = 3.4%

MONTHLY MEAN = 4.6 µg/m3

MAXIMUM PM2.5 = 10.2 µg/m3 DATE OF OCCURRENCE = 2/28 at 1700 MAXIMUM DAILY MEAN = 4.3 µg/m3 DATE OF OCCURRENCE = 2/29

SECOND MAXIMUM PM2.5 = 7.9 µg/m3 DATE OF OCCURRENCE = 2/28 at 2000 SECOND MAXIMUM DAILY MEAN = -1000.0 µg/m3 DATE OF OCCURRENCE = 2/0

MINIMUM PM2.5 = 1.5 µg/m3 DATE OF OCCURRENCE = 2/28 at 2300 MINUMUM DAILY MEAN = 4.3 µg/m3 DATE OF OCCURRENCE = 2/29

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

Draft

CSX AQ5C Modulair

HOURLY AVERAGES of PM2.5 in µg/m3 for MARCH, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	7.6	7.2	7.5	9.2	9.1	10.2	12.0	18.2	13.1	5.8	6.5	8.9	9.3	8.8	9.1	7.3	6.0	4.2	4.4	5.6	6.7	6.8	6.0	6.5	**8.1**	**18.2**	**4.2**
2	6.2	6.9	7.3	6.2	6.1	7.2	7.9	7.9	6.4	4.8	3.2	1.9	2.9	2.1	1.6	2.3	2.8	3.9	4.3	2.5	4.5	3.9	5.0	5.8	**4.7**	**7.9**	**1.6**
3	6.4	7.2	7.8	7.3	7.1	7.9	6.9	9.7	15.3	13.9	12.1	12.2	10.1	6.7	4.9	5.4	7.1	7.8	7.4	9.8	8.7	13.3	10.2	11.2	**9.0**	**15.3**	**4.9**
4	12.7	14.9	13.0	10.9	12.0	10.8	10.1	9.6	9.1	10.8	11.8	6.2	5.6	4.7	5.1	4.6	2.2	1.6	2.1	2.1	2.3	2.4	2.0	2.0	**7.0**	**14.9**	**1.6**
5	2.3	2.1	2.0	2.1	2.9	2.5	2.4	3.9	3.2	1.2	0.5	1.1	1.3	1.3	2.2	3.7	5.0	6.7	5.4	5.3	5.3	6.6	6.8	6.4	**3.4**	**6.8**	**0.5**
6	7.4	8.6	7.2	7.7	12.1	30.3	31.4	26.2	11.1	9.1	7.8	6.9	6.6	4.5	3.4	3.1	3.4	4.9	6.5	7.7	9.0	7.8	7.0	6.1	**9.8**	**31.4**	**3.1**
7	6.4	4.2	3.0	2.5	2.1	2.4	2.8	3.1	0.9	0.8	0.7	0.8	1.4	1.6	2.0	1.5	1.6	1.4	2.1	3.1	3.5	3.8	3.7	4.2	**2.4**	**6.4**	**0.7**
8	4.6	4.7	4.9	4.8	5.4	5.8	5.7	6.9	4.7	1.9	2.7	3.8	2.7	3.1	4.2	4.7	4.4	3.6	3.6	2.3	2.7	2.8	3.1	3.6	**4.0**	**6.9**	**1.9**
9	4.0	3.9	5.4	4.9	5.2	5.2	5.9	7.0	8.0	8.4	9.3	9.6	10.4	11.6	11.5	9.9	8.5	5.0	2.4	0.9	1.2	1.9	2.8	3.1	**6.0**	**11.6**	**0.9**
10	3.2	2.5	---	1.8	1.0	1.0	0.7	0.7	2.3	4.4	6.9	---	4.2	2.7	2.2	2.3	1.8	1.5	1.6	1.5	1.4	1.7	---	---	**2.2**	**6.9**	**0.7**
11	---	---	---	---	1.7	---	2.2	---	2.0	---	---	2.1	---	1.9	2.6	2.9	2.1	1.7	1.8	1.7	1.7	1.3	1.5	4.4	**---**	**---**	**---**
12	3.8	2.2	2.1	1.3	1.5	2.1	1.5	1.8	2.6	4.3	5.6	7.0	6.8	7.4	---	---	6.4	5.8	5.3	7.0	8.9	7.8	7.2	7.7	**4.8**	**8.9**	**1.3**
13	8.6	6.9	8.4	9.7	11.4	13.2	13.2	14.3	18.7	21.7	8.6	8.5	8.2	9.2	9.2	7.8	7.6	6.9	13.3	14.1	17.6	18.8	17.9	20.4	**12.2**	**21.7**	**6.9**
14	21.7	20.2	19.7	22.3	21.9	19.6	17.3	21.1	25.4	31.0	41.0	39.6	37.0	28.2	17.8	11.3	13.9	9.3	10.4	10.9	12.0	13.0	14.9	17.0	**20.6**	**41.0**	**9.3**
15	19.9	23.2	21.3	21.5	19.4	18.8	17.9	12.4	9.2	13.8	11.9	7.4	3.4	3.2	2.9	2.5	2.8	3.9	5.0	4.5	4.5	6.5	4.0	3.1	**10.1**	**23.2**	**2.5**
16	2.0	1.6	1.9	2.7	2.9	3.2	2.8	2.5	4.6	6.3	7.3	5.5	4.5	4.2	3.7	4.5	5.6	4.5	5.6	6.4	6.0	6.6	6.1	6.7	**4.4**	**7.3**	**1.6**
17	7.2	7.3	7.6	7.7	8.5	7.7	7.8	9.4	9.7	4.1	3.4	3.8	3.8	5.8	4.6	4.6	4.3	2.7	3.4	3.0	3.5	4.1	5.3	4.6	**5.5**	**9.7**	**2.7**
18	3.6	3.8	3.6	3.6	3.6	3.7	3.8	4.0	4.5	5.4	6.4	5.6	5.2	6.1	5.4	4.3	5.0	6.3	7.1	5.4	---	4.9	4.2	3.8	**4.7**	**7.1**	**3.6**
19	2.9	3.4	3.4	2.8	3.0	3.1	2.7	4.8	---	5.2	5.8	4.0	3.1	4.1	4.6	6.1	5.1	5.7	6.2	5.5	5.1	5.5	6.7	7.1	**4.6**	**7.1**	**2.7**
20	8.1	8.2	6.8	5.5	5.4	7.4	6.0	6.0	7.0	7.2	9.1	10.7	8.6	7.6	5.9	8.5	5.6	6.6	11.1	---	5.3	---	---	3.1	**7.1**	**11.1**	**3.1**
21	2.7	2.2	2.2	2.3	2.5	1.8	2.0	1.8	2.5	2.4	2.5	2.0	2.3	---	2.9	2.7	3.2	2.7	2.7	3.4	3.0	5.4	6.4	4.8	**2.8**	**6.4**	**1.8**
22	4.9	5.3	4.3	3.2	4.2	3.9	5.4	5.1	4.3	3.9	4.6	5.9	7.3	7.4	6.8	6.4	7.2	7.6	7.2	5.5	5.7	5.6	5.8	6.8	**5.5**	**7.6**	**3.2**
23	6.9	6.4	6.4	6.2	6.1	6.6	5.9	4.6	4.0	4.7	3.9	2.8	1.2	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
24	---	---	---	2.5	2.6	2.9	3.1	3.1	3.2	3.2	3.3	3.6	4.0	4.0	4.5	5.2	5.8	5.9	6.2	5.7	6.2	7.0	8.0	9.1	**4.7**	**9.1**	**2.5**
25	11.2	11.9	7.5	6.8	7.2	7.1	6.3	6.2	6.7	5.5	4.0	5.0	6.1	6.4	8.4	10.2	10.5	10.4	8.9	10.7	7.5	6.0	5.3	6.0	**7.5**	**11.9**	**4.0**
26	7.3	8.9	9.2	8.4	7.9	6.3	6.2	3.5	3.5	4.0	4.6	6.7	9.5	7.9	5.6	10.0	11.3	12.9	12.7	9.0	9.7	8.4	8.3	8.1	**7.9**	**12.9**	**3.5**
27	8.2	8.1	8.8	8.2	10.0	9.3	8.3	10.2	10.0	8.4	6.5	8.0	4.7	5.4	4.2	4.1	3.7	2.9	4.6	3.6	6.9	4.4	5.7	4.4	**6.6**	**10.2**	**2.9**
28	4.6	3.7	3.9	4.8	3.8	3.9	4.8	8.3	10.7	11.6	13.4	15.6	16.7	14.8	11.2	11.8	11.4	6.9	6.7	7.4	7.3	5.7	6.6	7.0	**8.4**	**16.7**	**3.7**
29	17.3	4.3	4.5	4.1	4.6	4.3	5.1	6.8	5.1	7.7	15.4	20.4	19.5	17.7	12.4	7.9	6.5	5.4	4.0	3.1	2.6	3.1	3.6	3.3	**7.8**	**20.4**	**2.6**
30	3.3	2.7	2.7	2.2	2.6	3.6	4.1	3.8	4.9	7.0	8.2	7.9	7.9	9.0	9.9	11.1	13.1	10.6	8.7	11.1	12.3	13.9	12.6	15.9	**7.8**	**15.9**	**2.2**
31	16.0	12.5	8.4	10.8	12.6	12.0	13.6	16.5	20.8	18.8	9.5	5.6	7.3	6.9	7.3	6.0	5.1	7.8	7.8	8.9	10.7	12.1	13.1	10.5	**10.8**	**20.8**	**5.1**
MEAN	**7.6**	**7.1**	**6.8**	**6.5**	**6.7**	**7.5**	**7.3**	**8.0**	**7.8**	**7.9**	**7.9**	**7.6**	**7.4**	**7.0**	**6.1**	**6.0**	**6.0**	**5.6**	**6.0**	**5.8**	**6.3**	**6.6**	**6.8**	**7.0**	**6.9**		
MAX	**21.7**	**23.2**	**21.3**	**22.3**	**21.9**	**30.3**	**31.4**	**26.2**	**25.4**	**31.0**	**41.0**	**39.6**	**37.0**	**28.2**	**17.8**	**11.8**	**13.9**	**12.9**	**13.3**	**14.1**	**17.6**	**18.8**	**17.9**	**20.4**		**41.0**	
MIN	**2.0**	**1.6**	**1.9**	**1.3**	**1.0**	**1.0**	**0.7**	**0.7**	**0.9**	**0.8**	**0.5**	**0.8**	**1.2**	**1.3**	**1.6**	**1.5**	**1.6**	**1.4**	**1.6**	**0.9**	**1.2**	**1.3**	**1.5**	**2.0**			**0.5**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 709 DATA RECOVERY RATE = 95.3% DATA CAPTURE RATE = 93.5%

MONTHLY MEAN = 6.9 µg/m3

MAXIMUM PM2.5 = 41.0 µg/m3 DATE OF OCCURRENCE = 3/14 at 1100 MAXIMUM DAILY MEAN = 20.6 µg/m3 DATE OF OCCURRENCE = 3/14

SECOND MAXIMUM PM2.5 = 39.6 µg/m3 DATE OF OCCURRENCE = 3/14 at 1200 SECOND MAXIMUM DAILY MEAN = 12.2 µg/m3 DATE OF OCCURRENCE = 3/13

MINIMUM PM2.5 = 0.5 µg/m3 DATE OF OCCURRENCE = 3/5 at 1100 MINUMUM DAILY MEAN = 2.2 µg/m3 DATE OF OCCURRENCE = 3/10

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

UNDERLINED DATA ARE SUSPECT

Draft

CSX AQ8A Modulair

HOURLY AVERAGES of PM10 in µg/m3 for JANUARY, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	12.4	11.7	17.3	15.9	14.6	18.2	24.1	17.5	17.1	17.1	14.3	9.4	9.7	10.2	8.3	8.6	10.0	9.0	8.0	9.4	13.5	12.3	13.0	16.7	**13.3**	**24.1**	**8.0**
2	16.2	10.9	8.9	11.0	10.1	8.9	10.1	8.3	6.5	7.8	9.1	8.7	7.9	12.6	13.3	13.3	12.6	15.3	14.1	12.3	10.4	8.9	7.7	7.4	**10.5**	**16.2**	**6.5**
3	7.8	13.2	7.9	7.3	7.2	7.3	9.2	18.4	27.3	15.6	25.1	14.2	11.2	20.1	21.2	37.6	19.1	16.4	19.7	34.6	20.9	20.7	12.7	13.1	**17.0**	**37.6**	**7.2**
4	21.1	29.3	15.4	15.6	20.0	15.5	14.8	25.5	24.9	24.6	26.6	26.1	21.5	21.1	24.5	23.4	15.9	5.4	5.5	8.0	5.1	6.5	6.2	10.1	**17.2**	**29.3**	**5.1**
5	11.9	8.8	6.9	10.8	10.6	12.7	9.7	15.2	24.9	22.1	14.2	11.6	13.2	14.6	14.7	20.1	29.0	29.9	31.9	30.8	35.7	25.7	22.1	21.1	**18.7**	**35.7**	**6.9**
6	15.5	16.3	54.6	100.5	49.2	27.7	16.8	60.6	51.1	23.6	24.6	17.5	19.4	20.4	26.3	21.7	22.7	13.6	6.3	6.8	6.3	7.6	8.5	10.2	**26.2**	**100.5**	**6.3**
7	13.5	13.3	8.2	6.7	8.2	7.2	8.5	10.2	11.1	8.8	11.8	7.4	8.2	6.4	6.3	3.9	5.7	4.0	6.2	5.8	5.5	3.3	2.9	2.9	**7.3**	**13.5**	**2.9**
8	4.1	5.2	8.3	10.9	12.3	9.5	---	11.2	11.4	16.8	12.9	13.8	10.3	11.4	14.3	11.2	15.4	18.7	19.9	26.6	20.3	20.4	18.5	14.8	**13.8**	**26.6**	**4.1**
9	11.6	12.2	12.6	13.5	26.5	22.4	22.1	23.4	22.3	29.7	34.9	42.7	41.0	49.2	60.6	73.5	47.7	28.8	26.7	13.9	3.2	3.5	1.8	1.8	**26.1**	**73.5**	**1.8**
10	1.7	2.1	3.5	3.5	4.0	4.7	4.1	4.6	2.6	1.7	4.6	3.6	3.5	5.4	2.4	2.3	2.7	2.9	4.3	2.7	3.7	2.9	3.2	2.5	**3.3**	**5.4**	**1.7**
11	3.2	3.6	4.3	4.4	5.2	5.0	9.0	22.3	9.7	12.4	5.6	5.1	7.0	6.1	6.8	8.4	7.1	21.8	83.6	33.3	30.8	18.7	11.1	18.4	**14.3**	**83.6**	**3.2**
12	14.4	14.4	11.2	17.2	14.3	25.3	17.8	60.8	34.4	20.1	24.5	22.2	22.0	21.5	32.3	57.8	22.7	30.6	39.3	47.5	43.9	63.5	29.6	8.5	**29.0**	**63.5**	**8.5**
13	10.6	14.6	17.0	---	1.4	2.3	3.1	4.5	4.6	5.9	5.6	5.3	5.8	5.6	5.7	5.2	4.9	6.3	4.8	4.9	4.4	3.9	3.0	3.4	**5.8**	**17.0**	**1.4**
14	3.2	3.6	4.0	4.7	5.4	4.6	4.4	4.4	4.7	5.5	7.8	15.0	9.6	6.9	9.7	7.8	7.1	4.6	5.3	6.2	7.1	6.1	8.7	12.3	**6.6**	**15.0**	**3.2**
15	9.5	8.6	6.7	10.8	7.9	5.2	10.3	9.2	7.1	6.8	9.3	12.0	12.9	9.9	8.9	9.1	9.0	8.8	9.6	9.3	8.8	8.5	6.5	7.6	**8.8**	**12.9**	**5.2**
16	6.1	9.9	10.8	11.7	12.0	19.7	21.8	39.7	27.7	26.8	34.3	33.3	28.0	34.1	29.0	21.8	20.4	14.5	17.0	16.8	17.7	17.4	19.3	---	**21.3**	**39.7**	**6.1**
17	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	19.6	22.9	32.4	22.8	20.2	26.1	41.2	32.2	**---**	**---**	**---**
18	32.3	32.5	40.6	38.7	27.7	38.1	38.4	49.9	62.7	64.9	44.2	42.5	36.3	24.0	15.0	11.5	11.5	18.7	29.0	37.0	27.5	23.8	29.2	40.8	**34.0**	**64.9**	**11.5**
19	26.7	29.4	21.6	29.7	25.1	23.1	17.6	21.9	32.7	36.3	40.5	30.0	29.8	40.2	39.0	45.7	29.3	16.4	18.1	17.4	11.5	12.9	13.7	11.7	**25.8**	**45.7**	**11.5**
20	10.3	9.2	10.6	9.2	5.5	4.7	5.8	4.4	6.8	8.5	11.6	8.8	8.4	7.1	8.3	8.2	9.1	8.1	11.3	14.8	15.7	15.6	14.0	12.4	**9.5**	**15.7**	**4.4**
21	11.0	9.0	8.3	14.2	14.2	14.0	10.2	11.6	10.6	10.1	11.8	11.4	11.9	12.7	12.3	14.3	11.9	14.1	13.8	16.0	15.0	14.6	14.1	12.5	**12.5**	**16.0**	**8.3**
22	14.6	16.0	13.6	15.4	20.0	27.7	40.9	52.9	59.4	46.4	35.3	20.5	16.2	18.5	16.4	15.7	22.7	15.9	25.6	27.5	26.7	35.2	34.5	30.7	**27.0**	**59.4**	**13.6**
23	33.0	31.5	29.7	24.1	21.3	24.0	33.4	33.6	70.9	80.9	64.5	73.6	48.7	40.9	41.3	42.8	32.0	37.6	26.4	30.7	30.1	33.4	33.7	32.5	**39.6**	**80.9**	**21.3**
24	37.6	30.4	31.1	32.4	34.5	36.8	41.2	48.2	58.6	127.8	91.8	65.2	42.2	48.6	46.7	55.2	51.8	41.3	27.4	29.8	30.1	29.7	31.1	35.8	**46.1**	**127.8**	**27.4**
25	32.5	32.7	37.8	36.2	33.9	41.7	43.8	44.1	50.7	71.4	94.3	81.8	76.3	57.6	66.0	65.3	45.1	---	---	---	---	---	---	---	**---**	**---**	**---**
26	---	---	---	---	---	---	---	---	---	22.2	21.0	14.4	13.3	9.2	7.7	18.9	24.6	15.6	19.6	---	---	---	---	---	**---**	**---**	**---**
27	---	---	---	---	6.7	4.4	7.0	7.9	12.6	32.7	29.5	12.6	18.5	18.1	16.0	19.5	15.8	20.8	18.4	15.3	20.1	18.8	16.0	16.6	**16.4**	**32.7**	**4.4**
28	17.1	14.5	13.7	8.4	8.9	8.5	4.2	1.4	1.2	3.7	1.1	1.4	1.8	2.4	2.5	2.1	2.3	2.8	3.1	4.4	5.6	5.3	7.0	7.1	**5.4**	**17.1**	**1.1**
29	8.2	6.3	4.4	4.3	2.9	4.1	2.8	4.8	5.9	4.7	6.1	5.3	4.0	6.0	8.9	8.4	8.0	9.2	6.5	7.8	7.7	7.8	8.7	8.8	**6.3**	**9.2**	**2.8**
30	9.2	12.2	13.6	23.1	9.1	8.9	14.9	21.2	18.4	20.4	12.7	12.6	15.2	23.4	20.2	16.9	17.9	24.9	25.2	19.0	23.0	23.6	25.4	23.6	**18.1**	**25.4**	**8.9**
31	19.2	28.2	22.2	12.5	11.6	12.6	13.0	10.7	12.3	13.8	28.2	30.8	28.5	24.4	24.8	22.2	19.0	28.0	27.2	31.2	20.2	17.2	17.0	19.5	**20.6**	**31.2**	**10.7**
MEAN	**14.8**	**15.3**	**15.9**	**18.2**	**14.8**	**15.3**	**16.4**	**22.4**	**23.8**	**26.3**	**25.3**	**22.0**	**19.4**	**19.6**	**20.3**	**22.4**	**18.5**	**16.9**	**19.5**	**18.7**	**16.9**	**17.0**	**15.9**	**15.5**	**18.9**		
MAX	**37.6**	**32.7**	**54.6**	**100.5**	**49.2**	**41.7**	**43.8**	**60.8**	**70.9**	**127.8**	**94.3**	**81.8**	**76.3**	**57.6**	**66.0**	**73.5**	**51.8**	**41.3**	**83.6**	**47.5**	**43.9**	**63.5**	**41.2**	**40.8**		**127.8**	
MIN	**1.7**	**2.1**	**3.5**	**3.5**	**1.4**	**2.3**	**2.8**	**1.4**	**1.2**	**1.7**	**1.1**	**1.4**	**1.8**	**2.4**	**2.4**	**2.1**	**2.3**	**2.8**	**3.1**	**2.7**	**3.2**	**2.9**	**1.8**	**1.8**			**1.1**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 700 DATA RECOVERY RATE = 94.1% DATA CAPTURE RATE = 90.3%

MONTHLY MEAN = 18.9 µg/m3

MAXIMUM PM10 = 127.8 µg/m3 DATE OF OCCURRENCE = 1/24 at 1000 MAXIMUM DAILY MEAN = 46.1 µg/m3 DATE OF OCCURRENCE = 1/24

SECOND MAXIMUM PM10 = 100.5 µg/m3 DATE OF OCCURRENCE = 1/6 at 400 SECOND MAXIMUM DAILY MEAN = 39.6 µg/m3 DATE OF OCCURRENCE = 1/23

MINIMUM PM10 = 1.1 µg/m3 DATE OF OCCURRENCE = 1/28 at 1100 MINUMUM DAILY MEAN = 3.3 µg/m3 DATE OF OCCURRENCE = 1/10

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

Draft

CSX AQ8A Modulair

HOURLY AVERAGES of PM10 in µg/m3 for FEBRUARY, 2024

Hr Beg Hr End Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	17.3	16.0	14.7	15.3	15.7	19.4	22.5	22.3	18.2	17.1	16.0	11.7	8.9	10.0	8.8	10.3	18.0	24.9	12.9	12.7	15.1	18.8	15.6	13.3	**15.6**	**24.9**	**8.8**
2	17.7	22.4	22.5	23.0	22.1	22.5	23.8	23.3	22.5	20.9	24.3	17.9	11.1	8.0	6.7	7.6	7.8	4.9	8.4	5.1	5.0	10.0	5.1	3.8	**14.4**	**24.3**	**3.8**
3	5.0	---	3.0	3.5	3.9	7.9	4.6	5.6	7.6	7.0	10.8	9.2	11.5	10.0	8.8	10.2	17.3	30.7	41.7	48.8	57.3	46.3	28.6	23.8	**17.5**	**57.3**	**3.0**
4	21.7	14.8	9.1	9.2	10.9	18.8	14.0	14.0	11.1	16.1	13.6	16.8	26.2	25.3	28.6	14.3	13.3	39.2	102.3	36.8	26.0	96.0	25.4	26.8	**26.3**	**102.3**	**9.1**
5	24.4	20.9	20.0	17.1	12.7	17.6	50.4	55.9	40.0	20.7	18.7	28.8	49.8	33.6	41.6	36.3	32.5	27.9	76.4	41.6	29.8	20.3	27.9	17.8	**31.8**	**76.4**	**12.7**
6	21.1	19.7	17.0	16.2	19.2	19.6	21.9	29.1	27.5	41.4	31.4	24.9	19.1	22.2	29.9	34.7	33.4	27.9	66.4	93.9	---	24.1	20.4	17.8	**29.5**	**93.9**	**16.2**
7	32.1	25.4	---	36.6	60.7	25.5	66.3	46.5	68.5	34.4	33.0	26.6	23.5	28.7	34.8	52.9	44.3	39.3	53.3	67.7	70.9	63.6	42.4	30.1	**43.8**	**70.9**	**23.5**
8	25.6	50.4	93.1	29.6	47.7	51.3	107.6	66.5	65.3	42.5	65.9	39.7	46.2	54.2	41.1	38.9	23.8	27.3	21.1	11.7	19.2	10.5	14.1	14.3	**42.0**	**107.6**	**10.5**
9	14.8	17.3	21.6	18.0	23.2	24.2	33.3	42.0	53.6	25.8	22.3	29.0	41.0	29.3	42.0	39.8	43.6	25.0	36.4	43.8	37.8	47.3	50.3	51.6	**33.9**	**53.6**	**14.8**
10	42.6	32.5	55.8	43.2	44.4	44.9	45.4	46.6	52.9	58.2	79.5	73.2	63.3	33.8	48.9	62.4	100.0	69.2	52.8	70.2	38.9	25.6	27.3	21.6	**51.4**	**100.0**	**21.6**
11	14.8	13.2	13.8	15.1	12.7	14.6	30.1	36.8	37.3	47.1	34.6	36.7	27.9	20.1	24.7	37.0	25.9	23.8	34.2	24.4	21.4	22.5	18.7	24.1	**25.5**	**47.1**	**12.7**
12	32.4	23.4	21.5	22.8	26.3	24.3	26.0	24.3	27.4	31.5	33.9	36.3	33.0	31.7	29.1	34.4	33.5	31.5	23.2	18.0	15.0	12.2	9.5	8.9	**25.4**	**36.3**	**8.9**
13	8.4	8.0	5.0	6.6	5.3	4.3	5.1	6.9	5.5	4.3	6.1	12.1	16.0	16.1	16.2	17.7	12.3	8.6	7.1	9.3	16.6	10.8	14.8	9.6	**9.7**	**17.7**	**4.3**
14	6.8	9.2	4.9	3.6	3.5	5.3	5.9	8.0	6.8	8.6	8.5	6.8	8.6	6.3	7.2	7.8	6.3	7.3	8.3	7.9	9.1	8.1	11.7	8.4	**7.3**	**11.7**	**3.5**
15	7.0	10.9	14.0	9.7	11.7	11.1	11.6	13.2	12.1	17.0	12.2	12.2	11.3	12.7	17.8	16.1	11.8	12.8	18.5	16.0	18.8	19.4	17.3	23.0	**14.1**	**23.0**	**7.0**
16	16.4	10.8	8.5	7.6	8.1	7.5	11.1	9.2	10.6	9.4	8.8	7.8	7.4	11.4	8.3	7.1	5.8	14.0	43.7	17.3	18.6	11.6	11.4	10.3	**11.8**	**43.7**	**5.8**
17	11.9	14.7	34.0	13.8	7.8	13.2	14.4	13.4	13.6	7.1	6.0	8.9	8.6	10.4	11.8	13.2	10.8	8.9	8.5	10.2	10.2	8.5	6.7	8.4	**11.5**	**34.0**	**6.0**
18	9.6	18.3	24.5	23.8	22.8	20.9	23.3	23.1	13.7	12.6	14.1	5.9	7.5	7.7	8.3	5.9	4.1	4.6	9.4	21.7	5.2	7.2	5.4	4.0	**12.7**	**24.5**	**4.0**
19	5.4	5.0	9.9	5.0	7.3	11.7	15.8	16.6	18.2	23.3	22.5	22.1	19.6	21.8	19.3	18.9	17.8	18.3	22.5	42.6	42.4	44.0	29.9	27.4	**20.3**	**44.0**	**5.0**
20	32.9	33.6	26.7	30.6	20.9	21.5	17.3	18.7	16.4	22.3	20.2	24.8	20.4	23.1	21.6	23.8	48.3	41.4	37.4	24.8	24.5	27.3	30.0	26.6	**26.5**	**48.3**	**16.4**
21	38.7	26.9	22.5	22.4	48.9	35.5	33.7	26.0	22.8	17.4	17.4	18.8	26.8	27.7	29.4	29.2	22.5	22.6	40.3	42.7	39.3	37.8	36.3	44.5	**30.4**	**48.9**	**17.4**
22	55.3	52.2	51.0	96.5	64.2	66.8	67.6	79.4	62.5	44.8	44.6	33.3	38.8	37.4	41.0	28.5	37.1	40.1	34.1	27.0	29.8	39.0	35.5	30.0	**47.4**	**96.5**	**27.0**
23	23.2	30.9	30.8	25.2	27.7	26.0	26.7	31.1	27.4	25.7	26.6	24.5	23.3	25.0	26.3	25.5	21.7	24.1	26.4	22.8	21.8	21.3	21.8	18.4	**25.2**	**31.1**	**18.4**
24	17.8	19.0	19.0	12.1	13.3	17.1	21.0	22.2	22.4	26.6	25.5	26.3	22.6	14.8	14.7	15.6	14.2	9.8	7.4	6.6	5.7	4.6	5.7	6.7	**15.4**	**26.6**	**4.6**
25	6.2	6.1	4.8	9.5	10.3	9.2	9.9	13.0	6.6	11.7	13.3	14.4	20.7	14.1	16.9	20.9	27.6	12.9	8.4	9.5	6.5	5.9	9.8	6.1	**11.4**	**27.6**	**4.8**
26	5.1	5.1	17.0	51.4	18.0	8.1	7.8	9.0	17.2	37.3	49.0	52.4	46.6	62.5	47.3	47.0	57.5	52.6	103.7	49.4	62.5	48.7	32.7	38.2	**38.6**	**103.7**	**5.1**
27	28.2	25.8	37.4	30.5	20.9	29.4	31.0	38.7	66.3	52.0	59.7	50.0	46.3	46.6	39.6	26.3	21.2	20.6	16.7	15.1	14.0	11.7	13.4	17.6	**31.6**	**66.3**	**11.7**
28	25.0	19.4	17.5	17.2	21.2	33.4	37.0	38.9	41.0	25.2	21.3	22.5	21.0	19.8	---	17.4	14.6	11.7	8.9	9.2	9.3	6.0	4.7	5.9	**19.5**	**41.0**	**4.7**
29	6.1	5.4	7.7	5.4	5.3	5.4	4.6	6.7	9.0	12.2	10.7	13.3	10.7	11.4	8.2	12.2	11.2	9.3	29.6	---	10.7	11.7	15.8	15.9	**10.4**	**29.6**	**4.6**
MEAN	**19.8**	**19.9**	**22.4**	**21.4**	**21.3**	**21.3**	**27.2**	**27.1**	**27.7**	**24.8**	**25.9**	**24.4**	**24.7**	**23.3**	**24.2**	**24.5**	**25.5**	**23.8**	**33.1**	**28.8**	**24.3**	**24.9**	**20.3**	**19.1**	**24.2**		
MAX	**55.3**	**52.2**	**93.1**	**96.5**	**64.2**	**66.8**	**107.6**	**79.4**	**68.5**	**58.2**	**79.5**	**73.2**	**63.3**	**62.5**	**48.9**	**62.4**	**100.0**	**69.2**	**103.7**	**93.9**	**70.9**	**96.0**	**50.3**	**51.6**		**107.6**	
MIN	**5.0**	**5.0**	**3.0**	**3.5**	**3.5**	**4.3**	**4.6**	**5.6**	**5.5**	**4.3**	**6.0**	**5.9**	**7.4**	**6.3**	**6.7**	**5.9**	**4.1**	**4.6**	**7.1**	**5.1**	**5.0**	**4.6**	**4.7**	**3.8**			**3.0**

POSSIBLE NUMBER OF OBSERVATIONS = 696 ACTUAL NUMBER OF OBSERVATIONS = 691 DATA RECOVERY RATE = 99.3% DATA CAPTURE RATE = 100.0%

MONTHLY MEAN = 24.2 µg/m3

MAXIMUM PM10 = 107.6 µg/m3 DATE OF OCCURRENCE = 2/8 at 700 MAXIMUM DAILY MEAN = 51.4 µg/m3 DATE OF OCCURRENCE = 2/10

SECOND MAXIMUM PM10 = 103.7 µg/m3 DATE OF OCCURRENCE = 2/26 at 1900 SECOND MAXIMUM DAILY MEAN = 47.4 µg/m3 DATE OF OCCURRENCE = 2/22

MINIMUM PM10 = 3.0 µg/m3 DATE OF OCCURRENCE = 2/3 at 300 MINUMUM DAILY MEAN = 7.3 µg/m3 DATE OF OCCURRENCE = 2/14

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

Draft

CSX AQ8A Modulair

HOURLY AVERAGES of PM10 in µg/m3 for MARCH, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	12.4	11.0	29.2	16.4	9.5	49.7	46.2	74.6	40.9	29.5	41.0	91.8	39.5	31.4	25.0	22.6	14.2	12.6	8.9	10.0	11.8	21.4	21.5	16.2	**28.6**	**91.8**	**8.9**
2	15.3	15.9	14.9	16.7	17.7	17.6	17.9	21.2	31.1	29.5	10.7	3.6	4.0	3.8	3.8	4.0	4.9	7.5	5.0	4.8	7.7	6.2	8.7	6.9	**11.6**	**31.1**	**3.6**
3	7.2	7.8	8.3	8.2	8.5	9.8	9.4	9.0	12.1	12.2	14.0	17.3	22.2	15.4	8.7	9.5	12.9	12.4	12.5	8.8	8.0	14.5	19.5	15.5	**11.8**	**22.2**	**7.2**
4	29.3	29.3	18.9	15.1	12.1	30.8	19.1	26.5	22.6	27.1	35.5	16.6	17.3	18.5	20.1	25.9	23.6	19.9	19.3	16.7	13.7	15.3	15.1	11.6	**20.8**	**35.5**	**11.6**
5	6.3	3.3	3.4	4.5	6.5	4.9	4.3	6.4	5.6	1.5	2.2	1.4	1.8	2.8	3.6	5.0	9.8	9.5	7.2	6.7	7.1	9.9	10.5	8.3	**5.5**	**10.5**	**1.4**
6	10.6	14.5	16.8	16.0	---	---	---	---	---	17.8	18.9	10.8	9.7	8.5	6.9	6.3	5.0	7.1	8.7	10.6	11.9	16.6	9.8	11.8	**11.5**	**18.9**	**5.0**
7	9.8	7.4	5.3	4.6	3.7	4.1	4.7	6.7	2.4	3.3	3.8	4.6	3.1	6.2	6.8	9.1	9.1	5.0	9.3	11.5	9.5	9.6	6.7	7.6	**6.4**	**11.5**	**2.4**
8	11.2	8.1	12.6	8.3	10.4	12.2	10.3	11.5	14.0	9.9	11.6	22.2	13.6	19.9	26.4	11.6	11.2	24.5	23.4	15.2	30.7	43.3	31.7	29.6	**17.6**	**43.3**	**8.1**
9	37.8	38.5	42.2	43.4	46.4	53.2	66.7	77.0	79.3	75.4	79.6	83.5	78.4	67.0	37.1	24.8	33.6	12.8	8.5	2.6	2.9	4.4	5.3	5.1	**41.9**	**83.5**	**2.6**
10	4.0	3.9	---	2.2	2.0	2.1	1.7	1.2	4.3	8.1	14.1	14.1	6.6	7.4	5.5	6.0	7.2	14.1	11.3	9.2	5.3	7.2	6.6	4.0	**6.4**	**14.1**	**1.2**
11	2.8	4.0	7.9	6.4	---	---	---	14.2	9.7	14.3	12.7	12.2	14.2	21.1	18.6	16.9	10.7	9.2	4.9	4.4	5.9	4.4	6.8	10.6	**10.1**	**21.1**	**2.8**
12	6.8	3.1	5.0	4.5	7.1	5.1	7.8	13.6	13.1	14.2	14.7	24.8	13.4	14.2	21.6	19.2	22.8	14.5	15.1	14.7	35.7	14.8	18.4	16.2	**14.2**	**35.7**	**3.1**
13	25.0	12.4	19.3	66.1	34.2	94.1	65.2	77.5	123.1	65.1	16.8	27.2	22.2	17.4	17.8	16.2	15.2	17.9	16.9	24.1	28.3	22.2	76.2	70.7	**40.5**	**123.1**	**12.4**
14	---	---	84.0	31.1	29.7	73.5	64.0	60.1	140.0	91.9	149.0	122.3	124.2	148.2	82.1	52.5	39.2	27.9	30.1	24.0	17.9	17.2	21.2	26.6	**66.2**	**149.0**	**17.2**
15	104.7	83.3	44.0	39.8	32.4	29.3	28.3	25.4	21.7	15.6	16.9	16.2	19.9	19.9	19.7	10.4	7.2	9.3	8.0	7.6	9.2	10.6	6.2	5.8	**24.6**	**104.7**	**5.8**
16	3.9	3.3	3.2	5.1	6.0	4.7	5.1	5.1	7.4	9.5	8.1	12.7	9.2	5.9	6.3	7.3	14.7	9.3	8.4	15.3	8.1	6.7	8.9	9.5	**7.7**	**15.3**	**3.2**
17	10.6	8.7	6.4	11.9	15.4	8.0	9.8	8.7	9.9	14.0	10.4	6.0	9.3	12.0	7.7	9.0	11.2	16.5	11.2	9.6	7.6	9.8	26.4	19.6	**11.2**	**26.4**	**6.0**
18	26.9	11.6	26.3	11.3	7.3	12.8	11.8	10.3	14.4	31.8	48.2	22.3	13.9	15.6	15.9	18.1	30.2	30.0	---	18.6	14.3	9.6	7.9	9.4	**18.2**	**48.2**	**7.3**
19	14.3	8.1	4.3	3.9	7.0	4.8	6.8	20.3	26.3	23.3	14.2	10.8	8.5	14.7	13.1	12.6	7.3	12.6	12.3	11.7	14.1	18.0	21.9	12.3	**12.6**	**26.3**	**3.9**
20	17.9	20.2	9.1	10.7	7.5	13.8	14.8	16.0	13.6	22.5	31.8	34.4	23.6	30.7	35.0	44.6	36.5	36.9	---	---	21.2	16.9	11.6	8.5	**21.7**	**44.6**	**7.5**
21	8.8	5.3	6.4	6.1	5.4	4.6	4.3	6.0	13.6	7.7	7.6	9.9	10.5	7.6	10.4	10.9	13.8	14.4	8.6	12.0	15.7	20.7	14.1	15.9	**10.0**	**20.7**	**4.3**
22	68.2	28.3	---	12.0	14.1	11.4	14.1	14.6	46.5	31.4	34.6	36.5	25.1	36.5	35.9	30.0	26.3	32.8	33.5	28.1	29.8	29.2	31.2	27.3	**29.5**	**68.2**	**11.4**
23	29.7	31.4	22.8	14.9	12.0	12.4	11.8	9.8	9.4	14.4	16.7	14.0	3.8	2.9	8.2	5.2	8.6	---	13.1	17.1	13.5	13.5	11.1	8.1	**13.2**	**31.4**	**2.9**
24	6.4	5.8	4.8	4.8	5.3	5.6	5.6	7.3	7.7	8.8	6.5	6.9	6.7	6.8	9.0	11.2	14.6	12.2	12.6	9.9	10.5	14.3	50.9	41.9	**11.5**	**50.9**	**4.8**
25	42.7	24.7	25.8	45.5	21.9	12.7	12.1	12.6	12.3	15.1	13.7	15.5	14.3	16.6	21.0	19.7	29.2	22.5	29.6	21.9	27.5	20.7	25.9	22.8	**21.9**	**45.5**	**12.1**
26	31.8	39.9	45.0	37.7	43.5	36.0	34.5	24.5	20.0	14.8	15.4	19.9	21.4	27.8	29.2	24.8	28.6	27.7	27.1	29.5	37.7	27.9	31.7	35.4	**29.7**	**45.0**	**14.8**
27	33.1	29.5	24.7	24.9	24.2	28.4	33.9	23.7	38.4	32.7	19.9	14.0	9.3	6.6	8.6	9.2	5.5	6.9	10.6	12.5	11.0	15.8	20.1	17.9	**19.2**	**38.4**	**5.5**
28	16.2	9.2	8.7	8.7	5.4	6.4	7.5	11.7	13.5	15.7	---	---	19.2	16.2	13.8	14.1	14.0	10.0	10.1	12.5	11.6	12.0	10.8	10.5	**11.7**	**19.2**	**5.4**
29	9.4	8.4	8.2	6.8	7.1	8.0	8.3	11.8	12.8	12.4	19.6	25.8	23.3	20.6	15.5	15.9	12.8	11.2	9.5	7.6	7.3	7.0	7.3	7.9	**11.9**	**25.8**	**6.8**
30	6.7	5.0	5.4	4.8	5.4	6.1	8.2	8.8	7.7	8.5	9.9	10.3	11.8	12.2	16.2	23.2	25.3	17.3	13.8	16.2	21.2	29.0	20.1	24.6	**13.2**	**29.0**	**4.8**
31	26.2	19.5	15.0	11.8	12.6	14.1	15.2	17.8	23.1	19.6	12.6	5.7	7.2	8.9	9.1	11.1	8.8	17.4	9.1	11.0	16.7	24.4	32.9	15.9	**15.2**	**32.9**	**5.7**
MEAN	**21.2**	**16.7**	**18.2**	**16.3**	**14.5**	**19.9**	**18.9**	**21.1**	**26.6**	**22.5**	**23.7**	**23.8**	**19.6**	**20.8**	**18.0**	**16.4**	**16.6**	**16.1**	**13.7**	**13.5**	**15.3**	**15.9**	**19.3**	**17.2**	**18.6**		
MAX	**104.7**	**83.3**	**84.0**	**66.1**	**46.4**	**94.1**	**66.7**	**77.5**	**140.0**	**91.9**	**149.0**	**122.3**	**124.2**	**148.2**	**82.1**	**52.5**	**39.2**	**36.9**	**33.5**	**29.5**	**37.7**	**43.3**	**76.2**	**70.7**		**149.0**	
MIN	**2.8**	**3.1**	**3.2**	**2.2**	**2.0**	**2.1**	**1.7**	**1.2**	**2.4**	**1.5**	**2.2**	**1.4**	**1.8**	**2.8**	**3.6**	**4.0**	**4.9**	**5.0**	**4.9**	**2.6**	**2.9**	**4.4**	**5.3**	**4.0**			**1.2**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 726 DATA RECOVERY RATE = 97.6% DATA CAPTURE RATE = 100.0%

MONTHLY MEAN = 18.6 µg/m3

MAXIMUM PM10 = 149.0 µg/m3 DATE OF OCCURRENCE = 3/14 at 1100 MAXIMUM DAILY MEAN = 66.2 µg/m3 DATE OF OCCURRENCE = 3/14

SECOND MAXIMUM PM10 = 148.2 µg/m3 DATE OF OCCURRENCE = 3/14 at 1400 SECOND MAXIMUM DAILY MEAN = 41.9 µg/m3 DATE OF OCCURRENCE = 3/9

MINIMUM PM10 = 1.2 µg/m3 DATE OF OCCURRENCE = 3/10 at 800 MINUMUM DAILY MEAN = 5.5 µg/m3 DATE OF OCCURRENCE = 3/5

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

UNDERLINED DATA ARE SUSPECT

Draft

CSX AQ8A Modulair

HOURLY AVERAGES of PM2.5 in µg/m3 for JANUARY, 2024

Hr Beg Hr End Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	10.0	10.1	13.8	13.4	13.3	16.7	22.1	16.3	14.8	15.7	12.2	7.9	7.6	8.1	7.7	7.6	8.9	8.5	7.6	9.0	12.6	11.5	11.8	16.4	**11.8**	**22.1**	**7.6**
2	15.7	10.3	8.4	10.4	9.6	8.5	8.6	5.8	5.2	5.6	7.1	6.5	7.2	9.2	10.6	9.0	8.4	10.3	9.1	7.8	6.3	7.2	6.1	6.1	**8.2**	**15.7**	**5.2**
3	6.3	7.4	5.8	6.4	5.9	5.2	5.5	6.9	9.9	10.0	15.5	11.1	9.1	12.4	11.9	14.5	10.9	10.1	12.8	12.5	13.2	12.9	10.2	10.7	**9.8**	**15.5**	**5.2**
4	11.3	11.5	12.1	11.9	12.5	12.5	11.8	13.7	13.3	18.1	19.4	16.9	7.7	5.7	4.3	4.0	3.6	3.0	3.2	3.3	3.5	4.6	4.8	7.6	**9.1**	**19.4**	**3.0**
5	7.6	5.9	5.4	7.1	6.3	6.6	7.3	5.7	8.1	8.4	6.9	6.8	8.3	8.5	9.3	8.2	10.1	8.7	12.8	14.0	11.7	11.5	13.6	13.5	**8.8**	**14.0**	**5.4**
6	12.3	11.5	12.6	14.6	13.1	10.3	9.2	13.6	13.5	12.0	8.3	11.9	13.6	12.0	8.4	9.1	8.8	6.4	4.1	5.8	5.7	6.7	8.1	9.8	**10.0**	**14.6**	**4.1**
7	13.2	13.1	8.0	6.6	7.8	7.2	8.2	9.6	10.8	8.3	10.9	7.2	6.7	5.3	4.7	3.5	4.2	3.4	4.2	4.3	4.0	1.8	2.5	2.5	**6.5**	**13.2**	**1.8**
8	3.7	4.7	7.3	10.5	11.7	8.8	---	6.9	8.8	13.1	11.0	10.7	9.3	9.4	9.4	8.9	8.5	8.1	8.9	8.0	7.7	7.4	7.4	8.1	**8.6**	**13.1**	**3.7**
9	8.0	7.7	7.5	8.4	11.2	8.0	8.3	8.7	7.1	5.2	5.2	6.0	6.2	6.7	7.7	9.6	9.0	7.3	7.3	2.9	1.8	2.0	1.5	1.3	**6.4**	**11.2**	**1.3**
10	1.4	1.6	1.3	1.5	1.2	1.8	1.3	1.3	0.6	0.6	0.7	0.5	0.6	0.7	0.5	0.6	1.2	1.3	1.7	2.1	2.2	2.4	2.1	2.0	**1.3**	**2.4**	**0.5**
11	2.5	2.6	3.1	3.4	4.2	4.0	4.8	5.4	5.7	7.1	3.7	2.8	3.0	2.6	2.5	2.8	3.4	5.1	11.8	9.7	10.4	10.4	7.2	9.2	**5.3**	**11.8**	**2.5**
12	9.2	9.5	7.3	6.4	8.0	9.8	6.8	9.4	11.6	13.8	13.1	11.4	11.1	10.8	10.0	10.5	8.8	9.6	9.2	10.5	8.9	10.2	6.3	4.0	**9.4**	**13.8**	**4.0**
13	3.7	5.9	7.1	6.8	1.0	1.5	1.9	2.3	2.6	2.7	3.2	2.8	2.8	2.6	2.6	3.0	2.8	3.6	3.3	2.9	2.5	2.6	2.1	2.5	**3.1**	**7.1**	**1.0**
14	2.4	2.6	3.0	3.2	3.5	3.3	2.7	2.3	3.0	3.0	3.9	5.6	5.8	5.0	4.2	3.3	4.2	3.0	2.9	3.2	2.5	2.5	3.3	4.4	**3.4**	**5.8**	**2.3**
15	5.2	4.6	3.3	3.2	2.9	1.8	4.4	3.1	2.8	3.7	6.0	8.1	8.4	6.6	7.0	7.9	8.1	6.9	7.0	6.6	5.9	5.1	5.8	6.5	**5.4**	**8.4**	**1.8**
16	4.7	7.3	9.2	10.8	10.9	13.2	14.1	18.0	20.1	22.0	25.5	27.6	25.4	30.7	27.1	20.8	19.4	13.1	13.0	12.3	12.9	11.6	9.0	---	**16.4**	**30.7**	**4.7**
17	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	4.3	5.9	8.0	6.3	6.9	8.7	16.6	10.0	**---**	**---**	**---**
18	10.7	9.7	10.9	13.5	11.9	12.3	11.2	12.2	14.3	16.5	13.2	13.3	15.3	8.4	6.4	5.2	5.7	6.7	8.7	10.5	9.4	9.5	11.0	13.8	**10.8**	**16.5**	**5.2**
19	13.9	15.2	13.3	15.7	17.5	18.3	15.7	18.6	23.7	27.7	26.5	23.7	23.4	34.3	33.5	41.2	26.1	13.4	14.9	14.4	9.5	9.3	11.0	9.3	**19.5**	**41.2**	**9.3**
20	8.8	7.8	9.7	8.3	4.5	3.9	3.8	2.4	3.7	4.1	4.0	5.1	4.2	4.6	4.5	5.4	6.0	6.1	7.7	8.6	8.3	7.5	6.4	5.5	**5.8**	**9.7**	**2.4**
21	4.2	4.2	4.3	7.8	10.5	10.5	7.1	6.6	5.9	6.3	6.5	7.1	8.4	9.7	9.0	9.8	7.6	7.6	7.8	7.0	8.0	10.3	9.2	8.8	**7.6**	**10.5**	**4.2**
22	10.3	9.3	8.9	8.6	8.1	8.7	10.3	11.6	14.2	21.2	15.0	9.2	8.9	9.6	9.9	7.8	12.6	9.8	11.2	11.1	12.6	14.1	13.3	14.9	**11.2**	**21.2**	**7.8**
23	14.3	12.9	13.1	12.2	11.6	11.8	14.4	14.9	20.2	31.3	37.0	38.4	30.9	23.0	18.5	18.9	17.5	18.6	15.8	16.9	18.0	21.2	24.6	23.5	**19.9**	**38.4**	**11.6**
24	23.6	22.7	24.1	23.4	22.2	23.1	23.0	24.5	25.9	26.7	32.6	35.9	27.9	30.9	29.2	29.0	24.9	23.6	21.0	21.5	22.4	22.4	22.8	26.6	**25.4**	**35.9**	**21.0**
25	24.1	23.6	25.4	25.5	24.7	26.0	25.4	29.9	33.7	36.5	45.6	48.5	52.1	43.5	46.0	38.8	26.1	27.5	18.2	15.7	32.8	18.5	17.9	16.0	**30.0**	**52.1**	**15.7**
26	9.4	4.2	4.2	3.7	4.9	5.9	6.7	15.1	14.9	9.1	7.4	6.1	7.2	5.6	3.3	10.3	10.6	7.9	7.7	7.1	5.7	5.6	5.7	3.7	**7.1**	**15.1**	**3.3**
27	4.7	3.9	4.6	3.0	2.3	2.4	3.2	3.8	6.1	11.2	14.4	9.5	10.6	8.6	7.1	9.5	9.1	9.1	9.1	9.1	10.8	10.7	11.2	10.5	**7.6**	**14.4**	**2.3**
28	11.1	10.3	8.9	7.1	4.9	2.2	1.2	0.6	0.6	3.5	0.7	0.9	0.9	1.3	1.2	0.9	1.2	1.9	2.6	3.3	4.6	4.5	5.4	5.7	**3.5**	**11.1**	**0.6**
29	7.6	5.9	4.0	3.6	2.5	3.5	1.6	2.5	2.9	2.3	2.5	2.2	2.3	3.1	5.6	4.0	4.7	5.4	4.3	4.8	6.1	6.7	6.9	7.0	**4.2**	**7.6**	**1.6**
30	7.2	6.1	12.1	21.5	7.5	4.4	3.2	4.2	4.8	8.9	5.2	5.4	6.9	7.9	7.2	6.7	10.2	12.9	12.6	14.8	15.1	14.0	18.0	15.1	**9.6**	**21.5**	**3.2**
31	11.7	16.1	6.6	4.7	4.4	4.6	4.4	4.9	4.2	4.6	5.4	5.8	6.0	6.8	9.3	7.3	7.3	7.0	7.1	7.9	8.6	8.6	7.7	7.7	**7.0**	**16.1**	**4.2**
MEAN	**9.3**	**8.9**	**8.8**	**9.4**	**8.7**	**8.6**	**8.6**	**9.4**	**10.4**	**12.0**	**12.3**	**11.8**	**11.3**	**11.1**	**10.6**	**10.6**	**9.5**	**8.8**	**8.9**	**8.8**	**9.4**	**9.1**	**9.3**	**9.4**	**9.8**		
MAX	**24.1**	**23.6**	**25.4**	**25.5**	**24.7**	**26.0**	**25.4**	**29.9**	**33.7**	**36.5**	**45.6**	**48.5**	**52.1**	**43.5**	**46.0**	**41.2**	**26.1**	**27.5**	**21.0**	**21.5**	**32.8**	**22.4**	**24.6**	**26.6**		**52.1**	
MIN	**1.4**	**1.6**	**1.3**	**1.5**	**1.0**	**1.5**	**1.2**	**0.6**	**0.6**	**0.6**	**0.7**	**0.5**	**0.6**	**0.7**	**0.5**	**0.6**	**1.2**	**1.3**	**1.7**	**2.1**	**1.8**	**1.8**	**1.5**	**1.3**			**0.5**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 726 DATA RECOVERY RATE = 97.6% DATA CAPTURE RATE = 96.8%

MONTHLY MEAN = 9.8 µg/m3

MAXIMUM PM2.5 = 52.1 µg/m3 DATE OF OCCURRENCE = 1/25 at 1300 MAXIMUM DAILY MEAN = 30.0 µg/m3 DATE OF OCCURRENCE = 1/25

SECOND MAXIMUM PM2.5 = 48.5 µg/m3 DATE OF OCCURRENCE = 1/25 at 1200 SECOND MAXIMUM DAILY MEAN = 25.4 µg/m3 DATE OF OCCURRENCE = 1/24

MINIMUM PM2.5 = 0.5 µg/m3 DATE OF OCCURRENCE = 1/10 at 1200 MINUMUM DAILY MEAN = 1.3 µg/m3 DATE OF OCCURRENCE = 1/10

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

Draft

CSX AQ8A Modulair

HOURLY AVERAGES of PM2.5 in µg/m3 for FEBRUARY, 2024

Hr Beg Hr End Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	8.4	8.5	8.3	8.2	8.4	8.5	8.0	9.3	11.2	13.0	12.4	8.3	6.2	6.6	6.8	6.3	9.6	10.3	7.4	8.3	10.3	10.8	9.7	8.9	**8.9**	**13.0**	**6.2**
2	9.4	12.0	12.0	11.8	11.0	12.2	13.6	14.0	13.3	14.2	21.9	15.7	9.4	5.9	4.9	3.8	3.5	3.0	4.1	2.8	2.2	3.7	2.3	2.1	**8.7**	**21.9**	**2.1**
3	2.2	---	2.1	2.5	3.0	3.2	3.2	3.3	4.2	5.2	5.5	5.5	5.9	5.9	5.9	6.0	6.0	7.7	11.8	12.1	25.3	27.2	18.4	10.8	**7.9**	**27.2**	**2.1**
4	9.1	8.1	6.4	6.4	6.8	7.0	6.4	5.8	8.0	8.6	6.8	6.9	9.3	10.6	10.6	7.9	6.7	8.5	14.5	12.5	9.7	15.2	15.1	15.0	**9.2**	**15.2**	**5.8**
5	13.8	12.6	12.6	10.9	9.6	11.1	11.0	10.6	11.2	10.7	10.3	9.6	11.9	10.7	12.2	11.4	10.8	10.0	20.4	16.9	16.3	16.1	12.1	11.7	**12.2**	**20.4**	**9.6**
6	11.2	10.6	10.1	9.0	8.1	7.9	10.1	9.9	11.4	11.5	7.9	7.8	7.1	6.6	6.2	6.0	8.7	7.1	9.9	10.8	15.2	9.5	9.7	9.2	**9.2**	**15.2**	**6.0**
7	13.6	13.5	21.8	9.8	12.2	8.3	11.1	9.1	12.9	12.9	13.5	12.0	11.9	12.7	12.4	14.5	14.7	13.0	13.2	15.6	15.4	17.9	15.7	15.6	**13.4**	**21.8**	**8.3**
8	13.1	12.2	19.8	13.1	17.4	13.4	16.8	14.8	18.4	18.4	23.7	20.8	15.5	13.4	13.2	11.9	9.7	8.7	7.8	6.3	6.9	6.7	7.1	7.3	**13.1**	**23.7**	**6.3**
9	6.3	6.0	5.7	6.2	8.4	7.9	9.8	11.6	12.5	11.3	12.1	14.5	15.7	13.5	17.6	20.9	22.7	16.5	20.5	19.2	23.6	23.8	21.4	21.3	**14.5**	**23.8**	**5.7**
10	21.7	21.7	23.1	24.9	23.6	23.8	22.6	23.3	29.6	37.4	42.0	43.3	31.8	17.7	27.7	25.9	28.0	27.3	28.2	26.3	20.6	19.1	20.5	17.4	**26.1**	**43.3**	**17.4**
11	13.3	11.2	11.1	12.2	10.1	10.9	19.1	26.9	23.8	30.2	24.5	25.5	23.0	17.1	16.5	16.3	16.5	16.2	25.0	17.2	16.3	15.9	14.4	14.4	**17.8**	**30.2**	**10.1**
12	15.0	14.7	15.1	15.6	16.7	18.3	16.3	14.5	17.1	18.1	19.3	21.2	22.8	23.8	21.6	23.6	21.7	19.5	17.5	14.8	11.7	9.8	8.0	6.7	**16.8**	**23.8**	**6.7**
13	4.9	3.4	3.1	2.3	2.0	2.1	3.8	5.3	3.4	2.7	4.6	9.2	14.4	13.0	14.5	11.7	9.7	6.5	5.2	5.6	13.3	8.3	12.5	7.9	**7.0**	**14.5**	**2.0**
14	5.5	8.2	3.8	2.7	2.3	2.6	3.3	4.4	3.6	3.7	3.2	2.4	2.7	2.7	2.6	3.0	3.5	4.1	5.4	4.9	5.0	5.2	7.6	5.1	**4.0**	**8.2**	**2.3**
15	5.4	5.5	6.3	5.9	8.7	5.7	6.6	6.6	5.0	5.6	5.4	4.5	4.9	5.2	5.4	5.0	4.2	4.1	8.6	5.9	6.7	8.5	8.7	8.6	**6.1**	**8.7**	**4.1**
16	7.3	5.6	3.6	4.5	4.4	4.8	4.5	4.3	5.1	4.0	4.2	4.4	4.8	5.2	4.9	4.1	3.5	6.7	7.8	6.5	7.4	6.3	6.0	6.3	**5.2**	**7.8**	**3.5**
17	5.0	4.4	4.6	4.8	6.2	8.2	9.5	8.2	8.1	6.4	4.6	6.1	5.3	7.3	8.4	8.0	7.5	6.7	6.2	6.4	5.7	5.8	4.6	5.8	**6.4**	**9.5**	**4.4**
18	7.2	16.2	21.6	20.8	19.9	18.2	15.1	18.5	10.6	9.4	7.9	4.9	5.4	5.5	4.9	3.7	2.2	2.2	3.8	4.8	2.8	3.2	2.8	2.0	**8.9**	**21.6**	**2.0**
19	1.9	2.3	2.6	2.9	3.9	4.7	6.4	7.6	10.7	15.5	15.5	16.2	15.6	15.9	15.7	14.8	13.0	11.8	13.7	18.4	17.5	15.9	18.6	16.3	**11.5**	**18.6**	**1.9**
20	16.5	16.2	14.3	14.9	15.8	15.4	10.5	7.4	6.5	5.2	5.8	7.6	6.6	7.7	8.1	9.7	15.7	11.7	10.9	8.6	6.0	4.8	4.9	4.4	**9.7**	**16.5**	**4.4**
21	4.0	4.1	3.0	3.1	4.7	4.0	4.3	4.7	5.7	5.7	6.5	7.6	6.2	8.3	8.3	9.3	6.4	6.6	9.6	6.3	4.5	4.7	4.5	5.5	**5.7**	**9.6**	**3.0**
22	8.4	7.3	11.8	11.7	6.8	7.0	8.2	8.2	9.9	7.8	6.3	6.1	6.1	5.5	7.4	6.3	8.7	9.3	7.8	8.4	9.3	11.4	15.6	16.6	**8.8**	**16.6**	**5.5**
23	11.8	12.4	12.7	12.2	11.8	11.9	13.4	17.1	20.9	20.6	23.0	22.8	21.6	21.3	22.3	22.3	17.7	17.2	18.0	17.5	16.7	17.0	17.6	13.9	**17.2**	**23.0**	**11.8**
24	13.9	15.5	15.2	11.1	12.4	16.2	19.1	19.6	20.8	24.2	23.5	24.0	21.3	12.8	13.0	12.4	11.4	7.6	4.4	4.7	4.1	3.4	3.2	3.8	**13.2**	**24.2**	**3.2**
25	4.3	3.5	2.9	7.5	8.0	4.7	6.4	8.9	3.7	6.4	5.5	5.5	6.6	5.4	6.4	6.9	7.7	4.8	4.4	4.1	4.1	3.8	4.6	3.7	**5.4**	**8.9**	**2.9**
26	3.3	3.1	3.5	6.5	5.9	4.9	5.1	6.0	10.3	20.2	22.6	20.7	12.1	13.5	12.4	14.4	16.4	15.7	21.6	15.9	19.4	14.8	13.6	14.0	**12.3**	**22.6**	**3.1**
27	13.7	13.7	17.8	15.1	13.7	13.9	13.7	15.9	25.6	29.2	31.9	30.2	28.7	26.8	19.3	15.6	13.3	13.5	12.7	12.2	11.3	10.5	10.8	12.4	**17.5**	**31.9**	**10.5**
28	14.2	14.2	12.8	12.9	13.6	15.1	15.4	18.0	21.0	15.1	14.0	14.5	15.0	14.6	---	12.3	8.8	5.7	5.6	6.1	7.2	2.8	1.5	3.4	**11.4**	**21.0**	**1.5**
29	3.6	3.2	3.7	3.1	3.4	3.0	2.6	2.6	5.0	7.3	7.2	7.5	6.2	6.4	5.0	4.9	3.4	2.7	3.6	---	4.1	5.6	5.7	6.6	**4.6**	**7.5**	**2.6**
MEAN	**9.2**	**9.6**	**10.0**	**9.4**	**9.6**	**9.5**	**10.2**	**10.9**	**12.1**	**13.1**	**13.5**	**13.3**	**12.2**	**11.1**	**11.2**	**11.0**	**10.7**	**9.8**	**11.4**	**10.7**	**11.0**	**10.6**	**10.2**	**9.5**	**10.8**		
MAX	**21.7**	**21.7**	**23.1**	**24.9**	**23.6**	**23.8**	**22.6**	**26.9**	**29.6**	**37.4**	**42.0**	**43.3**	**31.8**	**26.8**	**27.7**	**25.9**	**28.0**	**27.3**	**28.2**	**26.3**	**25.3**	**27.2**	**21.4**	**21.3**		**43.3**	
MIN	**1.9**	**2.3**	**2.1**	**2.3**	**2.0**	**2.1**	**2.6**	**2.6**	**3.4**	**2.7**	**3.2**	**2.4**	**2.7**	**2.7**	**2.6**	**3.0**	**2.2**	**2.2**	**3.6**	**2.8**	**2.2**	**2.8**	**1.5**	**2.0**			**1.5**

POSSIBLE NUMBER OF OBSERVATIONS = 696 ACTUAL NUMBER OF OBSERVATIONS = 693 DATA RECOVERY RATE = 99.6% DATA CAPTURE RATE = 100.0%

MONTHLY MEAN = 10.8 µg/m3

MAXIMUM PM2.5 = 43.3 µg/m3 DATE OF OCCURRENCE = 2/10 at 1200 MAXIMUM DAILY MEAN = 26.1 µg/m3 DATE OF OCCURRENCE = 2/10

SECOND MAXIMUM PM2.5 = 42.0 µg/m3 DATE OF OCCURRENCE = 2/10 at 1100 SECOND MAXIMUM DAILY MEAN = 17.8 µg/m3 DATE OF OCCURRENCE = 2/11

MINIMUM PM2.5 = 1.5 µg/m3 DATE OF OCCURRENCE = 2/28 at 2300 MINUMUM DAILY MEAN = 4.0 µg/m3 DATE OF OCCURRENCE = 2/14

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

Draft

CSX AQ8A Modulair

HOURLY AVERAGES of PM2.5 in µg/m3 for MARCH, 2024

Hr Beg Hr End Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	6.9	6.9	7.1	6.1	6.3	10.4	10.6	16.3	15.0	7.6	9.8	16.6	12.4	10.6	9.0	6.6	5.7	3.9	3.8	4.6	5.1	8.7	8.4	7.3	**8.5**	**16.6**	**3.8**
2	7.2	7.3	7.4	7.4	7.6	7.9	8.1	7.7	6.8	5.3	3.9	2.7	3.0	3.0	2.7	3.3	4.0	6.0	3.5	2.8	5.5	5.4	6.7	5.0	**5.4**	**8.1**	**2.7**
3	5.1	5.8	6.5	6.6	6.9	6.9	6.8	7.4	10.6	10.5	10.0	10.9	11.2	7.8	6.1	6.3	6.3	6.0	7.9	6.5	6.3	8.2	10.0	8.8	**7.7**	**11.2**	**5.1**
4	13.6	15.9	13.0	10.4	9.7	9.9	10.1	11.8	9.1	10.5	11.6	4.9	4.2	5.0	5.1	4.8	4.1	3.6	4.4	3.6	3.6	3.9	3.1	2.8	**7.4**	**15.9**	**2.8**
5	2.7	2.1	2.2	2.8	4.1	3.5	3.2	4.2	4.2	0.9	1.2	0.8	1.0	1.5	2.2	3.7	5.5	6.4	4.1	4.0	4.5	5.9	5.8	5.3	**3.4**	**6.4**	**0.8**
6	6.9	8.5	8.1	8.5	9.3	13.0	13.7	13.9	11.8	10.1	9.2	7.5	7.1	5.0	3.6	3.5	3.6	5.3	6.8	8.3	10.3	9.7	7.8	8.0	**8.3**	**13.9**	**3.5**
7	8.3	5.7	4.5	3.3	2.7	2.8	3.1	3.6	1.2	1.3	1.2	1.1	1.5	2.0	2.4	1.9	2.0	1.7	3.0	3.3	3.1	3.3	3.9	4.2	**2.9**	**8.3**	**1.1**
8	4.8	4.5	5.1	4.7	5.2	5.8	5.6	6.8	5.6	3.2	3.7	4.6	3.3	4.7	6.1	5.3	5.0	5.9	5.5	2.9	5.0	5.1	4.5	4.8	**4.9**	**6.8**	**2.9**
9	6.0	8.6	8.9	9.9	8.6	8.6	9.0	9.8	9.7	9.8	10.6	10.9	11.8	12.7	11.4	9.9	9.1	4.7	3.0	1.3	1.5	3.0	4.7	4.0	**7.8**	**12.7**	**1.3**
10	3.4	3.2	---	1.9	1.1	1.5	1.1	0.8	3.6	5.1	8.2	5.4	3.7	2.7	2.3	2.3	2.2	2.1	1.5	1.8	1.3	1.8	1.5	1.7	**2.6**	**8.2**	**0.8**
11	1.6	1.8	2.5	2.9	---	---	---	3.3	2.3	2.6	2.4	2.1	1.8	2.2	2.5	2.5	2.2	2.1	2.0	1.5	1.4	1.5	2.0	2.1	**2.1**	**3.3**	**1.4**
12	2.4	1.7	2.1	1.5	1.3	1.3	1.5	1.9	2.7	4.0	4.8	6.7	6.4	6.8	7.9	6.8	6.8	6.0	6.4	6.4	9.3	7.0	7.4	7.7	**4.8**	**9.3**	**1.3**
13	8.4	7.0	9.4	13.7	9.3	15.3	11.6	13.1	18.8	19.7	8.9	9.9	9.8	8.9	8.3	6.5	7.2	10.0	9.6	12.4	13.8	13.4	16.4	17.3	**11.6**	**19.7**	**6.5**
14	20.1	25.3	21.2	16.5	16.1	17.8	19.3	16.3	25.3	25.8	36.4	37.6	39.5	31.3	22.5	15.2	11.5	8.7	9.5	10.0	10.2	11.2	13.7	15.5	**19.8**	**39.5**	**8.7**
15	21.3	20.2	20.4	20.2	16.4	15.5	13.3	10.2	9.0	10.0	10.0	6.9	3.9	2.1	2.7	2.2	2.8	3.4	4.7	5.6	5.4	6.7	4.5	3.8	**9.2**	**21.3**	**2.1**
16	2.7	2.2	2.4	3.2	3.2	2.8	2.9	3.3	5.3	7.1	6.9	5.7	4.6	3.8	3.5	4.6	6.4	4.2	5.5	7.2	5.6	4.8	5.1	5.2	**4.5**	**7.2**	**2.2**
17	5.6	5.7	4.9	6.6	7.8	5.5	6.2	6.1	7.5	5.4	4.0	3.7	4.2	3.9	4.3	4.2	3.5	2.9	4.3	3.6	4.4	4.3	6.2	5.8	**5.0**	**7.8**	**2.9**
18	5.5	5.4	5.7	5.0	4.8	5.2	6.2	6.6	5.4	5.5	6.2	5.8	5.3	6.0	4.9	5.6	11.5	6.7	---	6.9	7.0	5.2	5.4	4.9	**5.9**	**11.5**	**4.8**
19	5.9	3.6	3.2	3.2	3.3	2.7	2.8	6.6	7.4	6.9	5.7	4.2	3.4	3.5	4.0	4.7	3.3	4.1	4.6	4.6	4.4	5.8	7.9	5.7	**4.6**	**7.9**	**2.7**
20	6.4	4.8	3.4	3.5	3.2	4.4	3.6	4.6	3.8	5.7	7.7	8.1	6.7	6.3	5.5	6.5	7.2	7.1	---	---	6.0	6.3	4.7	5.5	**5.5**	**8.1**	**3.2**
21	5.1	2.8	3.3	3.4	3.7	3.0	2.1	2.5	2.3	2.6	2.1	2.6	2.9	2.8	2.9	3.6	4.3	2.8	3.8	3.7	4.3	6.3	6.3	5.0	**3.5**	**6.3**	**2.1**
22	7.4	7.5	13.6	3.5	4.7	4.9	6.4	6.4	8.5	7.4	8.1	9.6	9.9	11.5	8.9	10.0	10.2	9.8	11.0	9.3	10.2	9.3	8.9	7.2	**8.5**	**13.6**	**3.5**
23	7.2	8.2	7.7	7.1	7.4	8.3	7.9	6.6	5.4	6.8	6.5	4.2	2.2	2.0	7.7	4.6	7.5	---	12.5	16.5	13.2	12.9	10.3	7.1	**7.8**	**16.5**	**2.0**
24	5.4	4.7	4.4	4.2	4.4	4.0	4.5	4.5	5.1	5.2	4.6	5.0	4.9	5.2	5.8	6.3	7.4	6.6	7.5	6.9	7.4	7.4	9.9	9.5	**5.8**	**9.9**	**4.0**
25	9.8	9.7	7.3	7.0	7.7	8.1	8.1	7.5	7.6	6.8	5.4	6.7	7.6	9.2	10.0	10.4	11.1	10.9	9.3	10.8	10.2	7.5	7.1	5.6	**8.3**	**11.1**	**5.4**
26	6.4	8.3	8.1	7.2	8.3	7.2	7.0	5.5	5.2	4.4	4.9	6.8	9.2	8.6	7.0	12.4	14.5	14.0	14.0	8.4	10.3	9.3	8.7	9.9	**8.5**	**14.5**	**4.4**
27	10.1	9.6	10.4	9.9	11.7	11.0	11.0	11.4	12.9	11.8	8.2	8.5	6.0	5.2	3.5	5.6	4.4	4.9	6.6	4.5	7.3	5.6	8.0	5.9	**8.0**	**12.9**	**3.5**
28	5.7	4.8	5.2	5.6	4.5	4.6	5.9	10.1	12.5	13.6	---	---	15.3	13.0	11.0	11.4	11.5	6.9	6.6	8.0	7.9	7.2	8.0	7.4	**8.4**	**15.3**	**4.5**
29	6.1	4.9	5.3	5.2	4.8	4.9	4.9	6.2	6.4	9.0	16.1	20.6	19.6	15.6	11.1	7.8	6.7	5.6	4.4	3.7	3.5	3.6	4.0	3.9	**7.6**	**20.6**	**3.5**
30	3.7	3.3	3.1	3.1	3.4	3.8	4.9	3.7	4.5	6.1	7.6	7.5	7.6	8.2	10.7	12.6	15.5	12.7	9.9	11.6	14.9	16.0	13.7	16.1	**8.5**	**16.1**	**3.1**
31	17.1	13.7	11.3	10.5	11.5	12.7	13.7	16.3	21.3	18.1	11.6	5.3	7.0	7.7	7.3	7.6	6.9	8.5	6.8	8.4	12.0	13.0	15.0	13.0	**11.5**	**21.3**	**5.3**
MEAN	**7.4**	**7.2**	**7.3**	**6.6**	**6.6**	**7.1**	**7.2**	**7.6**	**8.3**	**8.0**	**7.9**	**7.8**	**7.6**	**7.1**	**6.5**	**6.4**	**6.8**	**6.1**	**6.3**	**6.3**	**6.9**	**7.1**	**7.4**	**7.0**	**7.1**		
MAX	**21.3**	**25.3**	**21.2**	**20.2**	**16.4**	**17.8**	**19.3**	**16.3**	**25.3**	**25.8**	**36.4**	**37.6**	**39.5**	**31.3**	**22.5**	**15.2**	**15.5**	**14.0**	**14.0**	**16.5**	**14.9**	**16.0**	**16.4**	**17.3**		**39.5**	
MIN	**1.6**	**1.7**	**2.1**	**1.5**	**1.1**	**1.3**	**1.1**	**0.8**	**1.2**	**0.9**	**1.2**	**0.8**	**1.0**	**1.5**	**2.2**	**1.9**	**2.0**	**1.7**	**1.5**	**1.3**	**1.3**	**1.5**	**1.5**	**1.7**			**0.8**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 734 DATA RECOVERY RATE = 98.7% DATA CAPTURE RATE = 100.0%

MONTHLY MEAN = 7.1 µg/m3

MAXIMUM PM2.5 = 39.5 µg/m3 DATE OF OCCURRENCE = 3/14 at 1300 MAXIMUM DAILY MEAN = 19.8 µg/m3 DATE OF OCCURRENCE = 3/14

SECOND MAXIMUM PM2.5 = 37.6 µg/m3 DATE OF OCCURRENCE = 3/14 at 1200 SECOND MAXIMUM DAILY MEAN = 11.6 µg/m3 DATE OF OCCURRENCE = 3/13

MINIMUM PM2.5 = 0.8 µg/m3 DATE OF OCCURRENCE = 3/5 at 1200 MINUMUM DAILY MEAN = 2.1 µg/m3 DATE OF OCCURRENCE = 3/11

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

UNDERLINED DATA ARE SUSPECT

Draft

CSX AQ1 Modulair

HOURLY AVERAGES of PM10 in µg/m3 for JANUARY, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	11.4	11.5	16.3	15.0	14.4	17.2	22.9	19.8	19.4	20.6	21.0	14.1	6.4	8.9	11.2	9.6	10.8	10.1	9.8	8.8	12.5	12.4	10.9	8.6	**13.5**	**22.9**	**6.4**
2	7.5	9.8	9.6	9.0	11.1	12.2	11.3	8.4	7.6	14.7	12.1	15.5	8.2	13.8	11.9	13.0	12.4	11.0	21.8	18.7	10.2	12.8	7.6	6.1	**11.5**	**21.8**	**6.1**
3	7.9	17.6	8.1	6.8	7.2	11.1	25.9	40.3	36.3	14.4	27.9	15.1	16.2	20.0	21.1	26.6	22.4	14.6	17.4	22.0	25.3	17.4	12.5	12.5	**18.6**	**40.3**	**6.8**
4	14.1	16.6	14.3	15.8	15.2	15.0	14.4	21.7	19.9	16.0	19.7	19.7	19.8	28.7	21.2	31.9	14.2	6.4	4.1	4.0	4.0	4.8	4.2	8.5	**14.8**	**31.9**	**4.0**
5	7.0	6.8	5.5	6.2	5.7	9.1	9.7	20.7	17.3	15.1	12.4	10.5	14.4	18.6	17.3	18.2	28.4	21.7	17.8	16.6	22.4	20.3	16.0	15.6	**14.7**	**28.4**	**5.5**
6	15.2	14.9	21.2	15.6	22.5	18.7	13.4	17.8	18.4	17.3	18.9	13.2	14.7	18.1	17.1	17.9	19.5	11.8	6.6	4.8	3.7	4.9	5.7	6.1	**14.1**	**22.5**	**3.7**
7	7.3	8.5	7.5	6.1	6.7	6.0	7.0	5.6	6.3	7.7	12.9	11.1	6.4	7.0	5.7	4.9	5.0	5.2	6.5	5.5	6.5	2.7	2.5	3.3	**6.4**	**12.9**	**2.5**
8	4.3	5.7	5.6	6.1	7.1	6.4	9.3	7.8	9.7	15.5	20.0	15.6	11.0	13.0	13.2	12.1	19.9	21.9	23.3	15.4	20.9	19.2	22.3	13.5	**13.3**	**23.3**	**4.3**
9	8.2	9.4	10.5	14.0	23.1	17.0	19.3	18.0	15.3	22.6	32.4	37.4	39.1	44.7	55.1	75.3	47.9	39.0	22.4	9.5	27.7	22.1	9.2	8.4	**26.2**	**75.3**	**8.2**
10	7.2	3.6	3.6	2.8	5.1	3.9	3.7	5.6	5.6	2.5	4.1	3.0	2.9	4.9	5.0	3.5	3.4	3.7	5.1	4.0	3.6	2.4	7.8	2.2	**4.1**	**7.8**	**2.2**
11	2.6	2.5	2.3	2.8	4.7	4.7	17.6	17.8	9.3	10.4	7.7	5.4	7.7	8.9	8.6	9.8	11.2	23.0	55.2	54.1	35.8	17.3	7.9	12.5	**14.2**	**55.2**	**2.3**
12	16.3	17.3	11.7	14.1	10.6	15.5	27.1	35.1	34.5	20.1	18.0	15.8	20.6	23.5	24.9	32.4	17.7	17.3	24.5	38.1	42.2	49.2	27.4	9.0	**23.5**	**49.2**	**9.0**
13	8.2	13.4	20.3	---	1.2	1.9	3.2	5.1	14.7	4.7	4.5	5.3	4.8	4.3	5.3	9.4	11.6	9.0	7.5	5.7	4.7	3.5	2.2	5.0	**6.8**	**20.3**	**1.2**
14	2.8	3.7	3.6	3.9	3.4	3.5	3.1	5.1	3.6	3.8	7.6	13.7	8.0	6.8	12.5	8.0	11.6	14.6	4.6	6.9	7.4	12.0	---	---	**6.8**	**14.6**	**2.8**
15	28.0	---	---	---	9.5	3.8	5.0	6.3	5.0	6.8	9.1	12.7	13.4	8.8	12.8	24.9	15.2	8.1	9.9	8.1	7.7	6.2	6.2	6.6	**10.2**	**28.0**	**3.8**
16	5.2	8.5	10.2	10.1	11.5	15.5	17.7	30.0	23.3	22.9	26.5	25.8	17.8	22.3	17.6	15.3	17.1	12.9	13.6	11.2	13.0	14.7	13.6	15.9	**16.3**	**30.0**	**5.2**
17	14.0	15.4	22.3	28.5	24.2	26.4	36.2	50.0	23.4	17.7	16.0	28.4	15.2	10.8	16.6	9.6	8.7	14.1	33.5	24.8	21.4	29.3	29.4	28.2	**22.7**	**50.0**	**8.7**
18	32.3	35.7	31.1	32.5	25.5	35.0	32.8	43.4	69.1	94.1	54.2	42.0	33.1	24.0	19.4	9.8	10.2	12.8	24.9	30.0	22.7	19.1	22.1	28.5	**32.7**	**94.1**	**9.8**
19	19.0	21.1	18.0	25.6	23.1	20.8	16.1	18.1	26.7	32.2	34.9	29.2	27.4	31.5	27.2	32.0	23.3	11.6	11.4	11.4	7.4	9.1	11.8	10.9	**20.8**	**34.9**	**7.4**
20	10.8	7.2	11.1	7.1	4.3	4.3	3.6	6.9	5.4	9.1	7.8	8.8	13.9	8.0	6.8	9.2	8.1	8.4	11.0	12.6	16.7	14.6	10.4	10.3	**9.0**	**16.7**	**3.6**
21	9.0	8.0	7.0	10.3	12.0	13.3	10.5	13.2	10.3	12.2	16.3	15.2	10.5	14.1	14.0	13.3	12.9	10.5	11.0	8.8	10.2	11.3	14.1	10.9	**11.6**	**16.3**	**7.0**
22	14.1	16.8	17.8	19.1	29.5	35.1	43.0	58.3	59.0	46.0	29.4	16.3	14.8	16.1	14.4	13.0	16.0	15.9	22.5	22.8	21.2	28.0	25.5	20.8	**25.6**	**59.0**	**13.0**
23	22.8	28.3	25.8	27.5	18.6	19.7	27.2	30.5	72.8	76.9	61.1	82.6	43.6	35.4	42.4	39.7	29.5	33.8	25.5	30.0	33.0	33.3	34.2	31.5	**37.7**	**82.6**	**18.6**
24	32.3	29.9	32.0	28.6	29.9	33.1	36.3	35.9	41.4	89.8	65.2	42.5	44.9	50.9	42.6	51.3	48.7	34.7	25.1	33.9	30.3	29.7	28.9	33.7	**39.7**	**89.8**	**25.1**
25	30.0	30.3	33.6	34.0	34.0	38.2	46.8	78.8	58.7	77.2	86.3	86.8	68.8	64.1	65.7	52.2	38.3	---	---	---	---	---	---	---	**---**	**---**	**---**
26	---	---	---	---	---	---	---	---	---	35.0	29.2	15.1	15.4	11.4	7.2	21.0	21.3	14.0	19.7	---	---	---	---	---	**---**	**---**	**---**
27	---	---	---	---	2.9	4.2	6.0	5.3	9.6	28.2	27.2	14.4	15.4	12.9	10.8	16.3	13.7	13.4	14.6	11.9	19.5	15.1	13.9	15.7	**13.6**	**28.2**	**2.9**
28	15.7	10.9	10.7	6.8	6.5	6.0	4.2	0.8	1.3	0.9	0.8	1.1	1.3	2.6	2.7	1.8	3.1	2.6	2.1	4.4	6.8	5.8	6.9	6.3	**4.7**	**15.7**	**0.8**
29	8.5	5.0	3.0	3.1	2.3	3.0	1.9	5.0	4.9	6.3	8.7	8.3	6.4	13.3	10.9	10.3	13.6	11.4	9.6	5.6	6.6	9.2	13.6	11.6	**7.6**	**13.6**	**1.9**
30	9.2	6.1	6.8	6.4	5.6	12.2	10.3	10.5	15.8	13.3	12.2	11.1	14.3	18.3	13.4	9.5	12.2	11.1	18.0	12.3	11.1	14.1	13.5	10.6	**11.6**	**18.3**	**5.6**
31	10.8	10.4	10.0	10.4	11.6	11.4	8.8	9.7	11.9	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
MEAN	**13.2**	**13.4**	**13.6**	**13.6**	**13.0**	**14.1**	**16.5**	**21.1**	**21.9**	**25.1**	**23.5**	**21.2**	**17.9**	**18.9**	**18.5**	**20.1**	**17.6**	**14.6**	**16.5**	**15.8**	**16.2**	**15.7**	**14.1**	**13.1**	**17.1**		
MAX	**32.3**	**35.7**	**33.6**	**34.0**	**34.0**	**38.2**	**46.8**	**78.8**	**72.8**	**94.1**	**86.3**	**86.8**	**68.8**	**64.1**	**65.7**	**75.3**	**48.7**	**39.0**	**55.2**	**54.1**	**42.2**	**49.2**	**34.2**	**33.7**		**94.1**	
MIN	**2.6**	**2.5**	**2.3**	**2.8**	**1.2**	**1.9**	**1.9**	**0.8**	**1.3**	**0.9**	**0.8**	**1.1**	**1.3**	**2.6**	**2.7**	**1.8**	**3.1**	**2.6**	**2.1**	**4.0**	**3.6**	**2.4**	**2.2**	**2.2**			**0.8**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 698 DATA RECOVERY RATE = 93.8% DATA CAPTURE RATE = 90.3%

MONTHLY MEAN = 17.1 µg/m3

MAXIMUM PM10 = 94.1 µg/m3 DATE OF OCCURRENCE = 1/18 at 1000 MAXIMUM DAILY MEAN = 39.7 µg/m3 DATE OF OCCURRENCE = 1/24

SECOND MAXIMUM PM10 = 89.8 µg/m3 DATE OF OCCURRENCE = 1/24 at 1000 SECOND MAXIMUM DAILY MEAN = 37.7 µg/m3 DATE OF OCCURRENCE = 1/23

MINIMUM PM10 = 0.8 µg/m3 DATE OF OCCURRENCE = 1/28 at 800 MINUMUM DAILY MEAN = 4.1 µg/m3 DATE OF OCCURRENCE = 1/10

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

Draft

CSX AQ1 Modulair

HOURLY AVERAGES of PM10 in µg/m3 for FEBRUARY, 2024

Hr Beg Hr End Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	---	---	---	---	---	---	---	32.2	18.2	16.9	16.9	13.7	14.1	11.8	11.1	16.6	21.3	15.6	12.6	12.5	15.1	13.8	14.0	11.9	---	---	---
2	25.1	27.7	19.5	20.0	20.9	23.2	24.4	22.7	19.5	20.3	25.2	17.6	13.1	10.9	11.2	14.0	14.6	14.5	11.1	9.7	10.8	10.0	9.7	12.1	**17.0**	**27.7**	**9.7**
3	9.6	9.2	8.3	7.6	9.0	9.3	7.6	8.9	9.8	7.7	11.2	9.5	9.0	11.6	9.3	8.2	14.9	20.9	25.5	37.7	36.5	31.6	29.0	24.4	**15.3**	**37.7**	**7.6**
4	20.5	10.9	10.4	11.5	12.0	13.8	10.1	14.1	16.8	14.4	7.7	13.4	13.6	11.4	12.6	9.8	8.4	12.3	41.2	53.1	28.1	40.0	20.4	27.3	**18.1**	**53.1**	**7.7**
5	21.1	14.8	16.0	19.1	14.9	16.7	37.5	51.5	36.5	24.9	20.8	18.5	31.4	26.1	24.4	22.0	22.6	21.9	64.3	36.5	31.0	25.0	28.5	22.6	**27.0**	**64.3**	**14.8**
6	30.1	17.2	23.3	18.6	21.8	13.8	16.5	22.1	23.0	19.7	13.2	17.9	21.7	13.7	17.8	29.8	21.5	23.6	62.0	69.8	38.8	21.0	22.9	20.0	**25.0**	**69.8**	**13.2**
7	20.7	18.7	65.0	23.2	35.2	38.2	38.2	50.3	42.7	21.1	34.9	25.1	22.9	29.8	31.6	48.1	40.0	26.5	37.4	48.0	72.8	37.4	20.7	19.5	**35.3**	**72.8**	**18.7**
8	19.4	24.1	55.0	19.0	21.9	38.0	96.8	64.4	55.8	50.9	42.9	30.5	33.6	29.2	22.7	25.3	24.1	14.9	14.4	9.2	14.2	7.9	10.5	15.9	**30.9**	**96.8**	**7.9**
9	13.9	13.2	20.8	16.3	23.4	26.6	34.3	35.7	42.1	27.1	25.9	38.7	35.5	29.1	34.0	29.0	33.5	29.1	40.7	32.7	41.6	37.1	48.3	34.5	**31.0**	**48.3**	**13.2**
10	36.8	35.0	42.3	37.6	39.8	39.2	53.4	46.7	53.7	65.8	72.4	75.1	65.7	31.3	44.1	63.5	103.0	52.4	36.8	62.3	39.1	36.6	29.8	25.0	**49.5**	**103.0**	**25.0**
11	15.0	14.3	14.2	17.6	16.4	17.7	24.6	39.2	40.0	47.0	29.1	34.7	28.0	23.8	21.1	36.3	22.0	22.2	33.9	25.8	24.8	21.9	19.8	24.0	**25.6**	**47.0**	**14.2**
12	29.8	26.0	23.4	24.9	28.5	23.0	23.8	23.8	26.6	27.2	31.7	36.8	30.6	32.7	32.5	31.9	34.4	28.6	23.3	19.5	19.4	13.7	10.8	6.7	**25.4**	**36.8**	**6.7**
13	5.6	6.7	3.1	7.1	4.2	4.2	3.3	5.2	5.7	4.2	5.4	9.9	12.1	13.8	11.3	12.4	9.6	8.8	7.4	7.0	6.4	7.8	8.0	10.8	**7.5**	**13.8**	**3.1**
14	---	---	---	---	---	---	---	6.2	9.4	14.7	13.6	14.9	9.9	8.7	14.3	18.4	9.3	10.8	6.4	12.4	12.1	12.1	22.6	9.1	---	---	---
15	6.6	8.0	11.8	8.8	16.0	11.4	10.2	12.2	12.6	18.1	13.9	18.6	14.3	20.3	24.7	19.7	15.1	9.0	14.5	13.9	14.2	16.6	15.6	19.1	**14.4**	**24.7**	**6.6**
16	13.7	9.2	11.0	6.8	7.8	6.8	9.1	6.7	12.8	8.6	12.2	7.2	10.5	13.5	8.9	9.2	8.7	16.4	22.9	9.2	14.4	11.1	6.7	7.6	**10.5**	**22.9**	**6.7**
17	7.3	13.0	26.6	9.3	5.8	11.8	11.8	12.7	11.0	8.2	8.1	13.3	12.3	9.5	14.2	15.1	11.4	9.8	6.2	6.8	9.9	8.4	5.2	6.3	**10.6**	**26.6**	**5.2**
18	6.4	7.3	9.4	7.0	5.5	5.0	6.4	5.8	13.1	10.5	10.8	8.7	8.8	9.5	10.5	7.3	6.6	8.3	8.6	9.1	4.3	10.6	7.8	4.9	**8.0**	**13.1**	**4.3**
19	3.8	4.0	6.1	4.5	6.9	17.3	22.2	15.6	18.6	20.9	19.6	21.6	21.5	22.5	22.5	20.4	16.9	16.3	24.7	30.4	40.5	28.4	29.4	22.2	**19.0**	**40.5**	**3.8**
20	27.2	26.5	22.6	23.4	15.8	16.0	14.1	15.5	18.6	11.1	8.8	17.3	14.7	13.1	16.4	14.4	18.4	27.8	18.0	16.5	18.6	21.3	26.4	17.4	**18.3**	**27.8**	**8.8**
21	23.6	14.0	13.7	12.6	19.0	22.0	17.6	13.9	14.9	14.3	13.4	13.8	18.6	21.1	21.4	18.3	14.3	21.0	27.3	33.7	33.3	29.8	26.5	33.2	**20.5**	**33.7**	**12.6**
22	37.8	35.4	33.4	41.8	40.8	36.1	44.7	46.1	60.3	47.3	44.7	33.6	38.6	50.7	44.3	27.5	37.9	36.4	33.8	26.0	28.0	40.2	28.2	25.5	**38.3**	**60.3**	**25.5**
23	21.2	26.8	28.7	24.5	21.4	23.1	26.3	31.5	27.4	25.5	27.3	26.3	24.2	26.5	26.5	24.3	23.8	25.0	26.8	23.4	23.5	20.2	21.2	15.6	**24.6**	**31.5**	**15.6**
24	14.1	17.5	17.9	11.6	14.3	17.7	21.0	21.9	17.9	26.7	27.9	25.5	25.2	15.2	15.5	16.7	20.8	18.6	12.6	10.9	11.8	7.7	7.3	12.9	**17.1**	**27.9**	**7.3**
25	13.9	9.5	8.2	16.2	12.6	11.2	8.0	7.7	8.5	6.8	8.2	7.8	8.4	7.3	7.5	7.6	16.0	6.2	5.2	6.9	5.7	4.0	5.4	3.6	**8.4**	**16.2**	**3.6**
26	4.7	4.5	7.1	11.9	12.8	7.9	8.6	8.8	20.1	33.7	34.3	30.5	31.3	36.2	34.8	36.4	36.2	52.0	136.5	45.6	92.5	26.0	49.6	26.1	**32.8**	**136.5**	**4.5**
27	28.4	28.1	30.7	29.0	24.4	36.3	40.3	52.3	64.8	41.8	49.3	61.5	52.9	62.0	47.1	25.7	21.5	17.1	16.3	12.9	12.2	9.8	10.9	13.8	**32.9**	**64.8**	**9.8**
28	20.7	16.4	13.4	16.6	21.9	31.5	34.1	44.0	43.4	24.8	20.2	20.1	20.3	23.0	19.4	17.3	14.0	9.9	8.7	10.5	11.4	9.7	5.3	4.5	**19.2**	**44.0**	**4.5**
29	5.5	5.7	5.4	5.7	4.9	5.2	6.1	6.6	8.8	17.2	16.6	13.7	11.3	20.0	15.2	11.8	9.3	6.8	18.2	8.8	10.3	10.6	12.4	12.1	**10.3**	**20.0**	**4.9**
MEAN	**17.9**	**16.4**	**20.3**	**16.7**	**17.7**	**19.4**	**24.1**	**25.0**	**26.0**	**23.4**	**23.0**	**23.3**	**22.6**	**21.9**	**21.6**	**22.0**	**22.4**	**20.1**	**27.5**	**24.2**	**24.9**	**19.7**	**19.1**	**16.8**	**21.5**		
MAX	**37.8**	**35.4**	**65.0**	**41.8**	**40.8**	**39.2**	**96.8**	**64.4**	**64.8**	**65.8**	**72.4**	**75.1**	**65.7**	**62.0**	**47.1**	**63.5**	**103.0**	**52.4**	**136.5**	**69.8**	**92.5**	**40.2**	**49.6**	**34.5**		**136.5**	
MIN	**3.8**	**4.0**	**3.1**	**4.5**	**4.2**	**4.2**	**3.3**	**5.2**	**5.7**	**4.2**	**5.4**	**7.2**	**8.4**	**7.3**	**7.5**	**7.3**	**6.6**	**6.2**	**5.2**	**6.8**	**4.3**	**4.0**	**5.2**	**3.6**			**3.1**

POSSIBLE NUMBER OF OBSERVATIONS = 696 ACTUAL NUMBER OF OBSERVATIONS = 682 DATA RECOVERY RATE = 98.0% DATA CAPTURE RATE = 93.1%

MONTHLY MEAN = 21.5 µg/m3

MAXIMUM PM10 = 136.5 µg/m3 DATE OF OCCURRENCE = 2/26 at 1900 MAXIMUM DAILY MEAN = 49.5 µg/m3 DATE OF OCCURRENCE = 2/10

SECOND MAXIMUM PM10 = 103.0 µg/m3 DATE OF OCCURRENCE = 2/10 at 1700 SECOND MAXIMUM DAILY MEAN = 38.3 µg/m3 DATE OF OCCURRENCE = 2/22

MINIMUM PM10 = 3.1 µg/m3 DATE OF OCCURRENCE = 2/13 at 300 MINUMUM DAILY MEAN = 7.5 µg/m3 DATE OF OCCURRENCE = 2/13

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

Draft

CSX AQ1 Modulair

HOURLY AVERAGES of PM10 in µg/m3 for MARCH, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	10.8	9.9	31.5	9.4	10.2	57.8	46.5	74.4	18.8	19.7	16.1	18.3	19.3	21.3	26.8	20.2	10.0	13.7	11.0	9.6	10.9	17.5	14.4	14.1	**21.3**	**74.4**	**9.4**
2	15.1	13.7	12.6	12.4	12.9	15.5	15.8	18.9	36.2	39.7	8.7	3.9	5.1	5.3	6.9	4.2	4.7	6.5	4.7	4.5	7.9	5.5	7.4	6.1	**11.4**	**39.7**	**3.9**
3	6.8	6.5	5.7	5.8	6.0	8.0	9.0	8.6	11.4	12.9	17.3	22.7	20.9	18.4	8.2	11.8	11.6	7.6	16.1	13.0	10.2	13.2	26.6	28.9	**12.8**	**28.9**	**5.7**
4	23.6	18.5	15.6	13.5	22.2	55.5	14.9	24.8	17.3	23.1	26.9	16.8	17.3	17.7	18.4	23.6	13.4	16.4	15.0	9.5	7.1	7.1	7.2	5.5	**18.0**	**55.5**	**5.5**
5	5.4	2.8	2.4	2.9	3.4	3.5	2.7	3.6	4.7	3.8	3.1	3.7	5.6	5.5	6.6	7.1	7.7	8.7	5.6	6.1	6.2	8.8	8.5	7.1	**5.2**	**8.8**	**2.4**
6	10.9	13.4	12.7	12.7	---	---	---	---	---	25.6	18.4	6.9	6.6	7.6	6.0	6.2	5.1	6.2	9.6	10.6	11.0	15.9	9.8	10.2	**10.8**	**25.6**	**5.1**
7	7.8	6.5	6.0	3.9	3.2	4.3	7.3	7.1	7.0	5.1	9.8	8.9	9.8	17.1	19.6	20.3	28.9	18.3	18.5	18.0	16.2	12.8	16.9	15.3	**12.0**	**28.9**	**3.2**
8	14.6	15.0	16.6	11.1	14.7	11.8	9.2	10.3	15.3	8.9	10.1	18.2	14.6	15.5	19.3	9.1	14.7	18.6	16.0	13.7	16.6	18.4	29.5	30.8	**15.5**	**30.8**	**8.9**
9	34.2	33.5	31.3	35.6	34.6	41.3	56.6	65.3	65.1	60.0	68.6	74.5	71.8	59.6	40.2	29.1	30.3	14.1	5.1	2.5	2.7	3.7	3.3	3.2	**36.1**	**74.5**	**2.5**
10	3.3	3.0	---	2.3	1.4	1.5	1.4	1.8	3.1	6.7	14.7	12.7	6.2	6.1	4.8	4.2	6.3	6.3	4.0	4.2	4.0	3.5	3.3	2.8	**4.7**	**14.7**	**1.4**
11	3.3	2.9	5.0	4.9	3.2	3.7	5.3	6.7	6.9	19.8	31.1	31.1	28.9	38.5	44.5	37.4	28.6	16.6	6.5	4.7	4.8	5.0	3.7	4.5	**14.5**	**44.5**	**2.9**
12	4.1	2.7	3.3	2.7	2.5	4.1	6.3	9.8	10.9	16.2	12.4	15.6	15.7	17.4	23.2	21.3	22.0	18.5	18.6	16.9	21.0	14.0	16.5	16.4	**13.0**	**23.2**	**2.5**
13	16.5	10.9	15.4	40.2	36.3	143.7	111.8	96.7	146.0	91.2	15.9	19.3	14.0	18.1	18.1	14.9	13.8	17.2	18.2	31.5	31.1	23.0	28.8	42.7	**42.3**	**146.0**	**10.9**
14	39.9	105.0	89.9	29.1	33.4	40.6	92.3	76.8	159.8	148.4	148.9	111.2	99.7	151.6	72.0	50.4	58.9	50.2	26.5	19.0	15.1	16.0	18.2	20.8	**69.7**	**159.8**	**15.1**
15	65.8	51.4	57.5	28.1	27.3	35.9	30.3	16.9	16.0	15.8	17.5	18.5	13.4	10.5	17.8	9.2	6.1	12.2	13.3	10.2	8.8	10.2	10.6	10.0	**21.4**	**65.8**	**6.1**
16	8.8	7.5	8.5	9.7	9.3	6.3	5.2	4.8	6.8	13.0	10.3	10.0	9.6	9.4	8.6	8.1	8.9	10.4	6.4	8.8	7.5	7.6	6.5	8.3	**8.3**	**13.0**	**4.8**
17	12.5	8.6	6.8	8.6	9.4	6.5	6.8	6.3	12.1	25.3	14.9	11.3	8.3	17.8	10.4	10.2	10.2	19.6	36.0	27.5	22.4	26.0	35.8	50.6	**16.8**	**50.6**	**6.3**
18	50.5	19.2	19.8	14.8	15.0	9.1	11.7	9.9	13.3	30.4	34.4	20.9	14.8	16.7	12.0	13.5	24.6	37.9	62.3	30.5	15.0	9.9	8.3	7.7	**20.9**	**62.3**	**7.7**
19	4.1	7.0	4.3	3.3	3.2	3.9	8.7	10.1	16.3	17.4	15.9	13.7	16.2	11.6	14.6	13.5	15.0	17.1	8.6	8.7	14.2	9.8	13.5	12.3	**11.0**	**17.4**	**3.2**
20	12.4	8.0	8.3	6.9	8.5	12.3	14.2	11.6	9.4	18.2	20.9	41.9	28.7	27.1	36.6	43.7	25.8	31.9	87.1	39.9	26.5	19.7	13.2	11.4	**23.5**	**87.1**	**6.9**
21	8.9	4.7	7.7	10.5	5.7	4.9	4.1	8.6	10.6	7.3	10.4	9.8	12.1	15.0	16.9	11.6	13.7	8.6	7.5	9.9	16.8	13.9	14.0	27.5	**10.9**	**27.5**	**4.1**
22	27.4	21.7	42.4	16.3	19.9	8.0	9.3	10.7	17.5	16.2	20.8	36.0	13.8	27.5	31.8	27.6	20.7	24.0	23.2	20.5	20.6	19.9	25.0	19.5	**21.7**	**42.4**	**8.0**
23	21.4	21.5	14.9	10.7	7.8	10.5	7.6	9.2	8.7	10.6	12.3	9.2	4.3	7.1	10.8	6.5	11.0	12.7	15.2	17.1	13.4	9.4	11.5	12.3	**11.5**	**21.5**	**4.3**
24	11.2	13.3	8.5	5.4	8.6	10.3	10.3	12.2	9.7	9.0	7.9	7.9	6.9	9.8	7.8	9.4	8.6	8.6	10.5	8.0	8.8	18.4	21.5	24.8	**10.7**	**24.8**	**5.4**
25	25.9	17.3	20.8	24.1	15.7	9.2	9.6	10.0	8.9	8.2	12.2	12.1	13.5	13.6	17.1	19.1	25.4	20.8	24.8	21.2	25.5	17.1	20.0	16.7	**17.0**	**25.9**	**8.2**
26	20.0	44.2	27.5	28.6	34.7	22.6	14.8	18.4	17.1	14.9	15.3	20.5	19.9	25.3	22.6	23.5	30.0	23.7	28.1	30.4	39.7	28.0	30.9	30.9	**25.5**	**44.2**	**14.8**
27	32.0	26.6	23.0	25.3	22.9	25.8	31.9	23.2	27.4	28.0	16.9	14.0	8.1	5.2	8.1	9.2	5.0	4.2	9.8	10.3	10.6	14.5	16.9	14.1	**17.2**	**32.0**	**4.2**
28	12.8	6.0	6.8	8.3	4.5	4.7	7.5	9.7	13.0	15.7	15.3	---	19.6	15.7	12.8	15.6	16.8	13.6	14.6	16.2	13.0	10.5	8.5	10.4	**11.8**	**19.6**	**4.5**
29	10.2	8.1	8.9	6.9	6.6	8.5	---	12.7	11.6	13.3	19.2	25.5	21.5	20.0	16.4	16.6	15.3	11.8	9.3	8.6	7.2	7.0	8.1	7.8	**12.2**	**25.5**	**6.6**
30	7.4	5.5	5.3	4.9	5.4	5.3	5.9	5.9	8.7	9.4	10.9	10.8	9.7	11.1	15.2	14.4	17.2	16.4	12.2	13.4	21.7	31.7	22.4	24.4	**12.3**	**31.7**	**4.9**
31	23.3	17.7	12.3	15.1	15.0	15.7	17.8	19.2	22.0	17.9	12.8	6.1	7.5	6.7	7.2	7.2	7.3	15.7	8.3	12.8	12.8	13.1	27.6	16.7	**14.1**	**27.6**	**6.1**
MEAN	**17.8**	**17.2**	**17.7**	**13.4**	**13.5**	**19.7**	**19.8**	**20.1**	**24.4**	**24.2**	**21.6**	**21.1**	**18.2**	**21.0**	**18.8**	**16.7**	**16.7**	**16.4**	**17.8**	**14.8**	**14.5**	**13.9**	**15.8**	**16.6**	**18.0**		
MAX	**65.8**	**105.0**	**89.9**	**40.2**	**36.3**	**143.7**	**111.8**	**96.7**	**159.8**	**148.4**	**148.9**	**111.2**	**99.7**	**151.6**	**72.0**	**50.4**	**58.9**	**50.2**	**87.1**	**39.9**	**39.7**	**31.7**	**35.8**	**50.6**		**159.8**	
MIN	**3.3**	**2.7**	**2.4**	**2.3**	**1.4**	**1.5**	**1.4**	**1.8**	**3.1**	**3.8**	**3.1**	**3.7**	**4.3**	**5.2**	**4.8**	**4.2**	**4.7**	**4.2**	**4.0**	**2.5**	**2.7**	**3.5**	**3.3**	**2.8**			**1.4**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 736 DATA RECOVERY RATE = 98.9% DATA CAPTURE RATE = 100.0%

MONTHLY MEAN = 18.0 µg/m3

MAXIMUM PM10 = 159.8 µg/m3 DATE OF OCCURRENCE = 3/14 at 900 MAXIMUM DAILY MEAN = 69.7 µg/m3 DATE OF OCCURRENCE = 3/14

SECOND MAXIMUM PM10 = 151.6 µg/m3 DATE OF OCCURRENCE = 3/14 at 1400 SECOND MAXIMUM DAILY MEAN = 42.3 µg/m3 DATE OF OCCURRENCE = 3/13

MINIMUM PM10 = 1.4 µg/m3 DATE OF OCCURRENCE = 3/10 at 500 MINUMUM DAILY MEAN = 4.7 µg/m3 DATE OF OCCURRENCE = 3/10

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

UNDERLINED DATA ARE SUSPECT

Draft

CSX AQ1 Modulair

HOURLY AVERAGES of PM2.5 in µg/m3 for JANUARY, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	10.1	10.5	13.4	13.3	13.1	15.4	19.8	16.1	15.3	17.3	13.0	8.5	4.9	5.9	7.8	7.2	8.3	7.3	7.3	7.6	9.0	10.4	9.9	7.5	**10.7**	**19.8**	**4.9**
2	6.6	7.9	7.8	7.9	7.9	7.7	5.6	4.1	4.1	7.3	5.8	7.8	6.1	7.9	7.4	7.3	8.2	7.8	9.9	8.9	5.9	7.0	6.0	5.0	**6.9**	**9.9**	**4.1**
3	4.9	9.0	5.0	5.7	4.8	5.3	7.1	8.6	14.3	9.2	15.8	11.1	9.8	13.5	13.0	14.8	11.1	9.2	11.5	12.9	14.0	13.4	10.5	10.5	**10.2**	**15.8**	**4.8**
4	11.6	11.5	11.1	12.4	12.2	12.7	11.9	12.7	13.4	11.1	11.9	11.8	6.5	4.7	3.0	3.6	2.7	2.1	2.3	2.4	2.8	3.0	3.5	4.4	**7.7**	**13.4**	**2.1**
5	4.5	4.9	4.4	4.1	3.8	4.6	4.2	4.7	4.7	5.6	6.6	5.9	7.7	8.3	7.2	7.4	9.2	7.8	7.8	9.4	10.9	12.9	10.8	11.7	**7.0**	**12.9**	**3.8**
6	12.5	12.3	12.1	10.6	15.1	9.7	8.7	10.0	11.9	11.3	7.3	9.3	10.1	9.7	6.5	6.5	6.6	5.0	3.0	3.5	3.2	4.1	5.2	5.8	**8.3**	**15.1**	**3.0**
7	7.0	8.4	7.4	5.9	6.5	5.8	6.6	5.3	5.8	7.4	11.4	10.0	5.0	4.9	4.2	3.4	3.7	4.5	4.7	4.1	5.0	2.1	2.0	2.9	**5.5**	**11.4**	**2.0**
8	4.0	5.3	5.2	5.8	6.8	6.0	6.9	5.1	7.2	11.0	11.2	8.9	8.7	10.1	9.8	9.2	9.5	8.1	8.7	9.3	9.5	8.9	8.7	8.2	**8.0**	**11.2**	**4.0**
9	5.2	5.7	6.3	9.1	11.6	8.0	8.5	8.7	7.2	5.6	5.0	6.0	6.6	6.7	7.8	9.9	8.9	8.3	7.7	2.8	3.3	3.3	2.5	1.7	**6.5**	**11.6**	**1.7**
10	1.4	1.7	1.5	1.1	2.6	1.4	1.4	1.5	1.8	1.1	0.6	1.0	0.7	1.1	1.2	0.9	1.2	1.6	2.0	2.6	2.8	1.7	2.0	1.6	**1.5**	**2.8**	**0.6**
11	2.1	2.1	1.7	2.1	3.1	3.7	5.4	4.0	3.8	4.8	5.4	2.8	2.6	2.5	2.6	2.9	3.2	6.3	13.1	12.2	12.8	9.9	4.6	6.4	**5.0**	**13.1**	**1.7**
12	10.1	11.2	8.2	6.3	6.6	7.0	8.9	8.5	17.8	14.9	13.0	11.3	13.8	13.8	11.9	10.8	9.4	8.9	8.3	9.2	9.2	9.0	6.4	4.0	**9.9**	**17.8**	**4.0**
13	3.6	5.6	7.1	13.1	0.9	1.1	1.7	3.2	11.8	2.8	3.2	4.4	3.4	2.9	3.3	3.9	5.4	4.9	4.3	3.3	3.5	2.3	1.8	2.3	**4.1**	**13.1**	**0.9**
14	1.9	2.4	2.9	2.2	2.2	2.2	2.1	4.3	2.5	2.4	3.7	5.4	5.0	4.7	4.4	3.1	3.1	4.5	2.4	4.3	3.7	6.9	---	---	**3.4**	**6.9**	**1.9**
15	11.8	---	---	---	3.3	1.6	1.6	2.4	2.3	4.2	6.2	9.4	9.9	6.6	10.8	23.4	14.3	6.8	6.8	6.8	5.4	4.6	5.0	6.0	**7.1**	**23.4**	**1.6**
16	4.5	7.1	9.0	9.6	10.7	12.2	13.7	17.8	17.8	18.8	18.5	17.3	12.9	17.1	14.7	13.7	14.6	10.2	9.8	7.4	8.1	6.6	6.6	8.1	**11.9**	**18.8**	**4.5**
17	7.0	4.0	4.1	4.5	4.0	3.6	3.6	7.0	7.6	7.8	5.7	9.2	6.0	5.3	6.2	4.9	4.6	3.2	6.4	5.4	4.3	6.1	5.6	5.8	**5.4**	**9.2**	**3.2**
18	13.9	21.0	10.4	11.1	9.7	9.7	9.1	10.4	17.4	14.7	13.2	14.9	16.4	9.3	10.5	4.8	6.2	6.8	10.3	11.4	10.5	9.2	11.4	14.7	**11.5**	**21.0**	**4.8**
19	13.3	13.7	13.0	16.7	17.4	16.4	14.2	16.3	22.3	26.9	24.2	23.9	23.6	25.8	22.8	28.1	20.2	8.7	8.8	9.1	6.0	5.8	8.6	7.2	**16.3**	**28.1**	**5.8**
20	9.8	6.2	10.3	6.3	3.5	3.5	1.7	2.2	3.1	4.6	3.8	4.0	10.5	5.7	4.4	6.5	5.6	6.1	7.8	9.1	9.8	8.5	6.9	5.5	**6.0**	**10.5**	**1.7**
21	4.6	3.4	4.5	7.4	9.2	8.9	7.1	7.0	5.9	6.4	6.2	7.5	6.3	7.9	7.7	7.1	7.5	6.6	6.5	5.0	6.3	7.3	7.4	7.3	**6.7**	**9.2**	**3.4**
22	7.8	7.1	6.1	5.9	6.7	6.1	7.5	8.1	14.8	20.2	11.6	8.7	8.5	8.3	8.3	6.3	6.9	9.3	11.6	11.7	10.9	13.2	12.8	12.6	**9.6**	**20.2**	**5.9**
23	11.9	12.8	13.2	10.0	10.0	9.9	12.4	14.5	22.3	33.3	34.7	41.8	30.8	23.1	22.3	19.5	19.0	18.3	17.0	19.5	21.0	24.7	26.0	25.5	**20.5**	**41.8**	**9.9**
24	25.8	24.7	24.0	23.5	22.2	22.9	23.9	24.0	24.8	27.2	31.5	29.8	34.2	34.3	29.0	30.5	25.9	23.9	21.0	24.1	24.2	22.7	23.5	26.4	**26.0**	**34.3**	**21.0**
25	23.5	23.7	25.2	26.0	26.1	26.1	26.9	43.1	37.3	49.3	54.4	60.4	50.9	47.2	48.2	36.5	23.1	26.3	12.6	15.5	31.2	22.3	11.2	20.6	**31.9**	**60.4**	**11.2**
26	8.8	4.5	5.2	4.8	6.6	7.7	7.7	13.3	12.1	12.7	6.8	5.6	7.8	8.2	3.1	12.6	10.4	8.2	8.6	6.8	4.6	5.2	5.3	3.4	**7.4**	**13.3**	**3.1**
27	4.4	4.5	4.8	3.5	2.1	2.2	2.8	3.0	5.6	9.1	13.2	11.2	11.3	7.6	6.9	9.8	9.0	8.6	8.6	9.1	11.4	10.8	11.0	10.2	**7.5**	**13.2**	**2.1**
28	9.2	7.8	7.2	5.6	3.3	1.6	0.9	0.3	0.5	0.5	0.5	0.6	0.7	1.2	1.3	0.9	2.1	1.8	1.6	3.5	5.6	4.8	5.5	5.0	**3.0**	**9.2**	**0.3**
29	6.8	4.2	2.8	2.5	1.6	2.4	1.1	2.0	2.4	2.2	2.6	2.0	2.2	3.4	4.1	4.7	5.3	5.9	4.4	3.6	4.9	6.2	8.1	8.9	**3.9**	**8.9**	**1.1**
30	7.6	4.6	5.0	4.8	4.4	4.3	3.4	3.4	5.1	4.8	5.5	5.9	6.9	7.2	6.3	5.6	6.0	7.0	9.0	7.4	8.5	8.4	8.8	7.1	**6.1**	**9.0**	**3.4**
31	6.0	5.5	4.9	4.6	4.7	4.4	3.5	3.4	3.7	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
MEAN	**8.5**	**8.4**	**8.1**	**8.2**	**7.8**	**7.6**	**7.7**	**8.9**	**10.5**	**11.8**	**11.8**	**11.9**	**11.0**	**10.5**	**9.9**	**10.2**	**9.0**	**8.1**	**8.1**	**8.3**	**8.9**	**8.7**	**8.2**	**8.5**	**9.2**		
MAX	**25.8**	**24.7**	**25.2**	**26.0**	**26.1**	**26.1**	**26.9**	**43.1**	**37.3**	**49.3**	**54.4**	**60.4**	**50.9**	**47.2**	**48.2**	**36.5**	**25.9**	**26.3**	**21.0**	**24.1**	**31.2**	**24.7**	**26.0**	**26.4**		**60.4**	
MIN	**1.4**	**1.7**	**1.5**	**1.1**	**0.9**	**1.1**	**0.9**	**0.3**	**0.5**	**0.5**	**0.5**	**0.6**	**0.7**	**1.1**	**1.2**	**0.9**	**1.2**	**1.6**	**1.6**	**2.4**	**2.8**	**1.7**	**1.8**	**1.6**			**0.3**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 724 DATA RECOVERY RATE = 97.3% DATA CAPTURE RATE = 96.8%

MONTHLY MEAN = 9.2 µg/m3

MAXIMUM PM2.5 = 60.4 µg/m3 DATE OF OCCURRENCE = 1/25 at 1200 MAXIMUM DAILY MEAN = 31.9 µg/m3 DATE OF OCCURRENCE = 1/25

SECOND MAXIMUM PM2.5 = 54.4 µg/m3 DATE OF OCCURRENCE = 1/25 at 1100 SECOND MAXIMUM DAILY MEAN = 26.0 µg/m3 DATE OF OCCURRENCE = 1/24

MINIMUM PM2.5 = 0.3 µg/m3 DATE OF OCCURRENCE = 1/28 at 800 MINUMUM DAILY MEAN = 1.5 µg/m3 DATE OF OCCURRENCE = 1/10

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

Draft

CSX AQ1 Modulair

HOURLY AVERAGES of PM2.5 in µg/m3 for FEBRUARY, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	---	---	---	---	---	---	---	6.1	8.3	13.1	10.7	9.1	6.8	6.9	7.0	6.8	11.0	8.5	6.9	9.2	11.3	10.9	9.7	8.5	---	---	---
2	10.4	13.4	12.3	11.1	11.1	12.1	14.2	15.5	11.5	13.0	22.2	13.8	9.3	5.5	5.3	4.7	4.1	4.8	4.7	4.4	4.1	3.4	3.8	3.2	**9.0**	**22.2**	**3.2**
3	4.3	3.8	4.0	3.1	4.3	4.0	3.5	5.7	5.8	5.4	6.8	6.0	5.9	6.3	6.5	5.9	6.4	7.5	8.5	12.9	20.8	22.8	19.3	14.0	**8.0**	**22.8**	**3.1**
4	10.9	8.2	7.2	7.5	6.7	7.0	4.6	6.2	10.2	8.4	5.9	6.6	7.8	7.7	8.3	7.4	6.8	7.5	12.4	15.2	12.3	13.4	14.9	15.2	**9.0**	**15.2**	**4.6**
5	13.9	8.8	11.3	12.6	11.2	12.7	12.4	14.6	13.3	11.2	10.5	9.3	11.4	11.3	11.8	11.4	10.4	10.8	15.8	18.5	13.6	11.8	12.1	13.9	**12.2**	**18.5**	**8.8**
6	10.6	10.0	11.6	9.7	8.9	7.4	8.0	9.0	9.3	7.7	5.5	6.3	7.1	4.7	5.2	5.8	6.3	6.6	9.9	12.6	9.5	10.1	11.1	9.5	**8.4**	**12.6**	**4.7**
7	9.4	9.2	12.3	9.2	12.7	11.9	12.6	13.9	13.3	10.8	13.4	12.2	12.5	13.2	11.4	14.5	15.5	13.0	14.0	15.4	24.5	14.8	11.3	11.3	**13.0**	**24.5**	**9.2**
8	11.8	12.3	25.6	10.9	11.9	13.0	16.5	13.3	14.5	17.9	21.8	19.0	14.2	11.4	10.9	10.7	10.7	6.3	5.7	5.0	5.2	5.5	7.5	8.3	**12.0**	**25.6**	**5.0**
9	6.1	5.7	6.1	6.8	8.8	8.6	10.1	12.0	13.2	9.5	11.4	17.6	17.2	16.4	17.7	19.2	22.6	12.9	22.4	21.3	25.5	23.2	26.0	23.4	**15.1**	**26.0**	**5.7**
10	25.1	23.6	24.1	24.9	25.0	24.1	24.0	23.7	31.2	41.1	46.0	47.2	34.7	18.2	28.9	28.6	29.1	26.5	23.7	27.2	21.4	24.0	20.8	18.5	**27.5**	**47.2**	**18.2**
11	12.0	12.4	12.1	13.9	12.4	13.7	16.1	27.7	24.1	28.4	21.5	25.3	21.8	20.0	16.3	17.1	17.2	17.6	26.8	18.9	17.9	17.2	16.0	15.5	**18.4**	**28.4**	**12.0**
12	16.3	16.3	16.8	17.2	18.2	18.4	16.4	14.4	18.0	18.2	20.8	22.3	21.8	24.8	24.0	23.9	23.6	19.1	16.7	15.0	11.7	9.2	7.5	5.3	**17.3**	**24.8**	**5.3**
13	3.7	2.5	1.6	1.9	1.3	1.2	2.3	4.2	2.5	2.0	3.4	5.2	8.7	9.1	9.8	8.1	7.1	7.1	5.9	5.1	5.0	5.0	4.7	7.9	**4.8**	**9.8**	**1.2**
14	---	---	---	---	---	---	---	3.5	2.7	3.3	2.8	3.2	2.5	3.0	2.8	3.1	3.1	3.5	3.7	5.2	6.1	5.9	10.6	6.2	---	---	---
15	5.3	6.0	7.1	5.9	9.8	6.3	7.0	9.1	5.3	5.8	5.8	6.3	5.9	6.7	7.4	5.9	4.9	3.6	4.3	5.2	5.0	8.3	8.1	8.6	**6.4**	**9.8**	**3.6**
16	7.4	5.2	3.6	4.2	4.4	3.3	4.6	3.8	4.4	4.3	4.9	4.1	4.8	5.3	4.6	4.7	3.5	7.7	7.3	4.5	7.2	5.9	5.0	5.7	**5.0**	**7.7**	**3.3**
17	4.6	4.4	3.9	3.9	5.1	6.9	6.2	7.6	7.4	6.5	4.6	5.4	5.5	6.7	8.4	9.2	8.4	8.2	4.8	4.1	4.4	7.3	3.3	3.0	**5.8**	**9.2**	**3.0**
18	3.0	4.9	3.8	4.3	4.1	3.3	3.4	4.0	11.3	9.0	8.5	6.3	6.9	6.3	5.8	4.1	2.7	1.8	3.1	3.7	2.1	7.2	5.6	2.3	**4.8**	**11.3**	**1.8**
19	1.7	1.6	1.8	2.7	3.2	4.5	6.5	6.9	9.3	13.8	12.8	15.9	15.5	16.4	16.3	15.6	13.6	12.0	17.3	16.1	18.0	18.2	16.9	16.3	**11.3**	**18.2**	**1.6**
20	18.9	17.4	15.0	17.5	12.5	12.1	9.5	7.7	6.7	5.8	4.6	5.8	7.4	8.3	9.5	11.6	9.7	9.6	8.5	8.6	5.6	4.8	4.1	3.2	**9.3**	**18.9**	**3.2**
21	3.4	2.9	2.8	3.3	7.8	6.2	4.4	5.0	4.8	5.1	4.1	4.2	4.5	7.2	7.6	7.6	6.5	7.2	8.4	6.3	4.5	5.2	4.7	4.6	**5.3**	**8.4**	**2.8**
22	7.5	6.2	11.5	6.6	5.7	6.5	7.6	7.9	9.1	7.3	6.3	6.7	6.7	7.2	5.5	5.9	9.4	9.3	8.6	8.8	9.8	12.0	14.3	16.7	**8.4**	**16.7**	**5.5**
23	12.3	13.3	13.8	12.6	11.2	11.9	13.8	17.1	20.0	20.4	22.8	23.2	20.9	21.5	22.0	20.2	18.5	16.8	20.1	18.9	17.2	16.3	17.5	13.2	**17.3**	**23.2**	**11.2**
24	10.5	14.2	14.6	10.2	11.8	16.0	18.3	19.5	15.3	23.4	25.0	23.0	21.8	12.2	12.4	11.5	12.4	9.3	4.7	5.9	6.0	4.8	4.5	4.9	**13.0**	**25.0**	**4.5**
25	5.9	4.6	4.2	4.4	4.3	4.4	3.8	4.9	5.4	5.0	4.9	4.6	5.0	5.1	5.5	5.3	7.1	3.8	2.8	3.2	2.9	2.4	2.6	2.5	**4.3**	**7.1**	**2.4**
26	3.1	3.3	3.7	5.3	5.8	4.7	6.9	6.5	12.1	21.0	22.3	19.0	12.4	15.3	15.3	15.2	15.0	17.1	28.2	18.7	24.4	14.8	19.1	16.6	**13.5**	**28.2**	**3.1**
27	16.9	17.1	15.2	15.8	15.2	16.2	16.3	23.0	27.8	30.8	30.5	31.3	30.5	26.8	20.4	12.1	10.8	11.1	10.3	9.6	9.2	8.5	8.7	8.7	**17.6**	**31.3**	**8.5**
28	9.2	10.9	8.9	11.9	14.2	15.8	15.6	18.8	22.5	14.4	13.1	12.7	15.1	17.8	15.3	12.8	7.5	5.0	6.4	7.1	7.0	3.4	2.5	2.9	**11.2**	**22.5**	**2.5**
29	2.6	2.6	3.3	3.6	3.2	3.4	3.8	3.1	4.4	7.0	8.1	6.9	7.3	7.5	6.5	4.3	3.1	2.3	3.2	4.6	3.8	4.9	5.5	6.8	**4.6**	**8.1**	**2.3**
MEAN	**9.1**	**8.9**	**9.6**	**8.9**	**9.3**	**9.5**	**9.9**	**10.9**	**11.9**	**12.7**	**13.1**	**13.1**	**12.1**	**11.3**	**11.3**	**10.8**	**10.6**	**9.5**	**10.9**	**10.7**	**10.9**	**10.4**	**10.3**	**9.5**	**10.7**		
MAX	**25.1**	**23.6**	**25.6**	**24.9**	**25.0**	**24.1**	**24.0**	**27.7**	**31.2**	**41.1**	**46.0**	**47.2**	**34.7**	**26.8**	**28.9**	**28.6**	**29.1**	**26.5**	**28.2**	**27.2**	**25.5**	**24.0**	**26.0**	**23.4**		**47.2**	
MIN	**1.7**	**1.6**	**1.6**	**1.9**	**1.3**	**1.2**	**2.3**	**3.1**	**2.5**	**2.0**	**2.8**	**3.2**	**2.5**	**3.0**	**2.8**	**3.1**	**2.7**	**1.8**	**2.8**	**3.2**	**2.1**	**2.4**	**2.5**	**2.3**			**1.2**

POSSIBLE NUMBER OF OBSERVATIONS = 696 ACTUAL NUMBER OF OBSERVATIONS = 682 DATA RECOVERY RATE = 98.0% DATA CAPTURE RATE = 93.1%

MONTHLY MEAN = 10.7 µg/m3

MAXIMUM PM2.5 = 47.2 µg/m3 DATE OF OCCURRENCE = 2/10 at 1200 MAXIMUM DAILY MEAN = 27.5 µg/m3 DATE OF OCCURRENCE = 2/10

SECOND MAXIMUM PM2.5 = 46.0 µg/m3 DATE OF OCCURRENCE = 2/10 at 1100 SECOND MAXIMUM DAILY MEAN = 18.4 µg/m3 DATE OF OCCURRENCE = 2/11

MINIMUM PM2.5 = 1.2 µg/m3 DATE OF OCCURRENCE = 2/13 at 600 MINUMUM DAILY MEAN = 4.3 µg/m3 DATE OF OCCURRENCE = 2/25

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

Draft

CSX AQ1 Modulair

HOURLY AVERAGES of PM2.5 in µg/m3 for MARCH, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	6.4	6.8	12.6	5.1	5.5	17.5	13.5	20.5	11.8	8.7	9.0	10.9	11.4	11.2	10.1	7.7	5.5	3.8	3.7	4.5	5.4	8.1	8.0	7.4	**8.9**	**20.5**	**3.7**
2	7.7	7.0	6.7	5.5	6.0	6.7	6.5	5.8	6.1	5.0	3.5	2.6	3.2	3.6	3.3	3.4	4.1	4.8	3.2	2.6	5.5	4.3	6.2	4.3	**4.8**	**7.7**	**2.6**
3	4.3	3.8	3.4	4.1	4.0	5.4	5.6	7.0	10.0	11.6	11.7	12.6	11.6	8.9	6.3	6.8	7.3	6.2	6.1	6.8	6.7	9.2	12.7	9.5	**7.5**	**12.7**	**3.4**
4	13.2	15.2	12.6	10.6	10.9	12.0	10.0	12.1	9.1	10.8	11.6	5.5	5.0	5.5	5.6	5.3	3.0	3.7	3.7	3.8	3.5	3.4	2.3	2.1	**7.5**	**15.2**	**2.1**
5	2.1	1.6	1.7	2.0	2.5	2.2	2.0	2.3	3.0	2.6	1.6	2.2	3.1	3.8	3.8	5.0	5.0	6.3	3.6	3.6	4.3	6.3	4.6	4.8	**3.3**	**6.3**	**1.6**
6	7.3	8.0	6.8	7.0	15.1	36.3	35.9	44.4	13.2	8.8	7.5	5.9	5.2	3.9	3.1	3.2	3.5	5.1	6.7	7.5	9.2	7.8	6.7	6.0	**11.0**	**44.4**	**3.1**
7	6.2	5.0	3.8	2.4	2.0	2.4	3.2	3.3	2.7	1.9	2.1	1.9	2.9	3.5	4.3	3.4	4.6	4.4	4.5	5.7	5.4	4.5	6.0	6.5	**3.8**	**6.5**	**1.9**
8	6.5	5.5	6.6	6.4	6.8	6.5	5.8	6.6	6.1	3.1	3.6	4.8	3.5	4.6	5.8	5.4	5.9	5.7	4.8	3.8	3.9	3.8	4.7	5.3	**5.2**	**6.8**	**3.1**
9	6.1	8.0	7.1	9.2	7.1	6.9	7.7	9.6	9.5	9.7	10.3	11.1	11.5	12.8	11.9	9.5	8.3	3.5	2.4	1.3	1.4	2.4	2.8	2.5	**7.1**	**12.8**	**1.3**
10	2.5	2.1	---	1.8	1.1	0.9	0.9	0.8	2.7	5.2	12.1	6.6	4.4	4.1	2.7	2.8	3.0	1.9	1.6	1.6	2.0	2.1	1.7	1.9	**2.8**	**12.1**	**0.8**
11	2.6	2.2	2.5	2.1	2.5	2.1	2.5	2.4	2.8	2.9	3.8	3.3	3.0	4.3	5.3	5.0	3.5	4.5	2.4	2.0	2.0	1.9	1.3	1.4	**2.8**	**5.3**	**1.3**
12	1.3	1.3	1.5	1.1	1.1	1.6	1.5	1.9	2.9	5.3	5.1	6.7	7.8	8.5	8.0	9.1	7.4	7.5	7.4	6.6	8.0	5.8	6.4	6.6	**5.0**	**9.1**	**1.1**
13	8.3	6.3	8.5	11.8	10.6	16.4	13.8	14.4	27.1	27.8	7.9	8.4	7.7	8.2	8.3	6.5	7.1	7.0	8.6	15.1	14.5	14.7	16.1	17.3	**12.1**	**27.8**	**6.3**
14	17.6	28.5	23.6	18.4	18.1	16.2	19.7	16.2	32.0	32.7	42.5	38.5	39.8	33.3	22.8	15.0	11.4	9.3	7.9	9.3	9.2	9.9	12.1	14.8	**20.7**	**42.5**	**7.9**
15	22.0	21.6	23.5	20.0	16.1	15.0	12.2	8.9	8.2	8.7	8.0	5.9	3.3	3.2	6.8	2.6	1.7	5.0	6.2	6.2	5.8	6.2	5.1	4.1	**9.4**	**23.5**	**1.7**
16	3.5	3.7	3.4	4.4	5.8	4.0	3.1	3.5	4.2	8.3	7.9	6.3	5.9	5.3	4.3	4.2	6.1	4.2	3.8	4.4	4.4	4.5	4.2	4.7	**4.7**	**8.3**	**3.1**
17	8.4	6.2	4.7	6.9	7.3	5.2	4.1	4.5	7.7	8.7	7.2	5.6	3.8	4.5	3.9	4.4	3.6	4.0	9.3	7.6	6.9	7.0	8.1	10.3	**6.2**	**10.3**	**3.6**
18	9.4	5.9	5.7	5.2	6.0	4.8	5.4	5.1	5.1	6.3	7.7	6.5	5.2	4.7	4.9	4.9	9.1	8.1	11.3	7.5	5.0	4.7	3.9	3.5	**6.0**	**11.3**	**3.5**
19	2.7	3.6	3.5	2.2	2.0	2.2	2.4	5.1	5.4	5.8	5.6	5.4	4.5	4.3	6.1	5.4	4.2	4.2	3.9	3.7	3.7	4.8	6.6	6.0	**4.3**	**6.6**	**2.0**
20	5.3	3.3	3.6	3.1	3.0	3.3	3.0	3.3	4.2	7.3	8.0	9.4	8.8	7.3	7.1	9.4	7.5	9.2	15.3	9.0	5.7	4.9	4.3	4.2	**6.2**	**15.3**	**3.0**
21	3.5	2.4	3.2	4.0	3.0	2.3	1.9	2.4	2.4	2.1	3.4	2.7	2.9	4.1	3.9	3.4	3.9	3.8	3.3	4.2	5.1	5.7	7.1	7.5	**3.6**	**7.5**	**1.9**
22	8.9	7.1	9.5	5.1	5.4	4.1	4.2	4.5	5.6	6.5	6.7	8.5	9.2	9.9	8.4	9.0	9.5	9.2	8.7	7.9	7.8	7.4	7.8	6.8	**7.4**	**9.9**	**4.1**
23	6.4	6.2	5.7	5.7	5.9	7.5	5.6	6.5	5.0	6.1	5.3	4.0	2.0	3.6	7.9	4.3	6.5	6.6	8.7	12.3	8.4	6.3	5.8	5.6	**6.1**	**12.3**	**2.0**
24	5.9	6.3	3.9	3.1	4.4	6.1	4.9	5.5	6.7	5.3	4.6	4.7	5.0	6.3	6.0	6.7	6.3	6.8	7.5	6.4	6.8	9.4	10.0	11.4	**6.2**	**11.4**	**3.1**
25	10.9	10.7	7.8	7.6	7.5	6.2	7.0	7.1	6.4	4.9	5.5	6.7	7.8	8.4	10.6	11.4	11.4	11.4	10.2	11.8	10.0	7.1	6.6	5.3	**8.3**	**11.8**	**4.9**
26	5.3	8.3	7.8	7.3	7.8	6.5	5.8	5.3	5.6	4.9	5.5	7.3	10.2	9.3	7.2	12.1	15.5	14.9	14.7	8.0	13.1	10.9	9.4	10.3	**8.8**	**15.5**	**4.9**
27	11.2	10.4	10.7	10.4	11.2	10.0	10.0	10.6	10.9	12.5	7.1	7.4	5.5	3.9	3.5	5.3	3.9	3.5	5.8	3.9	6.2	4.8	6.1	4.6	**7.4**	**12.5**	**3.5**
28	4.9	3.6	3.8	4.7	3.6	3.6	5.1	8.0	10.6	13.2	12.2	---	15.3	12.3	10.3	11.4	12.0	7.0	7.3	7.8	6.9	6.2	5.8	7.1	**7.9**	**15.3**	**3.6**
29	6.4	5.1	6.1	4.8	4.4	4.7	---	6.6	6.0	8.9	12.8	16.9	17.1	14.8	10.5	6.3	5.2	4.5	3.4	3.1	2.9	3.3	3.8	3.7	**7.0**	**17.1**	**2.9**
30	3.6	3.3	2.9	2.5	3.0	1.4	2.1	2.4	3.9	7.0	7.7	7.9	7.4	8.1	8.3	9.8	12.5	10.8	8.7	8.8	13.4	15.7	12.3	15.7	**7.4**	**15.7**	**1.4**
31	16.2	13.0	10.1	13.4	14.0	14.6	15.5	17.6	20.3	16.8	11.2	5.0	7.0	6.1	6.0	6.0	6.2	7.6	5.0	7.1	10.5	11.1	14.1	12.7	**11.1**	**20.3**	**5.0**
MEAN	**7.3**	**7.2**	**7.1**	**6.4**	**6.6**	**7.6**	**7.4**	**8.2**	**8.3**	**8.7**	**8.3**	**7.7**	**7.8**	**7.5**	**7.0**	**6.6**	**6.6**	**6.3**	**6.4**	**6.3**	**6.6**	**6.6**	**6.9**	**6.9**	**7.2**		
MAX	**22.0**	**28.5**	**23.6**	**20.0**	**18.1**	**36.3**	**35.9**	**44.4**	**32.0**	**32.7**	**42.5**	**38.5**	**39.8**	**33.3**	**22.8**	**15.0**	**15.5**	**14.9**	**15.3**	**15.1**	**14.5**	**15.7**	**16.1**	**17.3**		**44.4**	
MIN	**1.3**	**1.3**	**1.5**	**1.1**	**1.1**	**0.9**	**0.9**	**0.8**	**2.4**	**1.9**	**1.6**	**1.9**	**2.0**	**3.2**	**2.7**	**2.6**	**1.7**	**1.9**	**1.6**	**1.3**	**1.4**	**1.9**	**1.3**	**1.4**			**0.8**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 741 DATA RECOVERY RATE = 99.6% DATA CAPTURE RATE = 100.0%

MONTHLY MEAN = 7.2 µg/m3

MAXIMUM PM2.5 = 44.4 µg/m3 DATE OF OCCURRENCE = 3/6 at 800 MAXIMUM DAILY MEAN = 20.7 µg/m3 DATE OF OCCURRENCE = 3/14

SECOND MAXIMUM PM2.5 = 42.5 µg/m3 DATE OF OCCURRENCE = 3/14 at 1100 SECOND MAXIMUM DAILY MEAN = 12.1 µg/m3 DATE OF OCCURRENCE = 3/13

MINIMUM PM2.5 = 0.8 µg/m3 DATE OF OCCURRENCE = 3/10 at 800 MINUMUM DAILY MEAN = 2.8 µg/m3 DATE OF OCCURRENCE = 3/10

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

UNDERLINED DATA ARE SUSPECT

Draft

CSX AQ2 Modulair

HOURLY AVERAGES of PM10 in µg/m3 for JANUARY, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	12.6	12.8	18.5	18.5	16.9	12.9	13.6	14.6	14.7	15.9	10.0	4.9	4.8	5.3	5.9	6.8	7.5	6.2	5.0	5.3	7.1	8.5	8.7	---	**10.3**	**18.5**	**4.8**
2	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
3	---	---	---	---	---	---	---	71.2	72.8	19.0	20.5	12.8	11.6	19.7	26.0	37.6	23.4	27.5	25.6	93.1	31.7	21.3	17.1	14.4	**---**	**---**	**---**
4	19.1	26.9	15.4	17.5	17.9	16.6	14.6	21.5	22.4	20.3	20.9	17.1	15.9	13.7	15.9	10.7	10.2	3.4	3.0	3.5	3.2	4.2	4.0	5.6	**13.5**	**26.9**	**3.0**
5	4.9	5.4	7.3	6.3	5.4	6.9	9.8	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
6	---	---	---	---	---	---	---	---	42.9	22.5	30.2	16.1	18.1	27.5	34.7	33.5	32.3	18.1	8.4	4.3	3.7	5.0	4.3	5.2	**---**	**---**	**---**
7	5.2	5.9	7.9	6.0	6.1	7.6	8.6	9.9	11.1	13.2	14.1	7.7	4.5	4.6	3.4	3.4	3.2	3.0	5.3	5.1	6.2	2.8	3.9	3.2	**6.3**	**14.1**	**2.8**
8	3.7	4.3	4.5	5.9	5.9	7.8	11.9	14.6	12.3	9.9	8.5	7.7	7.1	9.9	12.5	13.4	23.1	35.4	67.2	36.4	32.1	31.1	26.9	20.0	**17.2**	**67.2**	**3.7**
9	15.5	16.2	15.4	16.3	29.5	24.8	26.7	24.4	20.6	30.9	37.8	41.7	41.0	38.7	48.3	69.8	54.6	32.5	32.7	23.0	26.3	21.7	---	---	**31.3**	**69.8**	**15.4**
10	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
11	---	---	---	---	---	---	---	40.1	16.1	14.1	9.4	7.9	9.5	10.5	10.8	12.8	10.0	48.8	118.9	46.2	38.2	27.0	16.5	15.2	**---**	**---**	**---**
12	17.1	19.8	13.8	30.1	15.7	27.1	39.9	98.1	68.8	23.0	30.4	20.2	34.8	33.2	40.1	47.0	29.1	27.0	42.4	47.6	56.4	60.1	34.0	11.3	**36.1**	**98.1**	**11.3**
13	11.9	18.2	---	---	2.4	3.2	5.4	6.1	6.8	8.0	4.4	4.5	4.5	5.2	4.2	4.5	3.5	4.7	3.5	3.4	4.5	3.9	4.7	4.9	**5.6**	**18.2**	**2.4**
14	5.1	5.1	6.5	5.2	7.3	7.2	4.7	5.5	4.6	6.1	7.9	9.0	6.1	7.4	6.6	5.1	4.5	3.8	4.0	5.8	9.4	7.1	14.4	13.1	**6.7**	**14.4**	**3.8**
15	10.1	6.4	8.0	13.9	8.6	8.3	13.5	12.2	11.0	9.8	10.6	10.6	16.4	13.3	7.5	7.1	9.1	11.5	11.8	10.4	10.6	9.1	5.0	5.0	**10.0**	**16.4**	**5.0**
16	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
17	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	14.5	16.3	27.5	71.2	68.1	---	---	---	---	**---**	**---**	**---**
18	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
19	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
20	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
21	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
22	---	---	---	---	---	---	---	115.0	72.5	52.1	44.9	25.2	25.4	24.3	22.9	20.2	23.4	23.7	33.3	32.6	40.4	39.4	50.1	42.5	**---**	**---**	**---**
23	50.3	46.9	46.1	34.4	27.7	32.4	48.1	53.3	87.7	99.6	79.9	109.1	65.2	47.3	57.2	59.1	44.2	51.0	38.4	43.1	39.3	39.4	41.0	37.3	**53.3**	**109.1**	**27.7**
24	43.4	33.2	35.8	40.0	44.2	46.5	57.7	62.6	79.3	158.6	116.7	78.1	49.2	58.6	54.6	67.5	64.3	49.8	32.2	32.8	33.7	33.4	36.4	40.5	**56.2**	**158.6**	**32.2**
25	35.0	39.3	41.3	42.2	35.9	55.6	97.2	102.9	84.2	114.3	126.6	118.6	105.3	79.8	88.9	90.1	---	---	---	---	---	---	---	---	**---**	**---**	**---**
26	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
27	---	---	---	---	---	---	---	11.5	13.7	38.6	34.2	15.9	19.9	17.3	15.5	23.3	20.4	20.0	20.1	19.4	23.5	20.5	19.5	21.1	**---**	**---**	**---**
28	21.1	17.9	13.4	7.3	8.4	6.1	5.6	3.1	2.6	3.8	1.5	1.2	1.7	3.3	4.4	2.3	2.2	2.3	2.0	2.6	3.3	4.3	5.2	4.9	**5.4**	**21.1**	**1.2**
29	5.2	4.0	3.4	3.1	3.0	4.1	2.7	3.8	4.4	3.2	4.6	4.3	3.1	7.3	6.4	6.3	5.3	4.8	5.3	4.8	5.7	5.3	6.2	5.6	**4.7**	**7.3**	**2.7**
30	6.4	9.7	7.1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
31	---	---	---	---	---	---	---	---	17.5	18.1	40.4	47.8	44.1	34.1	32.4	28.6	24.9	20.0	39.0	59.1	33.6	21.0	19.8	21.3	**---**	**---**	**---**
MEAN	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**23.8**		
MAX	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**		**158.6**	
MIN	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**			**1.2**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 438 DATA RECOVERY RATE = 58.9% DATA CAPTURE RATE = 41.9%

MONTHLY MEAN = 23.8 µg/m3

MAXIMUM PM10 = 158.6 µg/m3 DATE OF OCCURRENCE = 1/24 at 1000 MAXIMUM DAILY MEAN = 56.2 µg/m3 DATE OF OCCURRENCE = 1/24

SECOND MAXIMUM PM10 = 126.6 µg/m3 DATE OF OCCURRENCE = 1/25 at 1100 SECOND MAXIMUM DAILY MEAN = 53.3 µg/m3 DATE OF OCCURRENCE = 1/23

MINIMUM PM10 = 1.2 µg/m3 DATE OF OCCURRENCE = 1/28 at 1200 MINUMUM DAILY MEAN = 4.7 µg/m3 DATE OF OCCURRENCE = 1/29

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

Draft

CSX AQ2 Modulair

HOURLY AVERAGES of PM10 in µg/m3 for FEBRUARY, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	18.5	21.2	---	---	---	---	---	---	---	---	23.3	15.9	14.6	13.9	12.5	15.4	21.5	47.8	17.7	16.4	23.4	25.5	22.8	15.1	---	---	---
2	22.7	27.7	27.0	29.1	27.2	27.7	28.8	27.5	30.8	20.2	16.9	12.2	9.0	6.5	6.4	6.2	6.3	4.1	5.6	3.7	4.3	4.3	3.0	3.0	**15.0**	**30.8**	**3.0**
3	2.7	2.4	2.0	3.3	2.0	2.7	4.1	4.3	11.2	6.9	7.6	6.8	9.6	8.5	8.6	9.6	23.0	32.1	55.1	58.0	51.3	44.9	37.2	30.0	**17.7**	**58.0**	**2.0**
4	23.8	14.6	13.2	12.4	12.2	18.4	15.9	15.3	14.8	19.4	14.4	17.3	23.8	21.8	29.3	15.0	17.4	55.3	113.9	46.3	29.4	62.4	26.5	28.5	**27.6**	**113.9**	**12.2**
5	35.5	23.3	25.6	26.1	21.0	22.5	99.1	78.7	47.4	26.1	25.2	28.1	45.5	41.0	45.4	40.9	32.4	30.6	105.3	37.8	17.0	12.3	17.9	11.7	**37.4**	**105.3**	**11.7**
6	17.8	22.1	13.6	27.8	28.3	23.5	24.1	40.2	40.5	46.1	28.9	30.4	19.2	31.2	33.3	44.6	32.0	47.9	121.7	99.3	41.3	22.2	22.9	21.8	**36.7**	**121.7**	**13.6**
7	30.3	21.4	---	45.6	89.9	43.7	127.1	50.5	76.5	46.7	40.0	32.5	25.8	30.7	44.4	70.5	58.4	37.4	83.7	95.1	89.6	56.2	25.7	24.4	**54.2**	**127.1**	**21.4**
8	27.1	33.8	67.3	25.6	37.0	72.3	165.6	166.2	106.0	58.9	65.6	44.0	43.5	51.4	40.6	42.5	33.1	39.1	22.8	18.6	25.4	12.6	14.7	20.5	**51.4**	**166.2**	**12.6**
9	20.4	19.8	21.8	22.7	33.2	32.7	56.0	58.6	57.8	35.6	30.7	33.1	47.9	40.6	39.9	39.9	48.9	40.2	50.7	43.9	68.1	69.5	64.3	50.1	**42.8**	**69.5**	**19.8**
10	46.0	41.7	59.7	50.7	47.4	49.1	60.9	65.3	67.4	78.7	97.2	93.2	86.7	39.9	57.2	75.7	140.5	72.8	51.0	98.6	45.9	31.7	36.8	27.1	**63.4**	**140.5**	**27.1**
11	19.9	15.4	14.7	16.0	14.1	18.0	37.7	36.8	46.4	53.3	39.5	36.9	32.2	23.9	24.1	46.9	28.3	27.4	40.6	31.8	28.2	25.2	24.8	---	**29.7**	**53.3**	**14.1**
12	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
13	---	---	---	---	---	---	---	4.4	4.7	2.9	5.7	8.7	12.8	12.8	10.7	10.5	8.4	8.5	9.4	9.7	9.9	15.8	14.5	11.2	**---**	**---**	**---**
14	7.3	6.0	4.9	5.5	4.8	5.6	4.9	5.5	5.3	5.5	3.4	6.0	5.5	4.7	4.7	5.9	5.8	5.4	5.8	6.8	4.8	14.0	17.8	11.1	**6.5**	**17.8**	**3.4**
15	10.1	19.3	22.6	13.5	11.6	18.3	14.7	14.3	16.7	21.7	18.7	22.2	21.1	27.2	23.3	25.5	19.5	22.5	21.5	19.6	23.0	23.4	21.3	26.1	**19.9**	**27.2**	**10.1**
16	17.3	11.1	7.2	5.0	5.8	6.3	5.3	9.1	6.2	8.9	7.6	7.9	5.7	8.6	7.4	7.0	8.5	21.4	72.4	15.6	19.3	12.6	10.9	10.8	**12.4**	**72.4**	**5.0**
17	9.0	10.5	20.9	10.2	4.4	9.0	10.3	12.9	11.5	4.3	4.3	5.6	7.1	7.0	7.4	9.6	7.0	7.1	7.0	8.2	21.3	6.3	8.8	9.5	**9.1**	**21.3**	**4.3**
18	8.1	9.8	12.4	10.8	12.6	11.5	24.9	14.0	13.4	14.4	13.2	7.4	9.3	8.6	9.7	7.5	5.5	6.5	13.5	17.6	7.5	5.0	5.4	5.5	**10.6**	**24.9**	**5.0**
19	8.1	7.5	10.1	7.7	11.7	14.8	26.4	24.0	17.7	17.7	14.7	19.8	14.1	17.2	16.1	20.4	16.9	17.1	35.3	50.1	63.5	49.6	38.1	32.2	**23.0**	**63.5**	**7.5**
20	40.7	51.5	32.1	39.7	18.6	16.1	18.2	18.9	25.9	22.5	30.1	29.7	24.3	21.3	26.9	29.4	32.8	52.4	64.8	29.6	34.8	36.3	42.6	36.7	**32.3**	**64.8**	**16.1**
21	44.8	38.4	31.1	30.9	66.2	39.2	57.7	40.7	33.5	24.4	25.0	27.1	29.7	32.8	39.8	33.2	29.6	31.6	47.2	52.2	51.5	42.9	41.6	46.3	**39.1**	**66.2**	**24.4**
22	58.5	58.8	55.7	80.5	68.3	90.3	98.6	130.1	75.2	62.5	53.8	51.7	51.8	45.0	59.8	44.3	44.9	50.8	49.1	36.8	35.8	56.9	43.4	36.8	**60.0**	**130.1**	**35.8**
23	27.7	35.0	34.7	32.9	32.0	32.7	31.1	28.3	18.9	18.9	18.7	14.2	14.2	14.8	15.5	15.6	18.0	22.4	30.6	28.7	30.1	22.9	21.9	18.8	**24.1**	**35.0**	**14.2**
24	19.3	19.3	13.9	7.7	8.3	10.6	12.4	19.5	18.6	16.9	17.9	16.5	13.1	10.4	9.7	10.7	13.3	8.9	7.2	5.4	4.5	3.5	4.8	4.9	**11.6**	**19.5**	**3.5**
25	11.7	5.9	6.2	4.8	7.4	10.1	11.3	9.5	11.3	9.7	15.3	11.5	10.0	14.4	12.6	14.8	22.6	20.5	15.4	11.2	8.6	8.1	8.1	5.6	**11.1**	**22.6**	**4.8**
26	7.9	7.2	16.5	15.5	20.9	9.4	10.8	9.3	24.2	40.7	49.6	43.2	50.8	46.2	50.5	52.8	55.7	65.2	140.5	92.3	72.9	57.1	37.2	32.0	**42.0**	**140.5**	**7.2**
27	32.0	28.4	35.3	27.9	24.5	34.2	37.2	72.5	80.0	84.1	78.3	64.5	62.0	62.0	50.9	36.3	28.8	28.1	21.4	20.0	18.9	17.4	19.7	22.7	**41.1**	**84.1**	**17.4**
28	30.5	25.9	24.1	22.6	26.8	40.9	46.3	45.8	48.1	32.8	30.8	30.8	27.0	24.7	24.4	22.2	20.8	15.3	13.0	10.9	10.8	4.5	3.6	4.6	**24.5**	**48.1**	**3.6**
29	6.8	4.9	5.2	4.8	4.8	6.3	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
MEAN	**22.4**	**21.6**	**23.1**	**22.3**	**24.7**	**25.6**	**41.2**	**38.5**	**35.0**	**30.0**	**28.8**	**26.6**	**26.5**	**24.7**	**26.3**	**27.9**	**28.9**	**30.3**	**45.3**	**35.7**	**31.2**	**27.5**	**23.6**	**21.0**	**28.7**		
MAX	**58.5**	**58.8**	**67.3**	**80.5**	**89.9**	**90.3**	**165.6**	**166.2**	**106.0**	**84.1**	**97.2**	**93.2**	**86.7**	**62.0**	**59.8**	**75.7**	**140.5**	**72.8**	**140.5**	**99.3**	**89.6**	**69.5**	**64.3**	**50.1**		**166.2**	
MIN	**2.7**	**2.4**	**2.0**	**3.3**	**2.0**	**2.7**	**4.1**	**4.3**	**4.7**	**2.9**	**3.4**	**5.6**	**5.5**	**4.7**	**4.7**	**5.9**	**5.5**	**4.1**	**5.6**	**3.7**	**4.3**	**3.5**	**3.0**	**3.0**			**2.0**

POSSIBLE NUMBER OF OBSERVATIONS = 696 ACTUAL NUMBER OF OBSERVATIONS = 637 DATA RECOVERY RATE = 91.5% DATA CAPTURE RATE = 86.2%

MONTHLY MEAN = 28.7 µg/m3

MAXIMUM PM10 = 166.2 µg/m3 DATE OF OCCURRENCE = 2/8 at 800 MAXIMUM DAILY MEAN = 63.4 µg/m3 DATE OF OCCURRENCE = 2/10

SECOND MAXIMUM PM10 = 165.6 µg/m3 DATE OF OCCURRENCE = 2/8 at 700 SECOND MAXIMUM DAILY MEAN = 60.0 µg/m3 DATE OF OCCURRENCE = 2/22

MINIMUM PM10 = 2.0 µg/m3 DATE OF OCCURRENCE = 2/3 at 300 MINUMUM DAILY MEAN = 6.5 µg/m3 DATE OF OCCURRENCE = 2/14

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

Draft

CSX AQ2 Modulair

HOURLY AVERAGES of PM10 in µg/m3 for MARCH, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	---	---	---	---	---	---	---	123.0	56.1	39.6	33.5	45.8	30.0	32.2	27.9	29.5	22.5	23.0	12.9	11.8	13.0	18.4	21.0	19.4	---	---	---
2	19.2	18.9	19.1	21.1	24.8	20.8	24.0	26.8	37.1	39.5	9.2	3.6	3.7	4.7	5.3	4.3	4.0	6.4	6.1	6.5	9.7	5.7	8.2	8.8	**14.1**	**39.5**	**3.6**
3	10.5	12.3	11.6	10.6	11.2	13.3	13.1	13.8	17.4	16.8	19.0	27.5	26.0	23.7	11.6	14.7	22.3	21.0	12.8	12.2	15.0	16.9	28.7	20.8	**16.8**	**28.7**	**10.5**
4	22.9	22.3	21.7	15.4	14.6	103.0	28.1	37.2	25.3	35.4	32.4	15.8	21.7	18.0	21.4	27.7	17.5	27.7	19.7	16.1	11.0	9.5	11.5	10.5	**24.4**	**103.0**	**9.5**
5	8.0	5.6	4.0	3.7	5.7	5.1	3.9	5.0	4.5	1.7	2.2	2.2	2.1	3.4	3.8	6.6	9.7	14.7	9.4	9.0	8.9	11.5	12.7	10.7	**6.4**	**14.7**	**1.7**
6	13.4	16.3	20.5	20.9	---	---	---	---	---	23.4	29.1	10.0	9.4	9.8	8.0	6.8	5.5	5.6	5.7	7.6	7.6	15.3	---	---	**---**	**---**	**---**
7	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
8	---	---	---	---	---	---	12.4	11.0	14.0	8.6	13.0	22.4	18.3	16.4	26.7	12.3	18.8	19.1	22.1	12.7	20.3	29.8	40.7	33.9	**19.6**	**40.7**	**8.6**
9	40.3	38.8	38.9	43.5	47.2	49.9	63.9	81.5	89.3	74.7	81.6	107.3	102.0	86.4	59.6	36.9	39.2	15.3	7.7	2.7	4.7	4.5	4.7	4.1	**46.9**	**107.3**	**2.7**
10	5.2	4.6	---	2.8	2.9	2.2	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
11	---	---	---	---	---	---	---	4.4	5.3	5.8	8.4	6.8	11.5	7.8	10.0	11.4	8.3	5.8	4.7	4.8	5.3	5.0	4.5	5.1	**---**	**---**	**---**
12	5.2	5.7	6.4	3.7	3.4	4.9	6.9	13.3	11.1	10.9	11.2	11.1	12.9	12.8	16.5	10.5	16.1	15.4	17.1	17.5	21.7	18.9	19.6	13.3	**11.9**	**21.7**	**3.4**
13	17.3	17.6	17.2	51.1	23.2	92.3	147.2	158.5	223.9	103.3	16.9	17.7	17.3	15.7	16.3	16.6	15.2	17.5	20.2	48.8	39.4	31.0	34.5	99.4	**52.4**	**223.9**	**15.2**
14	63.6	65.3	58.9	32.8	35.4	75.3	157.0	145.3	---	123.3	172.4	146.8	135.5	146.6	77.1	61.6	45.6	28.4	23.1	26.4	20.5	19.8	23.4	33.0	**74.7**	**172.4**	**19.8**
15	80.3	115.8	44.2	33.2	39.5	37.4	44.9	24.0	22.4	22.4	23.2	18.6	8.3	5.6	7.4	7.5	6.0	7.0	8.1	6.7	8.2	11.1	6.4	4.8	**24.7**	**115.8**	**4.8**
16	2.9	2.3	2.9	3.8	3.6	3.6	5.5	4.7	5.8	6.3	8.2	8.0	7.3	6.6	5.6	6.3	8.8	8.1	9.6	9.9	11.6	9.7	9.1	12.0	**6.8**	**12.0**	**2.3**
17	13.7	12.1	10.0	10.2	10.0	9.7	9.8	11.8	11.2	9.0	6.3	6.8	7.7	8.9	9.1	8.6	9.7	6.2	9.8	10.4	14.5	14.6	32.8	---	**11.0**	**32.8**	**6.2**
18	14.2	7.7	8.3	6.4	5.6	8.6	8.8	8.2	13.4	11.8	12.0	11.3	8.1	10.7	9.4	9.9	15.7	22.7	39.6	19.8	11.3	8.0	6.4	4.3	**11.8**	**39.6**	**4.3**
19	5.1	4.8	4.6	5.6	6.8	6.2	12.4	8.0	9.2	12.4	9.8	9.2	7.4	12.6	14.4	13.4	10.9	15.9	15.6	11.5	13.0	13.5	19.0	17.4	**10.8**	**19.0**	**4.6**
20	17.2	13.5	11.0	13.0	8.9	21.8	27.5	26.0	21.2	26.4	30.9	35.3	28.2	29.9	33.5	28.0	19.8	24.4	50.6	25.5	15.4	12.1	14.8	8.7	**22.7**	**50.6**	**8.7**
21	5.5	4.1	5.3	3.8	5.4	3.5	4.4	7.9	9.2	8.5	9.1	7.1	10.3	---	10.1	9.6	11.6	10.4	9.0	9.1	11.3	20.1	15.8	20.0	**9.2**	**20.1**	**3.5**
22	35.2	22.9	43.2	14.7	38.0	26.5	31.8	31.1	39.3	27.7	25.4	37.4	24.5	40.2	39.6	37.1	29.3	36.4	33.9	22.2	30.1	23.9	35.4	35.6	**31.7**	**43.2**	**14.7**
23	44.1	36.5	32.0	19.7	11.8	9.4	9.6	7.2	6.1	9.9	10.4	6.2	5.1	2.1	5.7	3.8	5.5	6.4	10.8	13.2	9.6	11.2	8.5	5.4	**12.1**	**44.1**	**2.1**
24	5.3	5.0	4.3	3.5	3.5	3.6	5.1	5.8	5.1	7.2	6.7	7.3	5.2	6.4	10.0	8.6	13.5	12.0	11.4	12.0	17.6	27.5	85.8	63.2	**14.0**	**85.8**	**3.5**
25	60.5	21.3	31.5	48.2	29.9	16.8	13.7	15.9	14.0	13.9	12.8	16.8	17.2	17.5	24.0	27.8	31.0	29.9	34.5	25.1	25.1	17.0	23.6	23.8	**24.7**	**60.5**	**12.8**
26	27.8	49.3	54.6	54.7	54.1	46.0	48.0	32.6	24.3	18.8	23.0	27.8	33.9	37.3	31.1	33.9	37.9	39.5	43.8	38.8	49.5	32.8	41.3	45.8	**38.6**	**54.7**	**18.8**
27	44.4	35.8	32.7	30.9	33.2	35.8	43.5	34.4	43.4	45.4	26.9	18.9	11.0	6.8	8.4	10.4	7.8	6.6	12.9	17.0	14.8	23.1	22.0	20.0	**24.4**	**45.4**	**6.6**
28	18.8	8.6	8.8	11.1	5.6	5.4	6.6	10.6	---	---	---	---	---	11.3	9.3	8.5	7.6	6.2	6.5	6.4	11.1	10.7	8.4	---	**9.0**	**18.8**	**5.4**
29	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
30	---	---	---	---	---	---	---	7.4	9.2	8.7	8.0	10.4	11.2	12.1	18.0	19.3	24.3	21.0	13.0	15.5	23.9	28.2	15.6	21.2	**---**	**---**	**---**
31	20.7	16.8	12.8	7.4	7.2	7.7	9.3	11.6	12.4	15.0	10.9	5.3	4.5	5.5	6.7	9.3	9.0	15.5	10.2	10.5	13.1	13.3	25.2	15.8	**11.5**	**25.2**	**4.5**
MEAN	**24.1**	**22.6**	**21.0**	**18.9**	**18.0**	**25.4**	**30.7**	**32.1**	**29.2**	**26.9**	**24.2**	**23.8**	**21.5**	**21.9**	**18.8**	**17.2**	**16.9**	**16.7**	**17.2**	**15.3**	**16.3**	**16.5**	**21.5**	**22.3**	**21.5**		
MAX	**80.3**	**115.8**	**58.9**	**54.7**	**54.1**	**103.0**	**157.0**	**158.5**	**223.9**	**123.3**	**172.4**	**146.8**	**135.5**	**146.6**	**77.1**	**61.6**	**45.6**	**39.5**	**50.6**	**48.8**	**49.5**	**32.8**	**85.8**	**99.4**		**223.9**	
MIN	**2.9**	**2.3**	**2.9**	**2.8**	**2.9**	**2.2**	**3.9**	**4.4**	**4.5**	**1.7**	**2.2**	**2.2**	**2.1**	**2.1**	**3.8**	**3.8**	**4.0**	**5.6**	**4.7**	**2.7**	**4.7**	**4.5**	**4.5**	**4.1**			**1.7**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 634 DATA RECOVERY RATE = 85.2% DATA CAPTURE RATE = 77.4%

MONTHLY MEAN = 21.5 µg/m3

MAXIMUM PM10 = 223.9 µg/m3 DATE OF OCCURRENCE = 3/13 at 900 MAXIMUM DAILY MEAN = 74.7 µg/m3 DATE OF OCCURRENCE = 3/14

SECOND MAXIMUM PM10 = 172.4 µg/m3 DATE OF OCCURRENCE = 3/14 at 1100 SECOND MAXIMUM DAILY MEAN = 52.4 µg/m3 DATE OF OCCURRENCE = 3/13

MINIMUM PM10 = 1.7 µg/m3 DATE OF OCCURRENCE = 3/5 at 1000 MINUMUM DAILY MEAN = 6.4 µg/m3 DATE OF OCCURRENCE = 3/5

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

UNDERLINED DATA ARE SUSPECT

Draft

CSX AQ2 Modulair

HOURLY AVERAGES of PM2.5 in µg/m3 for JANUARY, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	10.4	10.4	14.4	14.6	14.6	10.7	11.3	11.9	12.2	14.1	7.4	4.1	3.6	4.0	4.8	4.9	5.3	4.4	3.9	4.2	6.0	7.2	7.1	---	**8.3**	**14.6**	**3.6**
2	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
3	---	---	---	---	---	---	---	8.8	13.3	10.3	11.3	9.2	8.6	11.0	16.7	17.4	14.8	13.8	12.9	14.1	14.3	14.1	13.2	12.1	**---**	**---**	**---**
4	11.9	10.7	11.7	13.1	13.3	11.5	10.1	11.1	11.9	10.5	11.3	9.0	4.7	4.0	2.2	2.4	1.8	1.2	1.3	1.4	1.7	2.1	2.1	4.1	**6.8**	**13.3**	**1.2**
5	3.2	3.3	4.5	3.3	3.1	3.2	4.3	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
6	---	---	---	---	---	---	---	---	9.8	10.5	9.8	6.9	7.6	11.9	8.8	8.6	8.9	5.7	3.2	2.7	2.8	3.3	3.7	4.2	**---**	**---**	**---**
7	4.4	5.8	7.6	5.9	4.9	7.1	8.5	9.1	10.5	12.7	13.0	6.6	4.1	3.1	2.8	2.2	2.3	2.2	3.7	3.6	4.1	2.1	2.6	2.9	**5.4**	**13.0**	**2.1**
8	3.1	4.1	4.3	5.2	5.3	6.5	9.5	9.2	8.9	6.6	5.6	5.3	5.3	7.3	10.2	9.7	9.4	9.6	11.4	9.0	10.1	9.7	9.5	9.7	**7.6**	**11.4**	**3.1**
9	10.0	9.8	9.8	10.5	13.1	13.7	12.7	12.3	10.4	8.6	7.3	8.5	9.4	9.1	10.3	12.0	10.9	9.5	9.9	4.0	3.7	3.6	---	---	**9.5**	**13.7**	**3.6**
10	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
11	---	---	---	---	---	---	---	7.6	8.9	9.4	6.1	4.4	4.5	4.3	4.0	4.5	4.4	7.1	12.1	9.5	13.3	12.2	7.7	6.7	**---**	**---**	**---**
12	9.0	10.5	7.9	7.5	8.0	7.9	9.6	11.7	14.7	12.4	18.5	14.3	21.1	16.3	15.4	16.7	13.2	12.5	11.1	11.7	11.9	12.2	9.3	4.7	**12.0**	**21.1**	**4.7**
13	5.2	8.5	9.3	10.1	1.4	1.9	3.0	3.2	3.4	3.6	2.4	2.6	2.4	2.4	2.5	2.4	2.2	2.4	2.4	2.4	2.5	2.8	2.9	3.5	**3.5**	**10.1**	**1.4**
14	3.6	3.4	3.7	3.8	4.4	4.2	3.7	3.1	3.6	3.7	4.2	4.0	3.7	3.4	2.8	2.2	1.9	1.8	1.4	2.8	2.5	2.2	3.4	3.0	**3.1**	**4.4**	**1.4**
15	3.1	3.0	2.0	2.2	2.2	2.6	3.7	4.5	4.6	5.1	5.1	5.1	10.2	7.5	5.4	4.4	6.5	7.3	7.4	8.4	7.5	6.0	3.5	3.7	**5.0**	**10.2**	**2.0**
16	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
17	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	4.9	4.7	5.6	10.3	9.4	---	---	---	---	**---**	**---**	**---**
18	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
19	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
20	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
21	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
22	---	---	---	---	---	---	---	9.4	21.6	29.3	23.1	13.5	13.9	14.5	13.9	12.1	11.4	12.0	12.6	12.8	15.2	16.4	13.6	14.0	**---**	**---**	**---**
23	13.1	14.2	15.0	13.0	11.7	12.5	15.1	16.3	24.0	33.8	41.4	48.6	40.7	26.9	26.9	20.9	21.7	23.1	18.8	20.4	18.9	20.4	24.8	24.5	**22.7**	**48.6**	**11.7**
24	25.1	24.9	24.0	26.4	25.7	26.7	30.5	30.5	28.4	27.8	36.5	38.2	32.8	34.9	32.2	32.3	26.9	25.3	21.8	20.6	22.9	22.3	22.5	25.4	**27.6**	**38.2**	**20.6**
25	23.2	23.1	23.9	24.9	24.2	24.9	25.5	42.0	39.7	39.4	46.3	59.2	57.6	51.8	56.1	45.8	---	---	---	---	---	---	---	---	**---**	**---**	**---**
26	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
27	---	---	---	---	---	---	---	3.4	5.4	13.2	16.4	11.8	12.2	9.3	7.6	10.6	10.7	9.7	9.5	10.0	12.6	12.2	14.0	14.6	**---**	**---**	**---**
28	13.8	11.8	7.7	4.1	2.9	1.3	0.9	0.7	0.8	3.0	0.6	0.5	0.6	0.8	1.1	1.0	0.7	1.2	1.1	1.4	2.3	2.4	2.5	2.7	**2.7**	**13.8**	**0.5**
29	4.3	3.5	2.4	2.4	1.9	2.6	0.9	1.8	1.9	1.7	2.1	1.5	1.6	2.3	3.2	2.6	3.2	2.7	2.5	2.2	3.0	4.7	4.3	3.9	**2.6**	**4.7**	**0.9**
30	4.1	5.8	3.9	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
31	---	---	---	---	---	---	---	---	4.2	4.9	6.6	6.7	7.0	7.3	7.3	7.1	7.0	7.0	8.4	9.4	10.4	8.7	8.5	8.3	**---**	**---**	**---**
MEAN	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**10.2**		
MAX	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**		**59.2**	
MIN	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**			**0.5**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 440 DATA RECOVERY RATE = 59.1% DATA CAPTURE RATE = 41.9%

MONTHLY MEAN = 10.2 µg/m3

MAXIMUM PM2.5 = 59.2 µg/m3 DATE OF OCCURRENCE = 1/25 at 1200 MAXIMUM DAILY MEAN = 27.6 µg/m3 DATE OF OCCURRENCE = 1/24

SECOND MAXIMUM PM2.5 = 57.6 µg/m3 DATE OF OCCURRENCE = 1/25 at 1300 SECOND MAXIMUM DAILY MEAN = 22.7 µg/m3 DATE OF OCCURRENCE = 1/23

MINIMUM PM2.5 = 0.5 µg/m3 DATE OF OCCURRENCE = 1/28 at 1200 MINUMUM DAILY MEAN = 2.6 µg/m3 DATE OF OCCURRENCE = 1/29

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

Draft

CSX AQ2 Modulair

HOURLY AVERAGES of PM2.5 in µg/m3 for FEBRUARY, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	8.4	8.8	---	---	---	---	---	---	---	---	17.1	10.7	9.2	9.0	8.7	9.4	12.0	12.7	9.1	9.7	11.2	11.8	10.8	9.2	---	---	---
2	9.7	12.4	11.2	12.0	12.4	13.4	15.1	15.0	15.7	10.3	12.9	10.0	6.1	4.9	3.0	2.3	2.2	1.8	1.7	1.6	1.7	1.8	1.3	1.8	**7.5**	**15.7**	**1.3**
3	1.3	1.1	1.0	1.5	1.2	1.3	1.3	1.5	2.6	3.2	3.2	3.6	4.1	3.9	4.3	5.2	7.6	8.1	9.9	13.3	19.6	31.0	23.3	15.0	**7.0**	**31.0**	**1.0**
4	9.5	8.7	7.5	6.6	6.5	7.2	6.9	6.9	9.2	6.8	8.1	7.7	10.1	11.5	10.5	10.3	8.7	10.2	13.9	12.8	10.7	13.3	15.9	13.9	**9.7**	**15.9**	**6.5**
5	14.9	13.8	13.5	11.7	9.6	8.4	13.1	9.9	9.0	8.2	10.2	14.2	15.2	14.1	15.1	14.7	13.3	11.4	14.0	9.8	7.2	5.9	6.1	7.1	**11.2**	**15.2**	**5.9**
6	6.3	5.8	5.1	4.8	5.0	4.8	5.3	5.6	8.3	6.6	5.0	5.3	3.9	4.2	6.3	7.1	8.7	7.9	11.4	11.3	9.1	8.8	9.2	7.9	**6.8**	**11.4**	**3.9**
7	8.9	8.3	16.4	9.7	10.2	9.2	11.4	8.6	11.9	10.4	10.7	12.9	12.3	13.6	12.7	16.7	18.0	14.7	16.2	17.7	21.7	17.5	14.4	12.6	**13.1**	**21.7**	**8.3**
8	11.9	11.4	14.8	10.7	12.0	12.8	18.3	18.3	23.1	21.9	27.7	24.8	18.0	14.2	13.9	15.5	13.5	12.0	9.7	8.9	9.7	8.3	8.4	9.0	**14.5**	**27.7**	**8.3**
9	8.6	7.1	6.4	7.1	10.0	9.1	10.5	12.9	14.5	14.8	16.9	19.1	20.5	19.1	21.4	23.6	25.9	21.1	22.9	21.2	24.6	24.4	21.9	21.7	**16.8**	**25.9**	**6.4**
10	22.5	23.5	24.7	27.0	24.9	24.2	24.9	26.1	32.5	42.4	52.4	51.2	41.0	21.1	31.6	31.4	30.7	28.1	28.4	29.1	23.4	20.7	22.5	18.9	**29.3**	**52.4**	**18.9**
11	15.2	12.3	11.0	12.7	9.4	11.0	16.2	23.7	26.3	31.2	24.0	26.2	21.8	18.7	18.5	19.1	19.0	18.6	29.8	19.9	18.5	17.8	16.0	---	**18.9**	**31.2**	**9.4**
12	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
13	---	---	---	---	---	---	---	3.5	2.4	1.6	2.3	6.9	10.7	10.0	8.6	7.3	5.9	5.2	5.6	6.8	7.3	10.9	10.3	7.7	**---**	**---**	**---**
14	5.1	4.4	3.3	3.7	2.9	3.0	3.0	2.4	2.0	2.3	1.8	1.5	1.7	1.8	1.7	1.8	2.1	1.9	2.3	2.0	2.4	6.1	10.0	5.8	**3.1**	**10.0**	**1.5**
15	6.2	6.4	6.3	6.4	6.1	6.4	5.4	6.0	6.6	6.4	7.3	7.3	8.7	9.0	9.4	8.4	7.7	6.2	6.2	6.2	7.5	8.5	8.6	7.3	**7.1**	**9.4**	**5.4**
16	8.3	4.6	2.3	2.6	2.6	2.5	3.0	2.7	2.6	2.8	2.9	3.4	3.3	4.1	4.2	4.2	4.2	7.0	8.7	6.7	8.4	6.9	8.0	7.3	**4.7**	**8.7**	**2.3**
17	5.4	4.5	6.1	3.0	3.1	3.2	4.4	4.6	5.9	3.7	2.7	4.1	4.0	4.5	5.3	5.4	5.1	4.7	4.1	4.6	6.6	4.5	5.4	6.2	**4.6**	**6.6**	**2.7**
18	6.5	7.7	8.0	7.5	7.5	6.9	7.2	7.8	10.2	10.8	9.3	6.1	6.2	6.6	6.2	5.3	2.9	2.6	3.4	5.4	4.7	2.1	1.8	2.2	**6.0**	**10.8**	**1.8**
19	2.6	3.2	2.7	3.2	4.3	5.1	7.5	9.1	9.0	8.6	8.7	9.0	9.7	10.0	10.5	12.3	12.4	11.0	16.1	20.4	19.2	18.1	21.4	14.9	**10.3**	**21.4**	**2.6**
20	15.3	16.5	14.3	13.8	7.1	6.9	4.6	3.7	5.7	7.5	7.5	9.8	9.2	9.4	12.2	17.9	16.7	12.3	10.8	9.9	8.4	7.5	6.6	5.8	**9.9**	**17.9**	**3.7**
21	4.7	4.2	2.7	2.8	4.2	3.5	3.7	2.8	6.4	7.4	5.9	6.1	6.1	8.6	9.9	9.7	10.1	8.7	9.1	7.3	6.2	6.7	5.2	6.2	**6.1**	**10.1**	**2.7**
22	8.8	9.7	10.2	8.1	7.5	7.7	9.1	10.5	11.9	12.6	10.8	10.5	8.6	7.9	11.5	12.1	9.6	8.8	10.8	9.9	10.7	13.0	15.3	17.6	**10.5**	**17.6**	**7.5**
23	10.4	11.4	12.4	12.8	12.1	12.1	12.8	11.2	11.3	11.2	12.3	11.6	10.8	10.2	10.2	10.0	9.9	11.0	20.2	19.3	18.5	16.3	15.6	14.2	**12.8**	**20.2**	**9.9**
24	13.8	14.9	9.3	5.5	6.3	9.1	9.6	16.4	15.7	12.8	13.9	12.8	11.5	8.4	6.8	6.8	7.0	5.4	3.3	2.9	2.4	2.2	1.7	2.0	**8.3**	**16.4**	**1.7**
25	2.5	1.8	2.4	2.2	1.7	2.4	1.8	3.3	4.3	7.3	6.1	6.4	6.3	8.8	9.3	8.4	9.8	6.2	5.6	5.6	5.3	4.3	3.8	3.7	**4.9**	**9.8**	**1.7**
26	3.8	3.5	3.4	4.9	6.0	5.0	6.2	6.6	14.1	20.3	27.4	23.3	16.6	19.0	18.2	17.6	16.8	18.9	22.8	18.8	19.8	16.0	14.0	14.5	**14.0**	**27.4**	**3.4**
27	13.9	14.0	13.1	13.0	13.4	12.6	13.8	17.0	30.1	36.2	39.4	40.1	38.6	37.2	26.8	22.0	18.7	17.8	17.2	17.9	16.4	15.6	15.8	16.8	**21.5**	**40.1**	**12.6**
28	18.7	18.6	17.5	15.5	15.5	16.6	15.9	18.1	21.4	21.0	20.2	21.1	20.7	19.1	18.2	17.3	13.4	8.3	7.3	6.2	4.6	2.0	1.0	2.0	**14.1**	**21.4**	**1.0**
29	2.2	2.2	2.4	2.0	2.4	2.6	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
MEAN	**9.1**	**8.9**	**8.8**	**8.1**	**7.8**	**8.0**	**9.2**	**9.8**	**12.0**	**12.6**	**13.6**	**13.5**	**12.4**	**11.4**	**11.7**	**11.9**	**11.6**	**10.5**	**11.9**	**11.3**	**11.3**	**11.2**	**10.9**	**9.7**	**10.7**		
MAX	**22.5**	**23.5**	**24.7**	**27.0**	**24.9**	**24.2**	**24.9**	**26.1**	**32.5**	**42.4**	**52.4**	**51.2**	**41.0**	**37.2**	**31.6**	**31.4**	**30.7**	**28.1**	**29.8**	**29.1**	**24.6**	**31.0**	**23.3**	**21.7**		**52.4**	
MIN	**1.3**	**1.1**	**1.0**	**1.5**	**1.2**	**1.3**	**1.3**	**1.5**	**2.0**	**1.6**	**1.8**	**1.5**	**1.7**	**1.8**	**1.7**	**1.8**	**2.1**	**1.8**	**1.7**	**1.6**	**1.7**	**1.8**	**1.0**	**1.8**			**1.0**

POSSIBLE NUMBER OF OBSERVATIONS = 696 ACTUAL NUMBER OF OBSERVATIONS = 638 DATA RECOVERY RATE = 91.7% DATA CAPTURE RATE = 86.2%

MONTHLY MEAN = 10.7 µg/m3

MAXIMUM PM2.5 = 52.4 µg/m3 DATE OF OCCURRENCE = 2/10 at 1100 MAXIMUM DAILY MEAN = 29.3 µg/m3 DATE OF OCCURRENCE = 2/10

SECOND MAXIMUM PM2.5 = 51.2 µg/m3 DATE OF OCCURRENCE = 2/10 at 1200 SECOND MAXIMUM DAILY MEAN = 21.5 µg/m3 DATE OF OCCURRENCE = 2/27

MINIMUM PM2.5 = 1.0 µg/m3 DATE OF OCCURRENCE = 2/3 at 300 MINUMUM DAILY MEAN = 3.1 µg/m3 DATE OF OCCURRENCE = 2/14

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

Draft

CSX AQ2 Modulair

HOURLY AVERAGES of PM2.5 in µg/m3 for MARCH, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	---	---	---	---	---	---	---	19.6	16.0	14.4	13.1	17.2	17.6	14.7	13.3	10.6	8.8	6.0	5.4	6.1	7.0	9.7	10.8	9.8	---	---	---
2	9.9	8.7	8.3	7.3	7.1	6.7	8.6	8.4	7.6	6.4	2.4	1.6	1.3	1.3	1.9	2.4	2.8	4.2	3.6	3.1	5.8	4.1	6.2	5.9	**5.2**	**9.9**	**1.3**
3	6.5	6.6	6.8	7.2	7.5	7.2	6.8	9.7	15.4	14.1	13.8	14.5	13.4	11.0	9.2	8.4	7.8	8.2	8.2	7.9	7.1	8.7	11.3	8.8	**9.4**	**15.4**	**6.5**
4	13.4	15.9	13.6	11.0	9.7	11.4	10.6	13.7	10.0	11.4	12.7	5.1	5.6	6.0	6.3	5.6	4.0	4.3	4.2	5.1	4.0	3.8	3.3	4.1	**8.1**	**15.9**	**3.3**
5	2.8	1.9	1.5	1.4	2.2	2.4	1.9	2.5	2.2	0.4	0.5	0.6	0.7	1.6	2.2	4.0	6.0	8.4	4.9	4.9	5.3	6.1	6.3	5.7	**3.1**	**8.4**	**0.4**
6	6.9	8.3	9.3	9.2	10.5	15.1	15.8	15.4	12.4	11.5	9.9	8.2	7.3	4.3	3.0	2.1	2.5	2.6	3.3	4.3	5.3	5.0	---	---	**7.8**	**15.8**	**2.1**
7	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
8	---	---	---	---	---	---	3.7	4.6	6.3	3.4	4.4	6.0	4.4	5.5	6.8	7.0	6.9	6.5	6.9	3.6	5.0	6.3	6.7	6.8	**5.6**	**7.0**	**3.4**
9	7.1	8.3	7.6	10.4	9.6	10.0	10.2	13.5	13.2	12.6	13.8	15.5	15.9	17.6	17.5	14.3	12.9	5.1	1.6	0.8	1.2	1.9	3.1	3.0	**9.4**	**17.6**	**0.8**
10	3.8	3.8	---	2.0	1.3	1.0	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
11	---	---	---	---	---	---	---	1.9	1.4	1.4	1.7	1.1	1.0	1.1	1.4	1.5	1.6	1.5	1.3	1.5	1.5	2.0	2.3	2.3	**---**	**---**	**---**
12	2.5	2.9	2.8	1.7	1.6	1.3	1.6	2.0	2.5	3.8	5.0	6.1	6.8	6.6	6.1	5.7	5.8	5.6	6.5	7.8	9.2	8.5	7.5	6.4	**4.8**	**9.2**	**1.3**
13	6.9	7.8	8.5	10.7	9.4	13.6	14.5	15.2	22.3	26.2	9.7	11.0	10.5	10.6	9.2	9.7	9.6	10.0	11.0	18.6	18.6	15.9	19.4	17.2	**13.1**	**26.2**	**6.9**
14	17.1	22.5	21.6	16.4	14.9	15.0	19.6	18.5	25.6	32.9	43.9	46.5	48.7	33.9	27.2	15.3	14.1	12.6	12.4	12.6	13.3	13.6	16.4	18.0	**22.1**	**48.7**	**12.4**
15	21.5	21.4	19.2	20.8	19.3	19.3	19.2	15.3	13.0	15.0	14.5	9.3	2.6	1.1	1.6	1.9	2.3	3.1	3.6	4.0	4.5	5.7	2.8	2.2	**10.1**	**21.5**	**1.1**
16	1.6	1.4	1.8	1.5	1.6	2.6	3.0	2.7	2.9	4.4	6.1	5.6	4.4	4.1	4.1	4.7	6.2	5.9	6.9	7.6	8.0	7.0	6.5	6.8	**4.4**	**8.0**	**1.4**
17	6.8	6.7	6.6	7.0	7.0	6.6	7.3	8.5	7.7	3.4	2.2	3.1	4.1	5.1	5.5	5.1	5.1	1.8	3.0	2.5	3.1	3.5	6.2	8.8	**5.2**	**8.8**	**1.8**
18	4.2	3.6	3.4	2.7	2.7	3.3	3.2	3.4	4.4	3.5	3.3	3.6	3.5	3.9	4.4	4.4	8.2	5.0	7.5	6.4	3.9	3.0	3.1	3.0	**4.0**	**8.2**	**2.7**
19	3.0	2.6	3.0	4.5	4.3	4.1	3.7	3.7	3.8	3.9	3.6	4.1	2.9	3.6	4.7	5.1	4.8	5.4	6.9	6.1	4.8	4.6	5.4	5.8	**4.3**	**6.9**	**2.6**
20	7.0	6.3	5.7	5.3	4.8	5.9	5.4	5.6	5.7	7.0	8.6	9.6	8.0	6.8	5.3	3.8	4.3	5.2	13.6	8.3	4.1	3.9	3.2	3.2	**6.1**	**13.6**	**3.2**
21	2.3	1.5	1.8	1.9	1.6	1.5	1.2	1.6	1.4	1.5	1.4	1.7	1.7	---	2.5	2.4	3.1	2.6	2.3	2.4	3.1	4.8	6.3	4.9	**2.4**	**6.3**	**1.2**
22	6.5	6.4	7.8	2.5	5.3	3.6	6.5	5.7	7.6	8.1	9.3	12.3	15.7	12.7	10.3	12.2	12.3	13.3	11.2	9.6	12.2	10.1	10.1	8.6	**9.1**	**15.7**	**2.5**
23	8.4	8.4	8.0	6.4	5.2	4.0	4.3	2.8	2.4	3.1	3.2	2.3	1.7	0.9	4.2	2.9	4.8	4.8	8.3	11.0	8.7	9.0	7.8	4.9	**5.3**	**11.0**	**0.9**
24	3.7	3.3	3.3	2.2	2.3	2.0	2.9	2.5	3.0	2.9	3.6	2.9	2.9	3.3	4.0	3.5	6.0	5.9	7.7	7.1	6.6	6.0	8.5	9.8	**4.4**	**9.8**	**2.0**
25	10.6	10.0	9.2	6.0	5.3	5.6	4.4	4.4	5.0	6.6	6.3	9.0	9.6	10.1	12.9	13.7	13.7	13.7	12.0	12.6	10.0	7.6	7.2	6.6	**8.8**	**13.7**	**4.4**
26	7.0	9.1	8.4	8.2	9.4	7.9	6.9	6.2	6.5	5.3	6.3	8.6	12.6	13.0	10.5	16.3	18.8	19.1	20.8	12.2	17.3	12.6	12.7	15.6	**11.3**	**20.8**	**5.3**
27	15.1	13.2	14.2	13.2	15.3	13.1	13.1	15.1	14.0	14.5	11.6	10.7	6.7	4.9	3.8	5.9	4.2	4.3	6.7	5.1	7.6	6.1	7.6	5.9	**9.6**	**15.3**	**3.8**
28	5.4	4.0	4.9	4.9	4.1	3.6	3.6	7.8	---	---	---	---	---	8.8	6.6	5.9	5.4	3.6	3.1	3.4	6.2	6.5	5.4	---	**5.1**	**8.8**	**3.1**
29	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
30	---	---	---	---	---	---	---	3.7	5.5	6.0	6.2	7.3	8.4	8.8	11.4	11.7	13.8	12.3	8.5	10.2	12.9	13.2	10.1	12.4	**---**	**---**	**---**
31	12.6	11.1	9.2	5.4	5.7	6.3	7.8	9.7	10.6	13.9	9.8	4.6	3.6	4.7	5.1	8.7	8.0	8.1	7.0	7.7	10.4	10.2	12.6	11.3	**8.5**	**13.9**	**3.6**
MEAN	**7.7**	**7.8**	**7.8**	**6.8**	**6.7**	**6.9**	**7.4**	**8.0**	**8.5**	**8.8**	**8.4**	**8.4**	**8.2**	**7.6**	**7.2**	**7.0**	**7.3**	**6.8**	**7.1**	**6.9**	**7.4**	**7.1**	**7.7**	**7.6**	**7.5**		
MAX	**21.5**	**22.5**	**21.6**	**20.8**	**19.3**	**19.3**	**19.6**	**19.6**	**25.6**	**32.9**	**43.9**	**46.5**	**48.7**	**33.9**	**27.2**	**16.3**	**18.8**	**19.1**	**20.8**	**18.6**	**18.6**	**15.9**	**19.4**	**18.0**		**48.7**	
MIN	**1.6**	**1.4**	**1.5**	**1.4**	**1.3**	**1.0**	**1.2**	**1.6**	**1.4**	**0.4**	**0.5**	**0.6**	**0.7**	**0.9**	**1.4**	**1.5**	**1.6**	**1.5**	**1.3**	**0.8**	**1.2**	**1.9**	**2.3**	**2.2**			**0.4**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 641 DATA RECOVERY RATE = 86.2% DATA CAPTURE RATE = 80.6%

MONTHLY MEAN = 7.5 µg/m3

MAXIMUM PM2.5 = 48.7 µg/m3 DATE OF OCCURRENCE = 3/14 at 1300 MAXIMUM DAILY MEAN = 22.1 µg/m3 DATE OF OCCURRENCE = 3/14

SECOND MAXIMUM PM2.5 = 46.5 µg/m3 DATE OF OCCURRENCE = 3/14 at 1200 SECOND MAXIMUM DAILY MEAN = 13.1 µg/m3 DATE OF OCCURRENCE = 3/13

MINIMUM PM2.5 = 0.4 µg/m3 DATE OF OCCURRENCE = 3/5 at 1000 MINUMUM DAILY MEAN = 2.4 µg/m3 DATE OF OCCURRENCE = 3/21

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

UNDERLINED DATA ARE SUSPECT

Draft

CSX AQ3 Modulair

HOURLY AVERAGES of PM10 in µg/m3 for JANUARY, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
2	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
3	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
4	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
5	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
6	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
7	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
8	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
9	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
10	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
11	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
12	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
13	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
14	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
15	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
16	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
17	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
18	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	14.0	32.5	50.9	66.6	42.2	34.6	54.4	60.7	---	---	---
19	41.7	35.4	29.8	37.0	23.9	17.0	14.5	19.2	36.3	39.1	45.9	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
20	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
21	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
22	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
23	---	---	---	---	---	---	---	---	---	---	---	---	---	49.8	55.4	48.8	36.7	46.0	37.7	45.8	80.9	49.7	44.2	55.5	---	---	---
24	85.1	48.0	35.0	37.9	43.4	48.1	57.7	63.6	94.1	169.4	137.8	82.9	57.9	72.3	66.1	86.3	75.5	55.1	36.1	37.8	39.8	37.5	40.3	44.8	**64.7**	**169.4**	**35.0**
25	42.4	44.5	51.0	45.4	46.1	55.5	54.5	65.0	66.1	106.2	141.6	127.3	109.7	77.6	94.1	88.7	65.0	---	---	---	---	---	---	---	---	---	---
26	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
27	---	---	---	---	---	---	---	14.8	18.0	50.8	34.4	14.6	23.5	16.6	14.5	21.1	28.8	22.2	14.9	16.4	23.2	22.7	21.1	24.4	---	---	---
28	21.1	16.8	13.3	8.6	8.6	8.3	6.1	1.3	1.8	6.2	1.5	2.8	2.4	4.3	4.6	2.9	3.4	2.4	1.9	3.8	5.9	7.1	8.8	8.0	**6.3**	**21.1**	**1.3**
29	8.5	6.0	4.1	4.5	2.6	5.1	6.3	7.0	7.1	8.7	12.8	12.2	7.7	10.2	11.0	9.3	9.5	11.0	7.2	7.0	9.2	8.1	6.9	6.9	**7.9**	**12.8**	**2.6**
30	5.5	8.2	7.0	6.3	6.9	6.3	6.4	19.1	15.1	19.1	14.8	17.1	13.7	14.1	13.6	14.1	17.2	18.1	18.0	19.5	18.6	24.7	17.4	15.5	**14.0**	**24.7**	**5.5**
31	16.0	17.2	18.5	18.9	16.5	19.3	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MEAN	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**31.6**		
MAX	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---		**169.4**	
MIN	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---			**1.3**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 166 DATA RECOVERY RATE = 22.3% DATA CAPTURE RATE = 12.9%

MONTHLY MEAN = 31.6 µg/m3

MAXIMUM PM10 = 169.4 µg/m3 DATE OF OCCURRENCE = 1/24 at 1000 MAXIMUM DAILY MEAN = 64.7 µg/m3 DATE OF OCCURRENCE = 1/24

SECOND MAXIMUM PM10 = 141.6 µg/m3 DATE OF OCCURRENCE = 1/25 at 1100 SECOND MAXIMUM DAILY MEAN = 14.0 µg/m3 DATE OF OCCURRENCE = 1/30

MINIMUM PM10 = 1.3 µg/m3 DATE OF OCCURRENCE = 1/28 at 800 MINUMUM DAILY MEAN = 6.3 µg/m3 DATE OF OCCURRENCE = 1/28

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

Draft

CSX AQ3 Modulair

HOURLY AVERAGES of PM10 in µg/m3 for FEBRUARY, 2024

Hr Beg Hr End Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	---	---	---	---	---	---	---	61.7	34.5	30.4	24.0	16.9	14.1	14.4	13.2	12.8	17.6	23.2	15.1	18.3	18.1	24.3	18.6	14.3	**---**	**---**	**---**
2	22.3	26.0	35.7	27.3	27.1	35.0	36.0	32.5	39.5	30.0	22.2	16.7	11.8	9.1	9.1	10.5	14.3	8.4	7.7	7.0	4.9	---	---	---	**20.6**	**39.5**	**4.9**
3	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
4	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
5	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
6	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
7	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
8	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
9	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
10	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
11	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
12	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
13	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
14	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
15	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
16	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
17	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
18	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
19	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
20	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
21	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
22	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
23	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
24	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
25	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
26	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
27	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
28	---	---	---	---	---	---	---	---	---	---	---	31.0	29.6	27.6	26.6	24.3	24.3	18.9	17.3	16.1	12.8	5.6	3.3	5.5	**---**	**---**	**---**
29	7.2	5.2	5.7	5.9	6.2	8.2	8.9	8.7	12.5	13.4	17.4	17.1	16.9	19.2	16.8	24.2	18.4	9.0	10.5	11.3	12.7	12.5	24.9	20.8	**13.1**	**24.9**	**5.2**
MEAN	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**18.1**		
MAX	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**		**61.7**	
MIN	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**			**3.3**

POSSIBLE NUMBER OF OBSERVATIONS = 696 ACTUAL NUMBER OF OBSERVATIONS = 75 DATA RECOVERY RATE = 10.8% DATA CAPTURE RATE = 6.9%

MONTHLY MEAN = 18.1 µg/m3

MAXIMUM PM10 = 61.7 µg/m3 DATE OF OCCURRENCE = 2/1 at 800 MAXIMUM DAILY MEAN = 20.6 µg/m3 DATE OF OCCURRENCE = 2/2

SECOND MAXIMUM PM10 = 39.5 µg/m3 DATE OF OCCURRENCE = 2/2 at 900 SECOND MAXIMUM DAILY MEAN = 13.1 µg/m3 DATE OF OCCURRENCE = 2/29

MINIMUM PM10 = 3.3 µg/m3 DATE OF OCCURRENCE = 2/28 at 2300 MINUMUM DAILY MEAN = 13.1 µg/m3 DATE OF OCCURRENCE = 2/29

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

Draft

CSX AQ3 Modulair

HOURLY AVERAGES of PM10 in µg/m3 for MARCH, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	33.4	16.3	22.7	18.6	13.9	29.9	29.4	96.2	34.4	25.8	38.5	38.6	37.5	37.2	39.4	41.3	20.4	13.7	15.3	16.8	18.2	28.6	24.6	21.3	**29.7**	**96.2**	**13.7**
2	20.9	17.3	20.3	21.0	24.7	25.4	21.7	26.0	31.6	27.1	16.8	5.7	7.7	20.5	6.9	6.6	6.2	8.6	9.1	7.8	13.3	8.5	11.3	10.6	**15.7**	**31.6**	**5.7**
3	11.7	12.4	14.4	12.8	12.1	17.0	19.2	16.1	17.9	14.5	18.6	24.5	19.1	15.6	11.8	13.9	20.8	15.4	11.2	10.1	11.9	20.7	16.4	18.8	**15.7**	**24.5**	**10.1**
4	30.5	26.2	25.2	16.8	15.6	16.2	15.8	25.2	25.6	31.6	32.9	20.1	22.6	17.3	18.8	23.3	31.7	21.1	21.5	7.9	9.3	7.4	9.8	9.2	**20.1**	**32.9**	**7.4**
5	7.2	4.6	3.3	5.1	6.1	5.2	3.6	5.7	5.5	3.7	3.2	5.0	3.6	4.3	5.0	7.7	10.8	19.0	12.3	10.7	10.8	12.8	14.1	14.2	**7.6**	**19.0**	**3.2**
6	14.9	20.5	20.7	26.7	---	---	---	---	---	29.1	25.1	12.6	8.0	10.7	9.9	12.1	8.3	9.7	10.4	13.1	13.7	22.2	13.3	15.1	**15.6**	**29.1**	**8.0**
7	11.9	10.2	7.4	6.0	5.0	5.4	7.1	10.2	7.1	6.6	7.0	5.2	5.9	7.4	6.9	6.9	5.9	8.5	9.7	17.9	10.9	10.0	11.2	15.7	**8.6**	**17.9**	**5.0**
8	13.6	10.0	12.4	17.1	16.8	15.5	11.3	13.7	10.0	5.8	11.2	26.5	12.4	12.3	17.5	11.5	10.4	18.6	31.4	25.9	31.5	28.4	30.1	42.9	**18.2**	**42.9**	**5.8**
9	48.2	50.6	53.1	45.7	51.9	58.2	74.8	95.7	108.2	105.7	111.5	133.0	120.4	95.4	65.4	43.5	49.3	27.9	28.6	7.8	6.0	7.4	7.2	8.4	**58.5**	**133.0**	**6.0**
10	7.0	6.4	---	3.8	3.1	3.2	2.7	2.5	4.9	6.3	9.9	9.8	6.2	4.7	4.7	4.9	5.8	3.9	3.8	4.2	3.4	4.8	4.1	3.6	**4.9**	**9.9**	**2.5**
11	3.3	4.5	4.8	4.2	3.5	2.5	4.7	8.2	7.7	13.1	7.8	13.3	11.9	14.5	26.2	31.9	23.8	13.5	10.8	5.7	5.3	6.0	4.6	6.1	**9.9**	**31.9**	**2.5**
12	6.2	4.8	4.0	4.9	4.0	9.5	6.0	6.2	10.2	17.7	17.3	30.0	25.6	20.3	35.4	26.7	23.7	17.7	18.9	19.1	22.6	23.8	22.5	19.6	**16.5**	**35.4**	**4.0**
13	17.0	17.0	22.8	27.4	69.7	44.5	68.4	93.2	136.7	68.1	25.9	23.2	21.3	19.5	15.8	23.6	18.0	17.4	25.4	26.8	27.6	23.0	71.0	100.7	**41.8**	**136.7**	**15.8**
14	127.9	107.7	120.5	73.7	37.5	54.2	95.8	113.8	126.8	81.9	120.6	132.7	107.2	137.4	89.8	55.1	36.1	29.5	29.1	27.2	22.6	19.6	22.2	31.1	**75.0**	**137.4**	**19.6**
15	48.6	98.3	52.6	36.9	29.9	33.2	30.9	26.8	29.7	22.5	22.6	17.7	10.5	10.5	9.2	19.7	8.2	8.0	10.8	8.3	12.8	14.7	7.4	4.0	**23.9**	**98.3**	**4.0**
16	3.4	3.6	2.6	4.2	5.2	5.6	6.8	6.3	8.3	9.9	9.0	7.8	7.2	7.0	7.0	7.1	10.2	8.3	11.5	11.1	10.7	9.0	8.9	12.3	**7.6**	**12.3**	**2.6**
17	15.8	12.7	10.8	11.7	19.7	16.6	11.5	13.4	14.3	7.7	7.3	9.4	8.2	8.4	9.4	11.3	9.9	10.8	10.7	13.1	10.7	14.5	13.8	29.7	**12.6**	**29.7**	**7.3**
18	22.7	10.1	15.2	9.4	9.3	9.6	11.4	13.9	16.6	18.1	24.4	28.0	26.7	13.1	20.3	23.3	25.7	44.0	53.6	33.6	19.5	11.4	7.8	7.6	**19.8**	**53.6**	**7.6**
19	7.0	6.2	7.2	6.3	8.1	6.4	6.9	13.4	17.4	13.8	24.4	14.3	9.8	11.8	15.4	37.1	12.2	13.5	12.6	14.7	11.3	13.9	15.7	13.8	**13.1**	**37.1**	**6.2**
20	14.9	12.1	11.7	11.3	10.0	12.5	14.4	24.6	22.1	23.6	28.7	32.4	32.5	30.9	36.1	56.3	40.6	47.7	93.1	42.2	35.5	23.8	16.9	8.5	**28.4**	**93.1**	**8.5**
21	7.1	5.3	6.1	5.7	5.6	6.2	8.6	9.4	8.4	13.4	11.8	12.0	14.1	14.9	11.2	17.8	16.6	9.4	9.4	11.1	42.6	18.4	20.1	24.8	**12.9**	**42.6**	**5.3**
22	27.5	---	33.4	10.5	21.1	15.8	25.9	17.1	23.8	17.5	19.9	29.9	19.8	29.0	36.5	23.0	25.4	29.3	35.5	25.9	31.5	33.8	29.8	38.1	**26.1**	**38.1**	**10.5**
23	42.7	37.8	26.7	19.0	12.2	16.2	11.0	9.7	13.5	28.0	33.9	26.6	8.1	3.5	7.2	5.1	7.1	6.5	10.2	10.9	8.4	7.8	6.5	5.3	**15.2**	**42.7**	**3.5**
24	4.9	4.1	4.0	4.0	4.2	5.3	5.6	8.0	7.3	10.0	8.2	6.6	8.7	10.6	15.3	13.6	26.4	29.3	16.0	17.4	28.0	91.7	75.5	56.7	**19.2**	**91.7**	**4.0**
25	46.7	23.9	26.0	49.8	35.6	11.7	18.2	20.9	15.3	12.8	10.2	12.1	14.5	14.9	20.7	27.3	31.0	27.5	36.0	36.8	37.9	32.0	50.9	30.3	**26.8**	**50.9**	**10.2**
26	42.4	52.5	52.3	57.6	71.3	42.8	66.1	24.7	19.5	22.8	23.2	23.4	35.0	39.1	37.9	32.1	31.4	34.3	42.8	43.6	54.2	43.6	46.6	45.3	**41.0**	**71.3**	**19.5**
27	47.5	38.6	42.1	44.0	39.3	41.6	45.8	37.8	46.0	42.2	29.1	19.9	14.9	8.2	9.9	13.8	7.2	6.8	16.6	19.8	16.6	20.1	29.8	30.3	**27.8**	**47.5**	**6.8**
28	25.9	11.4	10.7	11.8	5.9	8.1	8.6	15.1	---	---	---	---	---	17.3	16.4	14.4	15.1	10.7	10.5	11.0	13.8	11.8	13.4	12.5	**12.9**	**25.9**	**5.9**
29	13.1	10.0	9.9	8.4	9.3	11.4	12.9	14.3	14.3	17.1	19.9	23.9	22.1	22.3	18.7	24.0	19.2	16.8	9.2	9.7	9.2	10.6	8.7	9.6	**14.4**	**24.0**	**8.4**
30	9.1	8.4	6.6	9.8	7.0	8.2	15.5	8.9	9.9	11.9	12.8	12.4	13.5	14.7	16.3	17.8	20.4	17.0	13.7	17.4	20.5	27.7	18.4	29.4	**14.5**	**29.4**	**6.6**
31	33.6	27.0	20.6	18.7	17.2	17.8	17.9	20.8	24.5	21.8	13.9	5.7	5.6	5.5	6.0	9.0	8.9	19.9	10.1	9.9	12.8	16.6	34.9	14.6	**16.4**	**34.9**	**5.5**
MEAN	**24.7**	**22.4**	**22.3**	**19.4**	**19.2**	**18.5**	**22.6**	**26.6**	**28.2**	**24.3**	**24.9**	**25.4**	**22.0**	**21.9**	**20.9**	**21.3**	**18.9**	**18.2**	**20.6**	**17.3**	**18.8**	**20.1**	**21.5**	**22.3**	**21.7**		
MAX	**127.9**	**107.7**	**120.5**	**73.7**	**71.3**	**58.2**	**95.8**	**113.8**	**136.7**	**105.7**	**120.6**	**133.0**	**120.4**	**137.4**	**89.8**	**56.3**	**49.3**	**47.7**	**93.1**	**43.6**	**54.2**	**91.7**	**75.5**	**100.7**		**137.4**	
MIN	**3.3**	**3.6**	**2.6**	**3.8**	**3.1**	**2.5**	**2.7**	**2.5**	**4.9**	**3.7**	**3.2**	**5.0**	**3.6**	**3.5**	**4.7**	**4.9**	**5.8**	**3.9**	**3.8**	**4.2**	**3.4**	**4.8**	**4.1**	**3.6**			**2.5**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 732 DATA RECOVERY RATE = 98.4% DATA CAPTURE RATE = 100.0%

MONTHLY MEAN = 21.7 µg/m3

MAXIMUM PM10 = 137.4 µg/m3 DATE OF OCCURRENCE = 3/14 at 1400 MAXIMUM DAILY MEAN = 75.0 µg/m3 DATE OF OCCURRENCE = 3/14

SECOND MAXIMUM PM10 = 136.7 µg/m3 DATE OF OCCURRENCE = 3/13 at 900 SECOND MAXIMUM DAILY MEAN = 58.5 µg/m3 DATE OF OCCURRENCE = 3/9

MINIMUM PM10 = 2.5 µg/m3 DATE OF OCCURRENCE = 3/10 at 800 MINUMUM DAILY MEAN = 4.9 µg/m3 DATE OF OCCURRENCE = 3/10

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

UNDERLINED DATA ARE SUSPECT

Draft

CSX AQ3 Modulair

HOURLY AVERAGES of PM2.5 in µg/m3 for JANUARY, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
2	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
3	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
4	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
5	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
6	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
7	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
8	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
9	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
10	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
11	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
12	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
13	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
14	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
15	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
16	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
17	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
18	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	6.9	7.6	9.5	12.1	14.7	11.9	12.8	14.4	---	---	---
19	13.3	9.1	13.2	13.6	11.0	10.2	9.0	12.7	15.0	18.0	15.2	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
20	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
21	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
22	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
23	---	---	---	---	---	---	---	---	---	---	---	---	---	28.8	23.1	20.4	21.2	23.5	20.0	19.4	23.7	25.8	27.4	27.9	---	---	---
24	32.0	30.0	25.9	26.1	25.1	25.2	27.6	28.2	30.3	31.9	40.1	40.4	36.2	40.2	36.8	36.6	31.8	28.5	25.1	24.8	26.7	25.9	27.7	31.0	**30.5**	**40.4**	**24.8**
25	29.3	28.5	30.2	30.4	29.6	30.8	30.0	30.6	36.2	36.5	50.4	57.7	63.3	55.8	58.9	51.3	33.8	32.7	28.5	25.3	43.3	47.0	34.5	25.4	**38.3**	**63.3**	**25.3**
26	11.3	6.7	6.6	5.7	6.4	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
27	---	---	---	---	---	---	---	4.1	6.9	16.3	17.4	8.5	15.9	10.6	8.0	11.0	11.8	10.5	10.3	11.1	13.0	14.2	16.6	17.0	---	---	---
28	14.4	12.2	8.5	5.4	4.2	2.0	1.4	0.7	1.2	5.0	0.6	0.9	1.1	1.0	0.8	0.8	0.6	1.1	1.2	2.3	4.0	4.5	4.6	5.0	**3.4**	**14.4**	**0.6**
29	6.6	4.4	3.1	2.6	1.8	3.6	1.9	2.4	2.2	1.7	2.1	1.7	2.0	2.3	3.6	3.2	3.6	4.2	3.8	4.6	5.2	5.3	4.8	4.8	**3.3**	**6.6**	**1.7**
30	4.4	5.2	4.1	3.7	4.0	4.1	3.7	4.6	6.4	6.8	7.6	8.5	9.5	10.1	9.3	8.8	10.5	10.5	11.6	11.6	12.6	14.1	13.3	8.5	**8.0**	**14.1**	**3.7**
31	7.7	7.0	6.8	5.4	4.3	4.7	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MEAN	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**15.6**		
MAX	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---		**63.3**	
MIN	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---			**0.6**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 178 DATA RECOVERY RATE = 23.9% DATA CAPTURE RATE = 16.1%

MONTHLY MEAN = 15.6 µg/m3

MAXIMUM PM2.5 = 63.3 µg/m3 DATE OF OCCURRENCE = 1/25 at 1300 MAXIMUM DAILY MEAN = 38.3 µg/m3 DATE OF OCCURRENCE = 1/25

SECOND MAXIMUM PM2.5 = 58.9 µg/m3 DATE OF OCCURRENCE = 1/25 at 1500 SECOND MAXIMUM DAILY MEAN = 30.5 µg/m3 DATE OF OCCURRENCE = 1/24

MINIMUM PM2.5 = 0.6 µg/m3 DATE OF OCCURRENCE = 1/28 at 1100 MINUMUM DAILY MEAN = 3.3 µg/m3 DATE OF OCCURRENCE = 1/29

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

Draft

CSX AQ3 Modulair

HOURLY AVERAGES of PM2.5 in µg/m3 for FEBRUARY, 2024

Hr Beg Hr End Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	---	---	---	---	---	---	---	20.5	20.3	23.3	19.6	13.3	10.6	10.5	10.2	9.4	11.3	12.2	10.0	10.5	12.2	13.0	12.9	10.4	**---**	**---**	**---**
2	11.8	13.2	14.6	13.9	14.6	15.9	18.4	17.6	18.4	16.7	15.4	11.8	6.9	3.9	3.3	3.1	2.4	2.3	3.3	2.1	1.5	---	---	---	**10.0**	**18.4**	**1.5**
3	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
4	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
5	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
6	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
7	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
8	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
9	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
10	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
11	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
12	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
13	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
14	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
15	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
16	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
17	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
18	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
19	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
20	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
21	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
22	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
23	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
24	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
25	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
26	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
27	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
28	---	---	---	---	---	---	---	---	---	---	---	20.9	20.5	19.7	18.7	17.0	13.5	9.0	8.5	8.5	7.2	2.4	1.4	2.7	**---**	**---**	**---**
29	2.8	2.5	2.9	3.0	3.4	4.1	3.7	3.9	5.7	6.5	7.6	8.3	8.9	8.2	6.9	5.6	4.3	3.5	4.3	4.5	5.0	6.4	6.4	8.0	**5.2**	**8.9**	**2.5**
MEAN	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**9.6**		
MAX	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**		**23.3**	
MIN	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**			**1.4**

POSSIBLE NUMBER OF OBSERVATIONS = 696 ACTUAL NUMBER OF OBSERVATIONS = 75 DATA RECOVERY RATE = 10.8% DATA CAPTURE RATE = 6.9%

MONTHLY MEAN = 9.6 µg/m3

MAXIMUM PM2.5 = 23.3 µg/m3 DATE OF OCCURRENCE = 2/1 at 1000 MAXIMUM DAILY MEAN = 10.0 µg/m3 DATE OF OCCURRENCE = 2/2

SECOND MAXIMUM PM2.5 = 20.9 µg/m3 DATE OF OCCURRENCE = 2/28 at 1200 SECOND MAXIMUM DAILY MEAN = 5.2 µg/m3 DATE OF OCCURRENCE = 2/29

MINIMUM PM2.5 = 1.4 µg/m3 DATE OF OCCURRENCE = 2/28 at 2300 MINUMUM DAILY MEAN = 5.2 µg/m3 DATE OF OCCURRENCE = 2/29

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

Draft

CSX AQ3 Modulair

HOURLY AVERAGES of PM2.5 in µg/m3 for MARCH, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	9.5	7.9	7.5	7.5	6.9	9.8	10.9	20.3	14.9	12.0	14.1	17.1	18.1	17.3	16.9	13.2	9.8	6.3	6.8	7.4	8.1	13.3	13.0	11.9	**11.6**	**20.3**	**6.3**
2	10.9	8.4	8.6	6.9	6.0	6.5	7.9	8.6	8.5	6.2	3.6	2.0	2.8	4.0	2.9	4.2	4.3	5.7	5.7	4.2	8.4	6.3	7.9	7.6	**6.1**	**10.9**	**2.0**
3	8.5	9.0	9.8	9.6	8.9	10.1	9.8	11.8	15.8	12.2	13.3	15.7	14.1	10.8	8.3	9.2	11.5	8.9	8.1	8.1	8.3	13.6	10.6	11.2	**10.7**	**15.8**	**8.1**
4	15.8	18.0	20.7	13.1	11.6	11.7	12.0	12.3	11.0	12.8	11.8	5.7	5.6	5.4	5.8	6.3	6.7	5.3	6.1	3.0	3.2	3.2	2.5	2.7	**8.8**	**20.7**	**2.5**
5	2.7	2.4	1.7	2.4	3.0	2.2	1.7	2.4	2.4	0.9	0.8	1.6	0.7	2.0	2.8	4.1	6.3	10.1	6.4	6.1	6.3	7.7	8.7	7.7	**3.8**	**10.1**	**0.7**
6	8.3	11.3	10.9	11.2	16.0	25.7	24.9	22.2	14.5	14.2	11.1	8.5	6.4	4.0	2.7	3.4	3.4	5.1	6.4	8.5	9.9	10.0	8.7	8.4	**10.6**	**25.7**	**2.7**
7	8.0	6.5	4.5	3.4	3.0	3.3	3.3	3.2	1.5	1.4	0.9	0.8	1.2	1.3	1.7	1.4	1.4	1.6	3.4	4.1	3.3	3.1	3.1	4.4	**2.9**	**8.0**	**0.8**
8	4.5	4.5	4.4	4.2	5.0	4.6	4.4	4.9	5.9	2.8	4.5	5.2	3.6	4.3	5.5	5.8	6.0	7.1	10.4	5.9	8.0	6.9	8.1	9.8	**5.6**	**10.4**	**2.8**
9	9.7	9.2	11.7	10.3	10.5	10.6	11.7	13.4	15.1	15.7	17.2	17.8	19.2	21.2	20.1	17.4	17.0	8.4	3.7	1.5	1.9	3.9	5.2	5.6	**11.5**	**21.2**	**1.5**
10	5.5	5.1	---	2.9	1.9	1.5	1.3	1.4	2.8	4.6	5.7	5.4	4.0	2.6	2.3	2.2	1.8	1.4	1.3	1.3	1.3	1.4	1.7	1.7	**2.6**	**5.7**	**1.3**
11	2.0	1.8	1.8	1.7	1.5	1.7	2.4	2.5	2.0	1.8	1.4	1.6	1.5	1.6	2.2	3.1	2.8	2.3	2.4	2.3	2.4	2.4	2.2	3.2	**2.1**	**3.2**	**1.4**
12	2.8	2.8	2.1	1.8	1.8	1.9	2.0	2.5	3.3	5.0	6.5	8.6	8.8	8.8	9.1	9.0	8.1	7.7	7.9	9.0	10.7	10.9	10.1	8.8	**6.2**	**10.9**	**1.8**
13	8.3	9.9	9.5	10.9	11.9	13.2	12.8	15.0	21.7	24.0	13.3	12.9	12.2	11.4	11.1	10.5	10.5	10.2	13.1	14.0	14.9	15.1	19.3	22.5	**13.6**	**24.0**	**8.3**
14	25.4	25.4	25.7	21.9	18.0	19.3	19.7	19.4	24.9	27.0	36.7	45.8	43.5	36.6	27.4	16.2	14.4	13.6	13.5	12.4	13.1	13.3	15.7	17.7	**22.7**	**45.8**	**12.4**
15	20.4	26.1	22.3	21.7	18.7	19.0	18.3	15.4	13.8	14.6	14.3	10.3	3.3	1.9	2.3	3.1	3.5	4.0	5.5	5.8	6.3	7.5	2.9	2.5	**10.9**	**26.1**	**1.9**
16	1.8	1.5	1.5	2.5	2.8	3.3	3.8	3.8	5.7	7.1	7.3	6.4	5.4	4.7	5.1	5.5	6.5	6.3	7.7	7.9	8.0	6.9	6.6	7.0	**5.2**	**8.0**	**1.5**
17	7.7	7.4	7.4	8.0	8.8	8.1	8.7	9.5	9.7	4.1	4.0	4.2	4.6	5.5	6.1	5.8	5.3	2.9	3.7	3.2	3.5	3.6	6.1	5.1	**5.9**	**9.7**	**2.9**
18	4.2	4.1	4.2	4.1	4.6	5.0	5.3	5.7	6.5	5.0	5.0	5.8	5.9	5.9	6.4	6.5	6.4	6.4	6.0	5.3	5.0	4.3	4.3	4.6	**5.2**	**6.5**	**4.1**
19	4.6	4.3	5.0	5.1	5.1	4.8	4.5	5.5	5.9	5.5	6.1	4.9	4.3	4.6	5.7	8.0	5.4	5.6	6.5	6.7	5.0	6.2	6.9	7.7	**5.5**	**8.0**	**4.3**
20	7.5	6.6	5.9	5.4	5.1	5.3	5.2	6.0	6.2	7.6	8.9	9.4	8.2	7.8	6.4	7.4	7.5	8.3	10.3	8.3	4.6	3.3	3.0	2.9	**6.5**	**10.3**	**2.9**
21	2.8	2.5	2.4	2.3	2.7	2.1	2.4	2.4	2.5	2.4	2.0	2.5	2.6	3.0	3.2	3.7	4.1	3.8	3.8	3.8	9.9	5.2	6.1	6.0	**3.5**	**9.9**	**2.0**
22	6.4	18.4	5.4	2.6	4.2	2.7	4.8	3.5	6.1	7.7	8.6	9.9	12.5	13.1	11.7	11.9	11.9	12.1	12.5	12.3	13.1	12.2	11.1	10.7	**9.3**	**18.4**	**2.6**
23	9.3	7.3	7.7	6.7	5.2	5.7	4.6	3.9	4.4	5.6	5.2	3.4	2.0	1.6	5.2	3.2	4.6	4.7	7.4	8.2	7.0	6.1	4.5	3.3	**5.2**	**9.3**	**1.6**
24	2.6	2.3	2.4	2.7	2.6	2.8	2.9	2.8	3.4	3.2	3.0	3.3	3.8	3.7	3.9	4.5	4.7	5.6	6.2	4.3	4.8	6.9	9.9	10.9	**4.3**	**10.9**	**2.3**
25	11.7	11.7	8.5	7.7	7.2	5.3	4.5	4.6	5.2	5.4	5.8	7.7	9.4	10.1	12.5	13.8	14.1	15.0	11.8	14.1	14.5	10.9	11.7	10.7	**9.7**	**15.0**	**4.5**
26	7.9	9.5	10.3	10.2	9.9	8.7	8.1	5.5	6.0	5.6	7.8	7.9	13.5	13.7	11.2	15.4	17.7	19.7	20.6	13.5	18.2	16.4	16.3	19.6	**12.2**	**20.6**	**5.5**
27	19.1	17.0	17.0	16.3	17.8	16.0	16.0	15.6	15.6	14.0	12.5	11.4	8.6	6.1	4.6	7.0	5.1	4.1	7.1	5.7	10.3	7.0	8.9	6.9	**11.2**	**19.1**	**4.1**
28	6.8	4.9	6.0	5.5	4.5	4.8	5.4	12.0	---	---	---	---	---	11.3	10.7	9.6	9.3	6.5	5.8	6.3	7.9	7.4	8.3	8.2	**7.4**	**12.0**	**4.5**
29	6.7	5.4	5.2	5.1	5.1	5.5	5.9	6.8	8.9	11.5	14.9	15.3	16.2	13.8	9.3	5.5	5.2	4.1	3.3	3.4	3.3	4.0	3.9	4.0	**7.1**	**16.2**	**3.3**
30	4.0	3.6	3.4	3.3	3.6	5.1	5.8	5.3	7.0	7.9	8.6	9.3	9.9	10.3	11.3	10.7	12.8	11.3	9.3	11.1	13.3	14.2	10.8	16.6	**8.6**	**16.6**	**3.3**
31	18.8	17.0	14.7	14.5	14.4	14.0	14.5	16.9	22.2	19.5	12.4	5.1	5.0	4.5	4.8	7.1	6.2	10.8	7.9	7.7	9.7	12.2	14.9	12.5	**11.9**	**22.2**	**4.5**
MEAN	**8.5**	**8.8**	**8.3**	**7.5**	**7.4**	**7.8**	**7.9**	**8.6**	**9.1**	**8.9**	**8.9**	**8.9**	**8.6**	**8.2**	**7.7**	**7.6**	**7.6**	**7.3**	**7.4**	**6.9**	**7.9**	**7.9**	**8.2**	**8.5**	**8.1**		
MAX	**25.4**	**26.1**	**25.7**	**21.9**	**18.7**	**25.7**	**24.9**	**22.2**	**24.9**	**27.0**	**36.7**	**45.8**	**43.5**	**36.6**	**27.4**	**17.4**	**17.7**	**19.7**	**20.6**	**14.1**	**18.2**	**16.4**	**19.3**	**22.5**		**45.8**	
MIN	**1.8**	**1.5**	**1.5**	**1.7**	**1.5**	**1.5**	**1.3**	**1.4**	**1.5**	**0.9**	**0.8**	**0.8**	**0.7**	**1.3**	**1.7**	**1.4**	**1.4**	**1.4**	**1.3**	**1.3**	**1.3**	**1.4**	**1.7**	**1.7**			**0.7**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 738 DATA RECOVERY RATE = 99.2% DATA CAPTURE RATE = 100.0%

MONTHLY MEAN = 8.1 µg/m3

MAXIMUM PM2.5 = 45.8 µg/m3 DATE OF OCCURRENCE = 3/14 at 1200 MAXIMUM DAILY MEAN = 22.7 µg/m3 DATE OF OCCURRENCE = 3/14

SECOND MAXIMUM PM2.5 = 43.5 µg/m3 DATE OF OCCURRENCE = 3/14 at 1300 SECOND MAXIMUM DAILY MEAN = 13.6 µg/m3 DATE OF OCCURRENCE = 3/13

MINIMUM PM2.5 = 0.7 µg/m3 DATE OF OCCURRENCE = 3/5 at 1300 MINUMUM DAILY MEAN = 2.1 µg/m3 DATE OF OCCURRENCE = 3/11

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

UNDERLINED DATA ARE SUSPECT

Draft

CSX AQ4 Modulair

HOURLY AVERAGES of PM10 in µg/m3 for JANUARY, 2024

Hr Beg Hr End Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	12.2	12.5	15.4	---	---	---	---	13.6	8.2	9.8	8.9	6.6	6.2	6.5	6.8	6.8	8.3	6.6	4.9	5.3	7.0	8.4	8.5	6.6	**8.5**	**15.4**	**4.9**
2	8.0	6.8	6.7	6.7	---	---	---	10.8	10.7	---	10.8	9.8	9.2	13.2	15.6	12.2	23.9	19.1	19.3	21.1	13.6	10.7	13.1	8.5	**12.5**	**23.9**	**6.7**
3	7.0	11.1	7.5	5.4	6.2	38.7	25.2	25.2	40.5	41.3	24.4	12.0	9.6	12.8	20.3	29.5	26.6	21.8	22.9	29.0	20.2	23.0	17.0	12.3	**20.4**	**41.3**	**5.4**
4	17.8	12.2	14.4	18.6	13.8	15.1	25.9	48.3	28.7	31.2	29.4	21.9	15.2	13.8	24.7	12.9	17.6	22.5	19.1	16.0	10.4	5.7	5.9	9.9	**18.8**	**48.3**	**5.7**
5	5.9	7.4	9.5	6.8	5.8	7.4	7.6	14.4	34.5	24.1	11.4	24.8	20.4	19.4	15.8	17.3	40.9	32.5	22.0	28.5	30.5	48.0	21.8	16.7	**19.7**	**48.0**	**5.8**
6	19.5	28.1	22.9	21.0	60.2	44.6	37.6	28.0	27.1	20.0	22.5	15.1	13.2	16.3	17.8	16.6	19.2	12.3	5.9	4.2	3.9	4.2	3.5	4.2	**19.5**	**60.2**	**3.5**
7	4.1	5.8	6.9	5.6	10.1	6.1	7.0	7.8	9.4	11.6	13.2	9.3	5.6	3.8	4.2	3.4	3.3	5.0	5.6	5.6	9.0	3.1	3.6	5.0	**6.4**	**13.2**	**3.1**
8	4.1	5.5	4.7	5.4	5.7	8.3	9.3	12.1	17.0	13.1	9.5	7.7	7.2	10.1	9.7	11.2	12.6	26.5	15.9	19.5	15.5	20.1	18.5	14.3	**11.8**	**26.5**	**4.1**
9	11.6	15.3	15.4	24.2	21.0	19.4	18.8	20.8	21.6	21.0	30.8	39.0	39.0	45.9	52.5	98.0	62.5	26.4	26.7	20.3	20.9	21.4	9.5	8.3	**28.8**	**98.0**	**8.3**
10	8.0	5.2	4.7	4.8	5.6	6.0	5.3	8.7	10.2	15.2	11.8	28.7	37.6	34.7	13.9	16.4	7.6	5.6	4.7	3.0	3.2	3.3	4.3	3.4	**10.5**	**37.6**	**3.0**
11	3.4	3.9	3.7	3.9	4.6	5.2	11.6	23.0	14.1	12.7	9.7	11.2	11.9	15.7	17.1	27.8	17.4	11.2	31.5	34.0	37.2	39.7	20.0	35.5	**16.9**	**39.7**	**3.4**
12	19.0	14.0	11.1	11.9	9.9	16.9	10.5	22.5	21.7	17.9	20.5	25.1	20.9	24.8	34.9	22.3	20.5	19.0	24.4	36.4	55.3	51.7	32.8	12.2	**23.2**	**55.3**	**9.9**
13	13.6	22.6	---	---	2.6	3.3	5.0	6.3	6.6	7.5	4.6	4.2	7.1	5.0	5.0	5.3	4.2	4.3	4.4	4.8	5.1	4.0	4.2	4.0	**6.1**	**22.6**	**2.6**
14	4.6	4.9	3.8	3.8	5.4	5.6	4.7	4.5	4.8	5.7	7.7	9.2	5.1	5.4	6.5	6.0	5.1	3.9	5.1	5.9	6.4	8.4	6.9	10.5	**5.8**	**10.5**	**3.8**
15	8.8	8.7	16.1	14.8	6.2	5.6	6.8	8.8	9.3	8.4	8.2	15.6	13.4	10.2	8.6	8.1	7.6	7.6	7.6	8.1	6.3	5.6	5.5	7.2	**8.9**	**16.1**	**5.5**
16	5.2	6.2	6.6	9.4	8.2	17.0	18.7	23.3	18.8	20.3	27.0	30.2	20.1	31.5	23.5	16.1	14.6	9.2	13.2	26.1	26.8	44.0	58.4	49.6	**21.8**	**58.4**	**5.2**
17	30.1	21.2	16.6	23.3	19.4	28.0	31.8	56.4	43.3	31.8	27.1	20.2	15.1	16.9	15.0	13.2	14.7	20.9	35.3	30.1	55.9	74.7	63.2	77.7	**32.6**	**77.7**	**13.2**
18	172.6	140.8	79.6	68.1	43.1	48.6	61.4	60.4	69.2	72.2	52.7	38.7	45.4	23.2	12.9	11.9	11.8	21.4	32.5	34.6	27.7	24.9	28.7	35.2	**50.7**	**172.6**	**11.8**
19	27.1	25.9	20.9	17.3	13.0	14.3	13.8	14.7	20.5	31.5	25.0	20.4	25.0	29.3	28.5	31.7	21.3	12.4	12.2	10.9	10.9	11.4	12.6	12.3	**19.3**	**31.7**	**10.9**
20	8.4	8.9	7.7	6.0	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
21	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	12.6	13.5	12.4	18.3	13.7	14.6	16.7	18.6	---	**---**	**---**	**---**
22	---	---	---	---	---	---	---	---	---	---	---	---	53.4	38.3	27.8	31.4	23.2	19.2	28.9	27.2	22.4	34.3	43.9	50.0	**---**	**---**	**---**
23	44.9	39.2	30.6	27.7	28.5	22.1	28.8	28.6	77.4	97.6	77.5	99.6	69.7	42.7	38.8	41.7	27.1	29.8	23.8	37.1	48.2	45.2	39.0	---	**45.5**	**99.6**	**22.1**
24	160.9	51.6	25.4	26.3	27.9	29.9	34.6	33.0	45.3	86.5	83.8	52.3	41.4	57.5	48.0	56.1	55.3	37.0	27.3	26.6	28.2	26.8	29.4	35.3	**46.9**	**160.9**	**25.4**
25	32.9	31.4	38.6	34.5	41.0	40.8	34.9	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
26	---	---	---	---	---	---	---	---	---	37.2	45.9	36.9	28.3	31.8	29.6	24.7	22.4	14.3	14.8	---	---	---	---	---	**---**	**---**	**---**
27	---	---	---	---	3.7	5.1	5.5	8.9	9.9	42.2	27.3	9.7	14.7	14.8	11.5	15.0	20.4	15.0	11.7	16.6	17.0	16.1	17.5	19.0	**15.1**	**42.2**	**3.7**
28	15.7	13.2	11.5	6.4	9.5	8.2	7.6	0.5	0.4	0.5	2.1	1.7	2.3	2.5	2.2	0.8	1.1	1.3	1.3	2.2	3.1	2.8	3.5	4.7	**4.4**	**15.7**	**0.4**
29	5.0	5.0	3.3	3.2	2.6	3.4	12.5	8.5	5.2	9.2	7.4	4.2	3.3	3.6	7.9	5.2	6.0	6.3	6.0	12.9	12.3	12.7	5.9	8.8	**6.7**	**12.9**	**2.6**
30	5.1	6.3	5.3	4.8	4.7	5.0	5.2	9.4	9.7	11.7	10.8	12.2	11.4	11.9	11.6	10.2	---	---	---	---	---	---	---	---	**---**	**---**	**---**
31	---	13.0	13.5	15.4	14.4	14.1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
MEAN	**25.2**	**19.5**	**15.5**	**15.0**	**14.9**	**16.7**	**17.9**	**19.9**	**22.6**	**27.2**	**23.5**	**21.8**	**20.4**	**20.1**	**18.9**	**20.2**	**18.8**	**15.7**	**16.5**	**18.5**	**19.7**	**21.8**	**19.1**	**18.8**	**19.5**		
MAX	**172.6**	**140.8**	**79.6**	**68.1**	**60.2**	**48.6**	**61.4**	**60.4**	**77.4**	**97.6**	**83.8**	**99.6**	**69.7**	**57.5**	**52.5**	**98.0**	**62.5**	**37.0**	**35.3**	**37.1**	**55.9**	**74.7**	**63.2**	**77.7**		**172.6**	
MIN	**3.4**	**3.9**	**3.3**	**3.2**	**2.6**	**3.3**	**4.7**	**0.5**	**0.4**	**0.5**	**2.1**	**1.7**	**2.3**	**2.5**	**2.2**	**0.8**	**1.1**	**1.3**	**1.3**	**2.2**	**3.1**	**2.8**	**3.5**	**3.4**			**0.4**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 623 DATA RECOVERY RATE = 83.7% DATA CAPTURE RATE = 77.4%

MONTHLY MEAN = 19.5 µg/m3

MAXIMUM PM10 = 172.6 µg/m3 DATE OF OCCURRENCE = 1/18 at 100 MAXIMUM DAILY MEAN = 50.7 µg/m3 DATE OF OCCURRENCE = 1/18

SECOND MAXIMUM PM10 = 160.9 µg/m3 DATE OF OCCURRENCE = 1/24 at 100 SECOND MAXIMUM DAILY MEAN = 46.9 µg/m3 DATE OF OCCURRENCE = 1/24

MINIMUM PM10 = 0.4 µg/m3 DATE OF OCCURRENCE = 1/28 at 900 MINUMUM DAILY MEAN = 4.4 µg/m3 DATE OF OCCURRENCE = 1/28

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

Draft

CSX AQ4 Modulair

HOURLY AVERAGES of PM10 in µg/m3 for FEBRUARY, 2024

Hr Beg Hr End Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	---	25.6	13.9	16.8	13.0	14.0	13.1	---	---	---	---	31.4	23.5	22.9	20.2	22.1	20.4	18.3	12.9	15.8	16.9	18.0	15.9	11.3	**18.2**	**31.4**	**11.3**
2	12.8	18.7	22.0	18.8	18.8	22.9	25.3	25.5	27.2	17.5	20.6	15.0	11.0	6.6	5.4	5.0	4.7	5.8	11.0	5.4	3.9	5.1	3.0	2.6	**13.1**	**27.2**	**2.6**
3	3.7	2.0	2.2	4.5	4.5	3.5	5.2	5.0	5.1	6.2	5.2	4.5	5.7	5.1	5.9	4.8	13.6	20.4	19.2	26.7	28.6	26.4	17.0	13.3	**9.9**	**28.6**	**2.0**
4	12.3	19.0	15.0	7.4	8.3	28.5	18.7	15.8	10.8	10.5	9.3	13.0	26.7	14.6	18.7	17.0	12.8	20.1	26.7	28.6	20.2	25.9	36.6	31.0	**18.6**	**36.6**	**7.4**
5	26.5	16.2	14.6	11.4	11.2	15.2	33.7	29.8	16.3	28.0	20.4	22.5	34.1	32.5	24.5	24.5	21.6	24.9	30.2	14.1	16.4	11.2	12.7	12.0	**21.0**	**34.1**	**11.2**
6	12.6	12.7	10.0	12.8	11.1	12.4	13.2	21.2	29.5	25.0	32.6	19.4	8.5	12.6	23.3	26.5	18.4	21.9	59.3	44.5	23.7	17.1	14.8	13.0	**20.7**	**59.3**	**8.5**
7	15.6	12.5	19.8	12.7	13.8	17.2	39.3	32.4	40.3	39.7	25.6	22.5	20.2	16.5	29.3	33.8	42.6	57.4	34.0	45.8	72.3	182.4	53.0	20.3	**37.5**	**182.4**	**12.5**
8	31.3	52.5	116.6	77.8	37.1	83.2	66.1	68.8	68.2	40.5	59.2	48.3	33.2	30.5	23.3	23.8	29.9	20.2	15.6	12.8	13.2	11.8	33.2	20.5	**42.4**	**116.6**	**11.8**
9	20.0	15.0	20.2	21.2	26.5	25.6	26.8	26.4	35.7	31.6	30.6	25.8	35.1	29.0	53.0	36.2	37.5	37.0	32.3	31.7	30.5	46.1	36.4	28.7	**30.8**	**53.0**	**15.0**
10	39.9	41.0	32.8	38.7	36.8	35.0	39.2	40.8	44.4	64.3	76.5	72.5	72.4	38.7	55.2	54.0	67.7	42.7	35.1	61.4	54.3	38.9	41.6	31.0	**48.1**	**76.5**	**31.0**
11	25.1	20.4	16.8	13.1	11.5	12.9	24.2	31.4	30.5	40.1	34.6	24.6	20.8	20.5	21.2	32.6	24.0	20.1	30.1	23.2	20.6	18.7	19.0	23.1	**23.3**	**40.1**	**11.5**
12	30.1	20.2	17.7	18.2	17.3	21.6	19.0	19.2	30.0	26.8	30.8	34.4	33.3	33.3	31.5	29.4	29.7	28.2	19.8	17.5	16.5	12.3	10.1	6.9	**23.1**	**34.4**	**6.9**
13	6.2	4.1	2.0	6.0	3.3	3.5	3.8	5.7	4.7	3.5	4.7	8.7	12.7	13.3	16.9	14.1	10.0	7.6	9.0	9.0	8.0	9.8	9.1	9.0	**7.7**	**16.9**	**2.0**
14	7.2	6.7	4.4	4.1	3.3	4.1	4.6	6.7	14.4	12.4	12.3	10.0	6.7	6.6	10.4	8.0	7.9	10.8	6.5	8.3	8.9	9.7	8.8	6.8	**7.9**	**14.4**	**3.3**
15	10.2	9.2	9.0	6.7	10.5	8.3	10.8	19.3	6.7	13.8	10.8	9.2	10.8	14.4	17.4	18.3	14.6	12.6	11.1	15.9	16.3	15.1	14.3	14.8	**12.5**	**19.3**	**6.7**
16	13.1	10.3	9.6	4.4	6.3	9.9	6.3	13.3	13.8	14.6	11.5	11.3	9.0	11.6	7.6	10.8	11.9	12.0	15.3	18.2	16.0	16.2	10.6	16.5	**11.7**	**18.2**	**4.4**
17	8.8	4.8	11.9	6.4	4.5	7.0	10.3	9.3	9.0	4.6	7.2	7.2	6.4	6.9	7.0	7.8	5.6	6.1	6.5	7.3	7.5	5.2	7.2	6.4	**7.1**	**11.9**	**4.5**
18	7.2	7.5	8.0	6.6	7.8	6.8	7.5	7.7	10.0	11.6	10.5	8.4	9.7	9.1	8.2	7.6	4.6	4.4	5.5	12.9	7.3	5.2	4.1	5.0	**7.6**	**12.9**	**4.1**
19	4.6	4.6	7.3	7.7	10.2	14.6	20.4	16.7	27.6	15.4	18.8	12.2	13.4	12.7	15.0	15.7	16.7	27.4	29.5	32.7	54.7	40.0	22.9	25.3	**19.4**	**54.7**	**4.6**
20	29.5	26.4	25.2	34.2	13.7	11.6	16.2	19.1	13.6	9.1	10.7	13.8	14.8	17.6	21.5	18.8	20.8	18.6	17.2	26.9	19.1	22.5	15.5	17.8	**18.9**	**34.2**	**9.1**
21	22.0	23.8	14.8	16.8	19.2	23.0	22.6	22.3	21.3	15.5	13.7	17.9	19.1	22.8	20.6	17.9	21.0	23.7	29.1	27.5	20.0	24.9	32.7	34.3	**21.9**	**34.3**	**13.7**
22	40.6	46.9	38.5	41.5	25.2	37.0	51.6	37.3	50.6	42.9	29.6	31.8	36.5	32.8	28.0	24.7	38.9	32.6	36.4	32.0	32.9	32.8	27.9	21.5	**35.4**	**51.6**	**21.5**
23	22.2	26.2	26.6	22.7	24.6	22.9	24.8	20.2	13.1	14.2	17.0	13.8	15.1	14.7	13.8	14.0	12.0	13.9	45.9	24.6	21.0	15.2	13.9	14.1	**19.4**	**45.9**	**12.0**
24	13.2	12.8	11.9	6.3	7.5	13.6	11.7	14.7	15.9	15.2	13.1	14.7	13.9	9.5	9.4	10.6	11.0	9.4	5.5	4.8	6.9	5.1	3.6	3.6	**10.2**	**15.9**	**3.6**
25	6.0	2.5	3.7	4.7	4.9	7.3	6.7	7.9	5.7	10.3	9.7	9.8	10.1	10.9	11.2	10.9	11.4	10.1	6.8	7.0	6.7	6.2	7.2	4.1	**7.6**	**11.4**	**2.5**
26	4.8	3.8	6.8	15.6	11.0	6.3	5.7	10.6	17.5	39.5	36.8	37.0	25.4	26.7	37.6	55.8	25.5	46.4	71.7	67.6	48.5	30.1	32.8	21.4	**28.5**	**71.7**	**3.8**
27	34.5	20.4	17.2	21.8	18.7	21.2	24.1	38.2	40.8	38.9	54.8	60.8	59.7	62.2	50.7	32.6	29.8	26.6	22.3	22.3	18.7	17.6	18.4	22.4	**32.3**	**62.2**	**17.2**
28	27.7	24.1	22.5	20.5	22.4	30.8	26.1	32.7	37.9	32.3	32.6	32.4	28.6	28.4	26.1	23.8	20.0	16.2	13.0	9.6	8.0	4.1	2.9	3.9	**21.9**	**37.9**	**2.9**
29	3.7	3.9	4.0	3.5	4.1	4.2	6.7	18.1	12.6	19.6	11.7	13.6	16.6	14.8	13.4	21.2	12.3	6.7	16.8	7.8	9.6	38.5	35.6	69.2	**15.3**	**69.2**	**3.5**
MEAN	**17.6**	**17.0**	**18.1**	**16.7**	**14.0**	**18.1**	**20.1**	**22.0**	**23.3**	**23.0**	**23.2**	**22.3**	**21.8**	**19.9**	**21.6**	**21.5**	**20.6**	**20.8**	**23.3**	**22.8**	**21.6**	**24.6**	**19.3**	**17.6**	**20.4**		
MAX	**40.6**	**52.5**	**116.6**	**77.8**	**37.1**	**83.2**	**66.1**	**68.8**	**68.2**	**64.3**	**76.5**	**72.5**	**72.4**	**62.2**	**55.2**	**55.8**	**67.7**	**57.4**	**71.7**	**67.6**	**72.3**	**182.4**	**53.0**	**69.2**		**182.4**	
MIN	**3.7**	**2.0**	**2.0**	**3.5**	**3.3**	**3.5**	**3.8**	**5.0**	**4.7**	**3.5**	**4.7**	**4.5**	**5.7**	**5.1**	**5.4**	**4.8**	**4.6**	**4.4**	**5.5**	**4.8**	**3.9**	**4.1**	**2.9**	**2.6**			**2.0**

POSSIBLE NUMBER OF OBSERVATIONS = 696 ACTUAL NUMBER OF OBSERVATIONS = 691 DATA RECOVERY RATE = 99.3% DATA CAPTURE RATE = 100.0%

MONTHLY MEAN = 20.4 µg/m3

MAXIMUM PM10 = 182.4 µg/m3 DATE OF OCCURRENCE = 2/7 at 2200 MAXIMUM DAILY MEAN = 48.1 µg/m3 DATE OF OCCURRENCE = 2/10

SECOND MAXIMUM PM10 = 116.6 µg/m3 DATE OF OCCURRENCE = 2/8 at 300 SECOND MAXIMUM DAILY MEAN = 42.4 µg/m3 DATE OF OCCURRENCE = 2/8

MINIMUM PM10 = 2.0 µg/m3 DATE OF OCCURRENCE = 2/3 at 200 MINUMUM DAILY MEAN = 7.1 µg/m3 DATE OF OCCURRENCE = 2/17

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

Draft

CSX AQ4 Modulair

HOURLY AVERAGES of PM10 in µg/m3 for MARCH, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	66.0	29.1	10.9	22.9	14.1	18.1	21.2	61.2	29.8	15.7	20.5	24.6	27.3	22.6	22.9	27.7	20.9	10.4	11.9	11.6	13.0	17.6	15.4	16.3	**23.0**	**66.0**	**10.4**
2	14.6	12.8	13.8	13.5	13.4	15.7	15.9	14.6	18.1	16.2	6.9	4.9	1.9	3.4	3.9	4.0	3.3	5.8	6.5	5.4	9.6	5.6	6.6	7.2	**9.3**	**18.1**	**1.9**
3	8.4	9.8	11.1	8.4	7.8	15.5	12.0	18.3	15.8	11.6	16.6	20.3	18.6	16.6	11.9	11.1	11.8	13.3	9.4	9.5	10.1	20.0	12.2	18.4	**13.3**	**20.3**	**7.8**
4	18.6	18.8	15.2	14.7	13.6	12.0	11.4	15.1	18.9	22.5	24.7	15.1	14.5	13.6	13.0	14.8	11.0	13.0	10.9	6.5	8.0	6.9	7.1	5.8	**13.6**	**24.7**	**5.8**
5	4.0	4.0	3.9	4.7	3.1	3.3	2.6	2.5	2.5	1.4	1.8	2.3	1.4	10.2	4.6	6.3	7.4	16.1	15.8	10.8	9.3	9.3	13.6	11.8	**6.4**	**16.1**	**1.4**
6	10.1	13.8	16.0	18.8	---	---	---	---	---	19.9	18.3	7.2	5.8	6.3	6.3	3.5	3.0	4.2	4.3	6.2	7.7	7.0	6.7	9.2	**9.2**	**19.9**	**3.0**
7	5.8	6.4	4.7	4.6	3.5	4.6	3.6	4.4	7.4	5.3	3.2	4.1	4.1	4.2	3.3	3.7	2.6	3.9	4.6	6.4	10.0	6.9	4.6	11.4	**5.1**	**11.4**	**2.6**
8	8.8	5.9	4.7	13.4	11.0	12.4	11.0	8.5	8.1	6.5	6.4	17.7	10.7	8.7	14.9	9.4	8.1	10.0	18.9	12.3	16.2	20.0	18.4	21.2	**11.8**	**21.2**	**4.7**
9	27.3	24.4	30.6	26.9	28.9	31.5	42.3	57.4	59.1	62.2	65.7	77.5	71.9	66.2	44.0	31.4	29.4	26.8	7.9	3.4	3.7	3.7	4.1	4.9	**34.6**	**77.5**	**3.4**
10	4.7	4.5	---	2.8	2.3	1.7	1.6	1.8	8.2	5.7	9.1	7.9	4.8	6.4	2.6	4.5	7.6	4.8	2.8	4.7	2.4	4.8	2.2	3.0	**4.4**	**9.1**	**1.6**
11	2.4	5.6	12.9	9.2	7.1	5.6	10.7	11.5	8.0	18.5	21.5	34.5	27.7	21.4	28.8	29.6	16.0	7.8	5.3	4.7	5.0	3.7	3.0	4.5	**12.7**	**34.5**	**2.4**
12	3.7	2.9	3.5	3.1	2.7	3.5	5.8	5.0	20.9	31.2	29.1	45.5	42.8	38.5	31.1	30.5	25.3	18.2	18.0	25.1	51.6	22.5	38.5	33.7	**22.2**	**51.6**	**2.7**
13	36.3	14.1	20.3	22.6	21.4	24.4	57.9	43.5	98.4	51.0	30.4	26.8	20.2	18.9	26.5	39.5	20.3	19.3	18.6	37.3	27.4	29.9	55.7	31.6	**33.0**	**98.4**	**14.1**
14	49.9	43.6	37.0	43.2	29.3	37.8	---	---	113.0	96.6	110.4	111.5	86.3	117.1	57.1	31.6	34.2	38.7	34.7	31.9	20.6	28.2	24.1	44.6	**55.5**	**117.1**	**20.6**
15	---	51.9	42.4	39.1	39.4	26.0	35.5	36.1	52.5	35.0	28.9	27.8	30.2	23.7	18.4	13.6	6.3	13.3	12.6	9.7	16.2	21.9	4.0	3.3	**25.6**	**52.5**	**3.3**
16	2.4	1.6	1.6	2.1	2.0	3.5	5.0	4.3	6.6	8.1	8.3	10.4	13.1	13.0	15.8	8.9	8.2	8.6	10.7	11.0	10.7	8.5	8.5	9.4	**7.6**	**15.8**	**1.6**
17	13.4	12.6	12.8	12.5	---	68.2	9.0	10.0	11.4	6.4	14.0	13.0	8.4	14.7	15.1	10.8	14.9	10.1	11.3	11.6	9.9	12.4	19.9	22.3	**15.0**	**68.2**	**6.4**
18	15.5	5.0	7.6	4.8	5.7	10.3	13.0	17.5	22.5	44.1	37.7	26.3	32.1	14.3	28.9	19.3	29.8	57.3	---	42.3	27.6	11.8	11.1	5.8	**21.3**	**57.3**	**4.8**
19	7.4	11.4	6.8	4.8	4.4	4.7	20.0	25.8	51.5	38.7	40.8	26.3	24.4	31.4	30.4	24.4	21.5	22.4	14.3	11.0	8.9	11.2	23.7	10.1	**19.8**	**51.5**	**4.4**
20	13.7	9.6	8.0	8.1	7.9	7.9	21.9	25.4	22.0	57.7	77.2	71.9	61.3	54.3	---	---	40.6	55.4	---	70.1	36.2	24.8	16.4	15.0	**33.6**	**77.2**	**7.9**
21	11.0	5.8	6.0	11.6	6.5	7.6	16.0	22.4	27.5	33.6	47.8	24.6	31.2	32.0	46.6	29.8	26.1	16.1	19.8	24.6	39.4	23.4	49.7	24.7	**24.3**	**49.7**	**5.8**
22	58.3	55.1	31.0	13.0	26.1	14.3	26.6	26.8	23.8	25.2	20.5	25.1	18.2	29.9	28.5	21.1	30.1	28.6	35.4	30.2	28.6	25.7	27.0	40.5	**28.7**	**58.3**	**13.0**
23	43.6	35.4	27.2	16.8	12.6	10.8	6.9	5.2	8.6	9.2	12.5	7.7	4.8	1.9	5.9	4.4	8.5	6.2	10.1	14.3	9.8	13.1	10.0	6.2	**12.2**	**43.6**	**1.9**
24	7.0	4.7	4.3	4.4	3.5	4.3	4.6	6.4	5.8	6.1	6.5	5.3	7.6	14.0	20.3	16.7	27.0	---	---	54.5	---	23.7	22.0	51.3	**14.3**	**54.5**	**3.5**
25	37.5	36.4	38.4	50.2	53.8	38.4	47.1	50.2	54.9	37.7	29.9	12.5	14.6	14.2	20.8	24.0	26.6	24.0	34.2	36.6	23.5	30.5	45.4	31.8	**33.9**	**54.9**	**12.5**
26	53.2	56.0	45.6	44.6	49.2	45.0	41.4	34.0	23.5	23.7	25.5	25.1	29.7	34.3	30.1	32.0	33.8	36.7	41.9	42.3	53.2	39.1	43.3	45.2	**38.7**	**56.0**	**23.5**
27	43.5	36.4	32.9	33.7	36.3	39.2	38.8	36.1	40.9	46.8	26.5	21.3	12.5	10.3	11.7	10.3	6.9	8.0	14.8	19.5	15.9	16.4	23.5	29.8	**25.5**	**46.8**	**6.9**
28	25.8	10.5	9.4	8.6	5.7	6.6	4.7	12.4	---	---	---	---	---	16.2	13.3	12.0	9.9	8.1	7.7	9.6	13.8	12.1	11.4	11.4	**11.0**	**25.8**	**4.7**
29	16.0	8.2	6.6	7.4	7.5	7.4	10.0	33.8	17.6	15.2	21.2	28.6	23.0	26.1	23.0	31.2	26.5	19.8	9.9	7.5	6.2	8.7	7.4	7.6	**15.7**	**33.8**	**6.2**
30	6.6	6.2	5.2	4.5	5.6	5.2	5.9	6.5	8.5	10.9	11.0	11.7	12.6	13.8	15.8	15.3	20.9	17.9	13.0	15.5	15.6	18.6	16.2	21.3	**11.8**	**21.3**	**4.5**
31	23.2	22.5	15.8	13.4	12.8	11.9	12.7	12.6	13.8	14.8	12.0	3.8	3.3	4.7	3.9	7.6	6.2	9.1	9.9	9.2	13.3	17.2	18.8	13.5	**11.9**	**23.2**	**3.3**
MEAN	**21.3**	**18.2**	**16.2**	**15.8**	**15.1**	**16.6**	**17.8**	**21.0**	**27.6**	**25.9**	**26.2**	**24.7**	**22.2**	**22.7**	**20.0**	**17.6**	**17.6**	**17.8**	**14.8**	**19.2**	**17.4**	**16.3**	**18.4**	**18.5**	**19.5**		
MAX	**66.0**	**56.0**	**45.6**	**50.2**	**53.8**	**68.2**	**57.9**	**61.2**	**113.0**	**96.6**	**110.4**	**111.5**	**86.3**	**117.1**	**57.1**	**39.5**	**40.6**	**57.3**	**41.9**	**70.1**	**53.2**	**39.1**	**55.7**	**51.3**		**117.1**	
MIN	**2.4**	**1.6**	**1.6**	**2.1**	**2.0**	**1.7**	**1.6**	**1.8**	**2.5**	**1.4**	**1.8**	**2.3**	**1.4**	**1.9**	**2.6**	**3.5**	**2.6**	**3.9**	**2.8**	**3.4**	**2.4**	**3.7**	**2.2**	**3.0**			**1.4**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 722 DATA RECOVERY RATE = 97.0% DATA CAPTURE RATE = 100.0%

MONTHLY MEAN = 19.5 µg/m3

MAXIMUM PM10 = 117.1 µg/m3 DATE OF OCCURRENCE = 3/14 at 1400 MAXIMUM DAILY MEAN = 55.5 µg/m3 DATE OF OCCURRENCE = 3/14

SECOND MAXIMUM PM10 = 113.0 µg/m3 DATE OF OCCURRENCE = 3/14 at 900 SECOND MAXIMUM DAILY MEAN = 38.7 µg/m3 DATE OF OCCURRENCE = 3/26

MINIMUM PM10 = 1.4 µg/m3 DATE OF OCCURRENCE = 3/5 at 1000 MINUMUM DAILY MEAN = 4.4 µg/m3 DATE OF OCCURRENCE = 3/10

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

UNDERLINED DATA ARE SUSPECT

Draft

CSX AQ4 Modulair

HOURLY AVERAGES of PM2.5 in µg/m3 for JANUARY, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	9.4	9.9	10.5	---	---	---	---	10.0	6.2	7.4	6.2	5.0	4.4	4.9	5.8	5.3	6.6	5.3	4.2	4.3	5.9	7.0	7.5	5.7	**6.5**	**10.5**	**4.2**
2	7.1	5.6	6.0	5.8	---	---	---	4.9	6.0	---	4.6	5.9	5.5	7.9	7.1	6.3	6.5	7.9	10.2	9.3	7.9	7.2	7.2	6.8	**6.7**	**10.2**	**4.6**
3	5.9	5.7	5.0	4.3	4.8	8.5	6.5	6.7	12.2	14.1	11.9	7.1	6.5	8.4	15.4	18.0	15.6	15.5	12.4	13.0	12.1	13.8	11.9	10.2	**10.2**	**18.0**	**4.3**
4	10.6	10.0	10.9	11.9	11.2	11.0	10.7	11.2	11.7	11.4	13.9	12.4	6.4	5.1	4.1	3.6	3.1	2.3	2.4	2.4	2.1	2.3	2.7	5.6	**7.4**	**13.9**	**2.1**
5	4.3	3.8	3.5	5.0	4.0	3.9	4.0	4.1	6.0	6.2	5.2	8.3	9.3	11.4	9.5	9.7	11.2	11.8	11.3	17.3	12.5	14.5	11.3	12.5	**8.3**	**17.3**	**3.5**
6	11.3	11.0	11.8	10.1	13.4	11.4	9.5	9.9	9.1	10.0	7.3	6.9	6.9	9.1	6.9	6.7	7.0	5.4	3.5	2.9	2.8	3.8	3.1	3.6	**7.6**	**13.4**	**2.8**
7	3.9	5.5	6.7	5.3	5.0	5.8	6.7	7.3	9.0	11.0	12.4	8.2	4.2	3.3	3.0	2.6	2.6	3.3	3.8	3.6	4.2	2.2	2.7	3.1	**5.2**	**12.4**	**2.2**
8	3.1	3.9	4.3	4.9	5.3	7.2	7.0	7.5	8.3	8.9	8.4	6.5	5.8	6.6	7.4	7.4	8.2	9.3	8.3	8.5	7.9	7.6	7.7	7.4	**6.9**	**9.3**	**3.1**
9	8.8	10.2	10.3	12.9	14.5	12.7	11.1	10.4	9.0	6.3	7.0	8.5	9.1	10.3	10.7	15.6	15.9	11.3	10.3	3.8	4.2	4.6	3.3	2.4	**9.3**	**15.9**	**2.4**
10	2.1	2.1	1.7	1.8	1.7	2.1	1.9	2.2	1.4	1.2	0.8	2.2	2.6	2.8	1.6	1.7	1.5	1.9	2.1	2.2	2.5	2.7	2.7	2.6	**2.0**	**2.8**	**0.8**
11	3.0	3.3	3.4	3.5	4.0	4.2	4.5	7.1	8.3	9.0	6.7	4.8	5.2	4.7	5.1	5.6	7.0	6.3	9.4	10.7	11.7	12.6	7.8	10.3	**6.5**	**12.6**	**3.0**
12	9.3	7.8	6.2	7.2	5.6	5.5	5.7	6.8	11.0	13.3	16.6	21.5	15.6	17.9	16.3	14.5	12.6	11.8	12.5	13.3	11.7	12.2	8.7	5.4	**11.2**	**21.5**	**5.4**
13	6.0	9.4	9.4	12.3	1.6	2.2	3.0	4.0	3.6	3.6	2.7	2.8	2.7	2.6	2.7	2.7	2.4	2.6	2.7	2.9	2.7	3.0	3.3	3.0	**3.9**	**12.3**	**1.6**
14	3.4	3.2	2.7	3.1	4.3	4.7	4.0	3.2	4.1	4.2	4.6	4.3	3.3	3.2	3.0	2.0	1.4	1.4	2.5	3.0	2.7	2.6	3.0	3.0	**3.2**	**4.7**	**1.4**
15	4.7	4.1	4.9	2.8	2.0	2.4	3.2	4.4	4.6	4.7	5.2	10.3	9.4	7.7	7.1	6.2	6.6	5.8	5.9	6.9	5.5	4.5	4.6	5.0	**5.3**	**10.3**	**2.0**
16	3.5	4.0	5.0	7.1	6.6	7.0	10.0	12.5	12.8	16.4	18.3	16.6	14.3	21.8	20.2	14.1	12.0	6.2	5.9	6.5	5.7	6.5	5.8	6.3	**10.2**	**21.8**	**3.5**
17	4.8	5.1	4.8	4.6	4.3	4.7	5.6	8.6	8.9	8.2	5.4	4.5	4.1	5.1	5.2	5.0	4.9	6.4	8.4	7.5	13.8	13.6	11.4	10.5	**6.8**	**13.8**	**4.1**
18	13.6	10.2	12.2	12.1	11.5	11.7	10.9	13.6	16.9	19.6	16.7	13.7	15.4	9.9	6.7	6.5	6.2	7.0	9.6	9.7	11.9	12.1	9.8	12.0	**11.6**	**19.6**	**6.2**
19	12.3	10.5	12.5	7.6	6.6	8.1	8.6	9.7	11.9	17.9	15.7	14.8	20.4	24.8	21.8	25.9	17.1	8.4	8.6	7.2	7.5	8.4	8.9	7.3	**12.6**	**25.9**	**6.6**
20	6.4	7.7	6.7	5.0	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
21	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	5.2	5.9	6.9	7.1	7.7	7.7	6.2	5.7	---	**---**	**---**	**---**
22	---	---	---	---	---	---	---	---	---	---	---	---	28.0	24.9	17.6	18.2	13.4	11.3	12.9	11.8	10.6	11.2	9.6	14.1	**---**	**---**	**---**
23	12.9	13.7	12.9	11.8	12.5	10.9	11.5	12.7	23.9	28.2	41.3	45.1	40.8	29.7	22.1	20.4	18.7	17.7	15.8	17.7	19.3	22.2	23.1	53.2	**22.4**	**53.2**	**10.9**
24	41.2	26.3	21.2	20.8	20.6	20.4	23.2	21.7	23.8	23.9	31.9	25.8	29.0	35.3	30.9	30.0	26.0	22.9	20.6	18.3	21.4	20.1	21.2	24.7	**25.0**	**41.2**	**18.3**
25	24.2	23.4	22.9	24.5	23.6	24.2	23.8	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
26	---	---	---	---	---	---	---	18.4	15.1	9.7	10.3	12.6	11.0	9.9	7.2	12.1	10.7	8.5	7.9	7.5	5.2	6.5	6.2	4.5	**---**	**---**	**---**
27	6.0	4.7	3.7	3.6	2.4	2.3	2.5	3.1	5.3	14.9	14.4	4.7	10.3	9.9	7.3	9.8	10.8	9.2	8.9	12.0	11.1	13.2	14.4	14.0	**8.2**	**14.9**	**2.3**
28	11.8	10.9	6.8	3.8	3.1	1.3	0.7	0.3	0.2	0.3	0.3	0.9	0.8	0.6	0.5	0.4	0.4	0.6	1.0	1.5	2.6	2.3	2.4	3.3	**2.3**	**11.8**	**0.2**
29	4.3	4.4	3.0	2.9	1.7	2.3	1.6	2.5	3.0	6.4	4.7	2.5	2.1	3.0	4.3	3.7	4.1	4.5	3.7	4.2	4.0	6.0	4.9	4.7	**3.6**	**6.4**	**1.6**
30	4.2	4.9	4.0	3.7	3.7	3.8	3.2	4.1	6.0	5.6	6.5	7.0	9.9	11.2	10.3	8.8	---	---	---	---	---	---	---	---	**---**	**---**	**---**
31	---	5.7	5.3	6.7	4.0	3.7	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
MEAN	**8.8**	**8.1**	**7.8**	**7.6**	**7.1**	**7.3**	**7.5**	**8.0**	**9.2**	**10.5**	**10.7**	**10.1**	**10.5**	**10.8**	**9.6**	**9.6**	**8.8**	**7.8**	**7.8**	**8.0**	**8.0**	**8.5**	**7.8**	**9.3**	**8.7**		
MAX	**41.2**	**26.3**	**22.9**	**24.5**	**23.6**	**24.2**	**23.8**	**21.7**	**23.9**	**28.2**	**41.3**	**45.1**	**40.8**	**35.3**	**30.9**	**30.0**	**26.0**	**22.9**	**20.6**	**18.3**	**21.4**	**22.2**	**23.1**	**53.2**		**53.2**	
MIN	**2.1**	**2.1**	**1.7**	**1.8**	**1.6**	**1.3**	**0.7**	**0.3**	**0.2**	**0.3**	**0.3**	**0.9**	**0.8**	**0.6**	**0.5**	**0.4**	**0.4**	**0.6**	**1.0**	**1.5**	**2.1**	**2.2**	**2.4**	**2.4**			**0.2**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 637 DATA RECOVERY RATE = 85.6% DATA CAPTURE RATE = 77.4%

MONTHLY MEAN = 8.7 µg/m3

MAXIMUM PM2.5 = 53.2 µg/m3 DATE OF OCCURRENCE = 1/23 at 2400 MAXIMUM DAILY MEAN = 25.0 µg/m3 DATE OF OCCURRENCE = 1/24

SECOND MAXIMUM PM2.5 = 45.1 µg/m3 DATE OF OCCURRENCE = 1/23 at 1200 SECOND MAXIMUM DAILY MEAN = 22.4 µg/m3 DATE OF OCCURRENCE = 1/23

MINIMUM PM2.5 = 0.2 µg/m3 DATE OF OCCURRENCE = 1/28 at 900 MINUMUM DAILY MEAN = 2.0 µg/m3 DATE OF OCCURRENCE = 1/10

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

Draft

CSX AQ4 Modulair

HOURLY AVERAGES of PM2.5 in µg/m3 for FEBRUARY, 2024

Hr Beg Hr End Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	---	9.4	7.0	7.0	7.3	6.4	6.6	---	---	---	24.1	21.9	12.9	11.4	10.9	12.1	11.0	11.3	9.5	9.9	10.6	10.3	10.5	8.7	**10.9**	**24.1**	**6.4**
2	9.1	10.8	9.8	11.2	11.0	11.6	13.3	15.8	13.4	10.4	19.4	14.0	8.4	5.7	4.1	3.2	2.9	3.8	5.8	2.9	2.4	1.7	2.2	2.1	**8.1**	**19.4**	**1.7**
3	2.7	1.4	1.6	1.8	1.9	1.6	1.8	2.8	3.4	3.7	2.8	3.0	3.1	3.6	4.1	3.5	6.1	6.1	5.5	8.2	10.3	12.6	11.7	8.5	**4.6**	**12.6**	**1.4**
4	7.0	9.2	6.0	4.9	5.4	6.1	6.6	5.5	5.0	5.1	7.3	8.7	11.4	11.2	10.7	9.7	7.9	6.6	10.3	10.6	10.0	11.7	13.7	10.9	**8.3**	**13.7**	**4.9**
5	11.2	10.6	9.6	7.8	6.7	6.2	9.0	6.0	5.9	10.2	10.2	12.5	15.9	15.7	15.1	14.3	11.1	10.9	9.9	7.7	7.9	8.2	7.6	10.1	**10.0**	**15.9**	**5.9**
6	8.4	5.6	5.0	5.1	4.5	4.5	5.0	5.5	6.8	6.5	4.9	4.5	3.9	3.4	5.7	7.2	6.9	5.6	10.4	9.8	8.5	7.4	6.8	6.7	**6.1**	**10.4**	**3.4**
7	7.8	6.1	6.5	5.1	5.4	5.8	6.5	5.0	6.5	9.3	7.8	12.1	9.6	8.3	12.1	15.1	16.6	13.3	11.8	12.8	16.7	26.8	14.5	11.1	**10.5**	**26.8**	**5.0**
8	13.0	13.4	20.9	15.7	12.5	15.3	14.6	15.2	21.8	20.5	27.2	28.7	22.5	13.9	13.8	14.2	16.8	12.7	9.8	8.7	9.5	7.4	9.1	10.6	**15.3**	**28.7**	**7.4**
9	10.1	7.5	7.3	7.7	9.6	9.3	12.0	9.6	10.4	14.6	17.4	16.1	20.9	20.1	21.8	23.1	25.0	21.8	20.0	20.9	21.0	23.0	20.1	19.8	**16.2**	**25.0**	**7.3**
10	21.1	20.3	19.1	20.1	19.9	19.6	20.6	22.3	26.3	41.0	52.3	45.3	47.7	21.1	31.1	29.4	26.0	24.0	24.3	23.9	23.5	20.2	23.8	20.7	**26.8**	**52.3**	**19.1**
11	15.7	13.7	13.1	10.6	8.2	9.8	15.2	21.2	21.4	26.1	24.7	21.6	18.4	17.4	17.3	17.8	18.3	16.7	21.1	17.1	16.4	15.6	14.6	14.2	**16.9**	**26.1**	**8.2**
12	13.6	13.2	13.2	13.9	14.4	18.2	15.3	14.0	16.8	19.1	20.9	22.3	23.7	28.1	27.7	23.8	22.1	18.4	14.8	14.8	12.3	10.2	9.1	6.2	**16.9**	**28.1**	**6.2**
13	5.3	2.6	1.7	1.1	1.1	1.3	2.3	5.2	3.5	2.4	2.9	7.2	11.5	10.2	10.4	7.3	5.8	5.7	6.7	7.0	6.4	6.7	7.8	7.3	**5.3**	**11.5**	**1.1**
14	6.0	5.5	3.4	3.2	2.9	2.9	3.1	2.5	7.5	5.1	3.9	2.1	2.5	2.2	3.3	2.3	2.6	2.5	3.2	2.7	2.7	4.3	4.8	4.4	**3.5**	**7.5**	**2.1**
15	4.9	4.9	4.5	4.6	7.3	4.5	4.1	5.9	4.6	5.6	7.3	7.8	8.8	10.2	12.3	10.5	9.1	7.2	5.6	6.8	6.8	7.3	6.8	6.6	**6.8**	**12.3**	**4.1**
16	6.3	4.5	2.7	2.8	3.0	3.0	2.9	3.4	3.6	4.0	4.4	4.2	4.1	7.2	4.5	5.2	4.7	5.5	7.5	7.8	8.2	8.4	7.8	8.1	**5.1**	**8.4**	**2.7**
17	5.1	3.5	4.7	2.9	3.2	3.7	5.0	4.8	5.7	3.7	3.2	4.9	4.1	4.7	5.3	5.5	4.4	4.8	4.6	4.8	5.9	4.4	5.3	5.2	**4.5**	**5.9**	**2.9**
18	5.9	6.7	6.4	5.8	6.5	5.7	5.5	6.4	9.2	10.0	8.6	6.3	6.4	6.8	6.2	5.7	2.8	2.6	3.1	4.9	4.1	2.3	1.9	2.0	**5.4**	**10.0**	**1.9**
19	2.3	2.3	2.5	2.8	3.5	3.9	5.3	5.9	9.1	10.8	12.4	9.4	10.2	9.4	10.0	10.6	9.3	11.1	14.1	14.7	17.8	16.0	13.6	13.2	**9.1**	**17.8**	**2.3**
20	12.8	10.8	9.5	9.7	7.7	6.9	4.5	3.4	4.7	4.9	5.5	7.3	8.1	9.9	12.2	15.2	11.7	8.7	8.9	9.4	8.0	7.3	5.9	4.4	**8.2**	**15.2**	**3.4**
21	3.7	3.1	2.4	2.6	2.9	3.5	3.7	3.5	5.2	4.9	4.8	5.3	5.3	8.2	9.0	8.5	7.3	6.3	8.9	6.9	6.2	6.4	6.7	7.4	**5.5**	**9.0**	**2.4**
22	8.6	6.5	13.2	7.6	5.6	5.3	7.0	6.6	11.1	11.6	8.6	9.8	10.8	8.6	7.6	8.6	10.9	7.6	11.8	10.0	10.8	10.4	13.2	12.0	**9.3**	**13.2**	**5.3**
23	9.4	9.5	10.4	10.2	9.6	10.4	10.4	8.3	8.8	8.9	13.0	12.7	13.5	12.3	10.1	11.0	8.3	9.9	16.9	16.3	15.5	12.9	11.1	11.4	**11.2**	**16.9**	**8.3**
24	10.0	9.3	8.6	5.4	7.1	13.1	10.1	13.0	14.3	13.6	11.5	12.5	11.9	8.4	8.5	8.6	9.3	7.8	4.0	3.6	5.6	4.2	2.3	2.4	**8.5**	**14.3**	**2.3**
25	3.8	1.5	1.4	1.0	1.7	2.1	1.9	2.8	3.0	5.1	6.5	6.3	7.5	8.8	9.8	9.4	9.6	7.6	5.6	5.1	5.1	4.0	3.7	3.3	**4.8**	**9.8**	**1.0**
26	3.1	2.7	3.0	4.6	4.7	4.0	4.1	5.7	12.5	15.8	22.2	25.5	18.7	20.2	18.0	16.6	17.9	16.9	19.3	21.5	20.4	16.5	14.1	13.4	**13.3**	**25.5**	**2.7**
27	12.6	12.3	10.1	11.0	10.8	12.1	11.1	15.2	27.6	34.1	41.6	47.6	45.3	44.7	34.9	23.7	21.1	17.6	17.0	18.3	16.6	16.0	16.3	17.9	**22.3**	**47.6**	**10.1**
28	19.2	18.5	17.2	14.6	14.2	15.0	14.7	15.1	17.9	19.4	20.8	23.3	21.7	21.0	19.6	18.0	13.4	8.8	7.1	6.0	4.7	1.9	1.2	1.9	**13.9**	**23.3**	**1.2**
29	1.9	2.2	1.8	1.9	2.0	2.6	2.6	2.9	4.1	5.9	6.6	6.9	6.7	5.9	5.2	4.7	3.3	2.5	4.7	4.2	4.7	4.6	5.8	10.8	**4.3**	**10.8**	**1.8**
MEAN	**8.6**	**7.8**	**7.7**	**7.0**	**6.9**	**7.4**	**7.8**	**8.3**	**10.4**	**11.9**	**13.9**	**14.1**	**13.6**	**12.4**	**12.5**	**11.9**	**11.1**	**9.8**	**10.4**	**10.3**	**10.3**	**10.0**	**9.4**	**9.0**	**10.1**		
MAX	**21.1**	**20.3**	**20.9**	**20.1**	**19.9**	**19.6**	**20.6**	**22.3**	**27.6**	**41.0**	**52.3**	**47.6**	**47.7**	**44.7**	**34.9**	**29.4**	**26.0**	**24.0**	**24.3**	**23.9**	**23.5**	**26.8**	**23.8**	**20.7**		**52.3**	
MIN	**1.9**	**1.4**	**1.4**	**1.0**	**1.1**	**1.3**	**1.8**	**2.5**	**3.0**	**2.4**	**2.8**	**2.1**	**2.5**	**2.2**	**3.3**	**2.3**	**2.6**	**2.5**	**3.1**	**2.7**	**2.4**	**1.7**	**1.2**	**1.9**			**1.0**

POSSIBLE NUMBER OF OBSERVATIONS = 696 ACTUAL NUMBER OF OBSERVATIONS = 692 DATA RECOVERY RATE = 99.4% DATA CAPTURE RATE = 100.0%

MONTHLY MEAN = 10.1 µg/m3

MAXIMUM PM2.5 = 52.3 µg/m3 DATE OF OCCURRENCE = 2/10 at 1100 MAXIMUM DAILY MEAN = 26.8 µg/m3 DATE OF OCCURRENCE = 2/10

SECOND MAXIMUM PM2.5 = 47.7 µg/m3 DATE OF OCCURRENCE = 2/10 at 1300 SECOND MAXIMUM DAILY MEAN = 22.3 µg/m3 DATE OF OCCURRENCE = 2/27

MINIMUM PM2.5 = 1.0 µg/m3 DATE OF OCCURRENCE = 2/25 at 400 MINUMUM DAILY MEAN = 3.5 µg/m3 DATE OF OCCURRENCE = 2/14

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

Draft

CSX AQ4 Modulair

HOURLY AVERAGES of PM2.5 in µg/m3 for MARCH, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	17.2	8.9	5.8	8.4	5.2	6.1	8.0	16.0	13.4	9.9	14.9	16.4	17.8	17.6	17.1	14.0	13.5	6.7	6.9	7.5	8.5	9.5	8.1	8.8	**11.0**	**17.8**	**5.2**
2	8.6	7.6	7.8	5.5	4.6	4.9	6.2	5.9	5.6	5.0	2.4	1.6	1.1	1.4	1.3	2.6	2.4	3.6	4.6	3.3	6.8	3.9	4.5	4.9	**4.4**	**8.6**	**1.1**
3	4.8	4.9	5.9	5.3	4.8	8.0	6.0	12.5	14.5	10.1	14.5	15.4	13.9	10.5	8.1	8.3	9.7	9.0	7.7	7.3	7.2	13.4	8.8	9.8	**9.1**	**15.4**	**4.8**
4	13.0	14.1	13.1	12.5	10.8	10.0	9.5	9.0	9.4	10.9	10.0	5.0	5.3	5.7	5.9	4.7	3.7	4.6	4.4	2.9	3.1	3.2	2.6	2.2	**7.3**	**14.1**	**2.2**
5	2.0	2.1	2.0	2.7	2.1	1.6	1.5	1.3	1.3	0.9	1.0	1.5	0.3	2.5	2.2	3.2	5.1	9.3	8.0	7.3	5.6	5.7	9.8	8.0	**3.6**	**9.8**	**0.3**
6	6.1	6.9	7.0	7.5	15.1	30.7	27.6	28.9	10.9	9.7	7.7	6.2	5.2	4.1	1.8	1.4	1.5	2.6	3.0	4.4	5.7	4.7	4.1	4.3	**8.6**	**30.7**	**1.4**
7	4.2	4.2	2.5	2.3	2.1	2.6	1.9	2.3	4.9	3.1	0.8	0.7	1.0	1.2	1.6	2.2	1.7	1.4	1.9	1.8	2.2	1.8	2.0	4.8	**2.3**	**4.9**	**0.7**
8	2.5	2.0	2.2	3.4	3.1	3.1	5.1	4.7	5.5	4.2	3.9	6.0	3.8	4.3	5.4	5.5	5.3	4.4	6.2	4.4	5.7	6.0	6.4	7.4	**4.6**	**7.4**	**2.0**
9	7.8	7.3	10.2	8.7	9.0	8.5	9.2	10.3	11.5	11.6	12.8	12.9	14.3	15.3	14.1	11.9	11.0	6.4	1.8	0.8	1.3	2.0	3.0	3.3	**8.5**	**15.3**	**0.8**
10	3.8	3.7	---	2.2	1.5	1.2	0.9	1.1	2.8	3.4	4.6	4.1	3.0	2.1	1.7	1.9	1.4	1.3	1.1	0.9	1.0	1.0	1.2	1.2	**2.0**	**4.6**	**0.9**
11	1.3	1.4	1.6	1.4	1.4	1.8	2.0	2.5	1.6	2.4	2.2	2.9	2.2	3.0	2.7	3.0	2.8	1.7	1.8	2.3	2.1	1.9	1.9	2.2	**2.0**	**3.0**	**1.3**
12	2.2	1.8	1.7	1.4	1.5	1.4	1.9	2.1	3.7	7.0	10.6	15.6	9.1	8.9	7.9	7.6	7.4	8.0	8.8	11.8	14.0	9.6	10.2	11.1	**6.8**	**15.6**	**1.4**
13	18.3	7.7	8.1	15.1	9.6	9.8	12.7	11.4	23.6	18.2	14.2	13.3	12.1	10.1	9.7	11.9	10.8	10.8	11.7	16.6	14.8	15.4	16.1	17.4	**13.3**	**23.6**	**7.7**
14	25.3	19.8	18.7	19.1	16.0	14.3	19.8	24.6	21.4	30.1	40.9	48.2	46.5	39.3	24.9	16.2	16.8	19.2	20.0	15.2	14.5	16.8	16.3	18.6	**23.4**	**48.2**	**14.3**
15	26.4	24.3	20.1	22.9	20.9	18.2	17.9	17.6	26.1	18.0	17.4	11.6	4.4	2.1	2.4	3.8	3.6	3.8	4.5	5.8	5.8	6.7	2.5	2.5	**12.0**	**26.4**	**2.1**
16	1.8	1.4	1.0	1.5	1.5	2.6	3.0	2.6	4.1	4.9	5.1	5.8	5.4	6.4	5.2	5.5	6.8	6.4	8.0	8.2	8.8	6.9	6.2	6.3	**4.8**	**8.8**	**1.0**
17	6.9	6.9	6.7	9.7	15.3	12.1	6.7	7.6	7.6	3.0	7.7	5.0	4.4	5.9	6.7	6.2	5.9	2.8	5.0	2.7	2.8	4.9	6.4	6.6	**6.4**	**15.3**	**2.7**
18	4.8	4.1	4.3	3.6	3.7	4.0	3.6	3.7	7.6	9.7	6.7	5.4	5.5	5.0	5.7	4.8	5.2	9.2	15.8	6.9	6.0	3.9	3.5	2.6	**5.6**	**15.8**	**2.6**
19	3.6	2.7	3.6	4.0	3.8	3.6	3.8	4.0	8.2	8.4	6.2	4.4	4.1	5.6	5.8	7.3	7.1	7.2	7.2	6.8	5.0	5.5	8.2	6.7	**5.5**	**8.4**	**2.7**
20	7.1	6.4	5.5	5.8	4.8	4.6	4.8	5.5	7.5	10.3	12.8	12.3	10.1	8.8	9.3	17.0	6.3	9.3	28.2	16.3	6.9	6.0	5.2	6.1	**9.0**	**28.2**	**4.6**
21	2.7	2.0	2.4	3.0	2.9	2.6	2.4	2.2	4.2	3.4	6.6	3.3	5.6	4.2	4.5	3.3	4.1	4.7	5.3	3.9	4.9	6.6	8.3	6.4	**4.1**	**8.3**	**2.0**
22	9.4	9.0	6.8	2.9	4.8	3.4	5.1	4.3	6.5	7.8	9.0	10.8	13.4	14.2	12.6	12.0	12.6	11.6	12.9	12.1	12.2	11.8	11.3	9.2	**9.4**	**14.2**	**2.9**
23	7.8	7.5	7.2	6.2	5.7	4.1	3.6	3.4	3.0	5.0	7.7	3.0	2.3	1.3	5.3	3.6	5.8	5.9	9.2	13.1	9.4	11.0	8.4	5.8	**6.0**	**13.1**	**1.3**
24	5.3	4.4	3.8	2.9	3.0	3.1	3.7	4.9	4.9	4.8	3.6	3.2	3.5	4.6	3.6	3.4	4.2	6.1	6.3	5.1	5.9	5.3	7.9	10.0	**4.7**	**10.0**	**2.9**
25	10.4	10.2	8.3	7.6	7.3	5.9	5.5	5.2	5.9	5.9	6.4	8.3	11.0	11.1	13.3	15.5	14.2	13.6	12.8	12.7	11.2	10.7	9.8	7.9	**9.6**	**15.5**	**5.2**
26	8.6	9.9	9.7	9.2	9.6	8.4	7.4	6.0	7.1	6.6	7.0	7.5	13.7	13.9	10.9	16.0	18.0	19.6	20.3	14.7	19.5	16.0	17.7	20.5	**12.4**	**20.5**	**6.0**
27	23.5	14.9	14.9	14.7	15.7	14.2	14.9	13.9	14.7	13.6	11.8	12.7	8.0	6.0	4.2	5.7	4.1	4.1	5.3	5.1	8.4	5.4	6.8	6.5	**10.3**	**23.5**	**4.1**
28	5.7	4.1	4.6	4.3	3.8	3.9	3.4	8.5	---	---	---	---	---	11.9	9.3	8.8	7.5	4.4	4.1	4.5	7.4	7.0	7.6	8.1	**6.2**	**11.9**	**3.4**
29	7.9	4.6	4.0	4.5	4.5	4.7	5.1	7.0	8.4	9.6	13.1	15.5	14.7	13.3	9.1	5.7	5.2	4.2	3.0	2.8	2.6	3.7	4.0	3.5	**6.6**	**15.5**	**2.6**
30	3.5	3.6	2.9	3.0	3.1	3.3	3.9	4.7	6.7	8.5	8.0	8.8	9.5	10.4	12.1	11.9	15.7	11.7	9.7	11.1	12.4	13.6	11.9	14.1	**8.5**	**15.7**	**2.9**
31	15.9	13.5	11.1	9.5	9.2	8.3	9.0	10.1	11.8	12.8	10.9	3.2	2.8	4.0	3.5	6.7	5.4	8.4	8.8	8.2	10.4	13.7	13.9	11.9	**9.2**	**15.9**	**2.8**
MEAN	**8.7**	**7.2**	**6.8**	**6.8**	**6.7**	**6.8**	**7.0**	**7.9**	**8.8**	**8.6**	**9.4**	**9.0**	**8.5**	**8.2**	**7.4**	**7.5**	**7.3**	**7.2**	**8.2**	**7.3**	**7.5**	**7.5**	**7.6**	**7.7**	**7.7**		
MAX	**26.4**	**24.3**	**20.1**	**22.9**	**20.9**	**30.7**	**27.6**	**28.9**	**26.1**	**30.1**	**40.9**	**48.2**	**46.5**	**39.3**	**24.9**	**17.0**	**18.0**	**19.6**	**28.2**	**16.6**	**19.5**	**16.8**	**17.7**	**20.5**		**48.2**	
MIN	**1.3**	**1.4**	**1.0**	**1.4**	**1.4**	**1.2**	**0.9**	**1.1**	**1.3**	**0.9**	**0.8**	**0.7**	**0.3**	**1.2**	**1.3**	**1.4**	**1.4**	**1.3**	**1.1**	**0.8**	**1.0**	**1.0**	**1.2**	**1.2**			**0.3**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 738 DATA RECOVERY RATE = 99.2% DATA CAPTURE RATE = 100.0%

MONTHLY MEAN = 7.7 µg/m3

MAXIMUM PM2.5 = 48.2 µg/m3 DATE OF OCCURRENCE = 3/14 at 1200 MAXIMUM DAILY MEAN = 23.4 µg/m3 DATE OF OCCURRENCE = 3/14

SECOND MAXIMUM PM2.5 = 46.5 µg/m3 DATE OF OCCURRENCE = 3/14 at 1300 SECOND MAXIMUM DAILY MEAN = 13.3 µg/m3 DATE OF OCCURRENCE = 3/13

MINIMUM PM2.5 = 0.3 µg/m3 DATE OF OCCURRENCE = 3/5 at 1300 MINUMUM DAILY MEAN = 2.0 µg/m3 DATE OF OCCURRENCE = 3/10

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

UNDERLINED DATA ARE SUSPECT

Draft

CSX AQ6 Modulair

HOURLY AVERAGES of PM10 in µg/m3 for JANUARY, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	12.1	15.2	17.2	---	---	---	---	17.8	15.6	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
2	---	---	---	---	---	---	---	13.0	9.7	5.0	8.4	7.9	10.6	14.1	14.5	17.4	18.4	14.6	17.1	14.3	12.2	---	---	---	**---**	**---**	**---**
3	---	---	---	---	---	---	---	18.7	18.8	15.5	20.9	14.5	17.1	13.6	9.4	21.2	20.7	13.5	21.8	20.4	25.5	18.6	19.9	---	**---**	**---**	**---**
4	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
5	---	---	---	---	---	---	---	17.1	22.9	17.8	11.5	14.3	15.1	19.3	18.4	18.9	33.0	20.6	14.5	16.5	21.6	23.8	21.3	17.5	**---**	**---**	**---**
6	14.7	14.4	27.2	24.2	---	---	---	---	17.4	17.8	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
7	---	---	---	---	---	---	---	---	12.1	13.5	15.5	10.1	7.6	6.1	5.5	4.7	4.4	4.3	5.3	6.2	5.5	---	---	---	**---**	**---**	**---**
8	---	---	---	---	---	---	---	10.2	12.3	15.1	9.0	8.4	8.7	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
9	---	---	---	---	---	---	---	---	11.6	13.3	17.0	21.8	22.8	22.8	37.0	35.4	43.5	34.2	34.0	---	---	---	---	---	**---**	**---**	**---**
10	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
11	---	---	---	---	---	---	---	36.2	25.8	18.3	13.2	11.7	9.1	6.6	9.5	12.4	14.9	25.4	33.9	32.6	30.3	33.4	19.6	15.2	**---**	**---**	**---**
12	19.7	16.8	11.5	17.6	17.7	20.0	33.8	42.8	28.8	18.9	11.6	11.6	13.6	17.8	25.4	19.5	11.8	11.5	15.7	34.6	60.3	34.8	---	---	**22.5**	**60.3**	**11.5**
13	---	---	---	---	---	---	---	---	10.4	8.4	5.7	5.2	8.3	13.1	13.5	10.8	4.8	5.4	5.8	5.8	5.5	4.6	5.3	6.4	**---**	**---**	**---**
14	9.5	14.4	8.8	7.5	---	---	---	4.6	4.9	10.2	20.4	25.1	8.6	8.1	9.5	8.4	10.2	11.5	5.1	8.2	6.3	5.7	9.9	13.6	**10.0**	**25.1**	**4.6**
15	15.4	5.6	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
16	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
17	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
18	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
19	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
20	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
21	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
22	---	---	---	---	---	---	---	41.4	46.5	39.1	34.4	15.8	16.9	21.6	17.3	18.9	30.2	18.2	19.8	21.0	19.0	30.5	47.7	45.9	**---**	**---**	**---**
23	40.5	32.8	31.8	34.0	29.1	22.6	34.8	---	---	---	---	90.9	33.5	32.3	41.0	38.5	20.8	26.0	27.8	25.1	32.0	---	---	---	**---**	**---**	**---**
24	---	---	---	---	---	---	---	42.1	58.2	109.1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
25	---	---	---	---	---	---	---	---	72.0	---	---	---	116.7	62.6	75.0	52.1	30.1	---	---	---	---	---	---	---	**---**	**---**	**---**
26	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
27	---	---	---	---	---	---	---	20.8	8.0	20.7	21.0	12.2	12.6	9.6	7.1	16.5	21.1	13.8	8.9	9.6	15.4	11.6	11.0	15.9	**---**	**---**	**---**
28	18.1	14.3	17.2	8.1	14.1	16.0	11.1	0.9	1.5	1.4	0.8	1.1	1.9	2.8	2.1	1.3	1.8	2.6	1.8	3.0	5.0	5.9	6.0	7.4	**6.1**	**18.1**	**0.8**
29	8.2	6.1	4.5	4.0	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
30	---	---	---	---	---	---	---	8.6	6.5	8.6	6.1	7.8	7.9	7.8	7.5	7.2	6.8	9.4	9.5	15.4	10.3	9.0	9.1	7.8	**---**	**---**	**---**
31	9.1	9.2	9.7	11.3	13.4	14.3	12.9	10.0	12.6	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
MEAN	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**17.8**		
MAX	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**		**116.7**	
MIN	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**			**0.8**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 280 DATA RECOVERY RATE = 37.6% DATA CAPTURE RATE = 9.7%

MONTHLY MEAN = 17.8 µg/m3

MAXIMUM PM10 = 116.7 µg/m3 DATE OF OCCURRENCE = 1/25 at 1300 MAXIMUM DAILY MEAN = 22.5 µg/m3 DATE OF OCCURRENCE = 1/12

SECOND MAXIMUM PM10 = 109.1 µg/m3 DATE OF OCCURRENCE = 1/24 at 1000 SECOND MAXIMUM DAILY MEAN = 10.0 µg/m3 DATE OF OCCURRENCE = 1/14

MINIMUM PM10 = 0.8 µg/m3 DATE OF OCCURRENCE = 1/28 at 1100 MINUMUM DAILY MEAN = 6.1 µg/m3 DATE OF OCCURRENCE = 1/28

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

Draft

CSX AQ6 Modulair

HOURLY AVERAGES of PM10 in µg/m3 for FEBRUARY, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	---	---	---	---	---	---	---	29.1	28.0	33.4	19.6	15.8	14.1	12.2	11.4	12.9	12.6	13.8	10.2	10.1	12.5	12.1	10.7	9.9	---	---	---
2	15.8	15.2	20.2	18.7	20.6	23.9	27.8	24.7	27.2	21.9	19.2	13.7	9.6	8.0	9.4	5.3	6.0	4.1	4.7	3.8	4.7	4.9	3.2	5.9	**13.3**	**27.8**	**3.2**
3	3.6	2.8	2.3	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
4	---	---	---	---	---	---	---	14.8	18.2	14.0	5.0	15.0	25.2	7.6	5.6	6.9	5.6	10.6	20.1	26.8	28.0	43.4	27.9	34.9	---	---	---
5	24.1	20.1	21.7	26.7	16.8	19.6	21.8	34.0	25.2	15.9	13.6	13.0	26.7	23.0	17.3	16.0	19.6	19.7	41.1	22.0	16.0	12.9	12.3	13.1	**20.5**	**41.1**	**12.3**
6	11.4	14.8	15.2	13.0	11.8	11.9	12.1	17.9	17.1	13.9	11.9	10.7	10.7	8.7	16.5	28.5	13.3	16.6	17.4	59.1	35.2	25.0	27.4	23.0	**18.5**	**59.1**	**8.7**
7	102.9	15.0	27.9	14.9	18.7	27.3	35.3	41.0	45.7	22.7	28.5	18.9	15.1	20.6	30.2	48.3	30.0	29.1	44.5	56.3	79.1	49.7	48.9	40.4	**37.1**	**102.9**	**14.9**
8	35.4	31.3	39.4	32.1	32.8	56.7	72.6	56.9	47.8	50.1	37.3	21.8	23.0	17.0	15.2	21.8	25.3	25.8	22.0	11.3	10.2	11.6	14.8	17.7	**30.4**	**72.6**	**10.2**
9	22.7	18.3	27.6	23.0	25.3	28.0	29.4	29.4	37.0	23.4	24.8	23.1	25.7	14.2	28.1	22.5	22.3	32.3	28.0	27.2	27.3	25.9	37.8	30.6	**26.4**	**37.8**	**14.2**
10	35.2	41.1	44.8	49.4	48.3	46.3	53.5	53.4	47.0	63.4	62.9	57.7	57.9	34.5	40.1	66.3	83.2	37.9	26.9	56.0	51.4	44.6	42.1	35.2	**49.1**	**83.2**	**26.9**
11	28.8	20.3	16.2	14.5	12.3	26.5	31.6	23.7	30.9	47.0	25.2	23.1	20.7	14.3	16.5	27.7	19.5	19.9	24.9	23.4	18.5	19.2	18.1	27.6	**22.9**	**47.0**	**12.3**
12	29.6	23.0	20.2	20.7	17.8	25.3	18.3	20.5	27.3	20.5	20.6	31.6	27.0	19.0	16.2	22.4	21.1	22.9	21.5	14.8	15.2	10.3	9.8	5.7	**20.1**	**31.6**	**5.7**
13	6.7	8.5	3.9	14.7	7.0	5.8	---	---	---	---	6.1	9.2	13.9	15.0	18.0	19.4	11.2	10.7	14.2	9.6	12.2	10.8	---	---	**10.9**	**19.4**	**3.9**
14	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
15	---	---	---	---	---	---	---	7.7	6.9	12.2	8.0	5.6	8.0	9.0	14.5	15.8	13.9	10.6	14.9	15.0	16.5	19.2	20.8	25.3	---	---	---
16	17.4	13.9	7.4	7.3	9.5	10.2	7.5	9.1	10.7	10.1	11.4	7.7	7.9	8.1	9.7	7.8	8.1	10.4	14.2	16.8	14.9	18.8	9.5	11.8	**10.8**	**18.8**	**7.3**
17	10.3	19.8	76.2	19.4	6.0	12.7	15.7	14.8	15.6	7.4	5.3	7.1	7.1	8.3	10.2	9.8	10.5	8.7	9.0	9.7	11.1	10.6	9.0	9.6	**13.5**	**76.2**	**5.3**
18	10.2	17.4	12.9	11.9	14.0	12.4	16.0	14.8	15.7	18.4	20.6	11.9	20.8	15.8	20.4	13.8	11.3	8.4	8.4	11.2	9.5	8.9	7.4	5.3	**13.2**	**20.8**	**5.3**
19	5.9	5.1	5.9	6.0	7.0	10.6	16.7	14.4	20.4	20.1	16.4	18.1	17.8	17.2	15.8	18.8	18.9	18.9	20.0	24.7	31.3	25.4	32.8	31.5	**17.5**	**32.8**	**5.1**
20	33.7	33.8	31.1	26.7	16.7	16.5	14.2	16.7	13.6	7.4	6.8	11.5	11.4	14.6	15.9	10.0	14.4	19.0	18.0	17.2	18.7	16.1	20.0	18.1	**17.6**	**33.8**	**6.8**
21	25.8	22.8	22.0	20.4	19.7	19.9	23.5	17.9	20.2	14.2	11.8	18.2	21.0	23.4	21.6	18.2	14.9	21.9	32.2	33.1	27.3	32.1	48.3	52.6	**24.3**	**52.6**	**11.8**
22	52.8	56.5	51.9	56.0	52.7	60.2	66.3	59.8	71.4	47.3	30.4	37.6	44.3	34.2	36.2	42.5	41.5	44.0	49.5	41.2	37.6	33.8	32.0	30.1	**46.2**	**71.4**	**30.1**
23	25.6	33.5	34.0	31.4	35.4	30.6	34.0	34.3	24.1	25.2	27.7	23.2	19.9	20.6	23.1	22.7	19.9	20.8	38.9	22.9	23.2	22.4	26.8	22.2	**26.8**	**38.9**	**19.9**
24	19.2	19.8	22.8	12.8	12.5	14.9	20.8	22.5	24.0	25.8	23.4	19.9	17.5	11.8	11.3	10.2	9.6	8.5	4.3	3.8	4.5	3.6	3.8	4.4	**13.8**	**25.8**	**3.6**
25	4.0	3.9	4.8	4.1	4.5	4.7	4.3	5.3	4.3	5.0	5.3	7.0	7.8	6.1	7.5	7.9	7.7	10.5	10.7	8.5	9.0	8.7	12.5	7.0	**6.7**	**12.5**	**3.9**
26	8.6	7.5	9.2	11.7	11.4	10.8	11.5	12.9	18.7	37.1	25.8	21.8	16.0	16.4	27.2	38.3	14.8	49.1	80.2	21.9	38.8	18.9	22.5	21.0	**23.0**	**80.2**	**7.5**
27	21.2	28.7	22.1	21.1	24.1	28.1	36.1	45.3	37.9	23.7	31.0	38.8	37.5	47.6	45.4	28.9	23.4	23.0	19.4	15.5	16.5	12.7	12.3	16.5	**27.4**	**47.6**	**12.3**
28	24.0	21.3	18.0	20.8	20.9	27.8	30.5	35.9	41.7	28.0	29.2	28.8	22.9	26.3	23.3	18.7	15.6	14.5	14.7	11.5	10.0	4.9	3.6	6.7	**20.8**	**41.7**	**3.6**
29	5.0	5.3	7.3	5.7	8.0	6.6	9.1	11.4	15.7	19.8	15.5	19.0	20.1	37.5	45.5	57.9	55.8	21.6	11.1	12.6	12.4	22.8	29.5	18.1	**19.7**	**57.9**	**5.0**
MEAN	**23.2**	**20.0**	**22.6**	**20.1**	**18.9**	**22.4**	**26.5**	**25.7**	**26.6**	**24.2**	**20.1**	**19.6**	**20.4**	**18.2**	**20.4**	**22.9**	**20.4**	**19.8**	**23.0**	**21.7**	**21.9**	**19.6**	**20.9**	**20.2**	**21.6**		
MAX	**102.9**	**56.5**	**76.2**	**56.0**	**52.7**	**60.2**	**72.6**	**59.8**	**71.4**	**63.4**	**62.9**	**57.7**	**57.9**	**47.6**	**45.5**	**66.3**	**83.2**	**49.1**	**80.2**	**59.1**	**79.1**	**49.7**	**48.9**	**52.6**		**102.9**	
MIN	**3.6**	**2.8**	**2.3**	**4.1**	**4.5**	**4.7**	**4.3**	**5.3**	**4.3**	**5.0**	**5.0**	**5.6**	**7.1**	**6.1**	**5.6**	**5.3**	**5.6**	**4.1**	**4.3**	**3.8**	**4.5**	**3.6**	**3.2**	**4.4**			**2.3**

POSSIBLE NUMBER OF OBSERVATIONS = 696 ACTUAL NUMBER OF OBSERVATIONS = 624 DATA RECOVERY RATE = 89.7% DATA CAPTURE RATE = 82.8%

MONTHLY MEAN = 21.6 µg/m3

MAXIMUM PM10 = 102.9 µg/m3 DATE OF OCCURRENCE = 2/7 at 100 MAXIMUM DAILY MEAN = 49.1 µg/m3 DATE OF OCCURRENCE = 2/10

SECOND MAXIMUM PM10 = 83.2 µg/m3 DATE OF OCCURRENCE = 2/10 at 1700 SECOND MAXIMUM DAILY MEAN = 46.2 µg/m3 DATE OF OCCURRENCE = 2/22

MINIMUM PM10 = 2.3 µg/m3 DATE OF OCCURRENCE = 2/3 at 300 MINUMUM DAILY MEAN = 6.7 µg/m3 DATE OF OCCURRENCE = 2/25

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

Draft

CSX AQ6 Modulair

HOURLY AVERAGES of PM10 in µg/m3 for MARCH, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	17.1	20.4	10.9	17.7	14.0	16.1	25.9	48.6	18.6	11.8	11.4	15.4	14.0	14.3	16.7	15.8	15.2	9.5	13.2	12.7	14.8	15.4	14.1	13.6	**16.6**	**48.6**	**9.5**
2	13.0	15.5	13.0	17.0	19.4	19.6	22.0	30.8	55.9	56.2	10.5	3.4	4.9	3.7	4.1	5.3	5.1	5.7	10.6	6.5	12.2	7.5	8.6	9.5	**15.0**	**56.2**	**3.4**
3	9.9	10.6	10.8	11.7	9.8	12.7	12.0	12.3	12.8	12.1	11.6	7.8	14.7	10.7	4.6	4.3	5.2	15.1	8.2	11.7	16.4	19.1	21.2	30.6	**12.3**	**30.6**	**4.3**
4	19.5	17.3	13.9	11.4	13.3	12.1	10.6	19.2	19.0	27.8	30.7	15.9	22.5	15.6	13.9	20.6	19.4	12.9	16.7	4.4	4.4	4.1	6.4	6.9	**14.9**	**30.7**	**4.1**
5	8.0	4.0	3.0	4.2	5.1	4.7	2.9	4.0	4.2	1.6	2.2	2.6	3.9	3.9	4.2	5.3	5.7	15.1	12.0	11.2	8.4	10.7	11.6	10.3	**6.2**	**15.1**	**1.6**
6	12.6	15.2	11.7	16.5	---	---	---	---	---	20.6	21.3	5.7	8.0	13.0	8.4	6.3	5.6	6.8	8.1	10.1	12.5	13.1	10.3	12.8	**11.5**	**21.3**	**5.6**
7	10.3	8.0	6.0	5.0	4.2	4.9	5.2	6.8	2.6	2.9	2.9	5.7	4.4	5.9	5.8	5.8	6.9	4.3	6.8	9.2	11.4	10.6	7.7	7.1	**6.3**	**11.4**	**2.6**
8	8.7	8.0	9.9	10.6	13.6	11.7	8.9	10.4	6.4	2.7	6.7	19.0	6.6	4.2	7.5	3.9	6.3	9.9	18.8	13.8	18.9	17.5	16.4	24.6	**11.0**	**24.6**	**2.7**
9	37.3	30.0	41.0	29.5	31.9	28.8	42.6	52.1	34.9	36.7	34.8	54.8	39.0	58.5	51.6	34.9	24.3	21.9	14.8	4.4	3.5	5.0	6.7	7.3	**30.3**	**58.5**	**3.5**
10	6.5	7.0	---	4.4	3.8	4.2	3.0	3.3	4.8	8.2	19.0	29.1	26.6	33.2	30.6	34.9	---	---	15.2	16.7	4.5	8.1	4.5	4.0	**12.9**	**34.9**	**3.0**
11	4.2	3.2	---	---	4.6	3.4	---	---	13.3	25.7	19.3	23.0	22.4	37.1	48.4	47.5	23.2	13.6	12.6	5.4	5.0	5.3	6.5	28.2	**17.6**	**48.4**	**3.2**
12	33.7	25.4	31.2	12.7	7.9	6.9	5.5	8.9	8.5	10.8	13.3	18.6	15.3	17.9	26.1	22.6	19.8	18.3	18.9	37.6	55.3	19.3	20.5	15.8	**19.6**	**55.3**	**5.5**
13	23.2	18.8	25.2	25.4	46.8	71.8	95.4	79.0	124.5	97.6	22.7	21.5	18.0	17.6	18.2	24.1	19.7	22.8	25.8	44.4	27.6	23.2	51.9	51.6	**41.5**	**124.5**	**17.6**
14	53.8	36.9	38.7	59.7	86.6	64.7	114.4	94.0	139.6	113.8	123.1	99.5	74.5	120.8	52.7	30.6	33.6	38.3	36.1	27.5	17.8	19.3	20.6	22.4	**63.3**	**139.6**	**17.8**
15	28.8	39.8	53.7	36.6	54.0	57.2	56.5	28.6	27.8	24.6	29.2	22.6	47.9	31.9	29.9	17.7	7.7	7.9	13.0	7.4	12.5	13.5	6.4	4.4	**27.5**	**57.2**	**4.4**
16	2.9	2.6	2.6	3.3	3.9	4.9	4.6	5.4	7.5	9.1	9.3	7.2	7.0	6.1	9.3	8.7	8.5	13.4	21.8	8.7	12.1	9.6	9.2	9.7	**7.8**	**21.8**	**2.6**
17	14.6	11.1	13.0	15.0	14.2	14.4	16.5	13.9	16.1	5.8	7.5	6.7	12.4	17.4	8.7	10.3	15.3	12.1	6.4	6.4	6.5	8.4	9.5	15.2	**11.6**	**17.4**	**5.8**
18	13.3	6.0	8.2	7.3	7.7	12.7	12.1	15.4	12.9	19.3	35.6	44.3	34.5	23.8	36.6	32.4	31.8	---	---	22.3	---	9.5	9.2	8.9	**19.2**	**44.3**	**6.0**
19	8.3	10.0	8.9	6.6	7.9	8.6	8.6	16.4	---	14.9	---	17.8	14.7	---	---	---	22.5	26.0	18.1	11.8	16.4	18.9	25.4	13.5	**14.5**	**26.0**	**6.6**
20	14.0	13.0	10.1	10.4	11.9	16.2	19.4	31.9	21.4	32.7	46.2	54.5	47.8	44.8	48.8	---	43.1	52.9	---	---	22.9	14.4	11.4	9.4	**27.5**	**54.5**	**9.4**
21	8.5	6.2	5.0	5.1	6.8	6.5	7.9	6.4	8.2	10.2	12.4	10.4	12.4	13.6	12.6	10.6	11.5	11.5	9.6	15.0	33.6	23.8	29.4	---	**12.1**	**33.6**	**5.0**
22	10.5	13.3	8.8	6.6	10.5	8.5	9.8	13.0	9.9	7.9	9.8	17.6	11.5	12.8	19.9	11.9	12.8	19.9	19.2	16.0	15.8	17.0	15.8	24.5	**13.5**	**24.5**	**6.6**
23	31.2	32.9	23.7	15.5	11.2	14.1	9.8	8.2	10.6	16.3	16.7	12.6	3.6	3.0	7.6	4.5	6.6	---	---	14.3	10.9	11.5	9.2	6.5	**12.8**	**32.9**	**3.0**
24	5.3	3.7	3.3	3.8	4.1	4.8	5.7	5.8	3.9	3.3	3.7	4.9	3.5	4.9	5.4	6.3	6.1	7.4	6.0	6.1	8.4	9.8	11.5	12.1	**5.8**	**12.1**	**3.3**
25	50.0	44.9	15.7	28.0	15.5	9.9	7.1	6.7	8.3	7.2	6.2	6.4	6.5	7.7	10.6	15.9	23.8	16.3	26.8	17.4	13.2	27.0	24.4	25.0	**17.5**	**50.0**	**6.2**
26	38.4	64.3	62.6	49.6	52.5	34.3	26.2	16.9	11.0	14.7	16.6	17.9	20.1	18.5	15.6	18.0	19.4	21.7	25.0	35.9	43.2	29.4	27.1	29.1	**29.5**	**64.3**	**11.0**
27	26.5	24.1	26.3	24.9	26.9	28.1	26.1	26.9	31.6	30.3	18.6	20.2	11.0	8.8	20.2	11.9	5.4	5.5	13.1	13.5	14.1	16.9	21.3	26.5	**19.9**	**31.6**	**5.4**
28	17.4	9.0	9.4	9.2	5.4	5.7	6.6	12.7	15.2	15.7	18.5	18.7	18.0	16.5	14.8	13.7	12.6	11.3	8.3	11.3	11.0	10.5	11.4	12.7	**12.3**	**18.7**	**5.4**
29	11.4	8.9	9.0	8.4	7.0	8.3	9.1	12.0	12.7	15.6	22.8	30.9	26.6	23.4	21.9	22.3	19.7	16.5	9.8	7.9	7.8	7.6	9.5	7.6	**14.0**	**30.9**	**7.0**
30	7.6	7.4	5.5	5.7	5.5	6.7	7.7	12.2	13.0	14.1	13.5	13.6	14.6	20.9	18.2	11.4	14.7	12.3	11.3	17.4	18.7	21.5	23.0	29.1	**13.6**	**29.1**	**5.5**
31	30.1	23.7	18.7	17.7	17.6	17.8	17.9	21.1	25.0	21.4	14.7	6.5	6.9	5.7	5.5	4.6	4.0	5.1	6.5	8.9	11.2	13.3	22.8	9.5	**14.0**	**30.1**	**4.0**
MEAN	**18.6**	**17.5**	**17.2**	**16.0**	**17.5**	**17.3**	**20.7**	**21.5**	**23.5**	**22.3**	**20.4**	**20.5**	**18.5**	**20.5**	**19.3**	**15.9**	**15.2**	**15.5**	**14.7**	**14.5**	**15.7**	**14.2**	**15.6**	**16.3**	**17.9**		
MAX	**53.8**	**64.3**	**62.6**	**59.7**	**86.6**	**71.8**	**114.4**	**94.0**	**139.6**	**113.8**	**123.1**	**99.5**	**74.5**	**120.8**	**52.7**	**47.5**	**43.1**	**52.9**	**36.1**	**44.4**	**55.3**	**29.4**	**51.9**	**51.6**		**139.6**	
MIN	**2.9**	**2.6**	**2.6**	**3.3**	**3.8**	**3.4**	**2.9**	**3.3**	**2.6**	**1.6**	**2.2**	**2.6**	**3.5**	**3.0**	**4.1**	**3.9**	**4.0**	**4.3**	**6.0**	**4.4**	**3.5**	**4.1**	**4.5**	**4.0**			**1.6**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 718 DATA RECOVERY RATE = 96.5% DATA CAPTURE RATE = 100.0%

MONTHLY MEAN = 17.9 µg/m3

MAXIMUM PM10 = 139.6 µg/m3 DATE OF OCCURRENCE = 3/14 at 900 MAXIMUM DAILY MEAN = 63.3 µg/m3 DATE OF OCCURRENCE = 3/14

SECOND MAXIMUM PM10 = 124.5 µg/m3 DATE OF OCCURRENCE = 3/13 at 900 SECOND MAXIMUM DAILY MEAN = 41.5 µg/m3 DATE OF OCCURRENCE = 3/13

MINIMUM PM10 = 1.6 µg/m3 DATE OF OCCURRENCE = 3/5 at 1000 MINUMUM DAILY MEAN = 5.8 µg/m3 DATE OF OCCURRENCE = 3/24

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

UNDERLINED DATA ARE SUSPECT

Draft

CSX AQ6 Modulair

HOURLY AVERAGES of PM2.5 in µg/m3 for JANUARY, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	8.3	10.4	12.5	---	---	---	---	14.1	13.0	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
2	---	---	---	---	---	---	---	6.0	6.1	3.5	4.7	5.2	7.3	9.6	9.7	10.2	9.0	9.0	11.0	10.5	8.9	---	---	---	**---**	**---**	**---**
3	---	---	---	---	---	---	---	7.3	9.5	11.4	14.5	10.6	10.1	9.1	4.8	8.4	8.5	7.0	9.5	11.4	11.5	11.9	11.2	---	**---**	**---**	**---**
4	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
5	---	---	---	---	---	---	---	9.7	7.6	7.5	6.5	7.5	9.5	10.5	10.3	8.1	8.4	5.9	5.7	8.3	9.0	11.5	10.8	11.9	**---**	**---**	**---**
6	9.4	9.7	12.6	13.4	---	---	---	---	9.4	10.4	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
7	---	---	---	---	---	---	---	---	11.0	12.3	14.9	9.4	6.4	5.3	4.7	3.9	4.0	3.8	4.0	3.9	3.9	---	---	---	**---**	**---**	**---**
8	---	---	---	---	---	---	---	8.2	9.8	11.2	7.1	7.5	7.6	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
9	---	---	---	---	---	---	---	---	6.2	6.1	6.6	8.0	8.7	10.9	11.4	15.5	14.9	11.8	10.5	---	---	---	---	---	**---**	**---**	**---**
10	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
11	---	---	---	---	---	---	---	7.1	8.3	6.3	4.3	3.2	2.9	2.4	2.7	3.6	5.1	6.6	8.8	10.1	10.6	10.7	8.3	9.6	**---**	**---**	**---**
12	10.2	10.2	7.5	7.7	8.3	9.2	9.2	13.3	17.4	11.4	8.3	7.9	8.5	8.6	9.2	10.4	8.4	8.7	9.2	8.0	9.6	11.4	---	---	**9.6**	**17.4**	**7.5**
13	---	---	---	---	---	---	---	---	4.5	4.1	3.7	3.5	3.4	4.2	4.0	3.8	3.4	3.8	4.1	3.5	3.3	3.5	3.7	4.0	**---**	**---**	**---**
14	3.7	4.1	3.3	2.8	---	---	---	1.9	2.2	2.9	4.7	6.1	5.8	5.3	3.8	3.7	3.3	3.6	2.8	3.2	2.7	2.8	3.9	4.4	**3.6**	**6.1**	**1.9**
15	5.0	2.8	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
16	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
17	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
18	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
19	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
20	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
21	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
22	---	---	---	---	---	---	---	8.9	17.0	16.6	12.6	7.4	9.8	10.7	10.2	9.5	10.3	8.0	9.6	10.9	11.8	12.2	14.9	15.2	**---**	**---**	**---**
23	14.4	13.4	13.7	14.1	13.3	12.1	13.5	---	---	---	---	25.6	13.0	12.5	11.4	14.2	9.1	9.8	12.2	15.0	18.1	---	---	---	**---**	**---**	**---**
24	---	---	---	---	---	---	---	14.3	16.8	26.9	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
25	---	---	---	---	---	---	---	23.6	26.3	32.3	39.7	38.7	44.8	35.7	32.6	32.2	17.6	29.7	13.1	23.1	44.2	30.9	20.1	---	**---**	**---**	**---**
26	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
27	---	---	---	---	---	---	---	3.4	4.4	7.1	10.0	8.8	7.4	4.2	4.3	7.6	7.3	6.6	6.8	7.1	8.5	7.6	6.5	10.4	**---**	**---**	**---**
28	9.1	8.4	7.3	5.5	3.8	2.7	1.1	0.3	0.9	0.4	0.5	0.6	0.7	0.9	0.8	0.7	0.8	1.5	1.4	2.5	4.3	4.6	4.5	5.4	**2.8**	**9.1**	**0.3**
29	7.5	5.7	4.1	3.4	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
30	---	---	---	---	---	---	---	2.5	3.2	3.8	3.2	3.8	5.5	7.1	6.1	4.9	5.2	7.5	5.3	5.1	5.8	5.7	5.0	4.3	**---**	**---**	**---**
31	4.0	2.8	3.0	3.7	3.8	3.5	3.2	3.0	3.5	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
MEAN	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**8.8**		
MAX	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**		**44.8**	
MIN	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**			**0.3**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 290 DATA RECOVERY RATE = 39.0% DATA CAPTURE RATE = 9.7%

MONTHLY MEAN = 8.8 µg/m3

MAXIMUM PM2.5 = 44.8 µg/m3 DATE OF OCCURRENCE = 1/25 at 1300 MAXIMUM DAILY MEAN = 9.6 µg/m3 DATE OF OCCURRENCE = 1/12

SECOND MAXIMUM PM2.5 = 44.2 µg/m3 DATE OF OCCURRENCE = 1/25 at 2100 SECOND MAXIMUM DAILY MEAN = 3.6 µg/m3 DATE OF OCCURRENCE = 1/14

MINIMUM PM2.5 = 0.3 µg/m3 DATE OF OCCURRENCE = 1/28 at 800 MINUMUM DAILY MEAN = 2.8 µg/m3 DATE OF OCCURRENCE = 1/28

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

Draft

CSX AQ6 Modulair

HOURLY AVERAGES of PM2.5 in µg/m3 for FEBRUARY, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	---	---	---	---	---	---	---	9.1	14.0	17.8	14.6	10.6	8.4	8.5	9.0	8.1	7.5	6.4	6.5	7.2	8.8	8.7	7.3	7.2	---	---	---
2	8.3	10.0	10.5	9.5	8.6	11.5	14.4	14.2	14.8	14.3	15.8	12.1	7.2	4.5	5.3	3.0	2.4	2.1	2.3	2.1	1.7	1.8	1.9	1.8	**7.5**	**15.8**	**1.7**
3	1.6	1.5	1.7	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
4	---	---	---	---	---	---	---	6.8	10.9	7.0	3.1	2.8	4.7	4.6	4.0	3.6	2.6	4.2	7.9	10.3	10.0	12.8	13.3	16.6	---	---	---
5	14.2	12.0	12.6	12.5	10.4	12.3	10.3	10.3	9.2	8.1	7.3	5.2	6.8	6.9	6.8	6.1	4.4	7.3	10.0	11.9	9.2	8.8	7.7	7.5	**9.0**	**14.2**	**4.4**
6	5.9	6.9	7.2	6.7	5.4	5.1	5.5	6.2	7.3	5.8	3.7	3.8	3.5	3.2	3.6	3.6	3.3	3.4	5.6	9.4	8.5	8.8	11.0	9.4	**5.9**	**11.0**	**3.2**
7	14.3	8.3	8.9	8.1	8.4	8.1	8.9	9.2	11.4	9.4	10.0	6.7	5.2	5.7	4.5	6.5	5.1	6.9	10.6	14.3	16.5	15.5	15.8	13.6	**9.6**	**16.5**	**4.5**
8	13.2	12.4	12.8	12.1	13.8	19.1	18.5	14.5	12.4	16.8	11.6	9.1	8.9	6.0	5.9	7.5	7.0	7.3	5.4	5.0	4.8	5.5	6.6	6.2	**10.1**	**19.1**	**4.8**
9	6.4	5.9	5.6	5.6	7.0	7.5	11.5	7.8	9.9	8.6	10.5	10.8	6.3	6.2	7.3	8.3	8.6	14.4	16.9	17.2	18.5	17.6	19.8	19.2	**10.7**	**19.8**	**5.6**
10	22.0	23.5	22.8	25.2	26.6	24.8	24.2	22.9	26.9	32.8	34.7	34.6	26.6	18.5	22.7	23.1	23.4	20.6	18.6	20.9	22.3	22.6	22.1	21.1	**24.3**	**34.7**	**18.5**
11	20.4	15.7	12.8	11.6	9.6	17.9	19.6	18.2	16.8	22.8	18.4	17.1	17.1	10.0	11.8	13.8	12.7	14.1	15.3	14.1	14.5	14.6	12.9	13.3	**15.2**	**22.8**	**9.6**
12	13.0	13.2	14.0	14.1	14.1	16.0	11.7	10.5	13.9	9.1	8.0	11.6	13.1	11.1	10.5	14.8	11.9	11.0	11.5	12.0	13.1	8.8	9.2	4.5	**11.6**	**16.0**	**4.5**
13	3.6	2.8	1.9	1.9	1.4	1.2	---	---	---	---	4.1	6.8	12.5	12.4	13.1	10.5	9.0	8.5	9.3	7.7	7.9	7.2	---	---	**6.7**	**13.1**	**1.2**
14	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
15	---	---	---	---	---	---	---	4.9	3.8	2.8	3.9	4.8	3.6	3.9	5.1	4.8	4.1	3.3	3.9	4.8	5.2	8.2	8.8	9.3	---	---	---
16	8.1	6.3	3.8	4.9	4.9	4.4	4.8	4.6	5.4	4.6	4.9	4.6	5.0	5.0	5.3	5.1	4.5	7.1	5.5	4.5	4.5	4.7	4.6	4.7	**5.0**	**8.1**	**3.8**
17	4.7	3.4	3.8	3.9	4.7	7.5	9.9	9.0	9.8	5.8	4.2	5.7	5.6	6.6	7.9	7.7	7.3	6.8	6.7	7.5	6.1	7.5	6.2	6.4	**6.4**	**9.9**	**3.4**
18	7.0	6.8	7.9	7.0	6.9	7.1	7.6	7.6	9.2	10.1	8.9	5.8	6.7	6.6	5.8	4.7	3.4	3.0	3.2	5.0	4.4	3.6	2.4	2.1	**5.9**	**10.1**	**2.1**
19	2.1	2.4	2.5	3.0	4.0	4.9	7.0	8.3	11.7	14.7	13.5	13.8	13.7	13.6	13.0	13.8	13.8	11.4	12.8	12.4	15.0	13.3	17.0	18.6	**10.6**	**18.6**	**2.1**
20	18.3	17.8	16.3	15.6	11.2	10.4	7.2	5.8	5.6	3.0	2.8	3.2	3.4	4.2	5.1	6.3	3.8	4.8	6.2	6.4	4.4	5.1	3.3	3.1	**7.2**	**18.3**	**2.8**
21	3.4	3.0	3.8	2.9	3.2	3.6	3.6	4.3	7.3	4.0	2.9	3.0	3.1	3.9	4.7	4.0	2.7	4.0	5.9	4.5	3.9	4.5	5.2	5.6	**4.0**	**7.3**	**2.7**
22	5.7	6.1	9.2	8.9	6.7	6.7	9.1	13.5	11.6	6.2	5.2	5.9	6.2	5.3	4.9	5.8	7.6	7.6	8.2	8.4	7.9	6.8	12.4	15.2	**7.9**	**15.2**	**4.9**
23	11.8	13.2	13.6	12.9	12.6	13.1	14.5	16.0	16.8	19.6	21.9	21.2	18.2	18.3	20.2	20.0	16.8	15.7	18.4	18.2	17.8	17.8	20.0	15.7	**16.8**	**21.9**	**11.8**
24	13.1	15.1	17.1	11.4	11.9	14.2	19.1	20.1	21.4	23.1	20.7	17.9	14.7	10.3	9.1	7.6	6.7	4.8	2.3	2.4	2.6	2.1	2.3	2.9	**11.3**	**23.1**	**2.1**
25	2.9	2.2	2.5	2.3	2.3	2.3	2.2	2.6	2.4	3.1	3.2	3.0	4.0	5.4	6.7	6.7	6.4	3.8	3.4	3.4	3.1	2.7	3.3	2.7	**3.4**	**6.7**	**2.2**
26	3.3	3.5	3.9	3.8	4.8	5.4	5.3	7.5	9.8	18.9	12.5	7.0	6.5	7.1	5.0	6.7	5.9	8.1	14.5	12.9	16.1	12.3	13.2	13.6	**8.6**	**18.9**	**3.3**
27	13.4	14.5	13.3	13.6	14.0	14.3	15.3	19.1	25.5	18.1	21.6	21.5	21.4	22.9	15.8	11.9	11.6	13.4	11.6	11.2	10.6	9.6	8.4	8.9	**15.0**	**25.5**	**8.4**
28	10.1	12.3	10.3	12.3	12.7	12.8	12.1	15.9	16.8	14.3	15.5	14.8	15.1	17.4	15.3	12.5	9.4	7.0	8.1	8.1	7.4	2.9	1.7	2.9	**11.1**	**17.4**	**1.7**
29	3.4	3.2	3.5	3.3	4.0	4.3	4.3	4.3	6.3	7.7	7.8	8.8	8.4	10.0	9.9	10.4	9.2	4.8	3.6	6.2	4.5	6.0	6.2	6.9	**6.1**	**10.4**	**3.2**
MEAN	**9.2**	**8.9**	**8.9**	**8.9**	**8.7**	**9.8**	**10.7**	**10.5**	**12.0**	**11.9**	**10.8**	**10.1**	**9.5**	**8.8**	**8.8**	**8.8**	**7.8**	**7.8**	**8.7**	**9.2**	**9.2**	**8.9**	**9.3**	**9.2**	**9.4**		
MAX	**22.0**	**23.5**	**22.8**	**25.2**	**26.6**	**24.8**	**24.2**	**22.9**	**26.9**	**32.8**	**34.7**	**34.6**	**26.6**	**22.9**	**22.7**	**23.1**	**23.4**	**20.6**	**18.6**	**20.9**	**22.3**	**22.6**	**22.1**	**21.1**		**34.7**	
MIN	**1.6**	**1.5**	**1.7**	**1.9**	**1.4**	**1.2**	**2.2**	**2.6**	**2.4**	**2.8**	**2.8**	**2.8**	**3.1**	**3.2**	**3.6**	**3.0**	**2.4**	**2.1**	**2.3**	**2.1**	**1.7**	**1.8**	**1.7**	**1.8**			**1.2**

POSSIBLE NUMBER OF OBSERVATIONS = 696 ACTUAL NUMBER OF OBSERVATIONS = 624 DATA RECOVERY RATE = 89.7% DATA CAPTURE RATE = 82.8%

MONTHLY MEAN = 9.4 µg/m3

MAXIMUM PM2.5 = 34.7 µg/m3 DATE OF OCCURRENCE = 2/10 at 1100 MAXIMUM DAILY MEAN = 24.3 µg/m3 DATE OF OCCURRENCE = 2/10

SECOND MAXIMUM PM2.5 = 34.6 µg/m3 DATE OF OCCURRENCE = 2/10 at 1200 SECOND MAXIMUM DAILY MEAN = 16.8 µg/m3 DATE OF OCCURRENCE = 2/23

MINIMUM PM2.5 = 1.2 µg/m3 DATE OF OCCURRENCE = 2/13 at 600 MINUMUM DAILY MEAN = 3.4 µg/m3 DATE OF OCCURRENCE = 2/25

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

Draft

CSX AQ6 Modulair

HOURLY AVERAGES of PM2.5 in µg/m3 for MARCH, 2024

Hr Beg Hr End Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	6.9	7.5	5.6	6.4	6.6	7.2	9.6	16.4	10.2	6.2	8.2	11.8	11.3	8.7	7.4	5.7	4.5	3.1	3.5	3.8	4.3	5.3	6.3	4.9	**7.1**	**16.4**	**3.1**
2	5.4	5.4	5.4	5.4	6.0	6.7	6.8	7.1	7.1	5.4	3.2	2.0	2.9	2.7	2.5	4.2	4.1	4.6	5.2	4.2	7.8	5.9	6.7	6.8	**5.1**	**7.8**	**2.0**
3	7.4	7.9	8.5	8.9	6.8	8.7	8.7	10.1	10.6	9.4	8.0	5.7	12.9	9.1	2.4	2.5	3.7	7.0	4.6	6.2	7.9	10.2	8.2	10.3	**7.7**	**12.9**	**2.4**
4	11.4	13.3	11.2	9.7	10.0	9.4	8.7	9.1	7.4	9.2	10.0	4.0	4.5	3.5	3.6	3.0	2.2	1.5	1.6	1.5	1.7	1.4	1.5	1.7	**5.8**	**13.3**	**1.4**
5	2.3	1.9	1.8	1.8	2.2	2.1	2.0	2.2	3.0	1.3	1.1	1.9	2.8	2.2	2.4	4.0	2.8	5.3	4.3	4.3	4.1	5.6	5.6	5.4	**3.0**	**5.6**	**1.1**
6	7.6	9.2	4.4	4.8	7.5	22.4	24.5	20.0	11.1	5.8	6.1	4.4	5.2	3.9	3.2	3.1	3.2	4.9	6.4	7.9	10.1	9.7	7.8	8.2	**8.3**	**24.5**	**3.1**
7	8.2	6.1	4.4	3.1	2.8	3.1	3.2	3.4	1.1	0.8	0.6	1.0	1.3	1.6	1.7	1.5	1.4	1.2	1.8	2.6	3.1	3.5	3.1	3.8	**2.6**	**8.2**	**0.6**
8	4.1	4.2	4.3	4.3	4.9	5.0	4.8	5.8	3.5	1.2	1.2	2.2	1.4	1.7	1.9	2.5	2.1	2.0	3.5	2.6	4.0	4.3	4.5	4.8	**3.3**	**5.8**	**1.2**
9	5.0	4.6	6.0	6.2	8.4	8.9	8.8	9.3	11.5	11.7	13.3	12.7	13.5	15.3	14.8	12.6	11.6	5.8	3.5	1.4	1.5	3.4	4.8	5.5	**8.3**	**15.3**	**1.4**
10	5.4	5.7	---	3.4	2.7	2.5	1.7	2.0	3.1	5.2	7.5	7.5	5.7	6.0	4.8	5.7	---	5.1	2.7	2.7	1.5	2.1	1.9	1.9	**3.9**	**7.5**	**1.5**
11	2.1	1.9	---	---	2.4	2.0	---	---	3.1	3.4	3.4	2.7	3.0	4.9	6.0	5.6	4.2	3.1	3.1	2.1	2.0	2.1	2.0	3.7	**3.1**	**6.0**	**1.9**
12	4.0	4.1	5.2	3.2	2.2	1.8	2.2	2.6	3.3	5.0	6.3	7.8	8.4	8.5	9.4	9.0	8.6	8.0	7.5	9.5	12.8	8.7	8.0	7.5	**6.3**	**12.8**	**1.8**
13	7.6	7.3	8.8	9.5	11.3	12.2	12.8	13.2	18.8	23.2	12.7	12.4	10.9	10.0	9.6	9.8	10.5	9.9	10.6	14.1	12.5	13.0	15.5	17.1	**12.2**	**23.2**	**7.3**
14	18.4	18.9	17.2	20.0	20.6	19.3	21.2	17.9	24.4	26.0	33.0	31.6	25.9	16.9	10.7	7.5	7.9	6.5	7.5	7.9	8.2	8.8	9.9	13.4	**16.6**	**33.0**	**6.5**
15	16.1	19.7	21.8	19.1	17.1	17.3	17.6	13.6	12.5	13.2	13.8	9.9	6.9	4.2	4.9	3.9	3.2	4.3	5.6	5.7	6.0	6.7	3.3	2.4	**10.3**	**21.8**	**2.4**
16	1.6	1.5	1.8	2.4	2.7	3.3	2.9	3.7	6.0	7.1	7.2	5.7	5.5	4.4	4.9	5.1	5.1	6.0	4.8	4.7	4.0	4.1	3.9	4.5	**4.2**	**7.2**	**1.5**
17	5.7	5.5	6.4	7.2	7.1	6.8	6.9	7.6	9.2	3.9	4.5	4.6	5.2	5.3	5.1	4.6	4.8	3.7	3.3	3.0	3.4	3.8	4.7	4.4	**5.2**	**9.2**	**3.0**
18	3.7	4.1	4.4	4.3	4.5	6.1	5.8	6.6	5.9	5.3	6.8	8.0	7.8	7.2	8.3	7.5	8.6	---	---	6.8	---	5.7	5.7	5.8	**6.1**	**8.6**	**3.7**
19	5.1	5.7	5.8	4.2	4.6	4.8	4.4	7.1	---	6.8	---	6.2	4.6	5.7	---	---	5.6	5.3	4.5	3.7	3.5	4.7	5.6	4.9	**5.1**	**7.1**	**3.5**
20	5.7	5.3	4.6	4.1	3.8	3.9	4.2	6.3	5.5	6.7	9.0	9.4	9.2	8.9	8.1	8.6	9.7	10.0	---	---	6.2	4.4	4.2	4.2	**6.4**	**10.0**	**3.8**
21	4.2	3.4	2.9	2.7	3.3	2.9	3.1	2.7	3.3	3.1	2.7	2.4	2.9	4.2	3.3	3.7	4.1	3.6	3.7	4.0	6.3	5.1	7.4	---	**3.6**	**7.4**	**2.4**
22	5.3	4.6	3.7	2.8	3.7	3.2	3.4	3.7	4.2	4.3	4.6	5.5	8.4	7.6	5.3	6.7	6.8	6.1	6.6	5.6	6.2	8.0	7.2	6.1	**5.3**	**8.4**	**2.8**
23	5.7	5.8	5.4	5.7	5.9	6.3	5.6	4.4	4.5	5.5	4.9	3.3	1.3	1.7	6.8	3.7	5.8	---	---	12.9	9.9	9.8	7.5	4.6	**5.7**	**12.9**	**1.3**
24	3.9	3.0	2.6	2.9	3.0	2.9	3.1	3.2	2.6	2.3	2.7	3.3	3.2	3.7	3.8	4.6	4.9	6.1	4.1	4.6	5.2	6.2	7.1	7.6	**4.0**	**7.6**	**2.3**
25	10.1	10.6	5.4	6.0	5.9	5.1	4.7	4.9	5.4	4.1	3.1	3.5	3.6	3.9	4.2	6.7	7.0	6.8	6.8	7.2	5.4	6.0	4.7	6.0	**5.7**	**10.6**	**3.1**
26	7.1	8.4	9.4	8.7	9.4	6.3	5.7	3.4	3.8	3.5	3.8	5.2	5.3	7.3	6.4	7.9	8.6	7.9	8.6	7.4	8.8	7.5	10.1	11.1	**7.1**	**11.1**	**3.4**
27	9.2	7.1	7.6	7.0	8.3	8.0	7.6	9.2	7.9	7.2	6.8	6.8	3.9	4.5	3.7	4.7	3.4	2.3	5.1	3.1	7.0	3.8	6.3	4.3	**6.0**	**9.2**	**2.3**
28	4.7	4.2	4.5	5.2	4.2	4.1	5.3	10.7	13.7	13.8	14.2	15.4	15.1	13.4	12.1	10.3	9.8	6.9	5.8	6.3	6.9	6.7	8.0	8.7	**8.7**	**15.4**	**4.1**
29	7.5	5.9	6.4	5.5	4.9	4.7	5.1	6.2	7.8	10.7	17.7	21.1	21.3	18.0	13.1	8.1	7.1	5.9	4.5	3.9	3.6	4.1	3.9	3.9	**8.3**	**21.3**	**3.6**
30	3.6	3.6	3.1	2.9	3.1	3.3	4.4	5.1	6.9	8.7	10.1	10.2	9.9	11.5	11.0	6.6	9.2	7.3	5.9	8.4	10.3	11.4	10.3	14.5	**7.5**	**14.5**	**2.9**
31	16.1	15.9	14.5	15.0	14.9	15.3	14.8	18.5	23.0	19.7	13.0	5.6	6.2	5.4	4.7	4.0	2.6	3.2	4.8	6.4	9.4	9.8	12.0	8.1	**10.9**	**23.0**	**2.6**
MEAN	**6.8**	**6.8**	**6.7**	**6.4**	**6.5**	**7.0**	**7.3**	**7.9**	**8.0**	**7.7**	**8.0**	**7.5**	**7.4**	**6.8**	**6.2**	**5.8**	**5.8**	**5.3**	**5.0**	**5.5**	**6.1**	**6.2**	**6.4**	**6.5**	**6.7**		
MAX	**18.4**	**19.7**	**21.8**	**20.0**	**20.6**	**22.4**	**24.5**	**20.0**	**24.4**	**26.0**	**33.0**	**31.6**	**25.9**	**18.0**	**14.8**	**12.6**	**11.6**	**10.0**	**10.6**	**14.1**	**12.8**	**13.0**	**15.5**	**17.1**		**33.0**	
MIN	**1.6**	**1.5**	**1.8**	**1.8**	**2.2**	**1.8**	**1.7**	**2.0**	**1.1**	**0.8**	**0.6**	**1.0**	**1.3**	**1.6**	**1.7**	**1.5**	**1.4**	**1.2**	**1.6**	**1.4**	**1.5**	**1.4**	**1.5**	**1.7**			**0.6**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 726 DATA RECOVERY RATE = 97.6% DATA CAPTURE RATE = 100.0%

MONTHLY MEAN = 6.7 µg/m3

MAXIMUM PM2.5 = 33.0 µg/m3 DATE OF OCCURRENCE = 3/14 at 1100 MAXIMUM DAILY MEAN = 16.6 µg/m3 DATE OF OCCURRENCE = 3/14

SECOND MAXIMUM PM2.5 = 31.6 µg/m3 DATE OF OCCURRENCE = 3/14 at 1200 SECOND MAXIMUM DAILY MEAN = 12.2 µg/m3 DATE OF OCCURRENCE = 3/13

MINIMUM PM2.5 = 0.6 µg/m3 DATE OF OCCURRENCE = 3/7 at 1100 MINUMUM DAILY MEAN = 2.6 µg/m3 DATE OF OCCURRENCE = 3/7

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

UNDERLINED DATA ARE SUSPECT

Draft

CSX AQ7 Modulair

HOURLY AVERAGES of PM10 in µg/m3 for JANUARY, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	13.3	13.8	24.2	18.4	14.2	22.6	26.1	9.3	9.8	28.7	22.8	19.3	21.1	17.3	17.7	14.6	20.0	16.9	10.5	10.3	16.3	14.0	8.5	13.2	**16.8**	**28.7**	**8.5**
2	16.5	17.3	15.5	11.6	16.1	13.8	17.7	13.6	15.7	17.8	26.1	29.6	26.8	58.7	36.4	18.9	43.6	23.1	22.2	8.6	15.0	12.7	27.3	9.5	**21.4**	**58.7**	**8.6**
3	5.8	4.5	7.3	4.4	6.7	12.1	21.8	25.5	26.5	37.2	21.5	17.0	13.9	15.3	13.4	26.6	24.0	15.4	13.9	18.0	17.4	14.6	8.7	8.2	**15.8**	**37.2**	**4.4**
4	14.4	12.6	12.8	15.8	16.7	14.5	16.1	35.0	21.4	25.5	27.7	19.6	15.4	15.3	16.7	13.7	7.3	6.6	5.8	6.4	5.3	6.9	7.5	6.6	**14.4**	**35.0**	**5.3**
5	8.3	6.4	6.3	7.4	7.0	8.7	9.5	33.1	36.3	18.3	11.4	15.1	14.5	18.9	16.6	16.7	37.2	38.1	16.6	14.6	19.8	25.5	23.1	19.2	**17.9**	**38.1**	**6.3**
6	17.4	15.9	14.5	9.7	26.0	26.6	15.9	12.9	18.1	20.7	23.9	15.4	16.4	23.6	31.2	27.2	29.6	20.9	---	---	---	---	---	---	**20.3**	**31.2**	**9.7**
7	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
8	---	---	---	---	---	---	---	9.4	34.0	19.6	54.8	54.2	21.0	24.6	12.2	10.0	10.1	27.1	22.6	24.9	26.1	27.7	23.0	18.0	**---**	**---**	**---**
9	30.6	54.2	29.1	74.9	21.9	19.2	16.9	16.7	14.9	30.3	52.3	71.7	67.9	67.0	100.4	158.8	104.0	68.9	102.9	104.8	111.4	68.1	21.7	31.6	**60.0**	**158.8**	**14.9**
10	10.1	4.6	6.1	6.4	7.0	6.7	6.8	7.3	7.6	10.5	15.4	8.4	3.4	8.5	9.7	12.9	5.8	5.1	4.2	4.7	5.4	3.5	3.8	2.1	**6.9**	**15.4**	**2.1**
11	3.0	2.8	3.4	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
12	---	---	---	---	---	---	---	36.2	21.4	14.9	11.0	10.7	16.0	13.2	25.8	34.6	11.2	12.7	18.6	32.9	58.3	69.9	50.9	19.0	**---**	**---**	**---**
13	22.2	22.6	---	---	3.7	2.0	2.6	4.1	5.5	6.7	19.0	26.1	---	51.7	51.6	22.6	16.3	18.2	9.8	21.2	13.2	30.5	26.2	19.7	**18.8**	**51.7**	**2.0**
14	23.9	3.8	2.7	3.2	3.3	4.1	4.0	3.3	3.8	6.6	12.7	20.8	13.4	25.3	---	30.0	29.0	77.8	23.3	8.1	10.9	12.0	8.2	12.2	**14.9**	**77.8**	**2.7**
15	27.0	10.0	5.2	11.9	16.5	5.9	8.2	7.4	6.5	6.1	8.8	10.6	12.7	7.9	12.3	9.7	10.6	9.6	13.6	9.4	12.8	9.7	---	---	**10.6**	**27.0**	**5.2**
16	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
17	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
18	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
19	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
20	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
21	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
22	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
23	---	---	---	---	---	---	---	35.5	64.4	59.9	64.2	79.2	39.5	38.1	45.9	36.6	---	---	---	---	---	---	---	---	**---**	**---**	**---**
24	---	---	---	---	---	---	---	---	38.2	75.9	61.2	30.3	38.9	43.6	42.2	52.5	46.0	30.1	21.5	24.1	30.1	30.3	29.8	28.2	**---**	**---**	**---**
25	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
26	---	---	---	---	---	---	---	---	---	---	47.4	27.8	16.5	19.8	7.4	21.1	20.0	14.7	19.1	---	---	---	---	---	**---**	**---**	**---**
27	---	---	---	---	---	---	---	8.9	8.4	21.6	22.4	13.1	14.8	9.5	10.4	17.4	16.2	14.1	9.5	11.9	15.7	---	---	---	**---**	**---**	**---**
28	---	---	---	---	---	---	---	0.5	0.6	1.2	0.9	1.3	1.9	1.9	2.4	1.5	1.2	1.6	1.5	1.8	3.0	2.9	3.7	5.0	**---**	**---**	**---**
29	6.6	4.9	3.0	2.6	3.1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
30	---	---	---	---	---	---	---	---	9.7	10.1	7.8	8.4	11.8	13.0	12.1	12.1	9.1	12.9	11.0	20.7	13.2	11.4	12.9	10.5	**---**	**---**	**---**
31	9.8	10.9	11.5	10.6	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
MEAN	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**20.2**		
MAX	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**		**158.8**	
MIN	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**			**0.5**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 379 DATA RECOVERY RATE = 50.9% DATA CAPTURE RATE = 35.5%

MONTHLY MEAN = 20.2 µg/m3

MAXIMUM PM10 = 158.8 µg/m3 DATE OF OCCURRENCE = 1/9 at 1600 MAXIMUM DAILY MEAN = 60.0 µg/m3 DATE OF OCCURRENCE = 1/9

SECOND MAXIMUM PM10 = 111.4 µg/m3 DATE OF OCCURRENCE = 1/9 at 2100 SECOND MAXIMUM DAILY MEAN = 21.4 µg/m3 DATE OF OCCURRENCE = 1/2

MINIMUM PM10 = 0.5 µg/m3 DATE OF OCCURRENCE = 1/28 at 800 MINUMUM DAILY MEAN = 6.9 µg/m3 DATE OF OCCURRENCE = 1/10

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

Draft

CSX AQ7 Modulair

HOURLY AVERAGES of PM10 in µg/m3 for FEBRUARY, 2024

Hr Beg Hr End Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	---	---	---	---	---	---	---	30.7	28.1	19.7	16.8	17.6	20.7	24.8	24.1	12.8	14.1	12.0	9.4	10.5	9.7	11.9	9.2	10.3	---	---	---
2	11.9	16.5	18.5	21.0	20.5	23.9	25.2	19.1	23.5	17.9	17.4	12.0	9.1	8.2	14.0	11.7	24.1	13.3	15.0	18.8	15.1	15.0	9.4	13.1	**16.4**	**25.2**	**8.2**
3	15.8	16.4	13.2	16.1	13.8	12.1	18.7	16.1	11.5	23.4	27.3	11.1	9.0	10.8	5.9	7.4	14.9	16.4	24.5	23.1	31.2	27.6	25.5	21.1	**17.2**	**31.2**	**5.9**
4	15.4	13.0	9.6	9.3	8.3	8.1	6.8	10.9	16.4	12.1	6.5	23.2	20.2	12.4	10.1	8.8	8.2	11.9	14.8	26.1	26.5	38.5	19.8	22.8	**15.0**	**38.5**	**6.5**
5	21.1	20.3	15.8	16.1	12.2	13.5	40.5	31.8	29.3	19.7	14.3	15.5	29.9	23.9	20.2	19.9	22.2	18.5	52.4	37.5	24.8	17.0	23.3	23.0	**23.4**	**52.4**	**12.2**
6	24.2	14.2	11.8	11.4	12.8	11.8	16.7	20.1	18.2	18.0	13.4	12.6	11.6	7.9	16.4	22.9	13.8	15.6	18.1	94.9	81.2	23.7	20.6	18.3	**22.1**	**94.9**	**7.9**
7	49.2	13.5	16.2	22.9	26.9	39.6	39.4	56.9	43.0	21.3	22.8	17.3	19.4	26.3	28.1	48.2	29.1	27.7	27.1	48.6	57.1	28.0	35.7	28.7	**32.2**	**57.1**	**13.5**
8	21.9	26.7	23.9	21.3	19.8	37.0	39.1	94.1	55.1	44.6	42.2	26.7	33.9	26.3	18.1	27.8	---	---	---	---	---	---	---	---	---	---	---
9	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
10	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
11	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
12	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
13	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
14	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
15	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
16	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
17	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
18	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
19	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
20	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
21	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
22	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
23	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
24	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
25	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
26	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
27	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
28	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
29	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MEAN	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**21.9**		
MAX	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---		**94.9**	
MIN	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---			**5.9**

POSSIBLE NUMBER OF OBSERVATIONS = 696 ACTUAL NUMBER OF OBSERVATIONS = 177 DATA RECOVERY RATE = 25.4% DATA CAPTURE RATE = 20.7%

MONTHLY MEAN = 21.9 µg/m3

MAXIMUM PM10 = 94.9 µg/m3 DATE OF OCCURRENCE = 2/6 at 2000 MAXIMUM DAILY MEAN = 32.2 µg/m3 DATE OF OCCURRENCE = 2/7

SECOND MAXIMUM PM10 = 94.1 µg/m3 DATE OF OCCURRENCE = 2/8 at 800 SECOND MAXIMUM DAILY MEAN = 23.4 µg/m3 DATE OF OCCURRENCE = 2/5

MINIMUM PM10 = 5.9 µg/m3 DATE OF OCCURRENCE = 2/3 at 1500 MINUMUM DAILY MEAN = 15.0 µg/m3 DATE OF OCCURRENCE = 2/4

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

Draft

CSX AQ7 Modulair

HOURLY AVERAGES of PM10 in µg/m3 for MARCH, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	13.5	9.1	11.6	14.2	10.0	14.9	33.3	56.1	17.0	11.8	12.1	15.4	14.9	17.3	24.1	15.9	9.9	7.6	8.2	18.5	26.8	21.1	13.7	14.1	**17.1**	**56.1**	**7.6**
2	13.8	11.4	12.6	14.7	16.2	17.8	21.1	31.4	48.2	58.7	22.5	9.2	7.4	4.3	6.2	7.6	8.7	9.4	12.3	10.7	15.1	10.3	11.2	7.8	**16.2**	**58.7**	**4.3**
3	6.1	6.5	6.5	6.4	6.4	6.0	6.8	9.3	12.8	11.5	11.9	12.4	9.3	7.3	5.3	6.2	8.8	14.7	6.1	5.6	11.0	13.6	8.3	12.8	**8.8**	**14.7**	**5.3**
4	16.2	13.0	11.3	8.7	9.4	9.9	12.0	20.4	16.7	22.5	27.0	18.8	20.3	19.1	13.5	18.3	16.0	13.3	14.2	4.6	5.4	4.7	4.3	5.5	**13.5**	**27.0**	**4.3**
5	8.0	3.9	2.9	4.8	4.7	4.1	2.8	2.8	3.8	7.5	2.5	2.1	5.9	15.1	12.9	9.2	5.8	10.7	7.0	7.0	6.5	7.7	6.2	6.8	**6.3**	**15.1**	**2.1**
6	8.5	10.4	12.5	11.7	---	---	---	---	---	14.9	30.8	6.5	6.5	20.9	11.2	6.7	6.5	4.7	8.4	8.2	8.9	10.3	8.5	9.7	**10.8**	**30.8**	**4.7**
7	8.3	6.4	4.2	3.5	3.1	3.8	4.0	6.8	2.9	2.1	3.2	15.1	12.2	36.4	18.0	20.6	16.3	4.3	3.6	4.6	10.2	11.2	6.6	6.3	**8.9**	**36.4**	**2.1**
8	7.7	11.7	7.1	6.7	9.3	10.7	9.9	10.6	5.9	2.6	6.4	16.1	9.5	6.1	7.4	6.7	5.9	16.5	11.7	17.4	15.1	13.9	13.2	19.6	**10.3**	**19.6**	**2.6**
9	32.1	26.2	34.8	26.4	30.1	40.3	47.6	55.6	60.4	56.4	60.5	63.8	70.8	62.6	43.0	28.7	36.0	21.5	28.6	9.2	6.2	7.9	5.8	4.8	**35.8**	**70.8**	**4.8**
10	5.5	5.9	---	6.1	6.3	10.3	9.2	12.1	5.3	10.0	---	33.0	11.2	14.9	8.6	13.9	18.8	16.3	9.1	21.8	12.4	9.8	7.7	11.7	**11.8**	**33.0**	**5.3**
11	12.9	8.0	32.3	34.0	13.2	10.2	10.8	24.0	32.2	59.6	49.3	55.0	27.6	39.2	44.9	40.8	23.2	17.2	12.4	5.0	4.7	4.3	3.9	4.2	**23.7**	**59.6**	**3.9**
12	4.4	2.5	3.4	2.3	3.6	6.1	9.3	15.9	29.6	22.7	43.0	65.6	18.1	69.0	100.9	91.3	101.2	41.5	30.0	29.2	18.5	9.5	15.1	17.6	**31.3**	**101.2**	**2.3**
13	18.6	7.9	13.0	19.4	23.4	49.0	53.0	76.8	41.9	60.5	83.4	113.4	19.4	29.2	29.9	45.5	45.9	63.0	41.4	28.4	56.9	---	50.3	23.5	**43.2**	**113.4**	**7.9**
14	30.7	39.4	39.1	34.8	32.2	34.1	84.6	93.8	77.8	112.1	97.8	89.6	73.5	102.0	42.6	26.0	18.8	16.1	19.7	15.1	14.0	13.4	15.9	17.5	**47.5**	**112.1**	**13.4**
15	29.1	56.5	67.3	61.1	22.8	38.6	35.5	30.6	29.0	13.6	25.4	73.4	44.3	---	79.2	28.3	68.2	47.2	22.3	23.5	24.9	34.2	41.3	58.4	**41.5**	**79.2**	**13.6**
16	77.0	92.1	75.2	54.8	25.6	20.2	17.4	10.0	16.4	41.6	25.5	16.9	46.5	50.6	37.2	15.7	11.5	---	14.3	8.0	8.5	5.9	5.9	8.2	**29.8**	**92.1**	**5.9**
17	8.3	7.6	6.4	12.7	8.4	5.9	7.7	6.8	15.0	21.5	37.7	81.7	---	18.2	6.4	13.9	28.3	---	106.5	73.3	21.4	17.7	28.0	29.6	**25.6**	**106.5**	**5.9**
18	---	15.4	8.3	12.4	8.1	24.4	26.4	18.6	16.4	50.3	57.0	53.6	19.5	83.2	70.1	84.5	78.0	108.6	92.2	34.6	49.0	56.8	32.2	13.3	**44.0**	**108.6**	**8.1**
19	24.8	27.4	38.4	31.1	22.9	26.2	29.4	43.7	52.7	50.0	66.8	39.0	23.4	34.9	63.9	57.3	28.8	19.8	12.2	7.6	6.7	6.4	7.5	10.4	**30.5**	**66.8**	**6.4**
20	7.9	5.1	7.4	7.5	8.0	12.9	14.7	38.6	28.1	51.4	40.0	41.8	33.5	31.8	39.4	42.8	71.8	65.0	90.7	32.8	24.3	25.6	20.2	9.6	**31.3**	**90.7**	**5.1**
21	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
22	---	---	---	---	---	---	---	8.4	6.6	4.8	6.7	9.6	9.3	10.3	10.6	10.2	9.9	12.7	13.1	11.7	11.4	12.6	12.0	10.4	**---**	**---**	**---**
23	11.2	11.4	10.4	9.0	8.7	13.0	9.6	6.0	8.5	15.3	24.5	17.7	3.2	3.4	8.9	6.5	9.1	5.9	12.1	21.1	10.8	13.4	12.1	10.7	**10.9**	**24.5**	**3.2**
24	10.5	6.6	5.8	6.2	5.0	4.5	5.9	3.6	7.5	13.7	4.4	3.1	4.7	17.7	22.3	19.5	9.3	8.4	6.2	6.1	4.7	6.1	10.3	10.2	**8.4**	**22.3**	**3.1**
25	13.4	16.0	9.6	11.9	11.6	7.9	8.6	9.2	6.8	5.7	4.8	5.7	7.2	7.8	10.4	12.2	14.5	12.7	14.2	12.0	9.8	13.0	11.4	8.0	**10.2**	**16.0**	**4.8**
26	9.9	36.9	26.5	20.4	16.1	10.1	9.4	5.6	5.1	5.6	6.9	7.7	11.4	13.1	10.8	12.6	15.0	13.8	15.4	13.4	20.0	17.3	15.3	13.7	**13.8**	**36.9**	**5.1**
27	14.8	12.0	14.0	14.2	15.3	15.6	14.4	13.6	14.9	12.5	10.4	10.1	5.8	6.7	14.1	5.8	3.5	3.1	6.8	5.4	8.1	8.5	10.8	7.8	**10.3**	**15.6**	**3.1**
28	7.0	4.4	4.2	5.6	3.5	3.7	4.5	7.5	11.3	10.8	13.1	12.6	13.1	12.5	11.7	10.8	11.2	8.3	7.2	7.3	7.9	5.6	6.4	7.1	**8.2**	**13.1**	**3.5**
29	5.5	4.9	8.0	3.9	3.5	3.3	4.2	6.0	7.4	8.6	27.9	39.4	25.5	28.4	29.6	33.2	25.3	31.7	21.3	12.0	4.2	4.0	3.1	3.7	**14.4**	**39.4**	**3.1**
30	3.5	2.6	2.3	1.9	2.2	3.5	6.1	6.0	6.9	8.5	9.4	10.1	11.5	10.0	9.1	10.2	12.9	11.3	9.5	12.9	14.8	20.3	15.2	19.5	**9.2**	**20.3**	**1.9**
31	17.2	10.7	6.9	7.8	8.2	10.8	13.2	15.8	21.7	13.6	8.0	4.0	6.1	5.8	6.2	6.1	5.5	6.2	7.7	7.7	10.4	10.9	15.9	11.3	**9.9**	**21.7**	**4.0**
MEAN	**15.2**	**16.3**	**17.2**	**15.7**	**12.1**	**14.9**	**18.3**	**22.3**	**21.0**	**26.0**	**28.2**	**31.4**	**19.7**	**26.8**	**26.6**	**23.6**	**24.2**	**21.8**	**22.1**	**15.8**	**15.0**	**13.7**	**13.9**	**13.1**	**19.8**		
MAX	**77.0**	**92.1**	**75.2**	**61.1**	**32.2**	**49.0**	**84.6**	**93.8**	**77.8**	**112.1**	**97.8**	**113.4**	**73.5**	**102.0**	**100.9**	**91.3**	**101.2**	**108.6**	**106.5**	**73.3**	**56.9**	**56.8**	**50.3**	**58.4**		**113.4**	
MIN	**3.5**	**2.5**	**2.3**	**1.9**	**2.2**	**3.3**	**2.8**	**2.8**	**2.9**	**2.1**	**2.5**	**2.1**	**3.2**	**3.4**	**5.3**	**5.8**	**3.5**	**3.1**	**3.6**	**4.6**	**4.2**	**4.0**	**3.1**	**3.7**			**1.9**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 700 DATA RECOVERY RATE = 94.1% DATA CAPTURE RATE = 93.5%

MONTHLY MEAN = 19.8 µg/m3

MAXIMUM PM10 = 113.4 µg/m3 DATE OF OCCURRENCE = 3/13 at 1200 MAXIMUM DAILY MEAN = 47.5 µg/m3 DATE OF OCCURRENCE = 3/14

SECOND MAXIMUM PM10 = 112.1 µg/m3 DATE OF OCCURRENCE = 3/14 at 1000 SECOND MAXIMUM DAILY MEAN = 44.0 µg/m3 DATE OF OCCURRENCE = 3/18

MINIMUM PM10 = 1.9 µg/m3 DATE OF OCCURRENCE = 3/30 at 400 MINUMUM DAILY MEAN = 6.3 µg/m3 DATE OF OCCURRENCE = 3/5

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

UNDERLINED DATA ARE SUSPECT

Draft

CSX AQ7 Modulair

HOURLY AVERAGES of PM2.5 in µg/m3 for JANUARY, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	9.3	9.8	12.4	11.3	12.5	9.8	11.0	7.2	7.5	15.6	9.3	6.1	5.8	5.8	5.8	4.3	6.1	7.0	4.9	6.1	7.3	7.4	6.7	5.8	**8.1**	**15.6**	**4.3**
2	6.5	5.7	5.1	5.4	5.5	5.5	6.6	5.0	5.4	4.4	5.7	6.3	6.6	9.1	8.1	6.5	7.5	6.6	4.7	3.4	4.3	4.2	7.0	5.5	**5.8**	**9.1**	**3.4**
3	4.0	2.8	3.0	2.8	3.8	5.0	7.9	6.5	11.9	12.6	13.9	11.1	9.0	11.2	10.3	12.3	10.8	8.5	8.1	11.1	10.0	8.6	6.6	5.8	**8.2**	**13.9**	**2.8**
4	8.1	7.8	7.8	9.6	9.9	7.9	5.8	6.8	7.1	15.5	17.4	12.1	7.3	4.4	5.4	3.5	3.3	2.9	3.3	3.3	3.4	3.5	5.1	5.7	**6.9**	**17.4**	**2.9**
5	5.4	4.9	4.2	5.5	4.4	5.4	3.6	6.1	5.6	4.8	4.9	5.4	6.4	7.9	7.4	7.1	7.6	8.1	8.7	8.4	10.5	10.6	10.2	10.6	**6.8**	**10.6**	**3.6**
6	10.3	10.6	9.1	6.1	10.5	9.3	7.5	8.0	9.9	11.6	8.9	9.6	10.0	15.3	11.3	12.6	11.6	8.9	---	---	---	---	---	---	**10.0**	**15.3**	**6.1**
7	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
8	---	---	---	---	---	---	---	5.2	8.9	8.5	9.2	8.5	6.7	8.9	8.3	8.2	7.8	9.6	7.7	8.8	9.1	9.5	9.5	8.4	**---**	**---**	**---**
9	10.1	11.0	9.7	13.2	12.0	8.4	7.9	7.6	6.6	5.1	6.0	7.8	8.6	9.1	10.6	15.2	12.9	11.6	14.3	6.9	7.8	5.8	3.7	2.9	**8.9**	**15.2**	**2.9**
10	1.8	1.5	1.8	1.9	2.0	1.7	2.2	2.2	2.1	6.3	5.6	2.8	2.1	2.5	2.7	2.1	1.6	2.7	2.6	2.5	3.0	2.6	2.1	1.6	**2.5**	**6.3**	**1.5**
11	2.1	2.2	2.6	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
12	---	---	---	---	---	---	---	6.1	5.4	7.1	5.8	5.4	7.3	7.2	7.4	7.6	5.2	5.5	6.4	7.4	7.7	10.0	7.3	3.7	**---**	**---**	**---**
13	5.1	6.3	11.8	5.8	1.0	0.9	1.1	1.5	2.5	3.3	7.1	7.5	21.2	17.6	20.1	9.0	6.2	5.2	5.1	5.7	4.9	6.0	4.4	5.5	**6.8**	**21.2**	**0.9**
14	4.2	1.6	1.6	2.4	2.7	3.0	2.9	2.3	2.6	3.2	4.4	8.0	5.2	6.1	16.1	5.7	5.2	6.5	2.9	2.4	2.3	2.8	2.4	3.1	**4.1**	**16.1**	**1.6**
15	7.1	2.9	2.1	2.7	2.8	1.5	2.6	2.6	2.7	2.7	4.0	5.4	5.9	4.3	4.1	4.9	6.9	6.6	6.7	6.4	5.4	5.4	---	---	**4.3**	**7.1**	**1.5**
16	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
17	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
18	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
19	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
20	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
21	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
22	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
23	---	---	---	---	---	---	---	12.8	22.6	24.5	28.9	34.1	23.2	19.5	15.8	15.7	---	---	---	---	---	---	---	---	**---**	**---**	**---**
24	---	---	---	---	---	---	---	---	19.2	21.4	24.6	21.0	23.3	27.7	24.8	23.9	20.1	18.9	16.7	16.0	19.1	19.0	19.4	19.0	**---**	**---**	**---**
25	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
26	---	---	---	---	---	---	---	---	25.8	27.4	10.6	6.9	7.7	11.3	3.4	9.9	8.5	6.6	6.6	8.1	6.9	6.1	6.1	3.8	**---**	**---**	**---**
27	8.0	9.3	7.6	7.6	5.6	---	---	2.5	4.6	9.3	12.3	10.1	9.3	6.8	5.9	8.9	8.4	7.2	6.6	7.8	8.6	---	---	---	**7.7**	**12.3**	**2.5**
28	---	---	---	---	---	---	---	0.4	0.4	0.6	0.6	0.8	0.7	0.6	0.9	0.6	0.6	0.9	0.9	1.4	2.2	2.0	2.4	2.7	**---**	**---**	**---**
29	4.6	3.7	2.4	1.9	1.7	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
30	---	---	---	---	---	---	---	---	3.7	3.7	4.6	4.9	6.0	6.4	6.0	6.0	6.9	7.5	7.5	9.3	8.8	8.8	8.9	5.9	**---**	**---**	**---**
31	4.7	4.5	4.0	3.8	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
MEAN	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**7.4**		
MAX	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**		**34.1**	
MIN	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**			**0.4**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 395 DATA RECOVERY RATE = 53.1% DATA CAPTURE RATE = 38.7%

MONTHLY MEAN = 7.4 µg/m3

MAXIMUM PM2.5 = 34.1 µg/m3 DATE OF OCCURRENCE = 1/23 at 1200 MAXIMUM DAILY MEAN = 10.0 µg/m3 DATE OF OCCURRENCE = 1/6

SECOND MAXIMUM PM2.5 = 28.9 µg/m3 DATE OF OCCURRENCE = 1/23 at 1100 SECOND MAXIMUM DAILY MEAN = 8.9 µg/m3 DATE OF OCCURRENCE = 1/9

MINIMUM PM2.5 = 0.4 µg/m3 DATE OF OCCURRENCE = 1/28 at 800 MINUMUM DAILY MEAN = 2.5 µg/m3 DATE OF OCCURRENCE = 1/10

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

Draft

CSX AQ7 Modulair

HOURLY AVERAGES of PM2.5 in µg/m3 for FEBRUARY, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	---	---	---	---	---	---	---	8.2	15.5	14.0	12.2	8.2	7.2	7.8	6.8	5.7	9.3	7.3	6.2	6.5	6.3	8.4	7.3	7.2	---	---	---
2	7.2	9.0	9.5	9.7	9.9	11.1	10.9	10.3	8.1	8.8	13.1	9.2	5.6	3.7	3.8	3.0	4.1	3.2	3.8	3.4	2.6	2.6	2.0	2.1	**6.5**	**13.1**	**2.0**
3	2.9	2.6	2.7	3.3	3.3	3.1	3.2	4.4	4.8	6.5	7.1	7.0	6.9	5.5	4.8	4.5	5.1	6.0	5.7	7.2	14.1	17.2	17.4	14.4	**6.6**	**17.4**	**2.6**
4	10.9	9.4	6.1	5.7	5.2	4.8	3.5	6.4	12.7	7.1	5.8	7.0	7.7	6.5	5.9	6.1	6.6	6.8	8.1	8.8	9.1	10.7	11.0	11.9	**7.6**	**12.7**	**3.5**
5	9.7	11.5	9.7	9.3	6.1	7.4	7.5	5.8	8.6	8.7	8.5	8.6	9.7	10.5	11.1	11.8	10.3	8.5	10.0	10.2	7.8	7.2	6.7	6.9	**8.8**	**11.8**	**5.8**
6	7.9	8.0	7.3	6.4	6.2	5.5	7.3	7.4	8.9	7.7	5.4	4.4	3.6	3.5	4.2	4.0	3.8	3.5	5.2	9.4	11.4	7.1	6.3	5.6	**6.2**	**11.4**	**3.5**
7	8.3	6.9	6.3	6.7	8.0	9.3	7.8	11.4	13.2	11.0	12.4	10.9	11.3	10.8	7.6	10.6	11.2	10.3	9.8	12.3	13.7	9.9	12.4	10.8	**10.1**	**13.7**	**6.3**
8	10.4	9.8	8.4	6.2	7.6	11.6	12.4	13.8	15.9	17.5	18.8	17.4	12.3	10.0	9.4	9.2	---	---	---	---	---	---	---	---	**---**	**---**	**---**
9	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
10	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
11	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
12	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
13	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
14	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
15	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
16	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
17	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
18	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
19	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
20	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
21	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
22	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
23	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
24	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
25	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
26	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
27	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
28	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
29	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
MEAN	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**8.1**		
MAX	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---		**18.8**	
MIN	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---			**2.0**

POSSIBLE NUMBER OF OBSERVATIONS = 696 ACTUAL NUMBER OF OBSERVATIONS = 177 DATA RECOVERY RATE = 25.4% DATA CAPTURE RATE = 20.7%

MONTHLY MEAN = 8.1 µg/m3

MAXIMUM PM2.5 = 18.8 µg/m3 DATE OF OCCURRENCE = 2/8 at 1100 MAXIMUM DAILY MEAN = 10.1 µg/m3 DATE OF OCCURRENCE = 2/7

SECOND MAXIMUM PM2.5 = 17.5 µg/m3 DATE OF OCCURRENCE = 2/8 at 1000 SECOND MAXIMUM DAILY MEAN = 8.8 µg/m3 DATE OF OCCURRENCE = 2/5

MINIMUM PM2.5 = 2.0 µg/m3 DATE OF OCCURRENCE = 2/2 at 2300 MINUMUM DAILY MEAN = 6.2 µg/m3 DATE OF OCCURRENCE = 2/6

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

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CSX AQ7 Modulair

HOURLY AVERAGES of PM2.5 in µg/m3 for MARCH, 2024

Hr Beg Hr End Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	3.8	2.8	3.2	3.3	2.8	5.7	7.3	16.5	10.1	5.8	7.9	8.8	8.5	8.4	8.4	6.1	4.8	3.2	3.4	4.8	5.5	7.4	7.4	6.9	**6.3**	**16.5**	**2.8**
2	6.1	6.3	7.3	6.9	6.0	6.9	8.9	8.8	8.0	6.9	2.6	1.7	1.8	1.5	2.0	2.9	3.1	3.2	2.9	2.3	4.3	3.6	3.8	3.5	**4.6**	**8.9**	**1.5**
3	2.8	3.8	3.9	4.2	3.8	3.1	3.3	7.8	11.5	10.5	9.7	9.5	7.1	5.6	3.9	5.4	6.0	5.8	4.4	4.0	4.3	6.6	6.0	7.5	**5.8**	**11.5**	**2.8**
4	9.0	10.2	8.7	7.1	7.1	7.2	7.1	8.7	6.7	8.7	9.3	6.4	4.4	4.9	4.5	4.1	2.1	2.0	2.5	2.2	2.3	2.2	2.0	1.9	**5.4**	**10.2**	**1.9**
5	2.6	2.1	1.9	1.8	2.4	2.0	1.8	1.5	1.8	6.1	1.4	1.4	2.3	2.7	2.7	3.4	3.7	5.3	3.5	3.7	3.7	4.6	3.5	4.0	**2.9**	**6.1**	**1.4**
6	5.0	6.0	5.3	4.9	11.2	43.2	46.1	38.0	13.1	6.5	6.4	5.6	5.1	4.5	2.8	2.9	4.0	2.5	5.0	6.3	7.7	7.3	6.1	5.9	**10.4**	**46.1**	**2.5**
7	6.1	4.5	3.2	2.3	2.2	2.4	1.6	2.9	1.1	0.7	0.6	1.5	1.6	3.8	2.1	1.8	1.8	1.2	1.2	1.9	2.1	2.0	2.6	2.9	**2.2**	**6.1**	**0.6**
8	2.7	4.0	3.2	3.5	3.8	4.2	4.5	5.4	3.9	1.8	2.8	3.8	2.7	3.0	3.5	4.8	4.0	4.1	4.3	2.8	3.7	4.1	4.3	4.6	**3.7**	**5.4**	**1.8**
9	5.5	5.0	6.7	6.1	7.0	7.3	7.5	8.5	9.5	9.8	10.7	11.1	12.2	13.4	13.4	11.2	9.8	4.4	2.5	1.0	1.3	2.1	2.4	2.9	**7.1**	**13.4**	**1.0**
10	3.5	3.0	---	2.5	1.7	1.8	1.9	2.0	5.4	6.5	21.6	16.6	6.7	12.1	4.4	7.0	11.0	6.5	3.6	7.6	4.7	6.3	3.4	3.6	**6.2**	**21.6**	**1.7**
11	4.7	4.1	11.8	14.7	3.4	3.2	3.1	6.6	11.9	20.5	11.0	9.5	6.1	9.8	9.9	8.9	5.8	3.7	2.9	2.0	1.7	1.6	1.5	1.6	**6.6**	**20.5**	**1.5**
12	1.7	1.1	1.1	0.9	1.2	2.0	2.1	2.4	4.0	6.8	8.8	10.5	7.1	11.9	14.2	15.7	14.7	9.1	6.6	4.6	4.6	3.9	4.8	5.3	**6.0**	**15.7**	**0.9**
13	4.1	3.6	6.3	6.9	7.1	8.1	7.5	10.0	12.4	14.3	15.4	18.4	8.4	9.7	10.5	14.9	9.0	14.3	10.9	8.8	12.9	21.6	16.6	13.0	**11.0**	**21.6**	**3.6**
14	12.0	14.9	14.4	14.7	9.9	10.6	15.5	14.4	20.5	30.0	35.7	36.1	33.7	27.5	17.8	12.1	8.7	8.0	8.6	8.3	8.8	9.5	11.3	12.6	**16.4**	**36.1**	**8.0**
15	16.6	20.8	21.3	24.8	11.9	12.6	12.5	10.8	8.2	8.2	9.8	15.6	11.0	23.9	16.2	7.8	10.0	7.9	4.9	5.2	5.3	7.1	7.2	6.6	**11.9**	**24.8**	**4.9**
16	6.7	8.2	7.2	6.3	4.4	3.5	2.8	2.3	3.8	7.2	6.9	5.9	8.2	9.1	11.5	6.1	7.1	18.2	7.4	6.1	5.3	4.2	4.5	4.4	**6.5**	**18.2**	**2.3**
17	4.7	5.0	4.2	4.9	5.7	3.9	4.7	4.7	6.2	5.0	6.9	9.4	11.8	7.1	4.2	5.2	7.4	23.0	15.3	10.2	6.8	5.1	10.3	9.5	**7.5**	**23.0**	**3.9**
18	19.5	5.3	3.3	3.4	2.7	4.4	5.3	5.0	4.4	10.9	17.4	15.8	6.7	16.4	16.0	14.8	21.9	20.8	20.7	12.2	9.7	11.6	7.8	4.6	**10.8**	**21.9**	**2.7**
19	6.0	6.6	9.6	7.5	5.6	6.9	6.6	14.5	15.4	10.9	17.7	9.7	7.7	9.7	15.1	15.1	9.1	7.9	4.6	4.0	2.9	3.4	3.8	4.6	**8.5**	**17.7**	**2.9**
20	3.4	3.0	3.5	3.1	3.1	3.3	4.4	8.4	6.6	24.1	12.7	16.8	20.3	19.6	15.6	26.3	34.5	35.3	39.9	10.8	7.8	7.6	6.4	3.9	**13.3**	**39.9**	**3.0**
21	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
22	---	---	---	---	---	---	---	6.7	4.7	4.1	4.6	6.2	7.8	7.6	6.7	7.1	6.7	6.9	7.4	7.5	7.9	6.9	6.1	5.2	**---**	**---**	**---**
23	4.8	5.2	5.6	5.3	5.3	5.1	4.9	3.1	2.7	2.8	3.3	2.3	0.7	1.5	6.0	6.0	5.9	4.9	8.2	12.8	8.7	10.1	7.4	5.6	**5.3**	**12.8**	**0.7**
24	4.4	3.2	3.0	2.7	2.8	2.9	2.8	2.4	3.6	5.3	3.1	2.7	4.1	6.5	8.3	7.1	5.7	6.2	5.3	4.8	4.4	4.6	7.8	8.5	**4.6**	**8.5**	**2.4**
25	8.2	8.8	6.8	6.2	7.0	6.9	7.1	7.2	5.4	4.9	4.3	4.9	6.1	6.8	8.2	9.7	9.2	8.6	7.9	9.4	6.6	5.5	6.0	4.0	**6.9**	**9.7**	**4.0**
26	4.8	7.3	8.8	7.2	6.0	5.5	4.9	3.0	2.9	3.2	3.9	5.0	8.2	7.5	5.7	10.1	11.4	11.2	11.4	6.7	8.9	8.0	8.2	9.4	**7.0**	**11.4**	**2.9**
27	9.3	8.5	8.1	8.1	9.0	7.7	7.6	7.7	8.4	6.9	6.6	6.8	4.2	4.1	3.9	3.6	2.6	2.4	3.8	3.0	5.7	3.7	5.4	3.6	**5.8**	**9.3**	**2.4**
28	3.8	3.1	2.9	4.1	3.2	3.0	4.1	6.7	10.7	9.8	11.6	11.5	11.6	11.1	9.6	9.4	10.0	6.4	5.8	6.2	5.2	3.7	4.0	4.7	**6.7**	**11.6**	**2.9**
29	3.9	3.4	4.4	2.8	2.7	2.2	2.5	3.5	4.3	5.9	15.2	18.6	17.0	16.2	13.9	12.4	9.2	8.9	7.2	4.2	2.5	2.5	2.1	2.2	**6.9**	**18.6**	**2.1**
30	2.0	1.8	1.5	1.3	1.4	2.6	3.7	3.7	5.3	6.8	7.8	7.4	8.2	8.8	6.9	9.2	10.7	9.3	7.3	9.3	11.4	14.4	10.2	13.6	**6.8**	**14.4**	**1.3**
31	12.3	8.0	5.5	7.2	7.7	10.4	12.7	15.3	20.9	13.0	7.4	3.9	5.9	5.3	6.0	5.8	5.3	5.5	6.3	7.0	9.9	10.1	12.2	10.8	**8.9**	**20.9**	**3.9**
MEAN	**6.2**	**5.8**	**6.2**	**6.0**	**5.1**	**6.5**	**7.1**	**8.0**	**7.8**	**8.8**	**9.4**	**9.4**	**8.2**	**9.3**	**8.5**	**8.6**	**8.5**	**8.6**	**7.5**	**6.0**	**5.9**	**6.4**	**6.2**	**5.9**	**7.3**		
MAX	**19.5**	**20.8**	**21.3**	**24.8**	**11.9**	**43.2**	**46.1**	**38.0**	**20.9**	**30.0**	**35.7**	**36.1**	**33.7**	**27.5**	**17.8**	**26.3**	**34.5**	**35.3**	**39.9**	**12.8**	**12.9**	**21.6**	**16.6**	**13.6**		**46.1**	
MIN	**1.7**	**1.1**	**1.1**	**0.9**	**1.2**	**1.8**	**1.6**	**1.5**	**1.1**	**0.7**	**0.6**	**1.4**	**0.7**	**1.5**	**2.0**	**1.8**	**1.8**	**1.2**	**1.2**	**1.0**	**1.3**	**1.6**	**1.5**	**1.6**			**0.6**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 712 DATA RECOVERY RATE = 95.7% DATA CAPTURE RATE = 93.5%

MONTHLY MEAN = 7.3 µg/m3

MAXIMUM PM2.5 = 46.1 µg/m3 DATE OF OCCURRENCE = 3/6 at 700 MAXIMUM DAILY MEAN = 16.4 µg/m3 DATE OF OCCURRENCE = 3/14

SECOND MAXIMUM PM2.5 = 43.2 µg/m3 DATE OF OCCURRENCE = 3/6 at 600 SECOND MAXIMUM DAILY MEAN = 13.3 µg/m3 DATE OF OCCURRENCE = 3/20

MINIMUM PM2.5 = 0.6 µg/m3 DATE OF OCCURRENCE = 3/7 at 1100 MINUMUM DAILY MEAN = 2.2 µg/m3 DATE OF OCCURRENCE = 3/7

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

UNDERLINED DATA ARE SUSPECT

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APPENDIX J. INVALID DATA PERIODS AND CORRECTIVE ACTION FORMS FOR FIRST QUARTER 2024

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AQS Null Code Description	
AN - Machine Malfunction	BA - Maintenance/Routine Repairs
AT - Calibration	AV - Power Failure

CSX AQ5 - Invalid Data Periods

Parameter	Start Date	Start Time	End Date	End Time	Hours Invalid	AQS NULL Code	Description
Relative Humidity	01/27/2024	01:01	01/27/2024	04:00	3	AN	Sensor malfunction, spike
	02/28/2024	08:01	02/28/2024	11:00	3	AT	Met tower calibration
Temperature	01/27/2024	01:01	01/27/2024	04:00	3	AN	Sensor malfunction, spike
	02/28/2024	08:01	02/28/2024	11:00	3	AT	Met tower calibration
Wind Speed, Direction, Gust	02/28/2024	08:01	02/28/2024	11:00	3	AT	Met tower calibration
PM10/CF/2.5	01/17/2024	09:01	01/17/2024	10:00	1	BA	Maintenance, Flow Check
	01/23/2024	11:01	01/23/2024	12:00	1	BA	Maintenance, Flow Check
	02/16/2024	06:01	02/16/2024	15:00	9	AV	Power Outage
	02/21/2024	00:01	02/22/2024	01:00	25	AV	Power Outage
	02/27/2024	20:01	02/28/2024	15:00	19	AV	Power Outage
	02/28/2024	15:01	02/29/2024	16:00	25	BA	Maintenance, Flow Check
	03/28/2024	09:01	03/28/2024	10:00	1	BA	Maintenance, Flow Check

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AQS Null Code Description	
BA - Maintenance/Routine Repairs	AV - Power Failure
AT - Calibration	

CSX AQ8 - Invalid Data Periods

Parameter	Start Date	Start Time	End Date	End Time	Hours Invalid	AQS NULL Code	Description
PM10/CF/2.5	01/17/2024	14:01	01/17/2024	16:00	2	BA	Maintenance, Flow check
	02/28/2024	12:01	02/28/2024	13:00	1	BA	Maintenance, Flow check
	02/28/2024	13:01	02/28/2024	14:00	1	AT	Calibration, maintenance
	03/08/2024	19:01	03/10/2024	12:00	41	AV	Power outage
	03/10/2024	12:01	03/10/2024	13:00	1	BA	Maintenance, Flow check

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CORRECTIVE ACTION REPORT

PROJECT NAME CSX - AQ5

Identification of a Problem or Deficiency:

Created By: Data management team
Assigned To: Nick Bratton
Date: 12/21/2023

Summary: T640X sample flow is deviating from the design flow rate.

Corrective Action Taken and Results:

From: Nick Bratton/Mike Peterson

Corrective Action Description: As found check performed on 1/17. The internal pump was replaced on 1/23, and another flow check was performed.

2/28-2/29 - Optical chamber was cleaned on 2/28, leak and PMT check were not within spec. It was cleaned again on 2/29 and the unit was calibrated. Operating within all criteria.

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APPENDIX K. CALIBRATION FIELD DATA SHEETS

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Trinity Consultants

CONTINUOUS PARTICULATE SAMPLER
CALIBRATION

SITE NAME	CSX AQ5	**Date**	2/29/2024	**Start Time**	14:45
PROJECT	234501.0038			**Stop Time**	15:45
SITE OPERATOR	Trintiy				

Analyzer Mfg	T-API
Analyzer Model	T640X
Analyzer s/n	1690

= Enter Flow Check Data
= Cell Containing Equations

REFERENCE EQUIPMENT:

	Model	Serial Number
Temperature Standard	Delta Cal	210062
Pressure Standard	Delta Cal	210062
Flow Standard	Delta Cal	210062
Certification Date	6/7/2023	

ZERO TEST / LEAK CHECK

PM Channel	Indicated Conc.	
PM_{10}	0.0	µg/m3
$PM_{2.5}$	0.0	µg/m3

CRITERIA:
PM < 0.2 µg/m3

TEMPERATURE SENSOR CALIBRATION

Indicated Temp.	Ref. Std. Temp.	Difference	
6.1	6.9	0.8	°C
6.1	7	0.9	°C

CRITERIA:
DIFFERENCE < ±2°C

PRESSURE SENSOR CALIBRATION

Indicated Pressure		Ref. Std. Pressure	Difference
kPa	mmHg	mmHg	mmHg
102.9	771.8	771.0	-0.8

CRITERIA:
DIFFERENCE < ±10 mm Hg

Sample FLOW VERIFICATION

Target Flow L/min	Indicated Flow (I) L/min	Ref. Std. Flow (R) L/min	Difference Ref. Flow %	Difference Design Flow %
5.00	4.98	4.90	1.6%	-2.0%

CRITERIA:
±4% OF REFERENCE, OR ±5% OF DESIGN FLOW (5.0 L/min)

Bypass FLOW VERIFICATION

Target Flow L/min	Indicated Flow (I) L/min	Ref. Std. Flow (R) L/min	Difference Ref. Flow %	Difference Design Flow %	
11.67	11.67	11.64	0.3%	-0.3%	as found.
					Calibrated

CRITERIA:
±4% OF REFERENCE, OR ±5% OF DESIGN FLOW (11.7 L/min)

PMT VERIFICATION

Peak Channel	Indicated Value	Difference	
10.9	11.2	0.3	as found.
10.9	10.8	-0.1	Calibrated

CRITERIA:
10.9 ±0.5

COMMENTS

After a passing As Found check yesterday the analyzer was removed from the outdoor enclosure for the optical bench cleaning maint. After the maint the leak check and PMT check failed. I performed the optical bench cleaning again today and now they looked good. The PM 10 inlet was also cleaned for maint.

Calibrated by: Mike Peterson

Draft

Trinity Consultants

CONTINUOUS PARTICULATE SAMPLER
CALIBRATION

SITE NAME	CSX AQ8	**Date**	2/28/2024	**Start Time**	12:15
PROJECT	234501.0038			**Stop Time**	13:30
SITE OPERATOR	Trintiy				

Analyzer Mfg	T-API
Analyzer Model	T640X
Analyzer s/n	1689

= Enter Flow Check Data
= Cell Containing Equations

REFERENCE EQUIPMENT:

	Model	Serial Number
Temperature Standard	Delta Cal	210062
Pressure Standard	Delta Cal	210062
Flow Standard	Delta Cal	210062
Certification Date	6/7/2023	

ZERO TEST / LEAK CHECK

PM Channel	Indicated Conc.	
PM_{10}	0.1	µg/m3
$PM_{2.5}$	0.1	µg/m3

CRITERIA:
PM < 0.2 µg/m3

TEMPERATURE SENSOR CALIBRATION

Indicated Temp.	Ref. Std. Temp.	Difference	
17.9	17.7	-0.2	°C
18.7	18.5	-0.2	°C

CRITERIA:
DIFFERENCE < ±2°C

PRESSURE SENSOR CALIBRATION

Indicated Pressure		Ref. Std. Pressure	Difference
kPa	mmHg	mmHg	mmHg
100.2	751.6	751.5	-0.1
100.2	751.6	751.5	-0.1

CRITERIA:
DIFFERENCE < ±10 mm Hg

Sample FLOW VERIFICATION

Target Flow L/min	Indicated Flow (I) L/min	Ref. Std. Flow (R) L/min	Difference Ref. Flow %	Difference Design Flow %
5.00	4.88	4.96	-1.6%	-0.8%
5.00	5.01	5.01	0.0%	0.2%

CRITERIA:
±4% OF REFERENCE, OR ±5% OF DESIGN FLOW (5.0 L/min)

Bypass FLOW VERIFICATION

Target Flow L/min	Indicated Flow (I) L/min	Ref. Std. Flow (R) L/min	Difference Ref. Flow %	Difference Design Flow %	
11.67	11.60	11.58	0.2%	-0.8%	as found.
11.67	11.66	11.63	0.3%	-0.3%	Calibrated

CRITERIA:
±4% OF REFERENCE, OR ±5% OF DESIGN FLOW (11.7 L/min)

PMT VERIFICATION

Peak Channel	Indicated Value	Difference	
11.0	10.9	-0.1	as found.
10.9	10.9	0.0	Calibrated

CRITERIA:
10.9 ±0.5

COMMENTS

First reading for each parameter is the as found check. Cleaned unit and inlet head. Changed both DFU filters and cleaned optical chamber. Second reading for each parameter is the as-left check.

Calibrated by Nick Bratton

Draft

Trinity Consultants

BAROMETRIC PRESSURE CALIBRATION SHEET

AS FOUND

SITE NAME	CSX	**Date**	02/28/2024	**Start Time**	8:30
PROJECT	234501.0064			**Stop Time**	11:00
SITE OPERATOR	Trinity				
Sensor Mfg:	Campbell Sci	**Last Calibration Date:**	9/26/2023		
Sensor Model:	BaroVUE10	**Sensor Height:**	5 feet		
Sensor s/n:	1808				
Sensor Range:	500-1100 hpa mb				

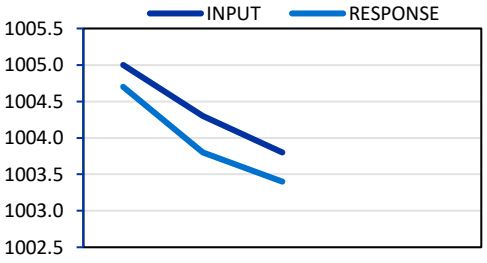
CALIBRATION EQUIPMENT

Calibration Device:	Vaisala	**Certification Date:**	8/7/2023
Calibration Device Model:	PTB110		
Calibration Device s/n:	Go770046		

Draft

Time	CALIBRATION INPUT (mb)	SENSOR RESPONSE (mb)	DIFFERENCE (mb)
09:02	1005.0	1004.7	-0.3
09:32	1004.3	1003.8	-0.5
10:04	1003.8	1003.4	-0.4
Average	***1004.4***	***1004.0***	***-0.4***

Calibration Criteria: +/- 3 mb



COMMENTS

Side by side comparison in ambient conditions.

Calibrated By: Mike Peterson

= cell containing equations

Trinity Consultants

RELATIVE HUMIDITY CALIBRATION SHEET

AS FOUND

SITE NAME CSX
PROJECT 234501.0064
SITE OPERATOR Trinity

Date 02/28/2024 **Start Time** 08:30
Stop Time 11:00

Sensor Mfg: Campbell Sci
Sensor Model: HygroVUE10
Sensor s/n: E4240
Sensor Range: 0-100 %

Last Calibration Date: 9/26/2023
Sensor Height: 2 meters

CALIBRATION EQUIPMENT

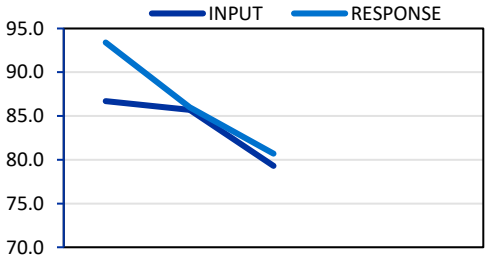
Calibration Device: Vaisala
Calibration Device Model: HMP45AC
Calibration Device s/n: D3250060

Certification Date: 1/18/2024

Draft

Time	CALIBRATION INPUT (%)	SENSOR RESPONSE (%)	DIFFERENCE (%)
09:03	86.7	93.4	6.7
09:33	85.7	86.0	0.3
10:04	79.3	80.7	1.4
Average	***83.9***	***86.7***	***2.8***

Calibration Criteria: +/- 7% RH



COMMENTS

Side by side comparison in ambient conditions. On and off rain showers today.

Calibrated By: Mike Peterson

= cell containing equations

Trinity Consultants

PRECIPITATION CALIBRATION SHEET

AS FOUND

SITE NAME CSX
PROJECT 234501.0064
SITE OPERATOR Trinity

Date 02/28/2024
Start Time 08:30
Stop Time 11:00

Sensor Mfg: Texas Electronics
Sensor Model: TR-525U
Sensor s/n: 93490-1222
Sensor Range: Unlimited inches

Last Calibration Date: 9/26/2023
Sensor Height: 48 inches
Recording Resolution 1 tip = 0.01"

Funnel Diameter: 20.3 cm
Funnel Area (A): 324.3 cm^2

CALIBRATION EQUIPMENT

Calibration Device: Polylab
Calibration Device Model: 100 ml buret
Calibration Device s/n: N/A

Certification Date: N/A

CALIBRATION INPUT (ml.)	CALIBRATION INPUT (inches)	SENSOR RESPONSE (inches)	DIFFERENCE (%)
86.0	0.1044	0.10	-4.2%
88.0	0.107	0.10	-6.4%
85.2	0.103	0.10	-3.3%
Average	***0.1049***	***0.10***	***-4.7%***

Calibration Criteria: +/- 10% of input

Draft

1 cc = 1 ml
Funnel (r)adius = funnel (D)iameter ÷ 2
(A)rea of funnel = $\pi * r^2$
INPUT = Input (ml) ÷ A ÷ cm to inches

COMMENTS

24 hr start = 0.01 then End = 0.31 On and off rain showers as well today.

Calibrated By: Mike Peterson

= cell containing equations

Trinity Consultants

WIND DIRECTION 10M CALIBRATION SHEET

AS FOUND

SITE NAME	CSX	**Date** 02/28/2024	**Start Time** 08:30
PROJECT	234501.0064		**Stop Time** 11:00
SITE OPERATOR	Trinity		

Sensor Mfg:	Met One	**Last Calibration Date:**	9/26/2023
Sensor Model:	020D	**Sensor Height:**	10 meters
Sensor s/n:	C21028	**Declination:**	-11.0
Sensor Range:	0-360 °	**Alignment:**	0.0
Vane to Crossarm:	0.3 / 179.3 ll 0.2 / 180.3	**Difference:**	0.0
		Rotational Torque:	< 3.0 gm-cm
CALIBRATION EQUIPMENT		**Starting Threshold:**	< 0.5 m/s

Calibration Device:	Met One	**Certification Date:**	1/19/2024
Calibration Device Model:	040 direction template	**Compass:**	5100715063
Calibration Device s/n:	N/A	**Torque Device:**	Met One Torque Disc

Draft

	INPUT	CLOCKWISE			COUNTER-CLOCKWISE		
	(°)	RESPONSE (°)	DIFF (°)	TOTAL DIFF (°)	RESPONSE (°)	DIFF (°)	TOTAL DIFF (°)
North	0/360	0.6	0.6	0.6	0.3	0.3	0.3
	30	30.4	0.4	0.4	30.3	0.3	0.3
	60	60.8	0.8	0.8	61.0	1.0	1.0
East	90	90.8	0.8	0.8	90.8	0.8	0.8
	120	120.9	0.9	0.9	120.7	0.7	0.7
	150	150.1	0.1	0.1	150.0	0.0	0.0
South	180	179.5	-0.5	-0.5	179.8	-0.2	-0.2
	210	209.8	-0.2	-0.2	209.5	-0.5	-0.5
	240	240.6	0.6	0.6	240.4	0.4	0.4
West	270	270.9	0.9	0.9	270.9	0.9	0.9
	300	301.5	1.5	1.5	301.5	1.5	1.5
	330	332.1	2.1	2.1	332.1	2.1	2.1

Calibration Criteria: Orientation and Linearity: +/- 5 degrees. Starting Threshold: </=0.5 m/s.

TOTAL DIFF is the total difference when including Orientation and Linearity

COMMENTS

Calibrated By: Mike Peterson

= cell containing equations

Trinity Consultants

WIND SPEED 10M CALIBRATION SHEET

AS FOUND

SITE NAME CSX
PROJECT 234501.0064
SITE OPERATOR Trinity

Date 02/28/2024 **Start Time** 08:30
Stop Time 11:00

Sensor Mfg: Met One
Sensor Model: 010C
Sensor s/n: C21557
Sensor Range: 0-60 m/s

Last Calibration Date: 9/26/2023
Sensor Height: 10 meters
Rotational Torque: < 0.2 gm-cm
Starting Threshold: < 0.5 m/s

CALIBRATION EQUIPMENT

Calibration Device: RM Young
Calibration Device Model: 18802
Calibration Device s/n: CA5428

Certification Date: 5/25/2023
Torque Device: Met One Torque Disc

Draft

CALIBRATION INPUT RPM	CALIBRATION INPUT (m/s)	SENSOR RESPONSE (m/s)	DIFFERENCE (m/s)
0	0.000	0.000	0.000
200	5.600	5.626	0.026
300	8.270	8.265	-0.005
600	16.260	16.260	0.000
900	24.260	24.256	-0.004
1200	32.250	32.251	0.001
1500	40.250	40.246	-0.004
1800	48.240	48.241	0.001

Calibration Criteria: +/- 0.2 m/s. Starting Threshold < 0.5 m/s

COMMENTS

Calibrated By: Mike Peterson

= cell containing equations

Trinity Consultants

TEMPERATURE CALIBRATION SHEET

AS FOUND

SITE NAME CSX **Date** 02/28/2024 **Start Time** 08:30
PROJECT 234501.0064 **Stop Time** 11:00
SITE OPERATOR Trinity

Sensor Mfg: Campbell Sci **Last Calibration Date:** 9/26/2023
Sensor Model: Hygrovue10
Sensor Range: -40 to +70 °C

Sensor Ht 2 meters meters **Serial Number** **E4240**

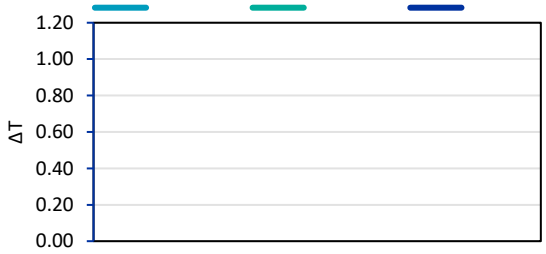
CALIBRATION EQUIPMENT

Calibration Device: Brooklyn Digital **Certification Date:** 1/17/2024
Calibration Device Model: 6661S
Calibration Device s/n: C404690

Draft

CALIBRATION INPUT Time	(°C)	2 METER RESPONSE (°C)	DIFF (°C)			
10:23	39.20	38.90	-0.30			
10:32	17.10	17.40	0.30			
10:44	0.00	0.10	0.10			

Calibration Criteria: ± 0.5 °C from audit input, and ± 0.1 °C for ΔT



COMMENTS

Side by side comparison in water bath temperature mediums.

Calibrated By: Mike Peterson

= cell containing equations

APPENDIX L. $PM_{10}/PM_{2.5}$ FLOW CHECKS AND FLOW CHECK EQUIPMENT CERTIFICATE AND FIELD CALIBRATION SHEETS FOR FIRST QUARTER 2024

Draft

Trinity Consultants

CONTINUOUS PARTICULATE SAMPLER
FLOW CHECK

SITE NAME	CSX AQ5	**Date**	1/17/2024	**Start Time**	8:45
PROJECT	234501.0038			**Stop Time**	9:30
SITE OPERATOR	Trintiy				

Analyzer Mfg	T-API
Analyzer Model	T640X
Analyzer s/n	1690

= Enter Flow Check Data
= Cell Containing Equations

REFERENCE EQUIPMENT:

	Model	Serial Number
Temperature Standard	Delta Cal	210062
Pressure Standard	Delta Cal	210062
Flow Standard	Delta Cal	210062
Certification Date	6/7/2023	

ZERO TEST / LEAK CHECK

PM Channel	Indicated Conc.	
PM_{10}	0.1	µg/m3
$PM_{2.5}$	0.1	µg/m3

CRITERIA:
PM < 0.2 µg/m3

TEMPERATURE SENSOR CALIBRATION

Indicated Temp.	Ref. Std. Temp.	Difference	
-7.1	-7.4	-0.3	°C
-7.0	-7.0	0	°C

CRITERIA:
DIFFERENCE < ±2°C

PRESSURE SENSOR CALIBRATION

Indicated Pressure		Ref. Std. Pressure	Difference
kPa	mmHg	mmHg	mmHg
102.1	765.8	764.0	-1.8
102.1	765.8	764.0	-1.8

CRITERIA:
DIFFERENCE < ±10 mm Hg

Sample FLOW VERIFICATION

Target Flow L/min	Indicated Flow (I) L/min	Ref. Std. Flow (R) L/min	Difference Ref. Flow %	Difference Design Flow %
5.00	5.16	5.17	-0.2%	3.4%
5.00	5.01	5.00	0.2%	0.0%

CRITERIA:
±4% OF REFERENCE, OR ±5% OF DESIGN FLOW (5.0 L/min)

Bypass FLOW VERIFICATION

Target Flow L/min	Indicated Flow (I) L/min	Ref. Std. Flow (R) L/min	Difference Ref. Flow %	Difference Design Flow %	
11.67	11.76	11.72	0.3%	0.4%	as found.
11.67	11.63	11.63	0.0%	-0.3%	Calibrated

CRITERIA:
±4% OF REFERENCE, OR ±5% OF DESIGN FLOW (11.7 L/min)

PMT VERIFICATION

Peak Channel	Indicated Value	Difference	
10.9	10.9	0.0	as found.
10.9	10.9	0.0	Calibrated

CRITERIA:
10.9 ±0.5

COMMENTS

First reading for each parameter is the as found check. Changed external DFU filter. Cleaned head.
Second reading for each parameter is the as-left check.

Flow Check by: Nick Bratton

Draft

Trinity Consultants

CONTINUOUS PARTICULATE SAMPLER

FLOW CHECK

SITE NAME	CSX AQ5	**Date**	1/23/2024	**Start Time**	10:30
PROJECT	234501.0038			**Stop Time**	12:15
SITE OPERATOR	Trintiy				

Analyzer Mfg	T-API
Analyzer Model	T640X
Analyzer s/n	1690

= Enter Flow Check Data
= Cell Containing Equations

REFERENCE EQUIPMENT:

	Model	Serial Number
Temperature Standard	Delta Cal	210062
Pressure Standard	Delta Cal	210062
Flow Standard	Delta Cal	210062
Certification Date	6/7/2023	

ZERO TEST / LEAK CHECK

PM Channel	Indicated Conc.	
PM_{10}	0.2	µg/m3
$PM_{2.5}$	0.2	µg/m3

CRITERIA:
PM < 0.2 µg/m3

TEMPERATURE SENSOR CALIBRATION

Indicated Temp.	Ref. Std. Temp.	Difference	
6.0	6.8	0.8	°C
6.1	6.8	0.7	°C

CRITERIA:
DIFFERENCE < ±2°C

PRESSURE SENSOR CALIBRATION

Indicated Pressure		Ref. Std. Pressure	Difference
kPa	mmHg	mmHg	mmHg
103.4	775.6	774.0	-1.6
103.4	775.6	774.0	-1.6

CRITERIA:
DIFFERENCE < ±10 mm Hg

Sample FLOW VERIFICATION

Target Flow L/min	Indicated Flow (I) L/min	Ref. Std. Flow (R) L/min	Difference Ref. Flow %	Difference Design Flow %
5.00	4.97	4.88	1.8%	-2.4%
5.00	4.99	4.91	1.6%	-1.8%

CRITERIA:
±4% OF REFERENCE, OR ±5% OF DESIGN FLOW (5.0 L/min)

Bypass FLOW VERIFICATION

Target Flow L/min	Indicated Flow (I) L/min	Ref. Std. Flow (R) L/min	Difference Ref. Flow %	Difference Design Flow %	
11.67	11.67	11.64	0.3%	-0.3%	as found.
11.67	11.66	11.65	0.1%	-0.2%	Calibrated

CRITERIA:
±4% OF REFERENCE, OR ±5% OF DESIGN FLOW (11.7 L/min)

PMT VERIFICATION

Peak Channel	Indicated Value	Difference	
			as found.
			Calibrated

CRITERIA:
10.9 ±0.5

COMMENTS

Changed internal pump and performed flow checks to verify parameters are within range. No PMT adjustment required and last flow check was recent so skipped PMT verification.

Flow Check by: Nick Bratton

Draft

CONTINUOUS PARTICULATE SAMPLER
FLOW CHECK

SITE NAME	CSX AQ5	**Date**	2/28/2024	**Start Time**	15:45
PROJECT	234501.0038			**Stop Time**	16:15
SITE OPERATOR	Trintiy				

Analyzer Mfg	T-API
Analyzer Model	T640X
Analyzer s/n	1690

= Enter Flow Check Data
= Cell Containing Equations

REFERENCE EQUIPMENT:

	Model	Serial Number
Temperature Standard	Delta Cal	210062
Pressure Standard	Delta Cal	210062
Flow Standard	Delta Cal	210062
Certification Date	6/7/2023	

ZERO TEST / LEAK CHECK

PM Channel	Indicated Conc.	
PM_{10}	0.1	µg/m3
$PM_{2.5}$	0.1	µg/m3

CRITERIA:
PM < 0.2 µg/m3

TEMPERATURE SENSOR CALIBRATION

Indicated Temp.	Ref. Std. Temp.	Difference	
17.1	16.8	-0.3	°C
			°C

CRITERIA:
DIFFERENCE < ±2°C

PRESSURE SENSOR CALIBRATION

Indicated Pressure		Ref. Std. Pressure	Difference
kPa	mmHg	mmHg	mmHg
100.3	752.3	751.5	-0.8

CRITERIA:
DIFFERENCE < ±10 mm Hg

Sample FLOW VERIFICATION

Target Flow L/min	Indicated Flow (I) L/min	Ref. Std. Flow (R) L/min	Difference Ref. Flow %	Difference Design Flow %
5.00	4.98	4.91	1.4%	-1.8%
5.00				

CRITERIA:
±4% OF REFERENCE, OR ±5% OF DESIGN FLOW (5.0 L/min)

Bypass FLOW VERIFICATION

Target Flow L/min	Indicated Flow (I) L/min	Ref. Std. Flow (R) L/min	Difference Ref. Flow %	Difference Design Flow %	
11.67	11.67	11.63	0.3%	-0.3%	as found.
11.67					Calibrated

CRITERIA:
±4% OF REFERENCE, OR ±5% OF DESIGN FLOW (11.7 L/min)

PMT VERIFICATION

Peak Channel	Indicated Value	Difference	
10.8	10.9	0.1	as found.
			Calibrated

CRITERIA:
10.9 ±0.5

COMMENTS

As found check only. Cleaned unit and inlet head. Changed both DFU filters and cleaned optical chamber. As left check completed the following day.

Flow Check by: Nick Bratton

Draft

Trinity Consultants

CONTINUOUS PARTICULATE SAMPLER

FLOW CHECK

SITE NAME	CSX AQ5	**Date**	3/28/2024	**Start Time**	10:00
PROJECT	234501.0038			**Stop Time**	10:30
SITE OPERATOR	Trintiy				

Analyzer Mfg	T-API
Analyzer Model	T640X
Analyzer s/n	1690

= Enter Flow Check Data
= Cell Containing Equations

REFERENCE EQUIPMENT:

	Model	Serial Number
Temperature Standard	Delta Cal	210062
Pressure Standard	Delta Cal	210062
Flow Standard	Delta Cal	210062
Certification Date	6/7/2023	

ZERO TEST / LEAK CHECK

PM Channel	Indicated Conc.	
PM_{10}	0.1	µg/m3
$PM_{2.5}$	0.1	µg/m3

CRITERIA:
PM < 0.2 µg/m3

TEMPERATURE SENSOR CALIBRATION

Indicated Temp.	Ref. Std. Temp.	Difference	
10.3	9.8	-0.5	°C
			°C

CRITERIA:
DIFFERENCE < ±2°C

PRESSURE SENSOR CALIBRATION

Indicated Pressure		Ref. Std. Pressure	Difference
kPa	mmHg	mmHg	mmHg
101.6	762.1	761.5	-0.6

CRITERIA:
DIFFERENCE < ±10 mm Hg

Sample FLOW VERIFICATION

Target Flow L/min	Indicated Flow (I) L/min	Ref. Std. Flow (R) L/min	Difference Ref. Flow %	Difference Design Flow %
5.00	5.03	4.88	3.1%	-2.4%
5.00				

CRITERIA:
±4% OF REFERENCE, OR ±5% OF DESIGN FLOW (5.0 L/min)

Bypass FLOW VERIFICATION

Target Flow L/min	Indicated Flow (I) L/min	Ref. Std. Flow (R) L/min	Difference Ref. Flow %	Difference Design Flow %	
11.67	11.67	11.59	0.7%	-0.7%	as found.
11.67					Calibrated

CRITERIA:
±4% OF REFERENCE, OR ±5% OF DESIGN FLOW (11.7 L/min)

PMT VERIFICATION

Peak Channel	Indicated Value	Difference	
10.9	10.1	-0.8	as found.
10.9	10.9	0.0	Calibrated

CRITERIA:
10.9 ±0.5

COMMENTS

Cleaned unit and inlet head. Changed external DFU filter. No changes or calibrations required.

Flow Check by: Nick Bratton

Draft

Trinity Consultants

CONTINUOUS PARTICULATE SAMPLER

FLOW CHECK

SITE NAME	CSX AQ8	**Date**	1/17/2024	**Start Time**	14:45
PROJECT	234501.0038			**Stop Time**	15:30
SITE OPERATOR	Trintiy				

Analyzer Mfg	T-API
Analyzer Model	T640X
Analyzer s/n	1689

= Enter Flow Check Data
= Cell Containing Equations

REFERENCE EQUIPMENT:

	Model	Serial Number
Temperature Standard	Delta Cal	210062
Pressure Standard	Delta Cal	210062
Flow Standard	Delta Cal	210062
Certification Date	6/7/2023	

ZERO TEST / LEAK CHECK

PM Channel	Indicated Conc.	
PM_{10}	0.0	µg/m3
$PM_{2.5}$	0.0	µg/m3

CRITERIA:
PM < 0.2 µg/m3

TEMPERATURE SENSOR CALIBRATION

Indicated Temp.	Ref. Std. Temp.	Difference	
-1.6	-1.9	-0.3	°C
-1.6	-1.8	-0.2	°C

CRITERIA:
DIFFERENCE < ±2°C

PRESSURE SENSOR CALIBRATION

Indicated Pressure		Ref. Std. Pressure	Difference
kPa	mmHg	mmHg	mmHg
101.8	763.6	762.6	-1.0
101.8	763.6	762.6	-1.0

CRITERIA:
DIFFERENCE < ±10 mm Hg

Sample FLOW VERIFICATION

Target Flow L/min	Indicated Flow (I) L/min	Ref. Std. Flow (R) L/min	Difference Ref. Flow %	Difference Design Flow %
5.00	4.98	4.97	0.2%	-0.6%
5.00	4.99	4.97	0.4%	-0.6%

CRITERIA:
±4% OF REFERENCE, OR ±5% OF DESIGN FLOW (5.0 L/min)

Bypass FLOW VERIFICATION

Target Flow L/min	Indicated Flow (I) L/min	Ref. Std. Flow (R) L/min	Difference Ref. Flow %	Difference Design Flow %	
11.67	11.78	11.70	0.7%	0.3%	as found.
11.67	11.69	11.67	0.2%	0.0%	Calibrated

CRITERIA:
±4% OF REFERENCE, OR ±5% OF DESIGN FLOW (11.7 L/min)

PMT VERIFICATION

Peak Channel	Indicated Value	Difference	
10.9	10.8	-0.1	as found.
10.9	10.9	0.0	Calibrated

CRITERIA:
10.9 ±0.5

COMMENTS

First reading for each parameter is the as found check. Cleaned unit. Changed external DFU filter. Second reading for each parameter is the as-left check.

Flow Check by: Nick Bratton

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Trinity Consultants

CONTINUOUS PARTICULATE SAMPLER

FLOW CHECK

SITE NAME	CSX AQ8	**Date**	2/28/2024	**Start Time**	12:15
PROJECT	234501.0038			**Stop Time**	13:30
SITE OPERATOR	Trintiy				

Analyzer Mfg	T-API
Analyzer Model	T640X
Analyzer s/n	1689

= Enter Flow Check Data
= Cell Containing Equations

REFERENCE EQUIPMENT:

	Model	Serial Number
Temperature Standard	Delta Cal	210062
Pressure Standard	Delta Cal	210062
Flow Standard	Delta Cal	210062
Certification Date	6/7/2023	

ZERO TEST / LEAK CHECK

PM Channel	Indicated Conc.	
PM_{10}	0.1	µg/m3
$PM_{2.5}$	0.1	µg/m3

CRITERIA:
PM < 0.2 µg/m3

TEMPERATURE SENSOR CALIBRATION

Indicated Temp.	Ref. Std. Temp.	Difference	
17.9	17.7	-0.2	°C
18.7	18.5	-0.2	°C

CRITERIA:
DIFFERENCE < ±2°C

PRESSURE SENSOR CALIBRATION

Indicated Pressure		Ref. Std. Pressure	Difference
kPa	mmHg	mmHg	mmHg
100.2	751.6	751.5	-0.1
100.2	751.6	751.5	-0.1

CRITERIA:
DIFFERENCE < ±10 mm Hg

Sample FLOW VERIFICATION

Target Flow L/min	Indicated Flow (I) L/min	Ref. Std. Flow (R) L/min	Difference Ref. Flow %	Difference Design Flow %
5.00	4.88	4.96	-1.6%	-0.8%
5.00	5.01	5.01	0.0%	0.2%

CRITERIA:
±4% OF REFERENCE, OR ±5% OF DESIGN FLOW (5.0 L/min)

Bypass FLOW VERIFICATION

Target Flow L/min	Indicated Flow (I) L/min	Ref. Std. Flow (R) L/min	Difference Ref. Flow %	Difference Design Flow %	
11.67	11.60	11.58	0.2%	-0.8%	as found.
11.67	11.66	11.63	0.3%	-0.3%	Calibrated

CRITERIA:
±4% OF REFERENCE, OR ±5% OF DESIGN FLOW (11.7 L/min)

PMT VERIFICATION

Peak Channel	Indicated Value	Difference	
11.0	10.9	-0.1	as found.
10.9	10.9	0.0	Calibrated

CRITERIA:
10.9 ±0.5

COMMENTS

First reading for each parameter is the as found check. Cleaned unit and inlet head. Changed both DFU filters and cleaned optical chamber. Second reading for each parameter is the as-left check.

Flow Check by: Nick Bratton

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Trinity Consultants

CONTINUOUS PARTICULATE SAMPLER

FLOW CHECK

SITE NAME	CSX AQ8	**Date**	3/28/2024	**Start Time**	11:30
PROJECT	234501.0038			**Stop Time**	12:00
SITE OPERATOR	Trintiy				

Analyzer Mfg	T-API
Analyzer Model	T640X
Analyzer s/n	1689

= Enter Flow Check Data
= Cell Containing Equations

REFERENCE EQUIPMENT:

	Model	Serial Number
Temperature Standard	Delta Cal	210062
Pressure Standard	Delta Cal	210062
Flow Standard	Delta Cal	210062
Certification Date	6/7/2023	

ZERO TEST / LEAK CHECK

PM Channel	Indicated Conc.	
PM_{10}	0.1	µg/m3
$PM_{2.5}$	0.1	µg/m3

CRITERIA:
PM < 0.2 µg/m3

TEMPERATURE SENSOR CALIBRATION

Indicated Temp.	Ref. Std. Temp.	Difference	
10.7	10.3	-0.4	°C
			°C

CRITERIA:
DIFFERENCE < ±2°C

PRESSURE SENSOR CALIBRATION

Indicated Pressure		Ref. Std. Pressure	Difference
kPa	mmHg	mmHg	mmHg
101.6	762.1	762.0	-0.1

CRITERIA:
DIFFERENCE < ±10 mm Hg

Sample FLOW VERIFICATION

Target Flow L/min	Indicated Flow (I) L/min	Ref. Std. Flow (R) L/min	Difference Ref. Flow %	Difference Design Flow %
5.00	4.99	5.00	-0.2%	0.0%
5.00				

CRITERIA:
±4% OF REFERENCE, OR ±5% OF DESIGN FLOW (5.0 L/min)

Bypass FLOW VERIFICATION

Target Flow L/min	Indicated Flow (I) L/min	Ref. Std. Flow (R) L/min	Difference Ref. Flow %	Difference Design Flow %	
11.67	11.75	11.69	0.5%	0.2%	as found.
11.67					Calibrated

CRITERIA:
±4% OF REFERENCE, OR ±5% OF DESIGN FLOW (11.7 L/min)

PMT VERIFICATION

Peak Channel	Indicated Value	Difference	
10.9	10.9	0.0	as found.
			Calibrated

CRITERIA:
10.9 ±0.5

COMMENTS

Cleaned unit and inlet head. Changed external DFU filter. No changes or calibrations required.

Flow Check by: Nick Bratton

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MesaLabs

Mesa Labs 12100 W. 6th Ave
Lakewood, CO 80228
NIST Traceable Calibration Facility

CERTIFICATE OF CALIBRATION - NIST TRACEABILITY

Calibration Report #: 210062-07062023
DeltaCal Serial Number: 210062
Calibration Technician: Leigh Clark
Date: 7-Jun-2023
Recommended Recal Date: 7-Jun-2024

Critical Venturi Flow Meter

Max Uncertainty = 0.346%

TE20005	6 - 30.00 LPM	Calibration Due:	11-Jul-2023
TE20007	1.40 - 6.0 LPM	Calibration Due:	11-Jul-2023

Room Temperature: +- 0.03°C from -5°C - 70°C **Room Temperature:** 21.4 °C

Brand: Eutechnics

TE Number:	TE12242	**Serial Number:**	A11441
Std Cal Date:	5-Oct-22	**Std Cal Due Date:**	5-Oct-23

Ambient Temperature (set): 21.2 °C
Aux (filter) Temperature (set): 21.2 °C

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Barometric and Absolute Pressure

Vaisala Model PTB330 (50-1100) Digital Accuracy: 0.03371%

TE Number:	TE12311	**Serial Number:**	H0850001
Std Cal Date:	6-Feb-23	**Std Cal Due Date:**	6-Feb-24

DeltaCal:
Barometric pressure (set): 617.0 mmHg

Results of Venturi Calibration

Flow Rate (Q) vs. Pressure Drop (ΔP). Where: Q=Lpm, ΔP= Cm of H2O

Venturi

TE20005	Q= 3.95970	ΔP ^	0.51615	Overall Uncertainty: 0.35%
TE20007	Q= 3.89503	ΔP ^	0.53776	Overall Uncertainty: 0.35%

MesaLabs

Mesa Labs 12100 W. 6th Ave Lakewood, CO 80228
NIST Traceable Calibration Facility

As Shipped Calibration Data for DeltaCal

Unit Type:	DC 1
Flow Range:	1.5-19.5 LPM
Serial No. :	210062
Firmware Version:	4.00P

Date	Technician
07Jun2023	Leigh Clark

Ambient Pressure:	617.0	mmHg
Ambient Temperature:	21.4	°C

Range 1

Venturi	TE20005
Type	1B
Flow range	6 - 30.00 LPM

Test #	Static Pressure mmHg	Barometric Pressure mmHg	Venturi Qa LPM	DUT Qa LPM	% error %
1	134.19	616.5	6.506	6.525	0.292
2	204.74	616.5	9.982	10.004	0.220
3	266.57	616.5	13.021	13.020	-0.008
4	327.72	616.5	16.041	16.047	0.037
5	367.19	616.5	17.984	18.002	0.100
6	394.55	616.5	19.331	19.369	0.197
	Maximum allowable error at any flow rate is 0.75%.			Average	0.140
				Result	PASS

Range 2

Venturi	TE20007
Type	2B
Flow range	1.40 - 6.0 LPM

Test #	Static Pressure mmHg	Barometric Pressure mmHg	Venturi Qa LPM	DUT Qa LPM	% error %
1	145.24	616.5	2.012	2.013	0.050
2	214.80	616.5	3.005	3.010	0.166
3	268.58	616.5	3.772	3.779	0.186
4	322.33	617.0	4.533	4.550	0.375
5	373.87	616.5	5.274	5.279	0.095
6	413.97	616.5	5.846	5.881	0.599
	Maximum allowable error at any flow rate is 0.75%.			Average	0.245
				Result	PASS

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Performed By: Leigh Clark **Date:** 7-Jun-2023

Leigh Clark

Approved By: Norma Aragon QC Inspector **Date:** 08 Jun 2023

Norma Aragon

APPENDIX M. MONITORING ENCLOSURE TEMPERATURES FOR FIRST QUARTER 2024

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CSX AQ5

SHELTER TEMPERATURE in deg C for JANUARY, 2024

Hr Beg Hr End Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	16.7	16.7	17.1	17.3	17.2	16.6	15.1	14.6	15.2	18.8	19.1	17.0	16.2	15.7	14.5	14.1	13.8	13.7	13.7	13.8	13.7	13.7	13.6	13.1	**15.5**	**19.1**	**13.1**
2	13.0	12.8	13.4	14.2	14.0	13.2	12.4	12.2	12.1	12.3	13.0	15.8	17.1	17.6	18.1	17.7	15.8	14.3	13.9	13.8	13.2	12.8	12.3	12.3	**14.1**	**18.1**	**12.1**
3	12.3	12.2	12.2	12.2	12.0	12.2	12.2	12.4	13.6	17.3	20.3	21.7	22.4	23.7	24.0	21.8	17.8	15.8	14.8	15.2	15.5	16.1	16.2	16.4	**16.3**	**24.0**	**12.0**
4	16.8	16.7	16.1	16.0	15.7	15.2	14.7	14.6	14.7	14.5	14.5	15.4	15.7	15.3	15.0	15.2	13.6	12.5	12.5	12.6	12.6	12.8	12.8	12.8	**14.5**	**16.8**	**12.5**
5	12.8	12.8	12.8	12.8	12.9	12.9	12.9	12.3	11.6	13.5	15.7	17.7	18.1	19.5	20.1	20.0	17.5	13.6	12.2	12.2	12.3	12.1	12.0	12.1	**14.3**	**20.1**	**11.6**
6	12.1	12.4	12.3	12.0	12.0	12.2	12.3	12.9	13.5	13.8	12.5	13.1	12.8	12.8	12.9	12.9	12.9	12.8	12.6	12.3	12.3	12.2	12.1	12.1	**12.6**	**13.8**	**12.0**
7	12.3	12.3	12.2	12.3	12.2	12.4	13.1	13.8	14.3	15.2	18.1	19.3	18.7	18.0	17.7	16.9	16.2	15.9	15.9	15.9	16.2	15.1	14.3	13.6	**15.1**	**19.3**	**12.2**
8	13.1	12.8	12.3	12.1	12.2	12.1	12.0	12.5	13.7	17.0	18.6	20.4	22.0	24.1	24.9	24.8	22.1	18.5	16.3	15.1	14.0	13.4	13.1	13.1	**16.3**	**24.9**	**12.0**
9	12.8	13.1	13.5	13.9	14.1	14.3	13.8	13.6	13.6	13.6	14.0	14.6	15.2	15.7	16.3	16.7	17.4	19.3	20.2	20.5	20.7	20.4	21.9	22.8	**16.3**	**22.8**	**12.8**
10	23.0	22.3	21.2	19.9	18.6	17.8	17.6	17.4	16.9	19.0	20.2	20.1	19.3	19.1	19.2	18.8	17.8	16.9	16.5	15.9	15.5	15.6	15.2	15.0	**18.3**	**23.0**	**15.0**
11	15.0	14.9	14.6	14.0	13.2	12.9	12.8	12.5	14.6	17.5	20.0	21.8	23.1	23.4	23.8	23.6	21.9	20.1	18.7	17.0	15.6	14.7	14.6	14.0	**17.3**	**23.8**	**12.5**
12	13.0	12.3	12.1	11.8	12.2	12.3	12.2	12.3	15.2	17.4	20.1	21.1	21.2	20.6	19.8	18.1	16.7	16.3	15.9	15.9	15.9	16.3	16.7	18.4	**16.0**	**21.2**	**11.8**
13	20.5	21.1	21.7	22.8	22.5	21.4	21.3	20.6	19.9	20.3	18.4	18.1	19.7	19.9	19.8	18.1	15.8	13.0	12.5	12.6	12.6	12.6	12.5	12.6	**17.9**	**22.8**	**12.5**
14	12.4	12.3	12.4	12.3	12.4	12.5	12.5	12.2	12.1	14.4	17.2	17.8	12.9	12.4	13.5	13.6	12.7	12.9	12.9	12.7	12.7	12.7	12.6	12.7	**13.1**	**17.8**	**12.1**
15	12.8	12.9	12.8	12.8	13.0	12.6	12.5	12.4	12.4	12.1	12.0	12.5	12.6	12.6	12.3	12.4	13.0	13.1	13.3	13.4	13.2	13.2	13.0	12.9	**12.7**	**13.4**	**12.0**
16	12.8	12.6	12.6	12.7	12.7	12.6	12.7	12.6	12.6	12.6	12.7	13.0	12.9	12.9	13.0	13.0	13.4	13.4	13.5	13.4	13.4	13.5	13.4	13.4	**13.0**	**13.5**	**12.6**
17	13.4	13.2	13.0	13.0	13.0	13.1	13.0	12.6	10.7	9.8	12.3	12.8	13.0	12.9	12.7	12.7	12.9	13.0	12.8	12.8	12.9	12.9	12.8	12.9	**12.7**	**13.4**	**9.8**
18	12.9	12.9	12.9	12.9	12.8	12.8	12.7	12.4	12.2	12.4	12.7	14.7	15.9	14.3	13.6	13.3	12.5	12.1	12.1	12.0	12.4	12.2	12.1	12.2	**12.9**	**15.9**	**12.0**
19	12.0	12.1	12.1	12.3	12.6	12.7	12.7	12.7	12.6	12.6	12.4	12.4	12.3	12.6	12.5	12.6	12.8	12.9	12.9	13.0	12.9	12.8	12.7	12.8	**12.6**	**13.0**	**12.0**
20	13.2	13.0	13.2	13.2	13.2	13.3	13.0	12.6	12.7	12.7	12.9	13.2	13.2	13.2	13.3	13.4	13.4	13.5	13.5	13.5	13.4	13.4	13.4	13.4	**13.2**	**13.5**	**12.6**
21	13.3	13.3	13.2	13.4	13.4	13.4	13.4	13.1	12.2	11.6	12.0	12.0	12.4	12.8	12.9	12.4	12.8	12.9	12.9	12.9	13.0	13.0	13.0	12.9	**12.8**	**13.4**	**11.6**
22	12.9	12.9	12.9	13.0	12.9	12.8	12.8	12.4	12.0	15.4	17.9	18.2	20.0	20.5	21.2	20.3	17.3	15.2	13.2	12.2	12.3	12.0	12.3	12.5	**14.8**	**21.2**	**12.0**
23	12.5	12.4	12.3	12.4	12.5	12.4	12.4	12.4	13.7	15.2	17.2	9.6	14.8	19.4	20.3	20.4	19.3	16.4	14.5	14.3	14.4	14.9	15.4	15.4	**14.8**	**20.4**	**9.6**
24	15.4	15.2	15.7	15.6	15.4	15.2	15.0	14.8	15.3	16.4	17.8	18.9	20.1	21.0	20.8	20.4	19.8	19.5	18.8	18.9	18.7	18.9	19.3	19.8	**17.8**	**21.0**	**14.8**
25	19.7	19.8	20.1	20.3	20.2	19.9	19.9	20.1	19.9	20.7	22.1	22.9	23.3	24.2	24.9	25.2	25.1	24.4	23.7	22.9	23.3	23.2	23.2	23.5	**22.2**	**25.2**	**19.7**
26	23.5	23.2	23.0	22.7	22.1	22.1	21.5	21.9	23.2	24.5	22.6	22.6	22.7	22.9	22.3	24.2	24.4	25.0	24.7	24.1	23.4	22.8	22.1	21.5	**23.0**	**25.0**	**21.5**
27	21.4	21.5	20.9	19.8	19.1	18.2	17.5	17.6	19.3	21.8	23.4	23.9	24.6	24.7	24.1	23.7	22.6	21.3	20.7	20.6	20.5	20.1	18.3	16.4	**20.9**	**24.7**	**16.4**
28	15.5	15.2	15.1	15.0	14.5	14.0	13.9	14.1	15.1	15.4	15.9	16.7	17.8	18.8	18.7	18.8	17.9	17.0	16.9	16.9	16.3	15.5	15.6	15.8	**16.1**	**18.8**	**13.9**
29	15.2	14.6	14.5	14.3	13.9	13.8	13.8	13.8	14.0	14.4	15.6	16.3	16.6	16.6	16.4	16.1	15.8	14.8	14.3	14.5	14.6	14.4	14.5	14.5	**14.9**	**16.6**	**13.8**
30	14.8	14.9	14.4	14.3	14.2	13.9	13.2	12.8	12.8	13.1	13.8	14.9	16.3	16.1	15.5	14.6	13.9	13.3	12.9	12.9	13.3	13.3	13.4	13.3	**14.0**	**16.3**	**12.8**
31	13.3	13.3	13.5	13.5	14.4	14.8	14.6	14.6	15.0	15.3	16.2	18.0	19.1	20.0	20.0	19.6	19.1	18.3	18.3	17.7	16.1	14.7	13.6	12.9	**16.1**	**20.0**	**12.9**
MEAN	**14.9**	**14.8**	**14.7**	**14.7**	**14.6**	**14.4**	**14.2**	**14.1**	**14.4**	**15.5**	**16.5**	**17.0**	**17.5**	**17.8**	**17.9**	**17.6**	**16.7**	**15.9**	**15.4**	**15.2**	**15.1**	**14.9**	**14.8**	**14.7**	**15.5**		
MAX	**23.5**	**23.2**	**23.0**	**22.8**	**22.5**	**22.1**	**21.5**	**21.9**	**23.2**	**24.5**	**23.4**	**23.9**	**24.6**	**24.7**	**24.9**	**25.2**	**25.1**	**25.0**	**24.7**	**24.1**	**23.4**	**23.2**	**23.2**	**23.5**		**25.2**	
MIN	**12.0**	**12.1**	**12.1**	**11.8**	**12.0**	**12.1**	**12.0**	**12.2**	**10.7**	**9.8**	**12.0**	**9.6**	**12.3**	**12.4**	**12.3**	**12.4**	**12.5**	**12.1**	**12.1**	**12.0**	**12.3**	**12.0**	**12.0**	**12.1**			**9.6**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 744 DATA RECOVERY RATE = 100.0%

MONTHLY MEAN = 15.5 deg C

MAXIMUM SHELTER TEMPERATURE = 25.2 deg C DATE OF OCCURRENCE = 1/25 AT 1600 MAXIMUM DAILY MEAN = 23.0 deg C DATE OF OCCURRENCE = 1/26

MINIMUM SHELTER TEMPERATURE = 9.6 deg C DATE OF OCCURRENCE = 1/23 AT 1200 MINUMUM DAILY MEAN = 12.6 deg C DATE OF OCCURRENCE = 1/6

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

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CSX AQ5

SHELTER TEMPERATURE in deg C for FEBRUARY, 2024

Hr Beg Hr End Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	12.4	12.2	12.5	12.7	12.5	12.4	12.4	12.4	15.0	18.8	21.9	23.7	25.0	25.0	24.7	24.8	24.8	22.4	19.6	18.7	17.9	17.7	18.0	18.4	**18.2**	**25.0**	**12.2**
2	18.8	19.0	18.7	18.1	17.3	17.1	17.6	17.7	18.2	18.0	18.3	17.8	18.4	18.7	18.9	19.1	18.3	16.9	16.3	15.9	15.7	15.4	14.2	14.1	**17.4**	**19.1**	**14.1**
3	13.7	12.7	12.2	12.4	12.4	12.4	12.6	12.4	14.7	17.1	19.5	22.0	24.5	25.5	25.1	25.2	24.3	20.8	18.1	16.5	15.3	14.5	13.7	13.2	**17.1**	**25.5**	**12.2**
4	12.5	12.0	12.4	12.5	12.5	12.4	12.4	12.7	16.2	19.7	22.2	23.1	24.6	23.7	23.4	23.2	21.2	18.7	16.9	15.7	14.8	13.8	13.2	12.5	**16.8**	**24.6**	**12.0**
5	12.3	12.2	12.4	12.5	12.6	12.7	12.5	12.3	15.0	18.9	22.1	23.2	22.9	23.3	22.9	22.6	21.3	18.8	16.8	15.5	14.2	13.1	12.6	12.3	**16.5**	**23.3**	**12.2**
6	12.3	12.2	12.3	12.4	12.6	12.7	12.7	12.2	13.8	16.3	18.3	19.9	21.3	23.1	23.4	21.8	19.6	16.5	14.5	13.6	12.6	12.5	12.5	12.6	**15.5**	**23.4**	**12.2**
7	12.5	12.6	12.5	12.7	12.7	12.6	12.7	12.0	14.9	18.8	22.3	24.4	25.2	25.1	25.2	25.5	23.9	19.9	17.2	16.1	14.9	14.1	13.5	12.5	**17.2**	**25.5**	**12.0**
8	12.1	12.3	12.4	12.4	12.5	12.9	13.1	13.6	15.9	20.1	23.4	24.8	24.3	23.0	23.8	21.3	19.9	18.8	17.6	16.6	16.0	15.8	15.9	16.2	**17.3**	**24.8**	**12.1**
9	16.1	16.0	16.1	16.3	16.3	16.1	16.5	16.9	18.0	19.4	23.4	24.2	24.8	25.2	25.7	26.0	24.4	21.7	20.6	20.1	19.7	19.3	19.1	19.0	**20.0**	**26.0**	**16.0**
10	18.8	18.5	18.2	18.0	17.8	17.7	17.7	18.1	18.8	20.5	22.2	24.1	23.9	23.5	24.3	25.1	25.4	24.9	23.7	23.2	22.8	22.5	22.5	22.5	**21.4**	**25.4**	**17.7**
11	22.9	23.4	23.4	23.7	23.3	23.4	23.1	22.7	22.5	22.2	22.2	23.0	23.0	23.2	24.1	24.7	24.3	23.8	22.7	22.0	22.1	21.9	21.7	20.6	**22.9**	**24.7**	**20.6**
12	20.6	20.4	20.8	20.9	21.0	20.2	19.8	19.5	20.5	20.7	20.1	19.9	20.4	20.8	20.7	20.4	20.2	18.9	18.0	17.5	16.3	15.7	14.9	14.6	**19.3**	**21.0**	**14.6**
13	14.6	14.2	14.2	14.2	13.8	12.8	12.5	12.7	12.9	12.8	12.5	13.4	14.6	16.1	17.1	17.0	16.7	15.7	14.8	14.3	13.9	14.1	14.9	15.2	**14.4**	**17.1**	**12.5**
14	14.1	13.3	12.6	12.2	12.5	12.5	12.5	12.3	12.6	13.9	15.0	15.8	16.9	17.9	18.1	17.7	16.7	14.3	12.6	12.3	12.4	12.4	12.5	12.6	**14.0**	**18.1**	**12.2**
15	12.5	12.6	12.7	12.7	12.7	12.6	12.6	12.5	14.7	17.2	18.3	16.9	17.2	18.0	18.5	18.0	17.5	15.5	14.5	14.6	14.6	14.9	14.4	13.4	**15.0**	**18.5**	**12.5**
16	12.9	13.5	14.3	14.0	13.3	12.5	10.4	7.0	7.1	8.0	8.9	9.3	11.1	11.8	12.5	16.5	18.7	18.0	18.1	16.8	15.8	15.0	14.9	15.1	**13.1**	**18.7**	**7.0**
17	15.5	13.3	13.4	13.0	12.7	12.6	12.8	12.7	12.4	12.5	13.5	13.0	13.8	13.8	13.1	13.8	12.9	12.8	12.9	12.9	12.8	13.1	13.0	12.9	**13.1**	**15.5**	**12.4**
18	12.9	12.9	12.9	12.9	12.8	12.8	12.8	12.7	12.8	14.4	16.6	18.6	20.1	21.4	22.2	23.0	22.5	20.6	18.0	16.2	14.8	13.9	13.5	13.2	**16.0**	**23.0**	**12.7**
19	12.8	12.4	12.4	12.6	12.6	12.6	12.6	12.6	15.1	17.9	19.3	20.7	21.9	23.0	24.5	25.0	24.1	20.9	17.7	16.1	15.0	13.6	12.9	12.4	**16.7**	**25.0**	**12.4**
20	12.6	12.6	12.6	12.6	12.7	12.7	12.7	12.2	14.9	17.2	18.3	20.4	22.4	23.1	23.0	22.0	20.0	18.7	16.5	14.9	13.5	12.6	12.6	12.8	**16.0**	**23.1**	**12.2**
21	9.5	4.5	1.8	-0.2	-1.5	-2.3	-2.8	-2.2	1.4	5.3	8.4	10.3	11.7	12.9	13.6	13.5	12.9	10.4	6.8	4.7	4.3	3.7	2.9	2.2	**5.5**	**13.6**	**-2.8**
22	7.6	12.3	11.9	12.3	12.4	12.4	12.4	12.5	14.8	17.5	19.0	18.4	16.8	17.1	17.7	15.5	15.2	16.3	15.6	15.5	16.0	16.4	16.7	17.1	**15.0**	**19.0**	**7.6**
23	17.5	17.2	16.6	17.3	17.5	17.5	17.4	17.7	17.9	18.0	18.8	19.8	20.1	20.3	20.0	20.0	20.1	19.4	18.8	18.5	18.3	18.1	17.4	16.5	**18.4**	**20.3**	**16.5**
24	16.2	16.3	16.5	16.3	16.5	16.1	15.8	16.1	17.3	19.7	21.3	21.2	22.1	24.1	23.5	22.0	19.1	16.6	14.6	13.4	12.5	12.6	12.6	12.6	**17.3**	**24.1**	**12.5**
25	12.8	12.7	12.7	12.7	12.8	12.8	12.9	12.3	14.7	17.5	19.8	21.3	21.3	20.5	19.8	18.7	18.1	16.7	14.1	13.1	12.7	12.4	12.3	12.2	**15.3**	**21.3**	**12.2**
26	12.1	12.1	12.3	12.7	13.4	13.6	13.3	13.7	18.3	22.7	23.5	24.2	25.6	25.3	25.3	25.4	24.7	23.0	21.3	20.3	19.2	18.8	18.5	18.1	**19.1**	**25.6**	**12.1**
27	17.8	17.3	17.1	16.8	16.7	16.5	16.2	17.8	22.2	23.4	23.3	23.8	24.9	24.9	24.0	23.7	22.7	22.8	23.9	24.5	22.0	18.5	16.7	15.4	**20.5**	**24.9**	**15.4**
28	13.8	13.0	12.6	12.4	12.1	11.4	10.7	10.2	10.7	13.7	14.6	15.3	16.3	17.7	17.3	18.7	18.6	19.4	22.8	21.9	20.1	18.5	16.5	14.4	**15.5**	**22.8**	**10.2**
29	12.6	12.8	13.0	13.0	13.0	13.1	13.1	11.9	12.7	13.5	14.9	16.7	18.9	19.8	20.5	20.1	18.6	13.6	13.3	13.9	13.8	13.1	12.6	12.1	**14.6**	**20.5**	**11.9**
MEAN	**14.2**	**14.0**	**13.9**	**13.9**	**13.8**	**13.6**	**13.5**	**13.4**	**15.0**	**17.1**	**18.7**	**19.6**	**20.5**	**21.0**	**21.1**	**21.0**	**20.2**	**18.5**	**17.2**	**16.4**	**15.7**	**15.1**	**14.7**	**14.4**	**16.5**		
MAX	**22.9**	**23.4**	**23.4**	**23.7**	**23.3**	**23.4**	**23.1**	**22.7**	**22.5**	**23.4**	**23.5**	**24.8**	**25.6**	**25.5**	**25.7**	**26.0**	**25.4**	**24.9**	**23.9**	**24.5**	**22.8**	**22.5**	**22.5**	**22.5**		**26.0**	
MIN	**7.6**	**4.5**	**1.8**	**-0.2**	**-1.5**	**-2.3**	**-2.8**	**-2.2**	**1.4**	**5.3**	**8.4**	**9.3**	**11.1**	**11.8**	**12.5**	**13.5**	**12.9**	**10.4**	**6.8**	**4.7**	**4.3**	**3.7**	**2.9**	**2.2**			**-2.8**

POSSIBLE NUMBER OF OBSERVATIONS = 696 ACTUAL NUMBER OF OBSERVATIONS = 696 DATA RECOVERY RATE = 100.0%

MONTHLY MEAN = 16.5 deg C

MAXIMUM SHELTER TEMPERATURE = 26.0 deg C DATE OF OCCURRENCE = 2/9 AT 1600 MAXIMUM DAILY MEAN = 22.9 deg C DATE OF OCCURRENCE = 2/11

MINIMUM SHELTER TEMPERATURE = -2.8 deg C DATE OF OCCURRENCE = 2/21 AT 0700 MINUMUM DAILY MEAN = 5.5 deg C DATE OF OCCURRENCE = 2/21

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

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SHELTER TEMPERATURE in deg C for MARCH, 2024

Hr Beg Hr End Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	12.0	12.1	12.2	12.1	12.2	12.3	12.1	13.8	18.3	19.9	20.2	20.6	21.0	21.3	21.6	21.3	19.4	18.1	17.5	17.4	17.3	17.2	16.7	15.4	**16.8**	**21.6**	**12.0**
2	14.3	13.9	13.6	14.0	15.2	15.7	15.2	15.4	16.1	16.8	17.9	19.7	21.7	22.8	23.2	22.7	21.3	20.6	20.8	21.8	21.3	20.7	19.9	19.9	**18.5**	**23.2**	**13.6**
3	20.1	19.7	18.9	18.4	18.3	18.0	17.6	19.7	22.7	22.7	22.9	23.3	23.9	24.1	24.1	24.3	24.6	25.1	24.4	23.7	23.2	22.5	22.1	22.7	**22.0**	**25.1**	**17.6**
4	23.1	22.8	22.8	22.4	22.2	22.6	22.5	22.4	23.1	24.1	24.2	23.8	23.5	23.3	23.1	23.5	24.5	24.0	22.8	22.2	21.8	21.8	21.4	20.8	**22.9**	**24.5**	**20.8**
5	19.3	18.6	18.0	17.6	17.2	17.2	17.4	17.6	17.8	18.3	18.9	19.3	20.3	21.6	22.7	23.9	24.1	22.8	22.2	21.4	21.0	20.7	20.4	20.3	**19.9**	**24.1**	**17.2**
6	20.5	20.7	20.8	20.7	20.4	20.4	20.9	21.0	21.7	21.3	21.6	22.5	21.9	21.1	20.6	21.0	21.6	21.5	21.6	21.9	21.5	20.7	20.6	21.0	**21.1**	**22.5**	**20.4**
7	20.7	20.5	20.8	21.1	21.8	21.9	22.1	22.0	21.7	23.0	24.5	23.9	23.6	24.1	24.2	24.1	24.0	25.1	24.4	23.5	22.9	21.8	20.8	20.1	**22.6**	**25.1**	**20.1**
8	19.5	18.7	18.1	17.8	17.7	17.6	17.6	18.6	22.3	23.6	23.8	24.1	24.4	24.9	25.1	25.4	24.2	22.6	20.7	19.2	18.6	17.8	16.7	15.9	**20.6**	**25.4**	**15.9**
9	15.8	16.0	15.9	15.9	15.8	15.6	15.6	15.7	15.1	14.9	15.5	16.5	17.0	17.2	17.5	18.0	18.0	18.6	18.9	18.4	18.6	18.5	17.7	17.3	**16.8**	**18.9**	**14.9**
10	16.7	17.0	17.2	16.7	16.8	16.9	16.9	16.9	18.4	18.4	18.7	19.4	19.5	19.2	19.1	17.9	17.5	16.0	13.8	12.9	12.4	12.4	12.5	12.6	**16.5**	**19.5**	**12.4**
11	12.3	12.5	12.4	12.1	12.2	12.4	12.2	12.9	14.7	16.4	18.3	19.9	21.6	22.7	23.2	23.2	23.2	22.3	20.1	19.0	18.3	17.9	17.7	17.4	**17.3**	**23.2**	**12.1**
12	17.1	17.1	17.0	17.0	17.1	17.7	18.1	20.5	23.3	24.0	23.8	23.4	22.9	22.9	22.7	22.7	22.7	23.2	23.7	24.0	24.5	24.7	25.2	24.7	**21.7**	**25.2**	**17.0**
13	24.2	23.9	22.6	21.2	20.0	19.2	19.2	21.0	22.6	21.8	22.4	22.1	22.2	22.3	22.4	22.5	23.0	23.3	23.8	24.5	25.0	25.0	23.8	22.6	**22.5**	**25.0**	**19.2**
14	21.6	21.0	20.6	20.3	20.0	19.7	20.1	21.8	22.4	22.3	22.4	22.8	22.9	23.0	23.1	22.6	22.8	23.1	23.7	23.9	24.1	24.5	24.7	24.6	**22.4**	**24.7**	**19.7**
15	24.4	24.5	24.1	24.5	24.0	24.3	24.1	24.3	23.7	23.1	22.4	22.2	22.3	22.4	22.3	22.9	23.1	23.7	24.2	24.2	24.2	24.3	23.2	21.7	**23.5**	**24.5**	**21.7**
16	20.6	20.0	19.8	19.6	18.7	17.9	17.4	19.5	22.3	22.7	22.7	23.1	23.3	23.5	23.4	23.8	23.5	24.1	23.6	22.0	20.8	20.5	20.3	20.4	**21.4**	**24.1**	**17.4**
17	20.8	21.2	22.1	22.4	21.7	20.7	20.9	21.8	22.9	23.6	24.4	22.9	22.9	23.3	23.5	23.2	23.0	23.8	24.5	24.2	23.5	23.3	23.1	20.3	**22.7**	**24.5**	**20.3**
18	17.8	16.5	15.9	15.7	15.2	14.8	14.6	15.2	16.8	17.8	19.2	20.4	21.6	22.8	22.7	22.0	20.8	18.1	14.6	12.7	12.1	12.2	12.4	12.3	**16.8**	**22.8**	**12.1**
19	12.5	12.4	12.3	12.4	12.2	12.0	12.3	13.1	15.2	16.1	16.2	19.3	20.8	22.3	23.3	23.9	24.9	22.9	20.3	18.9	18.8	19.4	19.7	18.9	**17.5**	**24.9**	**12.0**
20	17.4	16.2	15.4	15.2	15.0	15.2	15.5	17.2	19.2	22.8	22.8	23.3	23.2	23.1	23.5	23.7	24.0	24.4	20.2	17.0	15.3	14.1	13.1	12.0	**18.7**	**24.4**	**12.0**
21	12.2	12.4	12.5	12.6	12.7	12.8	12.1	12.7	14.6	15.6	16.9	17.8	19.0	20.2	21.0	20.9	21.1	20.7	18.1	16.6	15.8	15.2	14.6	14.4	**15.9**	**21.1**	**12.1**
22	14.1	13.4	12.9	12.7	12.0	12.3	12.3	14.9	16.3	18.6	20.5	20.1	18.5	19.5	20.0	18.9	18.6	18.5	18.1	17.6	17.3	17.0	16.2	16.3	**16.5**	**20.5**	**12.0**
23	16.2	15.5	15.2	15.3	15.0	15.1	15.7	16.0	15.9	15.8	16.1	18.2	21.1	22.3	21.0	19.6	18.2	17.7	16.0	14.3	13.3	12.3	12.5	12.7	**16.3**	**22.3**	**12.3**
24	12.7	12.6	12.6	12.5	12.5	12.6	11.9	13.5	16.0	18.4	19.9	21.9	24.0	25.1	25.1	24.9	24.9	25.3	21.9	19.0	17.7	17.0	16.5	15.8	**18.1**	**25.3**	**11.9**
25	14.8	13.9	13.8	13.5	12.7	11.9	12.3	16.6	20.5	21.8	22.8	24.0	25.1	25.0	24.6	24.5	24.6	25.0	22.9	20.0	18.4	17.3	16.7	16.3	**19.1**	**25.1**	**11.9**
26	15.5	15.0	15.0	15.0	14.9	14.6	14.9	16.1	19.1	22.0	24.0	24.1	24.9	25.5	24.8	24.9	23.8	22.5	20.8	19.5	18.7	18.0	17.0	16.8	**19.5**	**25.5**	**14.6**
27	16.9	17.2	17.2	17.3	17.7	17.3	17.7	18.6	18.7	18.0	17.3	17.3	17.7	17.4	17.5	19.5	20.2	20.1	20.3	19.7	19.4	19.8	19.4	19.2	**18.4**	**20.3**	**16.9**
28	19.7	19.7	19.8	19.9	19.9	19.7	19.7	19.7	19.5	16.2	18.6	20.0	20.6	20.2	20.1	20.7	20.4	19.9	19.6	19.5	19.1	18.3	17.6	16.9	**19.4**	**20.7**	**16.2**
29	16.3	15.8	15.4	15.0	14.3	13.8	14.4	18.3	20.5	22.1	23.2	23.8	25.2	25.2	25.1	25.3	25.4	24.7	22.7	21.0	20.1	19.5	18.8	18.3	**20.2**	**25.4**	**13.8**
30	17.7	17.3	16.8	16.4	16.1	15.9	16.7	20.6	23.1	23.4	23.5	23.6	23.9	23.9	24.4	24.3	25.2	24.2	22.9	22.6	22.2	20.3	20.2	20.4	**21.1**	**25.2**	**15.9**
31	19.8	19.4	19.0	18.8	18.8	18.7	19.7	22.8	22.9	23.6	24.2	23.9	23.2	23.0	24.3	24.3	25.0	24.4	24.6	24.5	25.1	24.7	23.7	22.2	**22.5**	**25.1**	**18.7**
MEAN	**17.6**	**17.3**	**17.1**	**17.0**	**16.8**	**16.7**	**16.8**	**18.1**	**19.6**	**20.3**	**21.0**	**21.5**	**22.1**	**22.4**	**22.6**	**22.6**	**22.5**	**22.1**	**21.1**	**20.2**	**19.8**	**19.3**	**18.9**	**18.4**	**19.7**		
MAX	**24.4**	**24.5**	**24.1**	**24.5**	**24.0**	**24.3**	**24.1**	**24.3**	**23.7**	**24.1**	**24.5**	**24.1**	**25.2**	**25.5**	**25.1**	**25.4**	**25.4**	**25.3**	**24.6**	**24.5**	**25.1**	**25.0**	**25.2**	**24.7**		**25.5**	
MIN	**12.0**	**12.1**	**12.2**	**12.1**	**12.0**	**11.9**	**11.9**	**12.7**	**14.6**	**14.9**	**15.5**	**16.5**	**17.0**	**17.2**	**17.5**	**17.9**	**17.5**	**16.0**	**13.8**	**12.7**	**12.1**	**12.2**	**12.4**	**12.0**			**11.9**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 744 DATA RECOVERY RATE = 100.0%

MONTHLY MEAN = 19.7 deg C

MAXIMUM SHELTER TEMPERATURE = 25.5 deg C DATE OF OCCURRENCE = 3/26 AT 1400 MAXIMUM DAILY MEAN = 23.5 deg C DATE OF OCCURRENCE = 3/15

MINIMUM SHELTER TEMPERATURE = 11.9 deg C DATE OF OCCURRENCE = 3/24 AT 0700 MINUMUM DAILY MEAN = 15.9 deg C DATE OF OCCURRENCE = 3/21

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

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CSX AQ8

SHELTER TEMPERATURE in deg C for JANUARY, 2024

Hr Beg Hr End Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	17.7	17.4	17.5	17.8	17.6	17.0	15.7	15.4	15.7	18.0	19.2	17.9	17.2	16.6	15.2	14.8	14.4	14.3	14.4	14.4	14.5	14.7	14.5	14.0	**16.1**	**19.2**	**14.0**
2	13.9	13.6	14.1	15.0	14.5	13.7	13.0	12.1	12.3	12.7	13.6	16.1	17.7	18.7	19.3	19.8	18.4	15.9	15.3	14.8	14.1	13.4	12.6	12.0	**14.9**	**19.8**	**12.0**
3	12.1	11.7	11.7	11.8	12.1	11.8	12.5	12.2	13.1	16.2	20.0	22.1	23.3	23.9	24.5	24.1	20.2	17.4	16.1	16.0	16.2	16.5	16.1	16.2	**16.6**	**24.5**	**11.7**
4	16.7	17.0	16.5	16.3	16.4	16.1	15.4	15.4	15.5	15.5	15.7	16.5	16.7	16.4	16.3	16.7	15.3	13.3	12.4	12.6	13.1	13.0	13.3	13.5	**15.2**	**17.0**	**12.4**
5	13.5	13.4	13.3	13.6	13.6	13.8	13.6	13.1	13.3	13.6	15.9	17.7	18.7	19.1	20.2	20.7	19.2	15.4	12.6	12.2	12.4	12.2	12.3	11.9	**14.8**	**20.7**	**11.9**
6	12.5	12.6	12.7	12.6	12.8	12.9	12.7	13.6	14.0	14.6	14.6	14.3	13.3	12.0	11.9	11.9	12.0	12.2	12.3	12.4	12.6	12.3	12.1	12.6	**12.8**	**14.6**	**11.9**
7	13.1	13.0	12.8	12.4	12.3	13.0	14.1	14.6	15.0	16.0	18.6	20.3	20.2	19.5	19.3	18.3	17.5	17.0	16.9	16.9	17.4	16.3	15.3	14.6	**16.0**	**20.3**	**12.3**
8	14.1	13.7	13.2	12.7	12.4	12.3	12.6	13.3	14.2	16.3	18.8	20.6	22.3	24.0	26.0	26.6	24.4	20.4	17.9	16.3	15.1	14.1	13.6	13.5	**17.0**	**26.6**	**12.3**
9	13.5	14.1	14.6	15.0	15.4	15.8	15.9	16.0	16.3	16.2	16.0	16.1	16.6	17.1	17.8	18.3	19.0	20.6	21.1	21.2	21.3	21.7	22.8	23.4	**17.7**	**23.4**	**13.5**
10	23.3	22.2	21.3	20.7	19.5	18.8	18.6	18.2	17.5	18.7	21.1	21.3	20.1	19.7	20.1	19.7	18.9	18.0	17.4	16.8	16.4	16.5	16.1	15.8	**19.0**	**23.3**	**15.8**
11	15.7	15.5	15.1	14.4	13.6	13.6	13.7	12.8	12.3	15.0	19.0	21.0	22.3	23.2	23.7	23.7	22.8	20.7	19.2	17.7	16.4	15.6	15.5	16.0	**17.4**	**23.7**	**12.3**
12	14.8	13.8	13.0	12.5	11.9	12.2	11.5	12.2	12.4	15.2	20.6	23.9	25.3	24.9	23.9	21.7	19.8	19.0	18.2	18.0	17.6	18.0	18.3	19.7	**17.4**	**25.3**	**11.5**
13	21.6	22.0	22.4	23.4	22.7	21.6	21.2	20.4	19.4	20.1	18.9	18.9	20.6	20.9	21.6	19.9	17.8	14.6	12.5	12.3	12.7	12.3	12.3	12.4	**18.4**	**23.4**	**12.3**
14	12.5	12.1	12.6	12.4	13.0	12.8	13.0	12.8	12.4	13.4	16.3	17.4	13.4	12.3	14.6	15.6	13.9	13.4	13.4	12.9	13.0	12.9	12.9	13.1	**13.4**	**17.4**	**12.1**
15	13.6	13.6	13.5	13.4	13.7	13.0	13.2	12.9	12.8	12.1	12.4	12.6	12.8	12.5	12.4	12.9	12.8	13.0	12.8	12.9	12.8	13.0	13.0	13.0	**12.9**	**13.7**	**12.1**
16	12.8	13.0	13.0	13.0	13.0	13.3	13.1	13.4	13.4	13.6	13.6	13.7	13.6	13.5	13.4	13.5	14.1	14.2	14.3	14.3	14.4	14.5	14.5	14.5	**13.7**	**14.5**	**12.8**
17	14.4	13.9	13.8	13.7	13.7	13.8	13.8	14.0	13.9	13.9	13.7	13.4	12.8	13.4	13.0	10.8	13.3	13.1	13.1	13.1	13.2	13.1	13.3	13.2	**13.4**	**14.4**	**10.8**
18	13.3	13.3	13.3	13.2	13.3	13.1	12.8	13.0	12.9	12.1	13.0	15.2	16.8	16.2	15.9	14.7	13.8	13.3	13.3	13.5	12.8	12.1	13.1	13.5	**13.6**	**16.8**	**12.1**
19	12.5	11.6	11.5	12.4	13.2	13.2	13.0	12.8	13.1	12.8	13.0	12.7	12.0	13.1	12.9	13.0	13.2	13.4	13.3	13.4	13.3	12.9	12.9	13.0	**12.8**	**13.4**	**11.5**
20	13.4	13.3	13.8	14.0	14.0	14.3	13.5	13.4	13.6	14.2	14.1	14.3	13.9	13.8	13.9	14.1	14.3	14.5	14.5	14.3	14.2	14.1	14.1	13.9	**14.0**	**14.5**	**13.3**
21	13.7	13.7	13.8	14.3	14.4	14.5	14.1	14.2	13.9	13.7	13.5	13.7	14.2	14.1	14.4	14.2	13.3	13.2	13.1	12.9	13.3	13.5	13.6	13.4	**13.8**	**14.5**	**12.9**
22	13.7	13.4	13.2	13.4	13.3	13.4	13.4	13.4	13.3	13.4	16.1	18.0	18.6	18.7	20.1	19.7	16.8	15.2	13.5	12.8	12.5	12.5	11.9	11.5	**14.7**	**20.1**	**11.5**
23	12.6	12.4	11.9	12.8	12.8	12.5	12.4	12.5	12.3	14.8	17.3	20.6	22.3	24.0	23.8	23.5	22.0	19.2	17.0	15.9	15.7	15.8	15.9	15.9	**16.5**	**24.0**	**11.9**
24	15.8	15.6	16.2	16.2	16.2	16.0	16.1	16.1	16.2	16.8	18.2	19.5	20.8	22.2	22.2	21.9	21.2	20.3	19.8	19.7	19.7	19.8	20.2	20.7	**18.6**	**22.2**	**15.6**
25	20.6	20.3	20.7	21.0	21.1	21.0	20.7	21.0	21.2	21.7	23.1	24.1	25.3	25.9	27.5	27.9	27.0	26.1	24.5	23.8	23.7	23.7	23.6	23.9	**23.3**	**27.9**	**20.3**
26	24.0	24.1	24.1	23.9	23.3	23.0	22.3	23.0	24.3	25.9	27.4	26.9	26.8	26.6	26.1	27.0	27.6	27.6	26.7	25.9	25.0	24.2	23.5	22.6	**25.1**	**27.6**	**22.3**
27	22.1	21.8	21.2	20.2	19.5	18.7	18.3	18.5	19.6	22.1	26.4	28.5	27.9	27.5	27.7	27.0	25.5	24.0	23.3	23.0	22.5	22.2	21.1	18.9	**22.8**	**28.5**	**18.3**
28	17.7	17.0	16.3	15.5	14.9	14.5	14.4	14.7	15.6	15.9	16.1	16.7	17.8	18.7	18.5	18.7	18.0	17.1	17.0	17.0	16.8	16.3	16.7	16.6	**16.6**	**18.7**	**14.4**
29	16.2	15.6	15.4	15.2	14.9	14.9	14.9	14.9	15.1	15.5	16.5	17.4	18.0	18.0	17.7	17.4	17.0	15.9	15.5	15.6	15.6	15.4	15.4	15.3	**16.0**	**18.0**	**14.9**
30	15.2	15.8	15.4	15.0	14.9	15.1	15.4	15.5	15.6	15.7	16.2	17.1	19.0	20.3	20.0	18.1	16.4	15.9	15.4	15.1	15.3	15.4	15.4	15.7	**16.2**	**20.3**	**14.9**
31	15.9	15.9	16.0	15.7	15.5	15.5	15.6	15.6	15.9	16.0	17.5	19.5	20.4	21.3	20.9	19.9	19.4	19.2	19.1	18.1	16.6	15.5	14.4	13.1	**17.2**	**21.3**	**13.1**
MEAN	**15.6**	**15.4**	**15.3**	**15.3**	**15.1**	**15.0**	**14.9**	**14.9**	**15.0**	**15.9**	**17.3**	**18.3**	**18.7**	**19.0**	**19.2**	**18.9**	**18.0**	**17.0**	**16.3**	**16.0**	**15.8**	**15.6**	**15.5**	**15.4**	**16.4**		
MAX	**24.0**	**24.1**	**24.1**	**23.9**	**23.3**	**23.0**	**22.3**	**23.0**	**24.3**	**25.9**	**27.4**	**28.5**	**27.9**	**27.5**	**27.7**	**27.9**	**27.6**	**27.6**	**26.7**	**25.9**	**25.0**	**24.2**	**23.6**	**23.9**		**28.5**	
MIN	**12.1**	**11.6**	**11.5**	**11.8**	**11.9**	**11.8**	**11.5**	**12.1**	**12.3**	**12.1**	**12.4**	**12.6**	**12.0**	**12.0**	**11.9**	**10.8**	**12.0**	**12.2**	**12.3**	**12.2**	**12.4**	**12.1**	**11.9**	**11.5**			**10.8**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 744 DATA RECOVERY RATE = 100.0%

MONTHLY MEAN = 16.4 deg C

MAXIMUM SHELTER TEMPERATURE = 28.5 deg C DATE OF OCCURRENCE = 1/27 AT 1200 MAXIMUM DAILY MEAN = 25.1 deg C DATE OF OCCURRENCE = 1/26

MINIMUM SHELTER TEMPERATURE = 10.8 deg C DATE OF OCCURRENCE = 1/17 AT 1600 MINUMUM DAILY MEAN = 12.8 deg C DATE OF OCCURRENCE = 1/6

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

Draft

CSX AQ8

SHELTER TEMPERATURE in deg C for FEBRUARY, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	12.1	11.6	12.2	12.5	12.3	12.3	12.5	11.9	12.8	16.4	20.5	23.6	24.6	25.4	26.7	27.8	27.8	24.6	20.9	19.6	19.0	19.2	19.4	19.2	**18.5**	**27.8**	**11.6**
2	19.2	19.4	18.9	18.2	18.0	18.2	18.3	18.2	18.7	18.9	18.8	18.3	18.9	19.5	19.7	20.0	19.0	17.6	16.8	16.4	16.1	15.9	14.8	14.8	**18.0**	**20.0**	**14.8**
3	14.4	13.2	12.4	12.0	11.8	11.6	12.6	11.5	12.4	15.8	18.9	21.6	23.8	24.8	26.4	27.2	27.6	24.0	20.3	18.1	16.7	15.5	14.6	14.2	**17.6**	**27.6**	**11.5**
4	13.9	13.2	12.6	12.2	11.7	11.4	11.8	12.2	13.3	17.4	22.2	25.4	27.0	28.1	28.4	28.2	27.3	23.4	19.9	18.0	16.6	15.5	14.2	13.1	**18.2**	**28.4**	**11.4**
5	12.6	11.9	11.5	12.2	12.1	11.5	11.7	12.2	12.5	17.0	21.4	24.9	26.5	27.4	27.9	28.2	27.5	23.5	20.0	17.7	15.3	13.7	12.9	12.4	**17.7**	**28.2**	**11.5**
6	12.0	11.9	11.7	11.3	12.2	12.6	12.5	12.6	12.8	15.1	17.5	19.7	20.7	21.8	23.9	25.7	25.6	21.8	18.1	15.9	14.3	13.4	12.4	11.7	**16.1**	**25.7**	**11.3**
7	12.0	12.1	12.0	12.2	11.9	11.7	11.6	11.7	12.5	17.0	21.2	24.4	27.2	28.2	28.2	28.2	28.5	24.5	20.3	18.1	16.6	15.5	14.1	13.3	**18.0**	**28.5**	**11.6**
8	12.6	12.0	11.9	12.1	12.4	12.6	12.8	12.8	14.0	19.1	23.8	26.7	27.8	27.7	28.1	26.9	24.3	21.6	19.6	18.2	17.4	17.0	17.1	17.4	**18.6**	**28.1**	**11.9**
9	17.0	16.8	17.0	17.3	17.3	17.5	17.9	18.0	18.8	20.4	24.7	26.6	28.2	28.2	27.8	27.6	27.4	25.0	22.9	21.9	21.1	20.5	20.1	19.7	**21.7**	**28.2**	**16.8**
10	19.3	19.0	18.8	18.5	18.1	18.1	18.1	18.2	19.1	21.1	23.5	25.7	26.3	26.5	28.1	28.5	28.0	26.6	25.4	24.9	24.4	24.6	24.6	24.7	**22.9**	**28.5**	**18.1**
11	24.9	25.5	25.7	25.8	25.1	24.7	24.5	24.5	23.8	23.2	23.2	23.9	24.5	24.6	26.2	27.2	26.9	25.9	24.7	23.8	23.5	23.2	22.9	22.0	**24.6**	**27.2**	**22.0**
12	21.8	21.6	21.8	21.6	21.8	21.6	21.5	21.3	21.6	22.3	22.7	23.0	23.3	23.7	23.5	23.4	22.9	21.3	20.3	19.5	18.6	18.6	17.9	17.3	**21.4**	**23.7**	**17.3**
13	17.3	16.7	15.9	15.2	14.4	13.4	12.0	12.5	13.2	13.3	13.2	14.6	15.9	17.6	19.1	19.2	19.3	17.7	16.4	15.8	15.4	15.1	15.5	16.1	**15.6**	**19.3**	**12.0**
14	15.5	14.7	13.9	13.2	12.6	12.7	12.8	12.8	12.6	14.7	16.4	17.5	18.7	19.5	19.9	19.8	19.1	16.4	13.9	13.0	12.2	12.0	12.0	11.5	**14.9**	**19.9**	**11.5**
15	11.4	11.8	11.7	11.6	12.3	12.3	12.4	11.7	12.6	17.2	19.6	20.2	20.8	20.6	21.0	21.2	21.0	18.5	16.5	16.1	15.7	15.9	15.5	14.3	**15.9**	**21.2**	**11.4**
16	14.2	15.0	15.4	15.3	14.4	13.5	12.7	12.4	13.1	16.4	18.3	19.5	21.5	22.3	23.2	23.8	22.9	20.4	19.8	18.8	17.7	17.1	16.5	16.5	**17.5**	**23.8**	**12.4**
17	16.4	13.9	11.6	11.8	12.5	12.5	12.8	12.3	11.9	13.7	15.6	15.3	16.1	15.8	14.8	15.9	15.0	13.3	13.0	13.1	12.7	13.1	12.9	12.9	**13.7**	**16.4**	**11.6**
18	12.7	12.8	12.9	12.8	12.8	12.8	13.0	13.0	12.6	13.2	15.2	17.3	18.7	19.8	20.7	22.1	22.6	21.0	18.6	16.8	15.4	14.8	14.5	14.3	**15.9**	**22.6**	**12.6**
19	13.8	13.0	12.4	11.9	11.6	12.0	11.9	11.5	13.1	17.4	19.9	21.5	22.5	23.6	25.1	25.8	26.3	23.9	19.9	17.8	16.1	14.7	13.4	12.9	**17.2**	**26.3**	**11.5**
20	12.4	11.7	11.9	12.1	12.3	12.2	12.5	12.6	13.3	16.6	20.1	22.9	24.8	26.7	27.6	26.9	25.2	23.2	19.7	17.2	15.8	14.2	12.9	12.2	**17.4**	**27.6**	**11.7**
21	11.9	11.4	12.4	12.5	12.4	12.4	11.9	13.1	13.7	17.8	21.4	24.5	25.4	25.6	26.9	27.7	27.8	24.7	20.2	17.5	15.3	13.5	12.7	12.6	**17.7**	**27.8**	**11.4**
22	12.7	12.6	12.6	13.0	13.3	12.7	12.2	12.4	14.9	18.2	20.4	20.4	19.0	19.3	19.8	17.3	16.6	17.5	17.0	16.6	17.1	17.8	18.0	18.0	**16.2**	**20.4**	**12.2**
23	18.0	17.9	17.5	18.1	17.9	18.0	18.2	18.3	18.0	18.1	19.3	20.5	20.9	21.2	21.1	21.2	21.3	20.6	20.0	19.8	19.6	18.8	18.0	17.1	**19.1**	**21.3**	**17.1**
24	16.4	16.3	16.7	17.2	17.5	17.0	16.7	17.2	18.5	20.6	22.3	22.0	22.8	24.7	24.2	22.4	19.6	17.1	15.2	13.8	12.7	12.5	13.1	12.3	**17.9**	**24.7**	**12.3**
25	13.3	12.9	12.6	12.4	12.8	12.7	12.7	13.0	14.3	17.4	20.3	22.6	24.0	23.9	23.4	23.7	24.1	21.4	16.7	14.8	13.6	13.2	13.0	12.6	**16.7**	**24.1**	**12.4**
26	12.3	12.3	12.8	13.8	14.4	14.2	14.0	14.2	17.4	22.0	26.3	28.3	28.4	28.0	28.1	28.1	27.7	26.3	24.1	22.3	20.8	19.8	19.2	18.7	**20.6**	**28.4**	**12.3**
27	18.4	17.9	17.8	17.6	17.4	17.2	17.0	18.1	21.5	25.6	28.0	27.8	28.1	28.0	27.5	26.2	24.7	24.4	25.0	25.3	25.1	25.1	25.1	24.9	**23.1**	**28.1**	**17.0**
28	24.1	24.0	24.0	24.0	24.5	23.9	23.2	23.0	24.0	25.3	25.2	25.9	23.1	22.1	25.4	25.9	25.4	25.0	24.8	23.0	21.0	19.3	17.5	15.4	**23.3**	**25.9**	**15.4**
29	13.3	11.8	12.6	12.6	12.5	12.5	12.8	12.1	12.2	14.2	16.1	17.8	19.5	20.4	21.3	22.0	22.2	21.1	18.0	16.6	15.4	14.3	13.7	13.1	**15.8**	**22.2**	**11.8**
MEAN	**15.4**	**15.0**	**14.9**	**14.9**	**14.8**	**14.7**	**14.6**	**14.7**	**15.5**	**18.1**	**20.6**	**22.2**	**23.1**	**23.6**	**24.3**	**24.4**	**23.9**	**21.8**	**19.6**	**18.3**	**17.3**	**16.7**	**16.2**	**15.7**	**18.3**		
MAX	**24.9**	**25.5**	**25.7**	**25.8**	**25.1**	**24.7**	**24.5**	**24.5**	**24.0**	**25.6**	**28.0**	**28.3**	**28.4**	**28.2**	**28.4**	**28.5**	**28.5**	**26.6**	**25.4**	**25.3**	**25.1**	**25.1**	**25.1**	**24.9**		**28.5**	
MIN	**11.4**	**11.4**	**11.5**	**11.3**	**11.6**	**11.4**	**11.6**	**11.5**	**11.9**	**13.2**	**13.2**	**14.6**	**15.9**	**15.8**	**14.8**	**15.9**	**15.0**	**13.3**	**13.0**	**13.0**	**12.2**	**12.0**	**12.0**	**11.5**			**11.3**

POSSIBLE NUMBER OF OBSERVATIONS = 696 ACTUAL NUMBER OF OBSERVATIONS = 696 DATA RECOVERY RATE = 100.0%

MONTHLY MEAN = 18.3 deg C

MAXIMUM SHELTER TEMPERATURE = 28.5 deg C DATE OF OCCURRENCE = 2/7 AT 1700 MAXIMUM DAILY MEAN = 24.6 deg C DATE OF OCCURRENCE = 2/11

MINIMUM SHELTER TEMPERATURE = 11.3 deg C DATE OF OCCURRENCE = 2/6 AT 0400 MINUMUM DAILY MEAN = 13.7 deg C DATE OF OCCURRENCE = 2/17

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

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CSX AQ8

SHELTER TEMPERATURE in deg C for MARCH, 2024

Hr Beg Hr End Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	12.2	11.8	11.8	11.5	11.1	11.4	11.5	12.5	16.3	19.6	22.1	23.5	25.2	25.7	25.2	24.3	22.0	20.2	19.4	19.0	18.8	18.9	18.6	17.3	**17.9**	**25.7**	**11.1**
2	15.9	16.3	16.5	16.5	16.7	16.8	16.5	16.8	17.6	18.4	19.1	20.3	21.9	23.5	24.0	23.5	22.5	21.9	21.9	22.6	22.3	21.9	21.0	20.7	**19.8**	**24.0**	**15.9**
3	20.6	19.6	18.7	18.4	18.1	17.8	17.8	18.9	21.3	26.4	27.9	27.5	27.2	27.1	27.0	26.9	27.1	28.0	26.8	25.2	24.3	23.8	23.1	23.4	**23.5**	**28.0**	**17.8**
4	23.9	24.0	23.9	23.3	23.0	23.5	23.6	23.8	24.6	26.0	27.8	27.3	27.1	26.6	26.6	26.7	27.7	27.6	25.9	25.3	24.8	24.7	24.5	23.5	**25.2**	**27.8**	**23.0**
5	22.0	20.2	19.3	18.6	18.0	18.0	18.2	18.4	18.6	18.9	19.5	20.1	20.8	22.3	23.4	24.5	25.2	24.5	23.5	22.8	22.4	21.9	21.2	20.8	**21.0**	**25.2**	**18.0**
6	21.4	21.7	22.1	22.4	22.6	22.6	22.7	22.9	23.5	23.7	24.2	25.7	24.8	23.1	21.7	21.9	22.3	22.3	22.3	22.6	22.3	21.5	21.4	21.9	**22.7**	**25.7**	**21.4**
7	21.5	21.3	21.6	21.9	22.6	22.8	23.1	22.9	22.5	23.3	25.3	27.6	28.7	29.2	28.4	28.7	29.2	27.0	25.0	23.9	23.3	22.0	20.9	20.4	**24.3**	**29.2**	**20.4**
8	19.8	19.1	18.5	18.2	18.1	18.0	17.9	18.7	21.6	25.8	28.3	28.1	28.1	27.6	27.9	27.7	27.5	26.2	23.9	21.6	20.5	19.8	18.4	17.3	**22.4**	**28.3**	**17.3**
9	17.0	17.3	17.4	17.5	17.5	17.7	17.7	17.7	17.5	17.5	18.1	19.2	19.6	19.6	19.9	20.1	20.1	20.3	20.1	19.3	19.4	19.3	18.5	18.1	**18.6**	**20.3**	**17.0**
10	17.4	17.6	17.9	17.4	17.6	17.8	17.7	17.3	18.4	19.0	20.3	21.2	20.6	20.3	20.3	19.8	19.9	18.3	15.5	14.1	12.8	12.0	11.8	11.8	**17.4**	**21.2**	**11.8**
11	12.3	11.7	11.6	12.1	12.2	11.9	11.8	12.9	14.8	17.3	19.5	21.4	22.7	23.7	24.6	25.6	25.8	24.8	21.9	20.3	19.6	19.1	18.6	18.0	**18.1**	**25.8**	**11.6**
12	17.7	17.7	17.7	17.8	18.1	18.8	19.1	20.6	23.5	26.3	27.6	28.2	27.7	27.2	27.0	26.5	26.6	26.9	27.9	28.2	28.3	27.8	27.1	26.4	**24.2**	**28.3**	**17.7**
13	25.8	25.6	24.5	23.1	21.6	20.6	20.0	21.1	25.3	27.3	26.8	26.4	26.2	26.3	26.4	26.2	26.7	27.1	28.0	28.2	27.0	26.0	24.9	24.0	**25.2**	**28.2**	**20.0**
14	23.1	22.4	21.8	21.2	21.0	20.7	20.4	21.6	25.8	27.1	26.8	26.2	26.2	26.1	26.0	25.7	26.0	27.0	27.9	27.8	28.4	28.1	27.5	27.6	**25.1**	**28.4**	**20.4**
15	27.4	27.2	28.5	28.6	28.3	28.1	27.6	26.9	27.7	27.6	26.6	26.5	26.4	26.6	26.5	26.9	27.7	28.9	28.9	27.6	25.7	25.1	23.8	22.3	**27.0**	**28.9**	**22.3**
16	21.1	20.6	20.4	20.2	19.4	18.9	18.3	19.1	21.8	25.8	28.6	28.2	27.9	28.1	27.5	27.1	27.1	27.6	26.8	24.1	22.1	21.4	21.1	21.1	**23.5**	**28.6**	**18.3**
17	21.3	21.5	22.2	22.7	22.1	21.0	20.8	21.6	22.9	25.5	26.4	27.7	27.5	27.4	27.1	27.2	27.0	28.0	27.5	25.7	24.5	24.1	23.9	21.3	**24.5**	**28.0**	**20.8**
18	18.8	17.6	16.9	16.7	16.3	16.0	15.6	16.4	17.7	18.7	20.3	21.6	22.9	24.0	25.0	24.3	23.1	20.4	16.3	13.9	12.9	12.3	12.0	11.8	**18.0**	**25.0**	**11.8**
19	11.5	11.4	11.5	11.2	11.1	11.9	11.6	12.5	15.0	17.0	17.2	20.2	21.3	22.3	23.8	24.8	25.2	22.7	20.5	19.4	19.6	20.3	20.4	19.6	**17.6**	**25.2**	**11.1**
20	17.9	16.5	15.6	15.4	15.1	15.0	15.1	16.6	18.6	22.7	26.1	28.5	27.8	27.5	27.7	27.7	28.5	27.1	21.9	18.4	16.4	15.1	14.0	12.9	**20.3**	**28.5**	**12.9**
21	12.3	11.7	12.1	12.7	12.7	12.6	12.3	12.5	14.4	16.2	18.0	19.6	20.5	21.5	23.0	23.8	23.9	23.6	20.3	18.0	17.1	16.5	15.7	15.1	**16.9**	**23.9**	**11.7**
22	14.8	13.7	13.0	12.8	12.4	11.7	11.4	13.0	17.6	21.1	23.7	24.5	23.2	23.5	23.4	22.3	22.0	21.5	20.6	19.9	19.5	19.2	19.1	18.6	**18.4**	**24.5**	**11.4**
23	17.9	17.0	16.6	16.4	15.8	15.8	16.4	16.6	16.6	16.5	16.8	18.7	21.5	23.0	21.9	20.6	19.1	18.5	16.8	14.9	13.9	12.6	12.2	12.7	**17.0**	**23.0**	**12.2**
24	12.8	12.8	12.8	12.7	12.7	12.8	12.6	12.8	14.3	16.9	19.1	21.2	23.0	24.7	26.1	27.8	28.5	27.7	24.2	20.4	18.7	17.7	17.1	16.6	**18.6**	**28.5**	**12.6**
25	16.0	15.4	15.2	14.3	13.5	12.6	12.3	14.3	18.8	23.0	25.5	26.8	28.2	28.4	27.8	27.5	27.5	27.3	25.3	22.2	20.4	18.9	18.1	17.2	**20.7**	**28.4**	**12.3**
26	16.7	16.5	16.3	16.0	15.6	15.7	16.1	18.2	21.0	23.7	26.8	28.0	28.1	28.1	27.8	27.9	27.3	26.8	23.8	21.3	20.2	19.6	18.7	18.3	**21.6**	**28.1**	**15.6**
27	18.5	18.6	18.5	18.5	18.9	19.0	19.4	20.2	20.8	20.1	19.3	19.3	19.2	18.6	18.7	20.4	21.2	21.2	21.5	21.3	20.8	21.0	20.8	20.7	**19.9**	**21.5**	**18.5**
28	20.7	20.6	20.6	20.6	20.8	20.6	20.7	21.0	20.7	20.4	18.4	19.1	21.3	21.3	21.5	21.9	21.7	21.1	20.6	20.4	20.3	19.7	19.2	18.3	**20.5**	**21.9**	**18.3**
29	17.6	17.0	16.5	16.2	15.9	15.4	15.5	17.7	20.3	22.6	24.3	25.3	26.5	27.6	28.5	28.7	28.5	27.3	24.4	22.3	21.3	20.7	20.0	19.6	**21.7**	**28.7**	**15.4**
30	19.1	18.6	18.2	18.0	17.2	16.5	16.5	19.1	23.0	25.8	28.4	28.4	28.6	28.1	27.8	27.7	28.1	27.2	25.3	24.6	24.0	21.5	21.3	21.3	**23.1**	**28.6**	**16.5**
31	20.7	20.5	20.4	20.2	20.1	19.7	20.1	22.0	25.0	27.6	28.0	28.5	27.7	27.1	26.9	27.0	27.6	28.1	27.6	27.7	27.1	26.1	25.2	24.0	**24.8**	**28.5**	**19.7**
MEAN	**18.6**	**18.2**	**18.0**	**17.8**	**17.6**	**17.5**	**17.4**	**18.3**	**20.2**	**22.2**	**23.4**	**24.3**	**24.8**	**25.0**	**25.1**	**25.2**	**25.2**	**24.7**	**23.3**	**22.0**	**21.2**	**20.6**	**20.0**	**19.4**	**21.3**		
MAX	**27.4**	**27.2**	**28.5**	**28.6**	**28.3**	**28.1**	**27.6**	**26.9**	**27.7**	**27.6**	**28.6**	**28.5**	**28.7**	**29.2**	**28.5**	**28.7**	**29.2**	**28.9**	**28.9**	**28.2**	**28.4**	**28.1**	**27.5**	**27.6**		**29.2**	
MIN	**11.5**	**11.4**	**11.5**	**11.2**	**11.1**	**11.4**	**11.4**	**12.5**	**14.3**	**16.2**	**16.8**	**18.7**	**19.2**	**18.6**	**18.7**	**19.8**	**19.1**	**18.3**	**15.5**	**13.9**	**12.8**	**12.0**	**11.8**	**11.8**			**11.1**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 744 DATA RECOVERY RATE = 100.0%

MONTHLY MEAN = 21.3 deg C

MAXIMUM SHELTER TEMPERATURE = 29.2 deg C DATE OF OCCURRENCE = 3/7 AT 1400 MAXIMUM DAILY MEAN = 27.0 deg C DATE OF OCCURRENCE = 3/15

MINIMUM SHELTER TEMPERATURE = 11.1 deg C DATE OF OCCURRENCE = 3/1 AT 0500 MINUMUM DAILY MEAN = 16.9 deg C DATE OF OCCURRENCE = 3/21

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

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CSX Transportation, Inc. Comments on Renewal of State Permit to Operate No. 510-2263 for CSX Transportation Curtis Bay Piers

Appendix 17d: *2024 Q2 Fenceline Monitoring Report submitted Sep. 2024*

SUMMARY OF METEOROLOGICAL AND CONTINUOUS PM_{10} AND $PM_{2.5}$ MONITORING DATA AT CSXT CURTIS BAY PIERS FACILITY MONITORING STATIONS SECOND QUARTER 2024

CSXT Transportation, Inc.

Draft

TRINITY CONSULTANTS
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Salt Lake City, Utah
801-272-3000

August 2024

Project 234501.0038

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1.0 EXECUTIVE SUMMARY

This report, prepared by Trinity Consultants, summarizes the PM_{10} and $PM_{2.5}$ monitoring data collected from April 1 through June 30, 2024 from the monitoring stations. CSXT, Curtis Bay Piers operates a coal, ore, limestone, and other dry material storage, transfer, and shipment terminal (Curtis Bay Piers Facility) pursuant to State Permit to Operate No. 510-2263. To meet the requirements of the Permit, CSXT is operating a fenceline network of continuous particulate matter with a diameter of 10 microns or less (PM_{10}) and particulate matter with a diameter of 2.5 microns or smaller ($PM_{2.5}$) monitors and a weather station. CSX installed Federal Equivalent Method (FEM) monitors at two monitoring stations, identified as AQ5 and AQ8, to measure both PM_{10} and $PM_{2.5}$ at the Curtis Bay Piers Facility, a network of eight (8) non-regulatory, community based PM_{10} and $PM_{2.5}$ monitors along the perimeter of the CSX Curtis Bay Piers facility, and a 10-meter tower to collect continuous wind speed and wind direction, temperature, relative humidity, barometric pressure, and precipitation near AQ5. Wind speed and wind direction measurements are also being collected at the perimeter monitoring locations (AQ1, AQ2, AQ3, AQ4, AQ6, and AQ7).

The equipment being operated in and around the perimeter of the Curtis Bay Piers Facility is presented in Table 1-1. The results of the hourly and 24-hour average PM_{10} and $PM_{2.5}$ concentrations collected from the FEM monitors at AQ5 and AQ8 are presented in Tables 1-2 and 1-3.

Table 1-1 Particulate and Meteorological Instrumentation at CSX Monitoring Stations

Station	Parameter	Equipment Manufacturer	Model Number	Serial Number
AQ1	PM_{10}, $PM_{2.5}$	QuantAQ MODULAIR Aeroqual	MODULAIR-PM	MOD386/MOD264[1] 21092023-2432
AQ2	PM_{10}, $PM_{2.5}$	QuantAQ MODULAIR	MODULAIR-PM	MOD385/MOD387[1]
AQ3	PM_{10}, $PM_{2.5}$	QuantAQ MODULAIR	MODULAIR-PM	MOD384/MOD266[1]
AQ4	PM_{10}, $PM_{2.5}$	QuantAQ MODULAIR	MODULAIR-PM	MOD383/MOD388[1,2]
AQ5	PM_{10}, $PM_{2.5}$	Teledyne-API	T640X	1690/CSX5
	Wind Direction	Met One	020D	C21028
	Wind Speed	Met One	010C	C21557
	Temperature	Campbell Scientific Inc.	HygroVUE10	E4240
	Relative Humidity	Campbell Scientific Inc.	HygroVUE10	E4240
	Barometric Pressure	Campbell Scientific Inc.	BaroVUE10	1808
	Precipitation	Texas Electronics	TR-525U	93490-1222
	Data Aq. System	Campbell Scientific Inc.	CR1000X	45777
AQ5A	PM_{10}, $PM_{2.5}$	QuantAQ MODULAIR	MODULAIR-PM	MOD266/MOD384[1]
AQ5B	PM_{10}, $PM_{2.5}$	QuantAQ MODULAIR	MODULAIR-PM	MOD387/MOD385[1]
AQ5C	PM_{10}, $PM_{2.5}$	QuantAQ MODULAIR Aeroqual	MODULAIR-PM	MOD388/MOD383[1,2] 15062020-1263
AQ6	PM_{10}, $PM_{2.5}$	QuantAQ MODULAIR	MODULAIR-PM	MOD267
AQ7	PM_{10}, $PM_{2.5}$	QuantAQ MODULAIR	MODULAIR-PM	MOD265
AQ8	PM_{10}, $PM_{2.5}$	Teledyne-API	T640X	1689/CSX8
	Data Aq. System	Campbell Scientific Inc.	CR310	16073
AQ8A	PM_{10}, $PM_{2.5}$	QuantAQ MODULAIR	MODULAIR-PM	MOD264/MOD386[1]

[1] Units were swapped from their previous locations and installed on 3/28/2024.
[2] On May 30, MOD288 at AQ4 was sent in for repair and MOD383 from AQ5C was moved to AQ4.

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Table 1-2 AQ5 PM_{10} and $PM_{2.5}$ Concentrations for April 1 – June 30 (Second Quarter) 2024 in Micrograms per Cubic Meter

Statistics	April ($\mu g/m^3$)	May ($\mu g/m^3$)	June ($\mu g/m^3$)	Second Quarter 2024 ($\mu g/m^3$)
Monthly Mean PM_{10}	18.6	16.8	19.8	18.4
Maximum Hourly PM_{10}	117.6	212.0	89.0	212.0
Second Highest Hourly PM_{10}	109.2	111.6	79.0	111.6
Maximum 24-hour PM_{10}	36.6	30.8	29.6	36.6
Second Highest 24-hour PM_{10}	32.0	24.6	29.1	32.0
Monthly Mean $PM_{2.5}$	7.1	6.9	7.7	7.2
Maximum Hourly $PM_{2.5}$	32.5	45.5	17.9	45.5
Second Highest Hourly $PM_{2.5}$	28.6	35.6	16.9	35.6
Maximum 24-hour $PM_{2.5}$	16.5	12.3	10.7	16.5
Second Highest 24-hour $PM_{2.5}$	15.1	11.6	10.5	15.1

Table 1-3 AQ8 PM_{10} and $PM_{2.5}$ Concentrations for April 1 – June 30 (Second Quarter) 2024 in Micrograms per Cubic Meter

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Statistics	April ($\mu g/m^3$)	May ($\mu g/m^3$)	June ($\mu g/m^3$)	Second Quarter 2024 ($\mu g/m^3$)
Monthly Mean PM_{10}	17.7	NA	22.4	20.1
Maximum Hourly PM_{10}	118.6	NA	78.3	118.6
Second Highest Hourly PM_{10}	93.5	NA	47.7	93.5
Maximum 24-hour PM_{10}	37.9	NA	27.1	37.9
Second Highest 24-hour PM_{10}	33.3	NA	22.5	33.3
Monthly Mean $PM_{2.5}$	6.6	NA	7.6	7.1
Maximum Hourly $PM_{2.5}$	30.2	NA	14.7	30.2
Second Highest Hourly $PM_{2.5}$	29.8	NA	11.9	29.8
Maximum 24-hour $PM_{2.5}$	16.3	NA	7.7	16.3
Second Highest 24-hour $PM_{2.5}$	15.3	NA	7.6	15.3

MODULAIR samplers are operated around the perimeter of the CSXT Curtis Bay facility to give an indication of the $PM_{10}/PM_{2.5}$ at each network location and to show $PM_{10}/PM_{2.5}$ trends. These data are not intended to be used for compliance with the National Ambient Air Quality Standards (NAAQS). The results of the hourly and 24-hour average PM_{10} and $PM_{2.5}$ concentrations collected from the MODULAIR samplers are presented in Tables 1-4 and 1-5.

Table 1-4 Perimeter Network MODULAIR PM_{10} Concentrations for April 1 – June 30 (Second Quarter) 2024 in Micrograms per Cubic Meter

Month	Statistic	Station									
		AQ1	AQ2	AQ3	AQ4	AQ5A	AQ5B	AQ5C	AQ6	AQ7	AQ8A
April	Mean	19.1	19.3	21.5	19.7	23.4	NA	17.8	19.5	6.8	19.6
	Hourly Maximum	141.0	176.2	168.2	118.5	157.3	NA	114.4	167.0	34.1	133.7
	Second High	115.7	145.2	156.6	111.3	141.7	NA	110.3	125.6	23.3	110.2
	Maximum 24-hour	41.8	46.3	45.3	37.0	46.6	NA	35.7	36.7	10.3	40.3
	Second High 24-hour	38.7	42.2	43.7	31.6	43.7	NA	34.6	36.7	6.9	40.0
May	Mean	19.2	21.1	22.2	19.6	23.4	NA	19.7	18.8	7.3	20.3
	Hourly Maximum	93.2	74.9	100.3	73.4	99.5	NA	78.4	87.5	17.2	76.0
	Second High	82.5	60.9	85.8	69.5	81.7	NA	66.6	65.8	15.5	74.4
	Maximum 24-hour	29.0	33.5	34.9	40.3	35.5	NA	32.8	28.8	NA	33.0
	Second High 24-hour	26.9	31.8	30.4	31.5	34.6	NA	30.6	26.8	NA	30.6
June	Mean	22.9	24.8	26.5	26.9	27.4	25.4	NA	22.3	15.0	24.2
	Hourly Maximum	120.6	74.0	116.1	91.6	91.6	90.9	NA	74.8	64.7	80.2
	Second High	77.5	68.7	104.4	84.9	89.5	83.5	NA	72.3	62.6	78.2
	Maximum 24-hour	44.3	41.1	44.4	43.5	42.1	43.6	NA	35.7	30.1	40.7
	Second High 24-hour	31.2	37.8	43.2	38.1	40.9	21.3	NA	32.3	25.1	39.1

NA – Not available

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Table 1-5 Perimeter Network MODULAIR $PM_{2.5}$ Concentrations for April 1 – June 30 (Second Quarter) 2024 in Micrograms per Cubic Meter

Month	Statistic	Station									
		AQ1	AQ2	AQ3	AQ4	AQ5A	AQ5B	AQ5C	AQ6	AQ7	AQ8A
April	Mean	7.5	8.0	8.5	8.4	9.0	NA	8.2	6.9	4.3	8.2
	Hourly Maximum	38.6	37.9	35.8	39.8	43.8	NA	40.9	35.1	13.0	38.6
	Second High	34.0	33.4	35.1	32.4	39.1	NA	34.7	30.5	12.9	37.4
	Maximum 24-hour	20.0	20.4	20.8	17.8	22.4	NA	21.1	17.4	7.6	21.4
	Second High 24-hour	17.5	20.0	19.6	15.2	20.3	NA	18.9	13.9	3.6	19.0
May	Mean	8.5	9.4	9.4	10.7	10.4	NA	10.1	7.9	4.8	9.6
	Hourly Maximum	30.8	37.5	32.1	53.3	38.4	NA	37.8	26.3	14.4	36.5
	Second High	30.6	36.9	32.0	48.8	37.6	NA	37.1	26.0	12.4	36.1
	Maximum 24-hour	17.0	20.2	19.1	26.4	21.6	NA	21.6	15.5	NA	19.6
	Second High 24-hour	16.6	20.0	17.8	19.0	20.8	NA	19.1	14.7	NA	18.2
June	Mean	9.6	12.1	11.8	13.1	12.4	9.4	NA	10.1	10.5	11.3
	Hourly Maximum	26.7	36.7	28.9	54.7	33.3	26.6	NA	25.4	34.6	30.4
	Second High	25.0	36.5	28.0	50.0	32.6	20.7	NA	22.9	33.4	29.4
	Maximum 24-hour	15.9	21.6	19.8	22.4	22.8	12.2	NA	15.8	18.2	19.7
	Second High 24-hour	15.7	21.4	19.4	21.5	20.3	10.9	NA	14.5	16.1	18.8

NA – Not available

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Figures 1.1 through 1.4 present the MODULAIR PM sampler PM_{10} and $PM_{2.5}$ concentrations compared with the FEM reference PM_{10} and $PM_{2.5}$ samplers at AQ5 and AQ8 for the second quarter 2024. Tables 1-6 and 1-7 present the EPA performance metrics and target values, and the comparison of the collocated data to the EPA performance target values.

Figure 1.1 AQ5A MODULAIR Serial Number MOD384 PM Collocation and Comparison Data for April through June 2024

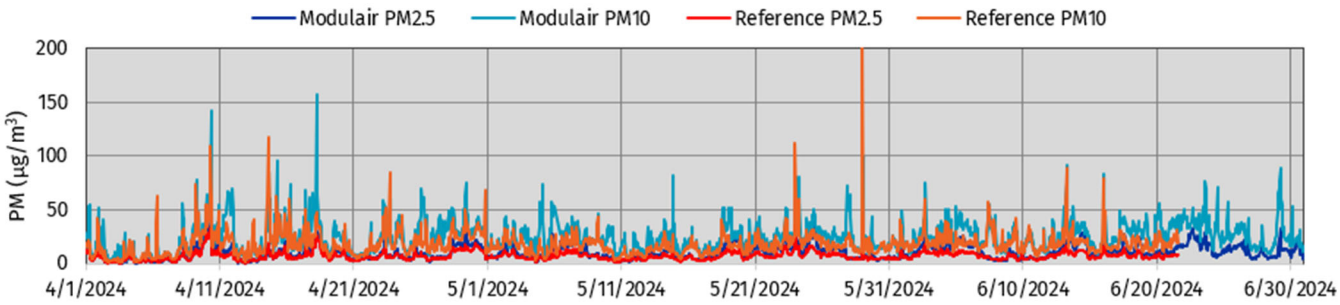
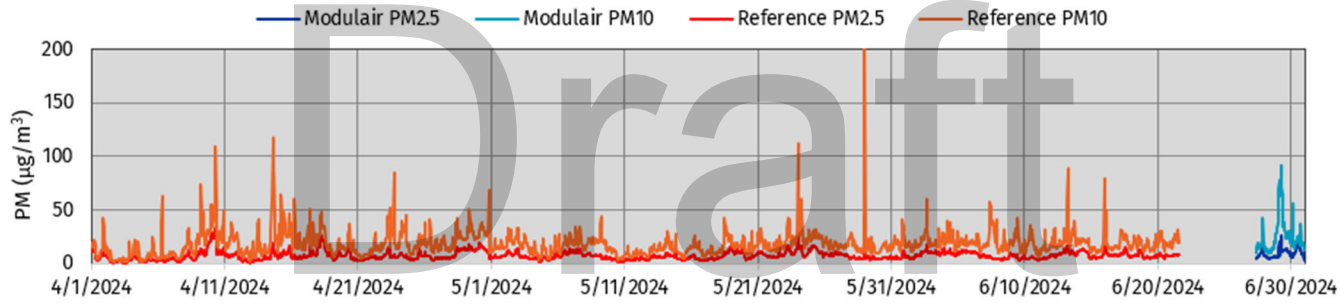


Figure 1.2 AQ5B MODULAIR Serial Number MOD385 PM Collocation and Comparison Data for April through June 2024



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Figure 1.3 AQ5C MODULAIR Serial Number MOD383 PM Collocation and Comparison Data for April through June 2024

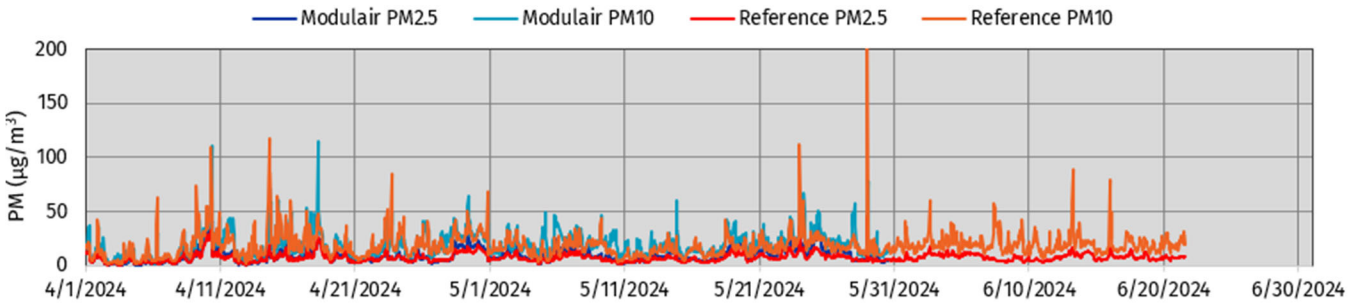


Figure 1.4 AQ8A MODULAIR Serial Number MOD 386 PM Collocation and Comparison Data for April through June 2024

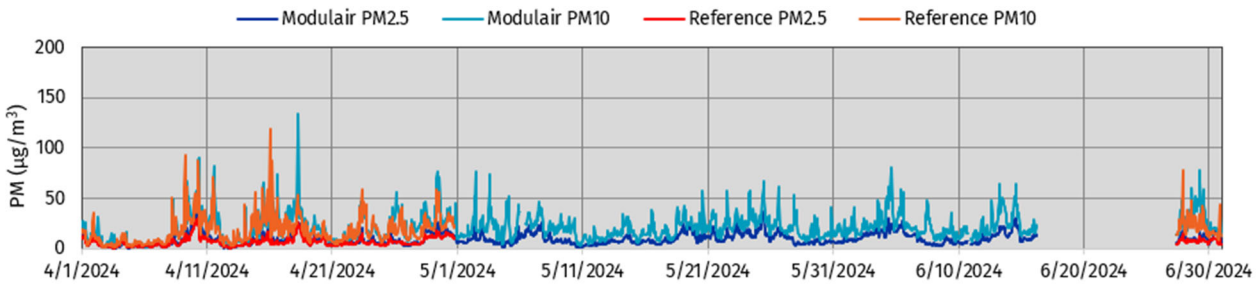


Table 1-6 EPA Recommended Performance Metrics and Target Values for Non-Regulatory PM Monitors

Performance Metric		Target Value
Precision	Standard Deviation	≤5 µg/m³
	CV	≤30%
Bias	Slope (m)	1.0±0.35
	Intercept (b)	-5 ≤ b ≤ 5 µg/m³
Linearity	R^2	≥0.70
Error	RSME	≤7 µg/m³

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Table 1-7 AQ5 and AQ8 MODULAIR and FEM Collocation Statistics for Second Quarter 2024

Statistics	AQ5A Modulair 384		AQ5B Modulair 385		AQ5C Modulair 383		AQ8A Modulair 386	
	$PM_{2.5}$	PM_{10}	$PM_{2.5}$	PM_{10}	$PM_{2.5}$	PM_{10}	$PM_{2.5}$	PM_{10}
Correlation Coefficient (r2)	0.712	0.351	NA	NA	0.695	0.365	0.769	0.519
Slope (m)	1.400	0.746	NA	NA	1.225	0.583	1.172	0.849
Intercept (b)	0.190	10.626	NA	NA	0.504	8.483	0.561	5.074
RMSW	6.714	16.420	NA	NA	5.216	13.762	8.598	18.357
Precision (CV)	22.730	27.040	NA	NA	24.790	24.720	22.700	18.700
Precision (SD)	5.281	14.166	NA	NA	5.197	13.142	6.337	14.268

From the AQ5 meteorological tower, the most frequent (and predominant) winds during the second quarter were from the east-southeast followed by the south-southeast. The percentage of winds that were calm was 0.6 percent and the percentage of wind speeds that were not calm and less than or equal to 24.2 miles per hour (mph) was 99.4 percent. Wind speeds measured to be greater than 24.2 mph was 0.0 percent. The peak wind gust for the period which occurred in April was 46.5 mph.

The hourly minimum temperature during the monitoring period was 3.9°C on April 6 at 04:00 and the hourly maximum temperature was 35.2°C on June 26 at 14:00. The mean relative humidity and barometric pressure during the second quarter was 67% and 1013.7 millibars, respectively. 9.98 inches of precipitation was measured by the precipitation gauge at the AQ5 meteorological tower.

PM_{10} and $PM_{2.5}$ concentration and meteorological data collected at the CSX monitoring stations have been subjected to a series of quality control procedures to document the validity of the data and increase the integrity of the data sets. Visual inspection of the meteorological tower, sensors, continuous FEM PM_{10}/$PM_{2.5}$ monitors, and network samplers is performed at least every month or more frequently when problems are indicated. The data loggers at the AQ5 and AQ8 meteorological tower and PM_{10}/$PM_{2.5}$ monitoring stations are interrogated every day to download and process the data. PM_{10} and $PM_{2.5}$ concentration from the MODULAIR samplers are downloaded from the QuantAQ Cloud daily. Abnormal conditions are logged and reported immediately to the program manager for corrective action.

Calibrations of the meteorological equipment are performed every six months or whenever a sensor exceeds specified control limits or undergoes major maintenance or repair. The FEM T640X PM_{10}/$PM_{2.5}$ samplers are calibrated by Trinity personnel every three months or when problems are identified. The AQ5 and AQ8 T640X PM_{10}/$PM_{2.}$ samplers were calibrated on April 24, 2024. The meteorological equipment was calibrated on February 28, 2024. No calibrations are performed on the MODULAIR samplers. All calibrations are performed using certified reference standards.

In addition, monthly flow rate, temperature, and pressure checks are performed on the FEM PM_{10} and $PM_{2.5}$ samplers. All flow rate and leak checks are performed using certified flow, temperature, and pressure reference standards.

A software program is utilized to perform a series of quality control (QC) checks of the data. When the QC program identifies values that exceed the criteria set for that parameter, the data file is inspected visually by data management specialists. Data failures or discrepancies that would invalidate an hourly average PM_{10} and/or $PM_{2.5}$ concentration are:

- Loss of more than three five-minute average in a one-hour period,
- Visual evidence, on the stacked parameter/time plots for example, that the 5-minute value is an outlier,
- Data collected during calibrations and audits,
- Equipment malfunction,
- T640 reports a status error,
- Shelter temperature less than 0°C,
- $PM_{2.5}$ and PM_{10} concentrations set to missing,
- PM_{10} less than -5 $\mu g/m^3$, concentrations set to missing, and
- $PM_{2.5}$ less than -10 $\mu g/m^3$, concentrations set to missing.

Data recoveries for the meteorological parameters and AQ5 and AQ8 station PM_{10} and $PM_{2.5}$ data for April 1 through June 30, 2024, in percent possible, are provided in Tables 1-8 and 1-9. Table 1-10 presents the data recovery for the perimeter MODULAIR sampling units.

Table 1-8 AQ5 Station – Meteorological, PM_{10}, and $PM_{2.5}$ Data Recovery in Percent for April 1 through June 30, 2024

Month	Level (m)	Wind Speed (%)	Wind Dir. (%)	Wind Gust (%)	Temp. (%)	Rel. Hum. (%)	Bar. Press. (%)	Prec. (%)	PM_{10} (%)[1]	$PM_{2.5}$ (%)[1]
April	1.5	--	--	--	--	--	100	100	99.9	99.9
	2.0	--	--	--	100	100	--	--		
	10.0	89.2	89.2	89.2	--	--	--	--		
May	1.5	--	--	--	--	--	100	100	99.9	99.9
	2.0	--	--	--	100	100	--	--		
	10.0	100	100	100	--	--	--	--		
June	1.5	--	--	--	--	--	100	100	68.8	68.8
	2.0	--	--	--	100	100	--	--		
	10.0	100	100	100	--	--	--	--		
Second Quarter 2024	1.5	--	--	--	--	--	100	100	89.5	89.5
	2.0	--	--	--	100	100	--	--		
	10.0	96.4	96.4	96.4	--	--	--	--		

[3] Data capture rate based on valid sample days.

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Table 1-9 AQ8 Station - PM_{10} and $PM_{2.5}$ Measurement Data Recovery in Percent for Second Quarter 2024

Month	PM_{10} (%)[1]	$PM_{2.5}$ (%)[1]
April	99.3	99.3
May	0.0	0.0
June	11.9	11.9
Second Quarter	37.1	37.1

[1] Data capture rate based on valid sample days.

Table 1-10 MODULAIR Perimeter Stations - PM_{10} and $PM_{2.5}$ Measurement Data Recovery in Percent for Second Quarter

Station	April (%)	May (%)	June (%)
AQ1 PM_{10}	96.0	98.3	99.2
AQ1 $PM_{2.5}$	96.0	99.6	99.3
AQ2 PM_{10}	89.3	88.0	87.1
AQ2 $PM_{2.5}$	89.6	88.0	87.2
AQ3 PM_{10}	94.2	97.3	95.4
AQ3 $PM_{2.5}$	94.2	98.8	95.4
AQ4 PM_{10}	75.4	76.7	97.6
AQ4 $PM_{2.5}$	75.8	78.1	98.6
AQ5A PM_{10}	100	98.7	100
AQ5A $PM_{2.5}$	100	100	100
AQ5B PM_{10}	0	0	12.1
AQ5B $PM_{2.5}$	0	0	12.1
AQ5C PM_{10}	100	94.1	0
AQ5C $PM_{2.5}$	100	95.4	0
AQ6 PM_{10}	96.0	97.0	88.5
AQ6 $PM_{2.5}$	96.0	98.4	88.8
AQ7 PM_{10}	9.6	4.4	95.1
AQ7 $PM_{2.5}$	9.6	4.4	95.3
AQ8A PM_{10}	100	98.7	62.2
AQ8A $PM_{2.5}$	100	100	62.2

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2.0 INTRODUCTION

This report, prepared for CSX Transportation, Inc. (CSX) by Trinity Consultants summarizes the second quarter 2024 (April 1 through June 30) meteorological, federal equivalent method (FEM) continuous particulate matter with a diameter of 10 microns or less (PM_{10}) and particulate matter with a diameter of 2.5 microns or smaller ($PM_{2.5}$), being collected at two monitoring stations, identified as AQ5 and AQ8, operated at the Curtis Bay Piers Facility. In addition, a network of eight (8) non-regulatory PM_{10} and $PM_{2.5}$ monitors are being operated along the perimeter of the CSX Curtis Bay Piers facility and these data are presented in this report. The CSX Curtis Bay Piers is a dry material storage, transfer, and shipment terminal located at 1910 Benhill Avenue, in Baltimore, Maryland.

2.1 Background

CSXT, Curtis Bay Piers operates a coal, ore, limestone, and other dry material storage, transfer, and shipment terminal (Curtis Bay Piers Facility) pursuant to State Permit to Operate No. 510-2263. To meet the requirements of the Permit to Construct 510-2263 issued on September 7, 2022, CSXT was required to submit a fenceline monitoring plan to the MDE describing the installation, operation, and maintenance of a network of PM_{10} and $PM_{2.5}$ monitors and a weather station. Per the Permit to Construct, CSX is required to install one FEM monitor to measure both PM_{10} and $PM_{2.5}$, install multiple sensors capable of measuring PM_{10} and $PM_{2.5}$, and operate a 10-meter meteorological tower that meets current U.S. EPA protocols and guidance. Meteorological measurements from a 10-meter tower consist of wind speed and wind direction at 10-meters, temperature at two-meters, relative humidity at two-meters, barometric pressure at 5 feet, and precipitation at 4 feet.

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PM_{10}, $PM_{2.5}$, and meteorological data collection officially began at the CSX monitoring sites on March 24, 2023 at 01:00 Eastern Standard Time (EST). Table 2-1 summarizes the parameters collected at the monitoring sites and the units for each parameter.

Table 2-1 Measured Meteorological and Air Quality Parameters

Parameter	Units
Wind Speed	meters per second (m/s)
Wind Direction	degrees from true north (°)
Temperature	degrees Celsius (°C)
Relative Humidity	percent (%)
Barometric Pressure	millibars (mb)
Precipitation	inches (in)
Continuous PM_{10}	micrograms per cubic meter ($\mu g/m^3$)
Continuous $PM_{2.5}$	micrograms per cubic meter ($\mu g/m^3$)
Time	Eastern Standard Time (EST)

The latitude and longitude coordinates of the monitoring stations are presented in Table 2-2.

Table 2-2 Location of CSX Curtis Bay Piers Facility Monitoring Stations

Site ID	Latitude (Decimal degrees)	Longitude (Decimal degrees)
AQ1	39.22169	-76.58194
AQ2	39.22169	-76.58455
AQ3	39.22710	-76.58483
AQ4	39.22968	-76.58538
AQ5	39.22773	-76.58096
AQ6	39.22485	-76.58015
AQ7	39.22147	-76.57630
AQ8	39.22320	-76.58400
Meteorological Tower (at AQ5)	39.22773	-76.58096

Figure 2.1 presents a Google Earth image showing the location of CSX monitoring stations. Photographs of the AQ5 and AQ8 monitoring stations, where the FEM PM_{10}/$PM_{2.5}$ monitors are located, are presented as Figures 2.2 and 2.3.

Figure 2.1 Google Earth Image Showing Location of CSX Monitoring Stations



Figure 2.2 Photograph of CSX AQ5 PM and Meteorological Monitoring Station



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Figure 2.3 Photograph of CSX AQ8 PM Monitoring Station



2.2 Meteorological and Particulate Instrumentation

The meteorological parameters provide information on the local meteorology and particulate concentrations at the Curtis Bay Piers Facility. The objective of the particulate and meteorological monitoring is to obtain representative particulate and meteorological information for the Curtis Bay Piers Facility that may be used for informational purposes, including community awareness and comparison with regional air quality. Table 2-3 presents a list of meteorological and PM equipment at the CSX Curtis Bay Piers Facility monitoring stations.

Table 2-3 Particulate and Meteorological Instrumentation at CSX Monitoring Stations

Station	Parameter	Equipment Manufacturer	Model Number	Serial Number
AQ1	PM_{10}, $PM_{2.5}$	QuantAQ MODULAIR Aeroqual	MODULAIR-PM	MOD386/MOD264[1] 21092023-2432
AQ2	PM_{10}, $PM_{2.5}$	QuantAQ MODULAIR	MODULAIR-PM	MOD385/MOD387[1]
AQ3	PM_{10}, $PM_{2.5}$	QuantAQ MODULAIR	MODULAIR-PM	MOD384/MOD266[1]
AQ4	PM_{10}, $PM_{2.5}$	QuantAQ MODULAIR	MODULAIR-PM	MOD383/MOD388[1,2]
AQ5	PM_{10}, $PM_{2.5}$	Teledyne-API	T640X	1690/CSX5
	Wind Direction	Met One	020D	C21028
	Wind Speed	Met One	010C	C21557
	Temperature	Campbell Scientific Inc.	HygroVUE10	E4240
	Relative Humidity	Campbell Scientific Inc.	HygroVUE10	E4240
	Barometric Pressure	Campbell Scientific Inc.	BaroVUE10	1808
	Precipitation	Texas Electronics	TR-525U	93490-1222
	Data Aq. System	Campbell Scientific Inc.	CR1000X	45777
AQ5A	PM_{10}, $PM_{2.5}$	QuantAQ MODULAIR	MODULAIR-PM	MOD266/MOD384[1]
AQ5B	PM_{10}, $PM_{2.5}$	QuantAQ MODULAIR	MODULAIR-PM	MOD387/MOD385[1]
AQ5C	PM_{10}, $PM_{2.5}$	QuantAQ MODULAIR Aeroqual	MODULAIR-PM	MOD388/MOD383[1,2] 15062020-1263
AQ6	PM_{10}, $PM_{2.5}$	QuantAQ MODULAIR	MODULAIR-PM	MOD267
AQ7	PM_{10}, $PM_{2.5}$	QuantAQ MODULAIR	MODULAIR-PM	MOD265
AQ8	PM_{10}, $PM_{2.5}$	Teledyne-API	T640X	1689/CSX8
	Data Aq. System	Campbell Scientific Inc.	CR310	16073
AQ8A	PM_{10}, $PM_{2.5}$	QuantAQ MODULAIR	MODULAIR-PM	MOD264/MOD386[1]

[1] Units were swapped from their previous locations and installed on 3/28/2024.
[2] On May 30, MOD288 at AQ4 was sent in for repair and MOD383 from AQ5C was moved to AQ4.

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2.3 Data Acquisition

Campbell Scientific Inc. (CSI) CR1000x DASs are used to store data from the 10-meter tower meteorological sensors and continuous Teledyne-API (T-API) T640X FEM $PM_{10}/PM_{2.5}$ monitors. Tower meteorological data are sampled every second and recorded as five-minute averages on the data logger. T640X particulate data are stored as five-minute and hourly averages. An hourly average is computed from at least nine five-minute averages that are available for the hour. Data from the QuantAQ MODULAIR samplers are sampled every minute and stored on internal data loggers that send data to a cloud server.

Each CSI CR1000x DAS has the capability of being polled locally through an RS232 connector or remotely via modem. An on-site display allows users to view current values of the parameters being measured.

The CSI CR1000x data loggers are interrogated by Trinity daily via a static IP address and the data are copied to duplicate computer files. Each data logger's telecommunications software performs dynamic error checking during download to ensure that an exact duplicate file is created. Any failures in instrumentation or data acquisition are identified daily so that field personnel can correct problems in a timely manner to prevent excessive data loss. The data collected during each interrogation are checked for consistency and the parameters are plotted for visual inspection.

The MODULAIR produces data which are saved to the onboard µSD card every minute. These values are averaged and pushed to the cloud where they are available on the QuantAQ Cloud for retrieval. Data from the MODULAIR are obtained from the QuantAQ Cloud daily.

The quality assurance stacked parameter/time plots for the second quarter (April through June) 2024 are presented in Appendix A. Data presented in Appendix A represent the final, quality assured data set. Hourly values provided are computed by the data logger. If fewer than 45 minutes are available, the hour is considered "missing".

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3.0 METEOROLOGICAL TOWER AND FEDERAL EQUIVALENT METHOD CONTINUOUS PARTICULATE DATA SUMMARY

This section of the report summarizes the data results and data recovery for the second quarter 2024 (April 1 through June 30). Hourly data for the period are tabulated in the appendices. These appendix tables display the hourly average of measurements recorded in the hour "ending"; that is, the first hour of the day is labeled 01, meaning the hour beginning at 00:00:01 and ending at 01:00:00 a.m. The second hour is labeled 02, meaning the values collected from 01:00:01 a.m. to 02:00:00 a.m.

3.1 Meteorological Data

Meteorological data records from the CSX Curtis Bay Piers Facility meteorological monitoring station consists of wind speed and wind direction at 10-meters, temperature at two-meters, relative humidity at two-meters, barometric pressure at 5 feet, and precipitation at 4 feet.

3.1.1 Wind Direction and Horizontal Wind Speed

The most frequent (and predominant) winds during the second quarter at the 10-meter level were from the east-southeast followed by the south-southeast. Reported wind directions represent the directions from which the wind is blowing.

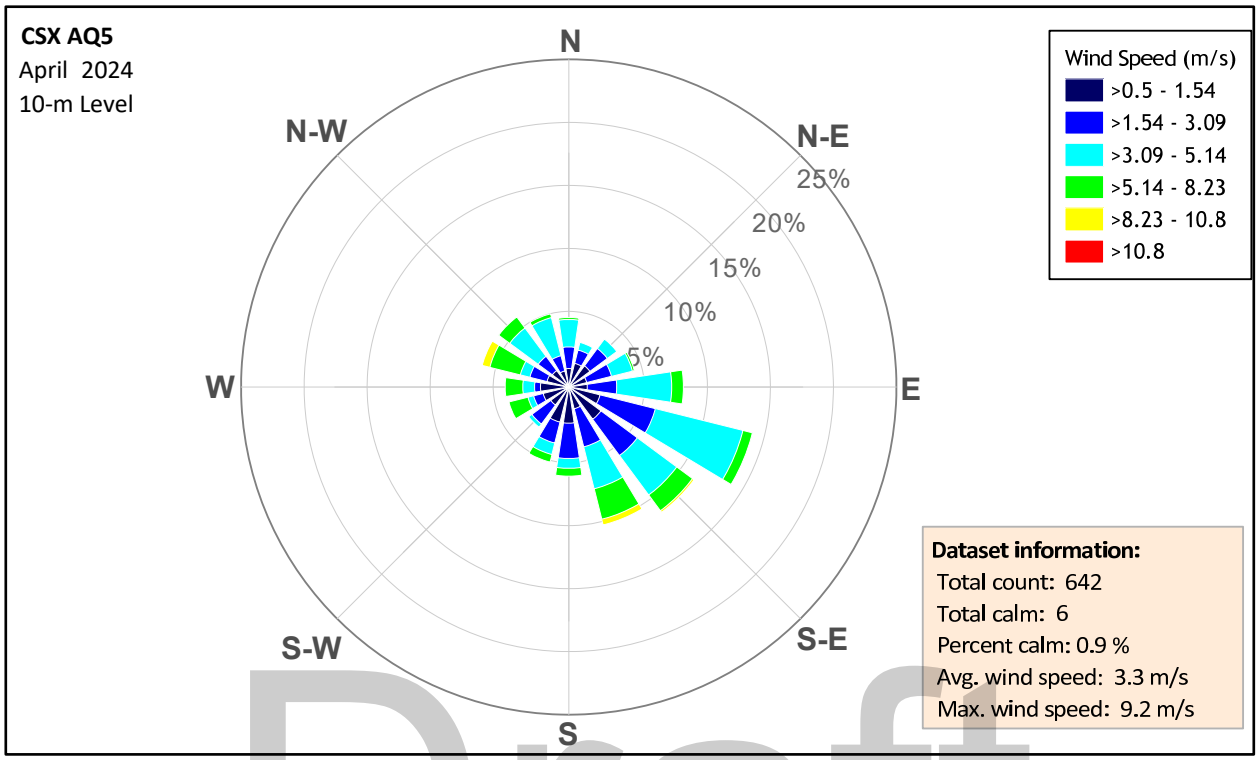
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For the second quarter 2024, the percentage of winds that were calm was 0.6 percent at the 10-meter level. The percentage of wind speeds that were not calm and less than or equal to 10.8 meters per second (m/s), which translates to 24.2 miles per hour (mph), was 99.4 percent at the 10-meter level. For the quarter, the percentage of winds greater than 10.8 m/s was 0.0 percent at the 10-meter level.

The sector with the highest average wind speed for the quarter at the 10-meter level was from the east at 4.0 m/s (8.9 mph).

Figures 3.1 through 3.3 provide diagrams of the joint frequency of occurrence distributions (wind rose) of wind speed and wind direction by month for the period for the 10-meter level. Figure 3.4 presents the second quarter 10-meter level wind rose. Summary tables of hourly average wind direction and wind speed for the 10-meter level for the second quarter are presented in Appendix B.

Figure 3.1 10-Meter Level Wind Rose, April 2024.



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Figure 3.2 10-Meter Level Wind Rose, May 2024.

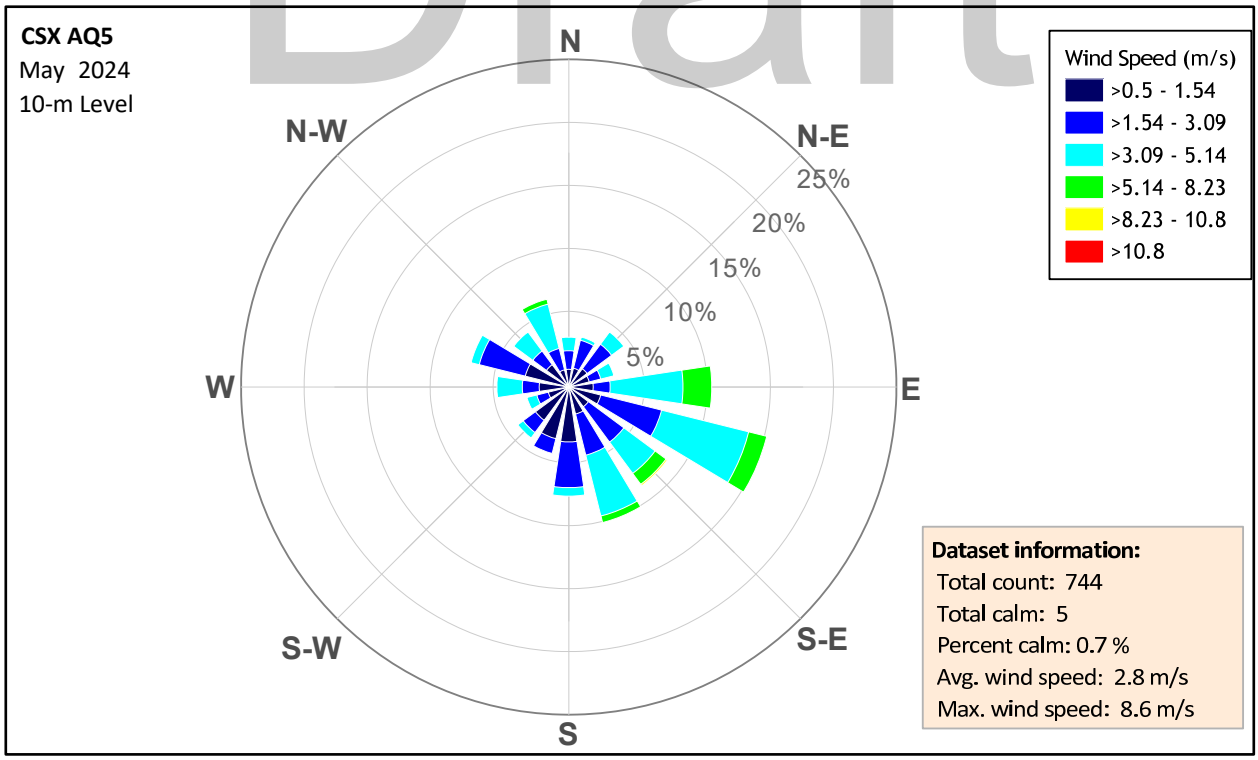
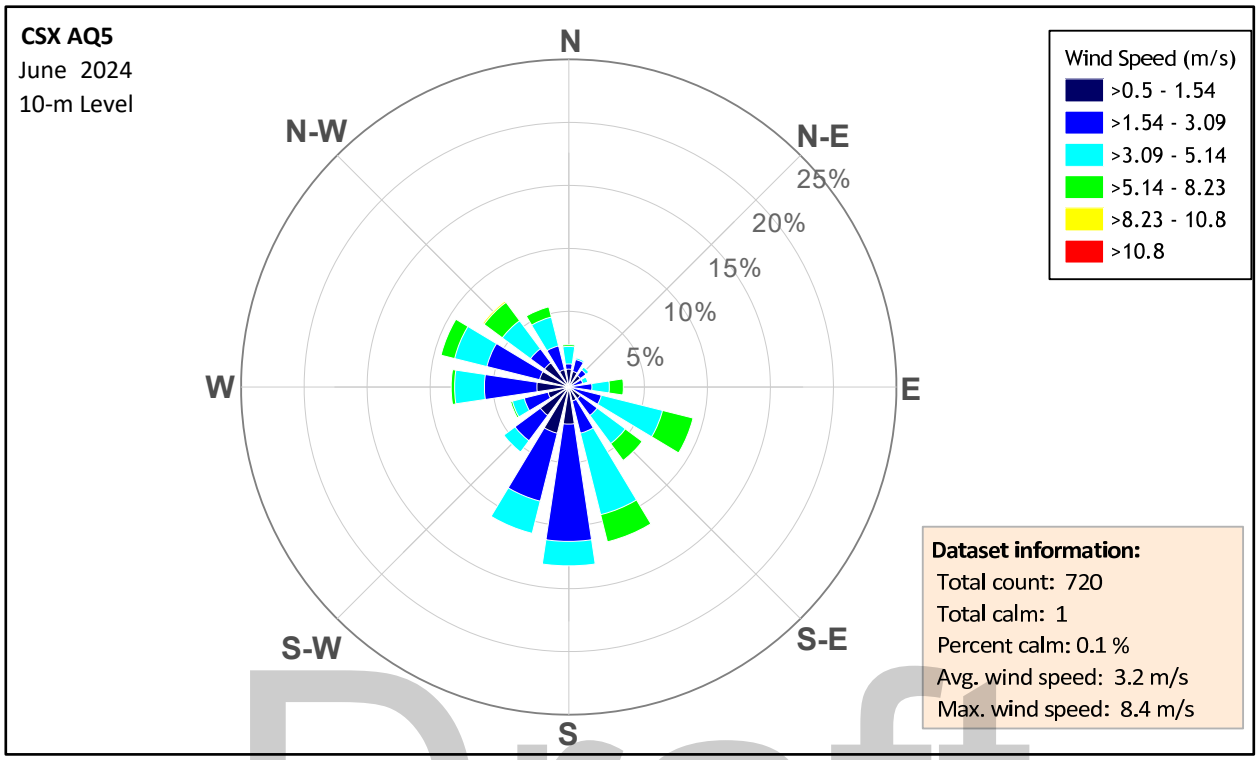
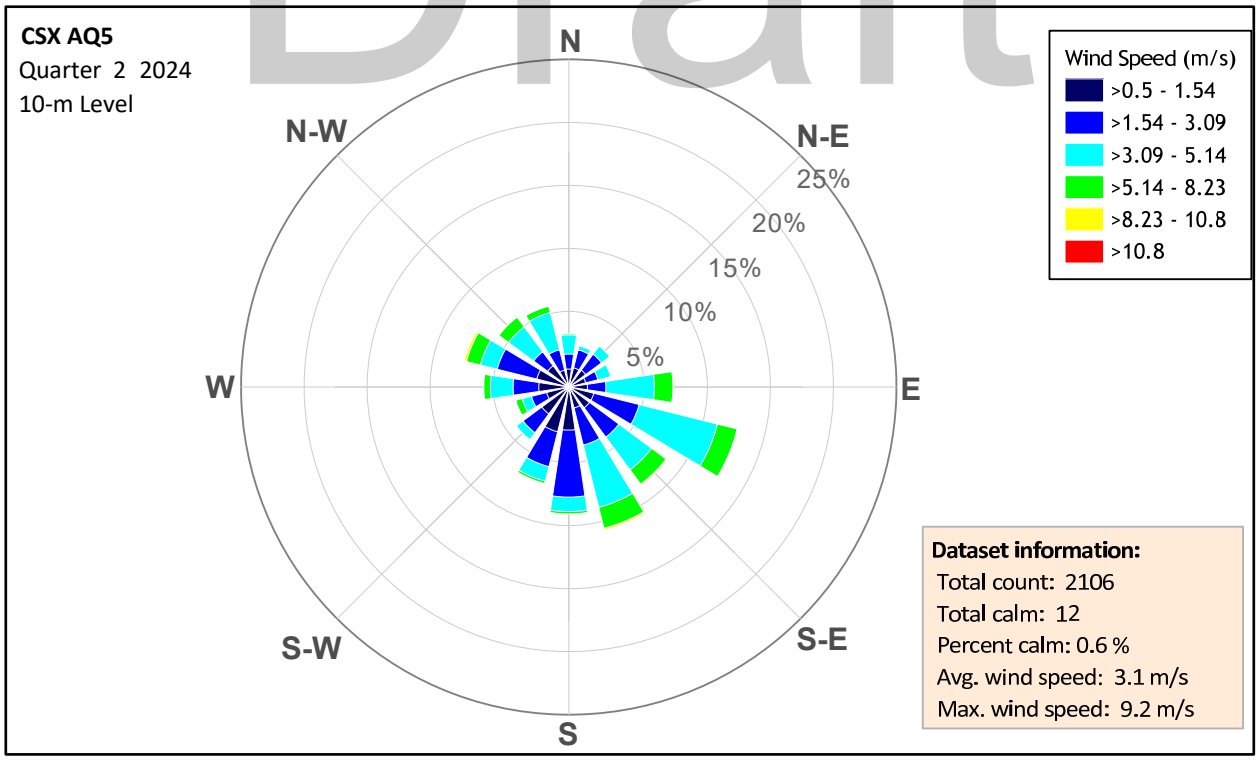


Figure 3.3 10-Meter Level Wind Rose, June 2024.



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Figure 3.4 10-Meter Level Wind Rose, Second Quarter 2024.



3.1.2 Wind Gust

At the 10-meter level, the peak wind gust during the period was 20.8 m/s (46.5 mph) which occurred on April 11 at 24:00. Wind gust information is presented in Table 3-1 and in Appendix B.

Table 3-1 Wind Gust Summary in Meters per Second for Second Quarter 2024

Month	Monthly Mean (m/s)	Maximum Hour (m/s)	Minimum Hour (m/s)
April	6.4	20.8	1.0
May	5.2	13.3	0.9
June	6.1	16.1	1.2

3.1.3 Temperature

The temperature is measured at the 2-meter level. The ambient daily mean temperatures for the second quarter 2024 ranged from a low of 7.2 degrees centigrade (°C) in April to a high of 31.1°C in June. The hourly minimum temperature was 3.9°C on April 6 at 15:00; the hourly maximum temperature was 35.2°C on June 26 at 14:00. Hourly temperature data for the second quarter 2024 are presented in Appendix C. Temperature data for the period are summarized in Table 3-2.

Table 3-2 Summary of Temperature in Degrees Centigrade (°C) for Second Quarter 2024

Month	Monthly Mean (°C)	Maximum Daily Mean (°C)	Minimum Daily Mean (°C)	Maximum Hour (°C)	Minimum Hour (°C)
April	14.4	24.1	7.2	30.2	3.9
May	19.5	24.5	11.9	31.8	9.4
June	25.2	31.1	20.4	35.2	14.5

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3.1.4 Relative Humidity

Table 3-3 presents the monthly means, maximum and minimum relative humidity information for the second quarter 2024. Relative humidity data are presented in Appendix D.

Table 3-3 Summary of Relative Humidity in Percent for Second Quarter 2024

Month	Monthly Mean (%)	Maximum Daily Mean (%)	Minimum Daily Mean (%)	Maximum Hour (%)	Minimum Hour (%)
April	64	95	40	98	21
May	76	94	41	99	27
June	62	90	45	95	27

3.1.5 Barometric Pressure

Barometric pressure data for the second quarter 2024 are presented in Table 3-4 and in Appendix E.

Table 3-4 Barometric Pressure Data in Millibars (mb) for Second Quarter 2024

Month	Monthly Mean (mb)	Maximum Daily Mean (mb)	Minimum Daily Mean (mb)	Maximum Hour (mb)	Minimum Hour (mb)
April	1014	1030	998	1032	992
May	1013	1023	1004	1024	1002
June	1014	1026	1002	1028	1000

3.1.6 Precipitation

For the second quarter 2024, 9.98 inches of precipitation were measured at the site. The precipitation data are summarized in Table 3-5 and are presented in Appendix F.

Table 3-5 Summary of Precipitation in Inches for Second Quarter 2024

Month	Monthly Total (in.)	Maximum Daily Total (in.)	Maximum Hourly Total (in.)
April	4.41	1.51	0.61
May	3.53	0.89	0.83
June	2.04	1.31	0.74

3.2 Particulate Data

PM_{10} and $PM_{2.5}$ data are measured at the AQ5 and AQ8 monitoring stations using continuous T-API Model T640X samplers. The T-API Model T640X samplers have Federal Equivalent Method (FEM) certifications of EQPM-0516-239 for PM_{10} and EQPM-0516-238 for $PM_{2.5}$.

3.2.1 AQ5 – PM_{10}

Hourly and 24-hour average PM_{10} concentrations collected at the AQ5 station during the second quarter 2024 are presented in Table 3-6. The ten highest 24-hour average PM_{10} concentrations for the 2024 monitoring year at the AQ5 monitoring station are presented in Table 3-7. Second quarter AQ5 station PM_{10} data are summarized in Appendix G.

Table 3-6 AQ5 PM_{10} Concentrations Second Quarter 2024 in Micrograms per Cubic Meter

AQ5 Statistics	April ($\mu g/m^3$)	May ($\mu g/m^3$)	June ($\mu g/m^3$)	Second Quarter 2024 ($\mu g/m^3$)
Monthly Mean	18.6	16.8	19.8	18.4
Maximum Hourly PM_{10}	117.6	212.0	89.0	212.0
Second Highest Hourly PM_{10}	109.2	111.6	79.0	111.6
Maximum 24-hour PM_{10}	36.6	30.8	29.6	36.6
Second Highest 24-hour PM_{10}	32.0	24.6	29.1	32.0

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Table 3-7 AQ5 Station Ten Highest 24-Hour Average PM_{10} Concentrations in Micrograms per Cubic Meter for 2024 Monitoring Year

Number	24-hour Concentration (µg/m³)	Date of Occurrence
1	57.8	03/14/2024
2	55.8	02/10/2024
3	43.6	02/07/2024
4	42.4	01/24/2024
5	41.8	03/20/2024
6	40.5	01/18/2024
7	38.4	01/25/2024
8	36.5	04/10/2024
9	36.4	03/13/2024
10	36.3	01/23/2024

3.2.2 AQ5 – $PM_{2.5}$

Hourly and 24-hour average $PM_{2.5}$ concentrations collected at the AQ5 station during the second quarter 2024 are presented in Table 3-8. The ten highest 24-hour average $PM_{2.5}$ concentrations for the 2024 monitoring year at the AQ5 monitoring station are presented in Table 3-9. Second quarter AQ5 station $PM_{2.5}$ data are summarized in Appendix G.

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Table 3-8 AQ5 $PM_{2.5}$ Concentrations Second Quarter 2024 in Micrograms per Cubic Meter

AQ5 Statistics	April (µg/m³)	May (µg/m³)	June (µg/m³)	Second Quarter 2024 (µg/m³)
Monthly Mean	7.1	6.9	7.7	7.2
Maximum Hourly $PM_{2.5}$	32.5	45.5	17.9	45.5
Second Highest Hourly $PM_{2.5}$	28.6	35.6	16.9	35.6
Maximum 24-hour $PM_{2.5}$	16.5	12.3	10.7	16.5
Second Highest 24-hour $PM_{2.5}$	15.1	11.6	10.5	15.1

Table 3-9 AQ5 Station Ten Highest 24-Hour Average $PM_{2.5}$ Concentrations in Micrograms per Cubic Meter for 2024 Monitoring Year

Number	24-hour Concentration ($\mu g/m^3$)	Date of Occurrence
1	29.1	02/10/2024
2	28.2	01/24/2024
3	26.5	01/25/2024
4	21.2	01/23/2024
5	19.7	02/27/2024
6	18.2	02/23/2024
7	17.9	03/14/2024
8	17.4	01/19/2024
9	16.7	02/12/2024
10	16.5	04/10/2024

3.2.3 AQ8 – PM_{10}

Hourly and 24-hour average PM_{10} concentrations for the second quarter 2024 are presented in Table 3-10 for the AQ8 monitoring station. The ten highest 24-hour average PM_{10} concentrations at the AQ8 station for the 2024 monitoring year are presented in Table 3-11. The second quarter AQ8 station PM_{10} data are summarized in Appendix H.

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Table 3-10 AQ8 Station PM_{10} Concentration for Second Quarter 2024 in Micrograms per Cubic Meter

AQ8 Statistics	April ($\mu g/m^3$)	May ($\mu g/m^3$)	June ($\mu g/m^3$)	Second Quarter 2024 ($\mu g/m^3$)
Monthly Mean	17.7	NA	22.4	20.1
Maximum Hourly PM_{10}	118.6	NA	78.3	118.6
Second Highest Hourly PM_{10}	93.5	NA	47.7	93.5
Maximum 24-hour PM_{10}	37.9	NA	27.1	37.9
Second Highest 24-hour PM_{10}	33.3	NA	22.5	33.3

NA -Not available.

Table 3-11 AQ8 Station Ten Highest 24-Hour Average PM_{10} Concentrations in Micrograms per Cubic Meter for 2024 Monitoring Year

Number	24-hour Concentration ($\mu g/m^3$)	Date of Occurrence
1	80.5	03/14/2024
2	57.5	02/10/2024
3	55.4	03/13/2024
4	51.0	02/07/2024
5	47.4	02/08/2024
6	42.7	01/25/2024
7	40.4	03/20/2024
8	38.1	02/26/2024
9	37.9	04/10/2024
10	37.1	02/05/2024

3.2.4 AQ8 – $PM_{2.5}$

Hourly and 24-hour average $PM_{2.5}$ concentrations for the second quarter 2024 are presented in Table 3-12 for the AQ8 monitoring station. The ten highest 24-hour average $PM_{2.5}$ concentrations at the AQ8 station for the 2024 monitoring year are presented in Table 3-13. The second quarter AQ8 station $PM_{2.5}$ data are summarized in Appendix H.

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Table 3-12 AQ8 Station $PM_{2.5}$ Concentration for Second Quarter 2024 in Micrograms per Cubic Meter

AQ8 Statistics	April ($\mu g/m^3$)	May ($\mu g/m^3$)	June ($\mu g/m^3$)	Second Quarter 2024 ($\mu g/m^3$)
Monthly Mean	6.6	NA	7.6	7.1
Maximum Hourly $PM_{2.5}$	30.2	NA	14.7	30.2
Second Highest Hourly $PM_{2.5}$	29.8	NA	11.9	29.8
Maximum 24-hour $PM_{2.5}$	16.3	NA	7.7	16.3
Second Highest 24-hour $PM_{2.5}$	15.3	NA	7.6	15.3

NA – Not available.

Table 3-13 AQ8 Station Ten Highest 24-Hour Average $PM_{2.5}$ Concentrations in Micrograms per Cubic Meter for 2024 Monitoring Year

Number	24-hour Concentration ($\mu g/m^3$)	Date of Occurrence
1	28.0	01/25/2024
2	26.3	02/10/2024
3	24.9	01/24/2024
4	18.6	01/23/2024
5	18.2	03/14/2024
6	16.9	02/27/2024
7	16.7	02/12/2024
8	16.3	04/10/2024
9	16.1	02/23/2024
10	15.5	01/19/2024

3.3 Data Recovery

Data recoveries for the meteorological parameters and AQ5 and AQ8 station PM_{10} and $PM_{2.5}$ data for the second quarter 2024 in percent possible are provided in Tables 3-14 and 3-15.

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Table 3-14 AQ5 Station – Meteorological, PM_{10}, and $PM_{2.5}$ Measurement Data Recovery in Percent for Second Quarter 2024

Month	Level (m)	Wind Speed (%)	Wind Dir. (%)	Wind Gust (%)	Temp. (%)	Rel. Hum. (%)	Bar. Press. (%)	Prec. (%)	PM_{10} (%)[1]	$PM_{2.5}$ (%)[1]
April	1.5	--	--	--	--	--	100	100	99.9	99.9
	2.0	--	--	--	100	100	--	--		
	10.0	89.2	89.2	89.2	--	--	--	--		
May	1.5	--	--	--	--	--	100	100	99.9	99.9
	2.0	--	--	--	100	100	--	--		
	10.0	100	100	100	--	--	--	--		
June	1.5	--	--	--	--	--	100	100	68.8	68.8
	2.0	--	--	--	100	100	--	--		
	10.0	100	100	100	--	--	--	--		
Second Quarter 2024	1.5	--	--	--	--	--	100	100	89.5	89.5
	2.0	--	--	--	100	100	--	--		
	10.0	96.4	96.4	96.4	--	--	--	--		

[1] Data capture rate based on valid sample days.

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Table 3-15 AQ8 Station - PM_{10} and $PM_{2.5}$ Measurement Data Recovery in Percent for Second Quarter 2024

Month	PM_{10} (%)[1]	$PM_{2.5}$ (%)[1]
April	99.3	99.3
May	0.0	0.0
June	11.9	11.9
Second Quarter	37.1	37.1

[1] Data capture rate based on valid sample days.

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4.0 PM_{10} AND $PM_{2.5}$ PERIMETER NETWORK MONITORING

At eight locations around the perimeter of the at the Curtis Bay Piers Facility, QuantAQ MODULAIR non-regulatory, community based $PM_{10}/PM_{2.5}$ samplers are operated. Three (3) MODULAIR samplers are being operated at AQ5 and one (1) MODULAIR sampler is operated at AQ8. These samplers are operated to give an indication of the $PM_{10}/PM_{2.5}$ at each network location and to show $PM_{10}/PM_{2.5}$ trends. These data are not intended to be used for compliance with the National Ambient Air Quality Standards (NAAQS). Summaries of the second quarter 2024 MODULAIR PM_{10} and $PM_{2.5}$ data, in micrograms per cubic meter, are presented in Tables 4-1 and 4-2.

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Table 4-1 Second Quarter 2024 MODULAIR PM_{10} Data in Micrograms per Cubic Meter

Month	Statistic	Station									
		AQ1	AQ2	AQ3	AQ4	AQ5A	AQ5B	AQ5C	AQ6	AQ7	AQ8A
April	Mean	19.1	19.3	21.5	19.7	23.4	NA	17.8	19.5	6.8	19.6
	Hourly Maximum	141.0	176.2	168.2	118.5	157.3	NA	114.4	167.0	34.1	133.7
	Second High	115.7	145.2	156.6	111.3	141.7	NA	110.3	125.6	23.3	110.2
	Maximum 24-hour	41.8	46.3	45.3	37.0	46.6	NA	35.7	36.7	10.3	40.3
	Second High 24-hour	38.7	42.2	43.7	31.6	43.7	NA	34.6	36.7	6.9	40.0
May	Mean	19.2	21.1	22.2	19.6	23.4	NA	19.7	18.8	7.3	20.3
	Hourly Maximum	93.2	74.9	100.3	73.4	99.5	NA	78.4	87.5	17.2	76.0
	Second High	82.5	60.9	85.8	69.5	81.7	NA	66.6	65.8	15.5	74.4
	Maximum 24-hour	29.0	33.5	34.9	40.3	35.5	NA	32.8	28.8	NA	33.0
	Second High 24-hour	26.9	31.8	30.4	31.5	34.6	NA	30.6	26.8	NA	30.6
June	Mean	22.9	24.8	26.5	26.9	27.4	25.4	NA	22.3	15.0	24.2
	Hourly Maximum	120.6	74.0	116.1	91.6	91.6	90.9	NA	74.8	64.7	80.2
	Second High	77.5	68.7	104.4	84.9	89.5	83.5	NA	72.3	62.6	78.2
	Maximum 24-hour	44.3	41.1	44.4	43.5	42.1	43.6	NA	35.7	30.1	40.7
	Second High 24-hour	31.2	37.8	43.2	38.1	40.9	21.3	NA	32.3	25.1	39.1

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Table 4-2 Second Quarter 2024 MODULAIR $PM_{2.5}$ Data in Micrograms per Cubic Meter

Month	Statistic	Station									
		AQ1	AQ2	AQ3	AQ4	AQ5A	AQ5B	AQ5C	AQ6	AQ7	AQ8A
April	Mean	7.5	8.0	8.5	8.4	9.0	NA	8.2	6.9	4.3	8.2
	Hourly Maximum	38.6	37.9	35.8	39.8	43.8	NA	40.9	35.1	13.0	38.6
	Second High	34.0	33.4	35.1	32.4	39.1	NA	34.7	30.5	12.9	37.4
	Maximum 24-hour	20.0	20.4	20.8	17.8	22.4	NA	21.1	17.4	7.6	21.4
	Second High 24-hour	17.5	20.0	19.6	15.2	20.3	NA	18.9	13.9	3.6	19.0
May	Mean	8.5	9.4	9.4	10.7	10.4	NA	10.1	7.9	4.8	9.6
	Hourly Maximum	30.8	37.5	32.1	53.3	38.4	NA	37.8	26.3	14.4	36.5
	Second High	30.6	36.9	32.0	48.8	37.6	NA	37.1	26.0	12.4	36.1
	Maximum 24-hour	17.0	20.2	19.1	26.4	21.6	NA	21.6	15.5	NA	19.6
	Second High 24-hour	16.6	20.0	17.8	19.0	20.8	NA	19.1	14.7	NA	18.2
June	Mean	9.6	12.1	11.8	13.1	12.4	9.4	NA	10.1	10.5	11.3
	Hourly Maximum	26.7	36.7	28.9	54.7	33.3	26.6	NA	25.4	34.6	30.4
	Second High	25.0	36.5	28.0	50.0	32.6	20.7	NA	22.9	33.4	29.4
	Maximum 24-hour	15.9	21.6	19.8	22.4	22.8	12.2	NA	15.8	18.2	19.7
	Second High 24-hour	15.7	21.4	19.4	21.5	20.3	10.9	NA	14.5	16.1	18.8

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4.1 Data Recovery

Data recoveries for the MODULAIR PM_{10} and $PM_{2.5}$ sampler data for the second quarter 2024 in percent possible are provided in Table 4-3.

Table 4-3 Second Quarter 2024 MODULAIR PM_{10} and $PM_{2.5}$ Data Recovery in Percent

Station	April (%)	May (%)	June (%)
AQ1 PM_{10}	96.0	98.3	99.2
AQ1 $PM_{2.5}$	96.0	99.6	99.3
AQ2 PM_{10}	89.3	88.0	87.1
AQ2 $PM_{2.5}$	89.6	88.0	87.2
AQ3 PM_{10}	94.2	97.3	95.4
AQ3 $PM_{2.5}$	94.2	98.8	95.4
AQ4 PM_{10}	75.4	76.7	97.6
AQ4 $PM_{2.5}$	75.8	78.1	98.6
AQ5A PM_{10}	100	98.7	100
AQ5A $PM_{2.5}$	100	100	100
AQ5B PM_{10}	0	0	12.1
AQ5B $PM_{2.5}$	0	0	12.1
AQ5C PM_{10}	100	94.1	0
AQ5C $PM_{2.5}$	100	95.4	0
AQ6 PM_{10}	96.0	97.0	88.5
AQ6 $PM_{2.5}$	96.0	98.4	88.8
AQ7 PM_{10}	9.6	4.4	95.1
AQ7 $PM_{2.5}$	9.6	4.4	95.3
AQ8A PM_{10}	100	98.7	62.2
AQ8A $PM_{2.5}$	100	100	62.2

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4.2 MODULAIR Sampler PM_{10} and $PM_{2.5}$ Concentration Comparison with FEM reference PM_{10} and $PM_{2.5}$ Samplers

Figures 4.1 through 4.4 present the perimeter network MODULAIR sampler PM_{10} and $PM_{2.5}$ concentrations compared with the FEM reference PM_{10} and $PM_{2.5}$ samplers at AQ5 and AQ8 for the second quarter 2024. QuantAQ MODULAIR hourly sampler data, and network collocation and comparison data are presented in Appendix I.

Figure 4.1 AQ5A MODULAIR Serial Number MOD384 PM Collocation and Comparison Data for April through June 2024

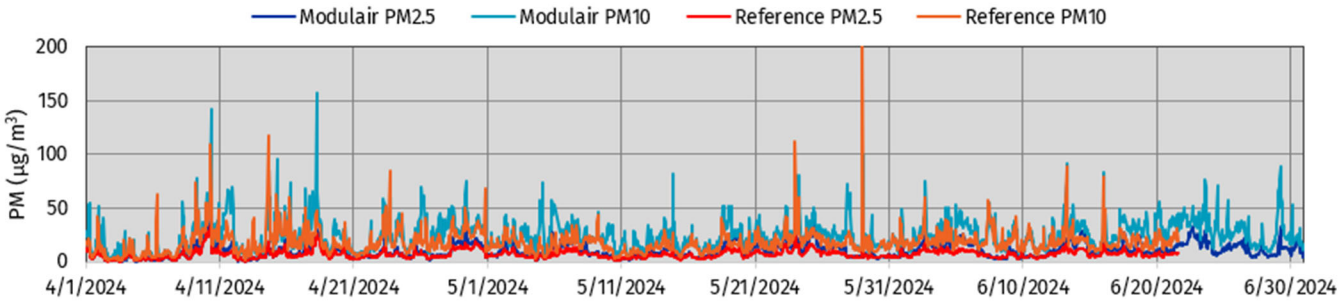
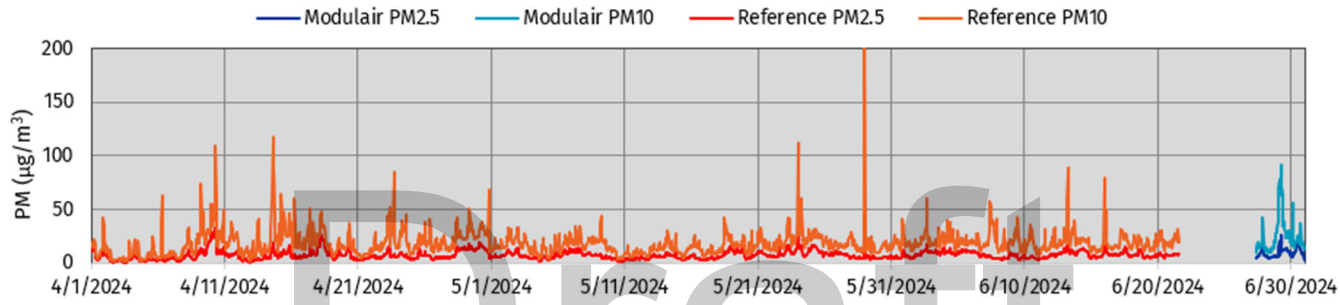


Figure 4.2 AQ5B MODULAIR Serial Number MOD385 PM Collocation and Comparison Data for April through June 2024



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Figure 4.3 AQ5C MODULAIR Serial Number MOD383 PM Collocation and Comparison Data for April through June 2024

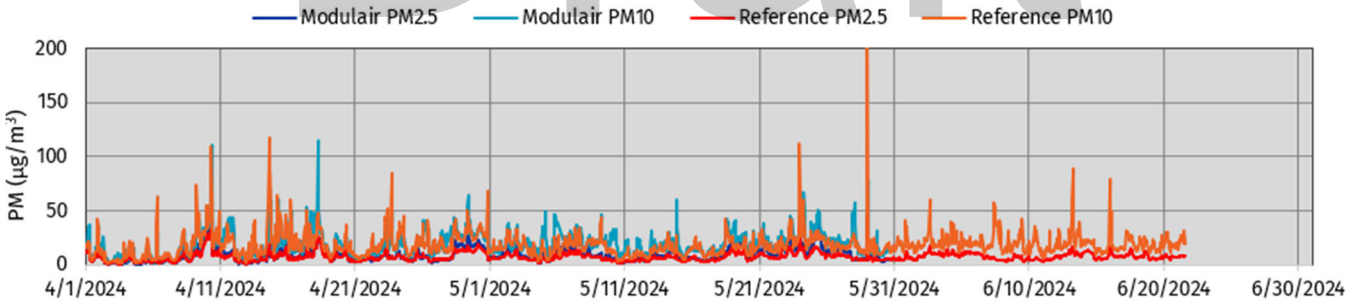
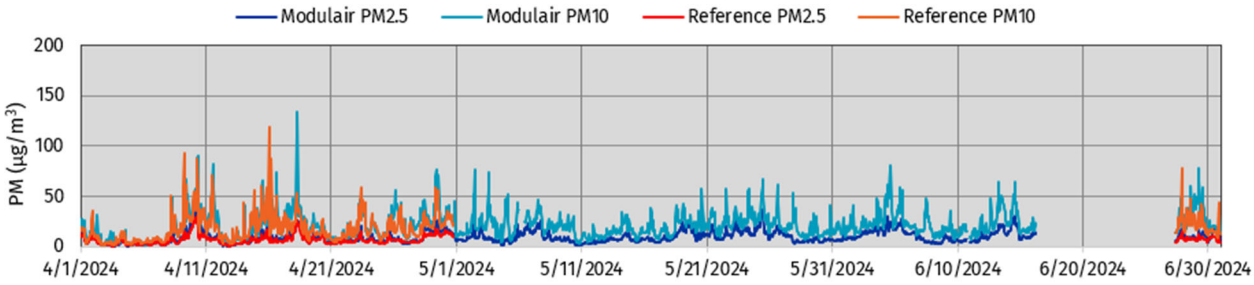


Figure 4.4 AQ8A MODULAIR Serial Number MOD 386 PM Collocation and Comparison Data for April through June 2024



Measurement error statistics were calculated via co-location of the MODULAIR and the FEM samplers at AQ5 and AQ8. The bias is determined from the slope and intercept measurements; the linearity is determined from the coefficient of determination (R^2). The root-mean-square error (RSME) is a measure of the expected error. Precision is the degree of agreement within a set of observations, and it is presented as the standard deviation (SD) or coefficient of determination (CV). The EPA recommended performance metrics for the non-regulatory MODULAIR sensors are presented in Table 4-4. The performance metric results of the second quarter collocation of the MODULAIR and FEM samplers at AQ5 and AQ8 are presented in Table 4-5.

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Table 4-4 EPA Recommended Performance Metrics and Target Values

Performance Metric		Target Value
Precision	Standard Deviation	≤5 µg/m³
	CV	≤30%
Bias	Slope (m)	1.0±0.35
	Intercept (b)	-5 ≤ b ≤ 5 µg/m³
Linearity	R^2	≥0.70
Error	RSME	≤7 µg/m³

Table 4-5 AQ5 and AQ8 MODULAIR and FEM Collocation Statistics for Second Quarter 2024

Statistics	AQ5A Modulair 384		AQ5B Modulair 385		AQ5C Modulair 383		AQ8A Modulair 386	
	$PM_{2.5}$	PM_{10}	$PM_{2.5}$	PM_{10}	$PM_{2.5}$	PM_{10}	$PM_{2.5}$	PM_{10}
Correlation Coefficient (r2)	0.712	0.351	NA	NA	0.695	0.365	0.769	0.519
Slope (m)	1.400	0.746	NA	NA	1.225	0.583	1.172	0.849
Intercept (b)	0.190	10.626	NA	NA	0.504	8.483	0.561	5.074
RMSW	6.714	16.420	NA	NA	5.216	13.762	8.598	18.357
Precision (CV)	22.730	27.040	NA	NA	24.790	24.720	22.700	18.700
Precision (SD)	5.281	14.166	NA	NA	5.197	13.142	6.337	14.268

5.0 QUALITY CONTROL

Meteorological, and PM_{10} and $PM_{2.5}$ concentration data collected at CSX monitoring stations have been subjected to a series of quality control procedures to document the validity of the data and increase the integrity of the data sets. The quality control performed for these data is described in this section.

5.1 Visual Inspection of Equipment

Visual inspection of the meteorological tower, sensors, continuous FEM PM_{10}/$PM_{2.5}$ monitors, and network samplers is performed at least every month or more frequently when problems are indicated. Abnormal conditions are logged and reported immediately to the program manager for corrective action.

5.2 Remote Interrogation of the Monitoring Stations

The data loggers at the AQ5 and AQ8 meteorological tower and PM_{10}/$PM_{2.5}$ monitoring stations are interrogated every day to download and process the data. PM_{10} and $PM_{2.5}$ concentration from the MODULAIR samplers are downloaded from the QuantAQ Cloud daily. Abnormal data values or apparent problems are reported immediately to the program manager who initiates corrective action and determines if a special visit to the site is required.

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5.3 Quality Control Data Inspections

During data acquisition, the data loggers at AQ5 and AQ8 collect and save 5-minute averages of each measured meteorological parameter, and PM_{10} and $PM_{2.5}$ concentrations. These values are stored in memory for subsequent retrieval via telephone, modem, and internet. Minutely MODULAIR data are downloaded daily. After the AQ5 and AQ8 data loggers are interrogated and MODULAIR data are downloaded from the Cloud, collecting all data since the last interrogation, the data are stored on Trinity computers in Salt Lake City.

The meteorological, PM_{10}, and $PM_{2.5}$ data files are input to a program which performs a series of quality control (QC) tests as listed in Table 5-1. The QC program produces a report that identifies each value in the data file that fails one or more of the listed tests. This report also provides means, maxima, and minima for each variable.

Table 5-1 Quality Control Checks Imposed by Data QC Program

Parameter	Less Than	Greater Than	Constant For
Wind Speed	0 m/s	35 m/s	2 hours
Wind Direction	0 deg	360 deg	2 hours
Temperature	-30 deg C	45 deg C	30 minutes
Relative Humidity	3%	102%	16 hours
Barometric Pressure	-20 mb < 7 day Avg.	20 mb > 7 day Avg.	2 hours
Precipitation	0 inches	1 inch in 24 hours	N/A
PM_{10}	-5 ug/m^3	150 ug/m^3	4 hours
$PM_{2.5}$	-10 ug/m^3	35 ug/m^3	4 hours
Shelter Temperature	20 deg C	30 deg C	N/A
Battery Voltage	11.5 V	16 V	N/A

5.4 Data Validation

When the QC program identifies values that exceed the criteria set for that parameter, the data file is inspected visually. In most cases, a flagged value is not invalid; it merely fell outside of expected ranges or "normal" rates of change for that parameter. If, after investigation, an air quality meteorologist determines that the value is reasonable, the value is not invalidated. If there is a reason to suspect the data point, the value is reset to "missing" (This is done on the data management file only, not on the raw data file collected from the data logger; the raw data file is never manipulated).

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For the purposes of this data report, data failures or discrepancies that would invalidate an hourly average for the meteorological sensors, T640x analyzers, and MODULAIR samplers are listed below:

- Loss of more than three five-minute average in a one-hour period,
- Visual evidence, on the stacked parameter/time plots for example, that the 5-minute value is an outlier,
- Data collected during calibrations and audits,
- Equipment malfunction,
- T640 reports a status error,
- Shelter temperature less than 0°C, $PM_{2.5}$ and PM_{10} concentrations set to missing,
- PM_{10} less than -5 µg/m^3, concentrations set to missing, and
- $PM_{2.5}$ less than -10 µg/m^3, concentrations set to missing.

At AQ5, on June 21, 2024, the T640x continuous particulate sampler malfunctioned and displayed a "bypass flow alarm". A site visit was conducted by the Trinity technician on June 27 and the bypass flow was found out of tolerance, and the bypass flow sensor was not working properly. Therefore, particulate data from the T640x sampler were invalidated from June 21 through the end of the quarter. Further repairs and troubleshooting will be discussed in the third quarter data report.

At AQ8, on April 30, the T640x continuous particulate sampler malfunctioned and displayed a span dust alarm, while reporting erroneous concentrations. A site visit occurred by the Trinity technician on May 4 to diagnose the errors. The technician noted some debris in the downtube, and an optical chamber cleaning was performed. The unit would not boot back up after the maintenance. On May 14, the unit was removed from the site to troubleshoot the bootup error and was ultimately reinstalled after maintenance on May 30. The design flow rate was still out of tolerance. On June 27, maintenance was performed, and the internal pump was replaced. T640x particulate data were invalid during this period from April 30 through June 27.

Invalid data parameters and the corrective action reports for the second quarter 2024 and corresponding times are presented in Appendix J.

5.5 Equipment Calibration

Calibrations of the meteorological equipment are performed every six months or whenever a sensor exceeds specified control limits or undergoes major maintenance or repair. The FEM T640X PM_{10}/$PM_{2.5}$ samplers are calibrated by Trinity personnel every three months or when problems are identified. The AQ5 and AQ8 T640X PM_{10}/$PM_{2.}$samplers were calibrated on April 24, 2024. The meteorological equipment was calibrated on February 28, 2024. No calibrations are performed on the MODULAIR samplers. All calibrations are performed using certified reference standards. Copies of the field calibration data sheets are presented in Appendix K.

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5.6 T-API T640X PM_{10} and $PM_{2.5}$ Flow and Leak Checks

Field quality control activities for the T-API Model T640X samplers include flow rate, temperature, and pressure checks. The T640X $PM_{2.5}$/PM_{10} continuous samplers quality control checks and calibrations are performed using a certified flow transfer standard.

Monthly flow checks are performed on the T-API T640x continuous PM_{10}/$PM_{2.5}$. Copies of the monthly flow checks are included in Appendix L. The results of the monthly flow checks are presented in Table 5-2. The measured flow rates of the particulate samplers should not exceed ±4 percent of the sampler flow rate or within ±5 percent of the design flow rate of 16.7 L/min. Flow rate difference is calculated using the following equation:

$$d_i = \frac{Y_i - X_i}{(X_i)} x100$$

Where d_i is the percent difference, Y_i is the sampler indicated flow, and X_i is the flow as measured by the reference flow standard.

Table 5-2 AQ5 and AQ8 PM_{10}/$PM_{2.5}$ T640X Second Quarter Monthly Flow Check Results

Month	Target Flow Rate (L/min)	Sampler Indicated Flow (L/min)	Reference Flow (L/min)	Percent Difference Ref. Flow (%)	Percent Difference Design Flow (%)
AQ5 PM_{10}/ $PM_{2.5}$					
April	5.00	4.95	4.96	-0.2	-0.8
	11.67	11.59	11.58	0.1	-0.8
May	5.00	4.95	5.04	-1.8	0.8
	11.67	11.59	11.62	-0.3	-0.4
June	NA	NA	NA	NA	NA
	NA	NA	NA	NA	NA
AQ8 PM_{10}/ $PM_{2.5}$					
April	5.00	5.00	5.14	-2.7	2.8
	11.67	11.66	11.73	-0.6	0.5
May	5.00	4.96	4.81	3.1	-3.8
	11.67	11.68	11.70	-0.2	0.3
June	5.00	5.01	5.00	-0.2	-0.3
	11.67	11.67	11.69	0.2	0.2

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5.7 T-API T640X PM_{10} and $PM_{2.5}$ Statistics for Assessment

Calculations for the PM_{10} and $PM_{2.5}$ T-API T640X data quality assessment were made based 40 CFR 58 Appendix A.

The bias estimator is an upper bound on the mean absolute value of the percent differences. The bias estimate equation is presented as equation (2).

$$|AB| = AB + t_{0.95,n-1}\frac{AS}{\sqrt{n}} \quad (2)$$

Where: n is the number of single point checks being aggregated; $t_{0.95,\ n-1}$ is the 95th quantile of a T-distribution with $n-1$ degrees of freedom.

The quantity AB is the mean of the absolute values of the d i's and is calculated for PM_{10} and $PM_{2.5}$ using equation (3).

$$AB = \frac{1}{n}\sum_{i=0}^{n}|d_i| \quad (3)$$

The standard deviation of the absolute value of the d's is calculated for PM_{10} using equation 4.

$$AS = \sqrt{\frac{n\sum_{i=0}^{n}|d_i^2| - \left(\sum_{i=0}^{n}|d_i|\right)^2}{n(n-1)}} \quad (4)$$

The mean percent difference, precision, and bias estimates limits for PM_{10} and $PM_{2.5}$ for the second quarter 2024 are presented in Table 5-3.

Table 5-3 Second Quarter 2024 Bias Statistics for T-API T640X Continuous $PM_{10}/PM_{2.5}$ Samplers

Statistics	AQ5 $PM_{10}/PM_{2.5}$	AQ8 $PM_{10}/PM_{2.5}$
Mean Percent Difference	-0.540	-0.057
AB	0.583	1.164
AS	0.805	1.377
Bias Estimate	-1.53	±2.30

NA = Not available.

5.8 T-API T640X Monitoring Enclosure Temperature

The T-API T640X enclosure's role in quality control is to provide a temperature-controlled environment in which the continuous particulate monitoring equipment can operate at optimum performance. The mean enclosure temperature should be approximately 25°C. Enclosure interior temperature is monitored by the datalogger and reported along with other measurements. Deviations greater than ±5°C from the 25°C optimum shelter temperatures indicate a need to readjust the temperature control system. Table 5-4 presents the average, maximum, and minimum interior shelter temperatures for the monitoring period. Figures 5.1 and 5.2 present plots of the internal enclosure temperatures and a running 24-hour standard deviations of the enclosure temperatures for AQ5 and AQ8. Appendix M contains the hourly shelter temperatures for the second quarter 2024.

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Table 5-4 Monitoring Enclosure Interior Temperature in Degrees Centigrade for Second Quarter 2024 – AQ5 and AQ8 Monitoring Stations

Month	Average Temperature	Maximum Temperature	Minimum Temperature	ABS Deviation from 25°C
AQ5				
April	22.0	25.5	12.0	-13.0
May	23.0	25.6	19.6	-5.4
June	21.7	25.3	17.6	-7.4
AQ8				
April	24.4	29.3	13.2	-11.8
May	24.9	29.3	15.1	-9.9
June	26.0	29.2	21.2	-3.8

Figure 5.1 AQ5 Enclosure Temperature and Temperature Standard Deviation

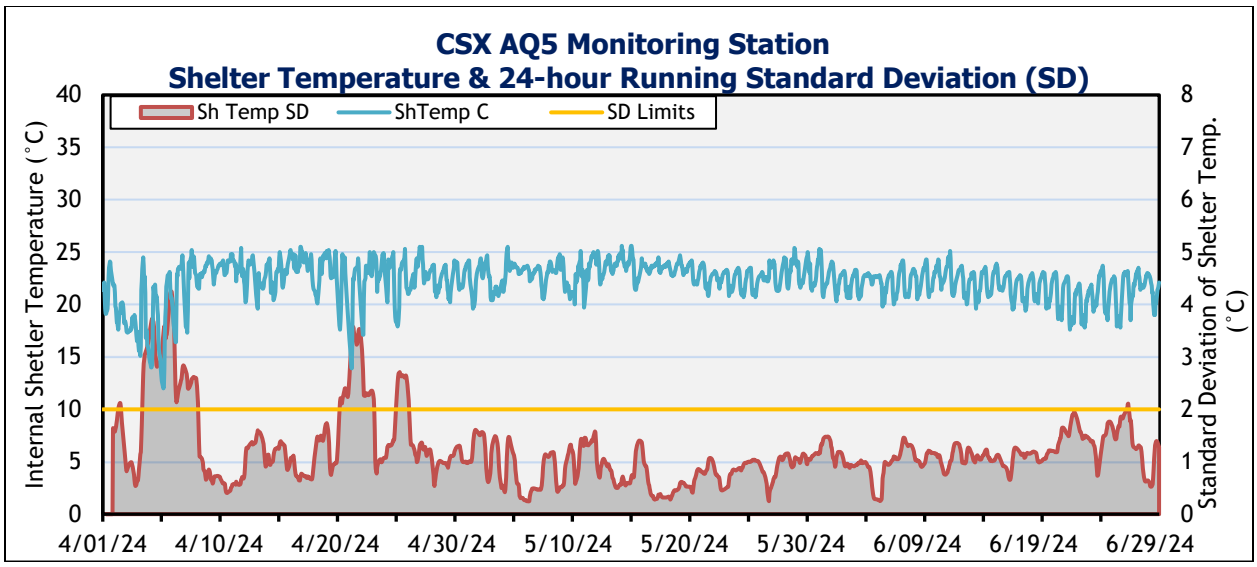
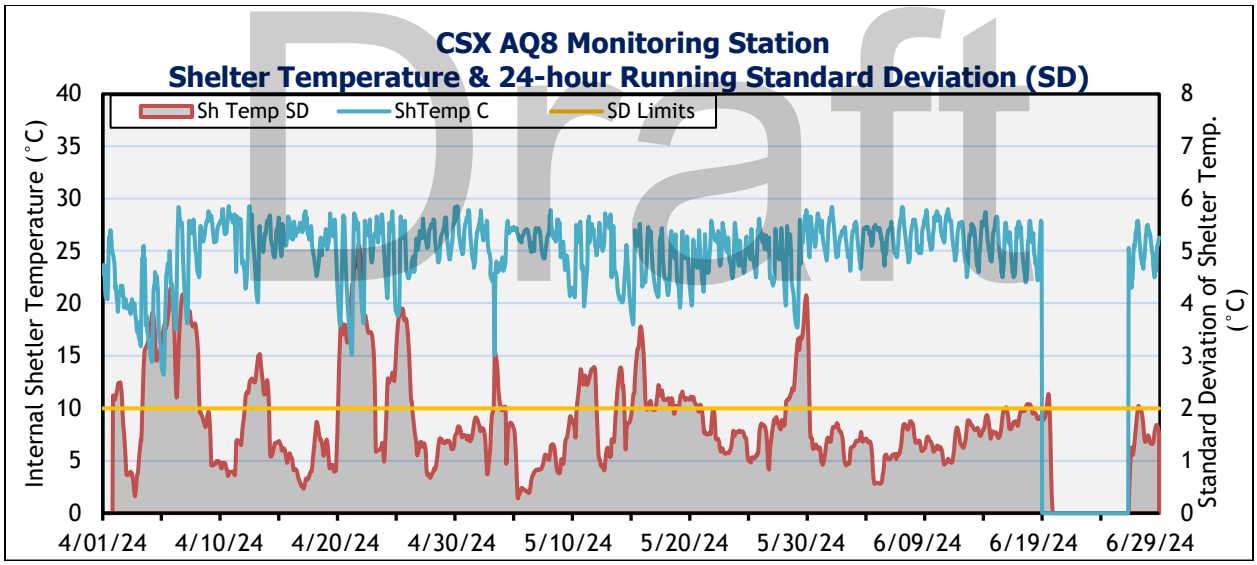


Figure 5.2 AQ8 Enclosure Temperature and Temperature Standard Deviation



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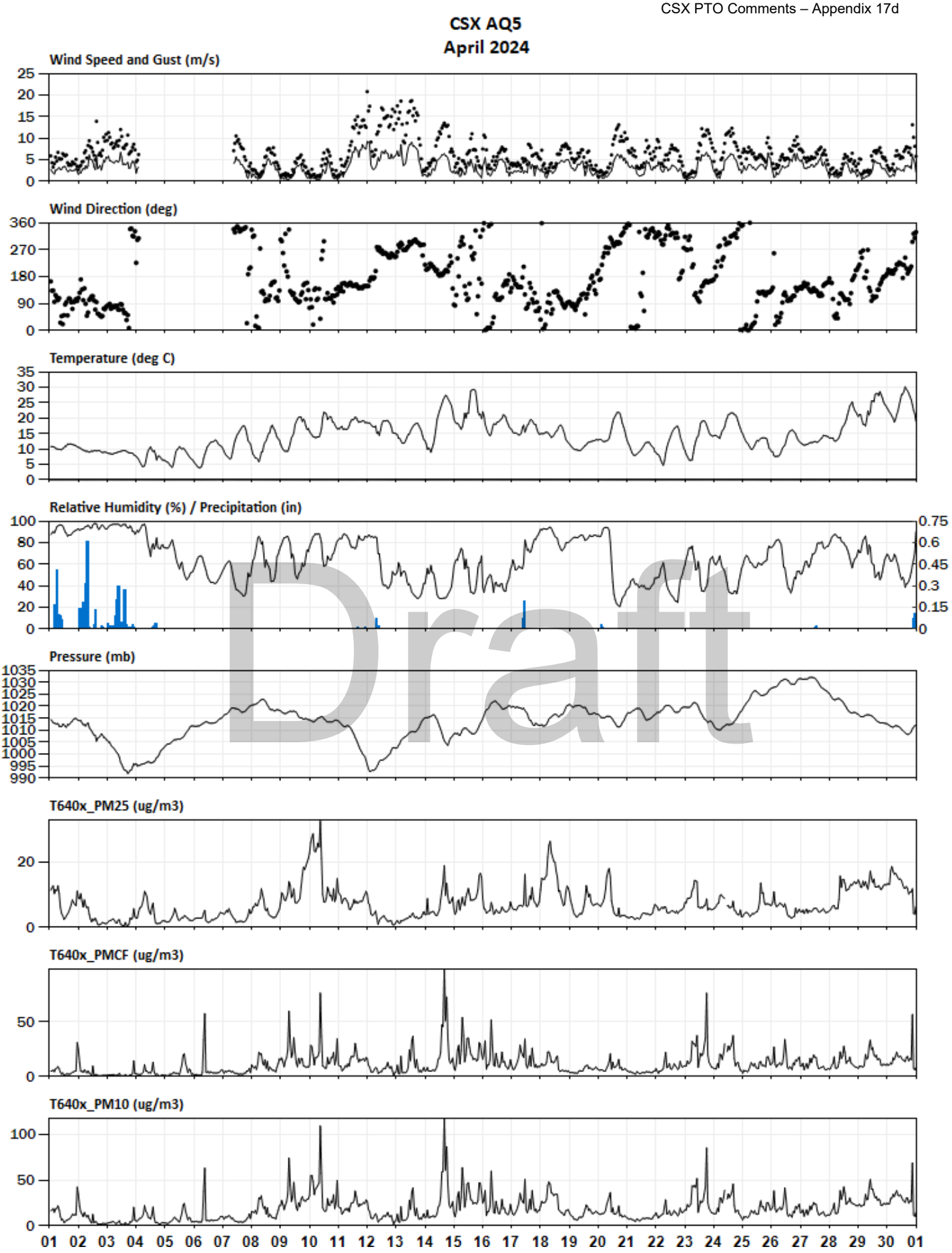
6.0 QUALITY ASSURANCE AUDITS

To comply with EPA requirements, a performance audit of meteorological instrumentation is conducted every six months, every three months for the particulate sampling equipment, or within 60 days after installation. Reference standards used in performance audits are independent of those used for calibration checks. Audits will be performed once the quality assurance project plan developed for this project has been approved.

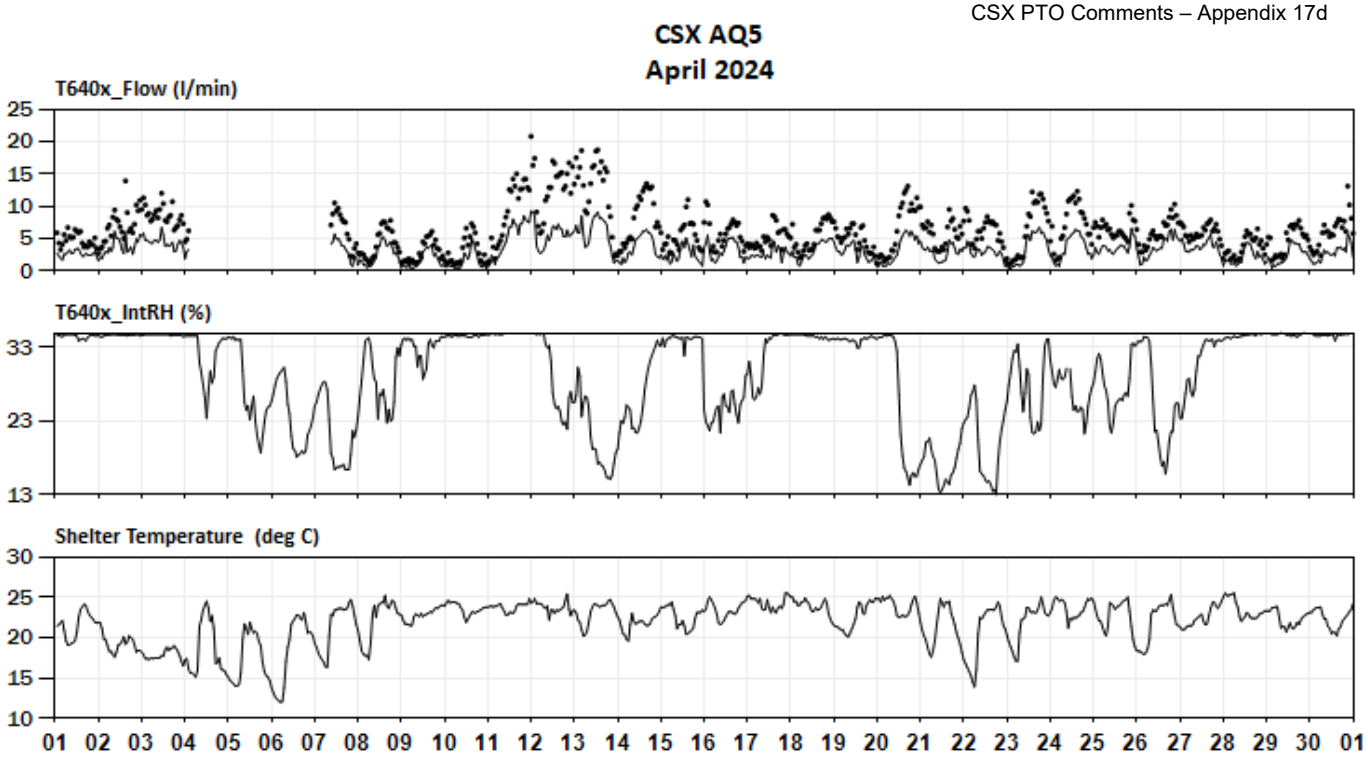
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APPENDIX A. STACKED PARAMETER PLOTS FOR SECOND QUARTER 2024

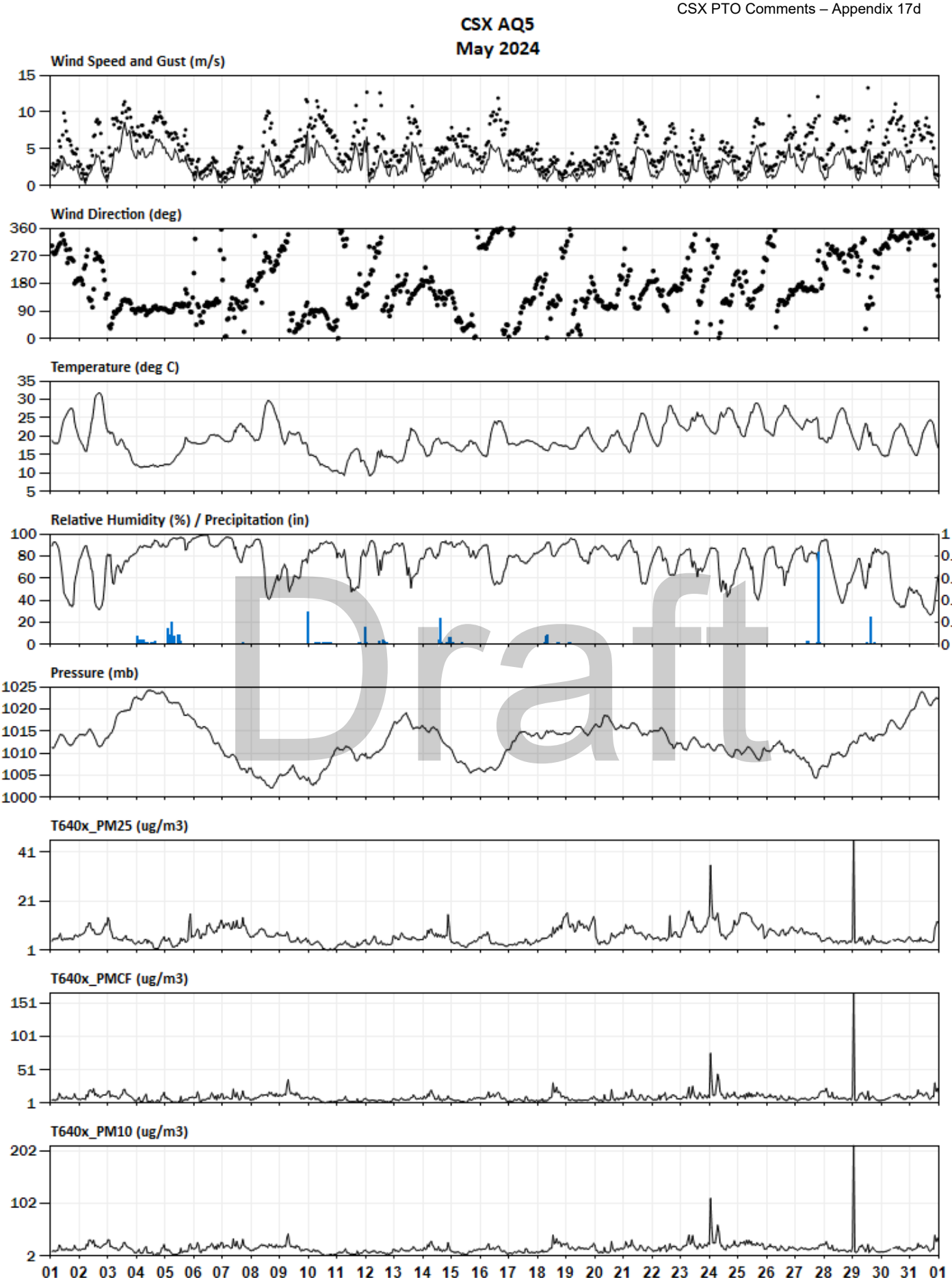
Draft


CSX AQ5
April 2024
Wind Speed and Gust (m/s)
25
20
15
10
5
0
Wind Direction (deg)
360
270
180
90
0
Temperature (deg C)
35
30
25
20
15
10
5
0
Relative Humidity (%) / Precipitation (in)
100
80
60
40
20
0
0.75
0.6
0.45
0.3
0.15
0
Pressure (mb)
1035
1030
1025
1020
1015
1010
1005
1000
995
990
T640x_PM25 (ug/m3)
20
0
T640x_PMCF (ug/m3)
50
0
T640x_PM10 (ug/m3)
100
50
0
01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 01

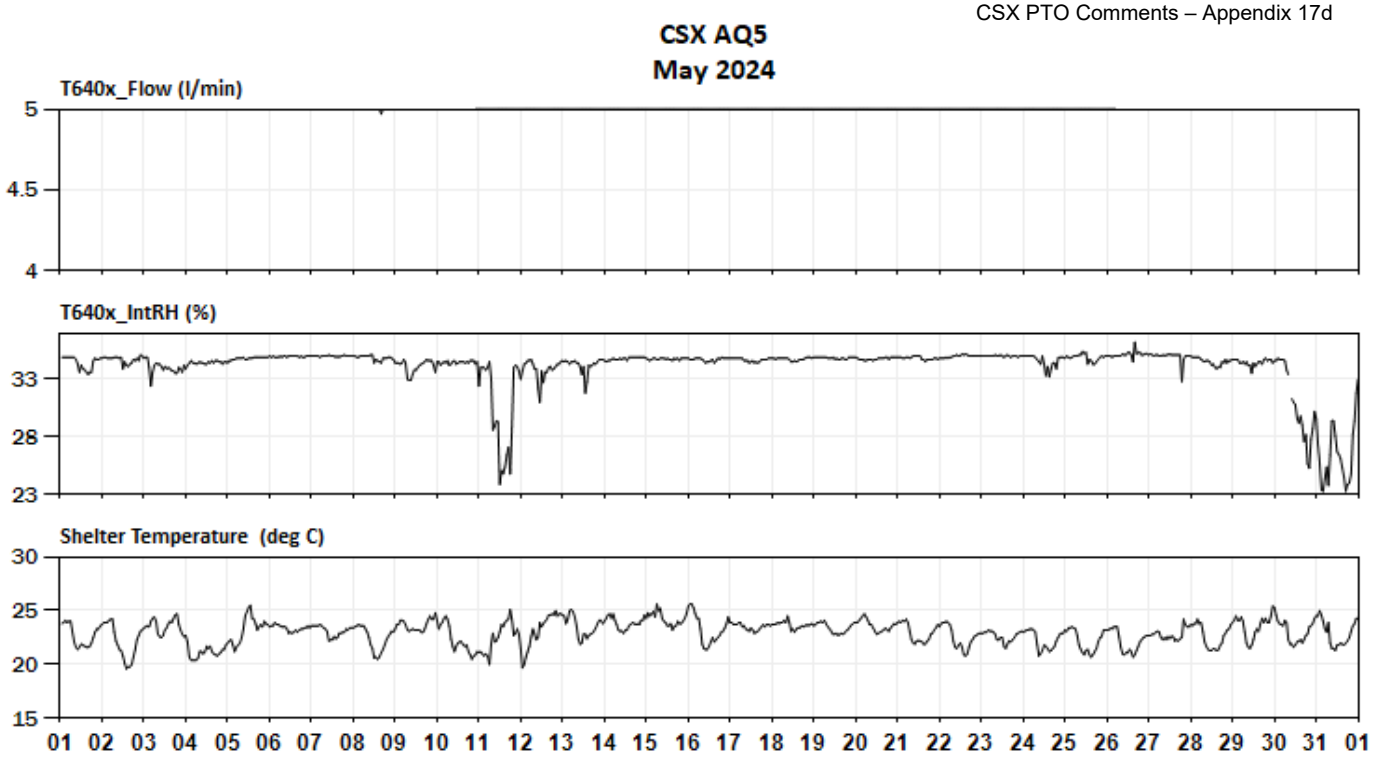
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CSX AQ5
April 2024
T640x_Flow (l/min)
25
20
15
10
5
0
T640x_IntRH (%)
33
23
13
Shelter Temperature (deg C)
30
25
20
15
10
01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 01

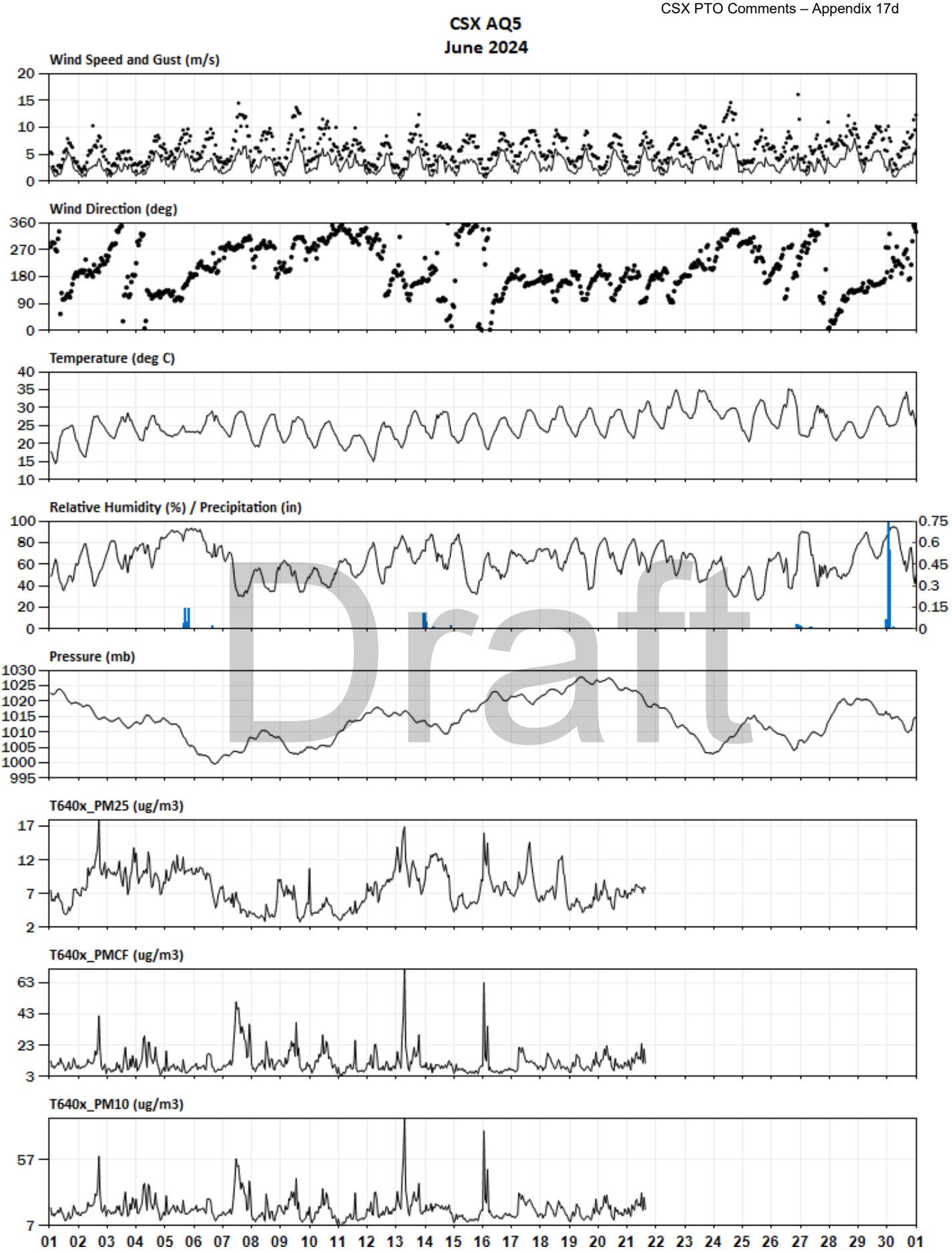
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CSX AQ5
May 2024
Wind Speed and Gust (m/s)
15
10
5
0
Wind Direction (deg)
360
270
180
90
0
Temperature (deg C)
35
30
25
20
15
10
5
Relative Humidity (%) / Precipitation (in)
100
80
60
40
20
0
1
0.8
0.6
0.4
0.2
0
Pressure (mb)
1025
1020
1015
1010
1005
1000
T640x_PM25 (ug/m3)
41
21
1
T640x_PMCF (ug/m3)
151
101
51
1
T640x_PM10 (ug/m3)
202
102
2
01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 01

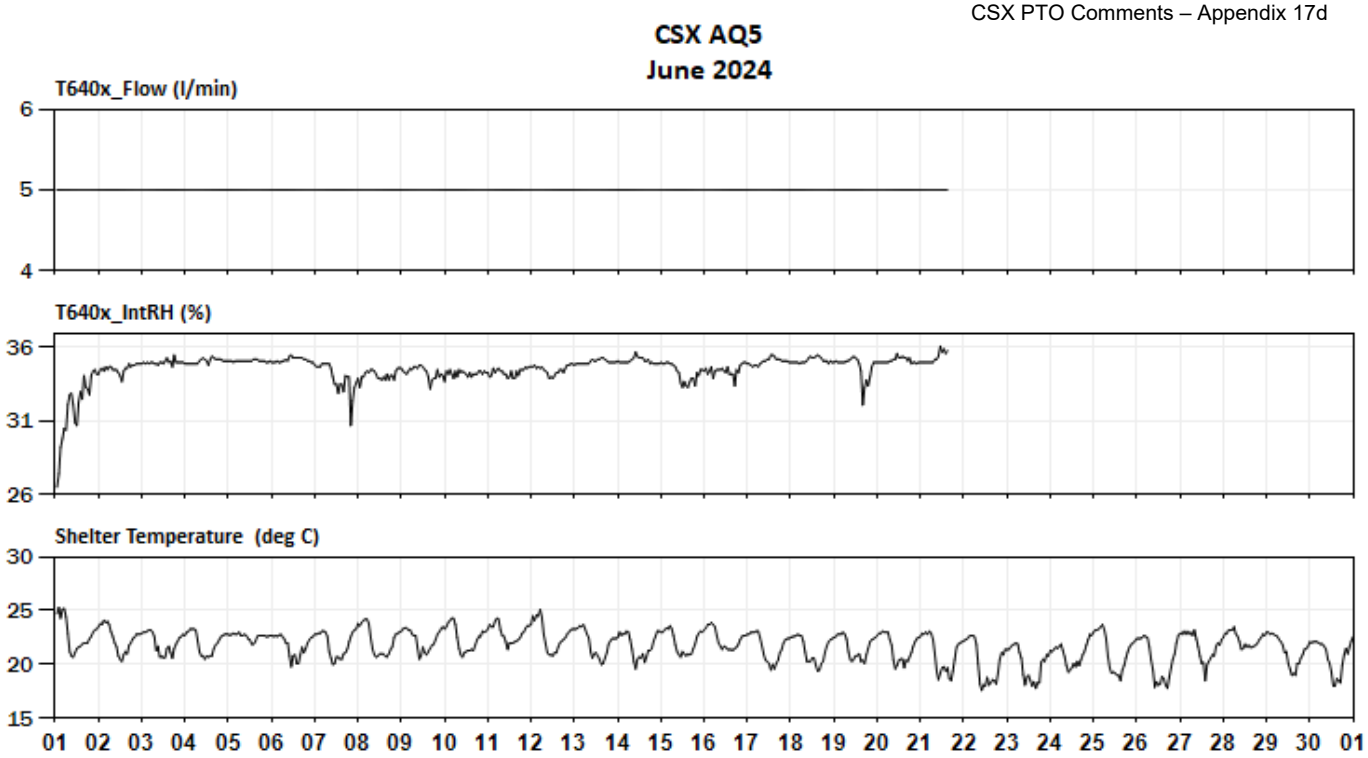
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CSX AQ5
May 2024
T640x_Flow (l/min)
5
4.5
4
T640x_IntRH (%)
33
28
23
Shelter Temperature (deg C)
30
25
20
15
01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 01

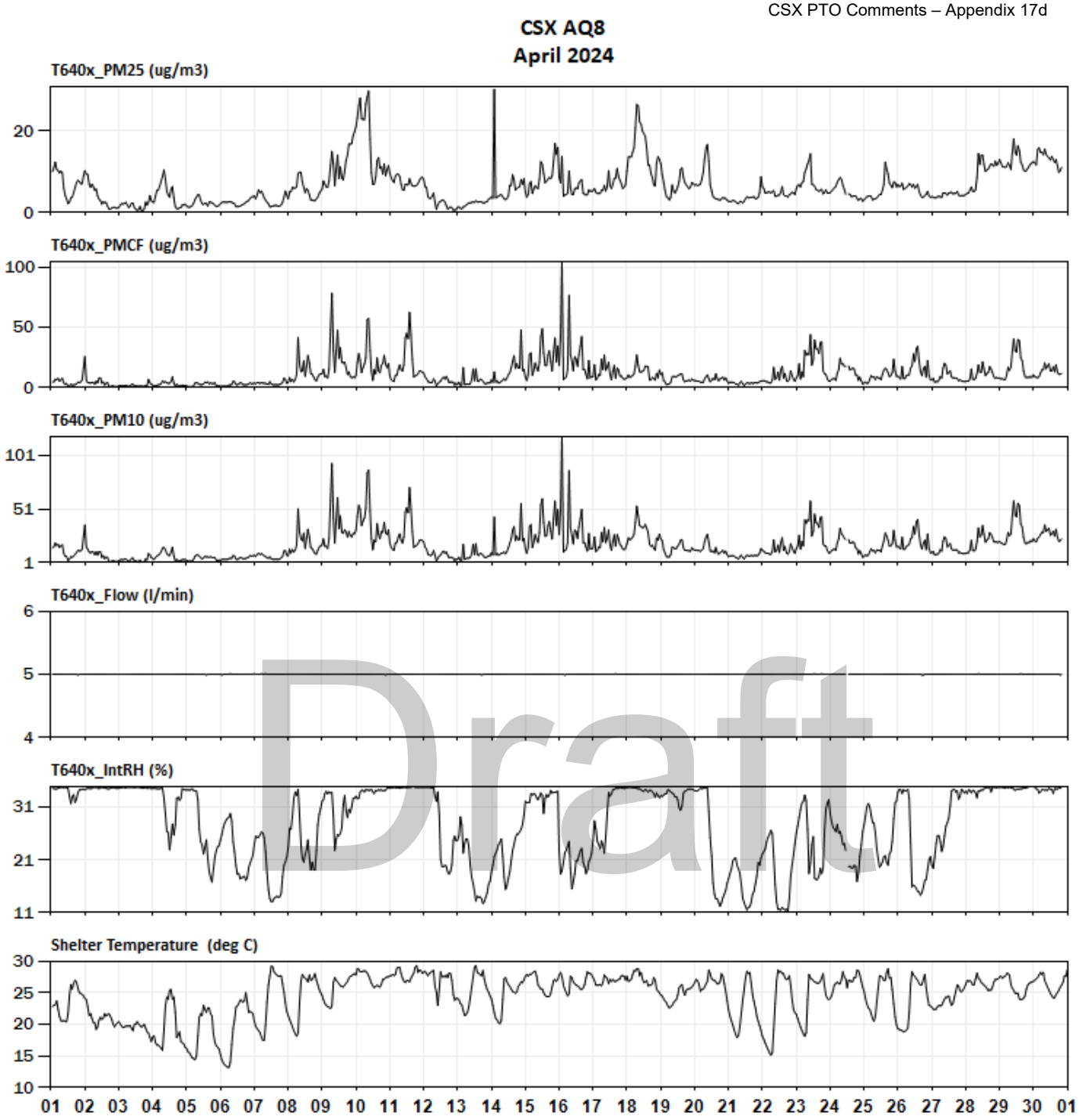
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CSX AQ5
June 2024
Wind Speed and Gust (m/s)
20
15
10
5
0
Wind Direction (deg)
360
270
180
90
0
Temperature (deg C)
40
35
30
25
20
15
10
Relative Humidity (%) / Precipitation (in)
100
80
60
40
20
0
0.75
0.6
0.45
0.3
0.15
0
Pressure (mb)
1030
1025
1020
1015
1010
1005
1000
995
T640x_PM25 (ug/m3)
17
12
7
2
T640x_PMCF (ug/m3)
63
43
23
3
T640x_PM10 (ug/m3)
57
7
01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 01

Draft


CSX AQ5
June 2024
T640x_Flow (l/min)
6
5
4
T640x_IntRH (%)
36
31
26
Shelter Temperature (deg C)
30
25
20
15
01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 01

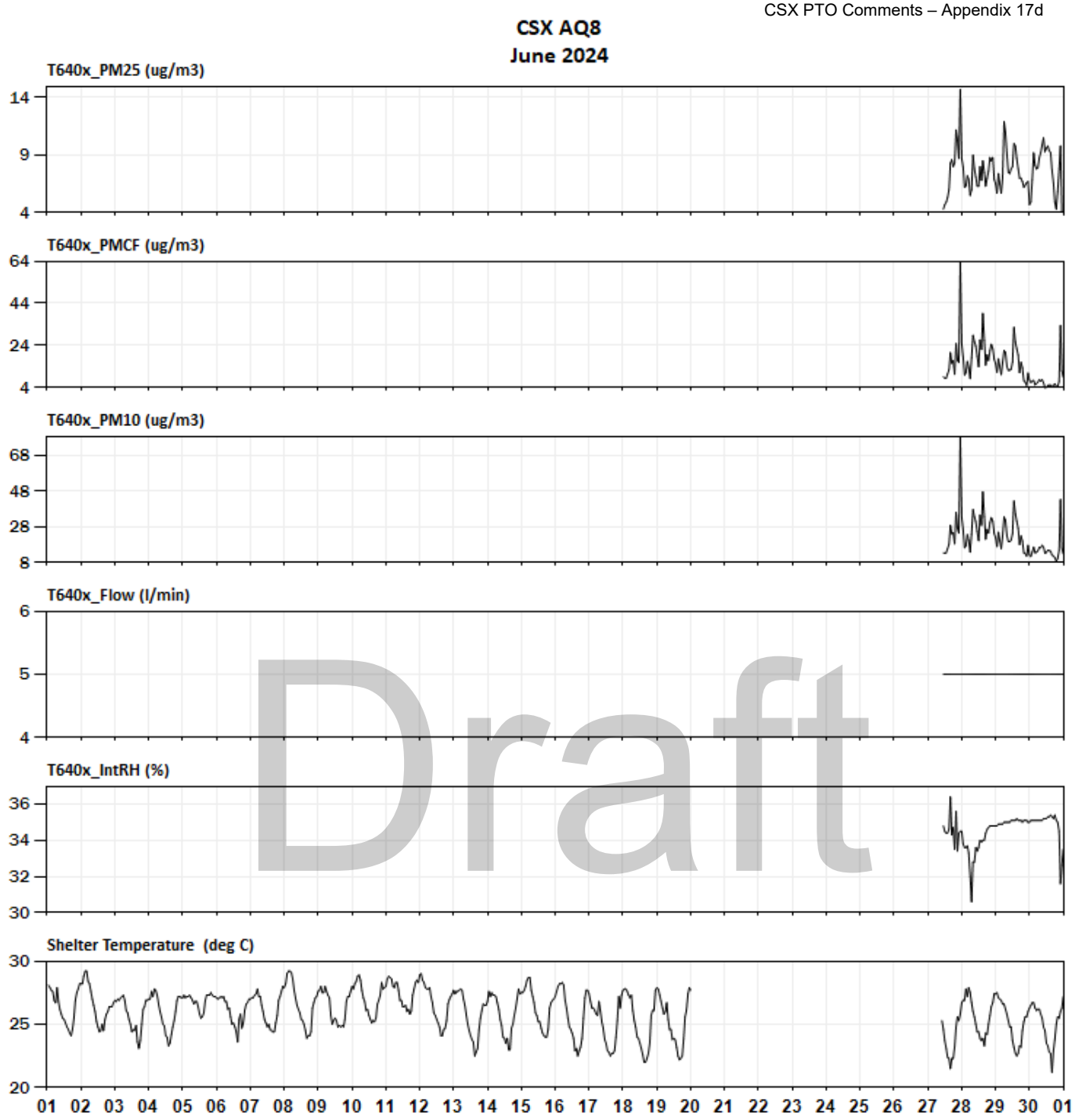
Draft


CSX AQ8
April 2024
T640x_PM25 (ug/m3)
20
0
T640x_PMCF (ug/m3)
100
50
0
T640x_PM10 (ug/m3)
101
51
1
T640x_Flow (l/min)
6
5
4
T640x_IntRH (%)
31
21
11
Shelter Temperature (deg C)
30
25
20
15
10
01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 01

Draft


CSX AQ8
May 2024
T640x_PM25 (ug/m3)
10000
9999
9998
T640x_PMCF (ug/m3)
10000
9999
9998
T640x_PM10 (ug/m3)
10000
9999
9998
T640x_Flow (l/min)
10000
9999
9998
T640x_IntRH (%)
10000
9999
9998
Shelter Temperature (deg C)
30
25
20
15
01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 01

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CSX AQ8
June 2024
T640x_PM25 (ug/m3)
14
9
4
T640x_PMCF (ug/m3)
64
44
24
4
T640x_PM10 (ug/m3)
68
48
28
8
T640x_Flow (l/min)
6
5
4
T640x_IntRH (%)
36
34
32
30
Shelter Temperature (deg C)
30
25
20
01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 01

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APPENDIX B. HOURLY WIND DATA FOR SECOND QUARTER 2024

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CSX AQ5

Unit Vector Wind Speed and Direction in mps for April, 2024

Hr Beg Hr End Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13
1	164/02.8	133/02.3	134/02.0	096/01.7	118/02.6	111/02.6	102/02.9	108/03.2	026/02.7	048/02.7	021/03.3	051/03.4	087/03.4
2	126/02.1	171/01.9	137/02.6	101/03.0	141/02.8	089/03.6	049/03.0	060/03.5	102/06.1	108/05.1	114/05.0	115/04.5	100/03.3
3	085/05.8	089/04.7	073/04.7	081/04.5	077/04.3	082/04.3	080/04.7	083/04.7	070/04.4	069/04.8	089/06.7	087/05.5	070/03.8
4	302/02.9	308/03.3	---	---	---	---	---	---	---	---	---	---	---
5	---	---	---	---	---	---	---	---	---	---	---	---	---
6	---	---	---	---	---	---	---	---	---	---	---	---	---
7	---	---	---	---	---	---	---	---	339/04.1	328/04.5	342/05.7	348/04.9	343/05.0
8	313/01.7	317/01.6	016/00.9	047/00.9	011/00.5	008/00.7	274/00.7	129/01.0	132/01.6	122/02.0	098/03.8	105/03.8	102/05.1
9	298/01.0	259/00.7	217/00.5	323/01.2	197/00.5	180/00.5	337/00.5	132/00.7	126/00.8	119/01.7	124/01.4	107/03.0	103/03.2
10	104/00.6	078/01.3	020/00.7	136/00.8	141/00.6	102/00.4	106/00.6	139/00.4	039/00.6	238/01.3	266/02.8	298/02.4	106/01.8
11	131/00.9	143/02.4	156/02.0	130/01.0	159/02.0	155/02.2	151/02.7	150/03.3	157/03.8	160/04.4	153/05.5	148/06.8	152/06.8
12	148/09.1	166/08.5	176/03.9	177/03.1	173/02.7	177/02.9	199/03.2	278/04.0	269/05.5	277/04.7	263/05.5	268/06.9	256/06.8
13	262/07.0	286/05.9	278/05.9	293/08.5	286/05.6	269/03.7	269/03.8	269/04.3	275/06.3	281/07.7	296/08.5	288/08.6	292/09.1
14	203/01.4	205/01.0	208/02.0	223/01.3	222/01.7	215/02.8	212/02.9	206/02.5	199/03.6	202/04.8	188/05.0	183/05.3	190/05.6
15	083/01.8	118/02.3	241/01.7	181/02.7	281/01.1	298/01.4	311/02.5	287/02.0	148/01.5	122/02.0	102/03.9	107/04.6	156/03.6
16	358/04.3	001/05.5	003/03.1	009/01.6	349/01.8	010/01.2	355/01.5	025/02.2	045/02.7	113/02.4	122/03.1	104/03.9	106/04.9
17	178/01.9	168/02.3	154/02.4	154/02.2	145/02.4	144/02.4	147/02.2	145/02.1	177/02.7	213/01.9	120/02.4	073/02.2	077/02.0
18	358/03.0	005/02.1	008/02.1	020/01.1	063/00.8	094/01.4	120/02.1	091/02.5	056/02.3	071/01.8	129/02.2	128/02.4	132/03.0
19	090/03.6	082/03.0	089/03.0	076/02.5	069/02.6	083/03.2	093/04.0	102/03.8	104/04.0	120/04.5	122/04.7	123/03.4	054/01.3
20	169/00.8	173/01.4	219/00.8	245/00.8	259/00.8	278/01.2	277/01.0	258/01.3	276/01.7	310/02.1	303/02.4	291/03.6	282/04.8
21	356/03.7	352/03.3	012/03.2	008/03.7	009/03.1	009/03.1	006/03.1	015/01.8	014/01.5	329/01.2	124/01.3	115/01.4	193/01.5
22	315/03.5	328/04.6	322/04.0	301/02.7	288/02.3	287/02.1	304/02.9	318/03.4	342/03.2	351/02.4	339/02.8	319/02.9	324/03.7
23	271/00.4	269/00.4	302/00.7	315/00.7	272/01.0	211/01.0	220/00.8	118/00.9	125/01.3	109/02.9	101/05.1	096/05.6	130/04.7
24	211/02.2	183/01.2	231/00.8	280/01.0	283/00.7	215/01.9	236/02.7	245/02.6	306/04.8	287/05.0	293/05.3	292/05.7	293/05.9
25	005/03.6	007/02.9	019/02.6	002/03.3	001/03.9	360/03.9	011/03.7	020/03.1	023/03.3	027/02.8	048/02.6	097/03.0	128/03.4
26	144/02.2	258/00.9	019/01.1	047/02.1	030/01.6	028/01.7	043/02.4	058/02.8	094/03.6	120/03.4	127/03.1	116/03.3	100/03.5
27	140/05.0	149/04.2	160/03.1	147/03.0	152/02.9	156/03.3	139/03.2	133/03.4	129/03.9	132/03.8	141/03.3	133/03.5	134/04.1
28	161/01.5	159/01.6	105/01.7	049/01.1	042/01.1	056/01.3	041/00.8	091/01.0	123/01.3	123/01.3	116/02.8	110/03.8	102/04.4
29	220/02.1	261/01.7	243/00.4	268/00.9	177/00.7	176/01.1	198/01.1	269/01.2	143/01.3	132/01.7	099/02.0	115/02.9	108/04.6
30	204/01.5	198/01.1	191/01.1	200/01.3	190/01.7	200/01.2	205/02.3	220/03.2	220/02.8	227/02.9	224/02.6	221/02.4	175/02.7
MEAN	**169/02.8**	**191/02.7**	**169/02.2**	**059/02.2**	**155/02.0**	**133/02.1**	**140/02.4**	**118/02.5**	**098/03.0**	**120/03.2**	**116/03.8**	**110/04.1**	**118/04.1**
MAX	**148/09.1**	**166/08.5**	**278/05.9**	**293/08.5**	**286/05.6**	**082/04.3**	**080/04.7**	**083/04.7**	**275/06.3**	**281/07.7**	**296/08.5**	**288/08.6**	**292/09.1**
MIN	**271/00.4**	**269/00.4**	**243/00.4**	**315/00.7**	**011/00.5**	**102/00.4**	**337/00.5**	**139/00.4**	**039/00.6**	**329/01.2**	**124/01.3**	**115/01.4**	**054/01.3**

MEANS REQUIRE 75% VALID DATA

MISSING DATA DENOTED BY ---

Draft

CSX AQ5

Unit Vector Wind Speed and Direction in mps for April, 2024

Hr Beg Hr End Day	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX SPD	MIN SPD
1	095/02.7	050/02.3	107/02.3	106/02.7	094/02.5	072/02.4	095/02.5	097/02.6	105/03.0	099/02.2	109/01.6	**094/02.6**	**051/03.4**	**109/01.6**
2	070/02.7	095/06.0	057/02.9	055/03.2	049/03.7	046/02.6	048/03.7	073/04.9	071/04.5	079/05.6	083/05.4	**088/03.8**	**102/06.1**	**171/01.9**
3	058/04.1	059/03.8	035/04.0	052/04.4	008/03.0	339/03.1	341/04.1	316/04.7	314/04.3	331/03.7	226/01.9	**054/04.3**	**089/06.7**	**226/01.9**
4	---	---	---	---	---	---	---	---	---	---	---	**---**	**308/03.3**	**302/02.9**
5	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
6	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
7	331/04.6	334/03.9	338/03.9	339/03.4	341/03.0	345/02.2	024/01.1	188/00.7	207/02.2	211/02.0	336/00.9	**---**	**342/05.7**	**188/00.7**
8	102/05.2	116/04.8	152/03.8	160/04.1	160/04.5	164/03.7	108/02.6	111/02.9	099/02.3	133/01.7	304/00.5	**104/02.5**	**102/05.2**	**011/00.5**
9	099/03.7	094/03.5	097/03.9	120/03.8	128/02.3	152/02.7	157/02.0	105/01.4	160/00.8	135/00.9	076/00.7	**131/01.7**	**097/03.9**	**217/00.5**
10	104/02.7	125/05.1	107/04.4	107/03.4	105/02.5	117/01.2	093/00.7	116/00.6	138/01.2	120/00.4	146/00.6	**113/01.5**	**125/05.1**	**102/00.4**
11	150/08.0	154/07.3	146/07.1	141/05.6	144/07.2	143/07.3	141/08.5	148/08.0	148/07.6	148/07.5	148/09.2	**148/05.3**	**148/09.2**	**131/00.9**
12	260/06.4	259/07.2	256/06.6	250/06.4	244/05.3	244/05.3	257/06.3	253/05.4	252/05.5	245/05.9	247/06.1	**236/05.6**	**148/09.1**	**173/02.7**
13	298/08.1	301/08.2	304/07.8	296/07.6	294/07.1	291/04.8	284/03.8	286/02.5	250/01.2	287/01.6	219/01.5	**282/05.8**	**292/09.1**	**250/01.2**
14	184/06.1	188/06.1	195/06.4	202/05.9	202/05.8	197/05.4	216/04.3	249/02.6	227/02.2	140/02.0	086/02.5	**200/03.7**	**195/06.4**	**205/01.0**
15	279/05.1	248/04.2	238/03.3	258/02.2	334/04.0	055/02.3	114/01.9	173/01.5	313/01.2	157/00.8	336/03.6	**211/02.6**	**279/05.1**	**157/00.8**
16	103/05.1	108/05.0	111/05.2	150/04.6	157/04.5	166/03.7	154/02.1	167/02.2	188/01.2	129/02.1	142/02.0	**094/03.2**	**001/05.5**	**010/01.2**
17	089/04.6	158/04.5	142/02.9	104/03.9	093/03.4	125/01.3	065/02.7	095/03.7	065/02.9	075/02.7	037/02.3	**123/02.7**	**089/04.6**	**125/01.3**
18	129/04.0	115/04.2	109/04.3	103/04.8	091/04.8	084/04.5	076/04.5	084/04.9	092/05.0	094/05.0	095/04.5	**086/03.2**	**092/05.0**	**063/00.8**
19	108/02.1	122/03.9	139/03.7	149/02.5	175/02.0	182/01.4	161/01.4	134/01.7	122/02.2	191/01.0	201/00.6	**119/02.8**	**122/04.7**	**201/00.6**
20	289/05.4	295/05.9	289/06.3	295/06.0	292/05.4	318/06.1	323/05.6	328/04.8	343/05.4	343/04.2	354/04.6	**289/03.4**	**289/06.3**	**169/00.8**
21	066/01.7	338/02.9	314/04.8	311/04.2	322/04.4	335/03.5	336/02.7	341/02.6	330/03.4	310/03.0	319/03.6	**351/02.9**	**314/04.8**	**329/01.2**
22	326/03.7	324/03.5	309/03.3	326/03.0	310/02.3	171/02.5	176/03.1	192/02.6	199/01.9	276/00.7	313/01.3	**306/02.9**	**328/04.6**	**276/00.7**
23	147/06.1	150/06.0	160/05.9	165/06.3	165/06.7	160/05.8	164/06.0	164/05.3	167/04.7	167/03.3	171/02.3	**167/03.5**	**165/06.7**	**271/00.4**
24	314/06.4	316/06.2	318/06.2	322/05.4	324/05.1	310/04.6	338/03.5	357/02.6	002/02.8	349/01.9	352/02.4	**297/03.6**	**314/06.4**	**283/00.7**
25	124/03.6	126/04.0	128/03.8	130/03.8	120/03.3	117/02.8	128/03.7	126/06.6	127/05.6	130/05.4	135/03.5	**077/03.7**	**126/06.6**	**019/02.6**
26	100/03.5	106/04.9	101/05.0	111/04.6	117/06.1	116/06.4	143/04.8	133/06.4	139/05.3	142/04.9	145/04.6	**103/03.7**	**116/06.4**	**258/00.9**
27	128/04.0	117/04.7	115/05.1	124/05.6	117/03.8	149/03.6	155/04.5	157/03.6	160/02.5	162/02.1	174/00.8	**142/03.6**	**124/05.6**	**174/00.8**
28	103/04.3	104/04.1	103/03.3	089/02.4	125/01.9	168/03.0	175/02.2	183/02.3	201/01.8	203/01.1	212/01.3	**122/02.1**	**102/04.4**	**041/00.8**
29	112/04.7	113/04.3	136/04.3	136/04.1	154/04.2	161/03.4	172/02.9	180/02.9	180/02.9	184/02.4	191/01.9	**168/02.5**	**112/04.7**	**243/00.4**
30	218/02.3	243/03.6	207/03.5	190/03.7	198/03.3	206/03.5	214/02.9	296/05.7	323/05.2	309/04.3	329/02.1	**219/02.8**	**296/05.7**	**198/01.1**
MEAN	**106/04.5**	**117/04.8**	**129/04.6**	**131/04.4**	**131/04.2**	**145/03.7**	**136/03.5**	**149/03.5**	**161/03.3**	**153/02.9**	**153/02.7**	**131/03.3**		
MAX	**298/08.1**	**301/08.2**	**304/07.8**	**296/07.6**	**144/07.2**	**143/07.3**	**141/08.5**	**148/08.0**	**148/07.6**	**148/07.5**	**148/09.2**		**148/09.2**	
MIN	**066/01.7**	**050/02.3**	**107/02.3**	**258/02.2**	**125/01.9**	**117/01.2**	**093/00.7**	**116/00.6**	**160/00.8**	**120/00.4**	**304/00.5**			**102/00.4**

POSSIBLE NUMBER OF OBSERVATIONS = 720 ACTUAL NUMBER OF OBSERVATIONS = 642 DATA RECOVERY RATE = 89.2%

MONTHLY MEAN = 131/03.3 MAXIMUM WIND SPEED = 09.2 AT 148 DEGREES DATE OF OCCURRENCE = 4/11 AT 2400

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

Draft

CSX AQ5

Unit Vector Wind Speed and Direction in mps for May, 2024

Hr Beg Hr End Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13
1	303/01.4	281/01.5	276/01.2	278/01.5	288/01.7	298/01.8	307/03.3	311/03.4	337/02.2	340/02.3	320/03.8	308/03.2	289/02.9
2	197/00.9	190/00.8	177/01.3	229/00.7	239/00.3	268/00.8	290/01.3	132/01.6	124/01.8	126/02.1	102/02.8	161/02.8	258/03.2
3	041/01.9	034/01.8	047/02.3	069/03.4	087/04.6	081/05.1	085/04.8	094/05.2	093/04.5	097/04.8	109/05.8	123/07.1	125/07.9
4	097/04.8	098/04.5	092/04.2	092/04.9	096/05.1	105/04.6	095/03.9	077/03.8	088/04.0	085/04.2	092/04.5	090/04.6	094/04.3
5	093/04.4	091/04.5	087/04.1	090/03.9	087/03.5	088/03.6	098/04.0	110/05.0	113/04.6	112/04.4	112/03.8	106/03.2	105/03.3
6	325/00.7	046/01.2	112/02.3	103/01.8	075/01.0	055/01.0	053/00.8	087/01.1	108/01.4	108/01.5	119/01.2	104/01.5	116/01.7
7	260/00.7	006/00.4	008/00.5	062/00.8	066/00.9	097/00.9	112/01.1	132/01.1	096/01.1	069/01.7	128/02.8	116/03.2	121/03.5
8	174/01.7	174/00.8	335/00.3	159/00.9	188/00.5	196/01.0	212/00.7	203/01.0	117/01.5	216/02.4	253/03.1	279/04.7	266/04.6
9	286/01.4	301/01.1	298/01.2	290/01.2	317/02.2	315/01.5	339/01.9	027/01.9	081/02.3	060/02.3	083/01.9	022/02.3	023/02.9
10	081/03.6	091/05.2	093/05.1	087/03.8	073/03.9	094/05.7	091/06.2	090/05.9	088/05.3	092/05.4	095/05.5	093/05.3	089/05.1
11	002/01.8	360/02.1	345/02.0	351/01.8	323/01.8	302/02.2	304/02.6	325/02.1	113/01.8	132/02.2	122/02.1	110/03.1	102/03.6
12	144/06.6	181/02.2	300/00.5	209/00.9	224/01.2	221/01.0	296/01.3	265/01.9	283/02.5	308/02.4	281/03.3	312/04.1	330/04.4
13	160/02.7	168/02.4	205/01.4	173/01.5	154/01.8	178/02.0	175/01.6	179/02.5	190/02.8	209/01.9	153/03.0	115/04.9	129/04.0
14	187/01.5	231/00.6	188/00.8	187/01.0	184/01.1	164/01.3	200/01.2	187/01.4	155/02.2	143/02.2	131/02.3	109/03.2	134/03.4
15	132/04.2	117/04.5	099/03.5	059/02.7	055/02.6	068/03.2	061/03.6	054/02.8	033/02.6	026/02.5	034/02.9	034/02.5	039/03.0
16	297/01.9	304/01.8	306/02.2	296/02.9	294/02.9	308/03.5	315/03.6	326/05.0	328/05.6	341/05.2	348/04.9	352/04.8	354/04.6
17	354/02.5	337/02.2	343/02.0	360/02.1	018/02.0	031/02.2	028/01.8	034/02.1	051/01.9	084/02.1	104/02.7	101/02.7	118/02.7
18	195/01.7	198/01.2	146/02.0	167/01.5	187/00.9	192/01.2	209/00.9	003/00.6	100/01.1	116/01.2	065/01.5	113/01.6	124/01.8
19	317/01.2	014/01.5	357/01.5	337/01.3	024/01.9	082/01.4	094/01.2	121/01.0	035/00.6	044/01.0	027/01.0	013/01.5	128/01.8
20	130/03.6	139/03.1	122/02.6	126/02.6	123/03.4	120/02.9	106/01.9	103/01.9	100/03.0	105/03.6	097/03.1	103/03.2	113/03.3
21	293/00.8	177/01.1	188/01.0	204/01.1	223/00.7	223/00.6	134/01.0	134/02.3	113/02.5	101/03.9	102/05.0	099/05.3	103/05.1
22	221/01.2	186/01.4	189/01.2	192/01.0	162/01.4	156/01.8	141/02.0	140/02.3	157/02.2	110/03.0	104/04.4	103/04.8	092/03.9
23	179/01.7	200/01.5	215/00.9	225/00.4	203/00.6	263/00.7	194/01.3	222/01.9	299/02.9	308/04.2	287/02.2	339/02.2	019/01.9
24	046/00.5	235/00.7	303/01.2	282/00.8	296/01.3	304/01.4	264/01.0	003/01.6	018/02.3	055/02.7	117/03.7	123/03.5	116/03.5
25	196/01.2	174/00.7	170/00.7	150/00.8	214/01.1	218/01.0	187/01.1	111/01.7	129/02.0	123/01.8	101/03.0	105/04.0	129/04.1
26	312/01.1	327/01.3	333/01.4	307/01.5	304/01.0	301/01.4	353/01.2	038/01.5	090/01.9	110/02.4	125/02.9	122/03.3	124/03.3
27	160/02.6	169/02.9	176/02.5	174/02.2	169/02.0	182/01.8	159/02.3	166/03.1	165/03.4	156/03.9	159/04.4	161/03.9	162/04.4
28	236/00.8	228/01.1	308/01.1	276/02.5	273/02.4	293/02.6	301/02.8	287/02.9	282/03.9	282/04.2	290/04.3	273/04.6	261/04.2
29	296/02.5	302/02.7	280/01.2	268/00.9	209/00.7	236/01.0	253/01.6	313/02.2	327/02.1	321/02.0	032/01.7	109/03.6	099/04.8
30	295/02.6	304/03.1	303/02.8	310/03.8	304/03.2	296/02.6	327/04.6	337/04.5	350/04.1	333/04.8	334/05.0	331/05.0	323/04.6
31	343/03.0	348/03.5	344/03.2	338/03.4	332/03.7	328/04.2	340/04.2	354/04.1	348/03.8	340/03.7	354/02.8	342/03.0	327/03.7
MEAN	**240/02.2**	**209/02.0**	**296/01.9**	**216/01.9**	**216/02.0**	**228/02.1**	**122/02.3**	**078/02.6**	**083/02.7**	**083/03.0**	**090/03.3**	**088/03.6**	**100/03.7**
MAX	**144/06.6**	**091/05.2**	**093/05.1**	**092/04.9**	**096/05.1**	**094/05.7**	**091/06.2**	**090/05.9**	**328/05.6**	**092/05.4**	**109/05.8**	**123/07.1**	**125/07.9**
MIN	**046/00.5**	**006/00.4**	**335/00.3**	**225/00.4**	**239/00.3**	**223/00.6**	**212/00.7**	**003/00.6**	**035/00.6**	**044/01.0**	**027/01.0**	**104/01.5**	**116/01.7**

MEANS REQUIRE 75% VALID DATA

MISSING DATA DENOTED BY ---

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CSX AQ5

Unit Vector Wind Speed and Direction in mps for May, 2024

Hr Beg / Hr End / Day	13 / 14	14 / 15	15 / 16	16 / 17	17 / 18	18 / 19	19 / 20	20 / 21	21 / 22	22 / 23	23 / 24	MEAN	MAX SPD	MIN SPD
1	247/02.7	262/02.9	291/02.9	262/02.3	258/02.5	253/02.1	180/02.7	188/02.5	188/02.9	195/01.8	192/01.4	**273/02.4**	**320/03.8**	**276/01.2**
2	279/04.3	261/03.9	268/04.1	267/03.8	255/03.1	251/02.0	221/01.6	192/01.2	132/01.0	145/00.5	146/01.0	**208/02.0**	**279/04.3**	**239/00.3**
3	128/08.6	126/07.7	121/06.8	125/07.1	123/07.5	115/06.6	095/04.9	095/04.7	094/04.1	084/03.8	093/03.7	**096/05.2**	**128/08.6**	**034/01.8**
4	103/05.3	101/05.6	107/06.3	098/06.3	094/06.0	098/06.3	100/05.9	098/05.8	097/05.1	097/05.3	098/05.1	**096/05.0**	**107/06.3**	**077/03.8**
5	115/03.6	105/03.3	113/03.3	161/04.0	147/03.1	106/02.7	115/02.3	088/02.2	087/01.8	134/01.8	214/00.7	**109/03.4**	**110/05.0**	**214/00.7**
6	111/01.5	111/01.9	117/02.8	110/02.4	124/02.4	130/01.9	117/01.1	121/00.5	289/00.6	356/00.4	191/01.1	**100/01.4**	**117/02.8**	**356/00.4**
7	105/03.7	100/03.7	097/02.8	118/01.8	023/00.9	103/01.0	124/01.1	170/01.4	186/01.7	179/01.2	192/01.1	**108/01.6**	**105/03.7**	**006/00.4**
8	265/04.1	264/04.9	250/03.5	225/03.4	220/02.7	224/02.6	238/01.4	253/01.9	244/01.8	271/02.1	290/01.9	**231/02.2**	**264/04.9**	**335/00.3**
9	032/02.7	047/03.0	034/03.1	043/03.4	042/03.0	058/03.0	074/02.9	077/03.3	107/06.2	117/07.4	053/03.1	**031/02.7**	**117/07.4**	**301/01.1**
10	084/04.7	075/04.1	066/04.2	045/03.9	037/03.5	035/03.2	032/03.1	029/02.9	055/02.8	039/02.3	060/02.4	**072/04.3**	**091/06.2**	**039/02.3**
11	106/04.4	103/05.8	110/05.3	147/04.9	161/04.1	211/02.8	157/02.1	155/02.9	136/05.1	141/06.1	175/04.6	**116/03.2**	**141/06.1**	**002/01.8**
12	093/03.3	092/03.2	107/02.5	111/02.8	135/01.7	090/01.4	074/01.3	094/02.2	106/02.5	157/02.8	145/02.7	**160/02.4**	**144/06.6**	**300/00.5**
13	132/03.2	146/05.9	145/05.4	147/05.3	157/05.4	160/04.7	165/04.1	170/03.8	175/03.0	191/01.9	173/01.8	**165/03.2**	**146/05.9**	**205/01.4**
14	154/02.5	150/02.2	129/03.0	134/02.7	112/03.0	130/03.8	151/02.9	145/03.6	154/03.8	155/03.2	151/03.4	**156/02.3**	**130/03.8**	**231/00.6**
15	044/03.1	045/02.5	049/02.5	078/02.3	042/01.6	003/02.1	007/02.4	357/02.1	331/02.1	296/02.3	299/02.4	**040/02.8**	**117/04.5**	**042/01.6**
16	356/04.9	347/05.2	355/05.1	358/04.2	359/03.5	028/03.0	016/02.6	025/03.1	046/03.5	044/03.3	007/02.0	**344/03.7**	**328/05.6**	**304/01.8**
17	128/02.5	126/03.3	124/04.0	122/03.0	113/03.2	123/03.6	132/03.1	133/03.3	165/02.3	177/02.2	189/02.3	**091/02.6**	**124/04.0**	**028/01.8**
18	109/02.7	106/02.2	111/02.2	139/02.0	131/00.9	127/00.8	293/00.7	264/00.6	284/01.1	283/01.1	304/01.1	**153/01.4**	**109/02.7**	**003/00.6**
19	127/01.5	123/02.0	104/02.1	117/02.0	131/01.7	154/01.2	150/01.4	201/01.6	182/01.2	177/01.5	156/01.7	**097/01.5**	**104/02.1**	**035/00.6**
20	107/04.0	105/04.8	104/05.0	100/04.9	106/04.1	145/03.3	160/02.7	205/01.3	193/01.7	199/01.3	240/01.1	**127/03.0**	**104/05.0**	**240/01.1**
21	129/05.0	143/04.9	147/05.0	154/04.8	160/04.5	163/04.1	175/03.5	187/02.4	184/02.0	186/01.3	185/01.5	**159/02.9**	**099/05.3**	**223/00.6**
22	145/04.2	151/04.8	155/04.5	161/04.7	162/04.5	173/03.6	169/02.7	156/02.4	164/02.0	162/01.9	160/01.4	**155/02.8**	**103/04.8**	**192/01.0**
23	054/02.0	123/03.4	112/03.3	118/04.2	155/04.4	170/03.2	189/01.8	227/01.5	192/01.1	322/01.0	213/01.0	**210/02.1**	**155/04.4**	**225/00.4**
24	129/03.3	122/03.2	115/02.9	110/03.2	119/03.3	142/03.6	176/02.1	188/01.6	208/02.1	215/01.7	219/00.7	**154/02.2**	**117/03.7**	**046/00.5**
25	152/04.6	155/05.0	156/05.5	159/05.1	164/04.3	162/03.1	172/02.8	218/03.4	264/02.3	259/01.9	256/01.2	**169/02.6**	**156/05.5**	**174/00.7**
26	123/03.3	111/03.1	117/03.5	117/04.5	130/04.8	140/05.7	158/03.9	156/03.8	144/03.9	157/04.4	159/03.7	**116/02.9**	**140/05.7**	**304/01.0**
27	168/04.1	159/04.4	156/05.2	156/04.0	156/03.8	255/04.0	286/03.4	193/02.0	165/01.9	175/01.6	247/01.1	**174/03.1**	**156/05.2**	**247/01.1**
28	271/04.5	277/04.9	277/05.1	249/04.5	222/04.0	223/03.1	220/02.4	274/03.6	290/02.2	268/02.6	290/02.3	**269/03.2**	**277/05.1**	**236/00.8**
29	107/04.9	135/03.4	201/02.8	113/03.2	234/01.7	287/01.9	282/01.3	231/01.7	276/01.8	278/01.5	292/01.9	**268/02.2**	**107/04.9**	**209/00.7**
30	321/03.9	324/04.4	333/04.7	329/04.5	340/04.1	343/04.0	337/03.3	335/02.1	334/02.2	292/01.8	314/02.2	**323/03.7**	**334/05.0**	**292/01.8**
31	347/03.8	328/03.8	332/03.7	335/03.4	330/03.7	338/03.5	305/02.2	239/01.0	190/01.0	160/00.6	138/00.5	**334/03.1**	**328/04.2**	**138/00.5**
MEAN	**112/03.8**	**117/04.0**	**116/04.0**	**126/03.8**	**134/03.5**	**143/03.2**	**155/02.6**	**173/02.5**	**172/02.5**	**183/02.3**	**195/02.0**	**131/02.8**		
MAX	**128/08.6**	**126/07.7**	**121/06.8**	**125/07.1**	**123/07.5**	**115/06.6**	**100/05.9**	**098/05.8**	**107/06.2**	**117/07.4**	**098/05.1**		**128/08.6**	
MIN	**111/01.5**	**111/01.9**	**104/02.1**	**118/01.8**	**023/00.9**	**127/00.8**	**293/00.7**	**121/00.5**	**289/00.6**	**356/00.4**	**138/00.5**			**239/00.3**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 744 DATA RECOVERY RATE = 100.0%

MONTHLY MEAN = 131/02.8 MAXIMUM WIND SPEED = 08.6 AT 128 DEGREES DATE OF OCCURRENCE = 5/3 AT 1400

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

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Unit Vector Wind Speed and Direction in mps for June, 2024

Hr Beg Hr End Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13
1	279/02.8	294/02.1	293/01.6	292/01.1	270/00.9	265/01.0	306/01.5	331/01.3	055/01.3	125/01.9	103/03.0	104/03.6	107/04.1
2	198/01.3	194/01.2	201/00.8	193/01.1	200/01.3	237/00.9	182/01.7	185/02.0	201/02.4	196/02.5	189/02.5	180/02.8	219/02.8
3	248/01.5	272/01.0	279/00.8	289/01.3	288/01.4	287/01.5	291/01.7	333/02.1	329/03.1	340/02.5	347/01.9	349/01.8	031/02.2
4	296/01.4	285/01.4	302/01.4	323/01.9	316/01.5	321/01.2	007/01.4	032/01.4	134/02.4	131/02.5	120/02.8	120/04.0	107/03.9
5	134/03.1	132/03.0	134/02.7	122/03.2	115/03.7	117/03.4	131/02.2	101/02.8	102/03.9	109/04.0	111/04.3	109/04.6	101/05.6
6	187/01.8	186/01.9	210/02.3	222/01.7	223/02.2	230/02.2	215/02.2	210/02.8	210/03.1	204/03.3	213/03.8	205/03.8	207/03.6
7	243/01.5	269/01.6	283/01.7	283/02.0	291/02.1	275/02.1	278/02.6	274/03.2	270/03.9	271/03.8	281/05.0	275/05.1	286/06.0
8	237/01.7	211/02.0	247/02.5	273/03.0	278/02.7	274/02.4	278/02.7	289/04.0	289/04.3	299/04.5	286/04.7	276/03.8	279/04.4
9	204/01.5	214/01.1	226/01.1	195/01.7	202/02.1	198/02.9	199/03.4	205/03.7	245/03.5	276/05.2	287/05.9	305/06.2	308/07.8
10	270/01.9	277/02.1	279/02.3	291/02.4	269/02.5	241/02.2	283/03.3	304/05.1	302/04.6	301/05.2	309/06.1	299/04.7	293/04.7
11	345/01.8	348/01.9	353/02.3	336/02.9	339/03.3	334/03.7	326/04.2	325/03.6	335/02.4	318/02.6	309/02.6	294/02.9	305/04.1
12	296/02.0	310/01.5	274/01.6	286/01.8	301/01.5	298/01.6	308/01.2	321/01.4	254/01.9	303/01.8	245/02.2	240/02.6	264/02.9
13	183/01.5	218/01.0	312/00.6	186/00.4	193/01.0	168/01.0	145/02.1	153/02.4	122/02.1	106/02.8	101/05.4	121/05.5	148/04.5
14	167/03.2	166/03.0	170/02.1	207/01.0	187/01.2	215/00.9	193/01.3	209/02.2	202/02.0	259/01.5	103/04.6	101/04.6	099/04.9
15	166/01.8	321/01.0	288/01.7	313/01.9	333/03.6	333/03.4	341/03.4	356/03.9	355/03.2	355/03.9	352/04.1	354/03.4	326/03.8
16	273/00.7	221/00.7	302/00.6	309/01.3	338/01.5	003/02.0	025/01.9	062/02.5	093/02.8	101/02.8	118/03.0	103/04.0	099/04.5
17	178/03.0	175/01.7	182/02.1	199/01.8	204/01.4	173/02.3	171/02.8	177/03.7	180/03.6	182/03.9	148/04.2	156/03.7	158/04.0
18	180/02.2	162/02.5	158/02.6	173/02.2	180/01.9	166/02.5	170/03.0	184/02.6	170/02.0	130/02.8	104/04.5	104/05.9	097/06.0
19	156/02.0	196/01.7	185/01.6	188/01.4	195/01.4	181/01.7	171/02.3	184/02.5	146/02.4	125/02.7	104/04.3	104/05.1	103/05.8
20	216/01.2	199/01.0	184/01.2	185/01.5	187/01.4	186/01.4	173/01.9	182/02.2	186/02.3	155/02.8	108/04.3	104/05.2	101/06.0
21	204/01.1	176/01.4	173/01.3	176/01.4	200/01.1	217/01.1	178/01.4	177/01.8	194/01.6	183/01.8	093/03.7	096/04.7	095/05.1
22	183/02.5	175/02.8	186/01.6	187/01.2	170/01.5	197/01.1	207/01.6	202/01.9	193/01.6	115/02.4	104/03.9	095/04.4	102/04.6
23	183/03.2	182/02.9	184/02.2	183/02.5	210/01.8	219/01.5	212/03.0	226/03.5	213/04.1	215/04.0	235/04.0	227/04.1	266/04.3
24	232/02.1	245/02.6	273/02.1	294/03.1	289/02.8	281/02.5	307/04.5	303/05.8	306/06.6	301/06.6	305/06.6	320/07.6	319/08.4
25	294/02.5	293/02.1	298/02.2	290/02.2	293/02.3	306/01.7	294/01.4	264/01.8	311/01.9	279/02.5	231/02.8	242/03.2	268/03.5
26	195/03.0	206/03.0	209/02.5	219/01.9	222/01.9	206/01.7	215/01.5	242/02.3	252/02.3	272/02.9	107/02.9	113/04.0	137/03.3
27	265/01.9	283/02.2	282/01.7	294/02.0	260/01.1	273/01.3	291/01.6	317/03.1	334/03.5	320/03.0	326/01.9	301/01.8	316/02.6
28	032/03.3	032/03.0	024/02.8	024/02.7	035/02.6	050/02.8	056/03.3	069/03.5	064/04.2	064/04.0	103/04.2	115/04.1	099/04.1
29	136/03.8	135/03.4	143/02.5	157/01.6	128/02.0	130/03.2	130/04.4	144/03.8	164/03.7	160/04.1	161/03.8	153/04.8	151/05.4
30	276/02.1	323/04.0	179/02.8	200/01.6	242/00.9	230/00.9	215/00.8	280/01.1	232/01.5	222/02.1	220/02.2	191/02.4	212/02.8
MEAN	**219/02.1**	**227/02.0**	**235/01.8**	**238/01.9**	**240/01.9**	**238/01.9**	**231/02.3**	**241/02.8**	**220/02.9**	**216/03.2**	**143/03.8**	**144/04.1**	**142/04.5**
MAX	**136/03.8**	**323/04.0**	**024/02.8**	**122/03.2**	**115/03.7**	**334/03.7**	**307/04.5**	**303/05.8**	**306/06.6**	**301/06.6**	**305/06.6**	**320/07.6**	**319/08.4**
MIN	**273/00.7**	**221/00.7**	**312/00.6**	**186/00.4**	**270/00.9**	**237/00.9**	**215/00.8**	**280/01.1**	**055/01.3**	**259/01.5**	**347/01.9**	**349/01.8**	**031/02.2**

MEANS REQUIRE 75% VALID DATA

MISSING DATA DENOTED BY ---

Draft

CSX AQ5

Unit Vector Wind Speed and Direction in mps for June, 2024

Hr Beg Hr End Day	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX SPD	MIN SPD
1	113/04.2	121/05.6	119/05.3	111/04.8	131/04.5	154/03.5	175/02.4	185/02.1	193/01.9	182/02.0	192/01.6	**164/02.7**	**121/05.6**	**270/00.9**
2	198/03.1	200/02.8	206/03.6	195/04.2	217/04.0	241/02.8	233/02.4	221/01.9	223/02.1	250/01.7	233/00.9	**208/02.2**	**195/04.2**	**201/00.8**
3	117/03.3	120/02.9	143/02.8	179/02.2	112/03.1	121/03.0	162/02.6	186/01.7	183/01.8	185/01.4	225/01.0	**249/02.0**	**117/03.3**	**279/00.8**
4	114/03.7	114/04.7	120/05.7	122/05.5	117/05.2	131/04.8	111/04.4	126/03.6	122/04.0	128/04.1	129/04.5	**107/03.2**	**120/05.7**	**321/01.2**
5	107/05.5	142/06.1	147/05.4	155/04.4	153/05.1	165/04.9	174/03.9	190/03.1	180/01.9	179/02.4	187/01.9	**137/03.8**	**142/06.1**	**180/01.9**
6	198/04.3	200/04.2	258/03.3	210/02.1	224/02.8	192/02.3	198/02.0	234/01.6	275/02.3	277/01.5	276/01.4	**218/02.6**	**198/04.3**	**276/01.4**
7	282/05.6	283/04.9	280/05.2	297/06.5	306/06.1	308/06.6	302/04.3	304/04.4	315/04.8	304/02.7	269/01.6	**285/03.9**	**308/06.6**	**243/01.5**
8	280/04.4	295/04.5	282/04.0	282/03.9	281/03.1	275/02.2	205/01.1	178/01.7	189/01.8	228/02.0	210/01.7	**262/03.0**	**286/04.7**	**205/01.1**
9	311/07.2	311/07.7	309/06.3	310/05.5	312/05.6	301/04.6	295/02.8	236/01.5	275/01.6	263/01.7	265/02.4	**262/03.9**	**308/07.8**	**214/01.1**
10	291/04.8	299/05.4	311/05.0	312/04.5	321/03.1	350/03.1	338/03.5	320/03.9	325/04.7	334/02.9	334/03.0	**302/03.8**	**309/06.1**	**270/01.9**
11	304/05.1	298/03.4	318/03.8	288/02.9	319/03.1	336/02.9	332/02.9	330/03.6	338/02.0	342/01.6	310/01.3	**324/03.0**	**304/05.1**	**310/01.3**
12	281/02.9	117/04.4	122/05.2	120/05.0	131/04.9	152/03.8	169/02.8	172/01.8	195/01.4	200/01.5	194/01.6	**243/02.5**	**122/05.2**	**308/01.2**
13	152/05.0	156/05.0	157/05.2	158/06.2	158/06.4	163/06.4	163/04.7	160/04.2	174/02.7	169/02.2	242/02.2	**161/03.4**	**158/06.4**	**186/00.4**
14	103/04.1	108/04.5	100/03.6	103/01.6	034/02.3	359/02.8	040/03.1	049/02.7	014/02.0	085/02.6	079/01.6	**124/02.6**	**099/04.9**	**215/00.9**
15	334/04.1	335/04.0	343/03.5	346/03.8	350/03.3	348/03.2	013/02.1	021/01.5	006/01.5	002/01.5	337/01.2	**344/02.9**	**352/04.1**	**321/01.0**
16	101/05.4	100/06.0	107/05.6	123/05.8	140/05.6	143/04.7	161/03.7	167/03.9	175/03.3	172/03.1	188/02.3	**121/03.2**	**100/06.0**	**302/00.6**
17	152/04.4	155/05.2	157/05.5	160/05.7	159/05.1	160/05.4	163/04.5	165/04.0	166/03.7	171/03.4	197/01.8	**170/03.6**	**160/05.7**	**204/01.4**
18	133/04.8	147/05.3	155/04.9	149/04.9	165/04.5	163/04.4	163/04.0	168/03.6	162/02.8	158/02.1	160/02.0	**155/03.5**	**097/06.0**	**180/01.9**
19	105/06.2	122/04.7	141/03.9	148/03.7	159/03.7	171/02.6	171/02.0	168/02.4	179/02.3	184/02.1	192/02.0	**158/02.9**	**105/06.2**	**188/01.4**
20	121/05.8	134/05.5	139/04.7	139/04.4	147/04.1	173/04.0	165/03.1	164/02.6	180/01.8	191/02.0	207/01.5	**165/03.0**	**101/06.0**	**199/01.0**
21	102/06.6	098/06.0	109/05.4	142/04.2	152/03.9	166/04.0	177/04.2	184/02.8	171/02.0	184/01.9	195/02.0	**162/02.9**	**102/06.6**	**204/01.1**
22	094/03.1	131/03.5	160/04.0	156/04.2	156/04.2	162/04.0	163/03.1	178/02.6	177/02.8	184/02.6	186/03.1	**163/02.8**	**102/04.6**	**197/01.1**
23	221/04.4	212/04.6	204/04.5	206/04.5	278/03.4	285/02.7	238/02.2	207/03.8	205/03.7	204/03.5	209/02.4	**217/03.4**	**212/04.6**	**219/01.5**
24	329/07.2	333/06.9	335/06.3	327/06.7	330/06.1	335/04.6	325/03.6	282/01.7	289/01.7	289/01.9	295/01.6	**303/04.6**	**319/08.4**	**295/01.6**
25	280/03.3	243/03.6	240/03.4	231/02.9	193/02.7	159/04.4	162/03.7	166/03.3	168/03.0	184/02.9	190/03.0	**249/02.8**	**159/04.4**	**294/01.4**
26	278/03.8	279/04.4	278/03.8	286/03.3	176/02.1	190/02.1	193/02.9	183/03.1	246/05.2	220/03.2	242/02.0	**219/02.9**	**246/05.2**	**215/01.5**
27	327/04.3	323/03.3	113/04.0	102/03.0	110/02.7	092/02.4	126/01.4	204/01.7	352/03.7	006/04.4	010/03.3	**316/02.6**	**006/04.4**	**260/01.1**
28	101/05.2	106/06.7	125/06.2	132/05.5	134/05.8	136/06.1	126/06.9	127/08.0	132/07.0	134/05.9	133/05.3	**091/04.7**	**127/08.0**	**035/02.6**
29	151/05.5	154/05.5	154/05.8	155/05.4	156/05.6	161/04.9	163/04.3	162/04.1	172/02.7	277/02.7	195/01.9	**155/04.0**	**154/05.8**	**157/01.6**
30	255/03.1	262/02.6	270/03.2	241/03.2	170/03.0	174/03.7	219/03.4	298/03.4	352/05.3	342/04.9	330/06.1	**243/02.8**	**330/06.1**	**215/00.8**
MEAN	**162/04.7**	**163/04.8**	**167/04.6**	**172/04.4**	**164/04.2**	**172/03.9**	**179/03.3**	**189/03.0**	**201/02.9**	**209/02.6**	**219/02.3**	**205/03.2**		
MAX	**311/07.2**	**311/07.7**	**309/06.3**	**327/06.7**	**158/06.4**	**308/06.6**	**126/06.9**	**127/08.0**	**132/07.0**	**134/05.9**	**330/06.1**		**319/08.4**	
MIN	**281/02.9**	**262/02.6**	**143/02.8**	**103/01.6**	**176/02.1**	**190/02.1**	**205/01.1**	**236/01.5**	**195/01.4**	**185/01.4**	**233/00.9**			**186/00.4**

POSSIBLE NUMBER OF OBSERVATIONS = 720 ACTUAL NUMBER OF OBSERVATIONS = 720 DATA RECOVERY RATE = 100.0%

MONTHLY MEAN = 205/03.2 MAXIMUM WIND SPEED = 08.4 AT 319 DEGREES DATE OF OCCURRENCE = 6/24 AT 1300

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

Draft

CSX AQ5

Joint Frequency Distribution for April, 2024

Percentage frequency of occurence of hourly wind velocities for all stability classes

Wind Direction		Wind Speed (mps) 0.5 - 1.54	1.54 - 3.09	3.09 - 5.14	5.14 - 8.23	8.23 - 10.8	OVER 10.8	TOTAL	AVG SPEED
N	348.75 - 11.25	0.6	1.7	2.2	0.2	0.0	0.0	**4.7**	**2.9**
NNE	11.25 - 33.75	0.9	1.1	0.6	0.0	0.0	0.0	**2.6**	**2.0**
NE	33.75 - 56.25	1.1	1.7	0.9	0.0	0.0	0.0	**3.7**	**2.4**
ENE	56.25 - 78.75	0.5	2.0	1.7	0.2	0.0	0.0	**4.4**	**3.1**
E	78.75 - 101.25	0.5	2.3	4.4	0.9	0.0	0.0	**8.1**	**3.6**
ESE	101.25 - 123.75	1.6	4.5	7.2	0.8	0.0	0.0	**14.0**	**3.4**
SE	123.75 - 146.25	2.2	3.6	3.9	1.6	0.2	0.0	**11.4**	**3.2**
SSE	146.25 - 168.75	0.8	3.1	3.4	2.5	0.5	0.0	**10.3**	**4.1**
S	168.75 - 191.25	2.0	2.8	0.8	0.6	0.0	0.0	**6.2**	**2.5**
SSW	191.25 - 213.75	2.0	1.7	0.9	0.6	0.0	0.0	**5.3**	**2.5**
SW	213.75 - 236.25	0.9	1.9	0.3	0.0	0.0	0.0	**3.1**	**2.1**
WSW	236.25 - 258.75	1.1	0.8	0.5	1.6	0.0	0.0	**3.9**	**3.6**
W	258.75 - 281.25	1.2	0.5	0.9	1.4	0.0	0.0	**4.0**	**3.8**
WNW	281.25 - 303.75	0.9	1.4	0.8	2.5	0.6	0.0	**6.2**	**4.6**
NW	303.75 - 326.25	0.6	1.4	2.8	1.1	0.0	0.0	**5.9**	**3.7**
NNW	326.25 - 348.75	0.5	1.2	3.1	0.3	0.0	0.0	**5.1**	**3.4**
	CALM							**0.9**	
	TOTAL	**17.4**	**31.8**	**34.4**	**14.2**	**1.2**	**0.0**	**100.0**	**3.3**

TOTAL NUMBER OF OBSERVATIONS = 642

POSSIBLE NUMBER OF OBSERVATIONS = 720

DATA RECOVERY = 89.2%

Draft

CSX AQ5

Joint Frequency Distribution for May, 2024

Percentage frequency of occurence of hourly wind velocities for all stability classes

Wind Direction		Wind Speed (mps) 0.5 - 1.54	1.54 - 3.09	3.09 - 5.14	5.14 - 8.23	8.23 - 10.8	OVER 10.8	TOTAL	AVG SPEED
N	348.75 - 11.25	0.5	1.5	1.1	0.0	0.0	0.0	**3.1**	**2.7**
NNE	11.25 - 33.75	0.5	2.3	0.3	0.0	0.0	0.0	**3.1**	**2.2**
NE	33.75 - 56.25	0.9	2.4	1.2	0.0	0.0	0.0	**4.6**	**2.4**
ENE	56.25 - 78.75	0.7	0.9	1.1	0.0	0.0	0.0	**2.7**	**2.6**
E	78.75 - 101.25	0.9	1.3	5.8	2.3	0.0	0.0	**10.3**	**4.1**
ESE	101.25 - 123.75	1.7	5.0	7.1	1.5	0.0	0.0	**15.3**	**3.3**
SE	123.75 - 146.25	1.2	3.5	3.1	1.1	0.1	0.0	**9.0**	**3.2**
SSE	146.25 - 168.75	1.2	3.4	5.0	0.5	0.0	0.0	**10.1**	**3.3**
S	168.75 - 191.25	3.5	3.6	0.7	0.0	0.0	0.0	**7.8**	**1.8**
SSW	191.25 - 213.75	3.2	1.2	0.0	0.0	0.0	0.0	**4.4**	**1.4**
SW	213.75 - 236.25	2.3	1.2	0.5	0.0	0.0	0.0	**4.0**	**1.6**
WSW	236.25 - 258.75	0.7	0.9	0.8	0.0	0.0	0.0	**2.4**	**2.3**
W	258.75 - 281.25	1.3	1.3	2.0	0.0	0.0	0.0	**4.7**	**2.8**
WNW	281.25 - 303.75	2.7	3.8	0.7	0.0	0.0	0.0	**7.1**	**2.1**
NW	303.75 - 326.25	1.2	1.3	1.9	0.0	0.0	0.0	**4.4**	**2.6**
NNW	326.25 - 348.75	0.4	1.7	3.6	0.4	0.0	0.0	**6.2**	**3.4**
	CALM							**0.7**	
	TOTAL	**23.1**	**35.5**	**34.8**	**5.8**	**0.1**	**0.0**	**100.0**	**2.8**

TOTAL NUMBER OF OBSERVATIONS = 744

POSSIBLE NUMBER OF OBSERVATIONS = 744

DATA RECOVERY = 100.0%

Draft

CSX AQ5

Joint Frequency Distribution for June, 2024

Percentage frequency of occurence of hourly wind velocities for all stability classes

Wind Direction		Wind Speed (mps) 0.5 - 1.54	1.54 - 3.09	3.09 - 5.14	5.14 - 8.23	8.23 - 10.8	OVER 10.8	TOTAL	AVG SPEED
N	348.75 - 11.25	0.4	0.4	1.4	0.1	0.0	0.0	**2.4**	**3.1**
NNE	11.25 - 33.75	0.3	1.0	0.1	0.0	0.0	0.0	**1.4**	**2.3**
NE	33.75 - 56.25	0.1	0.6	0.3	0.0	0.0	0.0	**1.0**	**2.6**
ENE	56.25 - 78.75	0.0	0.1	0.4	0.0	0.0	0.0	**0.6**	**3.6**
E	78.75 - 101.25	0.0	0.8	1.4	1.1	0.0	0.0	**3.3**	**4.3**
ESE	101.25 - 123.75	0.0	1.7	5.0	2.5	0.0	0.0	**9.2**	**4.3**
SE	123.75 - 146.25	0.1	1.7	2.8	1.7	0.0	0.0	**6.2**	**4.1**
SSE	146.25 - 168.75	0.1	2.6	6.7	2.2	0.0	0.0	**11.7**	**4.0**
S	168.75 - 191.25	1.9	9.3	1.9	0.0	0.0	0.0	**13.2**	**2.3**
SSW	191.25 - 213.75	2.8	5.6	2.6	0.0	0.0	0.0	**11.0**	**2.3**
SW	213.75 - 236.25	1.8	2.5	1.1	0.0	0.0	0.0	**5.4**	**2.2**
WSW	236.25 - 258.75	0.7	1.9	1.0	0.1	0.0	0.0	**3.8**	**2.4**
W	258.75 - 281.25	1.5	4.2	2.4	0.3	0.0	0.0	**8.3**	**2.6**
WNW	281.25 - 303.75	1.4	4.3	2.6	1.1	0.0	0.0	**9.4**	**3.0**
NW	303.75 - 326.25	1.4	1.4	2.8	1.8	0.1	0.0	**7.5**	**3.9**
NNW	326.25 - 348.75	0.4	1.9	2.4	0.8	0.0	0.0	**5.6**	**3.5**
	CALM							**0.1**	
	TOTAL	**13.1**	**40.0**	**34.9**	**11.8**	**0.1**	**0.0**	**100.0**	**3.2**

TOTAL NUMBER OF OBSERVATIONS = 720

POSSIBLE NUMBER OF OBSERVATIONS = 720

DATA RECOVERY = 100.0%

Draft

CSX AQ5

10M Joint Frequency Distribution for April - June 2024

Percentage frequency of occurence of hourly wind velocities for all stability classes

Wind Direction		Wind Speed (mps) 0.5 - 1.54	1.54 - 3.09	3.09 - 5.14	5.14 - 8.23	8.23 - 10.8	OVER 10.8	TOTAL	AVG SPEED
N	348.75 - 11.25	0.5	1.2	1.5	0.1	0.0	0.0	**3.3**	**2.9**
NNE	11.25 - 33.75	0.6	1.5	0.3	0.0	0.0	0.0	**2.4**	**2.2**
NE	33.75 - 56.25	0.7	1.6	0.8	0.0	0.0	0.0	**3.1**	**2.4**
ENE	56.25 - 78.75	0.4	1.0	1.0	0.0	0.0	0.0	**2.5**	**3.0**
E	78.75 - 101.25	0.5	1.5	3.8	1.5	0.0	0.0	**7.3**	**4.0**
ESE	101.25 - 123.75	1.1	3.7	6.4	1.6	0.0	0.0	**12.8**	**3.6**
SE	123.75 - 146.25	1.1	2.9	3.2	1.4	0.1	0.0	**8.8**	**3.4**
SSE	146.25 - 168.75	0.7	3.0	5.1	1.7	0.1	0.0	**10.7**	**3.8**
S	168.75 - 191.25	2.5	5.3	1.1	0.2	0.0	0.0	**9.2**	**2.2**
SSW	191.25 - 213.75	2.7	2.8	1.2	0.2	0.0	0.0	**6.9**	**2.1**
SW	213.75 - 236.25	1.7	1.9	0.7	0.0	0.0	0.0	**4.2**	**2.0**
WSW	236.25 - 258.75	0.8	1.2	0.8	0.5	0.0	0.0	**3.3**	**2.8**
W	258.75 - 281.25	1.4	2.0	1.8	0.5	0.0	0.0	**5.7**	**2.9**
WNW	281.25 - 303.75	1.7	3.2	1.4	1.1	0.2	0.0	**7.6**	**3.1**
NW	303.75 - 326.25	1.1	1.4	2.5	0.9	0.0	0.0	**5.9**	**3.5**
NNW	326.25 - 348.75	0.4	1.7	3.0	0.5	0.0	0.0	**5.7**	**3.5**
	CALM							**0.6**	
	TOTAL	**17.9**	**35.9**	**34.7**	**10.4**	**0.5**	**0.0**	**100.0**	**3.1**

TOTAL NUMBER OF OBSERVATIONS = 2106

POSSIBLE NUMBER OF OBSERVATIONS = 2184

DATA RECOVERY = 96.4%

Draft

CSX AQ5

WIND GUST in mps for APRIL, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	5.9	4.3	3.3	4.1	5.6	4.7	6.7	5.3	5.1	5.2	6.4	6.1	5.9	6.1	4.3	3.7	3.9	3.7	4.5	4.1	4.0	5.1	3.5	2.7	**4.8**	**6.7**	**2.7**
2	3.4	3.7	4.5	4.6	6.6	7.1	5.4	8.3	9.4	8.0	7.7	6.8	6.0	5.0	13.9	9.0	6.1	6.6	5.9	7.2	10.2	9.3	10.9	9.5	**7.3**	**13.9**	**3.4**
3	11.3	10.2	8.6	8.9	7.7	8.0	8.7	9.3	8.2	9.5	12.0	10.4	7.8	7.6	8.3	8.6	10.7	6.3	6.7	7.0	7.9	8.6	7.3	4.5	**8.5**	**12.0**	**4.5**
4	4.9	6.2	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
5	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
6	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
7	---	---	---	---	---	---	---	---	7.1	8.8	10.5	9.3	9.7	8.7	8.0	7.6	7.5	5.7	4.9	2.3	2.2	3.5	4.2	2.8	**---**	**---**	**---**
8	2.5	2.7	2.5	1.9	1.7	1.2	1.4	2.0	2.3	3.7	5.6	5.8	7.3	7.6	7.5	6.7	6.5	7.8	6.1	4.4	4.3	3.6	2.9	1.3	**4.1**	**7.8**	**1.2**
9	1.4	1.6	1.4	1.9	1.3	1.7	1.3	1.3	1.3	2.7	2.1	4.5	4.2	5.3	5.4	5.6	6.1	4.0	4.8	3.5	3.3	1.9	2.3	1.6	**2.9**	**6.1**	**1.3**
10	1.2	2.8	1.5	1.6	1.0	1.1	1.3	1.1	1.5	3.6	5.1	6.6	4.0	5.3	7.3	6.8	5.9	4.2	2.7	1.6	1.3	2.5	1.0	1.4	**3.0**	**7.3**	**1.0**
11	1.5	5.1	3.7	1.9	3.5	4.1	4.7	5.5	7.1	8.3	9.2	12.6	12.3	14.2	13.1	15.0	11.2	12.6	12.7	14.1	14.2	12.9	12.5	20.8	**9.7**	**20.8**	**1.5**
12	16.3	17.4	9.1	6.9	5.8	6.1	7.3	10.9	11.5	12.9	12.9	17.0	16.6	14.6	14.7	15.0	15.2	12.6	13.1	15.0	16.7	12.0	16.1	13.4	**12.9**	**17.4**	**5.8**
13	17.5	14.5	16.0	18.6	13.2	9.3	8.9	10.7	13.5	16.0	16.3	18.5	18.7	15.2	16.9	14.0	15.9	15.3	9.9	8.4	5.2	2.2	2.6	2.4	**12.5**	**18.7**	**2.2**
14	3.0	3.0	4.2	3.6	4.3	4.9	5.2	4.9	8.2	9.6	10.1	11.5	11.0	12.3	12.9	13.5	12.9	12.7	13.0	10.4	6.8	7.5	6.8	5.9	**8.3**	**13.5**	**3.0**
15	3.3	4.1	4.2	5.3	2.9	2.7	4.8	4.7	4.1	3.3	6.3	6.7	7.1	9.9	11.0	7.3	7.4	7.2	5.6	4.7	3.6	3.2	3.1	7.5	**5.4**	**11.0**	**2.7**
16	10.7	10.2	7.3	3.1	3.8	2.9	2.9	4.7	5.7	3.8	4.7	5.7	6.5	6.7	7.3	7.9	7.5	7.0	7.4	5.2	4.6	3.0	3.9	4.2	**5.7**	**10.7**	**2.9**
17	3.6	4.1	3.9	3.5	4.3	3.7	3.8	3.1	5.3	4.5	5.2	4.8	3.9	8.6	8.4	7.8	5.9	6.1	3.3	6.4	6.4	5.7	5.3	5.1	**5.1**	**8.6**	**3.1**
18	7.2	3.6	4.1	2.9	2.0	2.3	3.1	3.9	4.2	3.2	3.2	3.4	4.1	6.3	6.3	6.3	7.3	8.1	8.3	8.0	8.7	8.2	7.6	7.6	**5.4**	**8.7**	**2.0**
19	6.6	5.3	5.1	4.4	5.0	5.2	6.5	5.7	6.6	7.3	7.3	5.6	3.3	4.3	6.7	7.0	4.7	3.7	2.9	2.7	2.7	3.7	2.3	1.2	**4.8**	**7.3**	**1.2**
20	2.1	2.5	2.2	1.5	1.8	2.0	2.1	3.2	3.1	4.1	6.1	8.5	9.8	10.5	12.0	12.5	13.1	9.3	10.4	9.4	9.3	11.3	9.8	9.9	**6.9**	**13.1**	**1.5**
21	7.1	6.6	6.7	7.6	6.0	7.1	5.7	3.5	3.1	3.0	3.1	3.7	3.3	4.2	6.8	9.5	7.7	8.1	6.4	5.2	5.0	6.9	5.7	7.7	**5.8**	**9.5**	**3.0**
22	9.7	9.2	7.8	4.1	4.1	3.5	4.9	6.1	6.1	5.0	6.6	7.5	8.4	7.7	7.4	7.6	7.2	7.1	4.7	5.8	4.5	3.6	1.6	1.9	**5.9**	**9.7**	**1.6**
23	1.0	1.1	1.5	1.7	1.8	2.4	2.1	2.0	2.1	5.3	6.9	8.8	8.4	12.2	10.5	10.8	10.6	11.8	11.9	11.1	9.8	8.9	7.7	4.6	**6.5**	**12.2**	**1.0**
24	6.9	2.6	1.6	1.8	2.1	5.0	5.4	6.7	8.8	10.8	11.1	11.3	11.6	10.5	12.3	11.1	9.1	8.9	8.1	7.2	5.7	5.7	4.1	6.7	**7.3**	**12.3**	**1.6**
25	7.5	6.9	5.2	6.7	7.9	6.9	7.2	6.3	6.5	5.6	5.1	5.5	5.5	6.1	6.1	5.7	5.3	5.0	4.5	8.9	10.1	7.9	7.7	6.4	**6.5**	**10.1**	**4.5**
26	4.1	2.9	2.9	3.9	3.2	3.7	4.9	5.7	6.2	5.4	4.9	5.3	5.4	5.2	7.5	7.0	7.1	8.3	9.5	8.2	10.3	8.6	7.4	7.5	**6.0**	**10.3**	**2.9**
27	7.2	6.8	5.5	5.3	4.5	5.5	4.9	5.1	5.7	5.3	5.4	5.5	6.7	6.3	7.3	7.5	7.9	6.1	6.5	7.2	6.1	4.9	3.9	1.9	**5.8**	**7.9**	**1.9**
28	2.7	2.9	3.1	1.8	2.0	2.4	1.6	1.7	1.9	2.9	4.0	5.3	6.2	5.7	5.7	4.9	4.7	5.1	6.5	4.1	4.7	3.5	2.5	4.1	**3.8**	**6.5**	**1.6**
29	5.2	5.1	1.6	1.9	2.4	2.2	2.3	2.6	1.9	2.5	5.9	4.8	6.9	7.1	6.5	7.2	7.1	7.8	6.6	5.7	5.3	5.5	4.8	3.7	**4.7**	**7.8**	**1.6**
30	3.1	2.5	2.8	3.0	4.0	2.4	5.9	7.1	6.0	6.1	5.3	5.7	5.5	6.9	7.4	8.0	7.9	6.7	7.7	6.1	13.1	10.2	8.1	5.8	**6.1**	**13.1**	**2.4**
MEAN	**5.8**	**5.5**	**4.6**	**4.3**	**4.2**	**4.2**	**4.6**	**5.1**	**5.6**	**6.2**	**7.0**	**7.7**	**7.6**	**8.2**	**8.9**	**8.7**	**8.2**	**7.7**	**7.2**	**6.8**	**6.9**	**6.3**	**5.8**	**5.6**	**6.4**		
MAX	**17.5**	**17.4**	**16.0**	**18.6**	**13.2**	**9.3**	**8.9**	**10.9**	**13.5**	**16.0**	**16.3**	**18.5**	**18.7**	**15.2**	**16.9**	**15.0**	**15.9**	**15.3**	**13.1**	**15.0**	**16.7**	**12.9**	**16.1**	**20.8**		**20.8**	
MIN	**1.0**	**1.1**	**1.4**	**1.5**	**1.0**	**1.1**	**1.3**	**1.1**	**1.3**	**2.5**	**2.1**	**3.4**	**3.3**	**4.2**	**4.3**	**3.7**	**3.9**	**3.7**	**2.7**	**1.6**	**1.3**	**1.9**	**1.0**	**1.2**			**1.0**

POSSIBLE NUMBER OF OBSERVATIONS = 720 ACTUAL NUMBER OF OBSERVATIONS = 642 DATA RECOVERY RATE = 89.2%

MONTHLY MEAN = 6.4 mps

MAXIMUM WIND GUST = 20.8 mps DATE OF OCCURRENCE = 4/11 AT 2400 MAXIMUM DAILY MEAN = 12.9 mps DATE OF OCCURRENCE = 4/12

MINIMUM WIND GUST = 1.0 mps DATE OF OCCURRENCE = 4/10 AT 0500 MINUMUM DAILY MEAN = 2.9 mps DATE OF OCCURRENCE = 4/9

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

Draft

CSX AQ5

WIND GUST in mps for MAY, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	2.5	3.0	2.2	2.7	2.9	3.4	6.1	5.3	3.9	6.9	9.9	8.8	7.4	6.3	6.3	6.1	5.5	4.7	4.4	4.4	4.3	5.0	3.3	2.6	**4.9**	**9.9**	**2.2**
2	2.9	1.7	2.2	1.6	0.9	1.6	2.6	2.4	2.7	4.8	4.1	6.7	6.9	8.7	9.0	8.4	8.6	7.1	4.5	3.3	2.4	2.0	1.3	2.3	**4.1**	**9.0**	**0.9**
3	5.2	4.1	4.2	9.1	8.3	9.1	9.2	8.8	7.8	7.9	8.6	9.9	11.0	11.4	10.1	9.2	10.5	10.4	9.3	7.9	7.3	6.9	7.0	6.1	**8.3**	**11.4**	**4.1**
4	8.0	6.9	6.7	8.2	8.2	7.1	6.9	6.6	6.6	6.9	7.4	7.3	6.6	8.6	9.1	9.4	8.9	9.3	10.0	9.4	9.2	8.6	8.4	8.6	**8.0**	**10.0**	**6.6**
5	7.3	7.2	6.7	7.0	7.1	6.3	6.4	7.2	7.0	6.5	5.6	4.8	4.8	5.3	4.9	6.8	7.6	5.7	4.1	3.6	3.5	3.0	3.5	1.5	**5.6**	**7.6**	**1.5**
6	1.8	2.5	3.3	3.6	1.5	1.8	1.9	1.9	2.1	2.3	2.3	2.7	2.8	2.1	3.1	3.8	3.5	3.2	3.3	1.9	1.5	1.3	1.4	1.7	**2.4**	**3.8**	**1.3**
7	1.8	1.1	1.1	1.7	2.2	2.0	2.4	2.0	1.8	3.2	3.8	4.4	4.5	5.3	5.1	5.2	3.1	1.9	2.0	2.1	2.6	3.7	2.3	3.2	**2.9**	**5.3**	**1.1**
8	3.8	2.1	1.0	2.0	1.5	2.3	1.8	2.0	3.1	5.4	7.3	9.1	9.5	10.1	9.9	7.8	8.5	5.9	6.1	5.6	3.5	3.9	3.8	3.5	**5.0**	**10.1**	**1.0**
9	2.7	2.7	2.9	2.4	3.2	4.0	3.4	3.9	4.1	4.6	3.9	4.9	6.0	5.3	6.1	6.2	7.6	6.3	5.4	5.5	6.7	11.7	11.4	8.0	**5.4**	**11.7**	**2.4**
10	8.3	9.2	7.8	6.7	8.1	8.9	11.5	10.7	9.6	9.3	9.1	9.4	8.6	10.2	8.2	7.5	7.7	7.2	7.5	6.6	6.6	6.8	5.1	6.1	**8.2**	**11.5**	**5.1**
11	3.7	4.3	3.3	3.3	2.9	3.3	4.3	4.1	4.0	3.7	3.6	5.0	5.7	6.7	8.6	10.9	7.5	7.3	5.6	4.3	4.9	7.8	8.9	8.9	**5.5**	**10.9**	**2.9**
12	12.7	5.7	1.5	1.7	2.2	2.0	3.0	5.1	4.7	5.3	7.0	12.6	10.9	6.7	6.4	4.6	4.4	3.2	2.6	2.7	3.5	4.5	4.7	4.0	**5.1**	**12.7**	**1.5**
13	4.1	4.1	3.4	3.2	3.5	4.1	4.1	4.9	5.4	4.4	6.5	9.2	8.6	7.1	10.8	8.5	9.0	8.7	8.0	7.1	7.4	5.5	4.0	3.5	**6.0**	**10.8**	**3.2**
14	3.0	1.6	1.8	2.1	1.7	2.2	2.4	3.2	3.7	3.3	4.9	5.1	4.9	4.3	4.7	5.2	4.5	4.9	5.2	5.0	6.5	6.3	6.3	7.9	**4.2**	**7.9**	**1.6**
15	6.7	6.2	6.3	5.7	5.3	6.8	7.0	6.7	6.1	5.4	6.7	5.4	6.7	7.7	5.3	4.8	4.1	4.6	4.6	5.1	4.3	3.6	3.6	3.9	**5.5**	**7.7**	**3.6**
16	3.1	3.3	3.9	4.4	5.5	5.8	6.0	8.4	9.5	9.5	10.0	8.8	8.9	9.7	11.9	10.4	8.9	7.6	6.9	7.0	7.7	8.6	8.6	4.2	**7.4**	**11.9**	**3.1**
17	4.7	4.4	3.5	4.3	4.6	4.9	4.2	4.8	4.0	3.7	4.3	4.5	3.9	3.5	4.8	5.3	4.9	4.8	5.0	4.3	4.5	3.6	4.9	5.7	**4.5**	**5.7**	**3.5**
18	3.5	2.2	3.6	2.5	1.9	2.1	1.5	2.2	1.9	2.6	3.5	2.9	3.2	3.9	3.1	3.5	3.5	1.9	1.7	1.5	1.1	1.6	2.0	1.8	**2.5**	**3.9**	**1.1**
19	2.7	3.0	3.3	2.9	4.4	3.0	2.0	2.2	1.5	2.2	2.7	3.1	2.6	2.2	3.4	2.9	3.1	2.9	2.2	2.8	2.5	2.2	3.3	4.2	**2.8**	**4.4**	**1.5**
20	5.2	5.2	3.7	3.7	4.5	4.5	3.2	2.8	5.3	5.0	4.3	4.3	4.7	5.8	6.4	6.9	6.6	5.8	5.8	4.1	2.3	2.9	2.2	2.1	**4.5**	**6.9**	**2.1**
21	2.1	2.5	1.9	1.5	1.1	1.1	3.1	3.3	3.7	5.9	6.4	6.9	8.9	8.4	8.6	8.5	7.6	8.0	6.9	6.8	4.7	4.4	3.1	3.5	**5.0**	**8.9**	**1.1**
22	2.8	3.3	2.6	1.9	3.4	3.2	3.4	3.9	3.7	4.5	5.8	6.3	6.4	6.4	8.1	7.3	8.4	7.8	7.1	5.3	4.2	4.1	3.2	2.9	**4.8**	**8.4**	**1.9**
23	4.1	3.9	2.0	1.7	1.6	1.7	3.4	4.6	6.5	7.5	5.8	5.1	4.8	4.2	4.8	5.2	6.3	6.8	6.3	3.7	3.0	2.5	1.9	1.7	**4.1**	**7.5**	**1.6**
24	1.2	1.9	2.4	1.4	2.6	3.2	2.7	3.3	5.0	5.9	6.0	4.8	5.2	4.5	5.8	4.1	4.6	4.7	5.2	4.0	3.4	4.0	3.9	1.9	**3.8**	**6.0**	**1.2**
25	3.7	1.5	1.5	1.7	2.6	2.3	2.3	3.3	2.7	3.1	4.5	5.8	6.7	8.0	8.8	9.1	8.6	8.4	5.5	5.5	8.4	5.7	4.3	2.7	**4.9**	**9.1**	**1.5**
26	2.0	2.3	2.6	2.5	2.1	2.7	2.8	2.9	3.9	4.6	4.4	4.3	4.4	4.5	4.0	6.2	6.3	6.8	9.5	7.1	6.5	6.9	7.9	7.3	**4.8**	**9.5**	**2.0**
27	5.1	5.0	5.4	4.9	4.1	3.6	4.5	5.7	6.7	6.9	8.3	7.2	8.0	7.2	7.9	8.6	9.1	6.3	12.1	9.5	3.7	3.7	3.5	2.6	**6.2**	**12.1**	**2.6**
28	2.3	2.8	4.3	4.9	4.9	5.2	5.7	5.5	8.7	9.2	8.5	9.0	9.1	9.5	9.3	9.2	9.4	8.9	7.4	5.1	9.1	5.2	4.9	4.6	**6.8**	**9.5**	**2.3**
29	4.7	4.7	2.6	2.2	1.8	2.3	3.1	5.1	4.7	5.0	5.5	5.9	13.3	7.6	5.8	8.8	8.0	3.4	3.9	3.2	3.9	4.2	2.7	3.9	**4.8**	**13.3**	**1.8**
30	4.5	5.7	5.6	6.6	7.6	5.9	8.6	8.5	8.9	9.2	10.1	11.1	8.4	8.9	7.6	9.1	9.4	7.5	8.1	6.4	5.5	4.6	2.6	4.7	**7.3**	**11.1**	**2.6**
31	5.9	6.7	6.9	7.5	8.5	8.2	8.7	7.7	6.9	6.2	6.6	6.5	8.2	9.2	7.2	8.0	7.1	6.0	6.9	5.1	1.6	2.6	1.5	1.4	**6.3**	**9.2**	**1.4**
MEAN	**4.3**	**3.9**	**3.6**	**3.7**	**3.9**	**4.0**	**4.5**	**4.8**	**5.0**	**5.5**	**6.0**	**6.5**	**6.8**	**6.8**	**6.9**	**7.0**	**6.9**	**6.1**	**5.9**	**5.0**	**4.7**	**4.8**	**4.4**	**4.1**	**5.2**		
MAX	**12.7**	**9.2**	**7.8**	**9.1**	**8.5**	**9.1**	**11.5**	**10.7**	**9.6**	**9.5**	**10.1**	**12.6**	**13.3**	**11.4**	**11.9**	**10.9**	**10.5**	**10.4**	**12.1**	**9.5**	**9.2**	**11.7**	**11.4**	**8.9**		**13.3**	
MIN	**1.2**	**1.1**	**1.0**	**1.4**	**0.9**	**1.1**	**1.5**	**1.9**	**1.5**	**2.2**	**2.3**	**2.7**	**2.6**	**2.1**	**3.1**	**2.9**	**3.1**	**1.9**	**1.7**	**1.5**	**1.1**	**1.3**	**1.3**	**1.4**			**0.9**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 744 DATA RECOVERY RATE = 100.0%

MONTHLY MEAN = 5.2 mps

MAXIMUM WIND GUST = 13.3 mps DATE OF OCCURRENCE = 5/29 AT 1300 MAXIMUM DAILY MEAN = 8.3 mps DATE OF OCCURRENCE = 5/3

MINIMUM WIND GUST = 0.9 mps DATE OF OCCURRENCE = 5/2 AT 0500 MINUMUM DAILY MEAN = 2.4 mps DATE OF OCCURRENCE = 5/6

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

Draft

CSX AQ5

WIND GUST in mps for JUNE, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	5.4	5.1	2.7	2.1	2.0	1.8	2.9	3.0	2.5	2.9	4.1	5.4	5.7	6.0	7.9	7.1	7.1	6.6	6.3	4.3	3.7	3.4	3.6	2.8	**4.4**	**7.9**	**1.8**
2	2.4	2.1	1.7	2.3	2.8	2.2	3.5	4.8	5.7	5.3	5.8	10.3	6.5	6.7	6.3	7.5	8.4	8.1	6.5	5.5	4.6	5.9	4.0	2.2	**5.0**	**10.3**	**1.7**
3	3.4	1.9	1.5	2.9	3.2	3.3	2.9	4.2	5.1	4.7	4.1	5.4	5.3	5.6	4.2	4.1	5.5	5.6	4.3	4.1	3.0	3.1	3.3	1.9	**3.9**	**5.6**	**1.5**
4	3.0	3.2	3.5	3.5	2.7	2.0	2.9	3.0	3.6	3.3	4.5	5.4	5.5	5.2	7.5	8.3	7.5	8.5	8.0	6.5	4.7	6.2	6.9	5.9	**5.1**	**8.5**	**2.0**
5	5.3	4.2	4.3	4.7	5.5	5.0	3.7	4.4	6.0	5.7	6.1	6.9	7.7	8.1	9.5	8.7	7.1	8.8	9.7	7.5	8.4	4.5	5.5	4.0	**6.3**	**9.7**	**3.7**
6	3.9	3.9	5.2	4.2	4.9	4.4	5.5	6.5	6.4	7.8	9.1	7.8	8.0	9.7	8.1	8.9	5.0	6.7	4.5	3.9	3.6	4.4	3.6	2.6	**5.8**	**9.7**	**2.6**
7	3.3	3.7	3.2	4.1	3.7	3.9	4.6	6.1	7.7	7.5	9.3	11.9	14.5	12.4	10.2	12.3	12.2	11.7	12.0	10.2	8.4	8.4	5.6	2.9	**7.9**	**14.5**	**2.9**
8	3.5	3.9	6.2	6.2	6.2	5.5	5.5	7.6	8.5	9.1	9.2	7.8	8.8	9.1	9.8	8.9	8.3	5.9	4.1	3.2	3.1	3.4	4.3	3.2	**6.3**	**9.8**	**3.1**
9	2.8	2.5	2.1	4.4	4.3	5.9	7.1	7.9	8.6	11.9	12.2	12.1	13.7	13.2	12.7	12.6	9.5	9.6	8.2	6.0	3.0	3.1	3.8	6.1	**7.6**	**13.7**	**2.1**
10	3.7	4.0	4.2	4.2	5.5	4.6	7.0	9.9	7.9	9.7	11.5	8.7	9.8	10.5	11.1	9.9	7.8	5.8	5.7	6.9	6.5	10.0	6.3	5.5	**7.4**	**11.5**	**3.7**
11	4.9	4.1	4.3	5.8	6.5	6.1	7.0	6.1	4.7	5.3	5.5	6.7	7.7	9.9	7.6	6.9	5.9	7.1	6.3	5.7	5.8	3.8	2.9	2.4	**5.8**	**9.9**	**2.4**
12	3.4	2.1	3.0	3.1	2.8	3.0	2.2	2.6	4.2	5.1	4.8	6.9	6.8	6.6	7.1	8.4	7.1	6.8	6.3	5.1	3.1	2.7	2.5	3.0	**4.5**	**8.4**	**2.1**
13	2.9	2.5	1.3	1.7	2.1	2.2	4.2	4.3	4.1	5.5	7.6	8.8	7.3	7.9	8.7	8.7	10.2	10.4	12.4	8.5	7.4	5.9	4.9	5.4	**6.0**	**12.4**	**1.3**
14	6.8	5.1	4.1	2.9	2.9	2.0	3.1	4.7	3.9	3.7	6.6	6.6	7.1	6.3	6.5	6.1	3.5	6.8	6.3	6.3	6.0	4.0	4.5	3.6	**5.0**	**7.1**	**2.0**
15	3.7	2.7	2.7	5.6	5.9	5.7	6.4	7.6	7.5	7.3	8.6	7.1	7.9	8.4	8.4	7.3	8.4	6.4	6.3	6.4	4.1	3.3	4.1	2.4	**6.0**	**8.6**	**2.4**
16	1.2	2.3	1.4	2.4	4.1	4.0	4.2	5.0	5.3	5.3	4.9	5.4	6.1	7.5	8.9	7.8	8.9	8.5	7.5	5.9	7.3	6.7	6.5	5.5	**5.5**	**8.9**	**1.2**
17	6.9	3.7	4.7	4.7	3.2	4.7	5.3	7.0	7.3	7.7	7.8	6.5	8.0	7.9	9.3	9.1	9.4	9.3	9.3	8.6	7.6	7.4	6.6	5.3	**7.0**	**9.4**	**3.2**
18	4.7	4.7	4.9	4.1	4.4	4.7	5.6	5.5	5.3	4.6	7.0	8.3	9.5	8.8	8.5	8.1	8.1	7.5	8.0	7.6	8.0	6.2	4.2	3.7	**6.3**	**9.5**	**3.7**
19	3.3	3.7	3.7	3.0	2.7	3.8	4.3	4.5	4.3	4.5	6.0	6.6	8.6	9.3	9.0	6.7	6.1	6.4	5.0	4.7	4.7	4.5	4.3	4.3	**5.2**	**9.3**	**2.7**
20	2.7	2.3	2.5	2.3	2.6	3.0	3.6	4.5	6.6	6.9	6.3	7.1	8.5	8.7	8.5	8.3	6.9	8.1	6.7	5.5	4.7	3.9	4.5	3.6	**5.3**	**8.7**	**2.3**
21	2.4	2.8	2.5	2.6	2.5	2.5	2.7	3.5	3.5	4.5	6.7	6.9	7.5	8.9	9.1	8.2	7.1	6.2	7.1	7.5	6.5	3.9	4.7	4.5	**5.2**	**9.1**	**2.4**
22	5.1	5.3	3.8	2.5	3.3	2.1	3.9	3.9	3.4	4.3	6.0	6.5	6.8	7.0	7.7	8.0	7.8	6.8	6.8	5.3	5.2	5.4	4.7	5.7	**5.3**	**8.0**	**2.1**
23	6.2	5.7	5.0	5.0	4.4	3.5	7.9	8.2	9.1	8.2	9.4	9.0	10.3	8.9	9.9	10.1	10.0	7.5	7.1	5.9	8.6	7.9	7.4	5.3	**7.5**	**10.3**	**3.5**
24	5.8	5.6	4.8	8.1	6.8	6.5	8.6	11.1	11.7	11.9	12.4	13.1	13.7	14.6	12.8	11.4	12.5	12.5	8.7	6.7	3.6	3.5	3.2	3.1	**8.9**	**14.6**	**3.1**
25	3.8	3.3	3.5	3.8	3.5	3.5	3.8	3.5	4.1	6.0	7.3	7.0	7.5	7.6	8.2	9.5	6.4	5.7	8.0	6.8	6.9	6.0	6.1	6.0	**5.7**	**9.5**	**3.3**
26	6.5	6.3	5.5	4.3	4.3	3.9	4.2	4.9	4.6	6.3	5.5	7.1	8.0	9.2	8.4	8.0	5.9	4.4	6.4	6.2	6.4	16.1	11.5	4.1	**6.6**	**16.1**	**3.9**
27	4.2	4.1	3.5	4.6	2.1	2.7	3.5	6.4	5.7	5.1	5.5	5.8	7.9	8.6	6.1	6.6	6.2	5.4	4.7	4.1	6.5	7.5	11.0	7.8	**5.7**	**11.0**	**2.1**
28	7.5	6.9	7.0	6.1	6.4	7.0	6.6	7.7	8.4	7.5	7.1	6.8	6.7	8.3	10.3	12.2	9.4	9.0	8.6	9.8	10.7	9.7	8.6	8.1	**8.2**	**12.2**	**6.1**
29	6.4	5.1	3.9	3.8	3.3	4.2	6.3	6.4	7.1	7.5	7.2	8.1	8.7	8.8	10.2	9.9	9.6	10.1	9.2	7.7	7.9	5.8	9.5	5.6	**7.2**	**10.2**	**3.3**
30	10.2	8.0	7.4	4.1	2.0	3.3	3.0	2.3	5.0	4.5	4.6	5.7	6.1	7.3	6.1	6.9	9.1	6.3	8.0	8.2	8.6	11.4	9.5	12.3	**6.7**	**12.3**	**2.0**
MEAN	**4.5**	**4.0**	**3.8**	**4.0**	**3.9**	**3.9**	**4.7**	**5.6**	**5.9**	**6.3**	**7.1**	**7.6**	**8.2**	**8.6**	**8.6**	**8.6**	**7.9**	**7.6**	**7.3**	**6.4**	**6.0**	**5.9**	**5.6**	**4.6**	**6.1**		
MAX	**10.2**	**8.0**	**7.4**	**8.1**	**6.8**	**7.0**	**8.6**	**11.1**	**11.7**	**11.9**	**12.4**	**13.1**	**14.5**	**14.6**	**12.8**	**12.6**	**12.5**	**12.5**	**12.4**	**10.2**	**10.7**	**16.1**	**11.5**	**12.3**		**16.1**	
MIN	**1.2**	**1.9**	**1.3**	**1.7**	**2.0**	**1.8**	**2.2**	**2.3**	**2.5**	**2.9**	**4.1**	**5.4**	**5.3**	**5.2**	**4.2**	**4.1**	**3.5**	**4.4**	**4.1**	**3.2**	**3.0**	**2.7**	**2.5**	**1.9**			**1.2**

POSSIBLE NUMBER OF OBSERVATIONS = 720 ACTUAL NUMBER OF OBSERVATIONS = 720 DATA RECOVERY RATE = 100.0%

MONTHLY MEAN = 6.1 mps

MAXIMUM WIND GUST = 16.1 mps DATE OF OCCURRENCE = 6/26 AT 2200 MAXIMUM DAILY MEAN = 8.9 mps DATE OF OCCURRENCE = 6/24

MINIMUM WIND GUST = 1.2 mps DATE OF OCCURRENCE = 6/16 AT 0100 MINUMUM DAILY MEAN = 3.9 mps DATE OF OCCURRENCE = 6/3

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

Draft

APPENDIX C. HOURLY TEMPERATURE DATA FOR SECOND QUARTER 2024

Draft

CSX AQ5

TEMPERATURE in Deg C for APRIL, 2024

Hr Beg Hr End Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	10.8	10.8	10.7	10.6	10.2	10.0	10.0	9.8	9.8	9.7	10.1	10.4	10.9	10.9	11.6	11.5	11.6	11.6	11.4	11.3	11.2	11.0	10.7	10.5	**10.7**	**11.6**	**9.7**
2	10.4	10.1	9.8	9.6	9.5	9.2	9.3	9.1	8.9	9.1	9.3	9.2	9.4	9.5	9.3	9.4	9.5	9.3	9.0	8.8	8.9	9.0	8.9	8.7	**9.3**	**10.4**	**8.7**
3	8.5	8.5	8.4	8.3	8.4	8.6	8.7	8.8	9.0	9.0	9.2	9.3	9.5	9.4	9.4	9.2	8.9	8.7	8.7	8.6	8.6	8.1	7.9	7.6	**8.7**	**9.5**	**7.6**
4	7.2	6.6	5.8	5.1	4.4	4.3	4.5	6.0	8.1	9.5	10.1	10.7	9.7	9.1	9.5	8.3	6.4	7.6	7.7	7.3	6.8	6.3	6.4	6.2	**7.2**	**10.7**	**4.3**
5	5.9	5.7	5.4	4.8	4.4	4.0	5.2	7.2	9.1	9.8	10.1	10.8	10.3	10.0	10.2	10.0	9.3	8.8	8.1	7.6	7.0	6.7	6.4	5.7	**7.6**	**10.8**	**4.0**
6	5.2	4.8	4.2	3.9	3.9	4.1	5.0	6.9	8.2	9.3	10.6	11.1	11.7	12.1	12.3	12.3	12.6	12.9	12.5	11.7	11.3	11.0	10.8	10.1	**9.1**	**12.9**	**3.9**
7	9.2	8.4	7.8	7.5	7.0	6.7	7.1	8.8	10.9	12.5	13.7	14.6	15.2	15.9	16.5	17.1	17.5	17.4	16.4	14.7	12.6	12.1	11.6	9.8	**12.1**	**17.5**	**6.7**
8	8.3	7.8	7.0	7.1	6.6	5.8	7.1	8.9	9.1	11.1	12.2	12.6	13.9	15.0	15.3	17.1	17.7	16.9	16.2	15.1	13.8	13.3	12.9	11.5	**11.8**	**17.7**	**5.8**
9	10.6	9.8	9.4	9.2	9.3	9.2	10.3	11.9	13.6	14.2	15.2	17.9	18.8	19.7	20.2	20.4	20.3	18.9	19.7	19.0	17.4	16.3	16.6	15.7	**15.2**	**20.4**	**9.2**
10	15.0	14.5	14.0	13.9	13.6	13.8	13.9	13.9	14.9	16.6	20.1	21.9	21.7	21.4	19.5	20.0	20.5	20.3	18.9	18.7	17.9	17.1	16.5	16.6	**17.3**	**21.9**	**13.6**
11	16.5	17.1	17.3	16.3	16.5	16.4	16.3	16.7	17.5	18.7	19.4	19.4	19.7	20.3	20.1	19.2	18.6	18.9	18.8	19.1	19.2	18.6	18.5	18.6	**18.2**	**20.3**	**16.3**
12	18.3	18.5	17.9	17.4	17.2	17.1	17.4	15.0	15.5	14.4	16.1	18.0	19.0	19.2	19.0	19.2	19.2	18.7	18.1	17.1	15.3	15.1	15.1	14.9	**17.2**	**19.2**	**14.4**
13	14.6	13.5	13.4	12.6	11.9	11.8	12.0	12.8	13.8	14.7	14.8	15.9	16.6	17.3	17.8	18.1	18.4	18.2	17.5	16.7	15.8	14.2	13.0	12.6	**14.9**	**18.4**	**11.8**
14	11.7	9.8	10.4	9.8	8.9	10.4	11.5	13.7	16.4	19.4	20.9	22.3	23.4	24.6	25.8	26.6	27.4	27.2	26.3	25.7	24.9	24.0	22.1	19.7	**19.3**	**27.4**	**8.9**
15	18.8	18.2	18.4	17.8	17.1	16.4	17.1	19.0	21.6	20.0	21.7	21.5	25.4	28.8	29.1	29.2	29.3	28.7	25.8	22.0	21.0	21.3	19.8	22.1	**22.1**	**29.3**	**16.4**
16	20.8	18.0	16.7	15.5	14.8	14.2	14.9	16.7	18.1	18.0	18.0	18.7	18.8	19.1	19.6	19.9	21.0	20.9	20.3	19.0	18.1	17.1	16.6	16.3	**18.0**	**21.0**	**14.2**
17	15.4	15.1	15.2	15.1	14.8	14.5	14.6	15.1	17.0	17.7	15.4	16.5	17.7	18.0	19.1	19.6	19.2	18.5	17.9	17.9	16.4	15.3	14.7	14.9	**16.5**	**19.6**	**14.5**
18	15.0	14.9	15.0	15.3	15.4	15.3	14.9	14.3	13.7	14.0	14.3	15.1	15.7	16.0	17.1	17.6	17.7	17.1	16.0	14.8	13.1	12.5	12.0	11.6	**14.9**	**17.7**	**11.6**
19	11.1	10.6	10.2	9.9	9.7	9.7	9.6	9.5	9.4	9.8	10.2	10.6	11.1	11.3	11.9	12.2	12.2	12.4	12.5	12.6	12.7	13.0	13.0	12.9	**11.2**	**13.0**	**9.4**
20	13.1	13.1	12.8	12.4	12.4	12.5	12.6	12.9	13.4	15.0	16.7	18.7	20.0	20.6	21.4	21.9	21.9	21.5	20.1	18.3	17.2	15.9	14.1	12.7	**16.3**	**21.9**	**12.4**
21	11.7	11.0	9.8	8.8	8.1	7.9	8.0	8.3	8.7	9.0	9.4	10.0	10.6	11.2	11.9	12.1	12.1	12.2	11.7	11.1	10.7	10.3	9.1	8.8	**10.1**	**12.2**	**7.9**
22	8.3	8.1	7.5	6.3	5.4	4.7	6.1	8.6	10.5	11.9	13.0	14.0	15.1	15.9	16.6	16.9	17.3	17.3	16.2	14.1	12.7	11.7	10.3	9.5	**11.6**	**17.3**	**4.7**
23	8.3	7.6	6.8	6.2	6.4	6.4	8.7	11.0	12.5	13.7	14.1	16.0	18.3	18.9	19.0	19.2	18.7	17.7	16.6	15.4	14.6	14.4	14.1	14.3	**13.3**	**19.2**	**6.2**
24	14.4	14.3	14.0	13.7	13.4	14.8	15.9	16.4	17.2	19.0	20.0	21.1	21.3	21.7	21.7	21.7	21.1	21.0	20.4	19.1	17.8	16.7	15.5	14.9	**17.8**	**21.7**	**13.4**
25	13.9	13.0	12.2	11.9	11.2	10.5	9.8	9.9	10.5	11.2	12.1	12.8	12.5	13.0	13.4	13.6	13.6	13.6	13.5	13.3	11.7	10.2	9.7	9.2	**11.9**	**13.9**	**9.2**
26	9.0	7.8	7.5	7.6	7.6	7.7	8.2	9.1	10.2	10.8	11.1	12.5	14.1	15.0	15.7	15.9	16.2	15.9	15.3	14.9	13.7	12.9	12.4	12.0	**11.8**	**16.2**	**7.5**
27	11.7	11.4	11.2	11.3	11.4	11.5	11.8	12.0	12.1	12.0	12.3	12.4	12.3	12.1	12.4	12.8	13.3	13.6	14.4	14.3	14.2	14.1	14.0	13.5	**12.6**	**14.4**	**11.2**
28	13.6	13.5	13.6	12.6	12.5	12.7	13.1	13.7	14.7	16.2	17.1	17.6	18.3	19.4	21.0	22.5	24.0	24.5	25.3	23.6	22.6	22.0	21.3	20.5	**18.2**	**25.3**	**12.5**
29	21.2	21.2	19.5	18.0	17.9	17.4	19.4	22.3	21.0	22.0	25.5	25.6	25.3	27.7	28.0	27.9	27.3	28.6	27.7	26.6	25.3	24.5	24.0	23.3	**23.6**	**28.6**	**17.4**
30	22.6	22.0	21.4	20.6	19.9	18.7	19.6	21.2	22.3	24.1	25.9	27.7	27.8	28.7	30.2	29.3	28.9	28.0	27.0	26.0	24.3	22.5	21.4	18.9	**24.1**	**30.2**	**18.7**
MEAN	**12.7**	**12.2**	**11.8**	**11.3**	**11.0**	**10.9**	**11.4**	**12.3**	**13.3**	**14.1**	**15.0**	**15.8**	**16.5**	**17.1**	**17.5**	**17.7**	**17.7**	**17.6**	**17.0**	**16.1**	**15.2**	**14.6**	**14.0**	**13.5**	**14.4**		
MAX	**22.6**	**22.0**	**21.4**	**20.6**	**19.9**	**18.7**	**19.6**	**22.3**	**22.3**	**24.1**	**25.9**	**27.7**	**27.8**	**28.8**	**30.2**	**29.3**	**29.3**	**28.7**	**27.7**	**26.6**	**25.3**	**24.5**	**24.0**	**23.3**		**30.2**	
MIN	**5.2**	**4.8**	**4.2**	**3.9**	**3.9**	**4.0**	**4.5**	**6.0**	**8.1**	**9.0**	**9.2**	**9.2**	**9.4**	**9.1**	**9.3**	**8.3**	**6.4**	**7.6**	**7.7**	**7.3**	**6.8**	**6.3**	**6.4**	**5.7**			**3.9**

POSSIBLE NUMBER OF OBSERVATIONS = 720 ACTUAL NUMBER OF OBSERVATIONS = 720 DATA RECOVERY RATE = 100.0%

MONTHLY MEAN = 14.4 Deg C

MAXIMUM TEMPERATURE = 30.2 Deg C DATE OF OCCURRENCE = 4/30 AT 1500 MAXIMUM DAILY MEAN = 24.1 Deg C DATE OF OCCURRENCE = 4/30

MINIMUM TEMPERATURE = 3.9 Deg C DATE OF OCCURRENCE = 4/6 AT 0400 MINUMUM DAILY MEAN = 7.2 Deg C DATE OF OCCURRENCE = 4/4

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

Draft

CSX AQ5

TEMPERATURE in Deg C for MAY, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	18.9	18.4	18.1	18.1	18.1	18.1	18.7	20.2	21.9	23.4	24.6	25.1	25.8	26.4	27.0	27.4	27.6	27.5	26.8	24.0	22.4	21.4	20.2	19.2	**22.5**	**27.6**	**18.1**
2	18.7	18.0	17.6	16.6	16.0	16.0	17.6	19.7	21.0	23.6	24.8	27.3	30.2	31.1	31.4	31.7	31.8	31.5	30.7	28.7	25.8	23.6	22.1	21.2	**24.0**	**31.8**	**16.0**
3	21.3	20.7	21.1	20.9	20.0	18.5	17.8	17.6	17.9	18.8	19.2	18.9	18.2	17.3	16.7	16.6	16.3	15.6	14.7	13.5	12.9	12.4	12.2	12.3	**17.1**	**21.3**	**12.2**
4	12.1	11.8	11.6	11.6	11.6	11.8	11.8	11.7	11.8	11.7	11.9	12.1	12.1	12.3	11.9	12.0	11.8	11.7	12.0	12.1	12.1	12.0	12.3	12.4	**11.9**	**12.4**	**11.6**
5	12.3	12.4	12.3	12.4	12.7	13.0	13.3	13.9	14.4	14.9	15.0	15.4	15.9	16.4	16.9	17.9	19.6	19.5	18.8	18.6	18.5	18.2	18.2	18.2	**15.8**	**19.6**	**12.3**
6	18.2	18.1	18.0	17.9	17.9	18.0	18.1	18.2	18.2	18.4	18.8	19.3	20.1	20.4	20.4	20.4	20.5	20.2	20.2	20.3	20.1	19.9	19.5	19.3	**19.2**	**20.5**	**17.9**
7	19.0	18.7	18.6	18.7	18.5	18.7	18.8	19.1	20.0	21.6	21.2	22.4	22.6	23.2	23.5	23.3	22.5	22.8	22.2	21.4	21.5	21.2	20.7	20.0	**20.8**	**23.5**	**18.5**
8	20.0	19.4	18.8	19.1	19.0	19.0	19.5	20.7	21.9	24.8	26.4	28.4	29.0	29.7	29.6	29.4	28.9	28.4	27.5	26.4	25.7	24.5	24.0	22.5	**24.3**	**29.7**	**18.8**
9	21.0	19.4	18.8	17.8	18.4	19.0	20.7	21.3	20.9	20.6	20.7	20.5	20.5	20.7	21.1	21.0	20.3	18.9	18.1	18.1	18.2	18.2	17.5	15.4	**19.5**	**21.3**	**15.4**
10	14.8	15.0	14.9	14.8	14.5	14.6	14.1	13.5	12.9	12.2	12.4	12.3	12.0	11.9	11.7	11.7	11.5	11.0	10.8	10.5	10.6	10.7	10.6	10.8	**12.5**	**15.0**	**10.5**
11	10.3	10.0	10.0	10.1	9.8	9.4	10.9	12.2	13.5	14.0	14.8	15.5	15.7	16.1	16.4	16.6	16.7	16.3	15.3	13.1	13.4	13.5	13.2	11.9	**13.3**	**16.7**	**9.4**
12	11.6	10.6	9.4	9.4	9.6	10.1	10.5	11.8	13.3	15.6	16.0	14.3	16.3	14.9	14.7	14.4	14.7	14.3	14.5	14.5	14.3	14.4	13.9	13.6	**13.2**	**16.3**	**9.4**
13	13.4	13.0	12.8	13.2	13.4	13.3	13.4	14.5	15.6	17.3	19.0	18.9	20.3	22.2	21.6	21.7	21.4	20.9	20.2	19.1	18.3	17.8	17.5	17.3	**17.3**	**22.2**	**12.8**
14	16.5	15.4	14.6	14.8	14.7	15.1	15.8	17.3	18.4	18.7	19.2	19.2	19.5	19.0	18.1	18.0	18.3	18.2	18.3	18.4	18.3	17.9	17.6	17.4	**17.4**	**19.5**	**14.6**
15	17.4	17.2	16.9	16.3	16.3	16.1	16.1	15.8	16.1	16.4	16.8	17.3	17.6	17.4	18.7	18.8	18.7	17.9	18.2	18.2	17.6	17.0	16.2	15.8	**17.1**	**18.8**	**15.8**
16	15.4	14.9	14.7	14.7	14.5	15.0	17.1	18.9	20.8	22.1	23.1	24.0	23.9	23.3	24.2	24.1	24.1	23.8	22.9	21.8	21.0	19.9	18.3	17.8	**20.0**	**24.2**	**14.5**
17	17.9	17.9	18.1	18.0	17.9	17.5	17.7	17.8	18.0	18.5	18.5	18.4	18.6	18.8	18.9	18.9	18.8	18.7	18.6	18.6	18.3	18.1	18.0	17.8	**18.3**	**18.9**	**17.5**
18	17.5	17.2	17.2	17.1	16.5	16.5	16.2	16.2	16.1	16.6	17.6	17.9	18.3	18.2	18.2	18.0	17.7	17.5	17.6	17.5	17.4	17.3	17.4	17.4	**17.3**	**18.3**	**16.1**
19	17.3	17.0	16.6	16.6	16.6	16.7	16.8	17.1	17.9	18.7	19.5	20.3	20.0	20.8	21.2	21.4	21.9	22.4	22.3	20.8	20.2	19.3	18.7	18.3	**19.1**	**22.4**	**16.6**
20	17.9	17.4	16.9	16.6	16.3	15.9	15.9	16.4	16.9	17.0	17.7	18.9	19.7	20.4	20.2	20.2	20.5	21.2	21.6	21.0	19.8	19.3	18.5	17.8	**18.5**	**21.6**	**15.9**
21	17.5	17.4	16.7	16.0	15.6	16.0	18.2	18.8	20.6	21.4	21.7	22.7	24.0	25.3	26.2	26.2	26.1	25.7	24.9	23.6	22.4	21.4	20.5	19.8	**21.2**	**26.2**	**15.6**
22	18.9	18.4	18.0	17.4	17.3	17.8	18.5	20.1	22.4	23.2	23.5	24.1	26.0	28.1	28.4	28.2	27.4	26.3	26.1	25.3	24.6	23.7	23.1	22.8	**22.9**	**28.4**	**17.3**
23	22.7	22.4	22.2	21.8	21.5	21.7	22.0	22.8	24.6	25.1	24.2	24.3	25.3	26.5	25.4	25.6	25.4	25.8	25.0	24.2	23.3	22.9	22.5	22.1	**23.7**	**26.5**	**21.5**
24	21.5	21.2	21.0	20.8	20.6	21.2	21.6	23.9	25.7	26.5	25.5	25.2	26.0	26.2	27.5	27.7	27.7	27.2	27.1	26.4	24.9	24.0	23.4	22.5	**24.4**	**27.7**	**20.6**
25	22.6	21.1	20.4	20.1	19.9	20.1	21.9	22.9	23.7	25.4	26.6	26.4	27.3	28.6	29.0	29.0	28.8	28.1	27.2	26.1	25.0	22.4	21.7	21.5	**24.4**	**29.0**	**19.9**
26	21.5	21.0	20.9	20.5	20.2	20.2	21.9	23.8	24.6	25.3	25.5	25.9	26.3	26.9	28.4	28.3	27.6	27.5	26.6	25.7	25.4	24.9	24.4	24.1	**24.5**	**28.4**	**20.2**
27	23.6	23.3	22.9	22.6	22.1	21.8	22.5	23.4	24.2	24.7	24.2	24.1	23.9	23.8	24.4	24.5	24.7	25.1	24.3	19.6	19.4	19.4	19.5	19.1	**22.8**	**25.1**	**19.1**
28	18.7	18.4	18.4	19.6	19.6	19.4	20.2	21.3	22.7	24.0	25.3	26.3	26.7	27.3	27.7	27.6	27.1	26.5	24.8	23.5	23.2	22.0	21.0	20.0	**23.0**	**27.7**	**18.4**
29	19.2	18.6	17.7	16.7	16.3	16.6	18.0	19.6	21.2	22.4	23.5	23.2	21.5	19.9	21.1	19.0	17.7	17.7	17.7	17.7	17.3	16.7	15.9	15.3	**18.8**	**23.5**	**15.3**
30	14.9	14.8	14.6	14.7	14.7	14.8	16.3	17.3	18.7	19.8	21.0	21.6	22.0	22.3	22.6	23.5	23.1	22.7	22.2	21.3	20.2	19.7	18.2	17.5	**19.1**	**23.5**	**14.6**
31	17.5	16.5	15.9	15.3	14.8	14.8	15.7	16.8	18.1	19.5	21.0	21.7	22.4	23.0	23.7	24.2	24.4	24.3	23.9	23.0	20.9	18.7	17.7	16.8	**19.6**	**24.4**	**14.8**
MEAN	**17.7**	**17.3**	**17.0**	**16.8**	**16.6**	**16.7**	**17.3**	**18.2**	**19.2**	**20.1**	**20.6**	**21.0**	**21.5**	**21.9**	**22.2**	**22.2**	**22.1**	**21.8**	**21.3**	**20.4**	**19.8**	**19.1**	**18.5**	**18.0**	**19.5**		
MAX	**23.6**	**23.3**	**22.9**	**22.6**	**22.1**	**21.8**	**22.5**	**23.9**	**25.7**	**26.5**	**26.6**	**28.4**	**30.2**	**31.1**	**31.4**	**31.7**	**31.8**	**31.5**	**30.7**	**28.7**	**25.8**	**24.9**	**24.4**	**24.1**		**31.8**	
MIN	**10.3**	**10.0**	**9.4**	**9.4**	**9.6**	**9.4**	**10.5**	**11.7**	**11.8**	**11.7**	**11.9**	**12.1**	**12.0**	**11.9**	**11.7**	**11.7**	**11.5**	**11.0**	**10.8**	**10.5**	**10.6**	**10.7**	**10.6**	**10.8**			**9.4**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 744 DATA RECOVERY RATE = 100.0%

MONTHLY MEAN = 19.5 Deg C

MAXIMUM TEMPERATURE = 31.8 Deg C DATE OF OCCURRENCE = 5/2 AT 1700 MAXIMUM DAILY MEAN = 24.5 Deg C DATE OF OCCURRENCE = 5/26

MINIMUM TEMPERATURE = 9.4 Deg C DATE OF OCCURRENCE = 5/11 AT 0600 MINUMUM DAILY MEAN = 11.9 Deg C DATE OF OCCURRENCE = 5/4

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

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CSX AQ5

TEMPERATURE in Deg C for JUNE, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	17.9	17.3	16.1	15.2	14.5	15.2	17.8	20.0	21.9	22.5	23.6	23.9	24.0	24.4	24.3	24.5	24.8	25.1	25.1	24.1	22.5	21.0	20.7	19.7	**21.1**	**25.1**	**14.5**
2	18.5	17.9	17.3	16.8	16.4	16.4	18.3	19.9	21.6	22.8	24.6	26.5	27.6	27.5	27.5	27.8	27.0	26.2	25.8	25.3	24.9	24.4	23.7	23.2	**22.8**	**27.8**	**16.4**
3	22.9	22.3	22.1	21.8	21.5	21.5	22.3	23.8	24.6	25.4	26.2	27.4	27.4	26.3	26.1	27.3	28.6	27.6	26.5	26.6	25.5	24.7	23.9	23.2	**24.8**	**28.6**	**21.5**
4	22.8	21.9	21.1	21.2	20.8	21.0	23.4	24.6	24.0	24.8	26.2	26.9	27.7	27.8	27.8	26.2	25.4	25.5	25.2	24.0	23.6	23.5	23.4	23.1	**24.2**	**27.8**	**20.8**
5	22.6	22.4	22.3	22.3	22.1	22.0	22.2	22.5	22.5	22.5	22.8	23.3	23.8	24.4	25.1	24.3	23.3	23.3	23.4	23.4	23.3	23.3	23.4	23.2	**23.1**	**25.1**	**22.0**
6	23.2	23.3	23.5	23.3	22.8	23.3	23.9	24.9	25.2	26.2	27.8	27.9	28.2	28.5	29.1	28.0	26.3	27.8	27.7	26.7	25.7	25.2	24.7	24.6	**25.7**	**29.1**	**22.8**
7	24.0	23.6	23.1	22.6	22.0	22.0	22.8	24.2	25.7	27.1	27.9	28.2	28.7	28.9	29.0	28.9	28.7	28.0	26.6	25.4	24.3	23.5	22.3	21.0	**25.4**	**29.0**	**21.0**
8	20.2	19.7	19.2	19.5	19.4	19.2	20.4	21.7	22.9	24.1	24.9	25.6	26.4	27.0	27.7	28.1	28.1	28.2	28.1	26.4	24.9	23.6	23.4	22.1	**23.8**	**28.2**	**19.2**
9	21.3	20.4	20.3	20.6	20.9	21.5	22.2	22.8	24.7	26.4	26.3	26.1	26.9	27.4	27.5	27.0	26.8	26.6	25.9	24.9	23.3	22.5	21.5	21.5	**24.0**	**27.5**	**20.3**
10	20.8	20.2	19.4	18.8	19.0	19.4	20.7	21.9	22.9	23.9	24.4	24.9	25.6	25.8	26.0	26.3	26.1	25.1	24.1	23.6	22.6	22.4	21.5	20.8	**22.8**	**26.3**	**18.8**
11	19.8	19.6	19.3	18.6	18.1	18.0	18.5	19.0	19.2	19.8	21.1	21.9	22.3	22.3	22.1	22.3	22.3	22.4	21.8	21.5	20.9	20.2	19.5	18.7	**20.4**	**22.4**	**18.0**
12	17.6	17.1	16.5	16.1	15.1	15.9	17.7	19.7	21.5	22.9	23.8	25.0	25.6	26.0	24.7	24.6	24.9	24.8	24.7	24.0	23.1	22.0	21.3	21.3	**21.5**	**26.0**	**15.1**
13	21.2	20.4	19.8	19.1	18.9	19.7	20.7	21.6	23.6	25.0	25.1	26.2	27.7	28.5	29.0	29.2	28.7	27.9	26.9	26.0	25.3	25.0	25.0	24.8	**24.4**	**29.2**	**18.9**
14	23.2	23.1	22.8	22.1	21.5	21.5	23.0	24.5	26.3	28.0	27.1	27.9	28.4	28.1	28.9	28.9	28.8	28.9	28.5	26.2	24.2	22.4	22.0	22.0	**25.3**	**28.9**	**21.5**
15	21.4	21.0	20.3	20.3	20.9	20.9	21.5	22.6	24.0	25.3	26.1	26.6	27.1	27.8	28.1	28.5	28.5	28.3	27.8	26.5	25.3	24.7	24.1	22.9	**24.6**	**28.5**	**20.3**
16	21.2	19.6	18.9	18.4	18.5	19.9	20.9	21.9	22.5	23.5	23.8	24.8	25.5	26.5	26.9	27.1	27.2	27.4	27.1	26.4	25.2	24.6	24.3	23.5	**23.6**	**27.4**	**18.4**
17	23.2	22.6	22.4	22.0	21.5	21.6	22.2	23.6	25.0	26.3	26.9	28.3	29.3	29.2	29.5	29.3	28.9	28.5	27.8	26.8	25.9	25.3	24.8	24.3	**25.6**	**29.5**	**21.5**
18	24.2	23.9	23.6	23.5	23.2	23.2	23.7	25.0	26.3	26.9	26.9	26.7	27.8	29.5	30.2	30.5	30.2	30.3	29.3	27.9	26.8	25.8	25.2	24.8	**26.5**	**30.5**	**23.2**
19	24.3	23.3	22.9	22.5	21.9	22.2	23.2	24.7	25.4	26.2	26.5	26.9	27.2	28.0	29.1	29.8	30.0	29.8	29.1	27.9	26.4	25.3	24.9	24.2	**25.9**	**30.0**	**21.9**
20	23.4	22.6	22.4	22.1	21.6	21.8	23.1	24.6	26.0	27.4	27.3	27.5	27.9	28.8	29.2	29.4	29.5	29.5	29.2	27.9	26.8	25.8	24.9	24.0	**25.9**	**29.5**	**21.6**
21	23.3	23.0	22.7	22.2	21.5	21.8	23.6	25.1	27.6	29.4	29.2	28.7	29.1	29.5	30.0	31.1	31.9	31.6	30.7	28.8	27.7	27.3	26.7	26.3	**27.0**	**31.9**	**21.5**
22	25.8	25.3	24.8	24.3	24.2	24.2	25.6	27.4	29.5	30.4	29.8	30.2	31.1	32.7	33.7	34.8	34.9	34.2	32.8	31.4	30.1	29.3	28.9	28.7	**29.3**	**34.9**	**24.2**
23	28.6	28.1	27.4	27.1	27.1	27.2	28.2	28.6	29.8	32.2	34.2	35.0	34.7	34.4	34.7	34.7	34.4	33.7	32.5	31.7	31.9	30.9	30.1	29.5	**31.1**	**35.0**	**27.1**
24	29.4	29.2	28.6	28.1	27.7	26.9	27.0	27.1	27.7	28.4	29.1	29.3	29.5	29.8	29.8	30.0	29.9	29.8	29.3	28.6	27.3	25.7	24.5	23.6	**28.2**	**30.0**	**23.6**
25	23.7	22.9	22.2	21.5	20.6	21.1	23.0	25.0	27.4	28.6	29.6	30.6	31.0	31.7	32.3	32.0	31.9	31.3	29.4	28.2	27.5	26.9	26.4	25.7	**27.1**	**32.3**	**20.6**
26	25.4	25.2	24.9	24.4	24.2	24.6	26.2	27.7	29.1	30.6	30.9	30.1	31.6	35.2	35.1	34.9	34.9	33.8	33.2	31.7	30.1	26.4	22.9	22.5	**29.0**	**35.2**	**22.5**
27	22.4	22.3	22.2	22.2	22.0	21.9	22.2	23.6	24.5	24.3	26.3	28.5	29.1	30.6	30.4	28.6	29.8	28.7	29.5	28.3	27.3	28.1	26.5	25.1	**26.0**	**30.6**	**21.9**
28	23.9	22.8	21.9	21.5	21.1	20.9	21.7	22.0	22.5	23.3	23.6	23.8	24.7	25.4	25.9	26.2	26.0	26.1	25.9	25.2	24.4	23.3	22.5	22.0	**23.6**	**26.2**	**20.9**
29	21.7	21.6	21.8	21.8	22.5	23.0	23.7	24.6	25.8	26.8	27.4	28.3	29.1	29.8	30.2	30.4	30.2	29.9	29.4	28.6	27.9	27.7	26.5	25.4	**26.4**	**30.4**	**21.6**
30	25.4	24.8	25.0	25.1	25.1	25.2	25.4	26.0	26.8	28.3	29.7	30.8	32.0	32.9	32.5	34.4	33.0	29.6	28.3	27.9	29.3	28.3	26.7	24.8	**28.2**	**34.4**	**24.8**
MEAN	**22.8**	**22.2**	**21.8**	**21.5**	**21.2**	**21.4**	**22.5**	**23.7**	**24.9**	**26.0**	**26.6**	**27.3**	**27.9**	**28.5**	**28.7**	**28.8**	**28.7**	**28.3**	**27.7**	**26.7**	**25.8**	**25.0**	**24.2**	**23.6**	**25.2**		
MAX	**29.4**	**29.2**	**28.6**	**28.1**	**27.7**	**27.2**	**28.2**	**28.6**	**29.8**	**32.2**	**34.2**	**35.0**	**34.7**	**35.2**	**35.1**	**34.9**	**34.9**	**34.2**	**33.2**	**31.7**	**31.9**	**30.9**	**30.1**	**29.5**		**35.2**	
MIN	**17.6**	**17.1**	**16.1**	**15.2**	**14.5**	**15.2**	**17.7**	**19.0**	**19.2**	**19.8**	**21.1**	**21.9**	**22.3**	**22.3**	**22.1**	**22.3**	**22.3**	**22.4**	**21.8**	**21.5**	**20.9**	**20.2**	**19.5**	**18.7**			**14.5**

POSSIBLE NUMBER OF OBSERVATIONS = 720 ACTUAL NUMBER OF OBSERVATIONS = 720 DATA RECOVERY RATE = 100.0%

MONTHLY MEAN = 25.2 Deg C

MAXIMUM TEMPERATURE = 35.2 Deg C DATE OF OCCURRENCE = 6/26 AT 1400 MAXIMUM DAILY MEAN = 31.1 Deg C DATE OF OCCURRENCE = 6/23

MINIMUM TEMPERATURE = 14.5 Deg C DATE OF OCCURRENCE = 6/1 AT 0500 MINUMUM DAILY MEAN = 20.4 Deg C DATE OF OCCURRENCE = 6/11

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

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APPENDIX D. HOURLY RELATIVE HUMIDITY DATA FOR SECOND QUARTER 2024

Draft

CSX AQ5

RELATIVE HUMIDITY in % for APRIL, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	87	89	90	89	92	95	96	96	97	96	96	93	90	89	86	87	87	88	89	90	91	91	92	93	**91**	**97**	**86**
2	91	92	93	93	94	95	95	96	95	93	94	97	98	98	97	94	92	94	96	97	95	93	93	93	**94**	**98**	**91**
3	95	96	96	97	97	97	97	97	97	97	95	96	97	97	97	95	94	94	96	94	90	90	88	89	**95**	**97**	**88**
4	91	90	92	94	97	97	97	94	85	77	73	67	76	79	74	78	84	75	75	74	77	78	76	75	**82**	**97**	**67**
5	75	75	76	78	80	83	78	73	66	62	59	56	60	62	55	51	48	46	47	49	52	53	53	56	**62**	**83**	**46**
6	59	62	65	67	68	68	66	62	58	55	50	47	45	43	43	43	42	42	43	45	47	49	52	54	**53**	**68**	**42**
7	56	59	61	62	63	62	58	52	46	42	37	36	35	34	33	32	31	31	33	41	52	49	49	56	**46**	**63**	**31**
8	64	65	71	77	84	86	83	79	81	69	57	64	60	58	55	44	44	44	47	54	67	69	73	77	**66**	**86**	**44**
9	79	83	85	85	86	86	83	79	66	69	66	51	48	46	51	53	55	61	58	59	67	73	72	76	**68**	**86**	**46**
10	79	83	86	87	88	88	88	88	85	80	65	58	59	60	68	65	64	64	69	70	74	78	82	83	**75**	**88**	**58**
11	84	84	84	87	88	87	87	84	82	78	76	76	75	74	76	82	87	84	83	82	83	86	86	85	**83**	**88**	**74**
12	87	87	85	86	85	85	85	84	70	70	60	47	41	40	41	40	38	38	41	43	53	51	50	51	**61**	**87**	**38**
13	53	61	58	49	52	53	54	51	44	41	42	39	34	33	31	30	29	28	29	30	32	37	42	42	**41**	**61**	**28**
14	49	56	51	53	59	53	52	47	40	32	30	29	28	28	28	29	29	30	32	34	36	39	48	58	**40**	**59**	**28**
15	62	64	64	68	71	75	73	65	56	65	57	57	43	34	34	33	33	37	44	57	61	62	68	39	**55**	**75**	**33**
16	34	40	42	47	48	51	49	43	34	42	43	40	40	39	42	42	37	35	35	42	45	48	55	58	**43**	**58**	**34**
17	64	61	55	55	56	58	57	57	56	61	83	78	73	74	71	72	76	80	83	83	86	87	90	92	**71**	**92**	**55**
18	92	93	93	93	92	93	94	94	93	91	88	86	85	84	79	76	73	73	74	76	80	80	80	81	**85**	**94**	**73**
19	82	83	84	85	85	85	85	86	87	87	87	85	82	83	84	85	87	86	86	86	87	87	86	86	**85**	**87**	**82**
20	86	86	88	93	94	94	94	94	92	80	62	44	32	27	24	23	22	21	25	29	30	32	35	37	**56**	**94**	**21**
21	38	39	44	46	47	43	41	42	40	38	40	40	39	40	38	37	38	37	38	40	41	42	47	47	**41**	**47**	**37**
22	48	48	50	56	58	61	55	47	40	37	35	33	31	30	28	26	26	25	36	45	48	51	56	59	**43**	**61**	**25**
23	65	69	74	76	74	77	70	64	55	56	63	57	41	35	35	35	38	39	45	59	65	66	67	62	**58**	**77**	**35**
24	60	60	62	64	68	61	57	55	53	49	43	36	34	34	33	33	35	35	33	38	45	50	56	59	**48**	**68**	**33**
25	63	66	68	67	65	62	61	60	58	57	57	59	61	60	60	60	61	62	63	64	74	77	75	76	**64**	**77**	**57**
26	77	78	80	82	83	83	80	79	69	58	57	49	42	37	37	33	37	42	48	46	53	53	54	51	**59**	**83**	**33**
27	51	54	58	62	63	59	57	60	65	69	69	71	74	79	80	79	80	81	76	75	75	77	77	79	**70**	**81**	**51**
28	82	85	86	88	88	86	85	84	85	81	80	80	78	76	74	70	66	61	57	62	65	66	68	73	**76**	**88**	**57**
29	71	71	77	83	84	86	79	69	78	76	62	60	59	48	49	51	53	46	48	53	59	64	67	69	**65**	**86**	**46**
30	68	65	63	63	65	69	68	63	60	54	49	46	48	45	39	42	42	44	48	53	59	64	71	90	**57**	**90**	**39**
MEAN	**70**	**71**	**73**	**74**	**76**	**76**	**74**	**71**	**68**	**65**	**62**	**59**	**57**	**56**	**55**	**54**	**54**	**54**	**56**	**59**	**63**	**65**	**67**	**68**	**64**		
MAX	**95**	**96**	**96**	**97**	**97**	**97**	**97**	**97**	**97**	**97**	**96**	**97**	**98**	**98**	**97**	**95**	**94**	**94**	**96**	**97**	**95**	**93**	**93**	**93**		**98**	
MIN	**34**	**39**	**42**	**46**	**47**	**43**	**41**	**42**	**34**	**32**	**30**	**29**	**28**	**27**	**24**	**23**	**22**	**21**	**25**	**29**	**30**	**32**	**35**	**37**			**21**

POSSIBLE NUMBER OF OBSERVATIONS = 720 ACTUAL NUMBER OF OBSERVATIONS = 720 DATA RECOVERY RATE = 100.0%

MONTHLY MEAN = 64 %

MAXIMUM RELATIVE HUMIDITY = 98 % DATE OF OCCURRENCE = 4/2 AT 1400 MAXIMUM DAILY MEAN = 95 % DATE OF OCCURRENCE = 4/3

MINIMUM RELATIVE HUMIDITY = 21 % DATE OF OCCURRENCE = 4/20 AT 1800 MINUMUM DAILY MEAN = 40 % DATE OF OCCURRENCE = 4/14

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

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RELATIVE HUMIDITY in % for MAY, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	89	92	93	93	91	89	85	77	69	59	47	45	42	41	38	36	36	34	36	55	62	66	71	77	**63**	**93**	**34**
2	79	82	85	88	89	89	84	80	78	68	66	53	39	35	34	32	32	34	36	41	53	69	80	82	**63**	**89**	**32**
3	80	81	66	56	55	63	70	72	71	67	65	68	72	75	76	75	76	79	80	80	81	82	82	83	**73**	**83**	**55**
4	85	88	89	88	88	90	89	89	89	88	88	88	91	91	94	94	93	92	89	89	89	91	89	88	**90**	**94**	**85**
5	88	89	92	94	95	96	96	96	96	96	96	97	97	96	96	95	85	86	91	93	93	95	96	96	**94**	**97**	**85**
6	96	97	97	98	98	99	99	99	99	99	99	98	92	90	89	89	88	89	89	89	91	92	93	94	**94**	**99**	**88**
7	95	96	97	97	97	97	96	96	93	87	88	82	79	78	75	74	79	83	87	90	89	88	88	90	**88**	**97**	**74**
8	89	92	94	95	95	95	95	91	88	77	70	52	45	42	41	42	45	49	52	56	59	63	58	59	**69**	**95**	**41**
9	62	68	70	73	69	68	52	48	52	54	57	62	62	61	60	60	61	70	76	76	76	77	74	82	**65**	**82**	**48**
10	86	84	83	85	85	85	87	87	88	92	92	91	92	93	93	92	92	92	93	92	90	88	86	78	**88**	**93**	**78**
11	83	83	80	79	81	86	78	68	61	61	58	48	51	49	50	51	52	51	60	79	81	85	82	80	**68**	**86**	**48**
12	82	85	90	93	94	93	92	88	81	70	63	76	67	78	83	85	82	84	83	84	84	86	89	91	**83**	**94**	**63**
13	91	92	91	89	89	91	92	88	81	73	63	70	63	51	60	61	62	64	64	68	76	78	78	77	**75**	**92**	**51**
14	79	82	86	86	87	87	86	83	80	79	78	82	81	85	92	93	93	92	94	91	91	91	92	93	**87**	**94**	**78**
15	89	88	88	91	91	92	91	93	94	93	92	90	88	88	81	79	81	85	82	78	80	83	86	86	**87**	**94**	**78**
16	87	89	90	90	90	90	83	75	66	60	57	54	55	57	55	55	56	57	62	66	68	72	78	80	**70**	**90**	**54**
17	80	80	79	79	80	81	80	80	78	76	75	75	74	74	74	75	76	78	79	80	83	82	83	83	**78**	**83**	**74**
18	83	85	85	86	87	88	90	92	92	92	88	82	80	80	81	83	85	87	88	90	91	91	91	91	**87**	**92**	**80**
19	92	93	95	96	95	95	95	94	90	87	83	79	79	77	76	76	76	73	74	83	82	85	87	89	**85**	**96**	**73**
20	88	86	86	87	88	90	89	88	86	85	84	81	80	79	80	81	81	81	76	77	81	83	85	88	**84**	**90**	**76**
21	89	91	92	94	94	94	88	87	84	83	84	81	74	65	57	55	56	55	55	59	64	69	73	75	**76**	**94**	**55**
22	79	81	84	86	88	88	87	84	76	76	78	77	72	65	63	63	64	63	63	67	72	76	80	82	**75**	**88**	**63**
23	81	82	83	85	86	86	87	86	76	70	75	74	68	61	68	67	69	66	68	70	74	78	81	83	**76**	**87**	**61**
24	87	87	87	87	87	85	84	68	54	48	58	57	50	55	43	45	46	53	54	55	62	67	69	72	**65**	**87**	**43**
25	74	81	85	87	87	87	81	80	78	73	68	71	60	47	45	42	40	45	49	56	65	77	82	84	**68**	**87**	**40**
26	86	88	87	88	89	88	82	73	71	69	70	70	70	67	53	59	66	65	70	74	77	81	83	85	**75**	**89**	**53**
27	86	86	87	88	89	88	83	76	75	75	80	82	82	84	83	82	83	82	75	88	91	94	94	94	**84**	**94**	**75**
28	95	95	94	84	81	77	70	66	60	56	52	46	44	40	37	38	41	45	49	55	56	56	59	62	**61**	**95**	**37**
29	65	67	71	76	78	78	72	66	58	54	51	56	66	73	70	79	84	83	87	84	86	85	84	83	**73**	**87**	**51**
30	82	83	84	84	83	82	71	61	52	45	41	39	38	37	37	34	34	35	34	35	41	44	50	52	**53**	**84**	**34**
31	49	50	47	47	49	49	46	45	44	41	36	34	33	32	30	28	27	27	28	31	40	49	58	63	**41**	**63**	**27**
MEAN	**83**	**85**	**85**	**85**	**86**	**86**	**83**	**80**	**76**	**73**	**71**	**70**	**67**	**66**	**65**	**65**	**66**	**67**	**68**	**72**	**75**	**78**	**80**	**81**	**76**		
MAX	**96**	**97**	**97**	**98**	**98**	**99**	**99**	**99**	**99**	**99**	**99**	**98**	**97**	**96**	**96**	**95**	**93**	**92**	**94**	**93**	**93**	**95**	**96**	**96**		**99**	
MIN	**49**	**50**	**47**	**47**	**49**	**49**	**46**	**45**	**44**	**41**	**36**	**34**	**33**	**32**	**30**	**28**	**27**	**27**	**28**	**31**	**40**	**44**	**50**	**52**			**27**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 744 DATA RECOVERY RATE = 100.0%

MONTHLY MEAN = 76 %

MAXIMUM RELATIVE HUMIDITY = 99 % DATE OF OCCURRENCE = 5/6 AT 1000 MAXIMUM DAILY MEAN = 94 % DATE OF OCCURRENCE = 5/6

MINIMUM RELATIVE HUMIDITY = 27 % DATE OF OCCURRENCE = 5/31 AT 1700 MINUMUM DAILY MEAN = 41 % DATE OF OCCURRENCE = 5/31

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

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RELATIVE HUMIDITY in % for JUNE, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	49	51	56	61	65	62	53	47	43	42	37	36	40	42	44	49	49	49	44	47	55	61	59	61	**50**	**65**	**36**
2	66	69	72	75	79	79	74	68	62	57	53	45	40	40	45	47	51	53	55	57	61	64	68	71	**60**	**79**	**40**
3	74	79	81	82	82	81	78	70	64	61	59	55	56	65	69	59	52	60	68	65	69	73	75	76	**69**	**82**	**52**
4	72	75	77	78	79	79	70	70	77	77	69	63	57	59	65	72	75	75	74	83	85	84	84	85	**74**	**85**	**57**
5	85	87	88	89	91	92	90	90	91	91	90	89	88	87	82	87	91	93	91	92	93	93	91	92	**90**	**93**	**82**
6	93	92	90	91	92	89	86	82	81	79	72	71	71	70	66	67	79	67	68	74	76	77	77	70	**78**	**93**	**66**
7	65	63	65	67	71	71	70	65	54	43	37	35	31	31	31	31	30	34	35	33	36	39	43	47	**47**	**71**	**30**
8	50	54	55	54	55	56	55	51	48	42	39	38	37	37	35	35	35	35	35	43	53	57	55	60	**46**	**60**	**35**
9	60	62	64	62	61	59	59	58	51	49	52	54	47	43	38	34	35	34	35	38	43	45	48	47	**49**	**64**	**34**
10	51	52	55	57	55	56	53	49	48	43	42	42	41	41	39	39	39	42	46	46	52	51	56	58	**48**	**58**	**39**
11	63	63	62	63	64	65	63	60	61	59	52	50	49	48	48	50	50	51	53	53	57	59	62	67	**57**	**67**	**48**
12	71	74	75	76	80	77	71	63	55	50	47	43	42	43	56	58	57	58	57	61	66	72	76	75	**63**	**80**	**42**
13	75	77	80	83	87	84	82	80	74	71	76	71	65	62	61	61	63	65	65	68	71	73	73	72	**72**	**87**	**61**
14	82	83	83	85	88	87	82	76	70	63	70	68	67	69	59	56	60	55	56	65	67	79	80	79	**72**	**88**	**55**
15	83	83	87	88	80	77	71	63	56	48	42	39	38	35	34	34	34	33	32	37	44	45	46	51	**53**	**88**	**32**
16	60	65	67	70	70	60	58	57	59	57	57	54	55	51	46	51	49	48	51	53	59	66	71	73	**59**	**73**	**46**
17	70	71	69	67	69	70	68	68	66	64	65	61	60	63	63	63	63	63	65	67	73	74	74	74	**67**	**74**	**60**
18	72	73	74	74	74	75	73	68	65	67	70	73	71	64	58	56	56	54	58	63	61	65	70	72	**67**	**75**	**54**
19	75	79	81	82	84	84	81	74	71	69	71	70	66	59	46	37	37	38	38	41	54	65	71	76	**64**	**84**	**37**
20	78	80	81	83	84	84	81	75	70	66	69	71	67	61	59	55	53	55	51	56	62	66	70	73	**69**	**84**	**51**
21	76	77	79	81	84	83	78	74	65	59	65	71	69	67	64	59	53	53	56	63	67	70	73	75	**69**	**84**	**53**
22	78	79	80	82	82	82	75	68	62	63	67	68	67	62	57	50	49	52	55	59	66	70	71	68	**67**	**82**	**49**
23	65	66	69	70	69	69	67	66	62	54	47	44	43	45	44	45	46	46	51	54	54	57	62	63	**57**	**70**	**43**
24	61	60	61	63	63	67	61	57	52	46	40	38	36	35	33	31	30	30	31	33	36	42	46	49	**46**	**67**	**30**
25	48	50	53	54	58	56	52	48	40	33	29	27	27	28	29	30	32	35	47	55	60	65	63	63	**45**	**65**	**27**
26	65	66	66	68	70	71	67	62	58	52	56	66	58	39	38	37	38	47	50	50	54	70	87	89	**59**	**89**	**37**
27	90	90	90	90	89	89	88	78	69	68	62	54	48	39	40	59	49	58	51	59	58	47	51	53	**65**	**90**	**39**
28	56	55	57	57	57	54	49	49	48	46	50	51	49	49	51	52	55	58	60	68	71	74	77	79	**57**	**79**	**46**
29	79	82	83	84	86	89	90	86	81	77	75	73	69	67	66	65	67	68	70	76	81	83	84	86	**78**	**90**	**65**
30	90	91	94	94	95	95	94	93	91	83	75	71	65	60	63	53	58	65	75	76	65	48	42	50	**74**	**95**	**42**
MEAN	**70**	**72**	**73**	**74**	**75**	**75**	**71**	**67**	**63**	**59**	**58**	**56**	**54**	**52**	**51**	**51**	**51**	**52**	**54**	**58**	**62**	**64**	**67**	**68**	**62**		
MAX	**93**	**92**	**94**	**94**	**95**	**95**	**94**	**93**	**91**	**91**	**90**	**89**	**88**	**87**	**82**	**87**	**91**	**93**	**91**	**92**	**93**	**93**	**91**	**92**		**95**	
MIN	**48**	**50**	**53**	**54**	**55**	**54**	**49**	**47**	**40**	**33**	**29**	**27**	**27**	**28**	**29**	**30**	**30**	**30**	**31**	**33**	**36**	**39**	**42**	**47**			**27**

POSSIBLE NUMBER OF OBSERVATIONS = 720 ACTUAL NUMBER OF OBSERVATIONS = 720 DATA RECOVERY RATE = 100.0%

MONTHLY MEAN = 62 %

MAXIMUM RELATIVE HUMIDITY = 95 % DATE OF OCCURRENCE = 6/30 AT 0500 MAXIMUM DAILY MEAN = 90 % DATE OF OCCURRENCE = 6/5

MINIMUM RELATIVE HUMIDITY = 27 % DATE OF OCCURRENCE = 6/25 AT 1300 MINUMUM DAILY MEAN = 45 % DATE OF OCCURRENCE = 6/25

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

Draft

APPENDIX E. HOURLY BAROMETRIC PRESSURE DATA FOR SECOND QUARTER 2024

Draft

CSX AQ5

PRESSURE in mb for APRIL, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	1015	1014	1013	1013	1013	1013	1013	1012	1012	1011	1013	1012	1012	1011	1012	1012	1013	1013	1014	1015	1015	1015	1014	1014	**1013**	**1015**	**1011**
2	1014	1014	1013	1012	1012	1012	1013	1013	1011	1010	1010	1009	1008	1008	1005	1007	1007	1007	1009	1008	1007	1007	1006	1006	**1009**	**1014**	**1005**
3	1005	1005	1004	1003	1003	1002	1001	1001	1000	999	997	996	995	994	993	993	992	993	993	993	995	996	996	996	**998**	**1005**	**992**
4	995	995	995	996	996	996	996	996	997	997	997	996	996	997	997	998	999	999	1000	1001	1002	1002	1003	1003	**998**	**1003**	**995**
5	1004	1004	1004	1004	1005	1005	1006	1006	1006	1006	1006	1006	1006	1007	1007	1008	1009	1009	1010	1011	1012	1012	1012	1012	**1007**	**1012**	**1004**
6	1012	1012	1012	1012	1012	1012	1013	1013	1013	1014	1013	1013	1013	1013	1013	1013	1013	1013	1014	1014	1015	1015	1015	1016	**1013**	**1016**	**1012**
7	1016	1017	1017	1017	1018	1019	1019	1019	1019	1019	1019	1019	1019	1018	1018	1017	1018	1018	1018	1019	1019	1020	1020	1020	**1018**	**1020**	**1016**
8	1021	1021	1021	1021	1021	1022	1023	1023	1023	1023	1022	1022	1021	1020	1019	1019	1019	1018	1018	1018	1019	1019	1018	1018	**1020**	**1023**	**1018**
9	1018	1017	1017	1017	1017	1017	1018	1018	1018	1018	1018	1018	1018	1017	1016	1015	1015	1015	1015	1015	1015	1015	1014	1014	**1016**	**1018**	**1014**
10	1014	1014	1013	1014	1014	1015	1015	1015	1015	1016	1016	1015	1014	1014	1013	1013	1013	1013	1013	1014	1014	1014	1014	1014	**1014**	**1016**	**1013**
11	1013	1013	1012	1012	1011	1012	1012	1012	1012	1011	1010	1009	1008	1007	1006	1005	1003	1002	1001	1000	1000	999	998	996	**1007**	**1013**	**996**
12	994	993	993	993	993	994	994	995	996	997	998	998	998	998	998	999	999	1000	1000	1002	1003	1003	1003	1003	**998**	**1003**	**993**
13	1003	1004	1004	1006	1006	1007	1007	1007	1008	1008	1009	1009	1009	1009	1009	1009	1010	1010	1011	1012	1013	1014	1015	1015	**1009**	**1015**	**1003**
14	1015	1015	1015	1016	1016	1016	1017	1016	1015	1015	1013	1012	1010	1009	1007	1006	1005	1004	1004	1005	1007	1007	1008	1009	**1011**	**1017**	**1004**
15	1009	1008	1009	1008	1008	1009	1010	1011	1011	1011	1010	1010	1009	1009	1009	1009	1009	1009	1010	1011	1012	1013	1014	1015	**1010**	**1015**	**1008**
16	1016	1018	1019	1019	1019	1020	1021	1022	1022	1022	1022	1021	1021	1021	1020	1019	1019	1019	1019	1020	1020	1020	1020	1020	**1020**	**1022**	**1016**
17	1020	1020	1019	1020	1020	1019	1019	1019	1019	1019	1018	1018	1017	1015	1014	1014	1013	1012	1012	1013	1012	1012	1012	1012	**1016**	**1020**	**1012**
18	1012	1012	1012	1012	1013	1014	1015	1015	1016	1016	1016	1017	1017	1016	1016	1016	1017	1017	1017	1018	1019	1020	1021	1021	**1016**	**1021**	**1012**
19	1021	1020	1020	1020	1020	1020	1020	1020	1020	1020	1020	1019	1020	1019	1018	1017	1017	1017	1017	1017	1017	1017	1017	1017	**1019**	**1021**	**1017**
20	1016	1015	1015	1015	1015	1016	1016	1016	1016	1016	1015	1014	1014	1013	1012	1011	1011	1011	1012	1013	1014	1015	1016	1017	**1014**	**1017**	**1011**
21	1017	1017	1017	1018	1018	1018	1019	1019	1019	1019	1019	1018	1017	1016	1015	1014	1014	1015	1015	1015	1016	1016	1017	1017	**1017**	**1019**	**1014**
22	1018	1018	1017	1018	1018	1019	1020	1020	1020	1020	1020	1020	1019	1019	1018	1018	1018	1018	1018	1018	1019	1020	1020	1020	**1019**	**1020**	**1017**
23	1020	1020	1020	1020	1020	1021	1021	1022	1021	1021	1020	1019	1018	1017	1016	1015	1014	1014	1013	1014	1014	1014	1013	1012	**1017**	**1022**	**1012**
24	1011	1011	1010	1010	1010	1010	1011	1011	1012	1012	1013	1012	1012	1012	1013	1013	1014	1014	1015	1016	1017	1018	1018	1019	**1013**	**1019**	**1010**
25	1020	1021	1021	1022	1023	1023	1025	1026	1026	1026	1026	1026	1025	1025	1025	1024	1025	1025	1025	1025	1026	1027	1027	1028	**1025**	**1028**	**1020**
26	1028	1028	1028	1028	1029	1029	1030	1031	1031	1031	1031	1031	1031	1031	1030	1029	1029	1029	1029	1030	1031	1031	1032	1032	**1030**	**1032**	**1028**
27	1031	1031	1031	1031	1031	1031	1032	1032	1032	1032	1032	1032	1031	1031	1030	1029	1028	1028	1027	1027	1027	1026	1026	1025	**1030**	**1032**	**1025**
28	1025	1024	1023	1023	1023	1023	1023	1023	1023	1022	1022	1021	1020	1020	1019	1018	1018	1017	1017	1017	1017	1017	1017	1017	**1020**	**1025**	**1017**
29	1016	1016	1016	1016	1016	1016	1016	1016	1016	1016	1016	1016	1015	1015	1014	1014	1013	1013	1013	1013	1013	1013	1013	1013	**1015**	**1016**	**1013**
30	1012	1012	1012	1011	1011	1012	1012	1012	1012	1011	1011	1010	1010	1009	1009	1009	1008	1008	1009	1009	1011	1011	1012	1012	**1011**	**1012**	**1008**
MEAN	**1014**	**1014**	**1014**	**1014**	**1014**	**1015**	**1015**	**1015**	**1015**	**1015**	**1015**	**1015**	**1014**	**1014**	**1013**	**1013**	**1013**	**1013**	**1013**	**1013**	**1014**	**1014**	**1014**	**1014**	**1014**		
MAX	**1031**	**1031**	**1031**	**1031**	**1031**	**1031**	**1032**	**1032**	**1032**	**1032**	**1032**	**1032**	**1031**	**1031**	**1030**	**1029**	**1029**	**1029**	**1029**	**1030**	**1031**	**1031**	**1032**	**1032**		**1032**	
MIN	**994**	**993**	**993**	**993**	**993**	**994**	**994**	**995**	**996**	**997**	**997**	**996**	**995**	**994**	**993**	**993**	**992**	**993**	**993**	**993**	**995**	**996**	**996**	**996**			**992**

POSSIBLE NUMBER OF OBSERVATIONS = 720 ACTUAL NUMBER OF OBSERVATIONS = 720 DATA RECOVERY RATE = 100.0%

MONTHLY MEAN = 1014 mb

MAXIMUM PRESSURE = 1032 mb DATE OF OCCURRENCE = 4/27 AT 0900 MAXIMUM DAILY MEAN = 1030 mb DATE OF OCCURRENCE = 4/26

MINIMUM PRESSURE = 992 mb DATE OF OCCURRENCE = 4/3 AT 1700 MINUMUM DAILY MEAN = 998 mb DATE OF OCCURRENCE = 4/12

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

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CSX AQ5

PRESSURE in mb for MAY, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	1011	1011	1011	1012	1013	1013	1014	1014	1014	1014	1014	1013	1013	1012	1012	1012	1012	1012	1012	1013	1013	1014	1014	1014	**1013**	**1014**	**1011**
2	1014	1014	1014	1014	1014	1014	1015	1015	1016	1015	1015	1014	1013	1013	1012	1012	1012	1012	1012	1012	1013	1013	1014	1014	**1014**	**1016**	**1012**
3	1014	1014	1015	1015	1016	1017	1018	1019	1019	1019	1019	1019	1020	1020	1020	1020	1020	1020	1020	1021	1022	1023	1023	1023	**1019**	**1023**	**1014**
4	1022	1022	1022	1022	1022	1023	1023	1024	1024	1024	1024	1024	1024	1024	1024	1024	1024	1024	1024	1024	1024	1024	1024	1023	**1023**	**1024**	**1022**
5	1023	1022	1022	1022	1021	1021	1022	1021	1021	1021	1021	1021	1021	1020	1019	1019	1019	1019	1019	1019	1018	1018	1018	1018	**1020**	**1023**	**1018**
6	1017	1017	1016	1016	1016	1016	1016	1016	1016	1016	1016	1015	1015	1014	1014	1013	1012	1012	1012	1012	1012	1012	1011	1011	**1014**	**1017**	**1011**
7	1010	1009	1009	1009	1009	1009	1010	1010	1010	1009	1009	1009	1008	1007	1007	1006	1006	1007	1006	1006	1006	1007	1007	1007	**1008**	**1010**	**1006**
8	1006	1005	1005	1005	1005	1004	1005	1005	1004	1004	1004	1003	1003	1003	1003	1002	1002	1002	1003	1003	1004	1004	1005	1005	**1004**	**1006**	**1002**
9	1005	1005	1005	1005	1005	1006	1006	1006	1006	1007	1007	1007	1006	1006	1005	1005	1004	1004	1005	1005	1004	1004	1004	1005	**1005**	**1007**	**1004**
10	1004	1003	1003	1003	1003	1003	1004	1004	1004	1005	1006	1006	1006	1006	1007	1007	1007	1008	1009	1009	1010	1011	1011	1011	**1006**	**1011**	**1003**
11	1011	1011	1011	1011	1011	1011	1012	1012	1011	1011	1011	1011	1010	1010	1009	1008	1008	1009	1009	1010	1010	1010	1009	1010	**1010**	**1012**	**1008**
12	1009	1009	1009	1009	1009	1010	1010	1010	1010	1010	1010	1011	1011	1011	1012	1012	1013	1013	1014	1014	1015	1016	1016	1017	**1012**	**1017**	**1009**
13	1017	1017	1017	1017	1017	1018	1018	1019	1019	1019	1018	1018	1017	1017	1016	1016	1016	1016	1016	1016	1016	1016	1016	1016	**1017**	**1019**	**1016**
14	1016	1016	1015	1015	1015	1015	1016	1016	1016	1016	1015	1015	1015	1014	1014	1013	1012	1012	1012	1012	1012	1011	1011	1011	**1014**	**1016**	**1011**
15	1010	1009	1009	1008	1008	1008	1008	1008	1008	1008	1008	1007	1007	1006	1006	1006	1006	1006	1006	1006	1006	1007	1007	1006	**1007**	**1010**	**1006**
16	1006	1006	1006	1006	1006	1006	1007	1007	1007	1007	1006	1006	1006	1007	1007	1007	1008	1008	1009	1010	1010	1011	1011	1011	**1007**	**1011**	**1006**
17	1011	1012	1013	1013	1013	1013	1014	1014	1015	1015	1015	1015	1015	1015	1015	1014	1014	1014	1014	1014	1014	1014	1015	1015	**1014**	**1015**	**1011**
18	1014	1014	1013	1013	1014	1014	1015	1015	1015	1015	1015	1015	1015	1015	1015	1014	1014	1014	1014	1014	1014	1015	1015	1015	**1014**	**1015**	**1013**
19	1014	1014	1014	1015	1015	1015	1016	1016	1016	1016	1016	1016	1016	1015	1015	1015	1014	1014	1014	1015	1015	1016	1016	1016	**1015**	**1016**	**1014**
20	1017	1016	1016	1016	1016	1017	1018	1019	1019	1018	1018	1018	1017	1017	1017	1016	1016	1015	1016	1016	1016	1016	1016	1016	**1017**	**1019**	**1015**
21	1016	1016	1016	1016	1016	1016	1017	1017	1017	1017	1016	1016	1015	1015	1015	1014	1014	1014	1014	1014	1015	1015	1015	1015	**1015**	**1017**	**1014**
22	1015	1015	1015	1015	1015	1015	1016	1016	1016	1015	1015	1014	1014	1013	1012	1012	1012	1011	1011	1012	1012	1012	1012	1012	**1014**	**1016**	**1011**
23	1012	1011	1011	1011	1011	1011	1012	1013	1013	1013	1014	1014	1013	1013	1012	1012	1012	1011	1012	1011	1012	1012	1012	1012	**1012**	**1014**	**1011**
24	1011	1011	1011	1011	1011	1011	1012	1012	1012	1012	1012	1012	1011	1010	1010	1010	1010	1009	1009	1009	1010	1011	1011	1011	**1011**	**1012**	**1009**
25	1011	1010	1010	1010	1010	1011	1011	1011	1011	1011	1011	1011	1010	1010	1009	1009	1009	1008	1009	1010	1011	1011	1011	1011	**1010**	**1011**	**1008**
26	1011	1010	1010	1011	1011	1012	1012	1012	1012	1012	1013	1012	1012	1012	1010	1010	1011	1010	1010	1010	1010	1011	1011	1010	**1011**	**1013**	**1010**
27	1010	1009	1009	1009	1009	1009	1009	1009	1008	1008	1008	1007	1007	1006	1005	1005	1004	1004	1005	1006	1007	1007	1007	1007	**1007**	**1010**	**1004**
28	1007	1007	1007	1008	1008	1009	1010	1010	1010	1010	1010	1010	1010	1010	1010	1009	1009	1009	1010	1010	1011	1012	1012	1013	**1010**	**1013**	**1007**
29	1013	1013	1012	1012	1013	1014	1014	1014	1014	1014	1015	1014	1014	1013	1013	1014	1013	1013	1014	1014	1014	1014	1014	1014	**1014**	**1015**	**1012**
30	1014	1014	1014	1015	1016	1017	1017	1017	1018	1017	1017	1017	1016	1016	1016	1015	1016	1016	1017	1017	1018	1018	1019	1019	**1016**	**1019**	**1014**
31	1020	1020	1020	1020	1021	1022	1022	1023	1024	1024	1024	1024	1023	1022	1022	1021	1021	1021	1021	1022	1022	1023	1022	1022	**1022**	**1024**	**1020**
MEAN	**1013**	**1012**	**1012**	**1012**	**1013**	**1013**	**1013**	**1014**	**1014**	**1014**	**1014**	**1013**	**1013**	**1013**	**1012**	**1012**	**1012**	**1012**	**1012**	**1012**	**1013**	**1013**	**1013**	**1013**	**1013**		
MAX	**1023**	**1022**	**1022**	**1022**	**1022**	**1023**	**1023**	**1024**	**1024**	**1024**	**1024**	**1024**	**1024**	**1024**	**1024**	**1024**	**1024**	**1024**	**1024**	**1024**	**1024**	**1024**	**1024**	**1023**		**1024**	
MIN	**1004**	**1003**	**1003**	**1003**	**1003**	**1003**	**1004**	**1004**	**1004**	**1004**	**1004**	**1003**	**1003**	**1003**	**1003**	**1002**	**1002**	**1002**	**1003**	**1003**	**1004**	**1004**	**1004**	**1005**			**1002**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 744 DATA RECOVERY RATE = 100.0%

MONTHLY MEAN = 1013 mb

MAXIMUM PRESSURE = 1024 mb DATE OF OCCURRENCE = 5/4 AT 1000 MAXIMUM DAILY MEAN = 1023 mb DATE OF OCCURRENCE = 5/4

MINIMUM PRESSURE = 1002 mb DATE OF OCCURRENCE = 5/8 AT 1700 MINUMUM DAILY MEAN = 1004 mb DATE OF OCCURRENCE = 5/8

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

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CSX AQ5

PRESSURE in mb for JUNE, 2024

Hr Beg / Hr End / Day	0 / 1	1 / 2	2 / 3	3 / 4	4 / 5	5 / 6	6 / 7	7 / 8	8 / 9	9 / 10	10 / 11	11 / 12	12 / 13	13 / 14	14 / 15	15 / 16	16 / 17	17 / 18	18 / 19	19 / 20	20 / 21	21 / 22	22 / 23	23 / 24	MEAN	MAX	MIN
1	1023	1022	1022	1022	1023	1023	1024	1024	1024	1024	1023	1023	1022	1021	1020	1020	1020	1019	1019	1019	1020	1020	1019	1019	**1021**	**1024**	**1019**
2	1019	1019	1018	1018	1018	1019	1019	1019	1019	1018	1018	1017	1016	1015	1015	1014	1014	1014	1014	1015	1015	1015	1014	1014	**1016**	**1019**	**1014**
3	1014	1014	1014	1013	1014	1014	1014	1014	1015	1014	1014	1013	1013	1012	1012	1012	1011	1011	1012	1012	1012	1013	1013	1013	**1013**	**1015**	**1011**
4	1013	1013	1013	1013	1013	1014	1015	1015	1016	1015	1015	1015	1014	1014	1013	1013	1013	1013	1014	1013	1014	1014	1015	1014	**1014**	**1016**	**1013**
5	1014	1014	1013	1013	1013	1012	1013	1013	1013	1012	1012	1012	1011	1010	1009	1008	1008	1007	1006	1006	1005	1006	1005	1005	**1010**	**1014**	**1005**
6	1005	1004	1003	1003	1003	1003	1003	1002	1003	1002	1002	1002	1001	1001	1000	1000	1000	1000	1000	1000	1001	1001	1002	1002	**1002**	**1005**	**1000**
7	1003	1003	1003	1003	1002	1003	1003	1003	1004	1004	1004	1004	1003	1003	1003	1003	1004	1004	1005	1006	1007	1008	1008	1008	**1004**	**1008**	**1002**
8	1008	1008	1008	1008	1009	1009	1010	1010	1011	1010	1010	1010	1010	1010	1009	1009	1009	1009	1008	1008	1008	1008	1008	1008	**1009**	**1011**	**1008**
9	1007	1007	1006	1005	1005	1004	1004	1003	1003	1003	1003	1003	1003	1003	1003	1003	1003	1003	1004	1004	1005	1005	1005	1005	**1004**	**1007**	**1003**
10	1005	1005	1005	1005	1004	1005	1005	1005	1006	1006	1006	1006	1006	1006	1005	1005	1005	1006	1006	1007	1008	1009	1009	1010	**1006**	**1010**	**1004**
11	1010	1010	1011	1011	1011	1012	1013	1013	1014	1014	1013	1013	1014	1014	1014	1014	1014	1014	1014	1014	1015	1016	1016	1016	**1013**	**1016**	**1010**
12	1016	1016	1016	1017	1017	1018	1018	1018	1018	1018	1017	1017	1017	1016	1016	1016	1015	1015	1015	1015	1016	1016	1016	1016	**1016**	**1018**	**1015**
13	1016	1016	1015	1016	1016	1017	1017	1017	1017	1016	1016	1015	1015	1014	1014	1013	1013	1013	1013	1013	1013	1014	1014	1014	**1015**	**1017**	**1013**
14	1013	1012	1012	1012	1012	1012	1012	1013	1013	1012	1012	1012	1011	1010	1010	1010	1009	1010	1010	1010	1011	1013	1012	1013	**1011**	**1013**	**1009**
15	1013	1013	1013	1013	1014	1015	1016	1016	1016	1017	1017	1017	1017	1017	1017	1017	1017	1017	1017	1018	1018	1019	1019	1019	**1016**	**1019**	**1013**
16	1020	1020	1020	1020	1021	1022	1022	1023	1023	1023	1023	1023	1022	1022	1021	1021	1020	1020	1020	1020	1021	1021	1021	1022	**1021**	**1023**	**1020**
17	1021	1022	1021	1022	1022	1022	1022	1022	1022	1022	1021	1021	1020	1020	1020	1019	1019	1019	1020	1020	1021	1021	1021	1021	**1021**	**1022**	**1019**
18	1022	1022	1022	1022	1023	1023	1024	1024	1024	1024	1024	1024	1024	1023	1023	1023	1022	1022	1023	1023	1024	1024	1025	1025	**1023**	**1025**	**1022**
19	1025	1025	1026	1026	1026	1027	1027	1028	1028	1028	1028	1027	1027	1027	1026	1026	1026	1026	1026	1026	1026	1027	1027	1027	**1026**	**1028**	**1025**
20	1026	1026	1026	1027	1027	1027	1027	1027	1028	1027	1027	1027	1026	1026	1025	1024	1024	1024	1024	1024	1024	1024	1024	1024	**1026**	**1028**	**1024**
21	1024	1024	1024	1023	1023	1023	1023	1023	1023	1023	1022	1022	1021	1020	1020	1019	1018	1018	1018	1018	1019	1019	1019	1019	**1021**	**1024**	**1018**
22	1019	1018	1018	1018	1018	1018	1018	1018	1017	1017	1016	1016	1015	1014	1013	1013	1012	1011	1012	1012	1012	1012	1012	1012	**1015**	**1019**	**1011**
23	1011	1011	1010	1010	1009	1010	1009	1009	1009	1008	1008	1007	1006	1006	1005	1004	1003	1003	1003	1003	1003	1003	1003	1003	**1006**	**1011**	**1003**
24	1003	1004	1004	1004	1004	1005	1006	1006	1007	1007	1007	1008	1008	1008	1008	1008	1009	1009	1010	1010	1011	1012	1012	1013	**1008**	**1013**	**1003**
25	1013	1013	1014	1015	1015	1014	1014	1015	1015	1015	1014	1014	1014	1013	1013	1012	1012	1011	1011	1011	1011	1012	1012	1011	**1013**	**1015**	**1011**
26	1011	1010	1010	1010	1010	1009	1009	1009	1009	1009	1009	1008	1008	1007	1006	1006	1005	1004	1004	1005	1005	1006	1007	1007	**1008**	**1011**	**1004**
27	1007	1007	1006	1007	1007	1008	1008	1009	1010	1010	1010	1010	1010	1009	1009	1009	1009	1009	1009	1010	1011	1012	1013	1014	**1009**	**1014**	**1006**
28	1015	1016	1016	1017	1017	1018	1019	1020	1020	1020	1021	1021	1020	1020	1019	1019	1019	1019	1019	1019	1020	1021	1021	1021	**1019**	**1021**	**1015**
29	1021	1020	1020	1020	1021	1021	1021	1020	1020	1020	1020	1019	1018	1018	1017	1016	1016	1016	1016	1016	1016	1016	1017	1016	**1018**	**1021**	**1016**
30	1016	1016	1015	1014	1015	1015	1015	1015	1015	1014	1014	1014	1013	1012	1011	1010	1010	1010	1011	1011	1012	1014	1015	1015	**1013**	**1016**	**1010**
MEAN	**1014**	**1014**	**1014**	**1014**	**1014**	**1015**	**1015**	**1015**	**1015**	**1015**	**1015**	**1015**	**1014**	**1014**	**1013**	**1013**	**1013**	**1012**	**1013**	**1013**	**1013**	**1014**	**1014**	**1014**	**1014**		
MAX	**1026**	**1026**	**1026**	**1027**	**1027**	**1027**	**1027**	**1028**	**1028**	**1028**	**1028**	**1027**	**1027**	**1027**	**1026**	**1026**	**1026**	**1026**	**1026**	**1026**	**1026**	**1027**	**1027**	**1027**		**1028**	
MIN	**1003**	**1003**	**1003**	**1003**	**1002**	**1003**	**1003**	**1002**	**1003**	**1002**	**1002**	**1002**	**1001**	**1001**	**1000**	**1000**	**1000**	**1000**	**1000**	**1000**	**1001**	**1001**	**1002**	**1002**			**1000**

POSSIBLE NUMBER OF OBSERVATIONS = 720 ACTUAL NUMBER OF OBSERVATIONS = 720 DATA RECOVERY RATE = 100.0%

MONTHLY MEAN = 1014 mb

MAXIMUM PRESSURE = 1028 mb DATE OF OCCURRENCE = 6/19 AT 1000 MAXIMUM DAILY MEAN = 1026 mb DATE OF OCCURRENCE = 6/19

MINIMUM PRESSURE = 1000 mb DATE OF OCCURRENCE = 6/6 AT 1700 MINUMUM DAILY MEAN = 1002 mb DATE OF OCCURRENCE = 6/6

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

Draft

APPENDIX F. HOURLY PRECIPITATION DATA FOR SECOND QUARTER 2024

Draft

CSX AQ5

PRECIPITATION in in for APRIL, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	TOTAL	MAX HR
1					0.17	0.14	0.41	0.04	0.10	0.09	0.06														**1.01**	**0.41**
2		0.14	0.01	0.01	0.18	0.05	0.31	0.61	0.01					0.03	0.13					0.02	0.01				**1.51**	**0.61**
3	0.04		0.02		0.02	0.02	0.01	0.09	0.20	0.30	0.02	0.05	0.03	0.03	0.27	0.03	0.01		0.01			0.03	0.01		**1.19**	**0.30**
4															0.01	0.02	0.04								**0.07**	**0.04**
5																									**0.00**	**0.00**
6																									**0.00**	**0.00**
7																									**0.00**	**0.00**
8																									**0.00**	**0.00**
9																									**0.00**	**0.00**
10																									**0.00**	**0.00**
11																	0.01						0.01		**0.02**	**0.01**
12								0.07	0.01	0.02															**0.10**	**0.07**
13																									**0.00**	**0.00**
14																									**0.00**	**0.00**
15																									**0.00**	**0.00**
16																									**0.00**	**0.00**
17										0.07	0.19														**0.26**	**0.19**
18																									**0.00**	**0.00**
19																									**0.00**	**0.00**
20			0.03	0.01																					**0.04**	**0.03**
21																									**0.00**	**0.00**
22																									**0.00**	**0.00**
23																									**0.00**	**0.00**
24																									**0.00**	**0.00**
25																									**0.00**	**0.00**
26																									**0.00**	**0.00**
27													0.01	0.02											**0.03**	**0.02**
28																									**0.00**	**0.00**
29																									**0.00**	**0.00**
30																							0.07	0.11	**0.18**	**0.11**
TOTAL	**0.04**	**0.14**	**0.06**	**0.02**	**0.37**	**0.21**	**0.73**	**0.81**	**0.32**	**0.48**	**0.27**	**0.05**	**0.04**	**0.08**	**0.41**	**0.05**	**0.06**	**0.00**	**0.01**	**0.02**	**0.01**	**0.03**	**0.09**	**0.11**	**4.41**	
MAX	**0.04**	**0.14**	**0.03**	**0.01**	**0.18**	**0.14**	**0.41**	**0.61**	**0.20**	**0.30**	**0.19**	**0.05**	**0.03**	**0.03**	**0.27**	**0.03**	**0.04**	**0.00**	**0.01**	**0.02**	**0.01**	**0.03**	**0.07**	**0.11**		**0.61**

POSSIBLE NUMBER OF OBSERVATIONS = 720 ACTUAL NUMBER OF OBSERVATIONS = 720 DATA RECOVERY RATE = 100.0%

TOTAL PRECIPITATION FOR MONTH = 4.41 in

MAXIMUM DAILY PRECIPITATION = 1.51 in DATE OF OCCURRENCE = 4/2

MAXIMUM HOURLY PRECIPITATION = 0.61 in DATE OF OCCURRENCE = 4/2 AT 0800

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

Draft

CSX AQ5

PRECIPITATION in in for MAY, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	TOTAL	MAX HR
1																									0.00	0.00
2																									0.00	0.00
3																									0.00	0.00
4	0.07	0.01	0.04		0.01	0.04	0.02		0.01	0.02			0.02	0.01	0.01	0.03									0.29	0.07
5			0.14	0.04	0.08	0.20	0.07	0.07			0.03	0.08	0.03												0.74	0.20
6																									0.00	0.00
7																		0.01							0.01	0.01
8																									0.00	0.00
9																								0.29	0.29	0.29
10							0.01		0.01	0.02			0.01		0.02		0.01		0.01						0.09	0.02
11																			0.02	0.02				0.15	0.19	0.15
12	0.02											0.03			0.04	0.03	0.01	0.02							0.15	0.04
13																									0.00	0.00
14														0.04	0.23	0.01					0.01	0.02	0.06	0.02	0.39	0.23
15		0.01							0.01																0.02	0.01
16																									0.00	0.00
17																									0.00	0.00
18							0.02	0.07	0.08									0.01							0.18	0.08
19			0.01	0.01																					0.02	0.01
20																									0.00	0.00
21																									0.00	0.00
22																									0.00	0.00
23																									0.00	0.00
24																									0.00	0.00
25																									0.00	0.00
26																									0.00	0.00
27											0.03								0.01	0.83	0.02				0.89	0.83
28																									0.00	0.00
29													0.02			0.24			0.01						0.27	0.24
30																									0.00	0.00
31																									0.00	0.00
TOTAL	**0.09**	**0.02**	**0.19**	**0.05**	**0.09**	**0.24**	**0.12**	**0.14**	**0.11**	**0.04**	**0.06**	**0.11**	**0.08**	**0.05**	**0.30**	**0.31**	**0.02**	**0.04**	**0.05**	**0.85**	**0.03**	**0.02**	**0.06**	**0.46**	**3.53**	
MAX	**0.07**	**0.01**	**0.14**	**0.04**	**0.08**	**0.20**	**0.07**	**0.07**	**0.08**	**0.02**	**0.03**	**0.08**	**0.03**	**0.04**	**0.23**	**0.24**	**0.01**	**0.02**	**0.02**	**0.83**	**0.02**	**0.02**	**0.06**	**0.29**		**0.83**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 744 DATA RECOVERY RATE = 100.0%

TOTAL PRECIPITATION FOR MONTH = 3.53 in

MAXIMUM DAILY PRECIPITATION = 0.89 in DATE OF OCCURRENCE = 5/27

MAXIMUM HOURLY PRECIPITATION = 0.83 in DATE OF OCCURRENCE = 5/27 AT 2000

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

Draft

CSX AQ5

PRECIPITATION in in for JUNE, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	TOTAL	MAX HR
1																									0.00	0.00
2																									0.00	0.00
3																									0.00	0.00
4																									0.00	0.00
5																0.04	0.14	0.05		0.14					0.37	0.14
6																0.02									0.02	0.02
7																									0.00	0.00
8																									0.00	0.00
9																									0.00	0.00
10																									0.00	0.00
11																									0.00	0.00
12																									0.00	0.00
13																								0.11	0.11	0.11
14	0.05							0.01														0.02			0.08	0.05
15																									0.00	0.00
16																									0.00	0.00
17																									0.00	0.00
18																									0.00	0.00
19																									0.00	0.00
20																									0.00	0.00
21																									0.00	0.00
22																									0.00	0.00
23																									0.00	0.00
24																									0.00	0.00
25																									0.00	0.00
26																						0.03	0.02	0.02	0.07	0.03
27	0.01								0.01																0.02	0.01
28																									0.00	0.00
29																								0.06	0.06	0.06
30	0.01	0.74	0.55			0.01																			1.31	0.74
TOTAL	**0.07**	**0.74**	**0.55**	**0.00**	**0.00**	**0.01**	**0.00**	**0.01**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.06**	**0.14**	**0.05**	**0.00**	**0.14**	**0.00**	**0.05**	**0.02**	**0.19**	**2.04**	
MAX	**0.05**	**0.74**	**0.55**	**0.00**	**0.00**	**0.01**	**0.00**	**0.01**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.04**	**0.14**	**0.05**	**0.00**	**0.14**	**0.00**	**0.03**	**0.02**	**0.11**		**0.74**

POSSIBLE NUMBER OF OBSERVATIONS = 720 ACTUAL NUMBER OF OBSERVATIONS = 720 DATA RECOVERY RATE = 100.0%

TOTAL PRECIPITATION FOR MONTH = 2.04 in

MAXIMUM DAILY PRECIPITATION = 1.31 in DATE OF OCCURRENCE = 6/30

MAXIMUM HOURLY PRECIPITATION = 0.74 in DATE OF OCCURRENCE = 6/30 AT 0200

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

Draft

APPENDIX G. HOURLY AQ5 PM_{10} AND $PM_{2.5}$ CONCENTRATION DATA FOR SECOND QUARTER 2024

Draft

CSX AQ5 T640x

HOURLY AVERAGES of PM10 in µg/m3 for APRIL, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	16.2	17.3	18.9	14.7	18.5	18.9	21.8	17.4	10.0	6.3	7.1	3.6	4.1	6.1	6.4	7.1	8.1	9.8	12.5	11.8	12.2	11.9	42.3	34.0	**14.0**	**42.3**	**3.6**
2	21.6	15.1	12.7	10.0	14.6	11.2	9.4	11.5	7.4	4.9	2.8	12.4	3.1	4.4	4.1	2.0	1.5	1.8	1.9	2.5	2.5	2.4	2.3	2.6	**6.9**	**21.6**	**1.5**
3	3.1	3.6	3.7	4.3	4.6	3.4	2.4	2.6	4.1	5.4	2.0	1.4	1.4	1.0	3.5	1.6	0.9	1.8	4.6	3.9	6.2	20.2	6.1	5.3	**4.0**	**20.2**	**0.9**
4	5.1	6.7	8.1	8.3	9.9	13.0	22.0	15.6	14.3	9.3	8.8	7.2	11.8	20.5	8.3	3.2	3.8	3.0	1.8	1.9	2.9	3.6	2.9	3.1	**8.1**	**22.0**	**1.8**
5	2.8	2.2	2.7	4.1	4.8	6.0	8.0	9.4	7.5	6.6	5.0	4.1	9.0	14.0	22.9	24.4	16.0	11.1	6.5	9.2	8.1	4.0	4.8	4.1	**8.2**	**24.4**	**2.2**
6	4.5	5.0	4.2	3.9	4.3	3.7	6.7	37.9	63.1	6.4	5.3	6.3	4.9	6.4	6.3	5.4	5.9	5.9	6.1	6.7	7.7	10.0	10.4	9.9	**9.9**	**63.1**	**3.7**
7	7.0	9.5	9.4	9.7	11.3	10.1	7.8	8.6	6.5	5.3	4.5	4.8	3.5	4.3	4.3	3.9	3.7	5.1	5.4	8.0	8.8	13.0	7.9	15.4	**7.4**	**15.4**	**3.5**
8	15.3	14.2	16.7	13.1	19.0	30.7	29.4	32.7	22.8	18.9	20.9	12.8	19.8	9.7	12.5	10.9	8.8	9.0	8.4	7.5	12.4	16.8	21.8	22.5	**16.9**	**32.7**	**7.5**
9	27.7	22.9	17.6	22.7	26.1	35.0	74.1	44.0	26.5	31.1	47.5	30.2	20.3	16.7	25.0	21.1	29.0	31.9	28.1	27.2	27.1	29.1	29.4	33.0	**30.1**	**74.1**	**16.7**
10	54.6	55.0	48.5	34.0	40.5	41.8	44.3	47.3	109.2	57.7	19.9	16.8	15.5	16.7	29.8	22.9	22.0	27.0	25.6	33.9	18.8	25.2	49.6	21.5	**36.6**	**109.2**	**15.5**
11	19.7	19.3	12.6	14.5	16.8	18.9	17.0	19.2	15.2	21.6	25.1	25.1	27.2	38.0	31.5	23.8	21.0	23.9	22.7	23.9	25.6	24.3	28.3	27.0	**22.6**	**38.0**	**12.6**
12	17.7	15.8	8.5	7.9	8.2	11.1	13.3	10.4	4.0	5.7	7.3	7.5	10.3	11.3	9.9	11.9	14.7	10.8	9.6	11.3	5.7	1.8	4.7	5.9	**9.4**	**17.7**	**1.8**
13	12.6	4.5	3.7	20.8	6.1	5.5	6.4	6.1	7.5	11.4	28.0	17.8	36.6	41.5	19.2	11.0	19.1	11.2	7.0	8.8	7.0	10.0	13.2	9.0	**13.5**	**41.5**	**3.7**
14	9.7	17.1	9.1	9.2	9.8	10.3	11.0	9.4	10.5	13.4	20.5	22.3	30.5	58.7	59.4	117.6	61.0	86.6	45.6	23.4	19.9	22.1	26.3	13.7	**29.9**	**117.6**	**9.1**
15	9.8	16.3	32.1	37.1	17.0	31.2	63.6	45.0	20.3	29.2	45.5	47.2	37.1	28.6	27.9	24.0	25.0	25.0	24.1	27.3	46.9	46.5	36.2	24.7	**32.0**	**63.6**	**9.8**
16	28.1	38.5	11.1	15.2	15.7	20.8	59.8	35.7	14.6	13.7	26.8	19.9	13.6	13.2	18.1	28.8	18.8	19.2	14.3	13.3	12.0	14.8	23.4	17.0	**21.1**	**59.8**	**11.1**
17	12.7	11.8	14.4	16.4	20.6	25.3	35.5	29.7	26.1	24.7	50.7	17.8	14.2	18.2	28.9	18.0	38.4	25.2	16.3	18.3	14.5	16.6	16.7	21.5	**22.2**	**50.7**	**11.8**
18	26.9	24.9	25.1	26.0	29.1	43.9	47.9	45.5	36.0	35.3	32.8	34.1	34.7	34.2	17.8	16.2	14.6	14.2	12.1	11.8	16.3	17.2	17.5	14.3	**26.2**	**47.9**	**11.8**
19	11.8	10.5	9.5	6.9	7.4	6.0	6.8	9.3	9.6	9.2	9.9	13.7	17.8	22.8	21.2	16.5	18.3	15.2	13.4	13.4	14.4	16.1	14.6	13.6	**12.8**	**22.8**	**6.0**
20	12.5	12.4	13.4	13.3	14.2	16.8	23.5	27.5	31.7	36.4	15.0	19.4	12.9	12.6	13.5	14.8	21.7	10.8	12.2	9.7	10.0	11.1	9.8	8.5	**16.0**	**36.4**	**8.5**
21	7.8	7.0	7.9	6.8	6.4	5.4	4.8	7.5	6.8	5.4	5.6	7.2	8.3	7.9	7.8	8.8	8.1	8.5	7.4	7.8	7.9	10.7	11.9	14.1	**7.8**	**14.1**	**4.8**
22	11.0	8.4	10.5	11.0	12.3	12.7	20.9	28.4	12.7	13.4	16.4	12.1	11.8	13.6	16.6	14.5	13.5	10.8	12.7	19.2	15.1	14.1	15.8	17.5	**14.4**	**28.4**	**8.4**
23	17.1	23.2	20.7	21.8	24.1	43.7	42.4	44.2	41.9	51.7	14.7	21.7	27.2	25.4	26.7	34.8	42.3	85.3	25.5	19.1	16.9	14.3	13.9	13.2	**29.7**	**85.3**	**13.2**
24	13.2	13.5	19.1	15.5	30.3	29.9	25.2	30.3	39.0	---	29.2	34.9	30.7	33.8	36.8	45.7	21.9	14.7	16.2	17.2	13.0	11.1	8.7	6.5	**23.3**	**45.7**	**6.5**
25	9.8	9.4	10.0	8.8	9.9	12.8	16.5	15.5	13.6	16.4	13.0	12.4	13.1	20.9	27.3	20.6	20.9	17.6	15.9	24.9	25.4	22.2	17.3	18.3	**16.4**	**27.3**	**8.8**
26	21.2	38.2	18.2	15.0	17.4	18.4	20.3	17.5	18.7	25.4	41.3	29.8	12.9	10.4	12.5	10.9	9.4	15.8	14.3	21.3	18.7	21.5	23.6	14.3	**19.5**	**41.3**	**9.4**
27	14.8	17.5	10.4	14.3	17.5	12.0	15.8	21.7	17.6	21.9	25.5	23.5	23.7	16.2	12.3	11.8	13.5	13.8	15.3	12.0	10.5	11.3	12.1	11.7	**15.7**	**25.5**	**10.4**
28	12.6	16.9	18.6	24.7	13.6	13.3	14.2	21.8	38.4	28.7	33.8	42.5	35.7	23.4	25.6	26.2	30.4	25.7	24.5	24.0	23.4	22.0	22.0	21.9	**24.3**	**42.5**	**12.6**
29	23.6	21.5	21.5	22.8	22.9	34.3	28.6	28.9	41.7	50.6	40.2	40.1	34.9	30.6	31.9	27.7	29.5	27.7	22.1	22.4	24.2	24.2	23.3	24.9	**29.2**	**50.6**	**21.5**
30	23.6	24.1	29.9	30.1	34.4	31.9	35.6	38.4	33.7	32.6	33.9	31.3	28.2	26.9	25.6	30.4	30.3	24.7	27.5	26.2	68.8	12.0	10.2	14.7	**29.4**	**68.8**	**10.2**
MEAN	**15.8**	**16.7**	**15.0**	**15.4**	**16.2**	**19.3**	**24.5**	**24.0**	**23.7**	**20.6**	**21.3**	**19.3**	**18.5**	**19.6**	**19.8**	**20.6**	**19.1**	**19.8**	**15.3**	**15.6**	**16.8**	**16.0**	**17.6**	**15.5**	**18.6**		
MAX	**54.6**	**55.0**	**48.5**	**37.1**	**40.5**	**43.9**	**74.1**	**47.3**	**109.2**	**57.7**	**50.7**	**47.2**	**37.1**	**58.7**	**59.4**	**117.6**	**61.0**	**86.6**	**45.6**	**33.9**	**68.8**	**46.5**	**49.6**	**34.0**		**117.6**	
MIN	**2.8**	**2.2**	**2.7**	**3.9**	**4.3**	**3.4**	**2.4**	**2.6**	**4.0**	**4.9**	**2.0**	**1.4**	**1.4**	**1.0**	**3.5**	**1.6**	**0.9**	**1.8**	**1.8**	**1.9**	**2.5**	**1.8**	**2.3**	**2.6**			**0.9**

POSSIBLE NUMBER OF OBSERVATIONS = 720 ACTUAL NUMBER OF OBSERVATIONS = 719 DATA RECOVERY RATE = 99.9% DATA CAPTURE RATE = 100.0%

MONTHLY MEAN = 18.6 µg/m3

MAXIMUM PM10 = 117.6 µg/m3 DATE OF OCCURRENCE = 4/14 at 1600 MAXIMUM DAILY MEAN = 36.6 µg/m3 DATE OF OCCURRENCE = 4/10

SECOND MAXIMUM PM10 = 109.2 µg/m3 DATE OF OCCURRENCE = 4/10 at 900 SECOND MAXIMUM DAILY MEAN = 32.0 µg/m3 DATE OF OCCURRENCE = 4/15

MINIMUM PM10 = 0.9 µg/m3 DATE OF OCCURRENCE = 4/3 at 1700 MINUMUM DAILY MEAN = 4.0 µg/m3 DATE OF OCCURRENCE = 4/3

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

Draft

CSX AQ5 T640x

HOURLY AVERAGES of PM10 in µg/m3 for MAY, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	10.3	11.8	11.8	10.8	12.5	12.6	22.9	21.0	14.1	14.2	13.9	13.9	16.9	14.0	14.1	14.2	13.3	13.5	15.3	22.1	16.9	14.8	13.2	14.6	**14.7**	**22.9**	**10.3**
2	13.1	15.3	15.6	15.5	15.4	24.3	21.1	31.3	32.8	30.3	26.1	32.0	20.6	23.2	19.2	20.7	17.5	18.3	20.5	23.0	23.9	25.1	26.6	32.8	**22.7**	**32.8**	**13.1**
3	32.5	19.8	20.9	18.7	17.3	16.5	17.7	14.0	13.1	14.4	19.0	19.4	27.3	28.0	23.2	19.7	18.6	17.3	16.3	15.1	12.3	8.9	8.2	8.4	**17.8**	**32.5**	**8.2**
4	11.5	14.5	7.8	7.3	7.9	12.9	17.3	19.9	8.5	8.3	7.6	7.9	9.8	4.9	3.4	4.4	7.0	6.9	6.1	9.1	16.9	18.4	23.9	13.5	**10.7**	**23.9**	**3.4**
5	15.5	12.0	14.1	11.1	7.6	6.0	4.7	5.1	5.6	4.5	7.5	7.2	16.9	8.3	10.8	11.3	11.3	10.9	11.2	22.3	25.4	16.0	17.2	15.5	**11.6**	**25.4**	**4.5**
6	16.6	18.7	27.8	21.9	9.7	8.6	13.7	13.8	13.1	13.6	19.1	19.5	19.2	22.0	26.1	21.7	16.3	20.6	14.8	23.9	18.5	22.1	28.1	26.5	**19.0**	**28.1**	**8.6**
7	17.7	19.5	22.2	21.8	21.4	18.9	16.8	17.8	34.7	22.2	20.9	30.0	21.4	16.4	16.8	22.8	33.7	23.1	19.7	18.5	16.5	16.6	12.7	12.2	**20.6**	**34.7**	**12.2**
8	13.5	12.9	16.4	15.6	17.2	18.1	20.8	22.1	23.9	21.5	23.0	21.2	20.8	18.3	24.4	22.2	23.6	19.0	20.6	18.0	23.6	20.4	18.7	21.3	**19.9**	**24.4**	**12.9**
9	19.7	18.5	20.5	21.7	20.4	36.9	43.7	27.5	20.2	20.8	19.1	19.5	17.1	22.0	20.1	19.6	14.3	11.4	14.1	12.7	14.1	15.4	14.6	13.7	**19.9**	**43.7**	**11.4**
10	11.8	10.1	10.7	13.9	13.5	10.7	12.7	11.5	11.0	8.0	6.9	4.3	4.3	2.9	3.6	3.8	3.8	5.4	5.7	3.5	4.5	4.6	5.5	6.9	**7.5**	**13.9**	**2.9**
11	8.4	9.5	8.7	8.7	9.3	12.1	16.0	9.0	8.7	7.3	5.7	6.0	6.0	5.3	5.3	5.3	11.5	6.3	6.4	7.9	7.3	11.3	12.6	13.7	**8.7**	**16.0**	**5.3**
12	10.1	8.9	8.0	9.3	10.2	11.5	11.8	11.3	8.8	7.9	9.2	9.9	10.1	7.7	8.6	7.3	5.6	7.0	5.6	6.3	7.3	8.2	14.2	14.8	**9.2**	**14.8**	**5.6**
13	11.6	12.5	11.1	10.4	14.1	17.1	14.2	12.7	12.0	11.7	12.4	11.3	12.8	14.8	15.9	19.8	17.1	13.9	12.3	13.4	12.7	14.9	12.5	13.5	**13.5**	**19.8**	**10.4**
14	18.4	14.3	16.2	23.8	19.5	27.6	30.2	23.1	19.6	13.9	14.7	13.6	20.0	12.6	14.2	10.6	13.9	11.5	14.1	14.2	27.6	19.2	12.6	11.3	**17.4**	**30.2**	**10.6**
15	10.4	9.1	8.8	9.1	9.9	9.4	7.8	6.0	6.7	6.5	4.9	4.5	5.1	8.7	11.4	9.9	9.7	11.8	14.0	12.3	14.0	14.1	16.0	14.6	**9.8**	**16.0**	**4.5**
16	14.2	15.4	15.5	15.1	17.0	21.4	25.4	14.6	15.5	15.6	18.3	14.2	16.6	18.9	21.0	19.2	13.4	11.1	11.0	12.3	10.0	7.4	5.8	6.8	**14.8**	**25.4**	**5.8**
17	8.0	7.2	6.2	8.5	10.7	8.4	9.4	11.8	11.2	10.0	9.1	7.6	8.5	15.9	15.7	9.6	9.0	7.7	9.5	8.8	8.5	8.1	10.7	8.8	**9.5**	**15.9**	**6.2**
18	9.0	9.8	10.2	13.6	9.1	11.2	10.2	10.8	12.2	16.1	16.4	17.1	41.7	25.9	26.9	35.2	26.1	28.7	28.0	20.0	24.3	25.7	23.2	25.1	**19.9**	**41.7**	**9.0**
19	26.5	18.3	15.7	15.8	19.1	17.0	13.9	13.5	14.7	18.5	19.2	16.0	17.2	16.8	15.9	16.0	16.7	15.0	15.0	18.6	20.8	20.6	26.2	22.9	**17.9**	**26.5**	**13.5**
20	12.9	12.3	8.5	8.3	10.9	8.5	8.0	18.7	10.5	9.2	8.8	9.0	11.5	29.4	17.0	13.3	11.0	14.9	16.2	13.3	16.1	16.9	16.0	15.8	**13.2**	**29.4**	**8.0**
21	18.0	29.1	24.1	18.6	21.9	21.2	32.7	22.1	20.7	16.5	14.0	13.4	15.5	21.6	21.9	17.7	13.5	12.5	11.7	18.4	19.6	17.4	15.4	13.7	**18.8**	**32.7**	**11.7**
22	11.0	12.4	12.1	12.4	13.7	18.6	11.2	16.8	17.9	18.8	22.5	10.3	12.8	15.2	25.4	16.0	20.2	20.6	20.6	19.8	15.2	14.2	14.1	13.4	**16.1**	**25.4**	**10.3**
23	16.0	20.4	20.9	21.6	22.6	32.8	41.9	24.2	27.9	40.9	27.8	21.2	20.4	15.7	20.6	25.6	21.2	17.8	18.6	24.0	22.4	20.7	27.1	24.2	**24.0**	**41.9**	**15.7**
24	111.6	55.5	27.4	26.4	27.4	42.4	60.7	49.5	28.0	20.9	21.4	16.0	14.6	13.9	23.2	20.0	17.9	19.5	22.6	23.3	31.1	23.2	21.6	20.6	**30.8**	**111.6**	**13.9**
25	21.7	28.0	27.3	26.6	29.5	23.4	31.6	25.8	32.0	25.8	30.0	22.9	25.0	23.8	22.6	27.3	24.4	22.7	22.6	26.0	24.8	15.6	15.6	16.1	**24.6**	**32.0**	**15.6**
26	19.9	20.0	24.2	19.7	20.2	18.0	20.0	18.8	12.9	13.9	14.3	21.3	19.7	16.6	14.1	12.3	13.4	14.2	20.0	17.7	17.6	19.2	16.9	15.6	**17.5**	**24.2**	**12.3**
27	15.2	12.5	15.0	16.1	18.3	17.6	15.3	16.5	16.2	14.6	14.3	14.2	15.2	16.6	17.8	15.3	16.2	17.5	16.1	21.5	23.5	22.9	24.4	23.2	**17.3**	**24.4**	**12.5**
28	24.4	29.2	23.9	16.3	17.3	15.9	22.4	13.1	13.0	13.0	16.0	11.5	11.4	13.4	12.6	13.2	13.6	13.1	10.3	9.6	12.1	12.6	10.5	19.7	**15.3**	**29.2**	**9.6**
29	212.0	10.0	9.0	10.1	14.1	20.5	19.7	23.4	18.7	14.8	10.5	15.1	24.0	8.8	13.0	14.6	18.9	15.2	12.7	10.7	9.9	9.4	9.4	10.1	**22.3**	**212.0**	**8.8**
30	9.7	9.7	10.1	10.9	11.4	12.9	13.5	15.3	---	17.0	17.5	18.6	19.3	15.8	20.3	15.8	14.0	14.1	11.4	11.8	12.4	16.6	17.3	16.3	**14.4**	**20.3**	**9.7**
31	16.5	12.8	14.2	14.8	16.5	17.6	26.0	19.2	22.1	20.7	17.3	17.3	19.7	22.0	19.3	13.3	11.0	13.2	16.1	15.8	41.3	30.2	35.9	29.2	**20.1**	**41.3**	**11.0**
MEAN	**24.8**	**16.5**	**15.6**	**15.3**	**15.7**	**17.8**	**20.4**	**18.1**	**16.9**	**15.9**	**15.7**	**15.0**	**16.8**	**16.1**	**16.9**	**16.1**	**15.4**	**14.7**	**14.8**	**15.9**	**17.8**	**16.5**	**17.0**	**16.6**	**16.8**		
MAX	**212.0**	**55.5**	**27.8**	**26.6**	**29.5**	**42.4**	**60.7**	**49.5**	**34.7**	**40.9**	**30.0**	**32.0**	**41.7**	**29.4**	**26.9**	**35.2**	**33.7**	**28.7**	**28.0**	**26.0**	**41.3**	**30.2**	**35.9**	**32.8**		**212.0**	
MIN	**8.0**	**7.2**	**6.2**	**7.3**	**7.6**	**6.0**	**4.7**	**5.1**	**5.6**	**4.5**	**4.9**	**4.3**	**4.3**	**2.9**	**3.4**	**3.8**	**3.8**	**5.4**	**5.6**	**3.5**	**4.5**	**4.6**	**5.5**	**6.8**			**2.9**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 743 DATA RECOVERY RATE = 99.9% DATA CAPTURE RATE = 100.0%

MONTHLY MEAN = 16.8 µg/m3

MAXIMUM PM10 = 212.0 µg/m3 DATE OF OCCURRENCE = 5/29 at 100 MAXIMUM DAILY MEAN = 30.8 µg/m3 DATE OF OCCURRENCE = 5/24

SECOND MAXIMUM PM10 = 111.6 µg/m3 DATE OF OCCURRENCE = 5/24 at 100 SECOND MAXIMUM DAILY MEAN = 24.6 µg/m3 DATE OF OCCURRENCE = 5/25

MINIMUM PM10 = 2.9 µg/m3 DATE OF OCCURRENCE = 5/10 at 1400 MINUMUM DAILY MEAN = 7.5 µg/m3 DATE OF OCCURRENCE = 5/10

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

Draft

CSX AQ5 T640x

HOURLY AVERAGES of PM10 in µg/m3 for JUNE, 2024

Hr Beg Hr End Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	20.7	15.1	16.2	14.4	16.2	16.7	18.8	17.0	20.8	17.6	16.2	13.3	10.9	11.6	13.8	17.2	12.3	13.0	14.9	22.3	20.2	17.1	15.6	17.3	**16.2**	**22.3**	**10.9**
2	14.9	15.0	17.1	16.8	17.2	17.6	19.0	24.8	21.9	22.3	22.0	22.6	24.4	31.1	29.9	34.8	59.8	31.8	19.6	17.3	19.9	22.6	14.4	17.8	**23.1**	**59.8**	**14.4**
3	19.0	17.9	16.0	17.3	16.1	17.8	17.0	21.9	19.1	22.1	16.2	14.6	16.5	26.3	32.5	21.9	14.3	15.7	23.7	19.4	28.2	26.1	20.4	27.2	**20.3**	**32.5**	**14.3**
4	16.8	16.3	19.3	21.6	24.5	37.8	39.1	28.4	18.9	38.3	37.0	25.3	21.5	19.6	23.5	31.9	23.1	19.9	16.7	11.2	12.3	15.4	17.4	15.1	**23.0**	**39.1**	**11.2**
5	29.7	17.8	15.6	17.9	19.6	20.6	22.8	19.4	17.4	22.1	20.0	17.8	17.1	16.9	26.2	18.5	15.8	15.9	16.3	17.4	17.8	20.0	18.8	19.8	**19.2**	**29.7**	**15.6**
6	20.1	22.3	17.7	19.3	19.2	19.4	20.2	20.1	18.0	16.4	27.0	27.6	27.2	25.4	17.1	15.7	12.6	10.8	12.0	14.4	14.6	15.3	15.2	17.5	**18.5**	**27.6**	**10.8**
7	16.6	15.0	16.2	16.9	17.4	19.6	15.9	19.6	29.8	41.5	57.9	52.2	52.6	42.9	35.0	39.5	36.9	31.4	29.8	18.7	19.9	40.9	30.2	14.8	**29.6**	**57.9**	**14.8**
8	11.7	12.2	10.0	12.3	12.8	14.7	13.9	16.5	17.0	13.4	10.6	31.0	24.9	17.5	12.5	17.9	17.9	11.7	10.8	15.1	17.4	22.0	22.4	22.0	**16.2**	**31.0**	**10.0**
9	18.7	17.2	15.8	22.1	19.4	19.9	27.6	26.6	32.8	28.7	32.4	22.6	42.9	19.9	24.8	12.1	11.3	9.7	11.1	11.9	13.1	17.5	15.1	21.2	**20.6**	**42.9**	**9.7**
10	12.2	9.2	11.4	12.2	17.1	17.7	16.5	21.8	20.4	23.6	35.2	22.5	24.2	31.8	29.0	19.8	20.8	19.5	12.8	13.0	14.8	11.9	8.5	12.0	**18.2**	**35.2**	**8.5**
11	7.8	7.3	7.2	9.7	8.9	10.2	13.6	12.9	14.3	15.9	12.1	11.9	16.3	31.9	12.1	11.0	11.0	12.0	12.0	13.0	11.8	13.1	14.1	19.7	**12.9**	**31.9**	**7.2**
12	19.1	18.0	24.9	15.7	15.2	31.8	32.5	26.9	14.4	13.4	15.9	15.1	18.0	15.3	17.6	21.5	20.1	15.9	17.9	15.9	18.4	20.2	18.5	23.0	**19.4**	**32.5**	**13.4**
13	32.8	25.6	22.0	19.7	44.0	57.9	89.0	34.0	27.1	17.8	14.7	22.2	22.5	28.8	32.6	26.5	25.8	28.6	39.1	18.7	16.2	16.3	18.2	17.8	**29.1**	**89.0**	**14.7**
14	22.8	18.7	18.6	19.8	23.8	18.0	21.4	20.6	23.6	22.9	22.4	22.0	20.2	22.2	19.7	19.6	21.8	19.0	20.5	22.9	16.8	16.7	13.1	9.4	**19.9**	**23.8**	**9.4**
15	11.4	15.7	12.2	14.7	14.1	14.4	15.2	12.2	12.6	10.9	10.1	10.1	11.4	11.9	10.8	11.8	10.8	12.3	12.0	10.8	14.9	17.2	19.1	18.7	**13.1**	**19.1**	**10.1**
16	79.0	27.6	24.3	49.6	17.3	18.4	15.4	14.5	13.3	13.1	14.6	14.5	13.6	12.6	13.2	12.3	14.1	15.5	16.5	15.2	14.8	16.2	14.6	14.5	**19.8**	**79.0**	**12.3**
17	13.9	13.7	13.2	14.2	15.5	31.7	30.8	26.9	29.9	26.9	24.1	22.3	25.2	25.8	26.9	25.3	23.1	20.9	19.9	17.5	16.3	13.7	15.1	16.3	**21.2**	**31.7**	**13.2**
18	15.7	12.9	14.8	15.3	21.5	25.5	23.6	22.7	20.2	19.2	16.1	14.1	16.4	21.3	25.8	23.9	20.3	21.7	19.9	17.9	15.5	15.0	12.5	10.4	**18.4**	**25.8**	**10.4**
19	10.4	15.1	17.5	14.4	16.3	23.5	21.6	20.9	15.0	13.4	12.4	11.3	12.2	13.6	14.5	13.8	12.7	11.4	15.1	20.2	16.4	27.2	18.3	17.7	**16.0**	**27.2**	**10.4**
20	15.6	20.8	20.2	22.2	29.6	24.4	30.3	23.2	19.9	22.5	15.0	12.6	11.5	20.9	17.7	19.0	16.0	16.0	17.1	14.7	15.3	19.7	18.2	15.9	**19.1**	**30.3**	**11.5**
21	20.5	17.2	14.2	22.7	20.4	18.8	25.5	27.0	22.2	23.5	21.9	31.9	18.9	28.5	19.3	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
22	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
23	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
24	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
25	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
26	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
27	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
28	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
29	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
30	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
MEAN	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**19.8**		
MAX	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**		**89.0**	
MIN	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**			**7.2**

POSSIBLE NUMBER OF OBSERVATIONS = 720 ACTUAL NUMBER OF OBSERVATIONS = 495 DATA RECOVERY RATE = 68.8% DATA CAPTURE RATE = 66.7%

MONTHLY MEAN = 19.8 µg/m3

MAXIMUM PM10 = 89.0 µg/m3 DATE OF OCCURRENCE = 6/13 at 700 MAXIMUM DAILY MEAN = 29.6 µg/m3 DATE OF OCCURRENCE = 6/7

SECOND MAXIMUM PM10 = 79.0 µg/m3 DATE OF OCCURRENCE = 6/16 at 100 SECOND MAXIMUM DAILY MEAN = 29.1 µg/m3 DATE OF OCCURRENCE = 6/13

MINIMUM PM10 = 7.2 µg/m3 DATE OF OCCURRENCE = 6/11 at 300 MINUMUM DAILY MEAN = 12.9 µg/m3 DATE OF OCCURRENCE = 6/11

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

Draft

CSX AQ5 T640x

HOURLY AVERAGES of PM2.5 in µg/m3 for APRIL, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	11.3	12.1	12.7	10.3	11.5	11.2	12.7	10.3	6.1	4.2	3.6	2.4	2.8	3.6	4.1	4.8	5.8	6.9	8.4	7.6	7.0	6.6	11.1	9.0	**7.7**	**12.7**	**2.4**
2	8.7	10.3	7.9	6.2	8.4	6.7	6.0	6.2	4.0	2.6	1.7	2.6	2.1	2.8	2.0	1.0	0.7	0.9	1.1	1.5	1.3	1.2	1.1	1.3	**3.6**	**10.3**	**0.7**
3	1.8	2.1	2.1	2.5	2.6	2.1	1.4	1.3	2.2	2.3	1.0	0.7	0.6	0.4	1.5	0.7	0.5	1.0	2.9	2.4	2.9	5.7	3.3	2.8	**1.9**	**5.7**	**0.4**
4	2.9	4.8	6.0	6.1	7.0	8.6	11.0	10.3	9.3	6.0	4.7	4.0	6.1	7.4	4.0	1.4	1.1	1.2	1.2	1.2	1.7	2.1	1.9	2.0	**4.6**	**11.0**	**1.1**
5	1.7	1.6	1.7	1.9	2.6	3.3	4.1	5.8	4.8	3.4	2.3	2.1	2.6	3.0	2.9	3.6	3.4	3.0	2.8	2.2	2.2	2.0	2.1	2.5	**2.8**	**5.8**	**1.6**
6	2.7	2.8	2.9	2.8	2.8	2.8	3.0	4.3	5.2	2.1	1.7	1.5	1.6	1.9	2.4	2.2	2.5	2.7	2.8	3.2	4.0	4.6	4.3	4.3	**2.9**	**5.2**	**1.5**
7	4.0	4.4	5.2	4.6	5.7	4.8	3.9	3.4	2.7	2.4	1.5	1.7	1.8	1.8	1.9	1.8	1.6	1.7	2.1	2.7	3.7	5.5	4.2	4.6	**3.2**	**5.7**	**1.5**
8	6.1	6.3	7.3	6.6	6.7	8.3	8.8	11.8	10.1	8.4	5.5	5.1	5.8	4.1	3.6	3.4	3.1	3.0	3.0	3.2	3.9	4.7	5.5	7.5	**5.9**	**11.8**	**3.0**
9	10.6	10.0	8.6	8.1	9.1	10.4	14.0	12.8	9.1	9.8	11.8	7.6	7.5	7.6	8.2	8.8	12.2	15.8	18.4	17.7	18.7	19.9	21.0	22.7	**12.5**	**22.7**	**7.5**
10	25.9	27.6	28.6	23.4	23.1	24.2	25.8	24.6	32.5	21.1	10.1	7.8	7.7	8.9	12.3	11.2	9.6	9.8	8.2	11.8	7.9	9.0	14.9	10.7	**16.5**	**32.5**	**7.7**
11	10.2	9.6	7.3	8.4	8.9	8.8	8.2	7.5	5.6	5.4	6.2	7.1	8.5	7.4	8.0	7.4	7.6	8.0	8.0	8.0	9.2	10.0	11.0	10.1	**8.1**	**11.0**	**5.4**
12	7.4	6.9	4.1	3.7	3.8	4.3	5.0	2.9	0.9	2.1	2.7	3.0	3.4	3.5	2.8	2.3	1.8	1.9	2.0	2.0	0.9	0.7	1.0	1.6	**2.9**	**7.4**	**0.7**
13	2.1	1.5	1.2	2.1	1.9	2.2	2.3	2.6	2.7	2.8	3.4	3.1	3.9	4.4	3.3	2.9	3.3	2.7	2.7	3.0	3.1	4.1	4.8	3.9	**2.9**	**4.8**	**1.2**
14	3.9	8.8	4.0	4.3	4.6	4.7	4.9	4.2	3.7	3.6	4.5	5.4	8.4	11.1	13.7	18.9	9.8	13.5	9.5	7.5	7.5	8.3	9.2	5.5	**7.4**	**18.9**	**3.6**
15	4.0	4.8	7.9	8.4	5.3	7.2	9.2	7.4	6.7	9.3	10.5	11.9	10.2	8.2	8.5	8.3	8.6	8.8	9.8	11.6	15.8	16.6	15.3	8.8	**9.2**	**16.6**	**4.0**
16	5.7	5.6	4.3	4.6	5.0	5.1	7.6	6.4	4.0	4.3	5.4	4.9	4.5	4.4	5.0	6.2	5.6	5.1	4.7	4.8	5.2	5.6	7.8	6.5	**5.3**	**7.8**	**4.0**
17	5.7	5.4	5.5	5.3	6.1	6.6	6.7	6.7	6.4	7.0	16.3	6.6	6.4	6.9	9.6	8.6	12.2	8.9	7.6	7.2	6.3	6.9	7.9	11.5	**7.6**	**16.3**	**5.3**
18	15.0	14.8	14.6	15.3	15.9	21.4	25.1	26.3	22.8	21.5	20.2	20.0	17.2	15.3	11.0	11.3	9.4	8.1	6.6	7.0	10.6	12.6	12.1	10.6	**15.1**	**26.3**	**6.6**
19	8.2	6.9	5.3	4.0	3.7	3.1	3.4	3.9	4.3	4.0	4.8	6.4	8.5	12.8	10.8	9.3	10.2	7.7	7.1	6.6	7.0	7.1	7.3	7.0	**6.6**	**12.8**	**3.1**
20	6.7	6.4	7.2	7.8	9.1	11.5	15.5	17.2	18.0	15.4	8.1	6.2	4.5	3.9	3.6	3.5	5.9	3.3	3.4	3.7	3.6	3.7	3.3	3.1	**7.2**	**18.0**	**3.1**
21	3.0	2.9	3.2	3.2	3.0	2.6	2.5	2.9	2.8	2.5	2.9	3.8	4.3	4.4	4.2	4.1	4.2	3.9	3.8	4.0	4.3	5.8	7.0	6.7	**3.8**	**7.0**	**2.5**
22	6.2	5.3	5.3	5.8	6.2	5.7	6.3	6.2	4.6	4.4	4.5	4.7	5.1	5.0	4.8	4.4	5.0	4.2	4.8	5.2	5.3	5.6	6.1	7.6	**5.3**	**7.6**	**4.2**
23	7.5	8.8	8.9	8.9	9.3	11.3	12.0	14.4	14.2	14.0	6.2	6.1	5.8	6.3	6.0	6.7	6.8	8.7	5.3	5.7	5.7	5.4	5.5	5.7	**8.1**	**14.4**	**5.3**
24	6.0	6.5	7.2	7.4	9.7	10.0	9.5	9.1	8.8	---	6.5	6.7	6.0	6.1	6.2	8.0	5.3	5.0	4.2	3.9	3.8	5.3	3.3	3.3	**6.4**	**10.0**	**3.3**
25	4.0	4.4	4.6	4.4	3.9	3.3	3.7	4.2	4.1	4.3	4.7	4.8	5.7	7.6	13.6	10.4	10.6	7.6	6.9	7.3	7.1	7.1	6.7	6.8	**6.1**	**13.6**	**3.3**
26	7.7	10.9	7.2	6.4	6.5	7.0	7.5	7.1	6.8	6.2	7.2	6.0	4.1	3.4	3.4	2.9	2.9	3.2	3.4	5.9	4.4	4.9	5.6	4.8	**5.6**	**10.9**	**2.9**
27	4.7	5.3	4.2	5.0	5.6	4.4	5.2	4.9	4.8	5.2	5.7	5.8	5.9	5.4	4.8	4.6	5.0	5.2	5.7	5.0	4.5	4.6	4.7	5.1	**5.0**	**5.9**	**4.2**
28	5.4	6.1	6.6	6.6	5.7	5.8	5.7	8.6	15.7	12.2	14.7	14.6	13.4	11.2	11.5	11.7	12.5	13.2	12.9	13.6	14.0	13.4	13.6	14.5	**10.9**	**15.7**	**5.4**
29	13.7	12.3	12.2	14.1	12.8	14.0	12.6	11.7	13.9	17.2	15.2	13.7	14.8	12.4	12.3	12.3	12.8	12.1	11.5	12.1	12.8	13.2	12.9	13.3	**13.1**	**17.2**	**11.5**
30	13.3	13.1	17.4	18.6	17.1	16.3	16.6	15.9	15.2	14.6	14.8	14.3	13.0	12.1	11.9	12.5	11.9	10.2	10.8	10.8	11.8	4.2	4.1	6.4	**12.7**	**18.6**	**4.1**
MEAN	**7.2**	**7.6**	**7.4**	**7.2**	**7.5**	**7.9**	**8.7**	**8.7**	**8.4**	**7.5**	**6.9**	**6.4**	**6.4**	**6.4**	**6.6**	**6.5**	**6.4**	**6.2**	**6.1**	**6.3**	**6.5**	**6.9**	**7.3**	**7.0**	**7.1**		
MAX	**25.9**	**27.6**	**28.6**	**23.4**	**23.1**	**24.2**	**25.8**	**26.3**	**32.5**	**21.5**	**20.2**	**20.0**	**17.2**	**15.3**	**13.7**	**18.9**	**12.8**	**15.8**	**18.4**	**17.7**	**18.7**	**19.9**	**21.0**	**22.7**		**32.5**	
MIN	**1.7**	**1.5**	**1.2**	**1.9**	**1.9**	**2.1**	**1.4**	**1.3**	**0.9**	**2.1**	**1.0**	**0.7**	**0.6**	**0.4**	**1.5**	**0.7**	**0.5**	**0.9**	**1.1**	**1.2**	**0.9**	**0.7**	**1.0**	**1.3**			**0.4**

POSSIBLE NUMBER OF OBSERVATIONS = 720 ACTUAL NUMBER OF OBSERVATIONS = 719 DATA RECOVERY RATE = 99.9% DATA CAPTURE RATE = 100.0%

MONTHLY MEAN = 7.1 µg/m3

MAXIMUM PM2.5 = 32.5 µg/m3 DATE OF OCCURRENCE = 4/10 at 900 MAXIMUM DAILY MEAN = 16.5 µg/m3 DATE OF OCCURRENCE = 4/10

SECOND MAXIMUM PM2.5 = 28.6 µg/m3 DATE OF OCCURRENCE = 4/10 at 300 SECOND MAXIMUM DAILY MEAN = 15.1 µg/m3 DATE OF OCCURRENCE = 4/18

MINIMUM PM2.5 = 0.4 µg/m3 DATE OF OCCURRENCE = 4/3 at 1400 MINUMUM DAILY MEAN = 1.9 µg/m3 DATE OF OCCURRENCE = 4/3

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

Draft

CSX AQ5 T640x

HOURLY AVERAGES of PM2.5 in µg/m3 for MAY, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	4.6	5.6	5.6	5.6	5.8	5.7	6.9	7.8	5.3	5.1	5.7	5.5	5.7	5.5	5.8	5.7	5.8	5.5	5.5	7.0	7.2	6.8	6.5	7.3	**5.9**	**7.8**	**4.6**
2	7.1	7.5	7.7	8.1	8.8	10.5	10.6	12.1	12.1	10.0	9.2	9.5	7.8	7.6	7.5	7.6	7.6	7.8	8.3	9.7	10.8	11.9	11.2	14.3	**9.3**	**14.3**	**7.1**
3	13.1	9.4	8.4	6.2	5.8	5.8	6.3	5.6	5.3	5.2	5.3	4.9	5.9	6.2	7.0	5.4	5.3	5.2	5.1	5.3	4.4	3.8	3.5	3.8	**5.9**	**13.1**	**3.5**
4	4.5	4.6	3.9	3.8	4.0	4.6	5.3	5.4	3.9	5.1	4.5	4.0	4.0	2.4	1.4	1.7	1.7	1.7	2.7	3.8	5.1	5.6	6.5	4.9	**3.9**	**6.5**	**1.4**
5	5.0	5.1	6.0	4.9	3.6	2.5	2.4	2.5	2.9	2.7	3.9	3.9	5.9	4.8	5.6	5.4	4.3	4.5	5.1	12.7	15.8	6.2	6.9	6.6	**5.3**	**15.8**	**2.4**
6	7.1	8.6	9.7	9.0	6.1	5.8	7.6	7.7	7.2	7.5	11.1	10.9	11.9	10.0	9.7	8.5	8.0	8.9	8.5	10.5	10.1	12.1	13.3	11.8	**9.2**	**13.3**	**5.8**
7	10.0	11.2	11.9	11.2	12.2	11.0	9.6	9.8	12.6	10.1	10.7	13.1	10.2	10.1	10.0	10.8	14.3	11.1	11.0	9.7	8.0	7.6	6.4	6.3	**10.3**	**14.3**	**6.3**
8	6.7	6.4	7.3	7.7	7.7	8.4	9.3	9.6	9.9	9.3	9.3	8.0	6.9	6.6	6.7	6.5	6.6	6.4	6.6	6.9	7.8	8.2	7.3	7.2	**7.6**	**9.9**	**6.4**
9	7.2	7.0	6.9	7.1	6.9	8.4	7.5	5.2	4.5	4.5	4.5	4.7	4.6	5.2	6.2	5.3	4.3	4.0	4.8	5.0	5.3	6.0	4.4	5.1	**5.6**	**8.4**	**4.0**
10	3.9	3.3	3.2	3.5	3.9	4.2	4.5	4.6	4.1	3.4	3.0	1.8	1.7	1.4	1.2	1.1	1.1	1.6	1.4	1.1	1.5	1.5	2.1	2.6	**2.5**	**4.6**	**1.1**
11	3.2	3.4	3.6	3.3	3.6	4.1	4.7	3.6	3.6	3.5	2.7	2.5	2.6	2.3	2.3	2.6	4.1	2.9	3.2	3.6	3.9	4.9	5.0	5.3	**3.5**	**5.3**	**2.3**
12	3.7	3.6	3.4	4.0	4.8	5.6	6.7	6.5	4.3	3.8	3.6	4.0	4.7	3.4	3.6	3.6	3.1	3.5	3.3	3.3	3.4	3.9	6.7	6.8	**4.3**	**6.8**	**3.1**
13	5.7	6.2	5.4	5.3	6.8	8.1	7.5	6.3	6.2	5.9	5.7	5.5	5.7	5.2	6.3	6.3	6.0	5.7	5.2	5.2	5.2	5.4	5.3	5.4	**5.8**	**8.1**	**5.2**
14	6.7	6.0	6.6	9.1	7.9	9.3	9.7	7.9	7.4	6.7	7.9	6.4	7.5	6.6	7.3	6.2	6.9	6.1	7.0	7.0	15.5	10.6	5.5	4.3	**7.5**	**15.5**	**4.3**
15	4.2	3.8	3.9	4.2	4.1	4.0	3.4	2.8	2.8	2.9	2.4	2.1	2.5	3.4	3.7	3.9	4.1	4.3	5.0	4.5	4.7	5.3	6.4	6.3	**3.9**	**6.4**	**2.1**
16	5.9	7.0	7.4	7.1	7.2	8.4	7.5	5.0	3.9	3.7	3.7	3.6	4.2	3.8	3.5	3.4	3.5	3.4	3.4	3.0	2.7	2.6	2.7	3.2	**4.5**	**8.4**	**2.6**
17	3.3	3.3	3.1	3.3	3.7	3.1	3.4	4.2	4.2	4.3	4.2	3.9	4.3	5.6	5.2	3.7	4.2	3.1	3.4	3.9	3.9	4.4	5.2	4.5	**3.9**	**5.6**	**3.1**
18	4.7	4.8	5.3	6.0	5.6	6.0	5.8	6.0	6.4	7.1	7.5	6.5	10.3	7.8	8.4	10.2	9.2	10.6	11.2	9.8	12.6	14.4	14.7	15.7	**8.6**	**15.7**	**4.7**
19	16.2	12.4	10.5	10.4	11.8	11.3	8.5	8.8	10.1	12.6	13.0	11.1	11.8	11.6	10.0	10.4	11.0	9.9	9.0	10.7	12.0	13.4	14.7	13.2	**11.4**	**16.2**	**8.5**
20	6.2	5.2	3.8	3.4	4.5	4.2	4.2	5.0	3.9	3.6	3.7	4.1	5.4	8.0	6.8	6.9	6.1	6.6	7.4	7.3	8.1	8.3	8.1	7.8	**5.7**	**8.3**	**3.4**
21	9.4	11.4	10.0	9.8	10.5	10.0	11.1	10.5	9.0	7.9	7.9	7.7	8.1	8.1	8.2	7.2	7.0	6.3	5.4	6.9	7.5	7.4	6.6	6.3	**8.3**	**11.4**	**5.4**
22	5.5	5.8	5.9	6.0	6.4	5.7	5.0	5.3	5.7	5.7	5.9	4.9	5.5	6.3	15.0	6.7	6.7	7.6	8.4	8.5	7.5	6.5	6.4	6.3	**6.6**	**15.0**	**4.9**
23	8.3	9.9	10.4	12.2	14.2	16.1	17.0	15.4	13.1	14.6	11.3	10.3	10.1	8.4	8.5	8.8	8.2	8.8	9.9	10.8	10.6	12.0	14.1	14.9	**11.5**	**17.0**	**8.2**
24	35.6	20.8	14.0	14.1	13.3	14.8	16.1	12.6	8.6	7.0	7.3	7.1	6.1	5.5	6.9	7.4	7.7	8.3	8.7	10.3	13.1	11.7	11.3	11.9	**11.6**	**35.6**	**5.5**
25	13.1	15.8	16.1	16.0	16.3	15.7	16.3	15.3	15.3	14.9	14.4	12.5	11.9	11.3	10.7	10.2	9.3	10.1	10.5	11.6	10.7	5.8	6.4	7.0	**12.3**	**16.3**	**5.8**
26	8.6	9.3	9.9	9.3	9.1	8.9	8.6	7.8	7.4	7.0	7.1	8.7	9.2	9.3	7.5	7.1	8.2	7.8	8.9	9.9	10.4	10.3	9.3	8.9	**8.6**	**10.4**	**7.0**
27	9.0	8.0	8.7	9.3	10.1	9.7	8.1	7.6	8.5	8.3	8.2	7.8	7.5	7.6	7.9	7.4	8.0	7.9	6.6	7.0	5.7	4.6	4.8	4.8	**7.6**	**10.1**	**4.6**
28	5.1	5.6	6.0	5.7	6.2	5.4	5.0	4.1	4.3	4.7	4.6	3.6	4.2	4.9	4.6	4.6	4.9	4.7	3.7	4.0	4.6	4.6	4.4	6.0	**4.8**	**6.2**	**3.6**
29	45.5	4.1	4.1	4.5	5.0	6.2	4.9	6.4	5.1	4.1	3.4	4.1	5.1	3.5	4.2	5.1	7.0	5.2	5.4	4.6	4.6	4.3	4.6	4.7	**6.4**	**45.5**	**3.4**
30	4.3	4.0	4.1	3.9	3.8	4.4	4.5	4.8	---	5.3	5.1	5.0	5.3	5.6	5.4	5.0	5.0	4.9	4.5	4.4	5.1	5.6	6.2	6.4	**4.8**	**6.4**	**3.8**
31	5.6	5.0	4.6	4.9	4.9	4.6	5.2	4.6	6.2	5.1	4.8	4.8	5.3	5.0	4.8	4.4	4.3	4.2	4.6	5.0	9.9	11.3	12.7	12.0	**5.9**	**12.7**	**4.2**
MEAN	**9.0**	**7.2**	**7.0**	**7.1**	**7.2**	**7.5**	**7.5**	**7.1**	**6.8**	**6.5**	**6.5**	**6.2**	**6.5**	**6.2**	**6.5**	**6.1**	**6.2**	**6.1**	**6.2**	**6.9**	**7.7**	**7.3**	**7.4**	**7.5**	**6.9**		
MAX	**45.5**	**20.8**	**16.1**	**16.0**	**16.3**	**16.1**	**17.0**	**15.4**	**15.3**	**14.9**	**14.4**	**13.1**	**11.9**	**11.6**	**15.0**	**10.8**	**14.3**	**11.1**	**11.2**	**12.7**	**15.8**	**14.4**	**14.7**	**15.7**		**45.5**	
MIN	**3.2**	**3.3**	**3.1**	**3.3**	**3.6**	**2.5**	**2.4**	**2.5**	**2.8**	**2.7**	**2.4**	**1.8**	**1.7**	**1.4**	**1.2**	**1.1**	**1.1**	**1.6**	**1.4**	**1.1**	**1.5**	**1.5**	**2.1**	**2.6**			**1.1**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 743 DATA RECOVERY RATE = 99.9% DATA CAPTURE RATE = 100.0%

MONTHLY MEAN = 6.9 µg/m3

MAXIMUM PM2.5 = 45.5 µg/m3 DATE OF OCCURRENCE = 5/29 at 100 MAXIMUM DAILY MEAN = 12.3 µg/m3 DATE OF OCCURRENCE = 5/25

SECOND MAXIMUM PM2.5 = 35.6 µg/m3 DATE OF OCCURRENCE = 5/24 at 100 SECOND MAXIMUM DAILY MEAN = 11.6 µg/m3 DATE OF OCCURRENCE = 5/24

MINIMUM PM2.5 = 1.1 µg/m3 DATE OF OCCURRENCE = 5/10 at 1600 MINUMUM DAILY MEAN = 2.5 µg/m3 DATE OF OCCURRENCE = 5/10

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

Draft

CSX AQ5 T640x

HOURLY AVERAGES of PM2.5 in µg/m3 for JUNE, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	7.5	5.9	6.2	5.9	6.6	6.4	7.1	6.3	5.9	5.8	4.7	4.1	3.9	4.0	4.2	5.0	4.5	5.0	5.3	7.6	7.6	7.7	7.1	7.1	**5.8**	**7.7**	**3.9**
2	6.7	6.7	7.9	7.8	7.6	7.5	8.0	10.8	9.7	10.2	10.8	11.0	10.8	11.8	12.8	13.8	17.9	10.9	9.9	9.8	10.8	11.6	9.3	10.4	**10.1**	**17.9**	**6.7**
3	10.7	10.3	10.0	10.1	9.8	10.2	9.7	10.0	10.7	11.8	9.8	8.8	8.1	10.2	10.9	9.4	6.9	7.6	9.5	10.1	11.8	13.8	11.7	13.0	**10.2**	**13.8**	**6.9**
4	9.9	8.5	9.2	9.5	9.6	10.4	10.1	10.6	10.0	13.2	12.3	9.5	7.9	8.2	9.7	10.1	9.8	9.4	8.9	6.9	7.0	7.9	8.7	8.5	**9.4**	**13.2**	**6.9**
5	10.5	9.2	8.9	9.3	10.2	11.3	11.8	10.7	10.1	12.7	10.9	10.5	10.4	10.8	12.4	9.9	10.3	10.3	10.5	10.4	10.6	10.8	9.9	10.0	**10.5**	**12.7**	**8.9**
6	9.9	10.8	10.2	10.3	10.9	10.8	10.7	9.9	9.8	9.1	10.1	9.9	9.8	8.7	7.6	6.6	5.8	4.9	5.3	6.6	7.3	7.9	7.8	8.1	**8.7**	**10.9**	**4.9**
7	6.4	5.8	6.0	6.1	6.4	6.2	5.6	7.0	5.0	6.4	7.2	6.1	5.7	5.5	4.1	4.6	4.7	4.5	4.4	3.6	3.6	4.4	4.2	4.1	**5.3**	**7.2**	**3.6**
8	3.9	4.1	3.7	3.6	3.5	3.4	3.5	3.8	3.6	3.3	2.9	5.4	4.7	4.1	3.5	3.8	3.9	3.5	3.6	4.5	5.8	9.1	8.8	9.1	**4.5**	**9.1**	**2.9**
9	7.9	7.4	6.6	7.3	8.2	6.9	7.6	7.0	7.2	6.1	8.2	6.5	5.4	3.4	3.4	2.8	3.2	3.5	3.5	4.1	5.0	5.6	5.5	10.7	**5.9**	**10.7**	**2.8**
10	4.4	3.8	4.1	4.1	4.2	4.2	4.1	4.5	4.7	4.6	5.5	5.0	5.6	6.4	5.8	5.4	5.3	5.2	4.2	3.7	3.9	3.7	3.5	3.3	**4.5**	**6.4**	**3.3**
11	3.1	3.1	3.3	3.9	3.8	4.1	4.2	4.4	4.6	5.0	4.1	4.0	4.5	5.9	4.1	4.7	4.8	5.2	5.5	5.9	5.7	6.1	6.3	8.5	**4.7**	**8.5**	**3.1**
12	7.4	7.4	8.0	6.9	6.7	8.6	8.8	8.3	5.7	6.2	7.5	7.6	8.2	8.1	8.3	8.8	9.1	8.7	9.2	9.0	9.2	10.2	10.5	12.1	**8.3**	**12.1**	**5.7**
13	13.9	12.2	10.2	11.2	14.7	16.2	16.9	11.9	10.9	9.6	8.0	9.7	11.1	11.9	11.0	10.7	9.5	8.9	9.3	8.0	6.9	7.4	8.2	9.0	**10.7**	**16.9**	**6.9**
14	11.0	10.8	10.9	11.7	12.7	12.4	12.8	12.7	13.0	12.7	11.8	12.1	12.1	12.3	11.2	10.4	11.3	10.4	9.5	9.7	6.2	5.7	4.9	4.3	**10.5**	**13.0**	**4.3**
15	4.8	4.7	5.3	6.6	6.6	6.7	7.0	5.5	5.3	4.9	4.8	5.0	5.3	5.7	5.5	5.7	5.8	5.6	5.5	5.9	6.7	7.8	9.1	8.9	**6.0**	**9.1**	**4.7**
16	16.0	12.2	11.2	14.5	10.1	9.5	8.7	8.1	7.3	7.3	8.0	8.2	8.1	7.5	6.7	7.0	7.5	8.7	8.8	8.2	7.6	7.7	7.0	7.0	**8.8**	**16.0**	**6.7**
17	6.8	6.6	7.1	7.5	7.9	10.2	9.4	8.6	8.4	8.8	9.3	10.0	12.1	13.8	14.6	12.1	10.7	9.4	8.1	7.3	6.4	6.0	5.8	6.4	**8.8**	**14.6**	**5.8**
18	6.7	6.0	6.2	6.8	7.4	7.4	7.2	7.6	7.7	8.1	7.0	6.2	7.4	9.8	11.9	12.0	12.2	12.6	10.2	9.5	7.7	5.8	4.9	4.6	**8.0**	**12.6**	**4.6**
19	4.6	5.5	5.3	5.1	5.7	6.3	5.8	5.8	5.1	4.9	4.2	4.4	4.9	4.9	5.0	4.9	5.4	4.9	5.2	6.5	6.1	8.5	6.3	5.9	**5.4**	**8.5**	**4.2**
20	6.3	7.4	6.8	7.8	9.0	7.7	7.5	6.2	6.2	6.5	5.3	4.8	4.7	6.5	7.6	7.8	7.6	6.7	6.6	6.5	6.5	7.5	7.0	6.3	**6.7**	**9.0**	**4.7**
21	7.0	7.1	6.9	7.7	7.6	7.3	8.3	8.3	8.0	8.0	7.8	7.8	7.1	8.0	7.7	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
22	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
23	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
24	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
25	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
26	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
27	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
28	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
29	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
30	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
MEAN	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**7.7**		
MAX	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---		**17.9**	
MIN	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---			**2.8**

POSSIBLE NUMBER OF OBSERVATIONS = 720 ACTUAL NUMBER OF OBSERVATIONS = 495 DATA RECOVERY RATE = 68.8% DATA CAPTURE RATE = 66.7%

MONTHLY MEAN = 7.7 µg/m3

MAXIMUM PM2.5 = 17.9 µg/m3 DATE OF OCCURRENCE = 6/2 at 1700 MAXIMUM DAILY MEAN = 10.7 µg/m3 DATE OF OCCURRENCE = 6/13

SECOND MAXIMUM PM2.5 = 16.9 µg/m3 DATE OF OCCURRENCE = 6/13 at 700 SECOND MAXIMUM DAILY MEAN = 10.5 µg/m3 DATE OF OCCURRENCE = 6/5

MINIMUM PM2.5 = 2.8 µg/m3 DATE OF OCCURRENCE = 6/9 at 1600 MINUMUM DAILY MEAN = 4.5 µg/m3 DATE OF OCCURRENCE = 6/8

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

Draft

APPENDIX H. HOURLY AQ8 PM_{10} AND $PM_{2.5}$ CONCENTRATION DATA FOR SECOND QUARTER 2024

Draft

CSX AQ8 T640x

HOURLY AVERAGES of PM10 in µg/m3 for APRIL, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	14.6	15.9	19.4	16.9	18.1	15.1	16.4	17.5	9.8	6.9	6.9	3.1	3.9	6.4	6.0	6.9	8.8	10.3	12.4	11.9	12.0	13.3	25.4	36.1	**13.1**	**36.1**	**3.1**
2	15.5	13.7	10.8	10.1	11.4	10.5	8.2	11.3	7.9	11.2	10.9	5.8	7.6	4.6	6.0	6.1	1.8	1.8	2.3	2.7	2.2	2.0	2.0	2.7	**7.0**	**15.5**	**1.8**
3	3.6	3.8	3.6	4.0	4.5	3.2	2.1	3.2	4.8	5.1	2.8	2.4	2.2	1.2	3.5	1.3	2.0	1.6	4.5	3.4	9.4	8.3	5.6	4.9	**3.8**	**9.4**	**1.2**
4	3.8	5.8	7.3	7.9	9.0	11.1	14.6	14.9	13.2	9.3	7.9	7.6	10.8	15.4	7.3	2.7	4.0	2.4	2.5	2.6	4.1	3.4	4.1	3.0	**7.3**	**15.4**	**2.4**
5	2.5	2.0	2.4	2.4	4.0	7.1	7.9	8.2	7.2	5.4	4.6	5.2	6.9	6.3	6.4	5.7	6.6	5.8	5.5	5.8	3.2	3.0	3.3	3.1	**5.0**	**8.2**	**2.0**
6	3.8	3.8	3.9	3.9	3.8	4.8	5.0	4.9	7.6	7.2	4.3	3.7	4.8	5.4	5.7	4.5	4.5	4.9	5.4	6.1	7.6	6.9	7.4	7.9	**5.3**	**7.9**	**3.7**
7	6.7	8.7	9.6	8.5	9.5	8.3	7.4	6.5	5.7	4.9	6.4	4.6	4.1	3.9	4.3	4.0	3.9	4.3	5.4	6.5	11.8	12.1	7.9	7.5	**6.8**	**12.1**	**3.9**
8	13.4	10.1	13.2	10.7	12.7	17.4	51.2	30.1	23.3	21.3	28.4	14.3	23.2	32.1	25.0	14.9	14.2	11.7	9.4	9.0	12.4	15.5	16.8	17.2	**18.6**	**51.2**	**9.0**
9	23.1	16.1	16.1	14.2	23.4	59.1	93.5	42.6	19.2	41.3	61.6	32.5	44.5	29.3	28.4	31.6	29.5	24.9	29.9	26.1	25.0	28.2	28.0	31.1	**33.3**	**93.5**	**14.2**
10	44.0	54.5	50.9	35.5	39.5	42.5	51.3	84.6	87.3	49.0	23.3	13.0	21.9	20.3	37.5	27.5	23.3	29.8	29.4	38.6	28.4	27.2	31.6	19.3	**37.9**	**87.3**	**13.0**
11	15.3	13.2	12.5	19.5	19.9	24.8	27.9	22.0	19.3	24.6	48.3	52.0	47.4	71.0	50.9	29.8	15.3	16.3	17.1	18.7	21.7	22.3	21.5	20.5	**27.2**	**71.0**	**12.5**
12	15.3	13.9	8.8	8.1	7.6	8.4	12.2	8.1	2.5	5.0	7.3	8.1	10.6	11.7	9.8	11.1	7.9	5.3	6.3	5.5	5.1	2.7	4.5	3.8	**7.9**	**15.3**	**2.5**
13	6.0	3.2	3.3	18.1	4.1	4.6	5.3	5.1	5.7	9.4	18.2	8.2	18.6	8.3	7.7	9.7	9.1	7.8	5.9	5.8	6.4	7.4	7.3	10.4	**8.2**	**18.6**	**3.2**
14	8.0	43.4	8.1	9.7	7.9	8.4	9.7	10.0	10.9	9.2	11.3	15.0	18.8	23.0	31.0	34.7	21.4	25.7	22.3	22.7	56.0	21.3	23.5	13.9	**19.4**	**56.0**	**7.9**
15	9.8	14.9	34.8	36.5	15.0	20.3	27.1	22.7	19.8	29.0	54.8	60.6	38.6	25.6	25.9	35.3	39.3	29.9	22.9	42.3	58.3	35.7	50.4	27.0	**32.4**	**60.6**	**9.8**
16	51.5	118.6	10.7	12.1	13.3	19.9	86.8	33.5	26.2	18.4	31.3	30.0	23.5	34.6	42.3	50.6	19.6	19.6	15.2	11.8	28.2	13.5	14.3	14.2	**30.8**	**118.6**	**10.7**
17	25.0	11.3	12.4	15.7	14.8	29.2	20.3	33.7	19.7	23.5	31.4	17.6	12.4	20.5	27.0	16.4	27.1	23.7	17.6	16.8	13.7	13.0	14.4	18.4	**19.8**	**33.7**	**11.3**
18	24.1	22.2	23.0	24.6	27.4	38.6	53.7	44.7	35.5	34.6	33.6	33.8	36.6	33.2	29.3	18.1	16.1	17.2	14.2	12.6	24.0	22.0	27.6	22.9	**27.9**	**53.7**	**12.6**
19	21.5	13.0	10.2	6.4	6.4	6.1	8.2	15.5	15.0	13.8	14.1	16.5	18.3	21.8	22.4	14.9	12.3	12.4	12.1	12.0	11.6	14.7	13.3	12.5	**13.5**	**22.4**	**6.1**
20	12.7	12.1	12.3	11.5	12.6	14.3	20.5	25.0	27.4	20.0	11.7	11.5	11.9	10.1	15.0	10.7	8.8	10.2	11.2	12.4	9.8	11.7	8.4	6.4	**13.3**	**27.4**	**6.4**
21	7.3	7.3	7.5	7.2	5.7	5.3	4.1	6.7	7.9	5.7	4.4	6.6	7.9	7.3	7.0	7.9	7.2	7.6	7.8	7.3	7.9	9.9	14.2	12.1	**7.5**	**14.2**	**4.1**
22	11.7	10.2	9.6	9.7	9.0	8.6	11.3	22.3	10.9	12.0	17.3	10.4	19.9	24.2	12.3	15.9	9.9	9.0	11.3	18.6	15.1	11.7	9.7	14.2	**13.1**	**24.2**	**8.6**
23	16.5	26.6	13.5	20.7	16.6	40.8	37.6	40.8	40.1	58.4	25.7	29.8	46.2	38.3	37.5	33.7	42.9	43.6	18.4	16.5	16.5	12.2	10.0	10.4	**28.9**	**58.4**	**10.0**
24	12.1	13.2	13.5	12.5	19.3	23.0	33.1	27.7	26.5	23.6	22.4	---	22.7	19.1	19.3	20.4	19.5	14.8	14.1	9.1	12.1	9.3	6.1	6.6	**17.4**	**33.1**	**6.1**
25	8.3	7.5	7.8	11.0	13.9	11.9	12.4	10.0	12.8	12.2	12.6	10.9	16.6	21.3	28.6	25.8	21.8	16.3	16.8	18.5	31.0	21.6	15.7	16.4	**15.9**	**31.0**	**7.5**
26	14.8	13.7	24.7	13.4	13.3	16.0	17.1	17.9	23.4	24.2	34.8	27.8	38.9	41.3	27.2	17.8	13.6	19.3	21.8	13.1	27.8	14.4	10.2	10.3	**20.7**	**41.3**	**10.2**
27	11.5	8.1	8.9	8.6	10.1	13.2	11.6	21.1	25.1	23.4	15.6	17.1	18.8	13.7	12.6	12.8	12.7	12.9	10.1	10.5	9.8	9.3	9.5	9.6	**13.2**	**25.1**	**8.1**
28	10.2	10.3	12.9	21.8	12.2	11.9	13.2	20.7	33.4	24.9	26.8	35.5	27.6	20.0	22.3	23.0	29.0	27.4	24.2	20.3	20.2	20.1	19.8	21.0	**21.2**	**35.5**	**10.2**
29	19.4	18.8	17.9	17.8	21.6	29.2	26.0	27.8	44.3	58.6	45.3	43.6	56.4	54.1	36.9	34.2	24.5	19.3	18.4	20.0	19.6	21.5	20.6	23.3	**30.0**	**58.6**	**17.8**
30	21.3	20.2	23.7	24.9	27.0	29.4	29.1	36.2	30.0	31.8	33.1	26.7	27.7	30.2	25.6	32.1	24.8	20.9	21.5	23.1	---	---	---	---	**27.0**	**36.2**	**20.2**
MEAN	**15.1**	**17.9**	**13.8**	**14.1**	**13.8**	**18.1**	**24.2**	**22.5**	**20.7**	**20.8**	**21.9**	**19.1**	**21.6**	**21.8**	**20.7**	**18.7**	**16.0**	**15.2**	**13.9**	**14.3**	**17.6**	**14.3**	**14.9**	**14.0**	**17.7**		
MAX	**51.5**	**118.6**	**50.9**	**36.5**	**39.5**	**59.1**	**93.5**	**84.6**	**87.3**	**58.6**	**61.6**	**60.6**	**56.4**	**71.0**	**50.9**	**50.6**	**42.9**	**43.6**	**29.9**	**42.3**	**58.3**	**35.7**	**50.4**	**36.1**		**118.6**	
MIN	**2.5**	**2.0**	**2.4**	**2.4**	**3.8**	**3.2**	**2.1**	**3.2**	**2.5**	**4.9**	**2.8**	**2.4**	**2.2**	**1.2**	**3.5**	**1.3**	**1.8**	**1.6**	**2.3**	**2.6**	**2.2**	**2.0**	**2.0**	**2.7**			**1.2**

POSSIBLE NUMBER OF OBSERVATIONS = 720 ACTUAL NUMBER OF OBSERVATIONS = 715 DATA RECOVERY RATE = 99.3% DATA CAPTURE RATE = 100.0%

MONTHLY MEAN = 17.7 µg/m3

MAXIMUM PM10 = 118.6 µg/m3 DATE OF OCCURRENCE = 4/16 at 200 MAXIMUM DAILY MEAN = 37.9 µg/m3 DATE OF OCCURRENCE = 4/10

SECOND MAXIMUM PM10 = 93.5 µg/m3 DATE OF OCCURRENCE = 4/9 at 700 SECOND MAXIMUM DAILY MEAN = 33.3 µg/m3 DATE OF OCCURRENCE = 4/9

MINIMUM PM10 = 1.2 µg/m3 DATE OF OCCURRENCE = 4/3 at 1400 MINUMUM DAILY MEAN = 3.8 µg/m3 DATE OF OCCURRENCE = 4/3

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

Draft

CSX AQ8 T640x

HOURLY AVERAGES of PM10 in µg/m3 for MAY, 2024

Hr Beg Hr End Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
2	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
3	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
4	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
5	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
6	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
7	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
8	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
9	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
10	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
11	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
12	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
13	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
14	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
15	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
16	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
17	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
18	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
19	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
20	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
21	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
22	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
23	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
24	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
25	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
26	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
27	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
28	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
29	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
30	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
31	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MEAN	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---		
MAX	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---		---	
MIN	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---			---

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 0 DATA RECOVERY RATE = 0.0% DATA CAPTURE RATE = 0.0%

MONTHLY MEAN = --- µg/m3

MAXIMUM PM10 = --- µg/m3 DATE OF OCCURRENCE = --- MAXIMUM DAILY MEAN = --- µg/m3 DATE OF OCCURRENCE = ---

SECOND MAXIMUM PM10 = --- µg/m3 DATE OF OCCURRENCE = --- SECOND MAXIMUM DAILY MEAN = --- µg/m3 DATE OF OCCURRENCE = ---

MINIMUM PM10 = --- µg/m3 DATE OF OCCURRENCE = --- MINUMUM DAILY MEAN = --- µg/m3 DATE OF OCCURRENCE = ---

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

Draft

CSX AQ8 T640x

HOURLY AVERAGES of PM10 in µg/m3 for JUNE, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
2	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
3	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
4	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
5	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
6	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
7	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
8	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
9	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
10	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
11	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
12	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
13	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
14	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
15	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
16	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
17	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
18	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
19	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
20	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
21	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
22	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
23	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
24	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
25	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
26	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
27	---	---	---	---	---	---	---	---	---	---	13.6	13.3	13.5	15.8	18.4	29.0	24.2	24.7	18.6	36.2	27.3	24.6	78.3	33.6	---	---	---
28	26.8	16.3	17.3	23.7	20.5	13.9	24.0	37.8	33.8	30.9	25.4	20.3	34.7	29.0	47.7	34.0	21.1	26.7	24.6	30.5	33.2	31.4	24.4	21.9	**27.1**	**47.7**	**13.9**
29	17.0	25.1	20.5	15.9	22.9	33.6	31.9	23.2	19.8	19.8	20.5	24.3	42.6	35.4	31.3	27.1	18.1	23.0	20.2	13.6	13.0	11.7	17.7	12.2	**22.5**	**42.6**	**11.7**
30	11.4	13.8	16.7	13.6	13.8	14.6	16.6	16.3	17.7	16.8	13.3	13.7	15.0	14.7	14.4	12.2	11.8	10.7	8.8	10.4	14.7	43.4	16.1	12.9	**15.1**	**43.4**	**8.8**
MEAN	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**22.4**		
MAX	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---		**78.3**	
MIN	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---			**8.8**

POSSIBLE NUMBER OF OBSERVATIONS = 720 ACTUAL NUMBER OF OBSERVATIONS = 86 DATA RECOVERY RATE = 11.9% DATA CAPTURE RATE = 10.0%

MONTHLY MEAN = 22.4 µg/m3

MAXIMUM PM10 = 78.3 µg/m3 DATE OF OCCURRENCE = 6/27 at 2300 MAXIMUM DAILY MEAN = 27.1 µg/m3 DATE OF OCCURRENCE = 6/28

SECOND MAXIMUM PM10 = 47.7 µg/m3 DATE OF OCCURRENCE = 6/28 at 1500 SECOND MAXIMUM DAILY MEAN = 22.5 µg/m3 DATE OF OCCURRENCE = 6/29

MINIMUM PM10 = 8.8 µg/m3 DATE OF OCCURRENCE = 6/30 at 1900 MINUMUM DAILY MEAN = 15.1 µg/m3 DATE OF OCCURRENCE = 6/30

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

Draft

CSX AQ8 T640x

HOURLY AVERAGES of PM2.5 in µg/m3 for APRIL, 2024

Hr Beg Hr End Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	10.0	11.1	12.4	10.6	10.3	9.7	10.2	9.7	6.0	4.2	3.4	2.2	2.5	3.6	3.8	4.8	6.1	7.3	7.9	7.6	7.1	7.1	9.0	10.3	**7.3**	**12.4**	**2.2**
2	9.5	9.3	7.0	6.2	7.0	6.4	5.4	5.8	4.1	3.3	2.9	2.1	2.7	2.4	2.5	1.6	0.9	0.9	1.1	1.3	1.3	1.1	1.1	1.2	**3.6**	**9.5**	**0.9**
3	1.9	2.2	2.1	2.3	2.5	1.9	1.2	1.6	2.3	2.3	1.2	0.8	0.6	0.7	1.5	0.6	0.5	0.9	2.6	1.8	2.5	4.2	2.9	2.6	**1.8**	**4.2**	**0.5**
4	2.5	4.1	5.4	5.5	6.5	7.7	8.9	10.4	8.3	5.2	4.3	3.8	5.7	6.4	3.6	1.4	1.0	0.9	1.2	1.2	1.9	1.8	2.1	1.7	**4.2**	**10.4**	**0.9**
5	1.4	1.3	1.5	1.7	2.3	3.2	3.8	4.4	4.3	3.0	2.2	2.0	2.3	2.2	1.6	2.6	2.6	2.4	2.2	1.8	1.5	1.6	1.8	2.2	**2.3**	**4.4**	**1.3**
6	2.5	2.6	2.6	2.5	2.6	2.6	2.7	2.5	2.4	2.2	1.5	1.5	1.5	1.6	1.8	2.0	2.2	2.5	2.8	2.9	3.5	3.8	3.9	4.1	**2.5**	**4.1**	**1.5**
7	3.4	4.3	5.6	4.9	5.3	4.6	3.6	3.1	2.5	2.2	1.4	1.5	1.6	1.7	1.8	1.7	1.6	1.6	1.9	2.5	3.8	5.3	4.3	3.4	**3.0**	**5.6**	**1.4**
8	5.1	5.1	6.2	6.0	6.0	6.3	9.6	9.9	9.9	7.5	6.2	4.9	5.9	5.4	4.4	3.1	3.1	2.9	2.9	3.4	3.8	4.7	5.3	5.7	**5.5**	**9.9**	**2.9**
9	7.8	7.0	6.3	6.2	7.8	11.5	15.0	11.9	6.6	10.7	14.1	8.3	11.2	8.5	8.0	10.2	12.8	14.1	16.8	16.8	16.9	18.9	19.8	21.1	**12.0**	**21.1**	**6.2**
10	23.2	26.2	28.1	23.0	22.8	22.8	26.7	28.4	29.8	18.1	9.7	6.9	7.0	8.7	12.7	13.5	10.9	11.2	9.5	11.9	9.0	10.4	11.5	9.7	**16.3**	**29.8**	**6.9**
11	8.5	7.8	7.4	9.0	9.4	9.4	8.9	7.0	5.6	5.5	7.0	6.9	6.8	8.3	7.2	6.6	6.5	6.5	6.7	7.1	7.9	8.5	8.7	8.2	**7.5**	**9.4**	**5.5**
12	6.4	6.2	3.9	3.5	3.5	4.1	4.8	2.6	0.8	1.9	2.6	2.8	3.1	3.0	2.6	1.8	0.9	1.1	1.4	1.2	0.6	0.7	0.7	1.3	**2.5**	**6.4**	**0.6**
13	1.4	1.1	0.9	1.4	1.5	1.8	2.1	2.4	2.4	2.5	2.6	2.5	2.9	2.6	2.6	2.7	2.6	2.4	2.4	2.6	2.7	3.3	3.5	3.9	**2.3**	**3.9**	**0.9**
14	3.5	30.2	3.6	3.8	4.0	4.3	4.4	3.9	3.4	3.2	3.4	4.1	6.7	6.7	9.3	8.1	5.5	5.9	6.2	6.4	8.1	7.0	8.3	5.1	**6.4**	**30.2**	**3.2**
15	3.8	4.4	7.1	7.6	4.7	5.8	6.6	6.1	5.9	8.2	12.5	11.8	9.6	7.3	7.7	8.2	8.6	8.3	9.0	12.5	17.0	14.3	16.0	8.6	**8.8**	**17.0**	**3.8**
16	7.3	13.8	4.0	4.3	4.5	4.7	10.2	6.1	4.4	4.4	5.8	6.1	5.8	7.3	7.8	8.1	4.7	4.6	4.3	4.4	5.6	5.2	5.3	5.3	**6.0**	**13.8**	**4.0**
17	5.9	5.0	4.7	4.7	4.7	5.5	5.4	6.7	5.3	6.4	10.3	6.6	5.9	6.9	8.4	8.5	10.8	8.9	7.9	7.1	5.9	6.3	6.8	10.2	**6.8**	**10.8**	**4.7**
18	13.6	13.7	13.6	14.8	15.8	20.7	26.5	26.2	22.2	21.7	20.0	19.4	18.7	15.9	11.7	11.7	9.6	8.6	6.8	6.5	12.1	13.7	13.1	11.9	**15.3**	**26.5**	**6.5**
19	9.3	7.4	5.4	3.9	3.6	3.1	3.7	6.8	5.3	4.8	5.4	6.4	7.6	10.6	11.0	8.6	7.4	6.8	6.4	5.8	6.2	7.4	7.1	6.7	**6.5**	**11.0**	**3.1**
20	6.9	6.6	6.8	6.9	8.1	9.9	13.2	15.8	16.7	12.6	6.8	5.3	3.9	3.6	3.4	3.3	3.2	3.0	3.4	3.7	3.5	3.5	3.0	2.8	**6.4**	**16.7**	**2.8**
21	2.7	2.7	3.0	2.9	2.7	2.3	2.2	2.7	2.7	2.4	2.7	3.4	3.9	3.6	3.7	3.7	3.8	3.9	3.4	3.5	3.8	4.9	8.8	6.4	**3.5**	**8.8**	**2.2**
22	5.9	4.8	4.9	5.0	5.1	4.8	5.1	5.4	4.0	4.0	4.3	4.3	5.0	6.4	4.4	4.1	4.1	3.8	4.4	4.6	5.0	4.8	4.4	5.9	**4.7**	**6.4**	**3.8**
23	6.7	6.8	6.3	7.4	7.6	9.9	10.7	12.0	12.8	14.4	7.0	6.8	6.5	5.7	5.5	5.2	5.5	5.7	4.6	4.9	5.6	4.8	4.8	4.9	**7.1**	**14.4**	**4.6**
24	5.3	5.7	6.1	6.4	7.4	8.1	8.6	8.1	6.7	5.7	4.5	---	4.6	4.5	3.9	4.0	4.1	4.1	3.5	3.0	3.4	3.5	2.8	3.1	**5.0**	**8.6**	**2.8**
25	3.5	3.9	4.0	4.1	4.0	3.1	3.3	3.4	3.6	4.0	4.5	4.4	5.5	6.9	12.4	10.7	9.5	7.2	6.7	6.1	7.5	7.4	6.3	6.9	**5.7**	**12.4**	**3.1**
26	6.4	6.5	7.2	5.7	5.9	6.2	6.5	7.1	7.0	6.3	6.9	6.0	6.4	6.9	5.2	4.3	3.7	3.8	4.2	4.5	5.2	4.1	3.7	3.9	**5.5**	**7.2**	**3.7**
27	3.8	3.6	3.6	3.9	4.0	3.9	3.7	4.8	4.8	4.7	4.3	4.8	4.9	5.0	4.6	4.7	4.7	5.2	4.3	4.1	4.2	4.2	4.2	4.5	**4.3**	**5.2**	**3.6**
28	4.7	4.8	5.5	6.3	5.2	5.2	5.6	8.6	14.5	11.8	14.0	14.1	11.8	10.1	10.4	10.7	11.4	12.0	11.7	11.4	12.6	11.6	12.1	13.0	**9.9**	**14.5**	**4.7**
29	12.2	11.3	11.2	11.1	11.3	12.2	11.6	10.6	14.6	18.1	14.8	14.1	16.4	15.2	12.4	11.7	10.5	10.1	10.3	10.9	11.4	12.0	12.2	12.5	**12.4**	**18.1**	**10.1**
30	12.2	11.7	15.4	15.9	14.8	14.8	14.2	15.6	14.3	13.8	13.4	12.9	13.8	13.0	12.3	13.0	11.5	9.9	10.3	11.1	---	---	---	---	**13.1**	**15.9**	**9.9**
MEAN	**6.6**	**7.7**	**6.7**	**6.6**	**6.7**	**7.2**	**8.1**	**8.3**	**7.8**	**7.2**	**6.7**	**6.1**	**6.4**	**6.4**	**6.3**	**6.0**	**5.7**	**5.6**	**5.6**	**5.8**	**6.2**	**6.4**	**6.7**	**6.5**	**6.6**		
MAX	**23.2**	**30.2**	**28.1**	**23.0**	**22.8**	**22.8**	**26.7**	**28.4**	**29.8**	**21.7**	**20.0**	**19.4**	**18.7**	**15.9**	**12.7**	**13.5**	**12.8**	**14.1**	**16.8**	**16.8**	**17.0**	**18.9**	**19.8**	**21.1**		**30.2**	
MIN	**1.4**	**1.1**	**0.9**	**1.4**	**1.5**	**1.8**	**1.2**	**1.6**	**0.8**	**1.9**	**1.2**	**0.8**	**0.6**	**0.7**	**1.5**	**0.6**	**0.5**	**0.9**	**1.1**	**1.2**	**0.6**	**0.7**	**0.7**	**1.2**			**0.5**

POSSIBLE NUMBER OF OBSERVATIONS = 720 ACTUAL NUMBER OF OBSERVATIONS = 715 DATA RECOVERY RATE = 99.3% DATA CAPTURE RATE = 100.0%

MONTHLY MEAN = 6.6 µg/m3

MAXIMUM PM2.5 = 30.2 µg/m3 DATE OF OCCURRENCE = 4/14 at 200 MAXIMUM DAILY MEAN = 16.3 µg/m3 DATE OF OCCURRENCE = 4/10

SECOND MAXIMUM PM2.5 = 29.8 µg/m3 DATE OF OCCURRENCE = 4/10 at 900 SECOND MAXIMUM DAILY MEAN = 15.3 µg/m3 DATE OF OCCURRENCE = 4/18

MINIMUM PM2.5 = 0.5 µg/m3 DATE OF OCCURRENCE = 4/3 at 1700 MINUMUM DAILY MEAN = 1.8 µg/m3 DATE OF OCCURRENCE = 4/3

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

Draft

CSX AQ8 T640x

HOURLY AVERAGES of PM2.5 in µg/m3 for MAY, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
2	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
3	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
4	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
5	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
6	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
7	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
8	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
9	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
10	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
11	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
12	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
13	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
14	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
15	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
16	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
17	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
18	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
19	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
20	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
21	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
22	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
23	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
24	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
25	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
26	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
27	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
28	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
29	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
30	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
31	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MEAN	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---		
MAX	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---		---	
MIN	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---			---

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 0 DATA RECOVERY RATE = 0.0% DATA CAPTURE RATE = 0.0%

MONTHLY MEAN = --- µg/m3

MAXIMUM PM2.5 = --- µg/m3 DATE OF OCCURRENCE = --- MAXIMUM DAILY MEAN = --- µg/m3 DATE OF OCCURRENCE = ---

SECOND MAXIMUM PM2.5 = --- µg/m3 DATE OF OCCURRENCE = --- SECOND MAXIMUM DAILY MEAN = --- µg/m3 DATE OF OCCURRENCE = ---

MINIMUM PM2.5 = --- µg/m3 DATE OF OCCURRENCE = --- MINUMUM DAILY MEAN = --- µg/m3 DATE OF OCCURRENCE = ---

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

Draft

CSX AQ8 T640x

HOURLY AVERAGES of PM2.5 in µg/m3 for JUNE, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
2	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
3	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
4	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
5	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
6	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
7	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
8	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
9	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
10	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
11	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
12	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
13	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
14	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
15	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
16	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
17	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
18	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
19	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
20	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
21	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
22	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
23	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
24	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
25	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
26	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
27	---	---	---	---	---	---	---	---	---	---	4.3	4.7	4.9	5.3	6.0	8.3	8.6	8.0	8.3	11.2	10.3	8.7	14.7	8.7	---	---	---
28	8.0	6.2	6.3	7.2	6.9	5.5	6.0	9.0	7.8	7.1	6.3	6.3	8.0	6.8	8.5	7.5	6.3	7.0	7.6	8.8	8.5	8.8	6.9	6.5	**7.2**	**9.0**	**5.5**
29	5.7	7.4	6.5	5.7	7.0	11.9	11.0	9.1	7.5	7.4	7.8	8.0	10.0	9.8	8.7	7.8	7.0	7.0	6.7	6.2	6.4	6.6	6.7	4.7	**7.6**	**11.9**	**4.7**
30	4.9	6.8	9.2	8.1	7.8	7.9	8.8	9.2	9.9	10.5	9.3	9.6	9.8	9.4	9.2	7.7	6.6	4.9	4.3	5.8	7.8	9.8	4.1	4.0	**7.7**	**10.5**	**4.0**
MEAN	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**7.6**		
MAX	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---		**14.7**	
MIN	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---			**4.0**

POSSIBLE NUMBER OF OBSERVATIONS = 720 ACTUAL NUMBER OF OBSERVATIONS = 86 DATA RECOVERY RATE = 11.9% DATA CAPTURE RATE = 10.0%

MONTHLY MEAN = 7.6 µg/m3

MAXIMUM PM2.5 = 14.7 µg/m3 DATE OF OCCURRENCE = 6/27 at 2300 MAXIMUM DAILY MEAN = 7.7 µg/m3 DATE OF OCCURRENCE = 6/30

SECOND MAXIMUM PM2.5 = 11.9 µg/m3 DATE OF OCCURRENCE = 6/29 at 600 SECOND MAXIMUM DAILY MEAN = 7.6 µg/m3 DATE OF OCCURRENCE = 6/29

MINIMUM PM2.5 = 4.0 µg/m3 DATE OF OCCURRENCE = 6/30 at 2400 MINUMUM DAILY MEAN = 7.2 µg/m3 DATE OF OCCURRENCE = 6/28

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

Draft

APPENDIX I. MODULAIR PM_{10} AND $PM_{2.5}$ COLLOCATION AND COMPARISON DATA

Draft

Trinity Consultants

MODULAIR PM COLLOCATION & COMPARISON SHEET

As Found

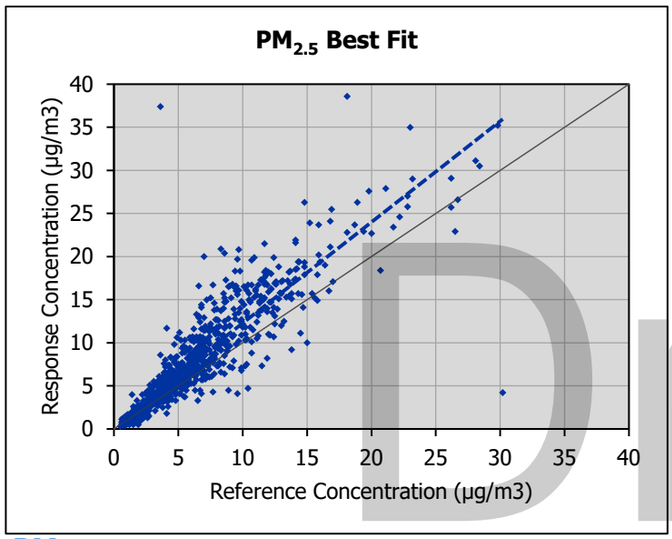
SITE NAME	AQ8A	**Date**	4/1/2024	**Start Time**	1:00
PROJECT	CSX	**Date**	7/1/2024	**Stop Time**	0:00

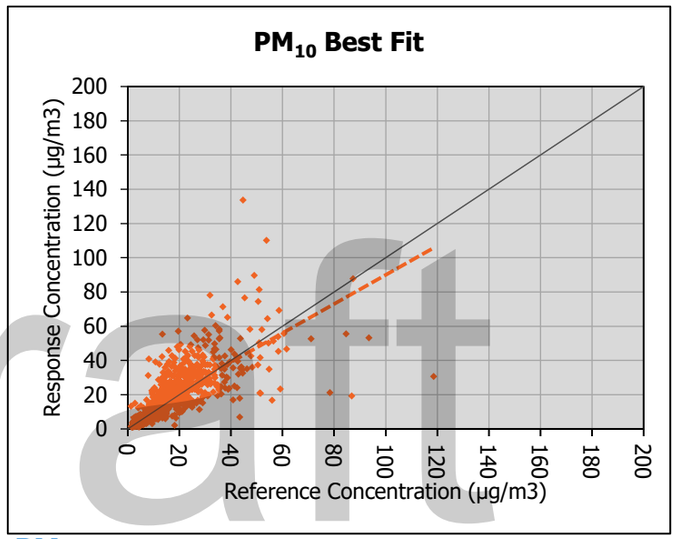
REFERENCE STANDARD:

Reference: AQ8 **Serial #:** 1689
Model: T640X

Analyzer:

Analyzer s/n MOD386
Anal. Range 0- 2000 **µg/m3**





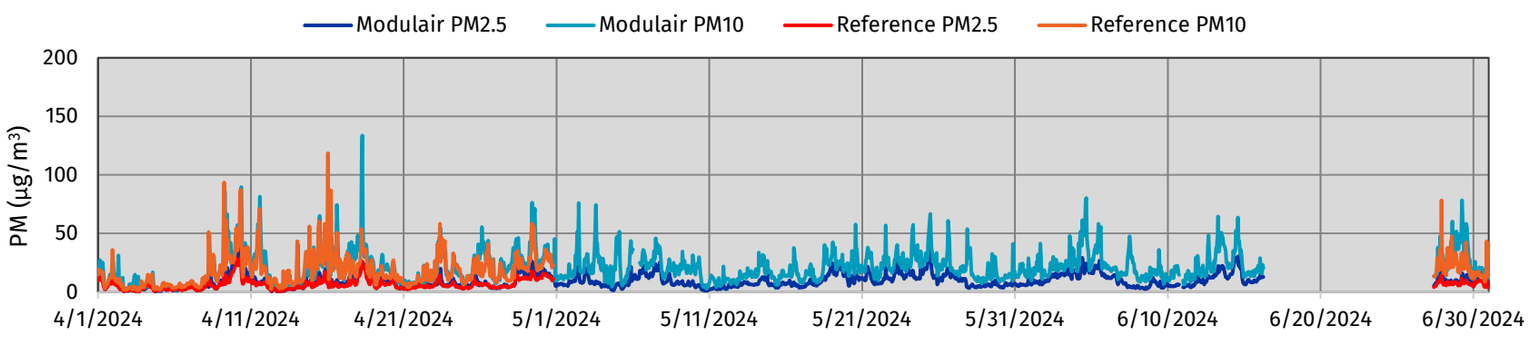
Draft

$PM_{2.5}$:

Correlation Coefficent(r2)	0.769	≥ 0.70
Slope(m)	1.172	1.0 ± 0.35
Intercept(b)	0.561	0 ± 5.0
RMSE	8.598	≤ 7.0
Precision CV(%)	22.700	≤ 30.0
Precision SD	6.337	≤ 5.0

PM_{10}:

Correlation Coefficent(r2)	0.519	≥ 0.70
Slope(m)	0.849	1.0 ± 0.35
Intercept(b)	5.074	0 ± 5.0
RMSE	18.357	≤ 7.0
Precision CV(%)	18.700	≤ 30.0
Precision SD	14.268	≤ 5.0



= cell containing equations

Trinity Consultants

MODULAIR PM COLLOCATION & COMPARISON SHEET

As Found

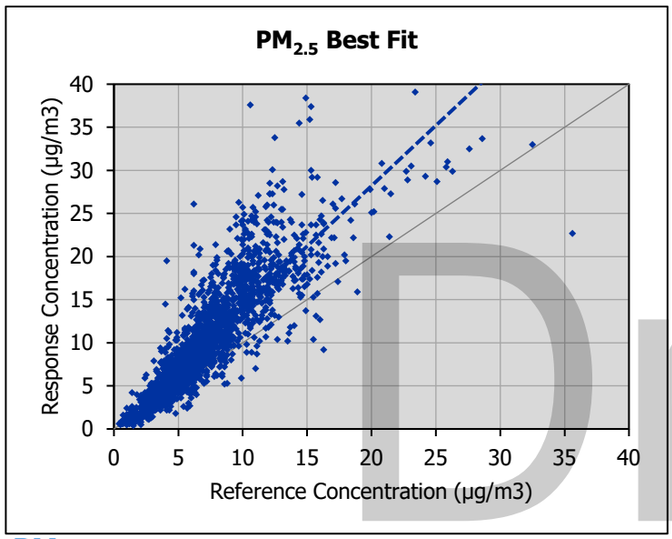
SITE NAME AQ5A **Date** 4/1/2024 **Start Time** 1:00
PROJECT CSX **Date** 7/1/2024 **Stop Time** 0:00

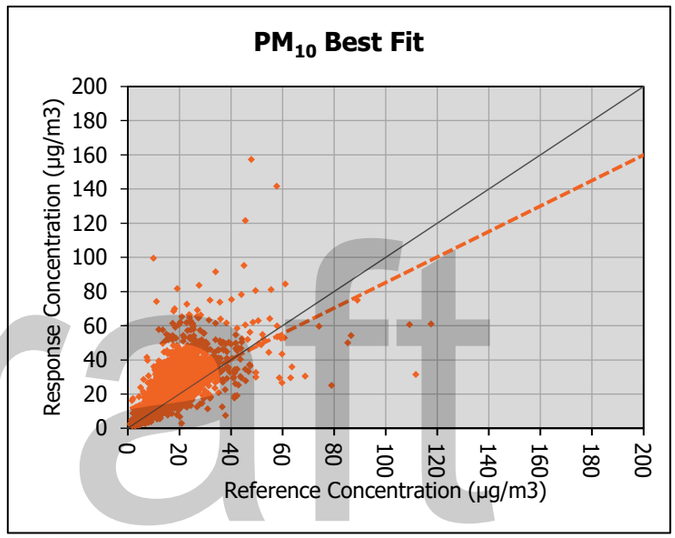
REFERENCE STANDARD:

Reference: AQ5 **Serial #:** 1690
Model: T640X

Analyzer:

Analyzer s/n MOD384
Anal. Range 0- 2000 **µg/m3**





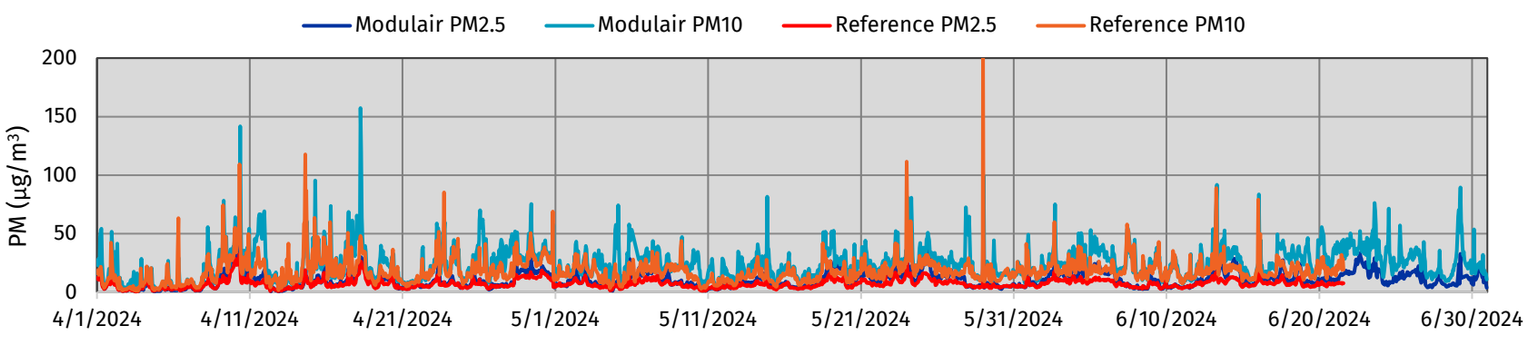
Draft

$PM_{2.5}$:

Correlation Coefficent(r2)	0.712	≥ 0.70
Slope(m)	1.400	1.0 ± 0.35
Intercept(b)	0.190	0 ± 5.0
RMSE	6.714	≤ 7.0
Precision CV(%)	22.730	≤ 30.0
Precision SD	5.281	≤ 5.0

PM_{10}:

Correlation Coefficent(r2)	0.351	≥ 0.70
Slope(m)	0.746	1.0 ± 0.35
Intercept(b)	10.626	0 ± 5.0
RMSE	16.420	≤ 7.0
Precision CV(%)	27.040	≤ 30.0
Precision SD	14.166	≤ 5.0



= cell containing equations

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MODULAIR PM COLLOCATION & COMPARISON SHEET

As Found

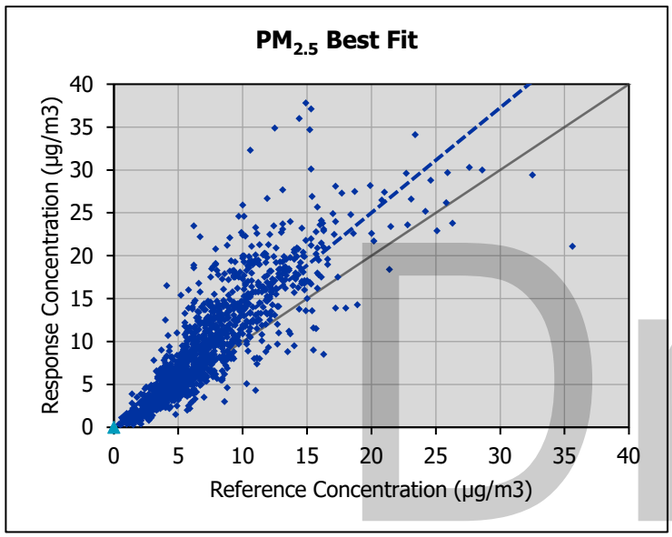
SITE NAME AQ5C **Date** 4/1/2024 **Start Time** 1:00
PROJECT CSX **Date** 7/1/2024 **Stop Time** 0:00

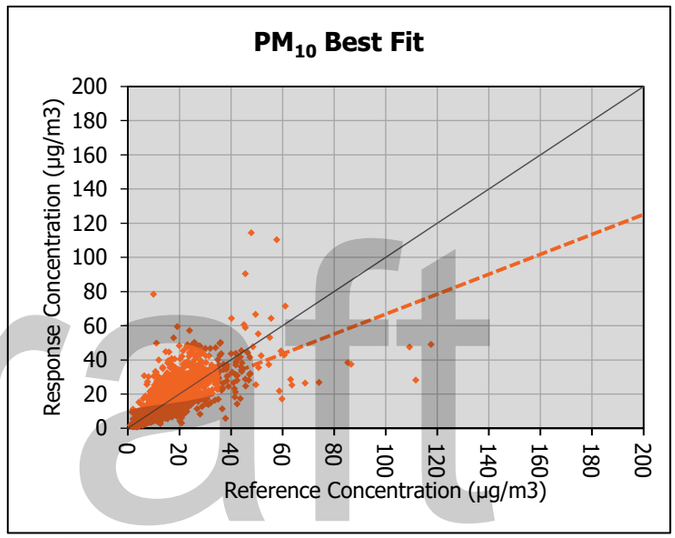
REFERENCE STANDARD:

Reference: AQ5 **Serial #:** 1690
Model: T640X

Analyzer:

Analyzer s/n MOD383
Anal. Range 0- 2000 **µg/m3**





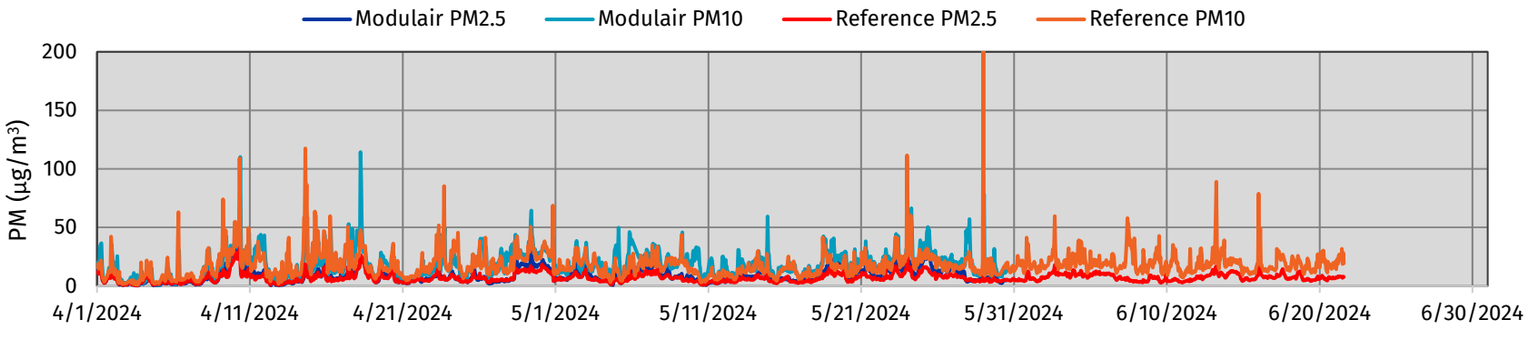
Draft

$PM_{2.5}$:

Correlation Coefficent(r2)	0.695	≥ 0.70
Slope(m)	1.225	1.0 ± 0.35
Intercept(b)	0.504	0 ± 5.0
RMSE	5.216	≤ 7.0
Precision CV(%)	24.790	≤ 30.0
Precision SD	5.197	≤ 5.0

PM_{10}:

Correlation Coefficent(r2)	0.365	≥ 0.70
Slope(m)	0.583	1.0 ± 0.35
Intercept(b)	8.483	0 ± 5.0
RMSE	13.762	≤ 7.0
Precision CV(%)	24.720	≤ 30.0
Precision SD	13.142	≤ 5.0



= cell containing equations

Trinity Consultants

MODULAIR PM COLLOCATION & COMPARISON SHEET

As Found

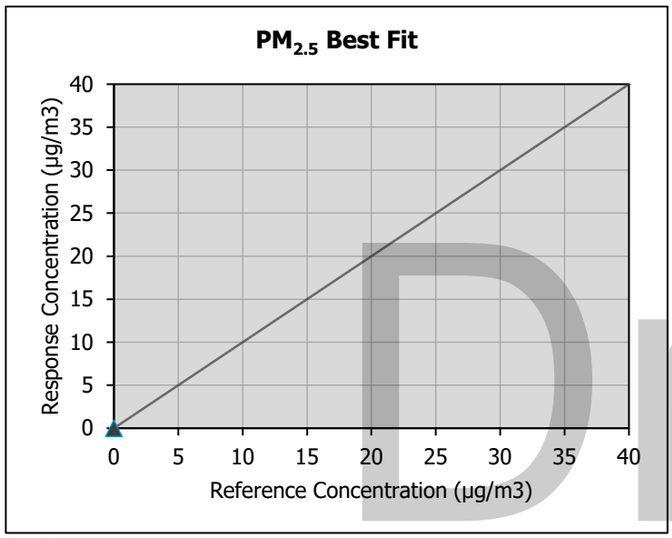
SITE NAME AQ5B **Date** 4/1/2024 **Start Time** 1:00
PROJECT CSX **Date** 7/1/2024 **Stop Time** 0:00

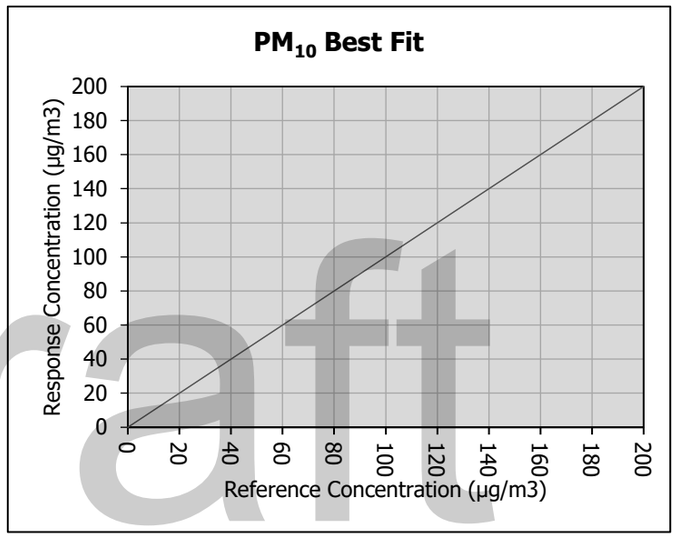
REFERENCE STANDARD:

Reference: AQ5 **Serial #:** 1690
Model: T640X

Analyzer:

Analyzer s/n MOD385
Anal. Range 0- 2000 **µg/m3**





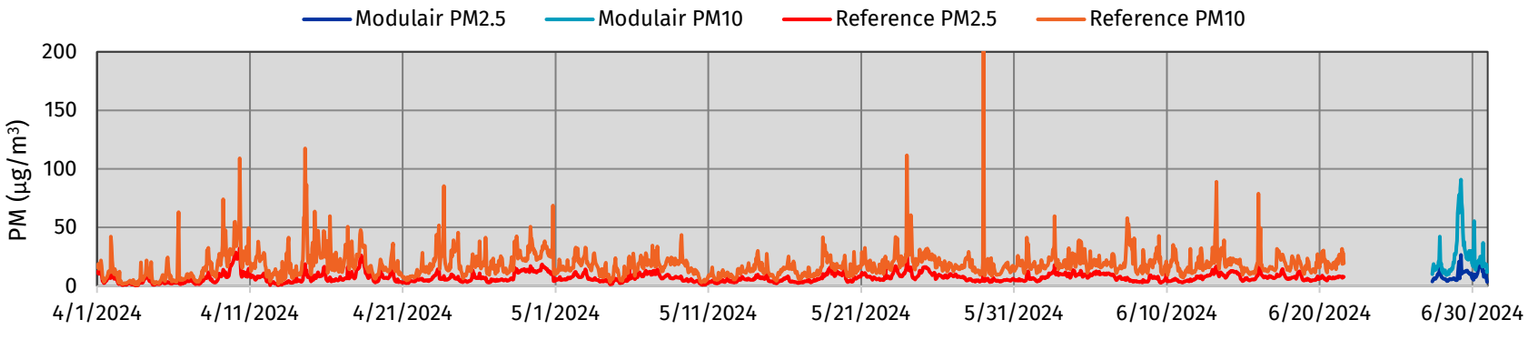
Draft

$PM_{2.5}$:

Correlation Coefficent(r2)	#DIV/0!	≥ 0.70
Slope(m)	#DIV/0!	1.0 ± 0.35
Intercept(b)	#DIV/0!	0 ± 5.0
RMSE	8.036	≤ 7.0
Precision CV(%)	#DIV/0!	≤ 30.0
Precision SD	5.284	≤ 5.0

PM_{10}:

Correlation Coefficent(r2)	#DIV/0!	≥ 0.70
Slope(m)	#DIV/0!	1.0 ± 0.35
Intercept(b)	#DIV/0!	0 ± 5.0
RMSE	21.243	≤ 7.0
Precision CV(%)	0.000	≤ 30.0
Precision SD	14.758	≤ 5.0



= cell containing equations

CSX AQ2 Modulair

HOURLY AVERAGES of PM10 in µg/m3 for APRIL, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	15.3	17.7	20.4	24.7	17.3	25.8	26.4	28.7	21.7	7.9	5.7	4.6	3.2	4.4	7.5	5.8	8.1	11.5	13.5	15.1	16.4	12.6	17.7	26.7	**14.9**	**28.7**	**3.2**
2	30.1	14.3	13.4	11.5	10.2	14.4	12.1	9.1	23.1	10.5	7.2	5.8	6.8	5.9	3.8	9.1	3.1	2.5	1.7	---	---	---	---	---	**10.2**	**30.1**	**1.7**
3	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
4	---	---	---	---	---	---	---	7.6	13.2	13.1	8.3	6.2	6.1	13.6	15.9	4.2	1.4	1.7	2.5	2.3	1.1	1.9	1.6	1.4	**---**	**---**	**---**
5	1.4	1.2	1.3	1.6	1.7	2.1	5.3	4.9	7.0	5.3	3.7	4.3	2.6	3.2	3.0	3.2	3.3	4.4	3.0	2.6	1.8	1.6	1.6	1.5	**3.0**	**7.0**	**1.2**
6	1.9	1.8	1.9	1.6	1.6	1.6	1.6	2.1	2.4	4.6	4.4	2.0	2.4	3.1	2.6	1.8	3.0	2.2	2.3	3.0	3.5	4.1	4.2	3.9	**2.7**	**4.6**	**1.6**
7	3.7	3.5	4.4	4.4	4.4	6.2	3.4	5.1	4.2	3.1	2.6	2.1	1.9	1.8	2.5	1.5	1.7	1.7	2.3	3.2	10.3	17.8	14.1	9.2	**4.8**	**17.8**	**1.5**
8	6.8	10.3	7.5	9.3	13.3	23.5	36.9	84.0	33.7	27.5	22.2	24.7	17.8	22.9	22.0	22.7	16.3	12.1	11.6	9.5	13.5	17.2	18.1	19.1	**20.9**	**84.0**	**6.8**
9	24.2	31.1	20.9	18.1	27.9	49.7	99.5	122.4	58.9	35.7	54.5	70.6	34.6	35.3	25.2	30.8	34.8	---	31.3	37.4	32.0	30.3	33.8	32.5	**42.2**	**122.4**	**18.1**
10	33.9	43.6	50.0	48.8	36.3	41.9	38.2	50.9	100.8	109.3	47.7	18.7	11.6	14.4	27.9	50.8	38.7	28.9	34.3	27.8	35.2	27.3	32.6	32.4	**40.9**	**109.3**	**11.6**
11	23.4	19.9	16.8	18.6	26.0	28.8	41.8	39.8	35.6	---	---	---	---	---	---	---	40.5	36.8	34.5	24.9	29.3	37.1	41.1	43.4	**---**	**---**	**---**
12	29.3	19.8	16.2	9.1	8.5	12.0	14.9	14.5	9.9	3.5	6.5	6.7	5.7	9.1	9.1	10.6	8.4	7.1	2.9	3.9	3.5	2.7	1.4	2.8	**9.1**	**29.3**	**1.4**
13	2.3	1.9	2.8	1.8	3.8	2.2	5.8	5.5	5.7	5.8	6.3	4.9	5.7	7.0	5.3	5.6	5.4	5.8	5.5	4.7	4.1	4.6	9.1	6.0	**4.9**	**9.1**	**1.8**
14	11.4	6.9	6.9	6.7	7.1	7.1	6.6	7.7	7.8	6.7	6.8	7.5	10.1	13.4	15.0	25.5	20.4	15.8	16.2	15.8	18.1	17.5	17.5	22.2	**12.4**	**25.5**	**6.6**
15	10.5	8.7	19.2	50.4	35.4	13.0	23.6	22.6	17.9	18.9	---	---	---	28.3	16.3	19.2	18.6	17.8	22.4	---	---	49.4	39.6	67.8	**26.3**	**67.8**	**8.7**
16	19.2	39.0	42.0	10.7	14.7	12.4	18.5	68.8	36.9	15.6	---	---	---	---	---	---	---	---	---	---	---	---	10.5	12.8	**---**	**---**	**---**
17	16.6	13.1	10.9	9.5	20.6	15.8	34.5	23.7	---	27.9	34.8	49.7	27.5	21.6	40.2	23.8	23.4	---	41.5	30.5	33.8	29.8	42.0	48.5	**28.2**	**49.7**	**9.5**
18	52.2	47.5	38.0	36.8	36.9	39.9	145.2	176.2	64.5	43.3	30.7	34.7	38.1	47.9	45.5	29.1	31.2	24.5	26.1	20.6	19.2	29.9	24.8	29.5	**46.3**	**176.2**	**19.2**
19	20.4	17.7	14.8	10.9	7.2	6.4	7.3	11.0	17.0	15.8	22.9	29.8	27.5	25.5	35.2	38.9	22.9	21.7	20.6	23.6	23.9	25.1	28.2	25.8	**20.8**	**38.9**	**6.4**
20	21.5	19.7	18.8	20.3	17.4	16.7	19.4	23.5	22.8	23.5	17.9	12.8	12.0	9.3	8.2	8.6	8.1	8.5	6.9	9.7	9.6	7.4	11.1	7.6	**14.2**	**23.5**	**6.9**
21	7.5	5.8	7.2	5.3	6.5	4.6	4.3	3.0	7.2	6.0	4.0	5.4	6.5	6.2	6.6	8.1	5.6	6.1	5.5	4.6	5.5	9.4	6.9	8.0	**6.1**	**9.4**	**3.0**
22	8.1	6.8	5.5	5.7	6.1	7.0	7.7	9.5	13.4	8.3	8.0	9.8	8.1	9.4	13.3	8.5	8.0	6.4	7.2	12.6	16.6	13.3	15.3	8.7	**9.3**	**16.6**	**5.5**
23	13.0	17.0	11.6	10.5	16.6	24.1	66.6	36.1	44.3	50.0	45.4	17.8	---	23.8	25.4	29.7	22.3	31.0	28.1	15.8	14.0	16.3	13.1	11.7	**25.4**	**66.6**	**10.5**
24	13.3	10.3	15.0	12.4	12.2	38.2	---	---	---	18.3	14.1	18.2	13.0	11.7	15.5	10.1	13.8	9.3	8.8	6.3	6.6	9.0	9.3	5.1	**12.9**	**38.2**	**5.1**
25	5.1	6.0	7.5	7.2	8.8	13.6	9.5	12.0	12.5	12.3	11.7	14.6	10.6	15.3	24.0	34.6	27.9	25.4	20.7	20.9	25.0	37.9	36.6	28.9	**17.9**	**37.9**	**5.1**
26	29.6	30.1	26.9	37.8	38.9	31.9	35.9	34.6	24.5	19.6	21.7	33.0	17.8	12.5	10.7	---	9.1	9.7	18.9	19.0	10.2	17.0	9.0	8.5	**22.0**	**38.9**	**8.5**
27	7.3	6.3	7.4	9.7	12.3	12.6	15.2	10.9	20.6	27.0	22.4	24.0	26.6	25.6	19.7	15.7	15.6	20.1	21.7	17.8	17.3	18.7	19.5	20.4	**17.3**	**27.0**	**6.3**
28	18.7	21.0	24.8	26.7	38.5	23.7	24.5	26.1	43.4	45.0	37.2	43.0	45.1	34.4	26.0	27.6	31.0	25.9	26.8	33.5	24.9	24.5	22.5	22.4	**29.9**	**45.1**	**18.7**
29	23.5	22.8	22.0	24.0	25.2	34.4	53.5	36.2	32.6	72.2	69.0	---	---	---	---	---	---	---	---	---	24.3	26.2	26.1	27.1	**---**	**---**	**---**
30	27.1	25.3	24.7	31.0	27.6	31.9	66.6	32.4	31.7	31.4	31.2	28.9	26.8	25.7	23.5	22.3	28.6	23.0	21.8	24.2	25.4	38.9	6.6	8.6	**27.7**	**66.6**	**6.6**
MEAN	**17.0**	**16.8**	**16.4**	**16.6**	**17.3**	**19.3**	**30.5**	**32.5**	**26.4**	**23.9**	**21.0**	**19.2**	**15.3**	**16.6**	**17.3**	**17.9**	**16.7**	**14.4**	**16.2**	**15.6**	**16.4**	**19.5**	**18.4**	**19.4**	**19.3**		
MAX	**52.2**	**47.5**	**50.0**	**50.4**	**38.9**	**49.7**	**145.2**	**176.2**	**100.8**	**109.3**	**69.0**	**70.6**	**45.1**	**47.9**	**45.5**	**50.8**	**40.5**	**36.8**	**41.5**	**37.4**	**35.2**	**49.4**	**42.0**	**67.8**		**176.2**	
MIN	**1.4**	**1.2**	**1.3**	**1.6**	**1.6**	**1.6**	**1.6**	**2.1**	**2.4**	**3.1**	**2.6**	**2.0**	**1.9**	**1.8**	**2.5**	**1.5**	**1.4**	**1.7**	**1.7**	**2.3**	**1.1**	**1.6**	**1.4**	**1.4**			**1.1**

POSSIBLE NUMBER OF OBSERVATIONS = 720 ACTUAL NUMBER OF OBSERVATIONS = 643 DATA RECOVERY RATE = 89.3% DATA CAPTURE RATE = 83.3%

MONTHLY MEAN = 19.3 µg/m3

MAXIMUM PM10 = 176.2 µg/m3 DATE OF OCCURRENCE = 4/18 at 800 MAXIMUM DAILY MEAN = 46.3 µg/m3 DATE OF OCCURRENCE = 4/18

SECOND MAXIMUM PM10 = 145.2 µg/m3 DATE OF OCCURRENCE = 4/18 at 700 SECOND MAXIMUM DAILY MEAN = 42.2 µg/m3 DATE OF OCCURRENCE = 4/9

MINIMUM PM10 = 1.1 µg/m3 DATE OF OCCURRENCE = 4/4 at 2100 MINUMUM DAILY MEAN = 2.7 µg/m3 DATE OF OCCURRENCE = 4/6

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

Draft

CSX AQ2 Modulair

HOURLY AVERAGES of PM10 in µg/m3 for MAY, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	13.4	10.2	12.9	11.7	12.0	11.5	11.1	11.3	11.0	12.0	11.0	9.3	11.0	12.6	12.6	10.2	9.5	10.0	11.8	14.8	21.0	20.6	15.9	15.8	**12.6**	**21.0**	**9.3**
2	12.5	15.8	20.9	19.4	13.6	30.4	45.6	26.7	37.6	47.2	35.3	60.9	27.6	18.4	16.6	16.2	13.4	17.0	16.8	20.7	29.8	26.7	28.9	31.7	**26.2**	**60.9**	**12.5**
3	34.1	31.5	21.1	19.0	---	---	20.4	17.9	16.9	15.4	---	---	42.5	---	---	---	---	---	---	---	---	---	---	18.0	**---**	**---**	**---**
4	21.5	26.6	25.3	18.9	10.5	16.8	26.2	18.3	9.2	8.1	12.3	13.5	16.2	23.1	7.1	4.0	5.0	7.6	17.5	14.8	16.7	27.3	42.3	41.9	**17.9**	**42.3**	**4.0**
5	38.8	36.8	36.1	51.0	26.8	15.0	8.4	6.8	7.5	8.9	9.5	12.6	10.3	14.4	13.7	19.8	24.2	23.9	25.9	29.4	---	---	---	---	**21.0**	**51.0**	**6.8**
6	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
7	---	---	---	---	---	---	30.3	25.0	29.9	37.4	31.7	33.9	47.0	44.6	41.8	45.3	33.4	41.7	38.2	37.0	28.6	21.5	18.8	16.5	**33.5**	**47.0**	**16.5**
8	13.9	14.6	13.7	18.0	21.5	19.2	20.7	22.2	25.3	31.1	24.2	25.5	21.4	20.3	17.0	23.0	21.1	17.5	16.0	15.2	21.5	18.5	21.1	17.8	**20.0**	**31.1**	**13.7**
9	18.5	19.1	23.6	27.7	34.3	23.7	60.7	23.7	36.0	37.0	26.8	30.8	18.8	17.6	23.5	28.2	32.1	18.6	17.3	18.2	19.6	17.9	28.3	---	**26.2**	**60.7**	**17.3**
10	25.1	---	---	---	---	---	---	27.1	22.7	---	16.5	12.7	9.6	5.5	4.2	4.4	5.0	5.8	8.0	5.3	3.4	5.4	6.9	9.2	**---**	**---**	**---**
11	10.9	12.5	14.3	14.8	15.8	16.1	14.6	12.9	8.4	8.6	8.0	3.9	---	---	---	---	---	7.9	---	6.2	7.4	9.5	20.8	17.1	**11.7**	**20.8**	**3.9**
12	14.8	10.4	12.8	16.2	14.7	12.1	12.1	12.4	10.2	8.0	---	---	9.2	9.1	---	---	---	---	10.9	8.1	12.3	9.3	11.6	13.6	**11.5**	**16.2**	**8.0**
13	18.1	13.5	14.9	15.9	12.3	16.2	16.0	16.8	16.7	---	---	---	---	---	---	---	---	---	---	---	---	16.4	17.9	17.1	**---**	**---**	**---**
14	19.2	20.1	14.1	15.9	16.4	20.0	36.8	29.6	26.1	29.4	29.3	32.0	38.3	32.1	22.9	16.7	15.8	14.0	19.1	27.0	25.0	24.4	20.8	22.3	**23.6**	**38.3**	**14.0**
15	19.9	20.4	15.2	13.5	16.1	13.7	12.3	10.4	7.6	6.4	8.4	7.7	6.3	7.6	18.5	16.4	12.4	13.2	23.2	21.8	17.9	18.3	15.0	15.2	**14.1**	**23.2**	**6.3**
16	12.7	14.4	14.7	15.9	14.8	14.2	15.7	22.3	17.8	14.5	14.4	14.7	16.3	34.8	31.3	21.3	26.3	16.5	12.5	12.6	13.8	11.3	10.8	9.4	**16.8**	**34.8**	**9.4**
17	10.0	11.3	8.2	8.5	8.2	11.7	13.0	14.1	21.0	19.8	18.9	17.0	11.9	15.8	22.5	24.6	---	---	---	25.2	10.0	14.9	9.6	10.5	**14.6**	**25.2**	**8.2**
18	11.3	9.8	10.1	8.9	12.9	9.2	10.7	11.2	15.5	12.6	16.6	18.9	30.4	42.1	27.1	27.5	44.4	31.0	27.5	26.0	22.2	24.8	25.6	25.1	**20.9**	**44.4**	**8.9**
19	29.9	29.1	41.1	28.4	32.7	41.9	34.4	21.4	20.9	21.8	24.9	24.3	24.6	29.9	27.0	24.0	29.0	35.9	19.7	17.4	23.2	22.0	25.1	25.8	**27.3**	**41.9**	**17.4**
20	23.2	24.2	16.1	13.3	20.0	29.3	32.1	22.5	22.0	28.0	28.7	30.1	25.7	33.1	57.4	37.2	35.2	23.6	25.6	16.8	17.9	19.1	18.6	16.6	**25.7**	**57.4**	**13.3**
21	16.7	20.8	22.9	24.1	27.1	34.8	45.4	30.8	42.6	36.7	27.0	27.8	27.0	38.5	27.3	25.3	20.4	20.0	15.9	13.5	14.1	17.3	18.1	15.1	**25.4**	**45.4**	**13.5**
22	13.2	10.7	13.2	15.2	20.0	33.2	29.5	27.1	19.5	24.1	25.4	24.6	23.3	25.5	26.2	28.0	27.9	25.3	22.1	20.0	21.3	20.6	17.5	17.5	**22.1**	**33.2**	**10.7**
23	18.5	19.7	21.0	23.0	25.4	39.2	44.6	42.8	33.4	28.9	22.5	21.5	23.2	22.7	19.2	33.5	30.6	26.2	20.2	21.2	19.2	17.1	21.0	30.8	**26.1**	**44.6**	**17.1**
24	23.7	25.3	29.1	28.3	23.8	29.7	51.6	56.0	48.2	28.8	30.0	29.4	33.5	32.3	24.9	26.2	27.3	21.4	36.9	22.4	26.4	27.4	25.5	24.6	**30.5**	**56.0**	**21.4**
25	24.2	29.5	28.0	26.1	29.0	26.5	27.0	33.0	53.1	51.0	50.7	50.4	39.4	35.6	35.6	31.3	33.5	30.7	25.0	24.6	22.2	23.6	17.1	15.8	**31.8**	**53.1**	**15.8**
26	17.8	20.8	22.6	21.5	22.5	20.9	20.3	34.6	23.5	23.0	20.7	20.9	28.8	29.8	28.5	21.8	23.8	33.8	18.3	20.0	22.3	22.9	21.2	20.6	**23.4**	**34.6**	**17.8**
27	19.7	17.2	17.7	17.0	17.1	16.6	16.7	14.8	14.2	18.0	19.3	21.2	20.4	21.3	27.3	22.8	21.0	21.8	21.5	19.6	46.9	74.9	49.1	47.7	**25.2**	**74.9**	**14.2**
28	51.2	46.6	59.0	40.4	18.8	20.1	17.4	16.5	14.4	10.1	10.1	10.0	9.7	8.2	---	7.4	10.9	---	---	---	---	8.9	9.1	9.8	**19.9**	**59.0**	**7.4**
29	12.3	10.1	9.3	12.1	12.1	24.8	31.3	21.3	13.8	15.7	9.0	8.4	25.8	56.3	---	14.3	21.1	45.4	27.4	23.0	17.8	17.2	13.5	13.6	**19.8**	**56.3**	**8.4**
30	11.5	11.5	11.6	13.3	14.9	15.8	12.8	13.0	12.4	12.2	12.2	13.5	12.4	11.8	11.4	11.7	10.8	11.1	10.7	11.7	9.4	15.4	18.1	11.5	**12.5**	**18.1**	**9.4**
31	14.3	13.5	9.9	13.2	15.1	9.6	13.4	21.9	23.3	15.2	15.5	15.4	17.8	14.6	16.8	16.0	10.9	11.1	11.6	9.0	13.0	20.1	19.5	21.4	**15.1**	**23.3**	**9.0**
MEAN	**19.7**	**19.5**	**20.0**	**19.7**	**18.8**	**21.2**	**25.2**	**22.1**	**22.0**	**21.8**	**20.7**	**21.9**	**22.4**	**24.4**	**23.4**	**21.4**	**21.8**	**21.2**	**20.0**	**18.6**	**19.3**	**20.5**	**20.3**	**19.7**	**21.1**		
MAX	**51.2**	**46.6**	**59.0**	**51.0**	**34.3**	**41.9**	**60.7**	**56.0**	**53.1**	**51.0**	**50.7**	**60.9**	**47.0**	**56.3**	**57.4**	**45.3**	**44.4**	**45.4**	**38.2**	**37.0**	**46.9**	**74.9**	**49.1**	**47.7**		**74.9**	
MIN	**10.0**	**9.8**	**8.2**	**8.5**	**8.2**	**9.2**	**8.4**	**6.8**	**7.5**	**6.4**	**8.0**	**3.9**	**6.3**	**5.5**	**4.2**	**4.0**	**5.0**	**5.8**	**8.0**	**5.3**	**3.4**	**5.4**	**6.9**	**9.2**			**3.4**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 655 DATA RECOVERY RATE = 88.0% DATA CAPTURE RATE = 87.1%

MONTHLY MEAN = 21.1 µg/m3

MAXIMUM PM10 = 74.9 µg/m3 DATE OF OCCURRENCE = 5/27 at 2200 MAXIMUM DAILY MEAN = 33.5 µg/m3 DATE OF OCCURRENCE = 5/7

SECOND MAXIMUM PM10 = 60.9 µg/m3 DATE OF OCCURRENCE = 5/2 at 1200 SECOND MAXIMUM DAILY MEAN = 31.8 µg/m3 DATE OF OCCURRENCE = 5/25

MINIMUM PM10 = 3.4 µg/m3 DATE OF OCCURRENCE = 5/10 at 2100 MINUMUM DAILY MEAN = 11.5 µg/m3 DATE OF OCCURRENCE = 5/12

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

Draft

CSX AQ2 Modulair

HOURLY AVERAGES of PM10 in µg/m3 for JUNE, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	22.4	10.9	10.3	10.9	17.2	16.9	29.5	17.2	16.4	16.6	21.2	18.7	12.8	13.1	13.0	16.7	23.3	18.4	11.7	10.8	12.4	15.4	14.7	14.0	**16.0**	**29.5**	**10.3**
2	13.9	13.8	12.4	15.1	12.9	13.9	15.7	16.3	20.1	20.1	21.1	22.6	25.5	20.6	20.6	22.8	24.9	28.8	20.6	19.7	20.2	20.1	21.4	19.7	**19.3**	**28.8**	**12.4**
3	20.3	20.9	21.6	19.7	19.9	19.1	25.4	20.2	27.5	19.4	21.7	20.1	20.3	23.0	50.9	46.2	26.6	14.5	29.5	23.9	28.8	27.9	27.9	23.9	**25.0**	**50.9**	**14.5**
4	26.6	18.3	18.1	18.6	67.2	26.2	51.5	67.5	47.5	49.2	68.7	67.0	---	50.5	48.3	58.8	59.4	34.9	---	24.7	26.7	21.9	25.8	25.9	**41.1**	**68.7**	**18.1**
5	25.4	22.8	31.9	28.8	37.2	43.4	44.0	44.2	43.1	37.0	60.1	54.1	48.4	54.4	55.7	59.4	27.1	24.0	25.5	28.4	30.3	29.9	27.4	23.8	**37.8**	**60.1**	**22.8**
6	26.1	24.3	24.9	21.8	21.4	22.3	22.0	20.2	21.5	22.0	24.2	22.3	23.7	23.6	24.2	21.8	17.6	18.4	11.5	13.3	15.7	15.4	15.3	18.3	**20.5**	**26.1**	**11.5**
7	19.9	22.2	17.8	16.0	16.3	19.3	20.2	19.1	20.3	22.6	33.2	34.6	44.8	39.1	36.5	28.3	16.8	---	---	21.7	16.6	10.6	15.4	12.2	**22.9**	**44.8**	**10.6**
8	13.3	---	---	---	8.0	---	---	14.0	13.2	11.1	7.9	6.1	7.1	7.2	10.5	10.1	7.3	9.6	6.8	8.2	12.4	---	---	---	**---**	**---**	**---**
9	---	---	16.7	15.9	18.7	18.4	18.0	---	---	16.2	18.3	16.6	18.3	13.2	16.0	11.1	7.8	---	---	8.0	---	---	---	---	**---**	**---**	**---**
10	---	---	---	---	---	---	---	---	11.9	9.9	16.2	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
11	---	---	---	6.6	10.6	9.1	9.6	13.0	12.2	13.9	12.4	7.7	7.5	8.8	8.1	8.7	9.9	12.9	8.8	11.2	19.5	14.4	15.0	28.5	**11.8**	**28.5**	**6.6**
12	22.8	13.8	13.8	12.4	15.6	14.9	18.3	26.1	16.8	13.4	11.0	11.5	12.2	12.4	17.8	37.0	51.6	41.8	24.4	23.9	18.4	23.7	19.0	19.3	**20.5**	**51.6**	**11.0**
13	18.9	21.3	18.4	17.5	19.6	34.1	53.5	74.0	37.9	47.8	41.3	---	---	---	---	---	---	---	---	---	---	19.8	21.0	20.3	**---**	**---**	**---**
14	21.2	25.5	23.7	22.2	22.7	23.2	23.4	29.2	31.2	33.6	33.6	55.6	---	44.5	54.7	---	---	42.7	26.6	31.7	34.1	28.9	21.3	14.5	**30.7**	**55.6**	**14.5**
15	12.7	17.4	15.0	14.2	15.2	13.9	14.9	16.5	16.0	12.1	12.4	17.5	15.0	12.1	11.0	10.3	11.5	12.3	12.3	10.1	21.5	25.2	29.8	61.9	**17.1**	**61.9**	**10.1**
16	29.8	16.8	20.0	17.0	15.6	21.5	18.5	16.4	16.0	16.7	15.9	18.0	17.4	21.3	---	---	---	---	---	---	---	---	---	18.1	**---**	**---**	**---**
17	16.2	14.0	12.8	14.5	13.1	18.7	35.9	35.3	34.2	31.3	36.9	44.2	38.5	47.1	50.0	57.9	49.3	42.4	35.4	31.6	24.0	25.0	27.5	25.2	**31.7**	**57.9**	**12.8**
18	24.2	20.6	20.7	22.1	24.3	30.6	30.8	33.4	22.4	24.5	47.4	47.6	44.6	56.3	44.0	43.2	43.6	39.0	33.4	28.8	35.2	22.6	36.3	25.0	**33.4**	**56.3**	**20.6**
19	26.1	22.0	25.7	27.7	28.0	32.9	40.0	30.0	22.7	39.2	32.4	27.2	---	---	41.8	23.5	9.8	11.2	10.9	10.4	27.8	14.8	23.5	27.1	**25.2**	**41.8**	**9.8**
20	31.3	31.0	28.9	33.7	33.8	38.1	43.0	33.1	26.4	23.7	---	---	---	---	---	---	20.3	20.9	20.0	---	---	---	---	---	**---**	**---**	**---**
21	---	26.9	34.1	27.6	41.7	29.9	39.9	31.8	32.2	24.9	25.1	---	---	---	---	---	---	---	---	---	---	26.7	31.4	32.1	**---**	**---**	**---**
22	30.1	31.8	30.1	30.9	29.5	31.5	32.4	25.8	28.6	30.7	36.6	40.7	35.7	56.4	48.7	45.1	41.0	40.0	31.7	30.6	29.1	29.7	29.6	29.8	**34.4**	**56.4**	**25.8**
23	27.9	33.1	23.8	22.3	20.2	21.9	17.1	18.3	17.2	22.7	19.9	24.3	24.0	23.7	30.0	28.1	32.3	29.3	22.9	23.7	26.7	28.0	23.6	22.9	**24.3**	**33.1**	**17.1**
24	23.1	23.1	21.8	18.9	14.7	13.6	16.9	10.1	13.4	17.2	19.1	22.8	31.4	33.6	29.1	27.8	33.3	31.3	19.4	17.6	16.9	20.4	18.0	18.3	**21.3**	**33.6**	**10.1**
25	21.1	18.3	18.9	16.7	21.6	21.5	51.1	29.3	31.3	23.5	17.2	19.5	22.4	16.8	20.6	26.7	24.6	21.7	22.6	24.9	24.0	24.9	23.0	26.2	**23.7**	**51.1**	**16.7**
26	23.3	22.3	23.5	25.4	24.2	25.5	40.8	35.3	30.8	36.9	27.2	29.4	41.9	45.0	19.1	17.4	17.4	21.5	26.2	33.6	29.8	28.4	20.7	14.2	**27.5**	**45.0**	**14.2**
27	13.3	11.7	12.0	12.1	11.4	13.5	13.1	12.6	11.1	10.2	10.1	12.4	12.1	12.5	11.9	13.4	25.7	25.0	27.8	18.9	30.1	24.6	20.5	58.1	**17.7**	**58.1**	**10.1**
28	30.1	34.0	26.6	20.1	29.0	31.6	18.8	20.2	19.8	28.8	30.0	19.7	25.5	23.7	19.6	---	25.2	22.3	18.9	19.2	28.5	35.1	30.2	28.7	**25.5**	**35.1**	**18.8**
29	33.1	38.0	41.8	42.9	40.4	59.4	65.2	63.3	39.9	37.7	33.3	33.9	31.3	31.1	29.9	27.6	25.4	27.1	25.3	18.5	17.7	19.9	20.4	13.6	**34.0**	**65.2**	**13.6**
30	12.2	11.9	36.7	33.1	16.8	17.4	18.0	19.4	18.9	21.2	22.6	21.3	23.7	24.5	20.0	19.2	16.9	15.6	12.7	14.6	13.8	17.7	33.6	11.3	**19.7**	**36.7**	**11.3**
MEAN	**22.5**	**21.8**	**22.3**	**20.9**	**23.0**	**24.4**	**29.6**	**28.3**	**24.2**	**24.5**	**26.8**	**27.5**	**25.4**	**28.6**	**29.3**	**28.7**	**25.9**	**25.2**	**21.1**	**20.3**	**23.3**	**22.8**	**23.7**	**24.3**	**24.8**		
MAX	**33.1**	**38.0**	**41.8**	**42.9**	**67.2**	**59.4**	**65.2**	**74.0**	**47.5**	**49.2**	**68.7**	**67.0**	**48.4**	**56.4**	**55.7**	**59.4**	**59.4**	**42.7**	**35.4**	**33.6**	**35.2**	**35.1**	**36.3**	**61.9**		**74.0**	
MIN	**12.2**	**10.9**	**10.3**	**6.6**	**8.0**	**9.1**	**9.6**	**10.1**	**11.1**	**9.9**	**7.9**	**6.1**	**7.1**	**7.2**	**8.1**	**8.7**	**7.3**	**9.6**	**6.8**	**8.0**	**12.4**	**10.6**	**14.7**	**11.3**			**6.1**

POSSIBLE NUMBER OF OBSERVATIONS = 720 ACTUAL NUMBER OF OBSERVATIONS = 627 DATA RECOVERY RATE = 87.1% DATA CAPTURE RATE = 76.7%

MONTHLY MEAN = 24.8 µg/m3

MAXIMUM PM10 = 74.0 µg/m3 DATE OF OCCURRENCE = 6/13 at 800 MAXIMUM DAILY MEAN = 41.1 µg/m3 DATE OF OCCURRENCE = 6/4

SECOND MAXIMUM PM10 = 68.7 µg/m3 DATE OF OCCURRENCE = 6/4 at 1100 SECOND MAXIMUM DAILY MEAN = 37.8 µg/m3 DATE OF OCCURRENCE = 6/5

MINIMUM PM10 = 6.1 µg/m3 DATE OF OCCURRENCE = 6/8 at 1200 MINUMUM DAILY MEAN = 11.8 µg/m3 DATE OF OCCURRENCE = 6/11

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

Draft

CSX AQ2 Modulair

HOURLY AVERAGES of PM2.5 in µg/m3 for APRIL, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	11.3	11.9	13.1	14.0	12.2	12.8	12.4	11.1	12.6	4.2	3.5	1.9	1.8	3.4	5.1	4.4	7.1	10.0	10.8	11.0	10.3	9.3	9.8	10.0	**8.9**	**14.0**	**1.8**
2	9.4	10.2	9.0	7.6	8.0	8.7	7.6	4.8	5.3	4.7	2.9	2.5	3.1	3.2	2.5	1.9	1.1	0.9	0.6	---	---	---	---	---	**4.9**	**10.2**	**0.6**
3	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
4	---	---	---	---	---	---	---	4.4	11.7	11.6	6.2	4.7	4.5	9.3	8.4	2.7	0.7	0.3	1.0	0.6	0.6	1.0	0.9	1.0	**---**	**---**	**---**
5	0.9	0.9	0.9	0.9	1.2	1.5	2.4	3.4	4.9	4.2	2.1	1.5	1.4	1.9	1.4	1.3	2.6	2.7	2.0	1.3	0.9	1.0	0.9	0.9	**1.7**	**4.9**	**0.9**
6	1.1	1.2	1.3	1.3	1.2	1.2	1.2	1.4	1.6	1.8	1.5	1.3	1.2	1.2	1.2	1.3	1.4	1.3	1.5	1.8	2.2	2.9	3.1	2.8	**1.5**	**3.1**	**1.1**
7	2.8	2.7	2.8	2.9	3.1	3.7	2.2	3.6	2.8	1.3	1.1	0.9	0.9	1.1	1.0	1.0	0.9	0.8	1.0	1.3	2.7	4.9	6.3	5.4	**2.3**	**6.3**	**0.8**
8	3.5	4.0	4.1	5.1	4.6	4.3	4.6	7.2	14.4	15.4	10.9	6.6	7.5	8.2	6.4	5.1	3.8	3.4	3.1	3.2	3.8	4.6	5.2	5.6	**6.0**	**15.4**	**3.1**
9	6.7	8.6	6.6	5.5	5.6	6.5	9.1	12.4	16.9	12.4	19.7	22.3	12.3	14.4	11.2	11.4	14.3	18.8	21.8	25.8	25.8	25.6	25.1	26.1	**15.2**	**26.1**	**5.5**
10	24.6	24.5	25.5	27.5	23.2	22.0	22.0	24.5	30.2	37.9	21.9	11.2	8.9	9.5	14.4	22.6	23.4	18.1	16.9	14.6	16.0	12.5	14.4	14.5	**20.0**	**37.9**	**8.9**
11	13.7	13.3	13.3	12.0	12.8	12.0	12.6	12.3	10.3	---	---	---	---	---	---	---	9.5	10.5	10.7	10.6	11.3	12.8	14.0	14.5	**---**	**---**	**---**
12	13.2	9.6	8.9	3.7	3.0	3.1	4.1	5.2	1.1	0.5	1.4	2.1	2.6	3.0	3.0	2.2	1.1	0.5	0.9	1.3	0.8	0.4	0.4	0.6	**3.0**	**13.2**	**0.4**
13	1.0	1.0	0.9	0.6	0.9	1.1	1.4	1.5	1.9	2.0	2.0	1.9	2.1	2.2	2.2	2.1	2.1	1.9	1.8	1.6	2.2	2.5	3.8	3.3	**1.8**	**3.8**	**0.6**
14	5.2	3.5	3.5	3.2	3.5	3.7	4.4	5.0	4.8	3.6	3.1	3.4	4.9	8.3	8.3	12.5	8.9	6.3	7.0	7.6	8.1	8.2	9.2	10.6	**6.1**	**12.5**	**3.1**
15	5.6	4.3	5.3	7.7	7.2	4.9	6.2	6.4	7.0	7.7	13.5	---	---	10.7	7.2	8.3	8.8	8.9	7.6	---	---	19.8	18.6	19.9	**9.2**	**19.9**	**4.3**
16	7.2	8.1	7.2	3.9	4.8	5.0	5.2	9.4	6.9	4.7	---	---	---	---	---	---	---	---	---	---	---	---	6.7	6.8	**---**	**---**	**---**
17	6.7	6.2	6.2	5.8	5.7	5.7	6.3	8.0	---	6.8	8.4	13.5	10.0	9.4	11.5	11.4	13.2	---	14.4	11.6	10.5	9.0	8.9	10.0	**9.0**	**14.4**	**5.7**
18	13.1	13.1	13.7	13.8	16.0	17.0	22.5	26.2	26.8	23.0	20.8	25.6	27.8	28.5	28.2	24.2	27.6	20.4	16.9	11.3	11.9	19.1	21.0	21.4	**20.4**	**28.5**	**11.3**
19	14.9	10.9	9.4	7.1	4.6	3.7	3.5	4.5	6.2	5.7	7.0	8.4	9.8	10.1	15.6	17.2	12.4	11.1	10.1	8.5	7.9	8.4	10.3	9.7	**9.0**	**17.2**	**3.5**
20	8.2	8.3	8.0	8.2	8.3	9.3	10.7	13.5	15.7	15.9	11.8	8.3	6.7	3.9	3.3	3.0	2.7	2.5	2.8	2.7	2.9	2.7	3.0	2.3	**6.8**	**15.9**	**2.3**
21	2.2	2.3	2.0	2.4	2.2	2.1	1.7	1.6	2.1	2.2	2.0	3.1	4.3	4.5	4.5	4.0	3.3	3.2	3.0	3.0	3.0	4.2	4.6	5.9	**3.0**	**5.9**	**1.6**
22	4.9	4.7	3.6	3.2	3.5	4.4	3.9	4.0	4.7	3.9	4.0	4.7	4.6	5.1	7.0	4.0	4.2	4.1	4.1	5.5	5.3	5.6	5.3	4.3	**4.5**	**7.0**	**3.2**
23	5.3	5.9	4.9	4.9	5.6	6.1	7.7	10.2	17.5	20.9	20.1	9.5	---	6.4	6.6	6.6	6.0	6.5	6.6	5.9	6.3	7.3	5.8	5.7	**8.1**	**20.9**	**4.9**
24	5.9	6.3	7.0	7.4	7.9	9.8	---	---	---	6.2	4.7	4.1	4.5	4.0	4.1	3.5	3.4	3.6	3.7	2.9	2.5	3.4	3.5	2.8	**4.8**	**9.8**	**2.5**
25	3.0	3.4	4.1	4.1	4.4	3.6	2.1	2.5	3.0	3.4	4.2	5.7	7.3	9.9	14.0	22.2	19.8	16.9	14.1	12.0	8.6	9.2	9.8	7.7	**8.1**	**22.2**	**2.1**
26	7.4	6.0	5.0	5.0	5.1	4.5	4.9	5.4	7.1	8.9	6.7	7.2	5.7	4.7	3.4	---	3.4	3.4	3.4	3.3	4.8	4.2	3.4	3.3	**5.0**	**8.9**	**3.3**
27	3.2	3.2	2.9	3.0	3.3	3.3	3.3	3.0	3.8	4.4	4.3	4.3	4.9	5.1	6.4	5.8	6.4	6.9	6.8	4.4	3.9	3.9	3.9	3.8	**4.3**	**6.9**	**2.9**
28	3.9	4.1	4.3	5.4	5.3	4.4	4.9	5.6	10.2	18.7	18.9	26.8	23.6	19.9	18.2	18.7	21.1	17.3	17.8	17.4	17.3	17.7	16.6	16.6	**13.9**	**26.8**	**3.9**
29	17.1	15.4	14.5	14.7	13.6	13.0	13.0	14.7	14.7	28.3	33.4	---	---	---	---	---	---	---	---	---	16.1	17.3	17.7	17.1	**---**	**---**	**---**
30	17.2	16.2	15.6	19.7	19.3	18.1	17.7	17.7	17.2	17.4	16.6	17.3	16.7	15.1	15.0	13.4	16.0	13.8	12.1	12.1	14.1	8.6	3.4	3.9	**14.7**	**19.7**	**3.4**
MEAN	**7.8**	**7.5**	**7.3**	**7.2**	**7.0**	**7.0**	**7.3**	**8.2**	**9.7**	**9.9**	**9.4**	**8.0**	**7.4**	**7.8**	**8.1**	**8.4**	**8.3**	**7.5**	**7.5**	**7.3**	**7.7**	**8.4**	**8.4**	**8.4**	**8.0**		
MAX	**24.6**	**24.5**	**25.5**	**27.5**	**23.2**	**22.0**	**22.5**	**26.2**	**30.2**	**37.9**	**33.4**	**26.8**	**27.8**	**28.5**	**28.2**	**24.2**	**27.6**	**20.4**	**21.8**	**25.8**	**25.8**	**25.6**	**25.1**	**26.1**		**37.9**	
MIN	**0.9**	**0.9**	**0.9**	**0.6**	**0.9**	**1.1**	**1.2**	**1.4**	**1.1**	**0.5**	**1.1**	**0.9**	**0.9**	**1.1**	**1.0**	**1.0**	**0.7**	**0.3**	**0.6**	**0.6**	**0.6**	**0.4**	**0.4**	**0.6**			**0.3**

POSSIBLE NUMBER OF OBSERVATIONS = 720 ACTUAL NUMBER OF OBSERVATIONS = 645 DATA RECOVERY RATE = 89.6% DATA CAPTURE RATE = 83.3%

MONTHLY MEAN = 8.0 µg/m3

MAXIMUM PM2.5 = 37.9 µg/m3 DATE OF OCCURRENCE = 4/10 at 1000 MAXIMUM DAILY MEAN = 20.4 µg/m3 DATE OF OCCURRENCE = 4/18

SECOND MAXIMUM PM2.5 = 33.4 µg/m3 DATE OF OCCURRENCE = 4/29 at 1100 SECOND MAXIMUM DAILY MEAN = 20.0 µg/m3 DATE OF OCCURRENCE = 4/10

MINIMUM PM2.5 = 0.3 µg/m3 DATE OF OCCURRENCE = 4/4 at 1800 MINUMUM DAILY MEAN = 1.5 µg/m3 DATE OF OCCURRENCE = 4/6

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

Draft

CSX AQ2 Modulair

HOURLY AVERAGES of PM2.5 in µg/m3 for MAY, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	5.3	4.8	5.5	5.5	5.3	5.3	5.3	5.3	5.6	6.0	5.7	5.0	5.2	5.4	5.9	5.9	5.8	6.2	5.7	6.5	9.7	10.0	9.2	8.8	**6.2**	**10.0**	**4.8**
2	8.1	8.2	8.3	8.6	7.7	8.5	10.0	14.4	22.1	29.4	17.2	23.0	11.4	8.9	8.3	8.3	8.1	8.7	9.6	10.9	13.0	14.4	17.3	17.4	**12.5**	**29.4**	**7.7**
3	18.9	16.3	11.8	10.0	---	---	9.5	11.2	10.7	10.5	---	---	9.1	---	---	---	---	---	---	---	---	---	---	4.1	**---**	**---**	**---**
4	5.5	6.7	6.9	6.3	6.0	7.4	7.4	6.6	5.2	5.1	8.9	7.7	6.3	6.6	2.7	1.5	1.5	1.7	2.0	3.6	5.2	6.9	8.6	8.7	**5.6**	**8.9**	**1.5**
5	8.1	7.4	7.1	8.8	7.8	5.3	3.4	3.1	3.0	4.6	5.0	6.7	6.1	7.8	10.1	10.7	10.0	6.2	6.6	10.6	---	---	---	---	**6.9**	**10.7**	**3.0**
6	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
7	---	---	---	---	---	---	11.3	13.2	16.4	19.7	23.4	26.9	33.0	26.7	26.5	26.1	19.8	20.3	24.5	27.2	18.1	10.7	8.8	7.5	**20.0**	**33.0**	**7.5**
8	6.5	6.7	6.8	7.3	7.6	7.7	8.6	10.6	15.7	16.5	14.2	13.7	7.7	6.7	6.5	6.7	6.9	7.2	7.4	7.6	7.8	8.8	9.0	7.8	**8.8**	**16.5**	**6.5**
9	6.8	8.2	7.3	7.9	7.1	6.7	9.1	5.9	5.4	6.0	5.2	6.4	5.3	4.9	6.2	8.4	7.0	4.8	4.3	6.2	6.8	8.6	12.9	---	**6.8**	**12.9**	**4.3**
10	5.9	---	---	---	---	---	---	6.3	5.9	---	5.2	4.5	3.3	1.9	1.6	1.2	1.1	0.9	1.1	0.9	0.6	0.9	1.0	1.3	**---**	**---**	**---**
11	1.7	1.9	2.1	2.1	2.2	2.4	2.3	2.7	3.1	4.4	4.6	2.8	---	---	---	---	---	2.7	---	2.9	3.5	4.2	7.6	5.1	**3.2**	**7.6**	**1.7**
12	3.8	3.4	2.4	2.3	2.4	2.7	3.5	5.2	6.7	4.7	---	---	3.4	4.2	---	---	---	---	4.8	4.1	6.0	3.9	5.0	5.0	**4.0**	**6.7**	**2.3**
13	6.4	5.8	5.5	5.0	5.4	6.4	7.2	7.9	8.5	---	---	---	---	---	---	---	---	---	---	---	---	6.6	5.9	5.7	**---**	**---**	**---**
14	5.9	5.9	5.3	5.3	5.6	5.7	6.9	8.3	9.7	10.5	11.1	12.8	15.2	12.9	10.8	9.7	9.2	8.8	10.8	13.9	7.7	6.8	5.7	5.5	**8.7**	**15.2**	**5.3**
15	6.3	6.8	7.2	6.3	5.7	5.4	5.7	3.9	2.9	3.0	3.5	2.8	2.4	2.9	4.1	4.7	4.8	5.7	6.8	6.9	6.7	6.7	5.4	5.5	**5.0**	**7.2**	**2.4**
16	4.8	5.0	5.3	5.8	5.2	4.9	5.7	6.1	4.2	3.3	3.3	3.6	3.5	5.3	4.8	3.3	4.4	4.5	4.7	4.3	4.1	2.9	2.8	3.0	**4.3**	**6.1**	**2.8**
17	3.5	3.5	3.0	3.0	3.6	3.9	3.4	4.1	5.9	6.1	7.2	6.2	6.2	8.0	12.3	12.0	---	---	---	7.8	5.3	6.3	6.2	6.6	**5.9**	**12.3**	**3.0**
18	5.7	5.6	5.7	5.9	6.5	6.3	6.6	6.8	7.4	8.8	9.6	12.1	10.5	13.8	11.7	11.8	14.0	14.3	14.1	15.1	12.8	13.5	16.7	17.6	**10.5**	**17.6**	**5.6**
19	21.3	21.2	16.8	13.6	12.4	13.9	14.6	13.3	13.9	17.5	20.7	20.1	19.2	23.6	22.2	20.1	23.8	26.3	15.7	13.1	12.7	13.2	14.0	14.7	**17.4**	**26.3**	**12.4**
20	13.5	9.8	5.5	4.2	4.6	14.0	13.9	8.8	10.0	8.3	8.5	9.6	9.5	17.1	24.7	18.6	16.5	15.1	15.5	10.6	12.0	10.5	11.3	10.2	**11.7**	**24.7**	**4.2**
21	9.0	9.7	10.1	9.8	8.7	8.4	9.7	15.8	23.4	23.4	18.0	18.0	19.4	18.1	13.9	13.4	11.0	10.6	9.1	7.8	7.7	8.2	8.5	7.8	**12.4**	**23.4**	**7.7**
22	6.9	6.4	6.7	6.6	6.4	7.2	6.5	8.1	9.4	11.0	12.5	12.5	11.1	15.9	16.4	17.0	15.5	13.2	12.9	12.7	12.8	12.0	9.8	9.0	**10.7**	**17.0**	**6.4**
23	9.4	11.2	12.5	13.9	15.5	18.1	21.4	22.8	25.7	19.3	12.1	14.5	14.2	15.6	13.7	17.9	16.0	14.9	13.6	15.2	13.5	13.4	15.4	18.0	**15.7**	**25.7**	**9.4**
24	17.6	16.5	16.5	13.8	13.6	13.1	13.7	17.0	16.4	11.1	12.6	13.1	11.9	10.9	11.0	11.0	12.6	12.7	14.9	12.8	13.8	16.3	16.7	15.3	**13.9**	**17.6**	**10.9**
25	16.4	19.2	18.6	17.5	16.7	17.2	18.1	26.3	37.5	36.9	36.3	36.8	30.0	22.1	18.0	17.6	15.8	13.8	15.1	14.9	15.4	12.9	5.5	6.9	**20.2**	**37.5**	**5.5**
26	8.8	10.0	11.0	10.2	9.2	9.2	8.7	12.7	14.1	15.7	14.4	15.3	19.2	21.7	23.3	15.9	15.3	25.2	15.3	15.9	17.7	18.5	17.3	16.6	**15.0**	**25.2**	**8.7**
27	14.9	13.4	12.6	11.9	12.2	12.2	11.2	10.6	10.3	13.5	14.0	13.7	13.2	11.2	11.9	13.5	14.1	13.3	13.1	8.4	4.6	4.5	3.1	3.4	**11.0**	**14.9**	**3.1**
28	3.3	3.5	4.0	4.6	5.1	6.3	5.0	4.9	4.4	3.8	4.1	4.0	4.0	4.1	---	4.3	4.2	---	---	---	---	5.0	5.4	5.5	**4.5**	**6.3**	**3.3**
29	4.7	4.0	4.3	5.0	4.8	5.8	5.7	6.0	5.3	5.7	3.9	3.6	7.1	10.3	---	8.6	6.6	12.0	8.3	6.7	5.6	5.8	5.0	4.7	**6.0**	**12.0**	**3.6**
30	4.0	3.1	2.9	2.9	2.3	2.4	2.7	3.1	3.9	4.6	4.3	3.9	3.9	4.2	4.0	4.3	4.2	4.4	4.4	4.1	3.9	5.6	6.3	6.1	**3.9**	**6.3**	**2.3**
31	6.0	5.4	4.6	3.9	3.8	3.4	2.9	4.6	4.8	4.4	4.0	4.7	5.0	4.5	4.5	4.6	3.9	4.0	4.1	3.9	5.8	10.6	11.2	13.2	**5.3**	**13.2**	**2.9**
MEAN	**8.2**	**8.2**	**7.7**	**7.4**	**7.2**	**7.8**	**8.3**	**9.2**	**10.6**	**11.2**	**10.7**	**11.3**	**10.6**	**10.9**	**11.5**	**10.7**	**10.1**	**10.3**	**9.8**	**9.4**	**9.0**	**8.8**	**9.0**	**8.6**	**9.4**		
MAX	**21.3**	**21.2**	**18.6**	**17.5**	**16.7**	**18.1**	**21.4**	**26.3**	**37.5**	**36.9**	**36.3**	**36.8**	**33.0**	**26.7**	**26.5**	**26.1**	**23.8**	**26.3**	**24.5**	**27.2**	**18.1**	**18.5**	**17.3**	**18.0**		**37.5**	
MIN	**1.7**	**1.9**	**2.1**	**2.1**	**2.2**	**2.4**	**2.3**	**2.7**	**2.9**	**3.0**	**3.3**	**2.8**	**2.4**	**1.9**	**1.6**	**1.2**	**1.1**	**0.9**	**1.1**	**0.9**	**0.6**	**0.9**	**1.0**	**1.3**			**0.6**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 655 DATA RECOVERY RATE = 88.0% DATA CAPTURE RATE = 87.1%

MONTHLY MEAN = 9.4 µg/m3

MAXIMUM PM2.5 = 37.5 µg/m3 DATE OF OCCURRENCE = 5/25 at 900 MAXIMUM DAILY MEAN = 20.2 µg/m3 DATE OF OCCURRENCE = 5/25

SECOND MAXIMUM PM2.5 = 36.9 µg/m3 DATE OF OCCURRENCE = 5/25 at 1000 SECOND MAXIMUM DAILY MEAN = 20.0 µg/m3 DATE OF OCCURRENCE = 5/7

MINIMUM PM2.5 = 0.6 µg/m3 DATE OF OCCURRENCE = 5/10 at 2100 MINUMUM DAILY MEAN = 3.2 µg/m3 DATE OF OCCURRENCE = 5/11

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

Draft

CSX AQ2 Modulair

HOURLY AVERAGES of PM2.5 in µg/m3 for JUNE, 2024

Hr Beg Hr End Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	13.2	6.0	5.7	5.7	6.2	7.3	8.2	8.2	7.5	7.4	8.0	8.5	5.3	6.7	6.9	7.4	9.2	8.8	6.9	6.7	7.2	8.7	10.1	8.9	**7.6**	**13.2**	**5.3**
2	8.8	8.4	8.1	8.3	8.0	7.9	8.8	11.3	12.8	14.0	15.0	16.6	16.5	14.1	14.6	17.9	18.2	18.7	13.7	13.7	14.2	15.9	15.9	14.3	**13.1**	**18.7**	**7.9**
3	15.0	15.4	15.1	15.3	14.5	13.9	14.6	14.4	14.6	13.9	15.7	14.0	13.8	14.7	21.5	23.2	15.4	10.4	17.9	18.0	17.1	17.4	18.2	16.2	**15.8**	**23.2**	**10.4**
4	16.5	13.5	11.2	10.9	12.5	10.8	12.2	17.2	24.0	30.8	36.1	32.5	---	19.1	23.4	24.9	25.0	24.3	---	17.5	20.9	19.9	20.5	18.0	**20.0**	**36.1**	**10.8**
5	18.2	16.3	17.3	15.9	22.4	27.3	26.7	22.2	24.4	23.5	25.8	27.1	36.7	36.5	32.4	20.2	18.3	15.7	17.2	18.6	16.4	14.6	13.7	12.2	**21.6**	**36.7**	**12.2**
6	11.7	12.1	12.6	12.5	12.6	12.2	12.6	12.7	14.3	14.6	16.3	16.1	16.6	16.3	16.2	15.1	9.4	9.5	7.6	8.4	9.8	10.9	10.3	10.5	**12.5**	**16.6**	**7.6**
7	9.9	8.7	7.4	7.3	6.7	7.0	7.5	6.6	5.9	4.5	4.1	3.7	3.8	3.3	3.6	3.3	3.6	---	3.2	3.3	3.2	2.7	2.6	3.2	**5.0**	**9.9**	**2.6**
8	5.3	---	---	---	2.7	---	---	3.6	3.3	3.1	2.4	1.9	2.2	2.3	2.8	2.5	2.8	2.9	3.4	4.0	4.5	---	---	---	**---**	**---**	**---**
9	---	---	9.5	8.0	8.6	9.6	7.7	---	---	5.5	5.4	6.6	7.0	4.2	2.4	2.2	2.0	---	---	4.1	---	---	---	---	**---**	**---**	**---**
10	---	---	---	---	---	---	---	---	3.4	3.6	4.0	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
11	---	---	---	3.6	3.7	3.5	3.5	3.5	4.2	5.1	5.0	3.7	3.7	3.9	3.6	4.0	4.4	5.3	5.7	6.0	7.5	6.8	7.3	8.4	**4.8**	**8.4**	**3.5**
12	9.4	7.6	7.8	7.3	7.0	6.5	7.7	10.6	8.2	6.1	7.5	8.6	8.9	9.2	10.6	15.9	19.2	19.2	15.6	13.6	12.7	12.6	12.7	12.5	**10.7**	**19.2**	**6.1**
13	12.6	13.5	12.5	12.0	12.8	13.7	15.2	22.3	19.1	22.2	24.4	---	---	---	---	---	---	---	---	---	---	11.9	11.2	12.4	**---**	**---**	**---**
14	13.2	15.6	16.0	15.3	14.6	14.4	15.7	21.1	24.1	26.6	26.4	32.0	---	31.1	30.4	---	---	23.4	17.3	16.2	17.1	10.5	8.0	7.3	**18.8**	**32.0**	**7.3**
15	6.4	6.3	5.8	6.2	7.5	6.6	7.0	7.7	7.1	6.5	5.8	6.4	5.8	5.9	6.0	5.5	6.3	6.8	6.9	6.1	7.9	9.8	10.8	12.7	**7.0**	**12.7**	**5.5**
16	11.8	11.5	14.3	12.5	10.9	11.2	11.1	11.2	11.5	11.6	11.5	14.5	13.1	14.2	---	---	---	---	---	---	---	---	---	10.8	**---**	**---**	**---**
17	9.8	8.5	8.2	9.0	9.3	10.0	11.4	11.4	11.3	12.1	15.0	18.9	20.9	24.6	29.5	30.2	25.2	21.7	17.6	15.1	12.2	10.5	9.2	8.3	**14.9**	**30.2**	**8.2**
18	7.8	8.1	8.3	8.3	8.8	8.8	8.8	9.4	10.5	13.7	19.7	21.4	20.5	23.1	24.6	26.0	27.6	27.2	25.2	20.3	17.8	12.1	7.9	7.1	**15.5**	**27.6**	**7.1**
19	6.8	6.7	6.6	6.5	6.4	6.8	7.2	7.0	7.1	9.7	11.2	10.4	---	---	12.2	7.9	5.7	6.5	6.2	5.1	6.2	6.8	7.6	7.6	**7.4**	**12.2**	**5.1**
20	7.5	7.4	7.8	8.7	8.3	8.9	8.3	8.3	8.0	9.0	---	---	---	---	---	---	10.8	10.1	9.9	---	---	---	---	---	**---**	**---**	**---**
21	---	7.9	8.1	8.0	8.8	7.9	8.8	10.0	10.9	12.2	13.2	---	---	---	---	---	---	---	---	---	---	12.3	12.6	12.3	**---**	**---**	**---**
22	12.4	12.8	12.9	12.5	12.4	12.2	12.8	15.8	19.6	22.1	28.5	29.1	25.0	34.1	35.1	32.7	28.9	28.6	25.6	22.0	20.1	19.9	19.7	19.4	**21.4**	**35.1**	**12.2**
23	18.8	22.6	17.7	16.3	14.4	11.2	10.3	10.4	11.1	13.0	14.3	16.1	17.3	16.6	18.6	19.3	20.2	19.4	16.8	16.2	18.6	17.2	16.8	16.5	**16.2**	**22.6**	**10.3**
24	17.0	17.0	16.3	13.5	9.9	9.0	9.7	6.0	5.0	5.9	4.6	3.3	4.9	4.8	5.0	6.9	7.8	7.2	7.0	7.4	8.5	11.9	10.9	11.0	**8.7**	**17.0**	**3.3**
25	12.3	11.4	13.2	12.4	13.2	13.7	14.8	15.0	14.6	14.3	12.5	13.6	13.6	12.4	13.6	14.4	14.3	14.3	15.9	17.4	16.7	15.3	13.5	13.9	**14.0**	**17.4**	**11.4**
26	14.6	15.1	16.1	16.7	16.1	15.7	17.0	18.2	18.7	20.1	16.6	17.7	26.9	21.5	11.0	10.3	9.0	10.2	18.1	19.8	15.5	13.1	8.8	5.9	**15.5**	**26.9**	**5.9**
27	4.8	4.7	4.2	4.0	4.2	4.7	4.8	5.3	4.2	3.4	4.5	5.5	6.2	6.5	5.7	8.1	11.6	11.8	13.5	11.7	13.7	13.4	11.2	14.3	**7.5**	**14.3**	**3.4**
28	9.9	9.2	8.8	7.4	8.9	8.7	7.2	5.6	6.2	8.5	9.5	7.0	8.5	10.2	9.7	---	7.8	8.4	8.4	8.6	8.8	8.2	7.0	6.6	**8.2**	**10.2**	**5.6**
29	6.5	5.8	5.5	5.6	5.8	7.5	10.8	13.0	11.9	12.1	13.0	13.3	14.1	15.6	15.9	16.2	16.8	14.5	13.3	12.4	10.8	10.8	10.3	7.1	**11.1**	**16.8**	**5.5**
30	4.8	4.9	5.4	9.8	8.6	8.3	8.6	10.1	11.8	15.6	18.3	18.5	20.4	21.3	18.2	17.3	14.9	12.4	7.3	7.0	8.7	11.0	9.2	4.3	**11.5**	**21.3**	**4.3**
MEAN	**11.0**	**10.7**	**10.5**	**10.0**	**9.9**	**10.2**	**10.7**	**11.4**	**11.6**	**12.4**	**13.6**	**14.1**	**13.6**	**14.9**	**14.9**	**14.4**	**13.4**	**14.1**	**12.5**	**12.0**	**12.3**	**12.2**	**11.4**	**10.8**	**12.1**		
MAX	**18.8**	**22.6**	**17.7**	**16.7**	**22.4**	**27.3**	**26.7**	**22.3**	**24.4**	**30.8**	**36.1**	**32.5**	**36.7**	**36.5**	**35.1**	**32.7**	**28.9**	**28.6**	**25.6**	**22.0**	**20.9**	**19.9**	**20.5**	**19.4**		**36.7**	
MIN	**4.8**	**4.7**	**4.2**	**3.6**	**2.7**	**3.5**	**3.5**	**3.5**	**3.3**	**3.1**	**2.4**	**1.9**	**2.2**	**2.3**	**2.4**	**2.2**	**2.0**	**2.9**	**3.2**	**3.3**	**3.2**	**2.7**	**2.6**	**3.2**			**1.9**

POSSIBLE NUMBER OF OBSERVATIONS = 720 ACTUAL NUMBER OF OBSERVATIONS = 628 DATA RECOVERY RATE = 87.2% DATA CAPTURE RATE = 76.7%

MONTHLY MEAN = 12.1 µg/m3

MAXIMUM PM2.5 = 36.7 µg/m3 DATE OF OCCURRENCE = 6/5 at 1300 MAXIMUM DAILY MEAN = 21.6 µg/m3 DATE OF OCCURRENCE = 6/5

SECOND MAXIMUM PM2.5 = 36.5 µg/m3 DATE OF OCCURRENCE = 6/5 at 1400 SECOND MAXIMUM DAILY MEAN = 21.4 µg/m3 DATE OF OCCURRENCE = 6/22

MINIMUM PM2.5 = 1.9 µg/m3 DATE OF OCCURRENCE = 6/8 at 1200 MINUMUM DAILY MEAN = 4.8 µg/m3 DATE OF OCCURRENCE = 6/11

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

Draft

CSX AQ3 Modulair

HOURLY AVERAGES of PM10 in µg/m3 for APRIL, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	18.9	21.5	29.5	36.8	19.3	29.5	34.7	39.7	24.8	11.7	6.9	7.4	2.9	4.1	6.1	6.2	8.3	11.1	14.2	16.4	16.0	12.4	19.8	44.7	**18.5**	**44.7**	**2.9**
2	35.4	20.7	17.1	17.4	11.7	18.4	14.8	16.2	32.8	14.7	6.0	7.5	9.5	6.2	4.9	10.4	2.2	2.0	2.0	2.3	2.8	2.2	2.2	2.2	**10.9**	**35.4**	**2.0**
3	3.4	6.4	6.7	4.7	8.3	8.9	4.8	2.2	5.9	10.8	12.4	2.5	2.9	1.7	1.0	13.8	1.8	0.9	1.9	---	---	---	---	---	**5.3**	**13.8**	**0.9**
4	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
5	---	---	---	---	---	---	---	7.2	9.3	8.1	5.5	4.6	5.2	7.5	7.4	6.0	6.8	7.8	8.0	9.4	4.7	2.9	3.0	3.4	**---**	**---**	**---**
6	2.8	3.9	2.9	3.5	3.0	3.2	3.1	3.6	7.3	8.0	7.7	8.7	5.6	8.3	4.9	3.9	4.3	4.5	4.6	4.3	5.0	6.5	7.4	7.0	**5.2**	**8.7**	**2.8**
7	7.1	5.7	7.7	7.3	7.2	10.0	6.7	6.5	5.3	6.0	5.9	12.5	4.9	3.1	3.1	2.5	3.5	2.0	4.0	4.6	7.0	11.1	11.2	6.4	**6.3**	**12.5**	**2.0**
8	7.4	15.4	9.0	11.2	13.0	24.3	30.8	39.2	37.5	32.2	21.3	25.6	14.9	23.6	14.1	13.5	9.7	11.0	7.9	9.0	11.3	14.8	17.8	23.1	**18.2**	**39.2**	**7.4**
9	24.6	25.8	20.5	20.8	19.6	26.5	51.0	88.3	38.7	26.3	42.5	79.4	29.0	25.3	20.4	26.3	23.0	37.2	39.7	35.8	31.3	32.9	37.2	36.4	**34.9**	**88.3**	**19.6**
10	38.4	59.6	61.0	56.0	45.8	50.2	46.6	56.7	92.9	114.9	58.0	29.3	15.3	14.7	24.2	38.5	27.2	30.3	28.1	27.4	32.6	22.2	34.1	45.1	**43.7**	**114.9**	**14.7**
11	24.6	23.2	18.9	19.5	26.9	31.8	38.9	39.8	37.1	35.8	---	---	---	---	---	---	44.7	45.6	38.8	28.8	33.7	41.8	45.7	48.7	**34.7**	**48.7**	**18.9**
12	34.0	21.7	20.5	11.7	10.1	13.6	17.7	15.0	12.7	4.6	7.9	6.5	7.2	7.4	7.9	7.7	6.8	5.2	3.1	4.4	3.2	3.2	1.1	1.6	**9.8**	**34.0**	**1.1**
13	4.5	3.8	3.3	6.3	8.4	2.7	3.3	4.1	4.7	5.3	9.2	9.0	9.6	9.3	6.5	7.8	6.8	10.8	7.3	5.9	5.3	7.6	7.8	8.8	**6.6**	**10.8**	**2.7**
14	8.7	7.9	23.5	6.4	8.6	9.5	8.3	7.9	7.1	6.7	6.7	7.6	9.9	13.9	14.1	21.3	18.2	17.9	18.3	17.2	16.8	17.3	17.4	19.3	**12.9**	**23.5**	**6.4**
15	11.9	8.7	18.1	37.7	36.0	16.4	21.4	44.5	20.7	16.6	29.9	47.0	45.7	26.0	30.6	29.2	22.1	21.4	24.3	24.1	43.3	60.6	41.5	51.9	**30.4**	**60.6**	**8.7**
16	19.6	28.3	22.4	10.3	15.8	10.1	21.4	37.1	29.1	14.0	14.0	35.5	26.7	30.8	22.5	30.4	38.5	17.3	14.7	15.9	14.1	14.9	11.9	21.4	**21.5**	**38.5**	**10.1**
17	13.8	14.2	11.1	14.3	16.8	15.0	23.8	24.1	39.9	22.4	38.4	49.7	28.8	22.9	37.2	28.1	28.1	51.9	34.6	36.1	32.9	31.9	38.4	50.4	**29.4**	**51.9**	**11.1**
18	59.8	56.2	42.6	38.0	39.4	41.6	156.6	168.2	68.4	40.5	31.8	34.7	35.4	46.4	41.6	24.2	25.7	21.2	17.9	13.9	14.4	22.8	23.1	21.9	**45.3**	**168.2**	**13.9**
19	18.7	14.0	13.2	10.6	8.3	6.1	7.0	11.1	15.7	14.0	15.6	21.9	24.9	25.8	37.0	32.9	25.6	26.2	21.0	26.0	24.9	26.6	31.9	26.3	**20.2**	**37.0**	**6.1**
20	23.3	20.2	21.9	22.8	19.8	21.9	22.9	29.5	29.1	30.7	20.9	14.1	10.8	9.0	8.2	9.5	9.1	10.0	9.6	10.2	10.1	9.8	8.9	8.2	**16.3**	**30.7**	**8.2**
21	6.1	5.9	6.3	4.9	4.4	4.2	3.5	3.2	4.4	9.8	4.5	4.9	6.3	8.3	7.7	7.3	8.5	8.1	7.5	7.3	6.7	8.3	12.6	31.0	**7.6**	**31.0**	**3.2**
22	15.2	11.6	9.3	11.1	10.1	10.0	11.4	17.7	32.0	8.7	9.1	9.3	9.8	13.6	18.3	14.9	15.9	10.5	10.0	16.3	16.4	12.7	11.1	11.3	**13.2**	**32.0**	**8.7**
23	12.9	17.3	26.8	13.9	15.0	18.6	52.1	46.4	53.3	45.3	57.9	23.4	25.2	24.3	26.6	24.5	22.7	30.0	28.7	18.2	17.3	19.9	18.5	14.9	**27.2**	**57.9**	**12.9**
24	15.1	15.4	16.7	14.8	16.3	19.1	24.2	23.6	26.2	26.4	24.1	29.8	30.3	22.8	25.4	21.5	26.5	18.6	15.3	11.6	8.8	8.3	7.6	5.3	**18.9**	**30.3**	**5.3**
25	6.8	7.6	8.5	9.7	8.7	10.8	8.0	19.8	25.1	16.5	17.2	14.0	14.6	14.6	29.1	33.1	28.9	26.8	24.0	24.2	30.1	41.5	38.6	33.5	**20.5**	**41.5**	**6.8**
26	43.0	47.5	49.3	53.5	51.4	53.9	64.1	50.6	35.6	23.5	27.3	41.3	25.5	12.3	12.4	19.9	21.0	22.2	26.9	26.8	21.3	30.2	18.1	14.8	**33.0**	**64.1**	**12.3**
27	15.8	16.7	16.7	14.0	19.6	19.0	17.4	16.6	38.0	30.4	35.1	27.8	38.4	40.4	27.2	21.0	18.3	18.4	23.3	25.2	26.8	26.6	27.8	27.9	**24.5**	**40.4**	**14.0**
28	26.5	32.6	32.5	37.9	44.8	30.7	29.9	33.2	46.7	56.1	48.6	50.1	54.6	36.3	30.6	30.9	34.1	34.9	30.5	27.9	26.8	27.3	23.7	24.6	**35.5**	**56.1**	**23.7**
29	26.1	25.6	26.3	24.6	28.8	31.0	47.5	40.3	28.7	36.3	48.5	36.7	48.7	41.0	38.2	44.0	35.8	31.4	24.9	22.0	22.6	26.6	28.1	27.4	**33.0**	**48.7**	**22.0**
30	26.1	24.3	23.3	28.6	31.6	32.1	39.3	34.4	31.8	31.7	33.2	32.5	31.5	27.7	25.5	28.2	29.2	23.8	27.8	25.2	28.4	38.0	11.8	14.4	**28.4**	**39.3**	**11.8**
MEAN	**19.7**	**20.1**	**20.2**	**19.6**	**19.6**	**20.3**	**29.0**	**32.0**	**29.0**	**24.4**	**23.1**	**24.0**	**20.5**	**18.8**	**19.0**	**19.9**	**19.1**	**19.3**	**17.9**	**17.7**	**18.4**	**20.7**	**19.9**	**22.6**	**21.5**		
MAX	**59.8**	**59.6**	**61.0**	**56.0**	**51.4**	**53.9**	**156.6**	**168.2**	**92.9**	**114.9**	**58.0**	**79.4**	**54.6**	**46.4**	**41.6**	**44.0**	**44.7**	**51.9**	**39.7**	**36.1**	**43.3**	**60.6**	**45.7**	**51.9**		**168.2**	
MIN	**2.8**	**3.8**	**2.9**	**3.5**	**3.0**	**2.7**	**3.1**	**2.2**	**4.4**	**4.6**	**4.5**	**2.5**	**2.9**	**1.7**	**1.0**	**2.5**	**1.8**	**0.9**	**1.9**	**2.3**	**2.8**	**2.2**	**1.1**	**1.6**			**0.9**

POSSIBLE NUMBER OF OBSERVATIONS = 720 ACTUAL NUMBER OF OBSERVATIONS = 678 DATA RECOVERY RATE = 94.2% DATA CAPTURE RATE = 93.3%

MONTHLY MEAN = 21.5 µg/m3

MAXIMUM PM10 = 168.2 µg/m3 DATE OF OCCURRENCE = 4/18 at 800 MAXIMUM DAILY MEAN = 45.3 µg/m3 DATE OF OCCURRENCE = 4/18

SECOND MAXIMUM PM10 = 156.6 µg/m3 DATE OF OCCURRENCE = 4/18 at 700 SECOND MAXIMUM DAILY MEAN = 43.7 µg/m3 DATE OF OCCURRENCE = 4/10

MINIMUM PM10 = 0.9 µg/m3 DATE OF OCCURRENCE = 4/3 at 1800 MINUMUM DAILY MEAN = 5.2 µg/m3 DATE OF OCCURRENCE = 4/6

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

Draft

CSX AQ3 Modulair

HOURLY AVERAGES of PM10 in µg/m3 for MAY, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	23.1	14.2	18.4	17.5	17.2	17.0	16.8	17.9	15.0	16.1	14.4	15.5	14.9	14.6	15.2	21.5	13.1	13.5	14.1	14.0	24.4	18.0	15.3	12.8	**16.4**	**24.4**	**12.8**
2	13.7	19.5	16.9	20.1	15.0	14.7	21.4	23.4	35.2	48.5	27.7	44.3	30.5	19.7	20.4	24.5	20.3	17.2	18.9	21.5	25.5	24.4	26.1	30.5	**24.2**	**48.5**	**13.7**
3	36.3	33.5	21.4	20.0	16.2	14.8	16.3	16.2	15.7	13.5	16.5	21.0	27.3	33.1	54.7	39.1	---	29.6	---	---	---	23.9	19.0	20.8	**24.4**	**54.7**	**13.5**
4	24.9	29.6	26.4	18.0	12.0	12.9	22.0	25.4	19.2	10.4	11.5	12.7	19.8	21.9	7.2	6.0	7.4	10.7	22.2	22.2	22.8	34.5	49.9	53.3	**21.0**	**53.3**	**6.0**
5	36.8	35.2	42.1	66.8	34.9	19.8	11.1	6.7	9.3	11.1	9.5	15.5	12.0	20.1	14.0	21.2	26.4	32.0	32.9	32.7	56.4	57.8	45.5	53.3	**29.3**	**66.8**	**6.7**
6	50.0	---	---	---	---	---	---	---	---	---	---	31.9	27.3	24.1	24.1	31.0	30.1	26.5	31.7	41.9	32.1	22.3	23.3	32.9	**---**	**---**	**---**
7	32.6	24.8	28.9	30.8	33.5	35.3	31.6	27.0	30.1	40.1	27.1	29.3	43.2	32.5	31.2	28.8	25.9	32.6	37.2	34.9	32.2	20.5	19.8	16.6	**30.3**	**43.2**	**16.6**
8	12.8	14.3	15.4	21.2	20.7	19.1	22.3	24.7	29.2	28.4	27.1	28.8	26.7	23.2	22.1	28.1	19.6	20.4	16.1	16.0	18.3	19.5	18.3	19.5	**21.3**	**29.2**	**12.8**
9	24.3	20.7	21.6	19.5	21.0	18.9	29.9	31.8	30.7	22.4	22.3	21.3	20.2	22.1	24.4	21.9	21.7	14.0	19.0	18.8	24.2	23.1	26.0	19.3	**22.5**	**31.8**	**14.0**
10	35.8	31.8	18.9	25.8	30.5	25.5	24.6	28.7	31.8	26.1	18.8	14.7	8.7	7.5	5.7	8.0	7.1	7.2	8.0	8.2	4.2	5.4	6.9	10.8	**16.7**	**35.8**	**4.2**
11	12.7	14.0	16.5	15.5	16.1	17.6	17.3	11.5	9.5	9.6	7.0	5.4	5.0	4.1	4.5	5.8	5.4	6.7	5.2	8.9	10.2	11.7	30.7	27.7	**11.6**	**30.7**	**4.1**
12	22.1	16.7	14.3	19.4	17.4	16.6	14.4	14.4	12.8	9.2	7.5	8.1	15.1	11.3	12.3	11.9	12.9	7.2	14.4	7.6	8.3	8.1	12.9	16.8	**13.0**	**22.1**	**7.2**
13	24.6	18.8	20.8	17.6	13.6	15.8	19.2	19.1	18.1	15.3	12.6	12.1	---	---	---	---	---	---	17.5	15.5	17.9	17.4	18.3	15.7	**17.2**	**24.6**	**12.1**
14	15.7	16.7	14.6	15.8	16.1	17.5	27.2	33.6	29.6	28.0	24.2	23.5	29.8	31.6	26.6	37.4	23.8	25.1	24.8	35.6	34.3	35.4	31.5	37.2	**26.5**	**37.4**	**14.6**
15	28.7	22.5	13.0	16.5	15.3	14.5	15.5	11.4	6.5	6.7	8.8	7.8	7.6	9.1	17.7	16.3	15.4	14.2	18.6	21.1	19.1	18.2	19.3	25.2	**15.4**	**28.7**	**6.5**
16	19.7	18.9	19.6	22.7	24.0	22.8	23.8	35.2	18.4	20.0	31.2	17.7	18.0	16.1	18.8	19.8	16.9	12.0	10.4	14.1	12.9	10.5	10.4	8.5	**18.4**	**35.2**	**8.5**
17	10.7	9.3	8.5	6.9	7.5	12.9	15.1	14.7	19.5	16.2	11.8	13.5	11.2	12.8	25.0	26.1	22.3	13.6	22.0	19.6	15.5	20.3	11.0	10.8	**14.9**	**26.1**	**6.9**
18	9.8	9.5	10.6	11.9	10.9	10.8	10.8	12.2	20.5	19.8	21.0	18.9	25.5	45.6	29.1	31.4	45.4	30.4	35.6	30.6	22.6	30.4	32.7	35.8	**23.4**	**45.6**	**9.5**
19	32.8	34.8	51.9	35.7	34.2	52.0	42.7	22.3	21.8	23.0	26.8	25.5	22.6	29.1	24.2	25.6	25.0	30.3	19.8	16.9	21.1	23.7	25.9	25.8	**28.9**	**52.0**	**16.9**
20	28.6	25.4	26.1	13.7	17.5	13.6	15.3	14.6	23.4	15.7	13.2	13.3	15.9	21.4	50.0	30.0	24.4	18.4	27.3	23.3	16.1	17.7	18.5	18.3	**20.9**	**50.0**	**13.2**
21	17.1	20.6	24.7	22.6	20.7	22.2	30.2	35.7	40.7	36.9	26.7	29.4	28.9	27.2	40.2	29.6	32.9	17.3	15.7	12.6	12.9	13.6	14.0	12.2	**24.4**	**40.7**	**12.2**
22	11.2	12.0	12.2	14.8	12.8	18.8	28.8	25.7	17.6	24.4	31.2	33.3	23.2	29.9	32.6	26.8	27.5	26.0	23.9	20.1	19.9	22.8	20.5	22.7	**22.4**	**33.3**	**11.2**
23	21.2	19.1	20.0	24.5	22.2	27.1	33.2	47.0	38.0	34.1	27.4	29.3	21.3	23.5	20.8	27.9	33.2	30.3	19.7	20.9	16.9	19.5	21.4	28.9	**26.1**	**47.0**	**16.9**
24	25.1	27.2	32.3	34.7	24.1	24.6	30.9	64.4	59.2	33.2	24.3	28.5	25.4	22.8	20.5	28.3	26.6	25.3	34.2	34.6	26.4	26.6	27.3	22.4	**30.4**	**64.4**	**20.5**
25	25.7	28.0	31.5	30.8	80.3	28.8	30.2	34.5	46.8	48.5	48.4	50.4	36.7	39.5	35.5	33.6	37.1	31.2	27.9	24.2	21.3	27.5	22.6	17.4	**34.9**	**80.3**	**17.4**
26	20.9	20.7	22.0	23.6	23.8	21.3	20.9	27.4	28.3	17.8	18.7	24.8	31.0	31.2	29.4	19.2	23.1	27.7	35.5	34.1	21.9	23.2	26.8	23.6	**24.9**	**35.5**	**17.8**
27	24.6	20.1	19.0	19.1	18.0	18.3	16.8	18.7	14.9	17.9	17.6	26.4	23.9	21.6	25.3	24.0	22.5	22.5	23.2	19.5	100.3	85.8	59.4	56.2	**29.8**	**100.3**	**14.9**
28	57.1	57.7	63.7	53.2	25.6	24.3	21.4	17.9	16.0	11.0	11.5	11.6	13.3	15.1	12.5	13.9	12.3	14.1	10.9	9.2	9.1	12.9	11.6	11.6	**21.6**	**63.7**	**9.1**
29	11.7	9.6	9.9	11.4	12.6	20.5	22.0	18.6	15.8	12.2	10.2	8.0	18.2	27.4	9.0	13.8	29.2	37.6	29.8	25.5	19.8	18.5	17.2	16.1	**17.7**	**37.6**	**8.0**
30	15.1	14.0	13.8	14.5	14.7	12.2	13.7	13.3	16.3	17.3	13.9	14.7	17.6	11.9	12.9	16.1	14.1	13.1	13.0	15.7	9.8	14.2	15.3	14.0	**14.2**	**17.6**	**9.8**
31	15.7	14.2	11.3	14.1	14.2	14.4	15.5	20.8	22.2	19.1	14.8	16.8	13.6	15.5	20.9	18.6	10.5	9.2	11.3	12.3	17.6	24.7	27.6	20.8	**16.5**	**27.6**	**9.2**
MEAN	**23.9**	**21.8**	**22.2**	**22.6**	**21.4**	**20.2**	**22.0**	**23.8**	**23.7**	**21.8**	**19.5**	**21.1**	**21.1**	**22.2**	**22.9**	**22.9**	**21.8**	**20.5**	**21.4**	**21.1**	**23.1**	**23.6**	**23.4**	**23.8**	**22.2**		
MAX	**57.1**	**57.7**	**63.7**	**66.8**	**80.3**	**52.0**	**42.7**	**64.4**	**59.2**	**48.5**	**48.4**	**50.4**	**43.2**	**45.6**	**54.7**	**39.1**	**45.4**	**37.6**	**37.2**	**41.9**	**100.3**	**85.8**	**59.4**	**56.2**		**100.3**	
MIN	**9.8**	**9.3**	**8.5**	**6.9**	**7.5**	**10.8**	**10.8**	**6.7**	**6.5**	**6.7**	**7.0**	**5.4**	**5.0**	**4.1**	**4.5**	**5.8**	**5.4**	**6.7**	**5.2**	**7.6**	**4.2**	**5.4**	**6.9**	**8.5**			**4.1**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 724 DATA RECOVERY RATE = 97.3% DATA CAPTURE RATE = 96.8%

MONTHLY MEAN = 22.2 µg/m3

MAXIMUM PM10 = 100.3 µg/m3 DATE OF OCCURRENCE = 5/27 at 2100 MAXIMUM DAILY MEAN = 34.9 µg/m3 DATE OF OCCURRENCE = 5/25

SECOND MAXIMUM PM10 = 85.8 µg/m3 DATE OF OCCURRENCE = 5/27 at 2200 SECOND MAXIMUM DAILY MEAN = 30.4 µg/m3 DATE OF OCCURRENCE = 5/24

MINIMUM PM10 = 4.1 µg/m3 DATE OF OCCURRENCE = 5/11 at 1400 MINUMUM DAILY MEAN = 11.6 µg/m3 DATE OF OCCURRENCE = 5/11

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

Draft

CSX AQ3 Modulair

HOURLY AVERAGES of PM10 in µg/m3 for JUNE, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	24.2	16.4	11.1	13.0	19.6	15.9	22.7	14.4	16.8	16.8	24.0	15.7	13.9	15.1	15.2	41.2	27.6	16.7	35.1	14.3	15.0	14.9	15.3	13.3	**18.7**	**41.2**	**11.1**
2	13.2	14.5	14.0	14.5	17.0	13.3	16.5	17.1	17.7	19.5	20.6	22.7	21.6	23.2	20.3	23.0	24.3	29.5	21.8	18.6	19.6	20.7	22.4	19.5	**19.4**	**29.5**	**13.2**
3	20.3	22.2	22.1	19.3	20.2	20.8	23.4	20.3	25.2	20.8	22.8	19.5	20.1	18.1	34.2	36.6	24.3	14.9	22.3	30.5	25.2	23.3	22.9	23.5	**23.0**	**36.6**	**14.9**
4	41.3	16.5	16.0	16.9	18.2	17.7	37.5	42.2	40.2	37.2	44.5	54.6	47.3	29.6	29.7	76.9	116.1	62.2	52.0	38.6	27.0	30.4	30.5	32.3	**39.8**	**116.1**	**16.0**
5	30.4	35.2	32.5	33.2	40.1	42.7	44.1	46.0	39.7	37.9	51.7	53.8	47.4	82.3	79.9	53.7	33.6	38.3	33.9	36.0	43.5	37.5	35.4	27.6	**43.2**	**82.3**	**27.6**
6	28.2	28.2	27.5	25.7	25.8	26.7	23.9	21.2	22.6	20.9	23.0	23.7	23.1	22.3	22.1	19.4	21.9	17.8	12.4	12.5	16.5	16.0	16.7	17.8	**21.5**	**28.2**	**12.4**
7	18.0	18.3	17.6	17.2	17.4	18.7	20.2	18.8	18.5	27.9	37.7	47.1	60.3	42.7	32.7	29.0	---	---	---	---	13.1	15.4	26.1	14.6	**25.6**	**60.3**	**13.1**
8	14.5	11.1	---	---	9.7	14.7	10.4	12.1	12.5	11.9	10.3	10.7	9.6	8.8	10.5	9.4	12.9	11.8	11.3	14.4	15.9	13.2	17.7	20.1	**12.4**	**20.1**	**8.8**
9	19.1	16.7	15.0	16.2	16.2	16.8	14.8	16.7	18.7	19.2	22.5	20.5	18.2	16.6	13.3	10.2	9.8	---	---	---	9.9	---	---	---	**16.1**	**22.5**	**9.8**
10	---	---	---	---	---	---	---	11.5	11.3	15.5	18.1	33.8	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
11	---	---	6.5	6.9	15.5	12.6	12.5	13.4	14.4	15.2	13.9	8.8	8.5	13.9	11.0	10.4	13.3	10.9	11.0	11.3	31.2	21.3	12.0	15.9	**13.2**	**31.2**	**6.5**
12	14.6	14.1	16.7	15.1	15.0	18.0	18.3	26.2	21.8	12.3	14.8	12.9	14.6	15.1	18.9	27.5	40.8	33.5	29.3	23.3	16.3	20.0	20.1	18.3	**19.9**	**40.8**	**12.3**
13	17.4	19.1	18.1	20.7	47.9	41.0	41.8	65.9	32.3	32.4	37.7	39.5	47.2	53.5	56.7	43.7	44.6	47.0	38.5	34.8	25.7	25.1	21.7	22.4	**36.4**	**65.9**	**17.4**
14	30.5	36.4	26.0	24.8	27.0	29.2	26.1	29.7	30.8	34.5	31.7	39.1	35.4	38.0	42.5	37.1	31.1	34.0	28.0	29.5	31.2	20.6	33.1	13.3	**30.8**	**42.5**	**13.3**
15	12.9	18.1	16.4	19.7	19.0	16.9	18.5	19.5	15.1	13.8	12.4	11.9	11.9	12.1	11.1	10.0	11.9	12.0	11.7	12.1	13.7	16.7	18.9	20.2	**14.9**	**20.2**	**10.0**
16	20.1	55.1	23.4	20.0	35.8	17.6	20.3	17.2	14.6	14.4	13.8	16.9	15.0	17.2	17.1	19.6	20.1	25.4	30.5	25.9	18.5	18.2	18.0	18.3	**21.4**	**55.1**	**13.8**
17	16.5	15.0	14.4	13.4	13.9	14.7	29.3	26.9	22.3	26.4	29.3	39.6	33.9	40.4	43.4	47.4	44.8	38.8	34.9	32.7	26.9	28.7	24.8	27.0	**28.6**	**47.4**	**13.4**
18	24.9	22.6	21.4	24.2	21.5	22.8	26.4	25.4	20.8	26.6	38.2	40.1	53.8	40.1	42.2	38.9	38.9	37.8	32.3	30.0	29.9	21.2	23.2	27.5	**30.4**	**53.8**	**20.8**
19	24.1	27.0	28.5	28.7	30.4	30.3	33.4	26.8	26.9	24.6	29.5	57.8	104.4	50.4	67.1	24.4	14.5	14.6	11.3	8.7	16.9	15.4	24.7	30.8	**31.3**	**104.4**	**8.7**
20	31.3	29.7	30.7	37.6	37.3	31.3	36.0	33.6	25.3	25.1	31.8	50.3	35.0	45.7	55.2	51.4	39.6	34.9	26.8	16.1	19.1	25.1	26.8	30.0	**33.6**	**55.2**	**16.1**
21	24.7	25.4	30.8	34.4	37.1	33.3	32.6	31.3	29.0	27.6	29.1	51.9	65.9	40.6	76.2	46.5	46.0	40.1	34.0	28.9	28.0	29.4	29.8	33.4	**36.9**	**76.2**	**24.7**
22	32.3	31.0	32.1	31.2	28.8	31.0	31.8	26.2	27.6	30.8	37.1	51.2	41.9	44.2	40.4	39.3	43.6	38.4	39.4	31.0	28.4	28.4	29.4	29.4	**34.4**	**51.2**	**26.2**
23	27.1	25.6	22.5	21.7	18.8	17.7	15.8	17.3	19.0	21.0	21.5	24.9	28.0	30.1	27.1	28.0	31.1	29.4	27.9	34.0	30.0	27.5	22.5	22.2	**24.6**	**34.0**	**15.8**
24	23.0	23.5	22.8	20.1	16.4	15.4	15.5	13.8	16.4	25.9	26.7	35.5	34.7	48.0	37.2	30.8	25.4	29.3	25.1	21.6	97.4	26.4	19.3	20.5	**27.9**	**97.4**	**13.8**
25	21.7	21.9	20.1	20.1	20.2	24.0	22.1	31.4	36.6	25.6	17.6	20.6	22.9	21.4	28.6	26.6	33.0	25.0	21.8	27.8	23.4	21.3	21.6	22.4	**24.1**	**36.6**	**17.6**
26	22.4	23.5	23.7	23.6	25.7	25.1	32.5	33.5	33.9	40.0	35.6	36.4	50.1	34.6	29.7	31.9	29.1	28.3	28.5	26.8	28.9	25.3	27.2	16.4	**29.7**	**50.1**	**16.4**
27	15.5	12.8	13.8	15.8	15.9	17.3	17.8	15.3	15.8	12.6	13.0	13.8	14.7	13.3	17.7	19.3	22.0	22.0	22.2	19.8	26.0	19.9	18.1	24.8	**17.5**	**26.0**	**12.6**
28	13.9	16.8	12.3	12.0	12.9	11.9	16.1	9.1	9.4	15.7	13.1	14.4	22.0	14.9	16.3	32.4	26.6	18.6	29.9	40.7	43.7	37.8	39.9	49.3	**22.1**	**49.3**	**9.1**
29	60.2	54.7	67.9	72.9	52.9	74.6	102.2	77.9	56.5	41.8	32.5	36.3	33.0	39.2	35.5	34.1	36.5	25.1	30.0	21.9	18.2	23.0	22.2	15.9	**44.4**	**102.2**	**15.9**
30	18.3	13.3	73.0	60.9	18.1	25.7	26.2	27.4	25.8	23.8	22.6	21.3	22.7	23.5	21.7	22.3	18.4	16.6	13.0	14.6	14.3	19.6	22.4	12.8	**24.1**	**73.0**	**12.8**
MEAN	**23.6**	**23.7**	**24.2**	**24.3**	**23.9**	**24.1**	**27.2**	**26.3**	**23.9**	**23.9**	**25.9**	**30.8**	**33.0**	**30.9**	**32.9**	**31.8**	**31.5**	**27.9**	**26.5**	**24.3**	**26.0**	**22.9**	**23.7**	**22.8**	**26.5**		
MAX	**60.2**	**55.1**	**73.0**	**72.9**	**52.9**	**74.6**	**102.2**	**77.9**	**56.5**	**41.8**	**51.7**	**57.8**	**104.4**	**82.3**	**79.9**	**76.9**	**116.1**	**62.2**	**52.0**	**40.7**	**97.4**	**37.8**	**39.9**	**49.3**		**116.1**	
MIN	**12.9**	**11.1**	**6.5**	**6.9**	**9.7**	**11.9**	**10.4**	**9.1**	**9.4**	**11.9**	**10.3**	**8.8**	**8.5**	**8.8**	**10.5**	**9.4**	**9.8**	**10.9**	**11.0**	**8.7**	**9.9**	**13.2**	**12.0**	**12.8**			**6.5**

POSSIBLE NUMBER OF OBSERVATIONS = 720 ACTUAL NUMBER OF OBSERVATIONS = 687 DATA RECOVERY RATE = 95.4% DATA CAPTURE RATE = 96.7%

MONTHLY MEAN = 26.5 µg/m3

MAXIMUM PM10 = 116.1 µg/m3 DATE OF OCCURRENCE = 6/4 at 1700 MAXIMUM DAILY MEAN = 44.4 µg/m3 DATE OF OCCURRENCE = 6/29

SECOND MAXIMUM PM10 = 104.4 µg/m3 DATE OF OCCURRENCE = 6/19 at 1300 SECOND MAXIMUM DAILY MEAN = 43.2 µg/m3 DATE OF OCCURRENCE = 6/5

MINIMUM PM10 = 6.5 µg/m3 DATE OF OCCURRENCE = 6/11 at 300 MINUMUM DAILY MEAN = 12.4 µg/m3 DATE OF OCCURRENCE = 6/8

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

Draft

CSX AQ3 Modulair

HOURLY AVERAGES of PM2.5 in µg/m3 for APRIL, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	14.0	14.7	18.0	18.1	13.9	16.0	14.7	14.4	14.5	5.7	4.1	2.7	1.8	3.2	4.8	4.7	7.6	9.8	10.7	11.5	10.9	9.7	9.9	11.4	**10.2**	**18.1**	**1.8**
2	10.0	11.9	12.0	11.2	8.8	11.0	8.4	6.2	6.3	5.2	2.7	2.3	2.6	3.7	2.6	1.9	0.7	0.5	0.7	0.9	1.3	1.3	1.2	1.1	**4.7**	**12.0**	**0.5**
3	1.4	2.2	2.4	2.3	3.0	3.1	2.3	1.4	1.4	1.8	1.5	0.7	0.5	0.5	0.3	1.6	0.3	0.3	0.9	---	---	---	---	---	**1.4**	**3.1**	**0.3**
4	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
5	---	---	---	---	---	---	---	4.4	6.6	6.1	3.4	2.2	2.0	2.5	2.1	1.6	2.7	3.1	2.4	2.1	1.6	1.5	1.5	1.7	**---**	**---**	**---**
6	2.0	2.2	2.3	2.3	2.1	2.1	2.2	2.5	2.4	2.2	1.8	1.3	1.2	1.4	1.4	1.5	1.8	1.8	2.4	3.0	3.0	4.7	5.5	5.2	**2.4**	**5.5**	**1.2**
7	4.7	3.6	4.7	5.0	4.7	6.4	4.3	3.6	3.0	2.0	1.6	1.0	1.0	1.1	1.2	1.4	1.3	1.0	1.2	1.7	2.8	4.4	7.1	4.2	**3.0**	**7.1**	**1.0**
8	4.4	5.9	5.7	6.9	5.9	6.1	6.3	9.0	17.1	15.2	10.6	6.1	6.8	8.6	5.6	4.0	3.4	3.2	3.1	3.1	3.9	5.1	5.6	7.6	**6.6**	**17.1**	**3.1**
9	9.8	11.6	10.0	8.3	7.6	8.4	9.2	12.8	15.5	9.1	14.5	19.0	9.9	10.7	10.1	9.8	12.6	19.0	22.5	24.1	23.9	24.9	26.1	26.6	**14.8**	**26.6**	**7.6**
10	28.1	28.5	30.6	35.1	28.0	25.9	26.3	29.1	32.6	35.8	21.9	13.5	9.0	9.4	13.6	20.0	16.9	13.8	12.3	10.7	16.6	10.9	13.7	16.9	**20.8**	**35.8**	**9.0**
11	15.2	14.2	12.7	11.6	13.2	13.2	12.9	12.4	10.4	7.8	---	---	---	---	---	---	11.0	12.2	12.2	12.2	13.5	14.5	16.0	16.9	**12.8**	**16.9**	**7.8**
12	15.2	11.4	10.3	4.0	3.4	3.5	4.4	4.9	1.7	0.6	2.0	2.7	3.0	3.3	3.3	2.4	1.4	0.6	0.9	1.3	0.9	0.6	0.6	0.7	**3.4**	**15.2**	**0.6**
13	1.3	1.2	1.2	0.9	1.2	1.6	1.8	2.1	2.5	2.5	2.4	2.5	2.6	2.6	2.7	2.6	2.6	2.5	2.5	2.8	3.0	3.8	4.7	5.6	**2.4**	**5.6**	**0.9**
14	5.0	5.1	5.0	3.7	4.5	4.8	5.1	5.6	4.7	3.4	2.9	3.2	4.2	7.3	7.2	10.2	7.8	5.8	6.5	7.1	7.7	8.9	8.7	10.2	**6.0**	**10.2**	**2.9**
15	5.7	4.0	4.8	7.6	7.3	5.4	7.0	8.7	7.4	7.1	10.4	13.7	14.4	9.8	8.8	9.0	8.9	9.3	9.3	10.1	14.6	17.9	17.9	19.1	**9.9**	**19.1**	**4.0**
16	8.7	4.9	4.3	3.4	5.5	5.5	7.0	7.1	4.9	3.8	5.3	6.8	6.2	6.5	5.7	6.2	7.3	6.1	5.6	5.6	5.8	6.6	7.1	7.8	**5.9**	**8.7**	**3.4**
17	7.3	7.0	6.4	6.2	6.1	6.1	6.3	7.2	7.9	6.6	8.4	14.6	8.5	8.5	10.0	11.6	12.7	17.7	11.8	11.6	9.4	9.1	8.5	10.7	**9.1**	**17.7**	**6.1**
18	15.1	17.4	13.9	13.6	18.3	19.2	25.1	29.5	27.9	22.2	22.3	25.5	25.8	26.5	24.0	19.6	22.4	16.1	13.3	9.4	10.0	16.8	19.5	17.4	**19.6**	**29.5**	**9.4**
19	15.0	11.0	9.0	6.8	4.6	3.7	3.2	3.8	5.1	5.8	5.9	8.2	9.7	10.8	17.4	17.0	14.0	13.4	11.0	9.5	8.9	9.6	12.7	10.9	**9.4**	**17.4**	**3.2**
20	9.4	9.8	9.2	9.5	10.6	12.1	13.9	18.0	19.6	19.9	15.3	9.2	6.5	4.7	4.0	3.7	3.4	4.5	3.3	3.6	3.9	4.0	3.5	3.1	**8.5**	**19.9**	**3.1**
21	2.4	2.2	2.3	2.2	2.0	1.8	1.4	1.4	1.9	2.5	2.4	3.1	4.5	5.3	5.1	5.0	5.3	5.7	5.2	4.4	4.8	5.2	7.5	26.9	**4.6**	**26.9**	**1.4**
22	9.7	8.7	6.6	6.9	7.1	7.5	6.9	7.3	7.1	4.1	4.2	4.6	5.0	5.7	10.6	4.8	5.1	4.4	4.6	6.3	5.7	6.1	5.9	5.8	**6.2**	**10.6**	**4.1**
23	7.4	7.8	7.9	7.7	7.5	8.3	9.8	14.6	19.6	19.4	20.2	9.5	8.7	6.8	6.6	6.4	6.1	6.3	6.4	6.1	6.6	7.6	6.3	6.3	**9.1**	**20.2**	**6.1**
24	6.5	7.1	8.3	8.6	9.2	10.2	11.7	11.2	10.8	12.0	6.5	5.2	6.4	5.8	5.3	5.0	4.9	5.2	5.3	4.3	3.2	3.0	2.7	2.9	**6.7**	**12.0**	**2.7**
25	3.4	3.0	3.4	4.0	3.4	2.7	2.0	2.4	3.3	3.6	4.0	4.9	6.0	8.3	11.4	19.8	17.4	16.6	12.1	10.9	9.8	8.7	9.1	8.2	**7.4**	**19.8**	**2.0**
26	9.3	9.0	8.2	6.7	6.3	6.6	7.1	7.0	6.8	7.8	6.8	6.7	5.1	3.4	2.9	3.2	3.0	3.3	4.6	4.1	6.4	5.6	5.0	5.1	**5.8**	**9.3**	**2.9**
27	4.9	5.9	5.3	3.8	4.7	4.4	4.2	4.4	6.0	5.1	5.5	4.9	6.5	7.8	7.4	5.6	5.6	6.5	6.5	5.0	4.7	4.7	4.6	4.7	**5.3**	**7.8**	**3.8**
28	4.8	5.0	5.3	6.7	6.1	5.1	5.5	6.1	11.6	20.6	18.5	24.5	19.4	17.2	17.0	16.8	19.9	16.9	17.7	16.9	16.6	16.6	16.1	16.7	**13.6**	**24.5**	**4.8**
29	17.6	15.6	14.8	15.4	15.6	14.7	15.1	15.5	13.8	15.4	19.8	17.2	19.0	21.3	17.2	18.1	17.0	17.2	15.2	15.1	15.1	16.0	16.5	16.4	**16.4**	**21.3**	**13.8**
30	16.1	15.4	14.6	19.1	19.5	18.5	18.1	17.7	17.0	16.8	16.7	16.8	16.7	15.2	14.1	14.4	15.1	12.9	11.7	11.7	12.6	10.2	4.9	5.4	**14.6**	**19.5**	**4.9**
MEAN	**9.1**	**8.8**	**8.5**	**8.5**	**8.2**	**8.4**	**8.7**	**9.3**	**10.0**	**9.3**	**8.6**	**8.3**	**7.6**	**7.8**	**7.9**	**8.1**	**8.2**	**8.1**	**7.7**	**7.7**	**8.1**	**8.5**	**8.9**	**9.8**	**8.5**		
MAX	**28.1**	**28.5**	**30.6**	**35.1**	**28.0**	**25.9**	**26.3**	**29.5**	**32.6**	**35.8**	**22.3**	**25.5**	**25.8**	**26.5**	**24.0**	**20.0**	**22.4**	**19.0**	**22.5**	**24.1**	**23.9**	**24.9**	**26.1**	**26.9**		**35.8**	
MIN	**1.3**	**1.2**	**1.2**	**0.9**	**1.2**	**1.6**	**1.4**	**1.4**	**1.4**	**0.6**	**1.5**	**0.7**	**0.5**	**0.5**	**0.3**	**1.4**	**0.3**	**0.3**	**0.7**	**0.9**	**0.9**	**0.6**	**0.6**	**0.7**			**0.3**

POSSIBLE NUMBER OF OBSERVATIONS = 720 ACTUAL NUMBER OF OBSERVATIONS = 678 DATA RECOVERY RATE = 94.2% DATA CAPTURE RATE = 93.3%

MONTHLY MEAN = 8.5 µg/m3

MAXIMUM PM2.5 = 35.8 µg/m3 DATE OF OCCURRENCE = 4/10 at 1000 MAXIMUM DAILY MEAN = 20.8 µg/m3 DATE OF OCCURRENCE = 4/10

SECOND MAXIMUM PM2.5 = 35.1 µg/m3 DATE OF OCCURRENCE = 4/10 at 400 SECOND MAXIMUM DAILY MEAN = 19.6 µg/m3 DATE OF OCCURRENCE = 4/18

MINIMUM PM2.5 = 0.3 µg/m3 DATE OF OCCURRENCE = 4/3 at 1500 MINUMUM DAILY MEAN = 1.4 µg/m3 DATE OF OCCURRENCE = 4/3

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

Draft

CSX AQ3 Modulair

HOURLY AVERAGES of PM2.5 in µg/m3 for MAY, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	7.3	5.9	7.3	7.2	7.0	7.2	7.2	8.5	7.1	6.4	5.9	5.9	6.2	6.0	6.7	6.9	6.1	6.5	6.1	6.3	9.1	9.3	8.3	8.1	**7.0**	**9.3**	**5.9**
2	8.4	8.5	9.5	10.4	9.7	9.8	10.8	15.0	19.1	23.6	13.1	17.3	11.6	9.1	8.9	9.4	9.2	9.4	9.9	10.5	12.8	14.0	16.3	17.7	**12.2**	**23.6**	**8.4**
3	19.5	15.0	11.2	8.6	6.5	6.5	6.9	8.4	8.9	7.7	7.8	7.1	7.0	9.4	11.6	12.1	---	8.4	---	---	---	5.8	4.9	3.8	**8.8**	**19.5**	**3.8**
4	4.7	5.8	6.0	5.2	5.1	5.6	6.3	6.4	5.1	4.5	7.1	6.2	5.2	5.6	2.3	1.4	1.5	1.4	1.1	2.8	4.7	6.1	8.0	8.5	**4.8**	**8.5**	**1.1**
5	7.2	6.4	6.9	9.4	8.2	5.6	3.3	3.1	3.2	4.5	4.5	6.7	6.3	8.6	8.5	10.6	9.7	6.2	7.0	9.4	22.3	26.1	11.4	13.0	**8.6**	**26.1**	**3.1**
6	11.9	12.4	15.6	15.9	13.1	12.6	11.9	13.1	11.8	11.1	12.0	18.8	17.4	17.8	17.7	15.2	17.2	14.9	20.6	20.9	19.8	14.1	14.1	17.0	**15.2**	**20.9**	**11.1**
7	15.8	14.5	15.9	16.5	17.5	16.6	15.5	14.9	16.7	19.7	18.4	21.7	23.5	18.5	20.4	20.2	16.2	16.7	21.0	24.1	19.2	10.9	8.7	8.1	**17.1**	**24.1**	**8.1**
8	7.1	7.2	8.0	9.6	9.6	9.4	9.6	11.7	13.4	15.3	14.0	14.1	9.6	7.8	7.2	7.5	7.0	7.1	7.2	7.3	7.8	8.6	8.6	7.8	**9.2**	**15.3**	**7.0**
9	7.6	7.6	7.6	7.6	7.4	7.4	8.3	5.9	4.8	4.3	4.0	4.6	4.8	4.4	5.1	6.4	5.1	3.7	4.0	5.3	6.2	7.4	9.8	6.6	**6.0**	**9.8**	**3.7**
10	6.0	4.6	3.7	3.5	8.1	4.5	5.6	6.1	6.3	5.5	4.6	3.6	1.8	1.6	1.4	1.5	1.0	0.9	1.3	1.1	0.9	1.2	1.2	1.7	**3.2**	**8.1**	**0.9**
11	2.0	2.4	2.6	2.7	2.6	2.9	3.3	4.0	3.5	3.6	3.7	2.4	2.0	2.2	1.8	2.0	2.4	2.7	2.4	3.6	4.1	5.2	11.9	8.6	**3.5**	**11.9**	**1.8**
12	4.9	5.2	3.0	3.2	3.6	4.5	4.9	7.4	8.3	5.0	4.3	4.1	5.2	5.2	4.1	4.5	4.6	4.0	5.8	4.2	4.5	4.0	6.6	6.1	**4.8**	**8.3**	**3.0**
13	8.7	7.9	7.3	6.8	6.9	7.7	8.9	9.4	8.7	8.5	7.9	6.6	9.6	---	---	---	---	---	6.9	6.9	6.2	6.2	5.9	6.0	**7.5**	**9.6**	**5.9**
14	6.3	6.6	7.0	7.3	7.3	7.3	8.5	10.9	9.6	9.9	10.7	12.3	11.3	12.8	10.6	10.6	12.8	14.7	11.8	17.6	8.5	9.2	6.4	6.3	**9.8**	**17.6**	**6.3**
15	7.0	7.9	5.6	5.8	5.3	5.3	5.2	3.8	3.0	3.1	3.2	2.4	2.1	2.5	4.2	4.7	4.7	5.4	5.7	6.9	6.4	6.2	6.2	7.1	**4.9**	**7.9**	**2.1**
16	6.6	6.8	7.1	7.6	8.0	8.5	10.0	8.9	5.5	4.3	4.6	3.8	3.6	3.9	3.6	3.2	3.2	3.4	3.3	3.4	2.8	2.6	3.1	3.6	**5.0**	**10.0**	**2.6**
17	4.2	3.4	3.3	3.1	3.4	3.7	3.1	3.8	5.1	5.1	5.6	5.6	5.5	6.8	9.1	11.4	9.1	7.9	5.7	7.0	8.0	8.0	6.2	6.6	**5.8**	**11.4**	**3.1**
18	5.6	5.6	6.1	6.7	7.3	7.2	7.8	7.9	8.6	10.5	10.3	11.9	9.0	12.4	9.9	11.1	13.8	13.4	16.4	16.2	13.7	18.8	19.5	21.1	**11.2**	**21.1**	**5.6**
19	21.5	22.5	19.3	16.2	15.4	16.7	16.0	13.6	14.6	17.8	20.9	20.1	17.6	22.7	18.9	19.2	19.7	22.6	14.5	12.2	14.8	15.8	17.8	17.6	**17.8**	**22.7**	**12.2**
20	17.9	10.3	10.6	5.2	5.1	5.6	6.6	6.3	7.8	6.0	5.4	5.6	7.7	12.4	14.4	12.3	12.4	11.8	12.9	10.6	10.7	11.6	12.0	11.8	**9.7**	**17.9**	**5.1**
21	10.9	12.2	13.0	12.1	11.3	11.0	12.2	16.7	21.6	21.6	19.0	20.3	19.5	15.0	13.9	12.7	11.1	9.3	8.3	7.3	6.8	7.7	8.1	7.6	**12.8**	**21.6**	**6.8**
22	6.8	6.8	7.1	7.2	6.9	7.9	7.4	8.0	8.7	10.1	12.7	11.1	11.1	13.6	14.9	14.9	13.9	11.6	11.3	11.3	11.6	11.5	9.4	8.7	**10.1**	**14.9**	**6.8**
23	9.3	10.9	12.4	14.3	16.0	17.8	20.8	23.4	25.5	20.4	14.8	14.9	14.3	14.3	11.9	15.1	14.1	13.1	12.3	13.4	12.8	13.8	15.5	18.2	**15.3**	**25.5**	**9.3**
24	18.3	16.7	17.4	15.1	14.2	13.7	13.9	16.8	14.9	10.3	9.3	11.7	10.3	9.1	7.5	9.3	10.5	11.4	14.1	13.1	13.3	15.9	15.8	14.9	**13.2**	**18.3**	**7.5**
25	16.0	18.7	20.2	19.9	21.0	19.9	21.4	25.0	30.6	32.1	32.0	31.8	25.4	19.8	16.4	15.6	13.7	12.6	13.3	13.3	13.7	13.6	6.0	7.0	**19.1**	**32.1**	**6.0**
26	9.1	10.6	11.5	10.6	10.2	9.3	9.8	12.4	12.4	12.0	12.5	14.6	15.2	17.4	18.9	12.4	13.6	17.1	15.6	15.5	15.9	17.3	17.5	15.4	**13.6**	**18.9**	**9.1**
27	14.8	13.8	12.4	11.8	12.0	12.6	11.7	10.2	9.6	12.2	12.9	12.3	12.1	10.2	10.8	12.4	12.8	12.6	12.1	8.4	6.0	5.1	3.9	4.3	**10.7**	**14.8**	**3.9**
28	4.2	4.3	5.2	5.8	6.4	7.2	6.3	5.0	4.8	4.4	4.6	4.5	4.4	5.0	5.7	5.5	5.5	6.0	5.6	4.7	5.2	6.1	5.6	5.4	**5.3**	**7.2**	**4.2**
29	5.1	4.9	5.0	5.1	5.3	6.1	6.0	5.8	5.4	4.3	3.8	3.5	5.4	6.9	4.8	6.9	6.8	9.5	9.1	8.2	6.1	6.1	5.8	5.3	**5.8**	**9.5**	**3.5**
30	5.1	4.6	4.4	4.1	3.7	3.4	3.6	4.2	5.0	5.2	4.5	4.5	5.0	4.7	4.8	5.4	5.2	5.4	5.4	4.9	4.6	5.3	6.4	6.8	**4.8**	**6.8**	**3.4**
31	7.0	6.0	5.2	4.9	5.0	4.6	4.6	4.5	4.8	5.1	4.6	4.6	4.7	4.8	5.0	4.8	4.5	4.4	4.6	4.9	7.9	9.8	13.4	10.9	**5.8**	**13.4**	**4.4**
MEAN	**9.3**	**8.9**	**8.9**	**8.7**	**8.7**	**8.6**	**8.9**	**9.7**	**10.1**	**10.1**	**9.6**	**10.1**	**9.5**	**9.7**	**9.4**	**9.5**	**9.2**	**9.1**	**9.2**	**9.4**	**9.5**	**9.8**	**9.5**	**9.4**	**9.4**		
MAX	**21.5**	**22.5**	**20.2**	**19.9**	**21.0**	**19.9**	**21.4**	**25.0**	**30.6**	**32.1**	**32.0**	**31.8**	**25.4**	**22.7**	**20.4**	**20.2**	**19.7**	**22.6**	**21.0**	**24.1**	**22.3**	**26.1**	**19.5**	**21.1**		**32.1**	
MIN	**2.0**	**2.4**	**2.6**	**2.7**	**2.6**	**2.9**	**3.1**	**3.1**	**3.0**	**3.1**	**3.2**	**2.4**	**1.8**	**1.6**	**1.4**	**1.4**	**1.0**	**0.9**	**1.1**	**1.1**	**0.9**	**1.2**	**1.2**	**1.7**			**0.9**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 735 DATA RECOVERY RATE = 98.8% DATA CAPTURE RATE = 100.0%

MONTHLY MEAN = 9.4 µg/m3

MAXIMUM PM2.5 = 32.1 µg/m3 DATE OF OCCURRENCE = 5/25 at 1000 MAXIMUM DAILY MEAN = 19.1 µg/m3 DATE OF OCCURRENCE = 5/25

SECOND MAXIMUM PM2.5 = 32.0 µg/m3 DATE OF OCCURRENCE = 5/25 at 1100 SECOND MAXIMUM DAILY MEAN = 17.8 µg/m3 DATE OF OCCURRENCE = 5/19

MINIMUM PM2.5 = 0.9 µg/m3 DATE OF OCCURRENCE = 5/10 at 1800 MINUMUM DAILY MEAN = 3.2 µg/m3 DATE OF OCCURRENCE = 5/10

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

Draft

CSX AQ3 Modulair

HOURLY AVERAGES of PM2.5 in µg/m3 for JUNE, 2024

Hr Beg Hr End Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	9.2	7.8	6.8	6.8	7.1	7.7	8.7	7.8	6.7	6.5	6.7	6.0	4.9	5.1	5.5	7.7	7.1	6.5	9.3	6.7	6.8	8.4	9.2	8.1	**7.2**	**9.3**	**4.9**
2	8.6	8.6	8.6	8.8	9.1	8.6	9.6	10.9	11.6	12.8	13.8	15.1	14.5	13.3	13.6	16.4	17.0	16.9	13.1	13.1	14.0	15.2	15.5	13.6	**12.5**	**17.0**	**8.6**
3	14.3	14.6	14.6	14.0	14.0	14.1	14.4	14.7	14.2	14.9	16.7	14.3	13.2	12.5	16.7	17.8	13.6	10.1	14.2	18.1	15.9	16.5	16.9	16.0	**14.8**	**18.1**	**10.1**
4	16.2	12.3	10.4	10.5	10.7	10.5	11.3	15.0	21.1	23.9	25.5	23.4	17.0	12.0	15.3	21.3	25.6	22.2	21.7	18.6	16.2	20.8	20.8	19.5	**17.5**	**25.6**	**10.4**
5	20.3	17.0	17.6	16.5	19.4	22.0	23.7	22.0	21.5	20.4	22.7	22.0	24.5	28.9	26.8	18.9	17.9	16.5	18.2	17.9	16.6	15.9	15.3	13.0	**19.8**	**28.9**	**13.0**
6	12.8	13.2	13.5	13.7	13.8	13.9	14.1	13.2	13.9	14.3	15.4	15.5	15.6	15.0	14.5	14.2	10.4	9.1	7.1	7.9	9.6	10.4	10.6	10.2	**12.5**	**15.6**	**7.1**
7	8.9	7.5	6.6	7.2	7.2	7.4	7.3	7.3	6.4	4.9	4.4	4.3	4.7	4.0	3.9	4.0	---	---	---	---	3.4	3.2	3.1	3.6	**5.4**	**8.9**	**3.1**
8	4.5	4.1	---	---	3.5	3.6	3.7	3.7	3.9	3.7	2.8	2.4	2.6	2.6	3.2	3.0	3.4	3.8	3.8	4.2	4.7	6.0	9.5	10.5	**4.2**	**10.5**	**2.4**
9	11.1	9.5	8.1	7.9	7.6	9.2	7.4	6.9	6.5	5.6	6.5	8.0	9.0	4.3	2.8	2.6	2.4	---	---	---	5.3	---	---	---	**6.7**	**11.1**	**2.4**
10	---	---	---	---	---	---	---	4.5	4.4	4.8	4.6	5.4	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
11	---	---	3.3	3.5	5.4	4.2	4.3	4.4	4.8	5.4	5.3	3.8	4.0	4.6	4.4	4.4	5.3	5.8	6.0	6.2	18.9	10.9	6.9	7.9	**5.8**	**18.9**	**3.3**
12	9.5	8.1	8.0	7.9	7.5	7.4	8.9	10.3	8.5	6.0	7.5	8.7	9.1	9.4	10.6	11.8	14.7	14.5	14.4	12.5	11.6	11.7	12.1	12.3	**10.1**	**14.7**	**6.0**
13	12.4	12.7	12.4	12.8	15.5	15.0	15.2	20.5	16.4	18.4	19.7	19.4	21.2	23.6	24.5	23.0	22.2	20.3	17.1	13.7	12.7	11.4	10.5	11.2	**16.7**	**24.5**	**10.5**
14	13.3	14.2	14.5	14.5	14.5	15.0	16.8	20.1	22.4	24.8	24.7	27.7	27.2	27.3	27.3	22.1	19.1	20.1	16.5	16.5	15.7	8.3	7.9	6.5	**18.2**	**27.7**	**6.5**
15	6.2	6.3	6.3	6.7	8.1	7.5	8.3	8.6	7.5	6.8	6.0	5.9	6.0	6.3	6.5	6.3	6.8	7.1	7.0	6.7	7.5	8.5	10.4	11.0	**7.2**	**11.0**	**5.9**
16	11.8	13.1	13.6	12.6	12.7	11.5	11.7	10.5	10.1	9.7	9.5	10.9	10.9	11.5	10.6	10.4	11.6	12.5	14.1	13.7	12.0	11.1	10.7	9.7	**11.5**	**14.1**	**9.5**
17	9.1	7.9	7.9	8.4	8.6	8.8	10.1	10.1	9.5	10.3	12.9	16.4	18.4	22.3	25.4	26.2	22.6	19.4	15.6	13.8	10.9	9.1	8.1	7.6	**13.3**	**26.2**	**7.6**
18	7.4	7.6	7.9	8.1	8.0	7.9	8.3	8.5	9.3	11.9	16.7	16.1	16.5	16.4	21.5	23.1	23.9	23.6	22.9	17.9	15.3	10.7	7.1	6.9	**13.4**	**23.9**	**6.9**
19	6.3	6.6	6.2	6.1	6.2	6.2	6.9	6.5	7.4	8.3	9.7	11.6	16.3	12.1	13.3	7.9	5.7	6.1	5.4	4.8	5.4	6.3	7.4	7.2	**7.7**	**16.3**	**4.8**
20	7.0	7.1	7.8	8.4	8.0	8.1	7.8	7.9	7.5	8.3	10.2	12.9	11.3	11.6	13.4	13.8	12.3	12.3	10.0	7.1	7.0	7.5	7.8	7.6	**9.2**	**13.8**	**7.0**
21	7.4	7.8	8.0	8.3	8.2	8.1	8.6	9.8	10.6	11.5	13.3	17.1	16.2	15.7	19.0	18.2	19.6	16.6	15.1	13.2	12.0	11.9	12.2	11.9	**12.5**	**19.6**	**7.4**
22	12.0	12.2	12.4	12.3	12.1	12.2	12.7	15.2	18.4	21.3	25.2	26.2	25.4	27.7	27.9	28.0	25.5	25.1	23.5	19.8	18.5	17.8	17.6	18.1	**19.4**	**28.0**	**12.0**
23	17.6	17.8	16.2	15.2	13.5	10.4	9.8	10.0	10.8	12.3	13.7	16.1	17.5	18.5	17.8	18.7	18.6	18.4	17.6	18.1	19.4	16.6	15.6	15.5	**15.6**	**19.4**	**9.8**
24	16.2	16.4	15.9	13.7	10.9	9.8	9.8	7.5	6.2	7.7	6.2	4.8	4.0	5.3	6.3	7.5	7.8	8.2	8.6	9.2	26.8	14.7	12.0	12.5	**10.3**	**26.8**	**4.0**
25	12.6	12.8	13.9	13.3	13.0	13.3	13.6	14.6	13.9	13.7	12.8	13.0	13.9	13.0	14.7	15.0	15.0	15.6	15.1	15.6	15.2	13.8	12.0	12.5	**13.8**	**15.6**	**12.0**
26	13.5	14.1	15.2	15.8	15.6	15.4	16.2	17.2	18.4	19.6	18.3	18.3	23.3	16.4	13.3	12.4	11.3	12.0	16.1	15.0	14.3	11.9	9.9	6.2	**14.9**	**23.3**	**6.2**
27	5.2	5.1	4.7	4.6	4.7	4.7	5.1	5.6	4.8	3.7	4.7	5.5	6.4	6.3	6.6	8.4	9.2	11.5	11.3	11.9	12.0	12.6	10.3	9.1	**7.2**	**12.6**	**3.7**
28	7.3	6.9	5.9	6.0	6.0	5.8	5.8	4.2	4.1	4.4	4.4	5.6	6.5	6.2	6.6	7.9	7.6	7.6	8.5	9.8	9.7	7.9	7.9	8.5	**6.7**	**9.8**	**4.1**
29	9.6	7.4	12.5	10.2	6.3	9.9	21.9	14.0	12.7	11.7	12.0	12.6	13.1	14.7	14.8	14.8	15.0	13.1	12.2	11.3	10.1	10.4	10.7	8.2	**12.0**	**21.9**	**6.3**
30	5.2	5.6	7.4	11.0	9.9	9.6	9.7	11.4	12.8	15.6	17.3	17.1	19.3	20.5	18.7	19.1	15.1	12.3	6.7	6.3	8.9	11.7	6.9	3.9	**11.7**	**20.5**	**3.9**
MEAN	**10.6**	**10.2**	**10.2**	**10.2**	**9.9**	**9.9**	**10.7**	**10.8**	**10.9**	**11.4**	**12.3**	**12.9**	**13.5**	**13.3**	**14.0**	**14.0**	**13.8**	**13.6**	**13.0**	**12.2**	**12.3**	**11.5**	**10.9**	**10.3**	**11.8**		
MAX	**20.3**	**17.8**	**17.6**	**16.5**	**19.4**	**22.0**	**23.7**	**22.0**	**22.4**	**24.8**	**25.5**	**27.7**	**27.2**	**28.9**	**27.9**	**28.0**	**25.6**	**25.1**	**23.5**	**19.8**	**26.8**	**20.8**	**20.8**	**19.5**		**28.9**	
MIN	**4.5**	**4.1**	**3.3**	**3.5**	**3.5**	**3.6**	**3.7**	**3.7**	**3.9**	**3.7**	**2.8**	**2.4**	**2.6**	**2.6**	**2.8**	**2.6**	**2.4**	**3.8**	**3.8**	**4.2**	**3.4**	**3.2**	**3.1**	**3.6**			**2.4**

POSSIBLE NUMBER OF OBSERVATIONS = 720 ACTUAL NUMBER OF OBSERVATIONS = 687 DATA RECOVERY RATE = 95.4% DATA CAPTURE RATE = 96.7%

MONTHLY MEAN = 11.8 µg/m3

MAXIMUM PM2.5 = 28.9 µg/m3 DATE OF OCCURRENCE = 6/5 at 1400 MAXIMUM DAILY MEAN = 19.8 µg/m3 DATE OF OCCURRENCE = 6/5

SECOND MAXIMUM PM2.5 = 28.0 µg/m3 DATE OF OCCURRENCE = 6/22 at 1600 SECOND MAXIMUM DAILY MEAN = 19.4 µg/m3 DATE OF OCCURRENCE = 6/22

MINIMUM PM2.5 = 2.4 µg/m3 DATE OF OCCURRENCE = 6/8 at 1200 MINUMUM DAILY MEAN = 4.2 µg/m3 DATE OF OCCURRENCE = 6/8

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

Draft

CSX AQ4 Modulair

HOURLY AVERAGES of PM10 in µg/m3 for APRIL, 2024

Hr Beg Hr End Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	15.4	18.6	21.7	23.4	17.1	21.9	24.6	26.5	19.6	7.6	5.4	5.4	2.9	4.4	6.1	6.3	8.6	10.4	13.4	14.8	14.4	13.0	15.4	32.9	**14.6**	**32.9**	**2.9**
2	24.7	21.8	14.7	13.5	10.8	16.6	11.4	12.5	20.6	9.7	4.3	3.8	6.4	4.5	3.9	5.3	1.7	0.9	1.3	2.0	2.1	1.7	1.6	1.7	**8.2**	**24.7**	**0.9**
3	1.9	3.6	4.2	3.5	5.6	6.1	3.6	1.7	4.3	7.4	9.0	2.8	14.0	18.4	1.2	22.1	2.4	0.9	1.7	2.9	3.0	5.7	17.9	2.7	**6.1**	**22.1**	**0.9**
4	3.1	2.9	3.9	6.2	8.4	12.0	17.4	45.6	12.8	16.1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
5	---	---	---	---	---	---	---	6.2	11.3	25.0	12.3	11.7	11.8	9.5	8.6	10.0	15.4	6.6	---	---	---	---	---	---	**---**	**---**	**---**
6	---	---	---	---	---	---	---	3.9	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
7	---	---	---	---	---	---	---	6.7	5.7	3.8	3.6	2.7	1.8	2.4	2.0	2.9	1.8	2.1	1.7	3.7	5.2	6.1	7.5	---	**---**	**---**	**---**
8	---	---	---	---	---	---	---	22.8	30.0	26.1	15.4	17.3	13.7	19.6	8.0	8.9	7.6	---	---	---	---	---	---	---	**---**	**---**	**---**
9	---	---	---	---	---	---	---	35.3	27.2	20.0	30.2	54.7	24.2	19.8	16.5	23.4	18.7	28.0	37.7	31.5	29.5	30.8	31.9	54.0	**---**	**---**	**---**
10	53.3	---	---	---	---	---	---	43.4	49.6	100.6	63.3	36.6	20.3	16.0	21.9	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
11	24.5	19.3	17.8	17.3	21.8	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	45.1	50.4	51.1	**---**	**---**	**---**
12	35.9	23.3	20.1	9.3	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
13	---	---	---	---	---	---	---	36.9	15.1	31.9	32.4	11.5	22.1	22.6	15.8	16.3	10.2	12.5	12.6	5.0	5.7	5.2	6.7	9.8	**---**	**---**	**---**
14	10.8	7.4	52.5	11.9	18.2	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
15	---	---	---	---	---	---	---	63.8	45.7	18.5	24.5	30.6	36.7	45.6	49.1	45.1	45.0	39.9	21.2	21.3	36.7	44.6	43.4	49.1	**---**	**---**	**---**
16	21.6	36.8	26.2	9.5	12.3	12.7	23.4	21.8	25.3	23.2	14.5	29.1	18.2	---	---	---	---	17.4	15.0	17.2	11.2	12.5	11.8	22.7	**19.1**	**36.8**	**9.5**
17	16.6	13.8	10.5	13.6	14.1	15.4	17.9	20.1	27.1	24.7	45.0	51.9	25.1	21.5	28.4	31.1	26.8	43.9	28.4	29.4	29.8	27.4	35.1	45.7	**26.8**	**51.9**	**10.5**
18	45.2	40.9	35.3	31.2	35.8	38.8	111.3	118.5	54.3	34.7	30.7	30.3	32.8	36.1	33.8	21.4	21.7	20.2	17.7	16.3	15.2	22.9	21.9	20.3	**37.0**	**118.5**	**15.2**
19	18.2	12.6	12.5	8.7	7.3	7.1	7.5	11.0	12.7	13.3	12.7	17.9	20.1	28.8	30.8	26.3	20.9	22.0	20.7	24.5	22.0	23.3	26.0	24.5	**18.0**	**30.8**	**7.1**
20	19.2	16.7	18.3	19.1	15.9	15.3	16.9	23.5	23.5	28.3	18.5	19.8	17.5	22.4	14.8	13.2	21.7	16.2	11.6	10.4	11.2	14.8	9.0	9.1	**17.0**	**28.3**	**9.0**
21	6.8	5.0	5.9	5.9	5.8	4.0	3.0	3.1	4.7	4.9	5.1	4.3	9.9	9.4	7.7	7.2	11.3	7.4	6.1	5.4	6.2	5.9	10.2	11.7	**6.5**	**11.7**	**3.0**
22	12.5	9.9	8.8	8.8	8.0	9.1	10.1	21.2	27.5	10.0	10.4	9.9	8.5	12.0	10.2	15.4	15.6	9.2	12.8	14.5	11.5	10.9	9.1	11.9	**12.0**	**27.5**	**8.0**
23	17.7	13.7	14.6	15.2	16.9	17.4	24.5	37.0	39.7	40.8	46.3	16.2	16.4	19.5	24.3	24.6	26.2	28.3	32.0	14.5	12.9	14.7	12.6	12.5	**22.4**	**46.3**	**12.5**
24	11.9	10.8	27.2	15.2	15.5	19.6	38.1	56.4	33.7	33.2	28.7	34.7	40.0	---	36.8	21.8	---	14.0	---	---	5.6	4.1	4.7	5.1	**22.9**	**56.4**	**4.1**
25	4.8	6.9	5.7	9.0	7.9	6.9	9.3	19.0	18.5	15.1	14.1	19.6	12.4	11.1	17.8	23.9	21.4	19.4	16.2	13.6	18.9	21.8	21.7	17.2	**14.7**	**23.9**	**4.8**
26	23.0	27.9	26.1	31.3	35.0	49.2	60.8	36.6	30.4	17.2	16.9	23.4	17.4	7.9	6.3	10.8	9.0	13.5	8.9	9.9	14.9	12.2	12.8	11.1	**21.4**	**60.8**	**6.3**
27	10.8	11.8	12.4	9.1	11.8	11.4	10.8	10.7	17.6	13.4	23.1	18.2	24.8	22.0	15.3	11.1	10.5	11.9	13.6	14.6	14.6	15.2	15.7	16.2	**14.4**	**24.8**	**9.1**
28	16.8	18.7	21.7	23.2	32.3	20.9	20.4	19.0	30.5	37.3	34.7	36.3	37.9	32.6	23.5	22.6	22.9	23.8	27.7	22.7	22.4	21.1	21.1	20.6	**25.4**	**37.9**	**16.8**
29	21.3	21.4	20.6	22.4	22.8	21.0	25.8	44.3	30.1	29.2	35.2	19.8	22.9	---	---	---	---	---	20.5	---	20.0	22.2	24.3	24.0	**24.9**	**44.3**	**19.8**
30	26.3	20.8	20.9	24.1	25.2	25.2	29.6	33.8	44.0	43.8	37.8	53.3	37.9	30.6	33.1	56.2	39.5	31.2	23.0	30.7	23.3	45.3	7.8	15.8	**31.6**	**56.2**	**7.8**
MEAN	**19.2**	**---**	**---**	**---**	**---**	**---**	**---**	**28.9**	**25.4**	**24.5**	**23.0**	**22.5**	**19.8**	**---**	**18.1**	**---**	**---**	**---**	**---**	**---**	**---**	**18.5**	**18.2**	**---**	**19.7**		
MAX	**53.3**	**---**	**---**	**---**	**---**	**---**	**---**	**118.5**	**54.3**	**100.6**	**63.3**	**54.7**	**40.0**	**---**	**49.1**	**---**	**---**	**---**	**---**	**---**	**---**	**45.3**	**50.4**	**---**		**118.5**	
MIN	**1.9**	**---**	**---**	**---**	**---**	**---**	**---**	**1.7**	**4.3**	**3.8**	**3.6**	**2.7**	**1.8**	**---**	**1.2**	**---**	**---**	**---**	**---**	**---**	**---**	**1.7**	**1.6**	**---**			**0.9**

POSSIBLE NUMBER OF OBSERVATIONS = 720 ACTUAL NUMBER OF OBSERVATIONS = 543 DATA RECOVERY RATE = 75.4% DATA CAPTURE RATE = 60.0%

MONTHLY MEAN = 19.7 µg/m3

MAXIMUM PM10 = 118.5 µg/m3 DATE OF OCCURRENCE = 4/18 at 800 MAXIMUM DAILY MEAN = 37.0 µg/m3 DATE OF OCCURRENCE = 4/18

SECOND MAXIMUM PM10 = 111.3 µg/m3 DATE OF OCCURRENCE = 4/18 at 700 SECOND MAXIMUM DAILY MEAN = 31.6 µg/m3 DATE OF OCCURRENCE = 4/30

MINIMUM PM10 = 0.9 µg/m3 DATE OF OCCURRENCE = 4/2 at 1800 MINUMUM DAILY MEAN = 6.1 µg/m3 DATE OF OCCURRENCE = 4/3

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

Draft

CSX AQ4 Modulair

HOURLY AVERAGES of PM10 in µg/m3 for MAY, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	14.1	8.7	10.7	11.7	10.2	10.1	11.1	17.7	14.4	8.9	12.2	14.3	14.8	14.6	19.7	15.5	12.3	11.6	13.0	10.7	18.3	17.5	12.9	11.8	**13.2**	**19.7**	**8.7**
2	11.3	11.2	14.2	14.0	12.7	14.2	20.0	20.7	34.1	37.5	38.7	25.6	42.2	35.8	31.5	62.8	45.4	25.8	19.6	30.0	29.6	25.8	26.6	37.3	**27.8**	**62.8**	**11.2**
3	34.0	29.1	18.3	17.4	12.1	10.9	13.8	16.7	14.2	12.7	13.1	13.4	14.9	23.6	---	---	---	---	---	---	---	---	13.7	12.4	**---**	**---**	**---**
4	11.2	14.6	14.2	9.2	8.8	7.3	8.2	9.9	7.5	7.1	10.2	14.5	11.1	12.0	4.8	3.7	4.5	4.7	9.8	10.9	11.7	16.3	23.2	26.3	**10.9**	**26.3**	**3.7**
5	18.0	17.8	22.3	34.4	18.8	12.4	5.6	4.0	4.6	5.9	5.6	9.0	7.7	11.4	9.5	13.8	15.5	15.2	17.5	19.3	34.6	36.6	29.3	32.8	**16.7**	**36.6**	**4.0**
6	28.5	---	---	---	---	---	---	---	---	---	---	24.9	20.2	21.3	24.2	20.0	22.9	23.4	24.8	20.7	26.1	20.5	22.3	28.6	**---**	**---**	**---**
7	23.3	21.4	22.7	20.7	23.0	22.4	20.0	---	23.3	33.6	24.5	25.6	35.2	24.9	25.5	22.3	28.9	23.1	30.9	28.5	23.5	15.1	12.4	12.0	**23.6**	**35.2**	**12.0**
8	13.6	10.3	11.5	14.8	13.6	12.6	13.7	17.2	18.8	26.9	27.8	35.0	26.9	27.3	28.0	39.8	25.5	39.9	21.5	16.3	19.8	17.2	16.9	15.0	**21.2**	**39.9**	**10.3**
9	15.3	15.5	13.7	17.8	14.7	16.4	43.9	17.3	22.9	14.0	14.4	15.3	13.6	15.0	16.1	---	19.0	11.9	13.3	11.7	13.7	14.0	15.7	---	**16.6**	**43.9**	**11.7**
10	21.8	16.6	11.5	13.1	15.0	14.6	---	17.1	19.8	15.0	10.9	8.2	4.4	4.9	4.4	3.3	2.9	3.6	5.1	4.0	2.2	2.8	3.5	5.3	**9.1**	**21.8**	**2.2**
11	6.3	7.7	8.7	10.1	10.0	9.2	17.1	9.2	7.1	5.7	6.1	---	3.5	---	---	---	---	---	---	8.2	6.0	7.4	18.7	17.6	**---**	**---**	**---**
12	14.9	11.8	8.0	12.7	13.7	9.6	9.6	8.8	10.9	7.7	---	---	7.3	9.0	---	---	---	---	11.7	9.4	7.8	8.7	10.4	10.6	**10.1**	**14.9**	**7.3**
13	14.4	11.8	12.6	11.7	9.3	10.8	16.0	13.8	14.4	---	---	---	---	---	---	---	---	---	---	---	---	12.0	12.5	12.7	**---**	**---**	**---**
14	11.4	12.2	11.3	10.8	12.5	11.2	20.5	23.7	23.6	---	---	---	---	---	18.3	20.5	17.4	23.7	18.0	21.1	19.5	28.0	18.4	24.2	**18.2**	**28.0**	**10.8**
15	17.7	---	---	10.4	10.5	10.3	---	6.8	6.6	6.3	7.5	---	---	---	---	---	---	---	---	---	---	---	14.8	18.2	**---**	**---**	**---**
16	---	16.4	13.9	14.7	14.1	14.0	15.7	29.5	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	8.7	**---**	**---**	**---**
17	10.9	6.2	6.7	5.8	7.2	9.6	17.1	17.8	22.7	18.3	12.9	11.5	8.1	9.3	15.9	15.6	10.4	14.0	---	14.2	11.1	12.9	9.3	10.5	**12.1**	**22.7**	**5.8**
18	9.8	9.0	11.3	11.5	9.8	9.8	11.3	17.2	18.0	17.2	18.0	17.1	17.7	33.4	27.6	23.5	33.0	23.9	27.0	28.8	23.1	26.9	26.0	25.4	**19.8**	**33.4**	**9.0**
19	27.8	30.2	35.4	27.6	31.4	36.2	29.4	17.8	17.2	21.0	24.0	23.7	21.0	26.5	24.6	26.3	29.5	37.7	25.8	26.3	21.9	19.8	19.8	21.0	**25.9**	**37.7**	**17.2**
20	21.2	16.0	14.0	9.0	11.8	9.1	9.9	10.8	16.4	11.1	8.0	12.7	17.1	22.5	37.4	16.8	15.3	16.1	20.9	24.0	15.6	16.2	16.4	15.6	**16.0**	**37.4**	**8.0**
21	19.6	19.0	18.7	19.5	17.4	14.8	19.0	32.3	33.9	34.3	25.9	29.9	25.4	24.2	25.7	27.9	28.0	17.1	15.3	11.3	10.2	12.8	12.8	15.4	**21.3**	**34.3**	**10.2**
22	14.8	11.1	11.2	11.1	10.0	16.0	20.9	21.5	18.8	21.8	24.7	26.9	19.9	24.2	28.3	30.1	28.4	25.4	23.0	19.3	18.3	21.1	17.6	18.1	**20.1**	**30.1**	**10.0**
23	19.7	30.0	17.5	21.0	27.2	28.4	37.7	41.4	43.4	47.7	34.6	36.6	29.1	26.1	22.0	23.8	30.5	27.5	21.8	23.1	24.4	23.8	25.1	42.4	**29.4**	**47.7**	**17.5**
24	39.4	73.4	48.2	28.2	21.9	24.1	54.5	47.8	41.9	26.7	24.8	22.8	23.9	21.8	14.7	22.7	25.0	26.4	25.4	32.8	23.7	36.7	25.7	23.1	**31.5**	**73.4**	**14.7**
25	42.3	57.4	---	34.6	69.5	27.1	32.5	50.9	---	63.7	60.0	55.8	42.9	42.2	33.0	30.3	40.3	27.3	25.7	23.4	27.3	42.3	---	18.6	**40.3**	**69.5**	**18.6**
26	---	27.3	23.5	25.2	23.9	---	23.2	31.1	29.0	19.8	20.7	28.5	34.5	---	---	---	---	---	28.8	31.4	31.7	28.3	34.9	32.8	**---**	**---**	**---**
27	33.5	---	35.0	---	---	---	---	---	---	---	---	---	25.6	26.5	31.7	35.9	36.7	29.7	26.3	---	---	---	---	---	**---**	**---**	**---**
28	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
29	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
30	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	9.0	19.1	13.8	10.4	9.7	19.5	21.8	15.2	**---**	**---**	**---**
31	12.5	7.6	7.3	8.0	8.3	8.5	11.8	12.4	14.0	8.4	10.7	14.1	14.8	13.6	13.2	10.6	10.3	13.4	12.6	12.7	18.4	---	29.4	36.5	**13.4**	**36.5**	**7.3**
MEAN	**19.5**	**19.7**	**16.9**	**16.3**	**16.8**	**14.8**	**20.1**	**20.5**	**19.9**	**---**	**---**	**---**	**20.1**	**---**	**---**	**---**	**---**	**---**	**---**	**18.7**	**18.7**	**20.1**	**18.9**	**20.3**	**19.6**		
MAX	**42.3**	**73.4**	**48.2**	**34.6**	**69.5**	**36.2**	**54.5**	**50.9**	**43.4**	**---**	**---**	**---**	**42.9**	**---**	**---**	**---**	**---**	**---**	**---**	**32.8**	**34.6**	**42.3**	**34.9**	**42.4**		**73.4**	
MIN	**6.3**	**6.2**	**6.7**	**5.8**	**7.2**	**7.3**	**5.6**	**4.0**	**4.6**	**---**	**---**	**---**	**3.5**	**---**	**---**	**---**	**---**	**---**	**---**	**4.0**	**2.2**	**2.8**	**3.5**	**5.3**			**2.2**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 571 DATA RECOVERY RATE = 76.7% DATA CAPTURE RATE = 64.5%

MONTHLY MEAN = 19.6 µg/m3

MAXIMUM PM10 = 73.4 µg/m3 DATE OF OCCURRENCE = 5/24 at 200 MAXIMUM DAILY MEAN = 40.3 µg/m3 DATE OF OCCURRENCE = 5/25

SECOND MAXIMUM PM10 = 69.5 µg/m3 DATE OF OCCURRENCE = 5/25 at 500 SECOND MAXIMUM DAILY MEAN = 31.5 µg/m3 DATE OF OCCURRENCE = 5/24

MINIMUM PM10 = 2.2 µg/m3 DATE OF OCCURRENCE = 5/10 at 2100 MINUMUM DAILY MEAN = 9.1 µg/m3 DATE OF OCCURRENCE = 5/10

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

Draft

CSX AQ4 Modulair

HOURLY AVERAGES of PM10 in µg/m3 for JUNE, 2024

Hr Beg Hr End Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	24.9	34.8	13.1	21.7	19.4	22.1	19.4	17.4	14.0	19.5	20.6	14.7	14.6	14.2	10.4	15.5	18.6	15.3	16.1	13.4	12.6	12.9	14.8	17.0	**17.4**	**34.8**	**10.4**
2	21.6	19.0	12.5	20.3	15.1	12.7	22.4	21.3	23.1	25.7	27.0	39.3	35.9	25.8	24.2	27.0	48.8	37.9	31.4	21.5	25.9	25.4	23.6	20.9	**25.3**	**48.8**	**12.5**
3	23.5	25.1	21.5	22.0	22.9	21.5	25.7	49.1	21.0	16.5	19.9	20.0	19.2	26.8	36.2	39.7	27.2	18.0	20.3	33.3	26.2	24.1	21.4	29.2	**25.4**	**49.1**	**16.5**
4	31.7	17.9	17.4	18.6	20.2	22.6	36.4	32.1	40.7	34.7	43.6	49.7	32.8	24.4	27.5	39.0	44.9	35.1	31.6	26.7	23.2	24.6	21.6	25.8	**30.1**	**49.7**	**17.4**
5	25.4	36.2	28.4	29.7	38.7	34.3	42.6	38.4	34.5	32.5	45.5	42.0	35.2	35.0	37.8	36.7	26.4	27.1	28.4	31.2	34.6	46.5	35.0	27.6	**34.6**	**46.5**	**25.4**
6	29.2	28.7	27.9	26.5	28.5	28.6	25.0	22.0	23.2	32.2	40.5	39.2	38.4	36.0	41.0	40.0	32.2	18.5	16.7	13.8	---	58.3	21.4	18.8	**29.9**	**58.3**	**13.8**
7	19.4	20.0	27.9	26.4	19.3	18.7	30.5	30.9	37.0	48.2	59.5	46.2	62.6	---	50.2	---	---	---	22.5	23.0	16.5	23.9	24.1	17.4	**31.2**	**62.6**	**16.5**
8	17.1	14.7	15.4	13.7	10.2	10.8	15.4	15.1	23.5	13.7	12.8	10.8	17.6	20.3	29.0	13.0	11.7	14.7	11.5	11.0	15.1	15.2	16.7	26.0	**15.6**	**29.0**	**10.2**
9	18.7	18.1	21.1	43.0	16.0	17.8	30.4	59.0	24.3	24.3	52.5	35.9	25.1	37.9	24.6	25.2	16.2	10.6	6.8	---	---	19.5	20.6	14.5	**25.6**	**59.0**	**6.8**
10	9.9	10.8	11.4	15.6	9.8	14.5	64.5	42.8	36.1	22.7	27.4	39.4	29.3	22.5	---	---	22.9	16.7	18.6	12.2	10.3	10.0	9.7	7.6	**21.1**	**64.5**	**7.6**
11	9.3	5.4	7.1	6.4	6.6	4.9	4.0	9.8	19.1	18.6	19.6	15.4	10.9	17.2	25.2	14.2	10.3	11.7	7.6	8.7	7.7	10.7	11.0	19.9	**11.7**	**25.2**	**4.0**
12	17.0	15.3	12.1	14.0	12.9	12.5	19.6	25.4	33.5	24.9	36.9	34.1	19.1	22.3	19.2	24.0	23.7	21.8	23.1	23.7	17.0	19.1	23.4	18.4	**21.4**	**36.9**	**12.1**
13	18.9	18.8	17.7	21.6	39.8	49.5	57.5	74.6	43.6	40.2	39.6	30.2	41.3	42.6	53.1	55.8	44.4	47.7	41.3	41.4	25.4	22.5	24.7	21.6	**38.1**	**74.6**	**17.7**
14	---	38.2	23.6	23.1	25.9	25.9	29.6	29.2	39.9	53.7	35.2	41.4	40.1	41.6	40.5	35.4	31.9	34.7	30.0	28.1	31.9	19.8	18.1	12.7	**31.8**	**53.7**	**12.7**
15	12.4	16.2	14.3	14.6	14.8	9.0	10.7	12.3	10.5	9.0	12.8	8.7	9.5	12.0	12.0	8.9	8.3	8.4	8.5	7.5	16.2	19.9	19.4	17.5	**12.2**	**19.9**	**7.5**
16	18.0	21.5	26.4	24.7	18.9	23.8	16.8	17.9	16.4	21.0	15.9	18.2	17.4	19.5	18.4	15.6	17.7	23.0	29.1	22.7	20.6	17.9	18.1	17.5	**19.9**	**29.1**	**15.6**
17	16.0	13.7	12.9	13.6	13.8	14.3	31.0	23.7	39.7	32.5	34.1	39.0	35.7	38.6	42.4	44.1	43.5	38.1	33.1	33.1	27.1	28.4	26.2	27.2	**29.2**	**44.1**	**12.9**
18	26.2	23.2	21.4	25.3	23.8	27.2	33.2	26.7	53.3	37.5	36.9	30.6	26.9	32.6	36.6	43.6	40.9	36.7	32.8	28.0	26.5	21.3	18.9	25.6	**30.7**	**53.3**	**18.9**
19	22.6	24.5	25.2	23.5	23.6	29.5	30.8	38.6	34.8	25.6	25.9	23.4	22.5	21.4	16.6	13.4	11.9	11.2	13.0	9.9	15.1	18.3	21.3	25.7	**22.0**	**38.6**	**9.9**
20	26.6	23.5	25.1	43.6	27.1	26.5	38.2	42.2	27.0	33.6	36.8	29.9	28.7	22.1	31.5	25.7	20.9	22.3	22.6	17.2	18.6	21.4	23.1	24.7	**27.5**	**43.6**	**17.2**
21	24.2	26.7	28.5	36.3	29.5	36.4	51.8	28.0	47.4	45.5	41.3	44.1	48.5	39.8	45.2	37.5	31.6	34.9	28.5	24.8	26.3	26.9	30.4	33.1	**35.3**	**51.8**	**24.2**
22	29.2	29.6	27.7	26.4	30.5	36.6	30.9	26.7	33.4	46.3	38.5	50.1	37.6	38.8	47.5	42.3	38.9	39.3	37.3	32.2	29.5	29.5	29.8	30.7	**35.0**	**50.1**	**26.4**
23	27.9	29.5	27.0	23.4	26.6	45.2	46.5	34.2	49.2	57.1	41.9	54.9	---	---	91.6	78.0	47.3	55.4	33.9	45.5	36.1	43.8	32.8	28.5	**43.5**	**91.6**	**23.4**
24	26.6	27.0	25.6	25.0	21.4	20.7	36.3	30.7	47.1	---	---	63.2	55.6	---	35.8	28.6	35.0	40.7	25.6	21.6	21.1	22.7	21.3	29.6	**31.5**	**63.2**	**20.7**
25	31.1	24.3	25.1	24.0	29.9	23.7	32.1	53.4	39.9	31.8	27.7	27.6	31.3	41.3	25.7	52.0	27.3	25.2	26.8	28.6	24.8	23.4	22.2	28.1	**30.3**	**53.4**	**22.2**
26	23.2	27.1	24.9	25.0	24.4	25.2	46.0	37.7	84.9	65.3	40.6	39.5	40.2	45.8	---	---	27.2	31.3	30.3	26.6	32.5	26.7	68.4	16.4	**36.8**	**84.9**	**16.4**
27	19.1	16.8	18.8	15.3	14.6	16.0	25.6	17.2	14.7	13.4	16.3	20.7	12.9	16.5	19.2	13.4	19.1	20.2	24.6	26.5	22.0	27.3	13.2	16.3	**18.3**	**27.3**	**12.9**
28	10.2	21.7	13.0	10.3	12.9	13.6	12.4	12.5	9.7	17.9	18.8	17.6	20.9	13.4	14.1	16.3	16.8	15.3	22.4	27.4	27.9	24.5	25.8	31.7	**17.8**	**31.7**	**9.7**
29	34.9	42.5	61.4	60.9	41.7	65.1	78.1	53.9	46.9	35.6	30.5	36.4	31.7	28.7	26.5	27.0	24.2	21.4	22.1	19.2	16.9	18.3	19.8	26.7	**36.3**	**78.1**	**16.9**
30	19.3	14.4	37.0	69.6	45.5	28.3	27.4	24.3	21.6	25.9	26.9	23.4	26.5	27.6	24.2	25.0	21.4	23.4	15.4	14.7	18.3	19.6	14.8	11.5	**25.3**	**69.6**	**11.5**
MEAN	**21.9**	**22.8**	**22.4**	**25.5**	**22.8**	**24.6**	**32.4**	**31.6**	**33.0**	**31.2**	**31.9**	**32.9**	**29.9**	**28.3**	**32.4**	**31.0**	**27.3**	**26.1**	**23.7**	**23.2**	**22.4**	**24.1**	**23.1**	**22.3**	**26.9**		
MAX	**34.9**	**42.5**	**61.4**	**69.6**	**45.5**	**65.1**	**78.1**	**74.6**	**84.9**	**65.3**	**59.5**	**63.2**	**62.6**	**45.8**	**91.6**	**78.0**	**48.8**	**55.4**	**41.3**	**45.5**	**36.1**	**58.3**	**68.4**	**33.1**		**91.6**	
MIN	**9.3**	**5.4**	**7.1**	**6.4**	**6.6**	**4.9**	**4.0**	**9.8**	**9.7**	**9.0**	**12.8**	**8.7**	**9.5**	**12.0**	**10.4**	**8.9**	**8.3**	**8.4**	**6.8**	**7.5**	**7.7**	**10.0**	**9.7**	**7.6**			**4.0**

POSSIBLE NUMBER OF OBSERVATIONS = 720 ACTUAL NUMBER OF OBSERVATIONS = 703 DATA RECOVERY RATE = 97.6% DATA CAPTURE RATE = 100.0%

MONTHLY MEAN = 26.9 µg/m3

MAXIMUM PM10 = 91.6 µg/m3 DATE OF OCCURRENCE = 6/23 at 1500 MAXIMUM DAILY MEAN = 43.5 µg/m3 DATE OF OCCURRENCE = 6/23

SECOND MAXIMUM PM10 = 84.9 µg/m3 DATE OF OCCURRENCE = 6/26 at 900 SECOND MAXIMUM DAILY MEAN = 38.1 µg/m3 DATE OF OCCURRENCE = 6/13

MINIMUM PM10 = 4.0 µg/m3 DATE OF OCCURRENCE = 6/11 at 700 MINUMUM DAILY MEAN = 11.7 µg/m3 DATE OF OCCURRENCE = 6/11

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

Draft

CSX AQ4 Modulair

HOURLY AVERAGES of PM2.5 in µg/m3 for APRIL, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	13.2	14.8	16.5	16.0	13.2	14.2	13.1	11.4	12.9	4.6	4.2	2.6	2.2	3.7	4.7	5.1	7.7	9.7	11.2	12.3	11.5	10.1	10.1	10.7	**9.8**	**16.5**	**2.2**
2	8.8	11.0	11.4	10.7	8.8	10.9	8.2	6.0	5.5	5.0	3.0	1.9	2.0	3.3	2.5	1.5	0.7	0.5	0.6	0.8	1.3	1.2	1.1	1.0	**4.4**	**11.4**	**0.5**
3	1.2	1.9	2.1	1.8	2.4	2.3	1.9	1.2	1.2	1.2	1.0	0.6	1.1	0.8	0.3	0.8	0.6	0.4	1.0	1.5	1.0	2.1	4.5	1.5	**1.4**	**4.5**	**0.3**
4	2.1	2.0	3.3	4.0	4.7	5.0	7.9	26.7	11.3	12.5	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
5	---	---	---	---	---	---	---	3.9	6.9	8.9	3.8	2.5	2.3	2.5	1.9	1.6	2.8	3.2	---	---	---	---	---	---	**---**	**---**	**---**
6	---	---	---	---	---	---	---	2.2	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
7	---	---	---	---	---	---	---	2.9	2.5	1.6	2.1	0.8	0.8	1.1	1.1	1.1	1.0	1.1	1.2	1.7	2.4	3.3	4.7	---	**---**	**---**	**---**
8	---	---	---	---	---	---	---	6.7	14.6	15.5	10.2	6.3	6.8	7.3	4.6	3.8	3.2	---	---	---	---	---	---	---	**---**	**---**	**---**
9	---	---	---	---	---	---	---	9.2	14.2	10.6	15.3	20.9	11.2	10.8	10.1	11.0	13.2	16.7	22.8	24.5	24.7	26.0	26.8	30.2	**---**	**---**	**---**
10	32.4	---	---	---	---	---	---	25.3	29.3	39.8	29.1	15.0	10.2	10.4	13.0	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
11	15.3	14.3	12.9	11.3	12.9	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	12.9	14.6	14.8	**---**	**---**	**---**
12	13.3	9.3	8.8	3.8	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
13	---	---	---	---	---	---	---	3.4	3.1	4.0	3.2	2.7	4.0	3.8	8.0	2.9	2.5	2.7	2.5	2.7	3.2	3.1	4.4	4.9	**---**	**---**	**---**
14	5.2	4.6	6.7	4.7	4.7	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
15	---	---	---	---	---	---	---	9.3	9.1	7.9	10.7	12.6	14.2	11.2	11.0	11.7	12.2	11.7	8.7	12.8	15.2	18.1	19.1	20.8	**---**	**---**	**---**
16	7.6	4.9	4.0	4.5	5.6	5.6	6.6	4.5	4.7	4.3	5.3	7.1	6.9	---	---	---	---	5.6	5.3	5.8	5.8	6.2	6.4	7.8	**5.7**	**7.8**	**4.0**
17	6.4	6.1	5.7	5.6	5.1	5.6	5.5	6.3	8.2	7.4	10.1	14.7	8.7	9.1	11.1	11.2	13.0	18.1	12.9	11.1	9.8	9.3	8.4	9.8	**9.1**	**18.1**	**5.1**
18	12.1	14.1	9.9	10.2	13.4	16.5	21.1	23.7	23.7	20.0	20.8	22.9	24.4	24.6	22.6	18.5	18.8	17.2	15.0	10.6	11.3	19.3	20.1	17.3	**17.8**	**24.6**	**9.9**
19	14.3	10.4	9.2	6.1	4.5	3.7	3.0	3.7	4.4	5.1	4.9	6.2	8.4	10.2	15.0	14.0	11.1	10.8	9.5	8.4	7.6	7.9	9.5	9.1	**8.2**	**15.0**	**3.0**
20	8.3	7.8	7.7	7.9	8.2	9.1	10.4	13.5	15.0	19.9	11.0	8.7	7.9	4.9	4.1	3.4	4.4	7.5	3.1	3.4	3.5	3.9	4.4	3.7	**7.5**	**19.9**	**3.1**
21	3.6	2.6	2.3	2.5	2.7	2.1	1.9	1.5	1.4	1.6	2.2	2.6	4.7	5.1	4.4	4.2	4.1	3.9	3.4	3.8	3.3	3.0	6.2	7.8	**3.3**	**7.8**	**1.4**
22	7.5	7.1	5.8	5.2	5.6	6.2	5.3	5.4	4.6	3.9	3.7	4.2	4.6	5.5	5.1	4.8	5.1	4.1	4.4	6.2	5.1	5.5	5.2	6.4	**5.2**	**7.5**	**3.7**
23	6.9	6.9	7.5	6.6	6.8	7.6	7.1	11.9	18.3	22.3	20.0	10.2	9.2	6.8	6.2	6.0	6.1	5.7	6.0	5.5	5.8	6.4	5.5	5.6	**8.6**	**22.3**	**5.5**
24	6.2	6.9	9.2	8.4	8.8	9.8	12.2	13.2	11.9	8.3	6.1	5.2	6.9	6.9	5.9	4.8	4.9	5.0	5.0	---	2.2	1.7	1.7	2.2	**6.6**	**13.2**	**1.7**
25	2.5	3.1	3.3	4.1	3.8	3.3	2.8	3.0	3.8	4.2	4.2	5.4	6.6	8.3	11.5	18.5	15.5	15.9	11.4	9.6	8.0	6.6	6.6	6.2	**7.0**	**18.5**	**2.5**
26	6.6	7.6	6.2	5.2	5.4	5.7	6.0	7.4	7.5	8.0	6.2	5.8	5.1	3.4	2.7	3.0	2.4	2.6	2.7	2.9	5.8	3.4	4.7	4.4	**5.0**	**8.0**	**2.4**
27	4.1	4.8	4.5	3.5	4.0	4.1	3.6	4.3	4.2	3.6	4.5	4.4	5.7	6.1	5.8	4.6	4.9	4.9	5.4	4.6	3.8	3.8	3.8	4.2	**4.4**	**6.1**	**3.5**
28	4.2	4.1	4.5	5.4	4.9	4.6	4.8	5.5	9.8	19.7	20.6	23.0	20.5	18.6	17.2	16.8	16.8	17.4	18.0	16.4	16.5	16.9	16.0	16.0	**13.2**	**23.0**	**4.1**
29	16.5	15.0	14.1	15.0	14.6	12.6	12.3	14.7	14.5	15.4	15.1	10.2	11.9	---	---	---	---	---	13.9	---	15.1	16.2	16.8	16.4	**14.4**	**16.8**	**10.2**
30	16.1	14.5	14.0	17.7	18.8	17.5	16.4	17.8	18.2	18.6	19.4	19.0	19.2	16.7	16.0	17.4	16.7	14.6	11.8	12.2	12.7	11.4	3.9	4.6	**15.2**	**19.4**	**3.9**
MEAN	**9.3**	**---**	**---**	**---**	**---**	**---**	**---**	**9.1**	**10.0**	**10.5**	**9.5**	**8.6**	**8.2**	**7.9**	**8.0**	**---**	**---**	**---**	**---**	**---**	**---**	**8.6**	**8.9**	**---**	**8.4**		
MAX	**32.4**	**---**	**---**	**---**	**---**	**---**	**---**	**26.7**	**29.3**	**39.8**	**29.1**	**23.0**	**24.4**	**24.6**	**22.6**	**---**	**---**	**---**	**---**	**---**	**---**	**26.0**	**26.8**	**---**		**39.8**	
MIN	**1.2**	**---**	**---**	**---**	**---**	**---**	**---**	**1.2**	**1.2**	**1.2**	**1.0**	**0.6**	**0.8**	**0.8**	**0.3**	**---**	**---**	**---**	**---**	**---**	**---**	**1.2**	**1.1**	**---**			**0.3**

POSSIBLE NUMBER OF OBSERVATIONS = 720 ACTUAL NUMBER OF OBSERVATIONS = 546 DATA RECOVERY RATE = 75.8% DATA CAPTURE RATE = 60.0%

MONTHLY MEAN = 8.4 µg/m3

MAXIMUM PM2.5 = 39.8 µg/m3 DATE OF OCCURRENCE = 4/10 at 1000 MAXIMUM DAILY MEAN = 17.8 µg/m3 DATE OF OCCURRENCE = 4/18

SECOND MAXIMUM PM2.5 = 32.4 µg/m3 DATE OF OCCURRENCE = 4/10 at 100 SECOND MAXIMUM DAILY MEAN = 15.2 µg/m3 DATE OF OCCURRENCE = 4/30

MINIMUM PM2.5 = 0.3 µg/m3 DATE OF OCCURRENCE = 4/3 at 1500 MINUMUM DAILY MEAN = 1.4 µg/m3 DATE OF OCCURRENCE = 4/3

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

Draft

CSX AQ4 Modulair

HOURLY AVERAGES of PM2.5 in µg/m3 for MAY, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	5.0	4.9	5.5	5.6	5.1	5.4	5.3	6.8	6.1	4.6	5.3	5.4	6.7	5.8	7.5	6.8	5.5	6.1	6.4	6.8	9.1	9.7	8.6	8.0	**6.3**	**9.7**	**4.6**
2	8.1	8.3	9.5	8.7	8.5	9.0	9.0	14.9	20.2	24.1	14.7	15.3	16.4	11.9	10.7	13.4	12.7	11.7	12.6	15.1	14.8	15.7	17.7	19.9	**13.4**	**24.1**	**8.1**
3	20.1	16.0	12.0	10.4	7.5	6.8	7.7	9.3	8.9	7.9	7.3	7.2	5.8	7.3	---	---	---	---	---	---	---	---	3.9	3.5	**---**	**---**	**---**
4	4.1	5.0	4.7	4.3	4.4	4.9	4.7	4.7	4.0	4.0	7.0	10.0	5.1	4.7	2.1	1.1	1.4	0.9	0.9	2.5	3.8	5.2	6.0	6.7	**4.2**	**10.0**	**0.9**
5	5.5	5.0	5.3	6.7	5.2	3.6	2.0	1.9	2.1	2.9	3.1	4.7	4.7	6.0	7.1	9.0	8.6	5.1	5.8	8.0	19.5	20.0	7.7	8.2	**6.5**	**20.0**	**1.9**
6	8.0	9.3	10.1	10.1	9.6	8.7	8.3	8.7	9.1	9.5	10.2	17.5	15.4	16.8	16.5	13.9	13.4	14.8	16.7	16.3	18.2	14.2	15.0	15.6	**12.7**	**18.2**	**8.0**
7	12.8	11.6	10.7	10.4	12.3	12.5	11.6	---	15.8	21.7	18.2	20.7	23.5	18.0	20.7	18.6	18.3	15.6	21.4	22.7	17.2	9.5	7.0	6.7	**15.5**	**23.5**	**6.7**
8	6.8	5.6	6.2	7.1	7.2	6.5	7.0	9.6	12.9	17.2	16.1	16.6	10.1	9.2	9.3	10.9	9.6	10.5	9.6	9.9	10.5	10.1	9.4	8.8	**9.8**	**17.2**	**5.6**
9	7.7	7.5	8.6	8.3	7.6	7.2	9.7	4.1	4.8	4.2	4.7	4.6	4.3	4.3	5.3	---	5.3	4.2	4.6	6.1	6.9	8.0	9.1	---	**6.2**	**9.7**	**4.1**
10	5.8	4.5	3.7	3.3	4.2	4.3	---	5.1	5.1	4.6	3.8	2.7	1.4	1.3	1.2	0.9	0.8	0.8	1.0	1.0	0.7	1.0	1.0	1.5	**2.5**	**5.8**	**0.7**
11	1.7	1.7	1.5	1.5	1.7	2.1	2.9	3.1	2.7	3.5	3.5	---	2.0	---	---	---	---	---	---	3.5	3.6	4.2	8.7	8.3	**---**	**---**	**---**
12	4.5	5.8	2.3	2.2	2.0	2.6	3.6	5.3	7.9	5.1	---	---	4.0	4.4	---	---	---	---	5.2	4.6	4.3	3.8	5.8	5.8	**4.4**	**7.9**	**2.0**
13	6.9	6.3	5.8	4.4	5.4	6.0	7.7	8.1	8.5	---	---	---	---	---	---	---	---	---	---	---	---	5.9	5.6	6.1	**---**	**---**	**---**
14	6.0	6.1	6.1	6.1	5.7	5.8	7.2	9.7	9.5	---	---	---	---	---	10.1	10.2	10.3	14.2	9.9	12.8	7.4	13.0	5.9	5.4	**8.4**	**14.2**	**5.4**
15	5.6	---	---	4.9	5.4	5.6	---	4.2	4.8	3.7	4.1	---	---	---	---	---	---	---	---	---	---	---	7.2	8.6	**---**	**---**	**---**
16	---	8.0	6.3	5.8	5.3	5.1	6.4	9.6	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	3.7	**---**	**---**	**---**
17	3.7	3.7	3.1	2.6	3.4	3.7	3.8	5.2	6.7	6.3	6.6	5.9	5.5	6.6	9.2	9.1	6.6	8.2	---	5.9	8.1	8.4	6.6	7.1	**5.9**	**9.2**	**2.6**
18	6.5	6.2	7.1	7.2	7.5	8.0	7.9	8.2	8.3	11.8	13.0	12.4	9.5	12.5	10.8	12.7	14.0	13.2	17.4	18.6	15.7	18.7	20.7	19.2	**11.9**	**20.7**	**6.2**
19	21.5	22.7	17.1	13.4	16.1	14.2	14.5	12.8	14.3	18.3	20.8	20.6	17.8	22.7	21.5	23.2	26.1	32.8	22.4	21.9	15.7	15.0	15.7	15.6	**19.0**	**32.8**	**12.8**
20	15.0	8.3	6.9	3.8	4.3	4.4	5.5	5.9	7.1	5.5	4.7	6.6	10.2	16.1	17.5	10.8	11.9	11.6	13.1	12.1	11.6	12.3	11.5	10.7	**9.4**	**17.5**	**3.8**
21	10.5	11.6	10.3	9.9	8.5	7.8	9.5	17.6	23.1	23.9	19.7	19.6	17.5	15.2	12.9	13.0	12.0	10.3	9.1	8.1	7.6	9.0	8.7	8.5	**12.6**	**23.9**	**7.6**
22	8.0	7.7	7.4	7.4	7.3	10.2	7.0	8.7	10.2	11.9	14.9	12.3	12.6	14.1	16.4	16.8	15.7	13.6	12.9	13.0	13.0	13.0	10.6	9.5	**11.4**	**16.8**	**7.0**
23	10.1	13.3	13.3	15.8	21.4	22.8	24.0	24.4	27.4	26.1	19.9	19.4	19.0	19.3	15.4	15.8	19.2	19.2	15.9	19.1	18.3	17.0	17.5	23.0	**19.0**	**27.4**	**10.1**
24	22.7	35.7	20.1	16.7	15.0	15.2	16.5	17.0	15.9	11.5	12.0	11.6	11.0	9.4	8.3	10.4	11.9	12.4	15.1	14.4	15.2	19.0	18.5	17.4	**15.5**	**35.7**	**8.3**
25	21.2	41.4	---	27.4	30.9	20.3	20.7	34.8	---	53.3	48.8	40.9	35.5	27.2	18.5	17.3	18.2	13.8	16.0	16.7	22.0	19.6	---	11.8	**26.4**	**53.3**	**11.8**
26	---	18.6	15.1	15.0	15.7	---	15.8	19.9	18.0	14.2	17.1	22.3	24.4	---	---	---	---	---	18.2	19.4	25.9	24.0	24.7	25.5	**---**	**---**	**---**
27	25.9	---	30.2	---	---	---	---	---	---	---	---	---	19.0	18.2	20.7	27.8	30.0	23.9	20.2	---	---	---	---	---	**---**	**---**	**---**
28	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
29	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
30	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	4.8	6.9	4.9	3.8	3.1	5.9	5.8	7.9	**---**	**---**	**---**
31	6.2	4.0	4.7	3.8	3.5	3.4	4.0	5.2	4.6	3.6	3.8	3.8	4.7	4.7	4.3	5.2	4.2	4.0	3.8	4.8	7.2	---	22.7	14.4	**5.6**	**22.7**	**3.4**
MEAN	**10.0**	**10.7**	**9.0**	**8.3**	**8.5**	**7.9**	**8.9**	**10.2**	**10.3**	**12.5**	**---**	**---**	**11.9**	**---**	**---**	**---**	**---**	**---**	**---**	**11.1**	**11.6**	**11.8**	**10.8**	**10.6**	**10.7**		
MAX	**25.9**	**41.4**	**30.2**	**27.4**	**30.9**	**22.8**	**24.0**	**34.8**	**27.4**	**53.3**	**---**	**---**	**35.5**	**---**	**---**	**---**	**---**	**---**	**---**	**22.7**	**25.9**	**24.0**	**24.7**	**25.5**		**53.3**	
MIN	**1.7**	**1.7**	**1.5**	**1.5**	**1.7**	**2.1**	**2.0**	**1.9**	**2.1**	**2.9**	**---**	**---**	**1.4**	**---**	**---**	**---**	**---**	**---**	**---**	**1.0**	**0.7**	**1.0**	**1.0**	**1.5**			**0.7**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 581 DATA RECOVERY RATE = 78.1% DATA CAPTURE RATE = 67.7%

MONTHLY MEAN = 10.7 µg/m3

MAXIMUM PM2.5 = 53.3 µg/m3 DATE OF OCCURRENCE = 5/25 at 1000 MAXIMUM DAILY MEAN = 26.4 µg/m3 DATE OF OCCURRENCE = 5/25

SECOND MAXIMUM PM2.5 = 48.8 µg/m3 DATE OF OCCURRENCE = 5/25 at 1100 SECOND MAXIMUM DAILY MEAN = 19.0 µg/m3 DATE OF OCCURRENCE = 5/19

MINIMUM PM2.5 = 0.7 µg/m3 DATE OF OCCURRENCE = 5/10 at 2100 MINUMUM DAILY MEAN = 2.5 µg/m3 DATE OF OCCURRENCE = 5/10

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

Draft

CSX AQ4 Modulair

HOURLY AVERAGES of PM2.5 in µg/m3 for JUNE, 2024

Hr Beg Hr End Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	11.8	17.8	7.7	8.9	7.7	7.3	8.3	8.5	6.8	7.8	7.7	6.2	6.3	5.8	5.9	6.9	7.9	7.5	8.8	7.4	7.8	9.3	10.8	9.7	**8.3**	**17.8**	**5.8**
2	10.7	10.2	9.3	10.2	10.6	9.1	10.6	13.5	14.3	16.3	17.2	19.6	18.5	17.2	17.0	20.4	21.3	21.7	16.5	16.0	17.7	19.2	18.7	16.3	**15.5**	**21.7**	**9.1**
3	17.4	17.5	16.8	16.9	17.1	16.8	16.5	19.5	10.2	9.6	13.4	13.0	13.5	13.5	19.5	21.1	15.6	11.8	15.8	19.2	18.3	18.7	18.4	17.8	**16.1**	**21.1**	**9.6**
4	17.6	14.2	12.0	11.9	12.0	12.8	12.7	14.3	23.7	25.3	29.3	29.5	19.7	14.7	18.5	23.5	24.5	22.5	23.7	19.4	17.4	16.3	17.1	18.2	**18.7**	**29.5**	**11.9**
5	18.7	18.5	19.2	18.0	19.2	21.8	24.4	22.6	23.1	22.5	27.3	25.1	25.0	28.7	30.2	19.4	17.5	15.9	17.2	17.7	16.6	16.4	14.8	12.7	**20.5**	**30.2**	**12.7**
6	12.4	12.7	13.0	14.0	14.1	13.6	13.7	14.3	15.9	18.3	18.9	19.8	20.1	19.8	19.8	19.5	12.5	10.6	9.0	9.6	54.7	36.9	13.9	11.8	**17.4**	**54.7**	**9.0**
7	11.6	9.9	9.0	9.4	9.0	9.0	9.1	9.8	11.3	11.1	7.3	4.9	8.2	11.1	5.8	6.1	---	---	4.3	4.7	4.3	3.4	3.0	4.3	**7.5**	**11.6**	**3.0**
8	6.5	5.6	5.1	5.3	4.9	4.6	4.8	5.0	5.0	4.1	3.8	3.4	3.9	4.0	7.6	3.3	3.7	4.9	5.0	5.0	8.5	7.0	10.9	13.2	**5.6**	**13.2**	**3.3**
9	12.2	11.0	10.0	12.4	8.9	10.6	9.5	10.8	8.0	7.0	9.1	9.6	9.4	5.8	4.3	3.2	4.2	5.4	3.2	---	---	8.0	10.1	8.9	**8.2**	**12.4**	**3.2**
10	6.9	6.7	6.2	6.5	6.4	5.7	11.1	8.3	5.5	6.3	5.9	8.7	5.8	6.0	---	---	10.2	5.0	5.6	5.6	3.2	3.8	3.4	3.1	**6.1**	**11.1**	**3.1**
11	2.5	2.6	3.5	2.5	2.6	2.4	2.7	3.6	4.4	4.6	4.5	4.1	3.9	5.0	5.1	4.8	4.8	5.9	5.0	4.7	4.7	5.3	6.3	8.3	**4.3**	**8.3**	**2.4**
12	11.6	9.1	8.2	8.1	7.3	7.1	7.9	11.4	9.1	8.7	9.0	11.0	10.0	11.0	11.7	13.9	13.6	15.7	14.8	14.4	13.2	13.3	13.8	13.2	**11.1**	**15.7**	**7.1**
13	13.6	13.7	13.3	14.5	15.7	15.9	16.8	22.4	20.1	23.2	23.3	23.1	25.9	26.0	27.6	26.7	25.3	22.8	19.4	16.2	14.6	12.8	12.4	13.1	**19.1**	**27.6**	**12.4**
14	50.0	19.3	15.8	16.0	16.2	16.3	17.2	22.8	31.1	31.9	27.8	34.0	33.9	33.3	30.6	27.1	22.0	22.6	16.3	12.2	17.0	9.9	8.0	7.5	**22.4**	**50.0**	**7.5**
15	7.3	7.2	7.0	7.3	7.8	5.5	6.6	8.2	5.4	5.5	7.5	5.1	5.4	5.7	6.8	5.2	5.5	6.2	5.6	4.5	6.3	9.3	10.9	9.7	**6.7**	**10.9**	**4.5**
16	13.0	16.7	16.9	14.4	14.1	12.2	8.5	10.8	12.0	13.7	11.8	13.7	13.4	15.4	13.2	11.9	13.4	13.8	15.8	16.0	14.3	13.0	12.8	11.5	**13.4**	**16.9**	**8.5**
17	10.7	9.4	9.1	9.6	10.1	10.2	11.3	12.5	12.7	12.5	15.8	18.0	22.0	25.8	28.1	29.0	23.9	21.9	17.9	15.9	12.9	10.7	9.4	8.8	**15.3**	**29.0**	**8.8**
18	8.6	8.7	9.0	9.1	9.2	9.2	9.5	9.8	12.7	15.1	19.9	17.8	16.3	20.4	23.6	25.9	27.6	26.2	25.5	20.3	17.7	12.3	8.0	7.8	**15.4**	**27.6**	**7.8**
19	7.2	7.5	7.5	6.7	6.6	6.9	7.2	7.5	8.0	9.2	11.0	9.6	9.8	10.2	9.4	7.7	6.2	6.9	6.9	5.4	5.8	7.6	8.3	8.2	**7.8**	**11.0**	**5.4**
20	7.9	8.1	8.9	9.2	8.3	8.4	8.8	10.8	8.7	10.5	12.3	11.1	11.2	9.6	12.9	13.2	12.3	12.3	11.4	8.8	8.0	8.6	8.6	8.5	**9.9**	**13.2**	**7.9**
21	8.4	8.8	8.6	9.2	8.6	9.0	9.7	11.3	16.9	15.2	16.1	18.5	19.6	19.1	19.7	22.6	22.5	19.2	17.2	14.5	13.6	13.3	13.6	13.4	**14.5**	**22.6**	**8.4**
22	13.4	13.5	13.2	13.0	12.9	13.2	13.5	17.0	22.1	25.1	28.0	29.1	27.1	30.1	30.7	30.1	27.6	27.9	25.7	22.3	20.8	20.5	20.3	20.8	**21.5**	**30.7**	**12.9**
23	20.5	21.0	19.3	17.6	16.0	29.1	12.1	12.0	13.8	16.0	16.4	18.9	---	---	23.3	23.6	25.4	22.6	20.5	21.4	21.6	19.7	18.4	18.4	**19.4**	**29.1**	**12.0**
24	18.7	19.0	18.8	16.3	12.3	11.9	13.3	7.6	8.5	12.0	14.8	6.7	10.0	15.1	9.4	12.4	11.2	12.4	10.1	9.6	9.6	14.4	14.5	15.3	**12.6**	**19.0**	**6.7**
25	15.6	14.9	16.4	15.5	16.5	15.3	15.3	17.6	15.4	14.3	14.1	14.8	16.4	16.5	14.5	18.5	16.7	16.5	17.8	17.1	17.5	16.1	13.9	15.8	**15.9**	**18.5**	**13.9**
26	15.6	16.9	17.4	17.7	17.7	17.4	18.6	20.0	26.5	24.1	21.8	20.7	23.2	19.2	---	---	13.8	14.5	18.0	16.3	16.8	14.0	12.8	7.2	**17.7**	**26.5**	**7.2**
27	6.3	6.2	5.6	5.4	5.3	5.8	6.1	6.2	4.5	3.3	4.4	5.1	6.5	6.6	6.5	8.1	10.4	12.5	13.1	14.2	13.3	18.5	8.5	7.0	**7.8**	**18.5**	**3.3**
28	5.3	7.6	6.0	5.6	5.7	6.3	6.6	5.1	4.4	5.2	5.4	6.0	7.8	7.6	7.7	8.3	7.8	7.9	9.9	9.6	8.3	8.4	7.0	9.6	**7.0**	**9.9**	**4.4**
29	6.7	8.0	21.8	20.4	6.8	12.6	35.3	12.5	13.1	12.7	13.0	14.5	14.5	14.9	15.0	15.7	15.4	13.7	12.4	12.4	11.0	10.7	11.4	9.5	**13.9**	**35.3**	**6.7**
30	5.4	5.7	5.6	10.6	10.0	9.6	9.9	11.3	13.1	16.4	18.9	18.4	21.4	22.8	20.1	21.7	17.0	14.3	7.6	7.4	9.6	12.2	7.9	4.4	**12.5**	**22.8**	**4.4**
MEAN	**12.5**	**11.6**	**11.3**	**11.4**	**10.7**	**11.2**	**11.9**	**12.2**	**12.9**	**13.6**	**14.5**	**14.7**	**14.8**	**15.2**	**15.9**	**16.1**	**15.2**	**14.5**	**13.3**	**12.7**	**14.0**	**13.0**	**11.6**	**11.1**	**13.1**		
MAX	**50.0**	**21.0**	**21.8**	**20.4**	**19.2**	**29.1**	**35.3**	**22.8**	**31.1**	**31.9**	**29.3**	**34.0**	**33.9**	**33.3**	**30.7**	**30.1**	**27.6**	**27.9**	**25.7**	**22.3**	**54.7**	**36.9**	**20.3**	**20.8**		**54.7**	
MIN	**2.5**	**2.6**	**3.5**	**2.5**	**2.6**	**2.4**	**2.7**	**3.6**	**4.4**	**3.3**	**3.8**	**3.4**	**3.9**	**4.0**	**4.3**	**3.2**	**3.7**	**4.9**	**3.2**	**4.5**	**3.2**	**3.4**	**3.0**	**3.1**			**2.4**

POSSIBLE NUMBER OF OBSERVATIONS = 720 ACTUAL NUMBER OF OBSERVATIONS = 710 DATA RECOVERY RATE = 98.6% DATA CAPTURE RATE = 100.0%

MONTHLY MEAN = 13.1 µg/m3

MAXIMUM PM2.5 = 54.7 µg/m3 DATE OF OCCURRENCE = 6/6 at 2100 MAXIMUM DAILY MEAN = 22.4 µg/m3 DATE OF OCCURRENCE = 6/14

SECOND MAXIMUM PM2.5 = 50.0 µg/m3 DATE OF OCCURRENCE = 6/14 at 100 SECOND MAXIMUM DAILY MEAN = 21.5 µg/m3 DATE OF OCCURRENCE = 6/22

MINIMUM PM2.5 = 2.4 µg/m3 DATE OF OCCURRENCE = 6/11 at 600 MINUMUM DAILY MEAN = 4.3 µg/m3 DATE OF OCCURRENCE = 6/11

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

Draft

CSX AQ5A Modulair

HOURLY AVERAGES of PM10 in µg/m3 for APRIL, 2024

Hr Beg Hr End Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	23.1	24.8	27.8	28.4	22.2	47.6	53.1	54.3	25.7	15.4	8.8	7.0	4.1	4.7	6.0	7.8	8.7	10.4	14.5	19.9	16.4	13.4	19.0	51.7	**21.5**	**54.3**	**4.1**
2	37.8	23.2	27.0	19.2	12.0	34.5	16.6	20.2	41.5	11.8	4.1	5.5	12.4	5.8	6.3	8.8	2.7	1.5	2.0	2.7	4.1	2.9	3.1	2.6	**12.8**	**41.5**	**1.5**
3	3.7	6.8	6.4	6.7	8.8	10.4	5.3	2.6	7.2	11.2	17.4	3.3	4.7	2.8	2.1	16.2	2.2	1.4	2.3	5.4	3.7	6.8	28.5	5.2	**7.1**	**28.5**	**1.4**
4	4.0	3.4	5.1	5.9	7.2	8.0	15.8	21.5	16.2	15.6	11.3	8.3	7.3	16.3	20.5	7.6	2.5	3.4	5.2	2.0	1.4	2.8	2.0	2.1	**8.1**	**21.5**	**1.4**
5	1.7	2.1	1.6	1.8	2.1	3.3	5.5	5.5	9.2	6.7	6.9	3.3	3.9	9.0	12.4	13.2	26.8	7.9	7.8	6.2	9.8	8.1	3.4	3.7	**6.7**	**26.8**	**1.6**
6	3.3	3.6	2.8	2.4	2.4	2.3	2.6	7.5	29.6	17.9	5.2	4.1	5.1	3.2	4.4	4.0	4.1	4.9	4.3	4.6	5.2	6.9	11.0	9.4	**6.3**	**29.6**	**2.3**
7	7.0	6.5	7.4	7.0	7.3	9.7	6.8	7.6	8.5	5.3	3.5	3.2	2.7	2.4	3.2	2.8	2.3	2.9	3.6	3.5	6.5	9.9	12.6	7.7	**5.8**	**12.6**	**2.3**
8	24.2	17.4	16.0	15.1	15.8	29.5	55.7	36.9	42.5	25.5	22.7	21.6	14.0	19.4	7.7	14.7	9.1	8.9	7.6	8.2	7.0	14.4	15.9	29.3	**20.0**	**55.7**	**7.0**
9	32.0	36.3	32.4	24.8	29.9	29.2	59.6	78.2	50.5	31.6	36.5	47.3	24.6	18.9	16.6	22.9	19.3	31.4	36.7	36.3	32.4	35.2	38.8	37.4	**35.0**	**78.2**	**16.6**
10	44.5	64.2	62.1	61.5	40.9	49.9	52.4	56.3	60.6	141.7	60.8	19.7	18.1	14.5	20.4	35.5	25.1	25.0	25.3	26.9	38.2	21.8	30.0	54.3	**43.7**	**141.7**	**14.5**
11	29.8	27.2	25.0	19.2	26.5	33.1	30.8	33.2	45.4	44.3	43.2	47.1	48.5	49.4	63.3	66.5	65.3	66.3	61.8	45.4	48.9	63.0	66.2	69.1	**46.6**	**69.1**	**19.2**
12	48.5	29.7	26.2	10.6	11.1	14.7	18.3	16.5	10.5	4.0	6.4	5.8	11.1	14.4	9.4	8.4	11.8	16.8	8.5	7.0	9.9	3.0	2.8	3.9	**12.9**	**48.5**	**2.8**
13	5.9	7.5	3.4	2.8	10.6	5.0	6.5	4.8	6.1	5.4	14.2	14.7	12.6	18.9	19.0	15.2	7.9	11.3	6.6	5.5	5.2	6.8	13.3	11.9	**9.2**	**19.0**	**2.8**
14	9.3	8.6	25.2	7.7	9.3	9.8	8.6	10.3	8.9	10.0	13.0	17.8	28.6	29.5	52.8	61.0	84.4	54.3	60.5	38.9	19.4	19.0	21.4	22.5	**26.3**	**84.4**	**7.7**
15	12.3	8.8	18.4	46.5	42.8	20.3	36.0	95.3	45.5	19.5	34.6	37.2	45.8	30.9	26.2	23.8	19.4	21.2	21.8	24.1	33.3	51.9	49.7	39.1	**33.5**	**95.3**	**8.8**
16	23.2	36.2	29.8	12.5	16.5	16.6	26.7	73.8	35.1	12.1	12.6	25.1	16.5	12.3	11.7	14.6	29.4	20.3	18.2	17.3	14.2	14.3	14.6	31.2	**22.3**	**73.8**	**11.7**
17	18.3	15.9	12.8	17.2	14.4	27.7	32.3	43.3	36.2	36.0	49.4	68.6	24.3	21.5	34.7	33.1	29.1	61.2	31.9	34.5	35.1	30.8	43.7	50.9	**33.5**	**68.6**	**12.8**
18	65.5	58.3	49.1	45.6	46.1	46.7	157.3	121.5	64.0	45.8	35.6	35.1	33.2	39.4	34.8	20.4	20.6	17.3	16.0	13.5	17.0	20.9	19.9	19.9	**43.5**	**157.3**	**13.5**
19	16.0	14.2	13.7	10.5	8.2	8.4	9.3	9.6	13.0	13.0	13.1	18.4	25.5	30.3	39.8	30.8	31.3	35.4	25.0	28.7	26.1	29.4	26.3	28.7	**21.0**	**39.8**	**8.2**
20	24.0	23.1	22.6	23.5	20.8	20.5	24.4	30.2	28.8	33.4	32.5	15.3	19.1	10.0	11.0	9.5	13.6	17.4	8.6	8.6	9.8	10.1	11.0	10.5	**18.3**	**33.4**	**8.6**
21	8.3	6.4	7.9	8.5	7.0	6.5	4.8	4.9	8.4	7.7	4.9	4.8	8.0	9.4	9.2	8.2	9.9	7.1	7.4	8.2	9.7	10.1	11.6	12.0	**8.0**	**12.0**	**4.8**
22	12.1	10.3	9.5	9.9	9.7	8.7	12.6	36.3	38.6	12.0	13.9	11.9	9.8	14.1	10.9	12.8	13.5	12.6	12.2	17.3	22.5	16.0	15.9	20.5	**15.2**	**38.6**	**8.7**
23	16.7	23.1	28.2	22.9	23.5	30.4	58.6	50.4	54.7	48.8	51.4	15.0	21.0	23.1	30.0	27.8	45.5	50.1	59.7	26.5	24.6	26.4	20.3	19.5	**33.3**	**59.7**	**15.0**
24	16.5	16.3	19.5	18.6	19.4	37.7	35.2	39.2	35.5	44.5	28.9	36.2	29.5	23.5	28.5	27.7	36.7	22.4	13.6	14.0	13.8	11.8	11.6	8.4	**24.5**	**44.5**	**8.4**
25	7.4	12.0	10.0	10.7	10.9	9.5	18.4	19.0	20.9	19.0	17.4	17.0	13.0	13.7	21.4	31.8	26.0	26.1	21.6	24.3	34.1	36.8	40.2	36.8	**20.8**	**40.2**	**7.4**
26	44.6	61.6	70.0	55.1	61.5	59.1	62.1	52.1	31.4	21.7	32.2	45.3	27.3	10.8	8.3	8.7	8.2	8.6	13.1	14.1	29.4	14.9	27.4	33.1	**33.4**	**70.0**	**8.2**
27	18.0	22.2	26.5	14.4	24.8	29.6	16.3	25.5	36.1	26.8	40.6	45.0	43.1	39.4	25.9	18.8	17.8	21.3	24.5	39.4	34.4	32.6	31.7	30.1	**28.5**	**45.0**	**14.4**
28	31.8	38.0	45.1	44.7	49.7	34.1	33.1	31.6	44.9	51.8	41.9	45.5	51.1	41.0	27.3	26.5	28.1	31.5	28.8	26.7	30.2	28.3	27.8	26.7	**36.1**	**51.8**	**26.5**
29	29.2	26.6	27.4	29.3	32.7	33.1	50.0	40.0	33.6	63.0	75.3	49.2	45.8	37.3	31.2	32.0	32.1	31.3	28.4	24.3	26.6	27.6	32.9	29.0	**36.2**	**75.3**	**24.3**
30	30.5	27.7	27.6	34.5	32.6	41.1	38.5	41.0	44.4	35.7	35.0	33.9	32.7	29.3	28.8	27.2	33.9	33.3	27.9	32.1	30.5	57.7	8.4	15.3	**32.5**	**57.7**	**8.4**
MEAN	**21.6**	**22.1**	**22.9**	**20.6**	**20.9**	**23.9**	**31.8**	**35.6**	**31.1**	**27.9**	**25.8**	**23.7**	**21.4**	**19.8**	**20.8**	**21.3**	**22.2**	**22.1**	**20.2**	**18.9**	**20.0**	**21.1**	**22.0**	**24.1**	**23.4**		
MAX	**65.5**	**64.2**	**70.0**	**61.5**	**61.5**	**59.1**	**157.3**	**121.5**	**64.0**	**141.7**	**75.3**	**68.6**	**51.1**	**49.4**	**63.3**	**66.5**	**84.4**	**66.3**	**61.8**	**45.4**	**48.9**	**63.0**	**66.2**	**69.1**		**157.3**	
MIN	**1.7**	**2.1**	**1.6**	**1.8**	**2.1**	**2.3**	**2.6**	**2.6**	**6.1**	**4.0**	**3.5**	**3.2**	**2.7**	**2.4**	**2.1**	**2.8**	**2.2**	**1.4**	**2.0**	**2.0**	**1.4**	**2.8**	**2.0**	**2.1**			**1.4**

POSSIBLE NUMBER OF OBSERVATIONS = 720 ACTUAL NUMBER OF OBSERVATIONS = 720 DATA RECOVERY RATE = 100.0% DATA CAPTURE RATE = 100.0%

MONTHLY MEAN = 23.4 µg/m3

MAXIMUM PM10 = 157.3 µg/m3 DATE OF OCCURRENCE = 4/18 at 700 MAXIMUM DAILY MEAN = 46.6 µg/m3 DATE OF OCCURRENCE = 4/11

SECOND MAXIMUM PM10 = 141.7 µg/m3 DATE OF OCCURRENCE = 4/10 at 1000 SECOND MAXIMUM DAILY MEAN = 43.7 µg/m3 DATE OF OCCURRENCE = 4/10

MINIMUM PM10 = 1.4 µg/m3 DATE OF OCCURRENCE = 4/3 at 1800 MINUMUM DAILY MEAN = 5.8 µg/m3 DATE OF OCCURRENCE = 4/7

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

Draft

CSX AQ5A Modulair

HOURLY AVERAGES of PM10 in µg/m3 for MAY, 2024

Hr Beg Hr End Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	20.3	11.0	17.4	16.9	16.7	15.2	17.3	27.0	22.1	16.1	14.2	16.1	15.5	15.7	16.1	15.3	13.9	13.5	13.3	13.3	23.0	19.9	16.9	17.1	**16.8**	**27.0**	**11.0**
2	17.9	17.8	18.1	19.1	18.6	19.7	30.9	24.9	40.8	43.2	34.3	34.5	35.1	19.6	20.7	15.6	17.7	14.8	18.0	21.1	27.1	28.2	31.0	33.1	**25.1**	**43.2**	**14.8**
3	39.5	36.6	25.4	21.3	17.0	14.8	16.8	16.7	14.6	13.3	15.1	21.3	25.0	31.2	32.9	28.6	26.9	24.3	22.7	25.4	35.7	27.4	19.6	23.1	**24.0**	**39.5**	**13.3**
4	25.8	32.2	26.7	17.2	12.4	11.9	21.6	23.8	22.1	11.7	13.1	14.0	19.2	24.0	7.5	6.7	8.0	12.8	20.2	21.3	23.6	33.6	53.4	57.5	**21.7**	**57.5**	**6.7**
5	39.5	37.4	44.6	74.2	39.8	21.5	13.4	8.0	11.8	11.1	10.3	14.4	12.9	21.3	13.6	21.2	24.6	33.3	31.2	30.6	57.9	54.0	44.1	52.2	**30.1**	**74.2**	**8.0**
6	53.3	---	---	---	---	---	---	---	---	---	---	27.9	29.5	27.0	26.1	29.8	25.4	22.0	27.9	26.0	31.0	28.5	32.7	36.4	**---**	**---**	**---**
7	37.5	25.5	28.3	31.2	34.0	32.7	29.9	26.2	28.8	43.7	31.4	32.3	38.3	29.2	28.2	26.1	30.8	39.1	38.2	36.1	29.8	22.6	20.9	17.1	**30.7**	**43.7**	**17.1**
8	15.6	16.0	18.4	20.0	21.5	22.6	22.5	31.6	27.8	32.8	28.4	25.3	22.3	19.9	17.5	21.5	22.2	22.8	19.8	22.1	20.3	23.8	21.7	20.4	**22.4**	**32.8**	**15.6**
9	22.4	22.5	21.5	22.5	23.2	27.0	40.3	47.0	26.6	20.8	22.8	20.4	19.6	17.7	25.6	25.1	21.2	15.9	17.0	18.3	22.0	22.0	24.5	19.9	**23.6**	**47.0**	**15.9**
10	31.3	36.2	24.6	27.4	28.5	31.6	26.7	33.6	34.3	30.6	19.8	18.6	8.9	10.8	6.4	6.4	7.3	7.9	9.7	8.2	6.3	6.4	9.8	13.3	**18.5**	**36.2**	**6.3**
11	16.6	19.2	18.8	22.3	20.9	22.7	28.4	21.7	10.2	9.0	8.3	6.6	4.2	5.5	5.9	5.7	6.8	12.5	6.0	7.4	9.6	11.1	28.7	28.6	**14.0**	**28.7**	**4.2**
12	27.4	24.2	15.4	21.2	19.2	18.8	14.6	15.2	15.0	10.2	8.7	7.5	13.9	11.0	11.2	13.4	12.6	7.6	11.0	8.6	7.6	9.8	16.6	34.8	**14.8**	**34.8**	**7.5**
13	33.4	23.7	25.4	18.9	16.8	29.8	24.7	23.9	21.2	17.9	14.4	15.3	15.9	14.4	16.2	21.5	23.3	21.9	22.0	15.8	23.5	25.9	26.5	21.6	**21.4**	**33.4**	**14.4**
14	23.4	28.4	18.5	23.2	34.4	27.6	40.9	36.3	32.0	27.0	21.9	21.5	23.2	30.8	25.5	27.7	21.0	30.4	19.1	31.6	31.4	81.7	37.8	36.7	**30.5**	**81.7**	**18.5**
15	24.8	22.0	13.0	14.9	17.5	16.0	15.8	11.6	8.5	8.4	9.5	7.4	7.8	8.4	18.1	18.4	16.0	15.7	18.5	23.7	16.4	16.5	18.4	20.8	**15.3**	**24.8**	**7.4**
16	19.1	20.3	23.2	23.2	18.8	21.8	27.9	33.6	17.8	15.4	15.4	16.8	16.1	16.5	21.9	21.6	20.5	12.7	13.4	13.9	12.3	12.2	10.1	7.1	**18.0**	**33.6**	**7.1**
17	9.1	9.0	7.6	8.0	10.0	14.3	14.9	14.4	17.9	14.1	13.5	10.5	9.8	11.8	20.1	17.6	13.0	12.0	9.2	14.8	12.1	14.1	13.8	14.7	**12.8**	**20.1**	**7.6**
18	13.5	13.0	12.8	16.4	19.0	12.5	15.5	15.2	23.3	20.8	23.8	20.4	26.0	51.5	29.4	34.1	51.7	31.1	37.9	38.0	30.7	33.5	33.7	32.1	**26.5**	**51.7**	**12.5**
19	37.9	37.7	51.9	39.3	48.4	52.4	37.2	22.3	23.1	25.6	30.8	28.9	25.9	26.6	28.3	23.3	25.7	30.1	24.5	22.9	30.6	29.0	33.6	35.7	**32.2**	**52.4**	**22.3**
20	34.9	19.7	19.6	12.3	13.5	14.0	14.0	13.2	22.5	12.3	10.6	11.7	13.1	17.4	41.0	17.7	15.6	15.2	19.6	26.5	22.2	21.5	24.0	22.8	**19.0**	**41.0**	**10.6**
21	24.6	25.2	38.8	32.1	27.1	28.9	29.5	44.0	36.5	33.6	26.0	27.3	23.9	21.9	26.1	27.2	21.3	18.6	15.7	13.1	23.7	22.5	21.8	18.4	**26.2**	**44.0**	**13.1**
22	19.1	13.0	16.8	16.8	18.6	20.1	20.5	18.4	20.0	22.5	25.0	26.9	16.7	21.7	24.1	33.2	25.5	28.2	29.4	29.1	26.6	22.9	20.6	20.5	**22.3**	**33.2**	**13.0**
23	20.8	25.1	28.1	27.8	28.8	31.8	46.8	52.3	38.1	29.3	51.0	28.9	24.5	24.6	18.2	24.4	28.3	21.2	18.7	22.2	28.9	26.0	27.6	35.9	**29.6**	**52.3**	**18.2**
24	31.4	81.2	64.6	32.5	33.1	34.5	53.0	80.6	57.3	30.8	21.0	22.9	19.7	16.0	15.8	22.8	21.7	22.1	23.9	28.2	37.7	42.0	30.2	28.0	**35.5**	**81.2**	**15.8**
25	29.4	30.8	38.1	37.5	36.5	38.1	32.4	45.1	46.1	50.8	47.4	44.6	35.8	31.0	31.1	30.4	33.6	30.7	27.5	28.2	33.6	30.2	19.8	20.9	**34.6**	**50.8**	**19.8**
26	21.3	27.3	29.5	28.6	27.3	26.8	24.7	29.8	24.8	21.5	18.4	20.6	27.3	24.4	22.6	14.6	17.2	18.4	19.0	30.4	27.7	25.5	34.6	25.9	**24.5**	**34.6**	**14.6**
27	27.3	25.4	20.9	24.6	23.8	24.4	21.8	19.4	21.4	21.1	18.6	24.6	22.3	22.5	28.2	26.0	22.0	26.2	23.7	22.6	37.9	72.6	61.4	57.2	**29.0**	**72.6**	**18.6**
28	57.6	48.8	64.7	44.3	22.5	23.8	20.1	25.9	16.2	14.7	14.1	12.7	12.0	14.0	12.9	14.6	10.8	13.5	13.5	10.9	10.9	11.9	11.3	10.5	**21.3**	**64.7**	**10.5**
29	30.5	99.5	10.7	13.2	15.1	22.6	26.2	24.5	24.4	17.7	12.5	9.7	17.4	23.3	8.6	15.7	22.7	44.3	26.3	23.6	17.1	16.5	15.4	14.1	**23.0**	**99.5**	**8.6**
30	13.4	14.9	14.8	15.8	16.2	14.8	15.8	14.8	15.7	16.3	14.6	14.4	16.7	16.0	15.4	19.5	14.7	12.9	12.8	12.5	12.1	13.7	16.3	19.3	**15.1**	**19.5**	**12.1**
31	17.2	17.6	14.7	15.4	14.8	16.5	19.5	26.0	19.2	23.3	22.7	15.4	15.0	20.0	19.1	15.5	10.9	8.2	10.5	15.1	17.8	37.4	41.0	49.1	**20.1**	**49.1**	**8.2**
MEAN	**27.0**	**28.7**	**25.8**	**24.6**	**23.1**	**23.6**	**25.5**	**27.6**	**24.7**	**22.2**	**20.6**	**20.0**	**19.8**	**20.8**	**20.5**	**20.7**	**20.4**	**20.6**	**20.0**	**21.3**	**24.1**	**27.2**	**26.4**	**27.3**	**23.4**		
MAX	**57.6**	**99.5**	**64.7**	**74.2**	**48.4**	**52.4**	**53.0**	**80.6**	**57.3**	**50.8**	**51.0**	**44.6**	**38.3**	**51.5**	**41.0**	**34.1**	**51.7**	**44.3**	**38.2**	**38.0**	**57.9**	**81.7**	**61.4**	**57.5**		**99.5**	
MIN	**9.1**	**9.0**	**7.6**	**8.0**	**10.0**	**11.9**	**13.4**	**8.0**	**8.5**	**8.4**	**8.3**	**6.6**	**4.2**	**5.5**	**5.9**	**5.7**	**6.8**	**7.6**	**6.0**	**7.4**	**6.3**	**6.4**	**9.8**	**7.1**			**4.2**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 734 DATA RECOVERY RATE = 98.7% DATA CAPTURE RATE = 96.8%

MONTHLY MEAN = 23.4 µg/m3

MAXIMUM PM10 = 99.5 µg/m3 DATE OF OCCURRENCE = 5/29 at 200 MAXIMUM DAILY MEAN = 35.5 µg/m3 DATE OF OCCURRENCE = 5/24

SECOND MAXIMUM PM10 = 81.7 µg/m3 DATE OF OCCURRENCE = 5/14 at 2200 SECOND MAXIMUM DAILY MEAN = 34.6 µg/m3 DATE OF OCCURRENCE = 5/25

MINIMUM PM10 = 4.2 µg/m3 DATE OF OCCURRENCE = 5/11 at 1300 MINUMUM DAILY MEAN = 12.8 µg/m3 DATE OF OCCURRENCE = 5/17

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

Draft

CSX AQ5A Modulair

HOURLY AVERAGES of PM10 in µg/m3 for JUNE, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	33.2	17.5	15.0	18.1	16.0	18.2	20.9	20.9	19.4	18.5	17.7	14.7	9.7	10.4	9.5	12.3	16.3	11.6	14.2	14.6	31.2	27.0	20.7	16.3	**17.7**	**33.2**	**9.5**
2	22.7	17.7	18.3	21.0	21.8	21.3	19.2	26.7	32.7	25.8	26.1	27.4	25.9	27.2	34.8	39.9	43.4	75.0	38.0	24.7	21.2	24.7	25.7	19.8	**28.4**	**75.0**	**17.7**
3	24.2	24.3	25.1	25.4	24.0	21.9	23.6	20.5	25.0	24.0	23.4	20.1	18.7	24.2	32.9	35.3	25.0	16.7	20.9	30.5	28.3	37.6	39.2	28.7	**25.8**	**39.2**	**16.7**
4	36.9	20.2	19.1	20.5	22.5	22.5	50.2	41.0	39.4	35.2	50.5	47.6	29.1	21.7	26.0	34.4	40.5	29.4	29.2	23.2	18.7	18.9	22.9	27.5	**30.3**	**50.5**	**18.7**
5	26.7	53.0	32.4	36.4	37.1	37.5	43.6	47.7	35.1	33.7	46.1	41.3	34.8	33.0	31.0	37.6	37.5	38.6	35.4	35.7	40.5	37.2	34.2	29.7	**37.3**	**53.0**	**26.7**
6	31.1	31.6	34.3	26.5	29.4	29.0	28.2	27.4	25.8	25.0	26.2	39.5	34.7	33.0	32.2	23.5	20.8	17.8	13.2	14.5	19.4	17.3	16.0	20.4	**25.7**	**39.5**	**13.2**
7	20.0	20.5	19.3	19.4	20.4	20.8	21.9	19.4	22.2	34.3	53.6	54.8	52.2	47.0	41.1	32.9	34.2	29.3	33.1	27.1	16.5	29.9	44.8	31.1	**31.1**	**54.8**	**16.5**
8	14.6	14.1	15.4	14.2	14.6	13.5	14.8	13.3	18.0	14.7	10.1	11.4	26.5	21.0	19.5	17.4	19.7	11.4	10.1	12.3	19.7	20.9	28.9	27.5	**16.8**	**28.9**	**10.1**
9	24.3	20.7	21.4	19.9	25.7	23.9	24.9	34.2	30.1	38.2	31.6	27.1	25.2	30.5	17.1	15.4	11.9	8.4	10.4	11.3	11.7	16.2	16.0	19.0	**21.5**	**38.2**	**8.4**
10	18.7	10.6	9.7	12.1	16.2	16.9	23.6	17.8	20.9	25.7	20.9	32.5	21.2	28.1	29.8	27.4	20.7	22.8	19.5	14.6	12.2	14.0	9.9	11.8	**19.1**	**32.5**	**9.7**
11	11.7	7.8	7.4	7.5	10.5	10.1	10.0	15.2	14.5	15.5	14.5	14.0	10.5	18.9	32.4	9.2	12.1	11.5	10.7	13.3	13.9	11.4	14.9	17.1	**13.1**	**32.4**	**7.4**
12	24.0	21.9	22.0	26.7	17.6	17.6	40.6	36.3	31.4	15.2	15.2	16.2	15.1	17.6	15.3	19.8	28.8	21.0	20.2	21.6	19.9	24.7	28.8	26.2	**22.7**	**40.6**	**15.1**
13	29.7	54.0	32.7	28.1	29.5	59.9	74.9	91.6	44.3	34.6	29.1	26.0	32.7	37.5	41.8	44.1	42.0	45.3	39.7	52.7	28.3	26.1	28.4	29.7	**40.9**	**91.6**	**26.0**
14	28.1	37.9	28.4	28.9	28.3	33.6	29.7	36.1	35.4	38.3	33.1	38.7	35.1	34.7	38.5	30.7	27.6	32.3	28.4	28.9	30.2	20.1	25.8	15.1	**31.0**	**38.7**	**15.1**
15	14.2	20.9	19.0	16.2	21.1	18.0	18.9	17.5	15.5	13.8	11.0	11.0	9.9	9.8	10.1	10.1	10.8	11.5	11.4	11.3	13.4	17.5	20.4	22.1	**14.8**	**22.1**	**9.8**
16	25.1	83.6	30.0	32.6	44.6	21.7	22.9	16.0	16.1	14.7	14.1	17.6	16.9	17.8	16.5	12.8	15.3	17.1	24.8	24.1	19.9	20.2	24.9	24.3	**23.9**	**83.6**	**12.8**
17	22.0	20.0	20.2	18.7	18.5	19.2	49.4	37.1	39.9	41.8	39.5	41.1	36.7	39.4	41.8	44.4	37.6	38.4	32.7	29.8	31.3	28.8	31.3	30.0	**32.9**	**49.4**	**18.5**
18	32.7	26.8	24.5	26.6	29.2	37.0	40.2	36.1	29.8	30.8	31.6	27.6	24.7	28.6	34.9	38.4	39.1	33.1	31.7	30.3	31.2	25.7	26.9	23.3	**30.9**	**40.2**	**23.3**
19	23.5	26.1	34.5	38.7	37.7	42.3	46.2	35.1	32.4	25.8	23.6	20.7	19.7	17.5	17.5	12.8	13.3	14.0	12.3	16.0	22.9	24.1	44.5	39.6	**26.7**	**46.2**	**12.3**
20	43.6	42.5	41.6	46.1	55.6	53.2	50.5	48.5	32.4	32.9	31.9	23.9	21.4	18.6	29.8	26.4	25.0	20.7	22.3	20.3	22.3	27.7	35.7	37.7	**33.8**	**55.6**	**18.6**
21	33.4	40.3	38.6	32.8	42.8	40.8	37.4	41.0	34.9	33.8	33.3	39.6	43.8	33.3	44.9	30.1	28.6	32.5	33.4	31.5	45.5	40.0	42.2	37.9	**37.2**	**45.5**	**28.6**
22	39.5	50.1	46.5	40.4	41.5	41.6	43.9	32.5	34.4	36.6	36.9	32.4	33.9	36.6	38.3	39.8	52.2	42.6	41.7	34.3	37.6	42.6	36.2	32.8	**39.4**	**52.2**	**32.4**
23	38.0	43.0	31.7	46.5	43.8	23.9	20.7	39.7	36.2	45.8	45.8	50.1	53.1	38.1	53.9	76.3	69.8	57.2	27.1	30.5	32.1	44.5	34.7	28.1	**42.1**	**76.3**	**20.7**
24	31.0	27.4	22.1	18.3	13.1	12.7	17.2	22.6	30.0	38.6	35.3	36.0	44.2	71.5	33.7	30.8	25.0	24.5	18.6	14.8	16.7	29.7	22.4	20.0	**27.3**	**71.5**	**12.7**
25	23.3	18.7	22.7	21.8	24.2	22.7	37.8	57.1	42.1	33.0	25.4	29.3	21.6	20.9	23.2	26.8	25.7	23.7	27.9	27.9	28.6	29.0	33.0	31.3	**28.2**	**57.1**	**18.7**
26	36.8	29.6	28.9	27.5	32.2	29.3	36.5	36.1	38.5	38.0	35.4	31.8	36.5	35.6	28.9	23.9	18.2	21.1	31.3	30.5	42.8	30.1	26.2	16.4	**30.9**	**42.8**	**16.4**
27	14.7	12.1	12.3	14.1	15.9	16.4	17.1	15.3	17.5	10.8	15.1	16.2	13.0	14.2	13.8	13.5	16.4	16.1	17.7	19.9	20.9	35.5	16.5	18.3	**16.4**	**35.5**	**10.8**
28	12.8	13.4	12.8	12.2	13.4	11.8	9.5	9.2	9.3	10.1	10.5	9.7	11.6	11.8	12.0	14.1	15.1	14.5	18.8	18.4	23.5	23.0	26.2	29.6	**14.7**	**29.6**	**9.2**
29	35.8	49.9	65.0	70.2	51.2	76.4	89.5	59.9	55.0	39.4	31.7	34.5	27.5	25.2	23.7	22.4	22.7	20.1	20.8	24.8	21.5	24.0	27.4	16.1	**38.9**	**89.5**	**16.1**
30	18.4	16.4	28.4	53.5	16.7	15.9	18.8	19.7	21.0	23.4	23.9	21.7	25.0	25.8	19.2	18.4	16.7	31.9	15.3	18.8	15.8	15.4	15.9	10.7	**21.1**	**53.5**	**10.7**
MEAN	**26.4**	**29.1**	**26.0**	**27.4**	**27.2**	**27.7**	**32.8**	**32.4**	**29.3**	**28.3**	**28.1**	**28.5**	**27.0**	**27.7**	**28.1**	**27.4**	**27.1**	**26.3**	**23.7**	**23.6**	**24.6**	**26.1**	**27.4**	**24.6**	**27.4**		
MAX	**43.6**	**83.6**	**65.0**	**70.2**	**55.6**	**76.4**	**89.5**	**91.6**	**55.0**	**45.8**	**53.6**	**54.8**	**53.1**	**71.5**	**53.9**	**76.3**	**69.8**	**75.0**	**41.7**	**52.7**	**45.5**	**44.5**	**44.8**	**39.6**		**91.6**	
MIN	**11.7**	**7.8**	**7.4**	**7.5**	**10.5**	**10.1**	**9.5**	**9.2**	**9.3**	**10.1**	**10.1**	**9.7**	**9.7**	**9.8**	**9.5**	**9.2**	**10.8**	**8.4**	**10.1**	**11.3**	**11.7**	**11.4**	**9.9**	**10.7**			**7.4**

POSSIBLE NUMBER OF OBSERVATIONS = 720 ACTUAL NUMBER OF OBSERVATIONS = 720 DATA RECOVERY RATE = 100.0% DATA CAPTURE RATE = 100.0%

MONTHLY MEAN = 27.4 µg/m3

MAXIMUM PM10 = 91.6 µg/m3 DATE OF OCCURRENCE = 6/13 at 800 MAXIMUM DAILY MEAN = 42.1 µg/m3 DATE OF OCCURRENCE = 6/23

SECOND MAXIMUM PM10 = 89.5 µg/m3 DATE OF OCCURRENCE = 6/29 at 700 SECOND MAXIMUM DAILY MEAN = 40.9 µg/m3 DATE OF OCCURRENCE = 6/13

MINIMUM PM10 = 7.4 µg/m3 DATE OF OCCURRENCE = 6/11 at 300 MINUMUM DAILY MEAN = 13.1 µg/m3 DATE OF OCCURRENCE = 6/11

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

Draft

CSX AQ5A Modulair

HOURLY AVERAGES of PM2.5 in µg/m3 for APRIL, 2024

Hr Beg Hr End Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	15.5	15.8	18.1	18.1	14.6	16.9	16.4	17.6	13.5	8.3	6.1	4.2	2.8	3.4	4.8	6.5	7.6	9.3	11.2	14.2	11.5	9.8	9.6	12.2	**11.1**	**18.1**	**2.8**
2	10.8	13.2	14.4	11.6	8.7	13.0	8.7	9.0	8.9	4.0	2.3	1.6	2.0	3.5	3.4	1.7	1.0	0.8	1.1	1.3	2.2	1.7	1.6	1.2	**5.3**	**14.4**	**0.8**
3	1.5	2.4	2.6	2.8	3.5	3.7	2.6	1.6	1.7	2.4	2.4	0.8	0.6	0.6	0.4	1.6	0.5	0.5	1.3	3.3	2.0	2.4	5.1	2.6	**2.0**	**5.1**	**0.4**
4	2.4	1.8	3.6	4.8	5.4	5.2	7.0	8.9	13.7	13.1	7.7	5.7	5.3	9.2	9.3	4.2	1.0	0.7	0.6	0.6	1.0	1.1	0.9	1.1	**4.7**	**13.7**	**0.6**
5	1.0	0.8	0.9	0.9	1.2	2.3	3.4	3.0	6.5	5.2	3.6	1.6	1.9	2.4	2.6	2.2	3.9	4.0	2.8	2.6	1.5	1.5	1.4	1.5	**2.4**	**6.5**	**0.8**
6	1.7	1.7	1.9	1.5	1.4	1.5	1.4	2.2	3.6	3.9	1.9	1.5	1.3	1.4	1.8	2.1	1.9	1.9	2.2	2.2	2.6	3.8	4.5	4.2	**2.2**	**4.5**	**1.3**
7	4.9	4.6	4.3	4.2	4.6	5.6	3.4	2.4	2.6	2.4	1.7	1.2	1.4	1.4	1.4	1.5	1.4	1.2	1.5	1.8	2.8	4.5	7.6	4.7	**3.0**	**7.6**	**1.2**
8	5.8	7.6	7.7	8.3	7.2	7.3	9.2	10.7	18.5	14.9	11.5	5.5	6.5	6.5	4.3	3.7	3.5	3.3	3.1	3.2	3.7	4.6	5.5	7.5	**7.0**	**18.5**	**3.1**
9	11.9	15.9	13.6	11.7	10.3	11.0	12.0	16.2	20.3	13.7	15.9	18.0	9.9	10.0	9.5	10.0	12.1	17.6	24.2	26.7	26.1	27.8	27.9	29.9	**16.7**	**29.9**	**9.5**
10	31.0	32.5	33.7	39.1	30.5	29.3	30.4	33.2	33.0	43.8	24.9	8.8	9.2	11.1	13.8	19.2	13.6	12.6	12.5	11.7	18.4	11.8	13.7	20.0	**22.4**	**43.8**	**8.8**
11	17.2	17.0	15.8	12.3	14.5	14.1	14.2	12.9	11.4	8.3	7.8	8.5	10.4	12.5	9.5	11.3	12.0	13.9	13.4	13.2	13.5	15.5	17.2	18.6	**13.1**	**18.6**	**7.8**
12	16.1	11.4	10.5	4.3	3.8	3.9	4.9	5.3	1.4	0.5	1.7	2.5	3.4	3.7	3.5	2.7	1.6	1.3	1.2	1.4	1.3	0.6	0.5	0.7	**3.6**	**16.1**	**0.5**
13	1.4	1.4	1.2	0.8	1.4	1.4	1.5	1.6	1.9	2.6	3.2	3.2	3.4	4.0	3.9	3.2	2.9	3.0	2.5	2.0	2.2	2.7	5.4	6.0	**2.6**	**6.0**	**0.8**
14	4.8	5.3	14.5	4.1	5.2	5.3	5.3	5.8	5.0	3.7	3.6	4.8	6.1	8.7	11.8	15.9	18.1	10.2	13.0	9.0	7.5	7.9	10.4	11.7	**8.2**	**18.1**	**3.6**
15	6.1	4.5	6.4	9.9	8.9	6.1	8.7	10.1	7.6	9.7	14.2	12.8	14.4	10.9	8.6	8.3	8.0	8.6	10.6	13.6	15.7	18.9	20.8	20.6	**11.0**	**20.8**	**4.5**
16	9.3	6.8	5.9	5.5	6.5	6.9	7.2	9.6	7.9	5.3	5.5	6.5	5.4	4.9	4.7	5.4	6.5	6.8	5.9	6.0	6.5	7.6	7.9	10.7	**6.7**	**10.7**	**4.7**
17	8.8	7.5	7.4	7.5	6.9	8.5	8.1	8.5	10.4	7.9	9.2	20.2	9.4	9.4	10.2	12.0	13.3	16.9	11.4	12.9	11.8	9.2	10.8	12.8	**10.4**	**20.2**	**6.9**
18	17.9	20.0	20.5	20.2	21.6	22.3	28.7	29.9	28.9	27.3	25.2	25.1	25.6	23.7	20.8	16.4	17.1	13.5	12.4	9.7	11.7	17.1	17.0	15.4	**20.3**	**29.9**	**9.7**
19	13.0	11.2	9.8	6.9	5.4	4.5	3.6	3.8	4.7	5.2	5.0	6.9	9.8	13.0	19.5	13.8	15.4	16.7	12.5	11.2	10.7	12.0	11.2	11.8	**9.8**	**19.5**	**3.6**
20	11.2	10.8	9.8	10.9	12.0	13.2	15.3	19.2	19.5	18.4	15.8	8.6	5.5	4.3	3.6	3.5	4.1	6.9	2.9	3.3	3.4	3.7	4.0	3.5	**8.8**	**19.5**	**2.9**
21	3.4	3.3	3.2	4.0	3.5	3.1	2.7	2.6	3.3	3.1	2.8	3.6	5.2	5.9	6.3	4.9	4.0	4.2	4.2	5.2	5.9	6.8	8.2	7.2	**4.4**	**8.2**	**2.6**
22	6.6	6.0	6.3	5.3	4.2	4.3	4.2	4.6	5.9	5.4	5.2	4.8	5.2	6.1	5.7	5.0	4.9	5.1	4.3	6.4	6.4	7.4	7.3	8.5	**5.6**	**8.5**	**4.2**
23	9.6	9.5	10.5	10.3	9.7	10.2	11.8	15.7	22.1	20.7	18.2	7.4	7.3	7.5	8.2	7.5	7.1	7.7	8.4	6.2	6.5	6.4	6.1	6.7	**10.0**	**22.1**	**6.1**
24	7.5	7.8	9.3	10.4	11.1	12.9	13.7	10.9	10.0	8.1	7.2	5.8	6.7	6.2	6.0	6.2	7.6	5.4	4.8	3.5	4.2	4.2	6.7	3.8	**7.5**	**13.7**	**3.5**
25	4.2	5.2	6.1	6.3	5.8	4.2	3.4	4.0	4.8	5.2	5.6	6.7	6.6	8.2	11.1	19.0	16.4	15.1	11.2	10.3	9.0	7.5	8.1	7.5	**7.9**	**19.0**	**3.4**
26	8.2	10.6	11.4	8.5	8.5	8.3	8.9	9.5	9.3	8.3	6.6	6.9	5.4	3.4	2.7	2.5	2.1	2.2	2.4	2.7	7.3	3.5	5.3	6.4	**6.2**	**11.4**	**2.1**
27	5.0	5.3	6.1	4.2	5.7	6.3	4.9	6.0	4.9	4.6	5.6	6.4	6.7	7.0	6.3	5.2	4.9	5.4	6.0	7.3	5.4	5.1	5.2	5.2	**5.6**	**7.3**	**4.2**
28	5.7	6.3	7.4	8.6	7.3	6.6	6.7	7.2	13.1	19.6	18.9	23.7	18.3	17.0	15.9	16.2	16.9	18.2	19.4	18.3	19.4	19.5	18.3	18.6	**14.4**	**23.7**	**5.7**
29	19.5	17.0	15.5	17.3	19.4	17.2	17.2	17.4	16.3	28.6	35.9	24.3	19.5	19.9	15.9	17.2	17.8	18.0	16.2	16.1	17.0	17.8	18.6	18.3	**19.0**	**35.9**	**15.5**
30	18.4	17.5	17.1	22.2	22.2	20.9	20.0	19.3	17.4	17.4	16.5	16.4	17.2	16.1	15.1	13.2	15.6	14.3	12.6	12.3	13.8	11.4	4.0	4.0	**15.6**	**22.2**	**4.0**
MEAN	**9.3**	**9.4**	**9.9**	**9.4**	**9.0**	**9.2**	**9.5**	**10.3**	**10.9**	**10.7**	**9.7**	**8.5**	**7.7**	**8.1**	**8.0**	**8.1**	**8.1**	**8.2**	**7.9**	**7.9**	**8.4**	**8.5**	**9.0**	**9.4**	**9.0**		
MAX	**31.0**	**32.5**	**33.7**	**39.1**	**30.5**	**29.3**	**30.4**	**33.2**	**33.0**	**43.8**	**35.9**	**25.1**	**25.6**	**23.7**	**20.8**	**19.2**	**18.1**	**18.2**	**24.2**	**26.7**	**26.1**	**27.8**	**27.9**	**29.9**		**43.8**	
MIN	**1.0**	**0.8**	**0.9**	**0.8**	**1.2**	**1.4**	**1.4**	**1.6**	**1.4**	**0.5**	**1.7**	**0.8**	**0.6**	**0.6**	**0.4**	**1.5**	**0.5**	**0.5**	**0.6**	**0.6**	**1.0**	**0.6**	**0.5**	**0.7**			**0.4**

POSSIBLE NUMBER OF OBSERVATIONS = 720 ACTUAL NUMBER OF OBSERVATIONS = 720 DATA RECOVERY RATE = 100.0% DATA CAPTURE RATE = 100.0%

MONTHLY MEAN = 9.0 µg/m3

MAXIMUM PM2.5 = 43.8 µg/m3 DATE OF OCCURRENCE = 4/10 at 1000 MAXIMUM DAILY MEAN = 22.4 µg/m3 DATE OF OCCURRENCE = 4/10

SECOND MAXIMUM PM2.5 = 39.1 µg/m3 DATE OF OCCURRENCE = 4/10 at 400 SECOND MAXIMUM DAILY MEAN = 20.3 µg/m3 DATE OF OCCURRENCE = 4/18

MINIMUM PM2.5 = 0.4 µg/m3 DATE OF OCCURRENCE = 4/3 at 1500 MINUMUM DAILY MEAN = 2.0 µg/m3 DATE OF OCCURRENCE = 4/3

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

Draft

CSX AQ5A Modulair

HOURLY AVERAGES of PM2.5 in µg/m3 for MAY, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	8.0	5.6	6.5	6.9	6.2	6.3	6.7	6.1	6.7	6.7	6.9	5.8	5.9	5.6	6.4	6.0	5.3	5.8	4.8	5.4	9.8	10.0	9.0	9.5	**6.7**	**10.0**	**4.8**
2	11.0	10.3	11.4	11.5	11.6	12.2	13.9	14.6	22.5	25.7	17.8	17.7	13.1	8.4	7.4	7.7	7.7	7.7	8.2	9.6	13.6	16.1	18.7	20.9	**13.3**	**25.7**	**7.4**
3	23.4	19.2	14.2	11.3	7.7	7.1	8.0	9.0	7.5	7.4	7.0	6.2	5.4	7.1	8.2	8.9	7.3	6.8	7.1	7.3	8.2	6.4	5.3	4.8	**8.7**	**23.4**	**4.8**
4	5.4	6.3	6.2	5.7	5.3	5.5	6.0	6.4	6.5	5.1	8.0	6.7	5.8	5.9	2.3	1.3	1.6	1.4	1.1	2.9	4.6	6.3	8.0	8.8	**5.1**	**8.8**	**1.1**
5	7.3	7.0	7.8	11.2	9.4	6.3	3.7	3.2	3.5	4.5	4.2	6.9	6.5	8.7	8.1	10.8	9.8	6.6	7.8	10.4	29.2	26.1	11.9	13.5	**9.3**	**29.2**	**3.2**
6	13.4	14.6	16.2	16.1	15.7	14.1	12.4	13.3	12.2	11.4	12.7	20.2	20.9	21.4	18.7	15.2	13.9	15.1	17.6	20.3	20.7	18.0	17.8	20.7	**16.3**	**21.4**	**11.4**
7	19.0	14.8	16.5	17.7	18.8	18.0	16.2	15.8	17.8	22.0	22.3	25.5	23.2	18.4	20.3	19.2	18.1	20.8	24.6	26.3	19.6	12.2	10.2	8.9	**18.5**	**26.3**	**8.9**
8	8.3	8.4	9.0	10.7	10.7	11.0	12.0	13.7	15.6	19.3	15.2	12.0	8.4	6.7	6.2	6.6	6.2	7.0	7.5	7.6	8.6	8.2	8.5	6.8	**9.7**	**19.3**	**6.2**
9	7.9	8.4	8.9	8.7	9.0	8.9	10.2	7.5	5.3	4.8	5.0	5.3	6.1	5.9	7.0	8.8	6.8	5.1	5.1	6.9	7.2	8.5	7.9	4.6	**7.0**	**10.2**	**4.6**
10	7.1	5.3	3.9	3.7	4.9	5.5	5.9	6.7	7.1	6.6	5.3	4.0	2.0	1.9	1.7	1.5	1.3	1.2	1.8	1.5	1.1	1.6	1.5	2.1	**3.5**	**7.1**	**1.1**
11	2.4	2.9	3.2	3.2	3.2	3.4	3.4	3.5	3.1	3.8	3.9	2.5	2.2	2.3	1.9	2.0	2.2	4.9	2.9	3.2	4.3	5.3	8.8	8.4	**3.6**	**8.8**	**1.9**
12	7.8	7.7	3.9	4.0	4.5	5.7	5.8	7.8	7.4	3.9	4.2	3.2	4.4	5.1	4.5	5.3	4.9	4.1	5.5	4.9	4.6	4.5	7.2	16.7	**5.7**	**16.7**	**3.2**
13	13.9	10.0	10.9	8.1	7.8	13.2	11.8	11.5	10.1	10.2	9.1	8.2	8.3	8.1	7.7	8.3	8.4	8.1	7.9	7.3	8.1	8.0	8.5	7.9	**9.2**	**13.9**	**7.3**
14	8.5	9.3	8.6	9.6	11.8	10.6	12.7	12.9	12.5	12.0	11.6	12.7	10.8	13.0	12.9	16.0	11.8	15.4	10.4	15.3	10.4	37.6	16.2	11.2	**13.0**	**37.6**	**8.5**
15	7.1	7.4	5.2	5.5	6.7	6.7	6.5	5.0	3.7	3.9	4.0	3.1	3.0	3.4	5.4	5.8	6.0	6.0	6.7	7.4	6.5	6.4	7.2	6.5	**5.6**	**7.4**	**3.0**
16	6.2	7.4	9.0	8.6	6.3	6.4	7.4	6.8	5.1	3.8	4.1	4.0	4.0	4.8	4.2	3.6	4.1	4.1	4.1	4.3	3.2	2.7	2.9	3.6	**5.0**	**9.0**	**2.7**
17	4.0	4.0	3.7	3.7	4.1	4.6	3.5	4.2	5.9	5.8	6.0	5.7	5.4	7.1	8.8	9.0	6.2	7.9	4.3	5.9	7.9	7.8	7.7	8.6	**5.9**	**9.0**	**3.5**
18	7.0	7.3	7.6	9.5	9.8	8.9	9.7	9.5	9.7	11.5	11.8	13.1	9.8	13.3	10.5	12.3	14.9	14.0	18.5	20.0	18.0	21.4	22.6	22.5	**13.0**	**22.6**	**7.0**
19	26.5	26.0	22.1	18.4	17.6	19.4	17.5	15.1	16.4	20.6	24.0	23.8	20.7	21.6	23.7	19.9	21.2	24.1	18.7	16.9	22.8	19.2	22.1	22.0	**20.8**	**26.5**	**15.1**
20	21.3	9.2	7.0	4.3	4.2	5.5	6.3	6.1	7.5	5.1	4.8	5.7	7.7	11.8	12.8	9.4	10.7	10.6	11.3	13.3	12.9	13.1	14.3	13.9	**9.5**	**21.3**	**4.2**
21	13.4	15.3	16.5	15.3	13.7	13.7	14.7	20.7	23.2	21.4	19.1	19.0	18.0	13.9	12.1	13.1	10.9	11.0	9.3	8.2	9.6	10.2	10.7	9.3	**14.2**	**23.2**	**8.2**
22	9.0	8.1	9.1	9.1	8.9	9.6	8.3	8.4	10.4	11.1	11.6	10.6	11.2	14.0	16.8	20.9	15.8	13.5	13.1	14.1	14.4	13.2	11.3	10.7	**11.8**	**20.9**	**8.1**
23	11.4	13.8	16.2	17.5	20.9	22.6	26.1	29.2	28.7	15.5	15.4	14.1	14.4	16.9	13.8	14.1	13.1	11.8	13.9	15.6	15.7	14.9	18.6	22.8	**17.3**	**29.2**	**11.4**
24	22.7	30.8	22.5	18.8	18.5	17.8	18.2	22.3	18.0	11.8	10.5	11.1	10.2	8.6	8.0	9.5	10.2	10.8	13.1	14.4	16.8	19.6	18.5	17.2	**15.8**	**30.8**	**8.0**
25	18.8	20.3	24.7	24.3	23.9	23.7	23.8	30.0	37.4	38.4	35.5	33.8	26.0	20.9	18.0	16.6	14.3	13.3	14.8	16.1	17.5	14.1	6.2	8.2	**21.6**	**38.4**	**6.2**
26	10.1	13.5	14.3	13.9	11.8	12.4	11.2	14.2	14.1	14.1	13.5	14.3	15.7	17.4	17.6	11.7	13.4	15.0	13.0	14.6	17.4	18.6	18.8	16.4	**14.4**	**18.8**	**10.1**
27	16.1	15.9	14.5	15.0	14.8	15.2	13.9	12.0	11.3	13.5	13.5	13.4	13.7	11.2	11.8	12.9	12.4	13.6	13.3	9.3	5.9	6.1	4.3	5.0	**12.0**	**16.1**	**4.3**
28	4.5	4.8	5.8	6.2	4.9	5.9	4.7	4.0	3.5	4.1	5.1	4.4	4.1	4.6	4.9	4.9	4.8	5.3	6.1	5.0	5.8	4.9	5.0	4.1	**4.8**	**6.2**	**3.5**
29	6.5	19.5	3.6	5.7	6.2	7.5	8.2	6.6	7.2	5.2	4.5	4.0	5.6	6.4	4.4	6.6	7.7	15.2	9.6	7.0	6.6	6.9	5.0	5.5	**7.1**	**19.5**	**3.6**
30	5.3	3.5	3.1	3.1	2.7	2.6	3.5	4.3	4.8	5.3	5.1	5.1	4.9	5.1	5.0	4.8	4.9	5.0	5.1	4.9	4.5	5.8	6.3	7.0	**4.6**	**7.0**	**2.6**
31	7.0	6.7	5.7	5.0	5.3	4.8	4.1	4.9	5.0	7.2	4.8	5.1	4.9	5.3	5.1	4.4	4.3	4.1	4.0	4.7	5.9	12.4	16.6	17.8	**6.4**	**17.8**	**4.0**
MEAN	**11.0**	**11.1**	**10.3**	**10.1**	**9.9**	**10.2**	**10.2**	**10.8**	**11.3**	**11.0**	**10.5**	**10.6**	**9.8**	**9.8**	**9.6**	**9.6**	**9.0**	**9.5**	**9.4**	**10.0**	**11.0**	**11.8**	**10.9**	**11.2**	**10.4**		
MAX	**26.5**	**30.8**	**24.7**	**24.3**	**23.9**	**23.7**	**26.1**	**30.0**	**37.4**	**38.4**	**35.5**	**33.8**	**26.0**	**21.6**	**23.7**	**20.9**	**21.2**	**24.1**	**24.6**	**26.3**	**29.2**	**37.6**	**22.6**	**22.8**		**38.4**	
MIN	**2.4**	**2.9**	**3.1**	**3.1**	**2.7**	**2.6**	**3.4**	**3.2**	**3.1**	**3.8**	**3.9**	**2.5**	**2.0**	**1.9**	**1.7**	**1.3**	**1.3**	**1.2**	**1.1**	**1.5**	**1.1**	**1.6**	**1.5**	**2.1**			**1.1**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 744 DATA RECOVERY RATE = 100.0% DATA CAPTURE RATE = 100.0%

MONTHLY MEAN = 10.4 µg/m3

MAXIMUM PM2.5 = 38.4 µg/m3 DATE OF OCCURRENCE = 5/25 at 1000 MAXIMUM DAILY MEAN = 21.6 µg/m3 DATE OF OCCURRENCE = 5/25

SECOND MAXIMUM PM2.5 = 37.6 µg/m3 DATE OF OCCURRENCE = 5/14 at 2200 SECOND MAXIMUM DAILY MEAN = 20.8 µg/m3 DATE OF OCCURRENCE = 5/19

MINIMUM PM2.5 = 1.1 µg/m3 DATE OF OCCURRENCE = 5/4 at 1900 MINUMUM DAILY MEAN = 3.5 µg/m3 DATE OF OCCURRENCE = 5/10

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

Draft

CSX AQ5A Modulair

HOURLY AVERAGES of PM2.5 in µg/m3 for JUNE, 2024

Hr Beg Hr End Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	16.5	5.6	6.6	7.8	7.8	8.6	8.7	8.7	7.6	7.8	7.5	5.5	4.7	4.6	4.7	4.9	5.8	5.6	7.0	7.3	10.4	10.3	10.9	9.8	**7.6**	**16.5**	**4.6**
2	10.3	10.0	10.1	11.8	11.2	11.2	11.6	14.3	16.6	15.3	16.2	17.8	16.5	14.9	17.1	20.4	20.2	24.2	15.1	12.7	14.5	17.3	16.8	13.7	**14.9**	**24.2**	**10.0**
3	17.2	16.4	17.2	18.0	16.8	15.1	14.6	13.3	15.5	14.1	17.2	15.8	14.0	14.2	18.0	19.6	16.1	11.5	15.2	17.9	18.5	20.1	23.1	18.7	**16.5**	**23.1**	**11.5**
4	19.2	13.5	11.7	11.6	12.5	12.7	14.8	17.7	24.2	27.8	30.1	24.6	16.4	13.0	16.0	19.1	18.7	18.3	18.8	17.2	14.7	15.2	15.2	17.8	**17.5**	**30.1**	**11.6**
5	17.7	18.7	19.2	18.9	18.9	20.4	23.1	24.2	22.6	21.6	24.0	22.6	24.1	25.7	24.0	22.0	18.1	18.0	17.8	18.2	18.0	17.0	17.6	15.7	**20.3**	**25.7**	**15.7**
6	15.5	15.9	16.7	15.5	15.7	15.0	15.7	17.1	16.7	16.8	17.5	18.6	18.2	18.5	16.9	15.6	10.0	10.3	7.6	9.4	11.8	12.2	8.5	11.0	**14.4**	**18.6**	**7.6**
7	10.9	8.8	7.3	7.4	6.4	7.5	6.2	5.3	5.8	4.8	5.5	7.2	5.9	4.8	6.2	3.8	4.6	4.7	4.6	4.6	3.0	3.0	3.2	3.3	**5.6**	**10.9**	**3.0**
8	4.8	5.0	6.0	3.7	2.8	2.7	3.0	3.0	3.7	3.2	2.8	2.6	5.2	4.8	3.4	2.8	3.6	3.1	2.8	3.3	5.9	8.0	14.3	12.4	**4.7**	**14.3**	**2.6**
9	13.2	11.3	10.2	9.2	10.1	11.0	9.2	10.3	8.5	7.6	7.2	10.1	9.1	5.9	3.5	3.4	2.5	3.3	3.5	3.2	4.1	7.1	6.7	8.9	**7.4**	**13.2**	**2.5**
10	7.8	4.8	3.7	4.1	4.2	4.5	5.2	3.5	4.7	5.1	4.8	5.7	4.9	5.9	6.7	5.8	5.3	5.3	5.4	5.2	4.1	3.9	3.9	4.0	**4.9**	**7.8**	**3.5**
11	3.6	3.8	3.6	3.8	4.5	4.3	4.2	4.1	4.1	5.3	5.0	3.8	3.5	4.4	5.4	4.1	4.6	4.4	5.4	6.5	6.6	6.2	8.0	9.4	**4.9**	**9.4**	**3.5**
12	11.4	8.1	10.1	8.7	7.9	8.2	9.8	12.2	10.0	6.2	7.6	8.9	8.7	8.9	10.5	11.2	11.4	12.0	12.5	13.5	13.4	14.2	15.1	14.9	**10.6**	**15.1**	**6.2**
13	17.7	19.1	16.1	16.1	17.4	20.0	22.2	22.6	20.6	22.1	19.9	17.6	20.6	24.2	25.2	24.7	23.7	20.7	17.4	14.7	13.5	12.0	12.5	13.6	**18.9**	**25.2**	**12.0**
14	13.2	17.2	18.4	18.8	18.8	19.1	20.2	23.9	25.5	28.2	25.8	28.5	27.3	27.3	27.1	21.0	19.9	22.7	18.5	17.5	18.0	9.5	8.8	7.3	**20.1**	**28.5**	**7.3**
15	6.9	7.6	7.1	6.7	10.1	8.8	9.2	8.3	7.5	7.3	6.5	6.1	6.3	5.6	6.2	6.2	6.7	7.0	7.0	6.8	8.3	9.7	11.5	12.2	**7.7**	**12.2**	**5.6**
16	12.7	18.6	16.6	15.3	16.4	13.7	13.1	12.4	11.7	10.6	10.6	11.9	11.7	12.4	10.7	9.4	10.2	11.1	13.3	15.6	13.1	12.1	13.0	11.5	**12.8**	**18.6**	**9.4**
17	11.1	9.9	9.9	10.5	10.4	11.1	12.9	12.6	12.0	12.8	15.0	18.3	20.5	24.0	27.2	27.3	22.6	19.1	16.4	14.0	12.0	10.1	9.1	8.7	**14.8**	**27.3**	**8.7**
18	9.6	9.6	9.0	8.9	10.2	10.3	10.1	10.4	12.0	14.1	17.3	15.0	13.1	15.8	21.4	24.0	24.6	24.0	23.0	19.2	17.0	11.8	8.2	7.3	**14.4**	**24.6**	**7.3**
19	7.1	7.6	8.1	7.8	7.9	9.9	8.6	9.0	9.1	9.3	9.5	8.0	8.6	8.3	7.6	6.7	7.5	7.9	6.6	6.9	7.7	8.7	11.5	9.5	**8.3**	**11.5**	**6.6**
20	9.1	10.5	10.5	10.2	11.4	11.9	11.3	11.7	10.0	10.4	13.2	10.3	9.2	7.8	10.3	14.0	14.7	12.2	11.8	10.0	10.0	10.3	11.1	10.2	**10.9**	**14.7**	**7.8**
21	9.2	10.1	11.0	11.1	11.2	10.4	10.3	12.8	13.4	14.1	15.4	15.8	14.4	14.9	15.2	15.7	16.1	18.4	18.3	16.5	16.0	15.7	17.7	15.2	**14.1**	**18.4**	**9.2**
22	17.1	16.4	16.3	15.9	16.7	16.5	16.4	17.8	21.3	24.8	28.0	23.8	23.7	25.5	29.6	30.0	33.3	30.0	28.6	25.2	24.3	22.8	21.5	21.7	**22.8**	**33.3**	**15.9**
23	21.5	25.6	20.7	21.9	20.2	13.7	12.0	13.5	13.1	16.6	19.1	19.9	23.9	18.0	23.4	29.0	27.4	24.3	13.4	12.5	19.1	19.8	18.6	17.4	**19.3**	**29.0**	**12.0**
24	18.3	18.5	15.0	10.5	7.6	6.9	7.8	6.3	7.0	9.0	8.2	5.7	5.6	8.6	7.2	8.6	8.3	8.3	8.6	8.1	8.2	13.0	11.8	11.5	**9.5**	**18.5**	**5.6**
25	13.2	9.1	11.9	12.4	11.1	11.4	14.9	16.7	15.1	13.9	12.0	17.7	12.8	11.4	12.8	13.9	14.3	14.2	17.1	16.7	16.7	15.4	14.0	15.4	**13.9**	**17.7**	**9.1**
26	16.4	16.6	16.9	17.7	17.9	17.5	18.2	19.3	16.7	17.7	14.2	19.2	22.4	20.4	12.5	10.3	8.0	8.4	19.3	19.9	17.1	13.7	11.3	6.6	**15.7**	**22.4**	**6.6**
27	5.3	4.9	3.8	4.2	4.2	5.6	5.2	5.9	5.4	3.8	5.0	6.4	6.9	6.6	6.4	7.3	8.3	10.4	11.2	10.9	12.7	15.9	10.2	9.3	**7.3**	**15.9**	**3.8**
28	8.0	7.8	6.9	6.7	6.8	6.6	6.1	5.0	4.5	4.9	5.1	5.1	6.1	6.3	6.1	5.9	6.2	6.6	7.5	7.5	6.4	5.9	5.5	5.5	**6.2**	**8.0**	**4.5**
29	5.3	9.1	15.5	23.9	6.9	20.5	32.6	11.7	13.3	12.4	12.7	13.3	12.9	13.5	13.8	14.2	14.1	13.0	11.8	11.9	10.8	10.7	12.1	7.8	**13.4**	**32.6**	**5.3**
30	7.0	7.1	6.1	13.2	10.8	10.4	10.9	12.5	13.8	16.9	19.6	19.0	22.5	22.8	17.5	15.8	12.7	14.4	8.3	8.9	9.3	9.9	7.0	3.7	**12.5**	**22.8**	**3.7**
MEAN	**11.9**	**11.6**	**11.4**	**11.7**	**11.2**	**11.5**	**12.3**	**12.2**	**12.4**	**12.8**	**13.4**	**13.5**	**13.3**	**13.3**	**13.8**	**13.9**	**13.3**	**13.1**	**12.5**	**12.1**	**12.2**	**12.1**	**12.0**	**11.1**	**12.4**		
MAX	**21.5**	**25.6**	**20.7**	**23.9**	**20.2**	**20.5**	**32.6**	**24.2**	**25.5**	**28.2**	**30.1**	**28.5**	**27.3**	**27.3**	**29.6**	**30.0**	**33.3**	**30.0**	**28.6**	**25.2**	**24.3**	**22.8**	**23.1**	**21.7**		**33.3**	
MIN	**3.6**	**3.8**	**3.6**	**3.7**	**2.8**	**2.7**	**3.0**	**3.0**	**3.7**	**3.2**	**2.8**	**2.6**	**3.5**	**4.4**	**3.4**	**2.8**	**2.5**	**3.1**	**2.8**	**3.2**	**3.0**	**3.0**	**3.2**	**3.3**			**2.5**

POSSIBLE NUMBER OF OBSERVATIONS = 720 ACTUAL NUMBER OF OBSERVATIONS = 720 DATA RECOVERY RATE = 100.0% DATA CAPTURE RATE = 100.0%

MONTHLY MEAN = 12.4 µg/m3

MAXIMUM PM2.5 = 33.3 µg/m3 DATE OF OCCURRENCE = 6/22 at 1700 MAXIMUM DAILY MEAN = 22.8 µg/m3 DATE OF OCCURRENCE = 6/22

SECOND MAXIMUM PM2.5 = 32.6 µg/m3 DATE OF OCCURRENCE = 6/29 at 700 SECOND MAXIMUM DAILY MEAN = 20.3 µg/m3 DATE OF OCCURRENCE = 6/5

MINIMUM PM2.5 = 2.5 µg/m3 DATE OF OCCURRENCE = 6/9 at 1700 MINUMUM DAILY MEAN = 4.7 µg/m3 DATE OF OCCURRENCE = 6/8

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

Draft

CSX AQ5B Modulair

HOURLY AVERAGES of PM10 in µg/m3 for APRIL, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
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MIN	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---			---

POSSIBLE NUMBER OF OBSERVATIONS = 720 ACTUAL NUMBER OF OBSERVATIONS = 0 DATA RECOVERY RATE = 0.0% DATA CAPTURE RATE = 0.0%

MONTHLY MEAN = --- µg/m3

MAXIMUM PM10 = --- µg/m3 DATE OF OCCURRENCE = --- MAXIMUM DAILY MEAN = --- µg/m3 DATE OF OCCURRENCE = ---

SECOND MAXIMUM PM10 = --- µg/m3 DATE OF OCCURRENCE = --- SECOND MAXIMUM DAILY MEAN = --- µg/m3 DATE OF OCCURRENCE = ---

MINIMUM PM10 = --- µg/m3 DATE OF OCCURRENCE = --- MINUMUM DAILY MEAN = --- µg/m3 DATE OF OCCURRENCE = ---

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

Draft

CSX AQ5B Modulair

HOURLY AVERAGES of PM10 in µg/m3 for MAY, 2024

Hr Beg Hr End Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
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POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 0 DATA RECOVERY RATE = 0.0% DATA CAPTURE RATE = 0.0%

MONTHLY MEAN = --- µg/m3

MAXIMUM PM10 = --- µg/m3 DATE OF OCCURRENCE = --- MAXIMUM DAILY MEAN = --- µg/m3 DATE OF OCCURRENCE = ---

SECOND MAXIMUM PM10 = --- µg/m3 DATE OF OCCURRENCE = --- SECOND MAXIMUM DAILY MEAN = --- µg/m3 DATE OF OCCURRENCE = ---

MINIMUM PM10 = --- µg/m3 DATE OF OCCURRENCE = --- MINUMUM DAILY MEAN = --- µg/m3 DATE OF OCCURRENCE = ---

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

Draft

CSX AQ5B Modulair

HOURLY AVERAGES of PM10 in µg/m3 for JUNE, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
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27	---	---	---	---	---	---	---	---	---	10.0	15.2	18.8	13.2	15.7	16.7	13.9	15.3	16.5	18.0	20.4	22.4	42.2	17.1	19.4	---	---	---
28	13.3	14.9	10.8	11.4	13.1	13.5	9.9	9.3	10.0	10.8	11.7	10.2	13.8	12.8	12.5	14.9	14.1	15.5	20.2	19.6	27.7	26.7	28.3	33.4	**15.8**	**33.4**	**9.3**
29	38.7	62.3	69.7	77.8	62.9	83.5	90.9	71.3	64.8	45.4	34.3	37.6	32.0	29.3	26.4	23.4	25.0	22.6	22.6	30.1	23.3	23.7	30.0	19.6	**43.6**	**90.9**	**19.6**
30	18.4	16.5	30.2	55.4	16.6	13.8	16.9	18.3	19.1	21.1	22.1	20.0	25.1	25.3	19.5	19.1	16.5	37.0	16.9	19.4	17.5	16.9	18.5	11.9	**21.3**	**55.4**	**11.9**
MEAN	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**25.4**		
MAX	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---		**90.9**	
MIN	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---			**9.3**

POSSIBLE NUMBER OF OBSERVATIONS = 720 ACTUAL NUMBER OF OBSERVATIONS = 87 DATA RECOVERY RATE = 12.1% DATA CAPTURE RATE = 10.0%

MONTHLY MEAN = 25.4 µg/m3

MAXIMUM PM10 = 90.9 µg/m3 DATE OF OCCURRENCE = 6/29 at 700 MAXIMUM DAILY MEAN = 43.6 µg/m3 DATE OF OCCURRENCE = 6/29

SECOND MAXIMUM PM10 = 83.5 µg/m3 DATE OF OCCURRENCE = 6/29 at 600 SECOND MAXIMUM DAILY MEAN = 21.3 µg/m3 DATE OF OCCURRENCE = 6/30

MINIMUM PM10 = 9.3 µg/m3 DATE OF OCCURRENCE = 6/28 at 800 MINUMUM DAILY MEAN = 15.8 µg/m3 DATE OF OCCURRENCE = 6/28

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

Draft

CSX AQ5B Modulair

HOURLY AVERAGES of PM2.5 in µg/m3 for APRIL, 2024

Hr Beg Hr End Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
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MEAN	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---		
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MIN	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---			---

POSSIBLE NUMBER OF OBSERVATIONS = 720 ACTUAL NUMBER OF OBSERVATIONS = 0 DATA RECOVERY RATE = 0.0% DATA CAPTURE RATE = 0.0%

MONTHLY MEAN = --- µg/m3

MAXIMUM PM2.5 = --- µg/m3 DATE OF OCCURRENCE = --- MAXIMUM DAILY MEAN = --- µg/m3 DATE OF OCCURRENCE = ---

SECOND MAXIMUM PM2.5 = --- µg/m3 DATE OF OCCURRENCE = --- SECOND MAXIMUM DAILY MEAN = --- µg/m3 DATE OF OCCURRENCE = ---

MINIMUM PM2.5 = --- µg/m3 DATE OF OCCURRENCE = --- MINUMUM DAILY MEAN = --- µg/m3 DATE OF OCCURRENCE = ---

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

Draft

CSX AQ5B Modulair

HOURLY AVERAGES of PM2.5 in µg/m3 for MAY, 2024

Hr Beg Hr End Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
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31	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MEAN	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---		
MAX	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---		---	
MIN	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---			---

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 0 DATA RECOVERY RATE = 0.0% DATA CAPTURE RATE = 0.0%

MONTHLY MEAN = --- µg/m3

MAXIMUM PM2.5 = --- µg/m3 DATE OF OCCURRENCE = --- MAXIMUM DAILY MEAN = --- µg/m3 DATE OF OCCURRENCE = ---

SECOND MAXIMUM PM2.5 = --- µg/m3 DATE OF OCCURRENCE = --- SECOND MAXIMUM DAILY MEAN = --- µg/m3 DATE OF OCCURRENCE = ---

MINIMUM PM2.5 = --- µg/m3 DATE OF OCCURRENCE = --- MINUMUM DAILY MEAN = --- µg/m3 DATE OF OCCURRENCE = ---

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

Draft

CSX AQ5B Modulair

HOURLY AVERAGES of PM2.5 in µg/m3 for JUNE, 2024

Hr Beg Hr End Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
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27	---	---	---	---	---	---	---	---	---	3.9	5.0	6.1	6.8	6.5	6.2	7.4	7.9	9.7	10.6	10.8	11.9	15.1	9.9	8.6	---	---	---
28	7.3	7.1	6.4	6.1	6.2	6.1	5.6	4.7	4.3	4.6	4.8	4.9	5.8	6.1	5.8	5.5	5.8	6.2	6.8	6.7	5.9	5.3	4.9	4.9	**5.7**	**7.3**	**4.3**
29	4.9	8.8	14.9	20.7	6.5	18.1	26.6	10.4	12.3	11.4	11.8	12.3	12.0	12.7	12.9	13.1	13.3	11.9	11.2	11.2	10.0	9.7	11.0	7.2	**12.2**	**26.6**	**4.9**
30	6.2	5.8	5.2	10.1	8.0	7.6	8.0	9.4	10.8	13.7	16.7	17.0	20.7	20.7	16.2	15.5	12.2	13.9	7.7	8.2	8.7	9.7	6.7	3.5	**10.9**	**20.7**	**3.5**
MEAN	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**9.4**		
MAX	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---		**26.6**	
MIN	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---			**3.5**

POSSIBLE NUMBER OF OBSERVATIONS = 720 ACTUAL NUMBER OF OBSERVATIONS = 87 DATA RECOVERY RATE = 12.1% DATA CAPTURE RATE = 10.0%

MONTHLY MEAN = 9.4 µg/m3

MAXIMUM PM2.5 = 26.6 µg/m3 DATE OF OCCURRENCE = 6/29 at 700 MAXIMUM DAILY MEAN = 12.2 µg/m3 DATE OF OCCURRENCE = 6/29

SECOND MAXIMUM PM2.5 = 20.7 µg/m3 DATE OF OCCURRENCE = 6/29 at 400 SECOND MAXIMUM DAILY MEAN = 10.9 µg/m3 DATE OF OCCURRENCE = 6/30

MINIMUM PM2.5 = 3.5 µg/m3 DATE OF OCCURRENCE = 6/30 at 2400 MINUMUM DAILY MEAN = 5.7 µg/m3 DATE OF OCCURRENCE = 6/28

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

Draft

CSX AQ5C Modulair

HOURLY AVERAGES of PM10 in µg/m3 for APRIL, 2024

Hr Beg Hr End Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	17.2	18.0	20.4	21.1	15.8	33.7	36.1	36.7	17.6	10.5	6.3	5.5	3.5	3.9	5.3	6.8	6.8	8.6	11.8	15.8	13.0	10.4	14.2	35.6	**15.6**	**36.7**	**3.5**
2	26.0	15.8	18.7	12.6	8.7	20.2	11.0	12.4	25.7	8.0	3.1	3.3	7.4	4.6	4.5	5.3	1.8	1.3	1.7	2.0	2.7	2.8	2.2	1.6	**8.5**	**26.0**	**1.3**
3	2.1	4.1	4.5	4.3	6.5	7.6	4.0	1.8	5.4	8.5	11.1	1.8	2.2	1.6	0.8	9.5	1.7	1.1	1.7	3.6	2.8	4.2	13.3	3.0	**4.5**	**13.3**	**0.8**
4	2.7	2.2	3.6	3.5	4.3	4.5	8.7	7.5	11.6	12.2	8.0	6.5	6.0	12.2	15.1	6.1	2.2	1.7	1.9	0.9	1.1	1.8	1.2	1.4	**5.3**	**15.1**	**0.9**
5	1.8	0.9	0.9	1.1	2.4	4.0	5.5	4.4	8.1	7.9	6.1	2.9	3.4	8.0	9.9	13.7	15.6	8.3	6.9	5.4	10.2	6.4	2.4	2.6	**5.8**	**15.6**	**0.9**
6	3.5	2.4	3.1	2.0	3.1	2.6	2.8	5.7	28.5	30.6	5.3	3.2	3.0	3.6	3.9	3.5	4.3	3.4	3.6	3.3	4.3	4.5	7.8	7.0	**6.0**	**30.6**	**2.0**
7	5.7	5.7	5.9	5.0	4.8	6.9	5.4	4.5	5.5	3.7	3.6	2.5	3.0	2.6	2.7	2.3	2.1	2.2	2.5	4.8	5.3	7.4	9.3	5.5	**4.5**	**9.3**	**2.1**
8	16.5	11.8	10.3	11.2	9.5	17.1	23.7	22.5	32.1	20.1	18.6	17.1	11.5	16.3	8.4	10.8	7.9	7.4	5.5	6.0	7.1	10.9	13.1	19.3	**13.9**	**32.1**	**5.5**
9	21.6	22.9	19.6	15.5	16.6	16.9	26.9	45.4	41.5	26.2	32.0	42.5	22.1	18.2	15.0	21.5	19.1	29.6	34.5	33.9	33.2	32.6	34.4	35.5	**27.4**	**45.4**	**15.0**
10	37.2	53.2	47.8	47.1	32.8	37.0	38.2	41.6	47.6	110.3	48.2	15.5	15.2	16.5	19.3	30.7	23.7	23.2	23.0	25.9	34.8	18.2	25.4	45.3	**35.7**	**110.3**	**15.2**
11	24.0	23.8	21.1	17.5	22.4	24.7	24.8	26.7	32.5	30.0	34.2	34.7	33.8	34.7	42.2	42.1	42.1	44.0	37.0	31.2	30.5	37.6	39.5	43.4	**32.3**	**44.0**	**17.5**
12	29.2	20.9	17.0	7.9	7.0	10.7	14.3	11.1	5.4	1.7	4.5	5.3	4.8	8.5	8.1	5.2	5.7	7.6	5.3	4.0	6.3	1.8	1.5	1.9	**8.2**	**29.2**	**1.5**
13	2.6	4.3	2.8	3.1	9.1	2.9	2.7	2.7	3.1	5.0	8.3	8.7	11.3	18.3	15.6	10.0	7.0	11.0	4.3	3.8	5.0	4.3	8.8	8.2	**6.8**	**18.3**	**2.6**
14	6.2	6.6	18.2	5.8	7.1	6.3	6.3	7.8	7.9	7.9	11.4	15.0	20.4	21.8	45.1	49.1	71.4	37.5	58.9	30.2	15.3	15.2	18.4	22.9	**21.4**	**71.4**	**5.8**
15	11.1	7.6	14.9	34.3	37.2	13.8	25.2	60.7	33.1	17.2	28.8	31.5	37.5	26.2	17.7	17.3	17.0	17.8	19.1	22.0	28.2	44.2	43.6	36.0	**26.8**	**60.7**	**7.6**
16	20.9	30.3	24.2	10.0	14.8	13.0	17.1	49.6	30.2	12.3	11.3	21.9	14.5	11.0	11.3	12.7	23.7	14.0	12.9	12.2	12.1	13.0	12.6	21.4	**17.8**	**49.6**	**10.0**
17	15.6	13.1	10.1	13.0	13.4	21.2	23.5	33.3	26.3	28.3	35.5	52.9	21.2	19.5	26.9	29.5	27.8	49.1	27.5	27.7	29.4	24.7	30.8	37.5	**26.6**	**52.9**	**10.1**
18	47.7	44.8	38.3	35.3	35.5	36.0	114.4	90.4	50.3	36.9	29.0	29.5	31.2	32.7	27.0	19.6	19.9	16.8	15.7	12.7	15.1	18.7	17.3	16.2	**34.6**	**114.4**	**12.7**
19	12.1	11.2	10.4	7.7	6.4	6.3	6.4	7.7	8.3	8.8	9.8	12.0	17.1	21.0	28.8	20.5	21.8	25.9	19.5	20.8	20.7	21.9	20.0	20.1	**15.2**	**28.8**	**6.3**
20	17.9	18.1	16.9	17.0	16.3	15.0	17.5	21.8	19.8	22.2	25.4	13.0	12.6	7.4	8.0	7.7	10.6	11.1	6.8	7.0	7.8	7.9	9.8	7.2	**13.5**	**25.4**	**6.8**
21	6.6	5.6	5.2	6.9	5.8	4.7	3.7	3.7	5.8	5.2	3.4	4.7	6.2	7.1	8.3	6.8	7.2	5.7	5.6	6.3	7.2	8.2	10.1	9.4	**6.2**	**10.1**	**3.4**
22	9.3	6.9	7.6	6.2	5.8	5.9	6.2	17.1	22.3	10.5	10.1	9.7	9.7	12.4	11.4	10.5	10.5	9.7	9.0	12.4	16.1	12.2	11.3	13.0	**10.7**	**22.3**	**5.8**
23	12.5	13.8	17.1	13.3	13.4	17.4	30.8	33.3	43.8	42.4	44.8	12.0	16.7	17.9	20.9	22.5	30.9	38.5	49.6	18.8	15.5	15.8	14.2	14.2	**23.8**	**49.6**	**12.0**
24	12.5	12.7	14.3	16.0	14.5	29.0	26.7	25.2	24.6	27.0	18.4	23.7	19.8	16.4	23.3	24.7	25.1	16.3	9.8	10.3	10.8	9.0	9.9	7.1	**17.8**	**29.0**	**7.1**
25	6.5	9.5	8.1	8.1	8.4	6.8	11.5	14.2	14.4	14.6	12.9	12.5	10.9	12.5	18.9	27.0	22.0	20.2	16.5	18.1	21.7	21.8	23.5	20.3	**15.0**	**27.0**	**6.5**
26	28.9	34.5	40.5	31.2	36.0	35.5	40.5	34.4	23.6	18.0	23.2	33.1	18.1	8.8	7.3	7.7	7.2	7.2	9.3	8.5	21.5	9.5	18.1	20.9	**21.8**	**40.5**	**7.2**
27	13.0	13.9	16.1	10.4	16.2	19.8	12.4	18.7	22.1	15.3	29.2	32.1	28.9	27.7	17.9	13.9	10.6	13.3	16.2	29.0	21.6	23.9	22.5	23.3	**19.5**	**32.1**	**10.4**
28	21.5	27.4	33.6	31.6	35.8	23.5	24.5	23.1	35.9	43.9	35.6	40.2	42.6	31.6	23.8	25.4	26.3	30.7	27.5	26.3	26.6	27.3	25.5	26.2	**29.9**	**43.9**	**21.5**
29	26.7	24.6	24.1	24.9	27.7	28.0	38.1	34.8	31.4	55.2	64.4	43.6	40.2	33.9	27.5	29.2	31.5	28.7	26.8	23.5	25.9	25.1	28.6	26.5	**32.1**	**64.4**	**23.5**
30	28.0	26.9	27.6	32.5	31.3	34.8	33.3	37.3	35.2	29.9	29.4	29.3	28.6	27.4	24.8	21.4	29.3	26.3	25.1	26.1	26.5	40.0	9.1	9.9	**27.9**	**40.0**	**9.1**
MEAN	**16.2**	**16.5**	**16.8**	**15.2**	**15.6**	**16.9**	**21.4**	**24.5**	**23.3**	**22.3**	**20.4**	**18.9**	**16.8**	**16.1**	**16.7**	**17.1**	**17.8**	**17.3**	**16.5**	**15.1**	**15.9**	**16.0**	**16.6**	**18.1**	**17.8**		
MAX	**47.7**	**53.2**	**47.8**	**47.1**	**37.2**	**37.0**	**114.4**	**90.4**	**50.3**	**110.3**	**64.4**	**52.9**	**42.6**	**34.7**	**45.1**	**49.1**	**71.4**	**49.1**	**58.9**	**33.9**	**34.8**	**44.2**	**43.6**	**45.3**		**114.4**	
MIN	**1.8**	**0.9**	**0.9**	**1.1**	**2.4**	**2.6**	**2.7**	**1.8**	**3.1**	**1.7**	**3.1**	**1.8**	**2.2**	**1.6**	**0.8**	**2.3**	**1.7**	**1.1**	**1.7**	**0.9**	**1.1**	**1.8**	**1.2**	**1.4**			**0.8**

POSSIBLE NUMBER OF OBSERVATIONS = 720 ACTUAL NUMBER OF OBSERVATIONS = 720 DATA RECOVERY RATE = 100.0% DATA CAPTURE RATE = 100.0%

MONTHLY MEAN = 17.8 µg/m3

MAXIMUM PM10 = 114.4 µg/m3 DATE OF OCCURRENCE = 4/18 at 700 MAXIMUM DAILY MEAN = 35.7 µg/m3 DATE OF OCCURRENCE = 4/10

SECOND MAXIMUM PM10 = 110.3 µg/m3 DATE OF OCCURRENCE = 4/10 at 1000 SECOND MAXIMUM DAILY MEAN = 34.6 µg/m3 DATE OF OCCURRENCE = 4/18

MINIMUM PM10 = 0.8 µg/m3 DATE OF OCCURRENCE = 4/3 at 1500 MINUMUM DAILY MEAN = 4.5 µg/m3 DATE OF OCCURRENCE = 4/3

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

Draft

CSX AQ5C Modulair

HOURLY AVERAGES of PM10 in µg/m3 for MAY, 2024

Hr Beg Hr End Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	18.0	9.8	13.1	12.2	11.5	10.6	13.5	18.2	17.8	13.0	11.6	12.1	12.5	12.8	13.0	12.1	10.7	10.0	9.1	10.5	21.7	17.1	14.3	15.6	**13.4**	**21.7**	**9.1**
2	15.9	14.8	15.3	16.4	15.1	15.2	21.1	22.0	35.6	38.5	33.6	32.0	27.9	15.3	15.9	13.6	13.1	12.4	14.9	16.9	22.6	25.4	28.6	30.0	**21.3**	**38.5**	**12.4**
3	37.1	33.6	22.9	19.3	15.2	13.4	15.3	14.5	13.5	12.3	12.4	16.2	15.7	20.4	20.2	20.8	20.0	17.5	17.2	18.0	24.1	17.1	16.4	15.8	**18.7**	**37.1**	**12.3**
4	17.5	20.3	18.0	12.7	9.3	7.9	14.5	17.7	16.9	8.3	10.1	9.5	13.2	14.4	6.7	4.1	5.1	7.0	11.8	13.0	19.4	30.8	32.0	34.9	**14.8**	**34.9**	**4.1**
5	24.4	24.3	29.4	49.8	27.3	17.4	9.8	6.0	7.7	7.4	8.2	11.9	10.3	15.1	10.6	16.1	19.1	23.9	27.2	26.7	46.1	44.6	35.4	38.3	**22.4**	**49.8**	**6.0**
6	39.6	---	---	---	---	---	---	---	---	---	---	23.9	26.3	24.6	22.4	25.3	20.5	19.4	23.4	22.7	27.0	24.5	25.6	31.3	**---**	**---**	**---**
7	30.4	20.9	23.0	25.2	26.6	28.2	23.7	22.8	23.6	36.3	28.5	30.3	35.3	26.5	25.8	24.4	27.7	31.7	34.1	31.3	25.9	19.6	16.5	13.7	**26.3**	**36.3**	**13.7**
8	12.6	13.6	13.4	16.3	16.6	16.3	17.3	25.0	23.9	27.5	23.9	18.9	15.5	14.7	14.5	14.9	17.1	18.5	15.8	16.5	17.4	20.1	17.4	15.9	**17.7**	**27.5**	**12.6**
9	18.4	20.4	20.7	23.1	22.3	26.2	41.7	45.8	26.0	21.4	22.6	19.9	20.6	18.0	27.4	27.6	19.5	15.9	16.6	20.3	19.8	22.0	19.4	17.4	**23.0**	**45.8**	**15.9**
10	28.6	30.5	21.3	26.8	28.0	33.2	23.2	28.1	32.6	30.1	18.9	15.2	7.7	8.5	6.5	8.5	7.3	8.0	10.4	7.6	6.4	6.1	10.9	11.0	**17.3**	**33.2**	**6.1**
11	15.4	16.5	21.4	21.7	22.1	23.8	22.0	16.4	10.9	10.0	8.8	5.0	5.0	4.3	4.9	5.4	5.7	12.7	5.9	6.6	8.3	10.6	24.9	25.2	**13.1**	**25.2**	**4.3**
12	22.6	20.1	14.9	22.6	16.0	16.5	12.9	12.2	9.9	8.3	8.5	6.4	8.8	11.5	9.8	11.2	11.0	7.0	9.1	9.4	7.0	10.5	13.0	31.0	**12.9**	**31.0**	**6.4**
13	30.7	20.4	22.2	16.5	13.5	23.1	20.4	19.4	18.8	15.8	13.9	13.8	13.3	13.7	15.7	17.9	20.3	17.1	17.6	12.2	19.2	18.7	20.9	16.6	**18.0**	**30.7**	**12.2**
14	18.1	22.2	12.9	14.4	20.3	18.3	27.5	29.9	25.1	24.5	18.8	19.6	19.9	24.5	21.2	22.3	17.2	22.9	15.7	24.8	24.9	59.5	29.0	27.3	**23.4**	**59.5**	**12.9**
15	18.2	16.2	10.2	11.4	12.9	12.8	11.9	8.1	6.3	6.1	6.6	5.8	6.5	7.0	15.7	13.6	13.7	12.9	15.9	16.8	13.4	12.6	14.2	14.5	**11.8**	**18.2**	**5.8**
16	13.7	14.1	16.4	14.7	12.7	12.6	15.2	21.2	11.8	11.7	12.8	14.9	12.2	14.8	16.5	17.2	17.9	12.0	10.3	11.4	9.8	9.5	8.5	7.1	**13.3**	**21.2**	**7.1**
17	7.7	7.2	7.6	8.3	7.7	12.0	11.9	12.4	14.6	12.0	12.0	9.1	8.6	10.8	17.3	15.8	11.2	11.1	9.0	12.7	11.2	12.4	12.0	13.1	**11.2**	**17.3**	**7.2**
18	10.9	12.2	10.9	14.8	17.2	10.7	12.5	11.6	17.1	16.8	20.6	17.8	21.3	42.6	27.0	27.3	40.3	25.8	30.2	30.8	22.9	26.2	27.1	26.9	**21.7**	**42.6**	**10.7**
19	30.1	31.6	39.5	30.1	34.3	40.8	30.0	18.6	19.6	23.0	26.1	26.2	24.2	24.0	26.1	21.7	23.0	27.5	22.3	20.3	28.1	25.3	29.1	29.5	**27.1**	**40.8**	**18.6**
20	29.0	18.5	16.0	8.8	9.5	10.4	9.7	11.0	19.9	10.7	10.3	9.6	11.5	16.5	31.4	16.8	14.2	14.1	17.8	23.3	19.6	19.2	21.0	19.9	**16.2**	**31.4**	**8.8**
21	19.2	19.6	29.0	24.6	19.9	19.0	20.4	38.2	30.1	29.8	24.4	24.3	22.2	20.8	24.2	25.3	19.4	16.4	14.7	12.5	20.7	19.1	19.2	15.6	**22.0**	**38.2**	**12.5**
22	16.6	11.7	14.2	13.9	12.9	15.0	17.5	15.4	17.6	20.3	22.1	25.3	16.9	21.3	24.3	31.5	26.4	24.4	25.6	25.4	24.7	21.4	17.7	18.6	**20.0**	**31.5**	**11.7**
23	17.7	20.0	23.2	23.2	25.9	29.5	38.7	44.6	33.6	26.7	42.8	28.8	23.0	23.0	18.7	21.5	24.5	20.2	18.7	21.3	25.5	22.4	24.8	31.7	**26.3**	**44.6**	**17.7**
24	28.1	64.4	48.2	27.4	26.9	28.0	42.8	66.6	48.0	26.1	20.3	20.8	16.8	16.3	15.1	20.6	19.4	19.7	22.7	25.3	30.8	39.1	32.7	28.8	**30.6**	**66.6**	**15.1**
25	28.6	30.8	37.0	36.5	34.7	37.0	31.8	46.4	46.7	50.3	46.7	47.9	35.4	30.4	27.5	28.9	29.1	24.6	25.6	24.8	30.3	25.5	15.6	15.4	**32.8**	**50.3**	**15.4**
26	17.6	22.8	23.1	22.3	21.7	22.4	20.0	24.7	22.0	19.7	17.5	19.3	24.8	23.5	21.9	14.3	16.0	18.3	17.8	22.9	24.3	24.1	27.0	20.5	**21.2**	**27.0**	**14.3**
27	21.9	21.1	18.0	19.6	20.1	20.7	18.0	16.4	16.9	19.9	17.7	20.8	18.1	19.4	23.2	21.1	18.8	21.1	20.3	17.3	23.9	47.3	37.3	48.8	**22.8**	**48.8**	**16.4**
28	47.1	45.2	57.2	35.5	16.6	17.6	17.6	19.3	13.2	9.9	12.0	11.8	9.4	10.5	9.1	9.6	8.7	11.4	11.8	9.1	9.5	8.8	9.8	7.6	**17.4**	**57.2**	**7.6**
29	23.1	78.4	9.3	10.3	10.6	14.4	18.8	21.6	19.5	14.0	11.7	9.0	14.8	19.5	7.8	14.1	17.1	31.7	19.9	15.7	14.5	12.2	9.8	9.7	**17.8**	**78.4**	**7.8**
30	9.0	8.2	8.9	9.2	8.8	7.9	10.4	11.0	11.8	13.6	11.3	12.9	12.3	13.2	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
31	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
MEAN	**22.3**	**23.8**	**21.3**	**20.3**	**18.5**	**19.3**	**20.3**	**22.9**	**21.1**	**19.4**	**18.4**	**18.0**	**17.0**	**17.9**	**17.9**	**18.1**	**17.7**	**17.8**	**17.6**	**18.1**	**20.7**	**22.5**	**21.0**	**21.8**	**19.7**		
MAX	**47.1**	**78.4**	**57.2**	**49.8**	**34.7**	**40.8**	**42.8**	**66.6**	**48.0**	**50.3**	**46.7**	**47.9**	**35.4**	**42.6**	**31.4**	**31.5**	**40.3**	**31.7**	**34.1**	**31.3**	**46.1**	**59.5**	**37.3**	**48.8**		**78.4**	
MIN	**7.7**	**7.2**	**7.6**	**8.3**	**7.7**	**7.9**	**9.7**	**6.0**	**6.3**	**6.1**	**6.6**	**5.0**	**5.0**	**4.3**	**4.9**	**4.1**	**5.1**	**7.0**	**5.9**	**6.6**	**6.4**	**6.1**	**8.5**	**7.1**			**4.1**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 700 DATA RECOVERY RATE = 94.1% DATA CAPTURE RATE = 90.3%

MONTHLY MEAN = 19.7 µg/m3

MAXIMUM PM10 = 78.4 µg/m3 DATE OF OCCURRENCE = 5/29 at 200 MAXIMUM DAILY MEAN = 32.8 µg/m3 DATE OF OCCURRENCE = 5/25

SECOND MAXIMUM PM10 = 66.6 µg/m3 DATE OF OCCURRENCE = 5/24 at 800 SECOND MAXIMUM DAILY MEAN = 30.6 µg/m3 DATE OF OCCURRENCE = 5/24

MINIMUM PM10 = 4.1 µg/m3 DATE OF OCCURRENCE = 5/4 at 1600 MINUMUM DAILY MEAN = 11.2 µg/m3 DATE OF OCCURRENCE = 5/17

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

Draft

CSX AQ5C Modulair

HOURLY AVERAGES of PM10 in µg/m3 for JUNE, 2024

Hr Beg Hr End Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
2	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
3	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
4	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
5	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
6	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
7	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
8	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
9	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
10	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
11	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
12	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
13	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
14	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
15	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
16	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
17	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
18	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
19	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
20	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
21	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
22	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
23	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
24	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
25	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
26	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
27	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
28	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
29	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
30	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MEAN	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---		
MAX	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---		---	
MIN	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---			---

POSSIBLE NUMBER OF OBSERVATIONS = 720 ACTUAL NUMBER OF OBSERVATIONS = 0 DATA RECOVERY RATE = 0.0% DATA CAPTURE RATE = 0.0%

MONTHLY MEAN = --- µg/m3

MAXIMUM PM10 = --- µg/m3 DATE OF OCCURRENCE = --- MAXIMUM DAILY MEAN = --- µg/m3 DATE OF OCCURRENCE = ---

SECOND MAXIMUM PM10 = --- µg/m3 DATE OF OCCURRENCE = --- SECOND MAXIMUM DAILY MEAN = --- µg/m3 DATE OF OCCURRENCE = ---

MINIMUM PM10 = --- µg/m3 DATE OF OCCURRENCE = --- MINUMUM DAILY MEAN = --- µg/m3 DATE OF OCCURRENCE = ---

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

Draft

CSX AQ5C Modulair

HOURLY AVERAGES of PM2.5 in µg/m3 for APRIL, 2024

Hr Beg Hr End Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	12.5	12.5	14.1	14.2	11.9	12.6	12.0	12.4	9.7	6.6	5.1	3.5	2.7	3.2	4.1	5.8	6.5	7.8	9.4	12.0	9.4	7.8	7.4	9.4	**8.8**	**14.2**	**2.7**
2	8.1	10.0	10.6	8.7	6.6	9.0	6.7	7.0	6.3	3.1	1.8	1.2	1.3	2.7	2.8	1.3	0.8	0.7	1.0	1.0	1.8	1.5	1.3	1.1	**4.0**	**10.6**	**0.7**
3	1.2	1.8	1.8	2.2	2.5	2.7	1.8	1.1	1.2	1.7	1.6	0.6	0.4	0.4	0.3	1.1	0.3	0.4	1.1	2.7	1.8	2.0	4.0	2.3	**1.5**	**4.0**	**0.3**
4	1.8	1.5	2.9	3.0	3.5	3.0	4.3	5.1	10.2	11.1	6.2	4.9	4.9	7.8	7.5	3.9	0.9	0.5	0.5	0.5	0.9	0.8	0.7	1.1	**3.6**	**11.1**	**0.5**
5	0.9	0.7	0.7	0.7	1.0	2.0	2.8	2.5	5.7	5.7	3.8	1.8	2.0	2.4	2.7	2.2	3.9	4.3	3.0	3.1	1.5	1.5	1.4	1.5	**2.4**	**5.7**	**0.7**
6	1.6	1.6	1.8	1.7	1.5	1.7	1.4	2.2	4.3	3.9	2.1	1.6	1.6	1.6	1.8	2.2	1.8	1.8	2.2	2.2	2.3	3.3	4.0	3.9	**2.2**	**4.3**	**1.4**
7	4.6	4.0	3.6	3.6	4.0	4.8	2.9	2.1	2.4	2.2	1.7	1.2	1.6	1.7	1.5	1.7	1.5	1.4	1.6	1.9	2.5	3.8	6.4	4.1	**2.7**	**6.4**	**1.2**
8	5.1	6.6	6.7	7.0	6.0	5.5	6.9	8.8	16.1	12.7	10.8	5.5	6.5	6.9	4.7	3.6	3.4	3.3	2.9	3.0	3.5	4.1	5.0	6.6	**6.3**	**16.1**	**2.9**
9	10.5	13.8	11.4	9.6	8.5	8.9	9.5	14.1	19.4	13.6	16.0	18.5	10.1	10.5	10.2	10.9	13.1	18.0	24.8	27.3	27.5	28.2	27.4	29.6	**16.3**	**29.6**	**8.5**
10	29.7	30.3	30.0	34.1	26.6	25.2	26.2	28.8	29.4	40.9	24.6	9.4	10.0	11.5	14.3	19.1	14.4	13.5	12.8	12.0	19.1	12.1	13.6	19.4	**21.1**	**40.9**	**9.4**
11	16.8	16.2	14.7	11.9	13.6	12.7	12.8	11.9	10.5	7.8	7.3	7.7	8.8	11.3	8.0	9.7	9.7	10.9	10.4	10.1	10.2	11.9	13.1	14.0	**11.3**	**16.8**	**7.3**
12	12.5	8.9	8.3	3.8	3.3	3.5	4.4	4.9	1.1	0.4	1.6	2.6	3.5	3.7	3.6	2.7	1.5	0.9	1.0	1.3	1.1	0.5	0.5	0.7	**3.1**	**12.5**	**0.4**
13	1.4	1.5	1.2	0.8	1.4	1.5	1.3	1.5	1.8	2.7	3.0	3.0	3.3	3.7	3.6	3.0	2.7	2.7	2.3	2.0	2.3	2.5	4.8	5.3	**2.4**	**5.3**	**0.8**
14	4.2	4.6	12.5	3.6	4.5	4.5	4.0	4.8	4.7	3.5	3.2	4.6	5.7	8.1	10.9	14.3	14.5	8.8	10.6	8.3	7.3	8.1	11.0	12.2	**7.4**	**14.5**	**3.2**
15	6.4	4.6	6.2	9.9	8.3	6.0	8.2	10.3	8.0	9.9	14.4	13.2	14.5	11.1	8.4	8.0	7.9	8.9	11.4	14.0	16.2	19.0	21.2	21.2	**11.1**	**21.2**	**4.6**
16	10.1	7.1	6.1	5.5	6.1	6.3	6.3	9.2	8.1	5.6	5.6	6.6	5.9	5.3	5.1	5.6	6.8	6.6	5.6	6.0	6.7	7.4	7.7	10.0	**6.7**	**10.1**	**5.1**
17	8.2	7.0	6.7	6.8	6.3	7.7	7.3	7.8	10.3	7.8	8.5	16.8	9.1	9.7	10.5	11.1	13.5	17.2	11.9	12.7	11.8	8.6	9.8	10.8	**9.9**	**17.2**	**6.3**
18	15.0	17.1	16.8	16.7	17.8	18.4	22.9	23.8	23.6	23.4	21.7	22.6	24.0	22.0	19.5	16.6	17.5	14.3	13.4	10.2	11.6	16.1	15.0	13.4	**18.0**	**24.0**	**10.2**
19	10.6	9.2	8.2	5.7	4.4	3.7	3.1	3.1	3.6	4.0	3.8	5.1	7.6	11.0	15.7	10.9	11.8	13.5	10.4	9.3	8.8	10.0	9.1	9.9	**8.0**	**15.7**	**3.1**
20	9.5	9.1	8.3	8.9	9.6	10.1	11.6	13.9	13.9	13.6	14.4	9.1	5.7	4.2	3.6	3.4	3.8	6.5	2.9	3.2	3.7	3.9	4.3	3.6	**7.5**	**14.4**	**2.9**
21	3.2	3.1	3.0	3.6	3.0	2.8	2.3	2.3	2.8	2.8	2.5	3.2	5.0	5.6	6.1	5.0	4.2	4.2	4.3	4.8	5.6	6.0	7.7	7.0	**4.1**	**7.7**	**2.3**
22	6.4	5.8	6.1	5.0	3.9	3.6	3.3	4.4	5.5	5.3	5.3	5.3	5.6	6.7	6.3	5.3	5.2	5.6	4.6	6.3	5.7	6.1	6.2	7.3	**5.4**	**7.3**	**3.3**
23	8.1	7.9	8.7	8.4	8.0	8.0	9.3	13.8	20.9	20.7	18.6	8.0	8.0	7.5	7.9	6.8	6.6	7.2	7.5	5.7	5.5	5.5	5.2	5.8	**9.1**	**20.9**	**5.2**
24	6.5	6.8	8.5	9.5	10.1	11.6	12.6	9.9	9.7	8.0	7.0	5.8	6.3	5.7	6.0	5.7	7.2	5.7	5.3	3.7	4.5	4.2	6.6	3.6	**7.1**	**12.6**	**3.6**
25	4.0	4.8	5.4	5.6	5.0	3.8	3.1	3.6	4.2	4.7	5.3	6.7	6.5	8.2	11.2	18.8	15.2	14.2	10.3	9.3	7.4	5.4	5.5	5.0	**7.2**	**18.8**	**3.1**
26	5.9	8.0	8.2	6.2	6.3	6.2	6.8	7.9	8.1	7.1	5.8	6.0	4.9	3.3	2.6	2.5	1.9	2.1	2.2	2.2	6.0	2.5	4.0	5.0	**5.0**	**8.2**	**1.9**
27	3.7	4.1	4.8	3.2	4.4	4.9	3.7	4.9	4.2	4.0	4.4	5.2	5.4	5.6	5.0	4.0	3.9	4.0	4.9	6.0	4.3	4.1	4.2	4.2	**4.4**	**6.0**	**3.2**
28	4.6	5.0	5.9	6.9	6.0	5.4	5.5	6.2	11.5	18.2	18.1	23.2	17.7	16.6	15.8	16.0	17.1	18.6	19.3	18.3	19.6	19.6	18.5	19.2	**13.8**	**23.2**	**4.6**
29	19.8	16.8	15.8	17.3	18.4	15.7	15.5	17.5	16.5	28.1	34.7	24.0	19.9	19.9	16.0	17.3	17.9	18.2	16.4	16.4	17.5	18.2	18.5	18.5	**18.9**	**34.7**	**15.5**
30	18.7	17.9	17.5	22.6	22.5	21.0	19.6	19.5	16.9	17.0	16.0	16.3	17.3	16.4	15.3	13.1	15.0	13.9	12.5	12.3	13.4	10.7	4.3	4.1	**15.5**	**22.6**	**4.1**
MEAN	**8.4**	**8.3**	**8.6**	**8.2**	**7.8**	**7.8**	**7.9**	**8.8**	**9.7**	**9.9**	**9.2**	**8.1**	**7.5**	**7.8**	**7.7**	**7.7**	**7.7**	**7.9**	**7.6**	**7.6**	**8.0**	**7.8**	**8.3**	**8.7**	**8.2**		
MAX	**29.7**	**30.3**	**30.0**	**34.1**	**26.6**	**25.2**	**26.2**	**28.8**	**29.4**	**40.9**	**34.7**	**24.0**	**24.0**	**22.0**	**19.5**	**19.1**	**17.9**	**18.6**	**24.8**	**27.3**	**27.5**	**28.2**	**27.4**	**29.6**		**40.9**	
MIN	**0.9**	**0.7**	**0.7**	**0.7**	**1.0**	**1.5**	**1.3**	**1.1**	**1.1**	**0.4**	**1.6**	**0.6**	**0.4**	**0.4**	**0.3**	**1.1**	**0.3**	**0.4**	**0.5**	**0.5**	**0.9**	**0.5**	**0.5**	**0.7**			**0.3**

POSSIBLE NUMBER OF OBSERVATIONS = 720 ACTUAL NUMBER OF OBSERVATIONS = 720 DATA RECOVERY RATE = 100.0% DATA CAPTURE RATE = 100.0%

MONTHLY MEAN = 8.2 µg/m3

MAXIMUM PM2.5 = 40.9 µg/m3 DATE OF OCCURRENCE = 4/10 at 1000 MAXIMUM DAILY MEAN = 21.1 µg/m3 DATE OF OCCURRENCE = 4/10

SECOND MAXIMUM PM2.5 = 34.7 µg/m3 DATE OF OCCURRENCE = 4/29 at 1100 SECOND MAXIMUM DAILY MEAN = 18.9 µg/m3 DATE OF OCCURRENCE = 4/29

MINIMUM PM2.5 = 0.3 µg/m3 DATE OF OCCURRENCE = 4/3 at 1500 MINUMUM DAILY MEAN = 1.5 µg/m3 DATE OF OCCURRENCE = 4/3

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

Draft

CSX AQ5C Modulair

HOURLY AVERAGES of PM2.5 in µg/m3 for MAY, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	7.9	5.5	6.0	6.3	5.7	5.9	6.7	6.6	7.3	7.2	7.1	6.3	6.3	5.8	6.4	6.0	5.9	6.1	4.9	5.7	9.8	10.4	9.2	9.6	**6.8**	**10.4**	**4.9**
2	11.0	10.1	10.7	10.7	10.5	10.7	12.2	15.2	22.5	25.9	18.2	17.9	13.5	8.6	7.7	7.9	7.8	7.8	8.1	9.7	14.0	16.9	19.5	20.8	**13.2**	**25.9**	**7.7**
3	23.1	19.3	14.2	11.6	8.1	7.8	8.6	9.7	7.9	7.8	7.2	6.4	5.0	6.3	7.3	7.8	6.8	6.3	6.2	6.3	7.0	5.3	4.4	3.9	**8.5**	**23.1**	**3.9**
4	4.4	4.8	4.8	4.5	4.3	4.3	4.7	5.1	5.3	4.0	6.6	5.2	4.6	4.5	2.8	1.0	1.2	1.0	0.8	2.4	4.8	11.0	6.3	7.4	**4.4**	**11.0**	**0.8**
5	5.7	5.5	6.1	8.4	6.8	4.7	2.7	2.3	2.4	3.2	3.3	5.4	5.4	7.1	7.1	9.4	8.9	6.0	7.1	9.7	25.7	23.5	10.4	11.4	**7.8**	**25.7**	**2.3**
6	11.6	12.5	13.8	13.6	13.8	16.0	14.0	12.0	12.2	10.9	11.5	19.3	19.8	20.0	17.5	14.2	12.9	14.0	16.1	18.6	19.3	16.5	16.2	19.2	**15.2**	**20.0**	**10.9**
7	17.3	13.3	14.7	15.8	16.8	15.8	14.2	14.2	16.2	20.0	21.1	23.7	22.3	17.7	19.7	19.0	17.8	19.3	23.3	24.6	18.3	11.6	9.6	8.4	**17.2**	**24.6**	**8.4**
8	7.8	7.9	8.3	9.6	9.6	9.9	10.7	12.6	14.7	18.3	14.6	11.6	8.4	6.7	6.2	6.6	6.2	6.7	7.3	7.6	8.5	8.2	8.5	6.9	**9.3**	**18.3**	**6.2**
9	8.2	8.5	9.3	8.9	9.0	9.2	10.7	7.8	5.5	4.9	5.2	5.5	6.3	6.2	7.4	9.5	7.2	5.4	5.5	7.3	7.5	9.0	8.2	4.8	**7.3**	**10.7**	**4.8**
10	6.9	5.1	3.7	3.6	4.6	5.2	5.6	6.2	6.6	5.9	4.7	3.5	1.7	1.6	1.5	1.4	1.2	1.1	1.6	1.4	0.9	1.4	1.4	2.0	**3.2**	**6.9**	**0.9**
11	2.2	2.6	2.8	2.9	2.9	2.9	3.1	3.3	3.2	4.1	3.9	2.5	2.3	2.5	2.1	2.1	2.4	4.9	2.9	3.2	3.9	4.7	7.3	7.0	**3.4**	**7.3**	**2.1**
12	6.3	6.0	3.4	3.4	3.6	4.8	4.9	6.5	6.8	4.1	4.7	3.4	4.7	5.9	4.9	5.5	4.9	4.0	5.0	4.7	4.3	4.1	6.1	14.0	**5.2**	**14.0**	**3.4**
13	11.6	8.4	9.0	6.6	6.5	10.7	9.7	9.9	9.3	10.3	9.4	8.6	8.7	8.6	7.7	7.9	8.3	7.9	7.7	7.3	8.1	7.6	8.1	7.5	**8.5**	**11.6**	**6.5**
14	8.0	8.5	7.4	8.0	9.6	8.8	10.8	11.5	12.2	12.0	11.9	12.8	10.9	12.8	12.4	14.5	10.7	14.0	9.5	13.7	9.0	32.3	13.3	9.4	**11.8**	**32.3**	**7.4**
15	6.1	6.5	4.5	5.0	6.0	5.9	5.7	4.5	3.2	3.6	3.7	3.0	2.9	3.4	5.5	5.9	6.2	5.9	6.3	7.0	6.2	6.0	6.5	5.8	**5.2**	**7.0**	**2.9**
16	5.7	6.3	7.5	7.0	5.4	5.5	6.4	7.3	5.2	4.0	4.2	4.3	4.0	5.0	4.4	3.8	4.3	4.4	4.3	4.4	3.3	2.8	3.0	3.9	**4.8**	**7.5**	**2.8**
17	3.9	4.0	3.8	3.7	4.1	4.5	3.5	4.3	5.9	5.9	6.1	5.6	5.6	7.2	8.6	9.0	6.2	7.8	4.5	6.0	7.8	7.4	7.4	8.2	**5.8**	**9.0**	**3.5**
18	6.7	6.9	7.0	8.7	8.9	8.1	8.5	8.4	8.5	9.9	10.7	12.4	9.7	12.6	10.3	12.0	14.2	13.3	16.9	18.1	16.1	18.7	20.0	20.2	**11.9**	**20.2**	**6.7**
19	23.8	23.5	19.3	15.6	14.8	16.4	14.8	13.1	14.7	19.2	22.7	22.6	20.2	20.1	22.4	18.9	20.1	22.7	18.2	16.4	21.3	18.2	20.4	19.9	**19.1**	**23.8**	**13.1**
20	18.9	8.2	6.1	3.8	3.7	4.6	5.4	5.5	7.1	4.8	4.7	5.7	7.8	11.7	12.2	9.2	10.6	10.6	11.3	12.9	12.7	13.0	13.5	12.9	**9.0**	**18.9**	**3.7**
21	11.9	13.3	13.8	12.9	11.2	10.9	12.3	19.9	22.1	20.8	19.0	18.7	17.8	14.1	12.3	12.7	10.7	11.0	9.5	8.5	9.4	10.1	10.5	9.5	**13.4**	**22.1**	**8.5**
22	8.9	7.9	8.5	8.3	7.8	8.4	7.7	8.1	10.0	11.2	11.7	11.0	11.8	14.8	17.1	22.2	15.8	13.5	13.0	14.1	14.6	13.5	11.2	10.4	**11.7**	**22.2**	**7.7**
23	10.9	13.1	15.1	16.7	19.9	21.5	24.9	26.9	27.7	16.8	14.5	15.0	15.3	17.3	14.4	14.1	13.2	11.8	13.8	15.8	15.5	15.0	18.0	21.8	**17.0**	**27.7**	**10.9**
24	21.1	26.5	20.4	17.4	17.2	16.8	17.5	20.9	17.9	12.3	11.2	11.2	10.1	8.8	8.2	9.8	10.5	11.3	13.2	14.5	17.1	20.3	19.0	17.7	**15.4**	**26.5**	**8.2**
25	19.3	20.9	24.1	23.6	22.9	22.8	23.1	30.1	37.1	37.8	36.0	34.9	26.7	21.3	18.0	16.6	14.1	13.0	15.2	16.4	17.1	13.9	6.2	8.0	**21.6**	**37.8**	**6.2**
26	9.7	12.5	13.5	13.1	11.3	11.6	10.9	13.9	14.2	14.4	13.7	14.4	15.8	17.7	17.5	11.9	13.7	15.5	12.8	13.6	17.0	18.3	17.5	15.4	**14.1**	**18.3**	**9.7**
27	14.9	14.7	13.2	13.8	13.7	13.9	12.8	11.8	11.0	13.3	13.3	12.7	12.9	10.4	10.8	12.4	11.8	12.8	12.4	8.6	4.9	5.1	3.7	4.4	**11.2**	**14.9**	**3.7**
28	4.0	4.3	5.1	5.6	4.5	5.7	5.3	4.6	3.8	4.1	5.3	4.9	4.2	4.8	5.1	5.0	5.0	5.5	6.1	5.2	6.0	5.4	5.7	4.1	**4.9**	**6.1**	**3.8**
29	6.6	16.5	4.4	5.7	5.9	6.7	7.6	6.8	7.6	5.7	4.8	4.3	5.8	6.3	4.6	6.7	7.4	15.4	9.1	6.5	6.2	6.3	4.3	4.8	**6.9**	**16.5**	**4.3**
30	4.7	3.3	3.1	3.0	2.5	2.4	3.1	4.3	4.9	5.5	5.1	5.2	4.8	5.1	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
31	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
MEAN	**10.3**	**10.2**	**9.5**	**9.3**	**9.1**	**9.4**	**9.6**	**10.4**	**11.1**	**10.9**	**10.5**	**10.6**	**9.8**	**9.8**	**9.7**	**9.8**	**9.2**	**9.6**	**9.4**	**10.0**	**10.9**	**11.6**	**10.2**	**10.3**	**10.1**		
MAX	**23.8**	**26.5**	**24.1**	**23.6**	**22.9**	**22.8**	**24.9**	**30.1**	**37.1**	**37.8**	**36.0**	**34.9**	**26.7**	**21.3**	**22.4**	**22.2**	**20.1**	**22.7**	**23.3**	**24.6**	**25.7**	**32.3**	**20.4**	**21.8**		**37.8**	
MIN	**2.2**	**2.6**	**2.8**	**2.9**	**2.5**	**2.4**	**2.7**	**2.3**	**2.4**	**3.2**	**3.3**	**2.5**	**1.7**	**1.6**	**1.5**	**1.0**	**1.2**	**1.0**	**0.8**	**1.4**	**0.9**	**1.4**	**1.4**	**2.0**			**0.8**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 710 DATA RECOVERY RATE = 95.4% DATA CAPTURE RATE = 93.5%

MONTHLY MEAN = 10.1 µg/m3

MAXIMUM PM2.5 = 37.8 µg/m3 DATE OF OCCURRENCE = 5/25 at 1000 MAXIMUM DAILY MEAN = 21.6 µg/m3 DATE OF OCCURRENCE = 5/25

SECOND MAXIMUM PM2.5 = 37.1 µg/m3 DATE OF OCCURRENCE = 5/25 at 900 SECOND MAXIMUM DAILY MEAN = 19.1 µg/m3 DATE OF OCCURRENCE = 5/19

MINIMUM PM2.5 = 0.8 µg/m3 DATE OF OCCURRENCE = 5/4 at 1900 MINUMUM DAILY MEAN = 3.2 µg/m3 DATE OF OCCURRENCE = 5/10

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

Draft

CSX AQ5C Modulair

HOURLY AVERAGES of PM2.5 in µg/m3 for JUNE, 2024

Hr Beg Hr End Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
2	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
3	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
4	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
5	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
6	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
7	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
8	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
9	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
10	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
11	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
12	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
13	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
14	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
15	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
16	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
17	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
18	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
19	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
20	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
21	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
22	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
23	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
24	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
25	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
26	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
27	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
28	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
29	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
30	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MEAN	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---		
MAX	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---		---	
MIN	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---			---

POSSIBLE NUMBER OF OBSERVATIONS = 720 ACTUAL NUMBER OF OBSERVATIONS = 0 DATA RECOVERY RATE = 0.0% DATA CAPTURE RATE = 0.0%

MONTHLY MEAN = --- µg/m3

MAXIMUM PM2.5 = --- µg/m3 DATE OF OCCURRENCE = --- MAXIMUM DAILY MEAN = --- µg/m3 DATE OF OCCURRENCE = ---

SECOND MAXIMUM PM2.5 = --- µg/m3 DATE OF OCCURRENCE = --- SECOND MAXIMUM DAILY MEAN = --- µg/m3 DATE OF OCCURRENCE = ---

MINIMUM PM2.5 = --- µg/m3 DATE OF OCCURRENCE = --- MINUMUM DAILY MEAN = --- µg/m3 DATE OF OCCURRENCE = ---

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

Draft

CSX AQ6 Modulair

HOURLY AVERAGES of PM10 in µg/m3 for APRIL, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	17.0	15.6	17.4	20.7	12.7	33.9	35.2	63.4	18.3	11.9	8.2	5.4	2.7	2.7	3.4	4.7	3.9	5.2	8.6	12.7	10.5	8.1	14.5	38.9	**15.7**	**63.4**	**2.7**
2	27.4	13.9	19.1	12.0	8.1	20.4	13.5	29.7	69.1	6.0	5.3	5.1	10.1	4.0	4.7	13.6	2.5	1.7	2.5	2.4	4.0	3.0	2.3	1.7	**11.8**	**69.1**	**1.7**
3	2.8	7.9	4.7	5.4	7.1	9.1	4.8	2.0	16.0	38.1	44.6	3.8	4.6	2.0	3.2	39.1	3.3	1.2	1.9	4.5	4.1	6.8	18.2	4.6	**10.0**	**44.6**	**1.2**
4	2.8	3.3	5.5	5.7	5.9	---	---	10.7	10.9	11.2	8.7	7.5	5.9	11.9	15.8	6.8	2.2	3.0	2.4	1.3	1.8	2.2	2.0	1.8	**5.9**	**15.8**	**1.3**
5	2.6	1.8	1.6	1.8	2.2	3.1	5.1	11.6	8.7	7.3	4.8	3.6	6.1	4.8	8.4	10.2	---	---	---	7.6	5.7	3.4	2.6	3.5	**5.1**	**11.6**	**1.6**
6	2.9	3.1	3.8	3.3	2.7	3.1	2.8	3.3	10.8	17.9	5.9	2.6	3.8	3.4	2.7	4.7	4.4	3.7	3.9	3.3	5.1	5.9	6.1	7.2	**4.9**	**17.9**	**2.6**
7	5.7	6.3	6.5	6.1	5.6	7.9	5.9	5.2	6.2	3.2	2.8	2.2	2.3	2.1	3.0	2.5	2.6	2.2	2.4	3.6	6.7	9.5	11.7	5.9	**4.9**	**11.7**	**2.1**
8	9.2	14.2	11.2	11.1	12.3	23.4	33.0	34.7	35.6	16.6	26.6	28.6	7.2	12.1	6.6	12.9	7.5	5.9	7.1	6.7	7.6	11.8	13.5	22.7	**15.8**	**35.6**	**5.9**
9	29.5	30.7	26.2	21.4	24.5	23.9	36.4	73.4	49.7	23.7	19.3	28.8	13.3	12.2	12.7	11.9	13.0	24.8	27.9	27.2	27.1	29.2	33.8	30.4	**27.1**	**73.4**	**11.9**
10	35.5	46.1	54.3	47.1	31.1	37.8	44.7	42.3	54.0	125.6	61.3	18.4	13.1	11.6	13.5	28.1	17.2	16.3	12.1	21.2	30.6	15.2	20.6	32.3	**34.6**	**125.6**	**11.6**
11	23.2	21.0	20.0	17.7	20.6	27.3	28.2	28.7	35.6	30.3	43.7	31.9	43.4	45.2	56.3	55.5	47.5	53.4	45.5	35.9	36.7	43.0	45.4	45.1	**36.7**	**56.3**	**17.7**
12	35.5	20.7	17.7	7.9	9.1	12.5	13.2	13.2	7.3	3.1	4.0	4.8	---	---	---	---	---	28.1	15.0	19.0	21.7	6.6	3.4	10.8	**13.3**	**35.5**	**3.1**
13	---	---	---	4.7	10.6	4.6	3.5	4.1	7.2	8.7	---	---	---	---	11.5	---	9.5	10.9	10.4	4.8	5.5	5.7	6.7	8.3	**---**	**---**	**---**
14	9.4	14.5	19.6	6.1	10.0	6.9	8.3	8.3	9.6	10.3	14.0	17.1	15.0	19.2	34.6	37.7	41.3	26.2	22.9	21.1	18.1	19.7	17.5	21.3	**17.9**	**41.3**	**6.1**
15	10.5	9.0	17.2	40.9	38.3	13.8	21.6	66.5	35.0	18.3	24.4	30.9	30.8	28.2	21.7	21.4	21.4	22.6	---	19.4	37.1	46.3	35.6	33.9	**28.0**	**66.5**	**9.0**
16	16.1	20.1	16.2	9.8	17.5	12.8	20.0	32.2	25.2	10.9	10.7	21.8	11.3	9.6	12.6	19.5	18.1	17.6	17.7	13.2	11.1	11.0	11.3	21.3	**16.2**	**32.2**	**9.6**
17	14.2	11.2	10.4	11.6	11.8	24.5	22.7	25.5	29.5	31.9	36.8	54.3	25.7	18.8	31.5	28.3	25.1	43.1	29.8	30.0	31.3	28.6	38.9	47.5	**27.6**	**54.3**	**10.4**
18	52.3	47.1	40.6	34.9	38.6	41.1	167.0	119.4	54.0	37.5	27.3	21.1	21.3	29.0	26.4	14.5	14.2	13.0	11.9	9.2	11.7	15.4	15.5	17.5	**36.7**	**167.0**	**9.2**
19	13.4	9.5	10.2	6.9	5.7	6.2	6.2	7.2	10.4	10.5	10.4	13.8	18.4	23.4	27.7	21.2	20.5	22.7	20.3	23.1	21.4	25.9	24.4	21.3	**15.9**	**27.7**	**5.7**
20	21.4	16.7	16.3	19.1	18.0	17.6	20.1	25.5	25.1	26.7	23.3	14.8	13.3	13.2	15.3	16.2	12.5	12.6	9.5	9.1	8.7	8.0	12.0	8.2	**16.0**	**26.7**	**8.0**
21	6.4	5.5	5.7	6.4	5.9	5.8	4.0	4.8	6.7	7.5	5.9	4.3	4.4	6.5	7.2	10.5	15.1	8.3	8.5	6.8	7.7	7.9	11.5	27.9	**8.0**	**27.9**	**4.0**
22	14.5	10.9	11.9	9.4	9.0	8.7	8.1	23.2	32.5	19.0	12.5	18.3	20.6	20.0	16.9	21.4	16.9	15.4	10.4	14.6	15.9	12.2	11.6	9.7	**15.2**	**32.5**	**8.1**
23	20.7	15.3	11.9	12.1	16.6	19.2	46.8	35.4	45.2	51.0	33.2	10.5	13.5	19.3	26.0	23.6	34.3	44.6	59.7	20.8	20.3	15.9	15.0	14.6	**26.1**	**59.7**	**10.5**
24	13.1	13.0	14.0	16.3	16.2	22.8	24.8	33.8	27.3	---	17.5	19.3	---	---	---	---	---	---	---	---	11.7	8.2	5.3	5.6	**---**	**---**	**---**
25	5.5	8.5	7.3	9.2	6.7	8.4	12.9	9.5	11.2	13.0	11.7	12.1	10.6	10.2	21.1	19.6	17.9	17.2	14.3	20.2	28.6	31.9	33.2	28.8	**15.4**	**33.2**	**5.5**
26	36.0	47.6	59.5	45.9	47.4	42.8	46.2	39.2	26.6	18.8	38.8	41.6	27.4	11.1	8.9	7.3	8.2	7.1	8.1	9.4	26.5	17.2	33.9	34.4	**28.7**	**59.5**	**7.1**
27	16.7	19.2	17.9	12.1	16.9	20.5	12.5	24.0	32.5	19.5	40.2	38.5	35.8	39.2	25.3	16.1	10.8	18.2	20.9	33.4	23.8	26.9	27.7	26.3	**24.0**	**40.2**	**10.8**
28	27.6	34.7	39.1	42.7	50.3	29.2	31.2	31.3	48.0	48.7	32.8	33.5	46.7	28.6	24.6	21.3	25.6	27.3	24.1	20.0	20.1	19.1	23.6	23.2	**31.4**	**50.3**	**19.1**
29	26.6	23.1	22.6	24.1	26.8	32.4	62.4	42.1	36.9	56.1	65.8	37.5	34.0	27.4	24.8	26.5	31.0	23.8	20.3	18.6	20.8	20.8	24.6	20.3	**31.2**	**65.8**	**18.6**
30	24.0	24.4	27.8	30.7	28.1	33.2	37.5	35.4	36.8	30.8	31.9	32.3	30.0	25.7	26.3	27.7	31.6	25.2	23.9	24.9	25.4	---	9.5	12.3	**27.6**	**37.5**	**9.5**
MEAN	**18.0**	**17.8**	**18.5**	**16.8**	**17.2**	**19.1**	**26.8**	**29.5**	**27.4**	**24.6**	**23.2**	**19.5**	**17.5**	**16.3**	**17.6**	**19.4**	**17.0**	**17.9**	**16.4**	**15.3**	**16.9**	**16.0**	**17.7**	**19.6**	**19.5**		
MAX	**52.3**	**47.6**	**59.5**	**47.1**	**50.3**	**42.8**	**167.0**	**119.4**	**69.1**	**125.6**	**65.8**	**54.3**	**46.7**	**45.2**	**56.3**	**55.5**	**47.5**	**53.4**	**59.7**	**35.9**	**37.1**	**46.3**	**45.4**	**47.5**		**167.0**	
MIN	**2.6**	**1.8**	**1.6**	**1.8**	**2.2**	**3.1**	**2.8**	**2.0**	**6.2**	**3.1**	**2.8**	**2.2**	**2.3**	**2.0**	**2.7**	**2.5**	**2.2**	**1.2**	**1.9**	**1.3**	**1.8**	**2.2**	**2.0**	**1.7**			**1.2**

POSSIBLE NUMBER OF OBSERVATIONS = 720 ACTUAL NUMBER OF OBSERVATIONS = 691 DATA RECOVERY RATE = 96.0% DATA CAPTURE RATE = 93.3%

MONTHLY MEAN = 19.5 µg/m3

MAXIMUM PM10 = 167.0 µg/m3 DATE OF OCCURRENCE = 4/18 at 700 MAXIMUM DAILY MEAN = 36.7 µg/m3 DATE OF OCCURRENCE = 4/11

SECOND MAXIMUM PM10 = 125.6 µg/m3 DATE OF OCCURRENCE = 4/10 at 1000 SECOND MAXIMUM DAILY MEAN = 36.7 µg/m3 DATE OF OCCURRENCE = 4/18

MINIMUM PM10 = 1.2 µg/m3 DATE OF OCCURRENCE = 4/3 at 1800 MINUMUM DAILY MEAN = 4.9 µg/m3 DATE OF OCCURRENCE = 4/6

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

Draft

CSX AQ6 Modulair

HOURLY AVERAGES of PM10 in µg/m3 for MAY, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	16.1	10.1	13.8	14.4	13.3	14.9	13.2	16.9	13.0	11.3	11.5	11.1	13.2	13.7	13.8	13.2	14.4	11.5	11.2	11.7	18.2	14.9	12.7	12.6	**13.4**	**18.2**	**10.1**
2	14.3	14.9	13.9	16.6	15.6	16.6	21.6	24.1	32.7	27.9	20.4	19.0	23.2	19.3	22.0	25.5	22.7	16.1	17.4	20.7	27.8	25.9	26.3	30.9	**21.5**	**32.7**	**13.9**
3	46.9	29.3	19.2	16.0	12.4	13.0	12.8	13.6	11.2	11.3	10.5	16.5	18.4	22.0	29.1	23.9	17.4	17.8	19.4	15.4	25.9	17.5	14.6	18.9	**18.9**	**46.9**	**10.5**
4	22.6	22.9	14.5	14.9	8.3	9.5	13.3	15.7	8.7	6.9	10.2	9.7	15.2	20.1	3.5	2.2	2.9	5.1	8.1	10.1	11.3	16.2	34.0	28.4	**13.1**	**34.0**	**2.2**
5	25.0	28.1	32.7	59.3	30.0	18.7	13.8	6.1	5.2	7.5	5.6	8.6	8.5	15.2	8.8	15.1	19.9	26.1	26.8	23.0	41.3	44.2	39.0	45.7	**23.1**	**59.3**	**5.2**
6	50.1	---	---	---	---	---	---	---	---	---	---	18.7	22.3	16.6	20.1	21.7	15.8	15.4	21.7	19.7	28.8	23.0	25.5	29.5	**---**	**---**	**---**
7	33.5	23.6	25.9	28.0	30.4	29.4	24.0	24.0	24.1	36.1	23.4	15.4	24.3	18.5	19.6	18.7	19.9	34.5	30.5	31.4	23.3	17.0	16.9	13.5	**24.4**	**36.1**	**13.5**
8	15.3	13.8	14.0	17.1	18.2	19.1	22.4	22.9	22.9	22.8	24.6	24.7	21.3	23.6	19.9	22.5	18.4	17.6	18.1	24.7	16.4	20.1	23.2	23.5	**20.3**	**24.7**	**13.8**
9	18.6	17.1	19.3	19.5	20.3	24.2	28.9	31.3	20.9	21.5	18.5	16.8	16.6	15.7	23.1	22.3	17.0	14.2	13.9	16.2	15.5	17.4	14.2	9.7	**18.9**	**31.3**	**9.7**
10	29.4	28.5	17.9	22.3	25.5	25.5	18.4	21.8	22.9	18.5	14.7	8.4	5.7	5.3	4.0	5.4	6.9	5.4	8.7	4.9	4.1	5.0	7.0	8.4	**13.5**	**29.4**	**4.0**
11	11.4	11.3	12.2	13.7	13.6	13.5	14.0	11.7	7.4	7.0	5.1	3.6	3.7	4.0	3.6	3.5	4.6	8.9	5.3	7.7	5.8	8.1	23.8	24.8	**9.5**	**24.8**	**3.5**
12	17.9	17.9	10.7	12.9	10.8	12.2	12.5	13.1	10.8	7.9	---	---	---	---	6.1	9.2	8.3	6.6	7.3	6.2	5.5	7.3	11.3	23.5	**10.9**	**23.5**	**5.5**
13	21.9	17.3	17.4	14.5	11.2	22.0	15.3	18.8	16.2	13.3	11.0	8.9	10.3	13.2	---	28.5	36.0	30.8	22.2	13.7	20.6	23.3	25.7	24.3	**19.0**	**36.0**	**8.9**
14	15.8	23.3	53.8	21.6	26.1	23.2	35.9	34.0	32.2	22.2	16.5	17.8	19.2	28.1	18.5	20.2	18.8	26.5	13.4	24.5	28.8	65.8	28.5	28.9	**26.8**	**65.8**	**13.4**
15	19.3	17.9	9.4	9.3	12.1	10.7	11.8	8.5	9.4	10.5	13.0	5.2	8.3	7.0	16.4	15.9	12.7	12.9	15.0	16.4	14.2	15.8	15.4	16.9	**12.7**	**19.3**	**5.2**
16	16.2	15.0	16.7	21.1	18.4	16.9	22.2	30.6	15.0	10.8	12.2	13.1	13.5	9.1	14.9	---	---	7.8	8.2	10.1	9.5	8.9	6.9	6.3	**13.8**	**30.6**	**6.3**
17	7.5	7.6	8.2	6.0	6.7	8.4	10.8	12.2	12.3	12.8	9.4	7.9	7.0	7.2	12.0	13.6	9.1	6.2	19.4	17.3	7.9	11.4	11.4	15.5	**10.3**	**19.4**	**6.0**
18	19.3	14.9	16.4	18.5	23.7	16.9	17.8	13.0	12.4	15.2	17.5	17.1	25.4	39.9	21.1	27.0	40.2	23.7	29.7	31.0	28.4	28.8	31.5	30.8	**23.3**	**40.2**	**12.4**
19	33.0	32.2	40.1	32.8	42.0	41.2	28.6	19.1	18.1	20.5	24.0	24.1	18.7	17.8	20.6	12.7	14.0	16.8	18.8	22.5	26.6	33.5	30.4	25.7	**25.6**	**42.0**	**12.7**
20	30.3	19.0	17.8	7.5	12.0	8.1	10.4	10.3	20.1	10.7	11.1	8.7	8.0	11.0	32.5	18.6	13.5	11.9	13.9	25.3	15.6	51.5	38.8	43.9	**18.8**	**51.5**	**7.5**
21	26.1	20.9	49.5	21.1	20.5	21.5	26.7	36.3	23.0	17.6	14.4	22.9	14.5	16.0	25.4	26.3	20.4	11.7	11.7	10.0	7.9	11.6	12.7	16.1	**20.2**	**49.5**	**7.9**
22	16.2	22.0	17.0	13.7	18.9	14.5	17.0	12.9	14.3	15.5	15.9	17.3	10.7	16.8	18.8	22.5	18.0	21.9	19.5	16.1	16.6	16.7	14.9	17.1	**16.9**	**22.5**	**10.7**
23	15.8	16.1	25.9	27.0	25.8	32.3	42.7	47.0	35.7	32.5	28.9	25.0	22.7	20.5	14.6	17.2	20.5	16.5	13.7	14.1	25.9	31.1	41.5	34.7	**26.2**	**47.0**	**13.7**
24	42.9	56.5	31.2	28.6	25.9	28.4	47.7	87.5	46.9	25.6	17.7	17.3	14.0	11.8	10.0	19.0	15.1	15.1	15.9	21.6	23.2	29.5	29.3	29.9	**28.8**	**87.5**	**10.0**
25	30.5	27.6	28.9	30.1	31.6	34.4	30.2	32.0	27.2	30.3	23.2	29.5	23.8	23.7	24.8	26.4	34.3	21.4	19.7	22.2	20.7	22.9	19.9	18.4	**26.4**	**34.4**	**18.4**
26	18.6	21.7	23.8	24.2	23.5	22.0	22.7	26.6	19.5	12.4	9.9	11.4	19.9	15.4	11.9	9.4	10.2	13.5	18.3	24.3	20.0	20.8	32.5	15.8	**18.7**	**32.5**	**9.4**
27	19.0	17.7	15.2	14.8	14.3	16.3	17.6	13.5	12.9	11.1	11.9	15.5	14.8	19.3	20.8	17.1	15.2	19.0	18.8	17.3	21.9	65.0	51.9	47.1	**21.2**	**65.0**	**11.1**
28	38.1	38.7	47.1	30.2	17.6	16.4	14.9	14.3	12.4	11.3	10.5	11.7	25.6	31.2	---	---	---	---	22.6	12.3	14.7	---	12.1	9.6	**20.6**	**47.1**	**9.6**
29	9.9	10.0	10.3	9.9	13.1	16.4	24.3	26.6	14.7	10.8	9.1	8.8	15.4	18.2	6.8	12.0	21.0	40.6	24.4	20.0	14.1	18.4	12.2	10.7	**15.7**	**40.6**	**6.8**
30	10.3	9.5	11.5	10.1	10.6	9.0	10.4	11.7	11.9	12.1	10.9	12.4	11.0	13.1	12.7	13.0	12.1	11.6	11.0	9.1	9.0	9.8	13.7	13.5	**11.3**	**13.7**	**9.0**
31	14.8	12.0	10.7	9.6	9.5	10.2	10.0	14.2	19.3	22.6	12.3	12.5	12.1	13.2	13.5	9.1	8.3	8.9	9.6	10.8	15.3	56.6	62.6	35.5	**17.2**	**62.6**	**8.3**
MEAN	**22.8**	**20.6**	**21.5**	**19.5**	**18.7**	**18.8**	**20.4**	**22.3**	**18.4**	**16.6**	**14.6**	**14.7**	**15.6**	**16.9**	**16.2**	**17.0**	**16.8**	**16.5**	**16.6**	**17.1**	**18.2**	**24.6**	**23.9**	**22.9**	**18.8**		
MAX	**50.1**	**56.5**	**53.8**	**59.3**	**42.0**	**41.2**	**47.7**	**87.5**	**46.9**	**36.1**	**28.9**	**29.5**	**25.6**	**39.9**	**32.5**	**28.5**	**40.2**	**40.6**	**30.5**	**31.4**	**41.3**	**65.8**	**62.6**	**47.1**		**87.5**	
MIN	**7.5**	**7.6**	**8.2**	**6.0**	**6.7**	**8.1**	**10.0**	**6.1**	**5.2**	**6.9**	**5.1**	**3.6**	**3.7**	**4.0**	**3.5**	**2.2**	**2.9**	**5.1**	**5.3**	**4.9**	**4.1**	**5.0**	**6.9**	**6.3**			**2.2**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 722 DATA RECOVERY RATE = 97.0% DATA CAPTURE RATE = 96.8%

MONTHLY MEAN = 18.8 µg/m3

MAXIMUM PM10 = 87.5 µg/m3 DATE OF OCCURRENCE = 5/24 at 800 MAXIMUM DAILY MEAN = 28.8 µg/m3 DATE OF OCCURRENCE = 5/24

SECOND MAXIMUM PM10 = 65.8 µg/m3 DATE OF OCCURRENCE = 5/14 at 2200 SECOND MAXIMUM DAILY MEAN = 26.8 µg/m3 DATE OF OCCURRENCE = 5/14

MINIMUM PM10 = 2.2 µg/m3 DATE OF OCCURRENCE = 5/4 at 1600 MINUMUM DAILY MEAN = 9.5 µg/m3 DATE OF OCCURRENCE = 5/11

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

Draft

CSX AQ6 Modulair

HOURLY AVERAGES of PM10 in µg/m3 for JUNE, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	23.6	18.2	10.3	10.2	11.8	14.9	19.7	14.5	13.4	13.2	12.1	11.1	10.3	8.2	7.3	12.4	13.6	10.3	13.7	12.0	16.9	16.3	15.9	17.8	**13.7**	**23.6**	**7.3**
2	43.3	24.9	16.4	19.2	18.3	14.9	21.7	19.1	19.8	20.5	22.6	21.8	20.2	24.6	30.5	32.4	37.6	35.4	41.8	20.2	33.4	33.3	31.9	31.2	**26.5**	**43.3**	**14.9**
3	34.1	28.5	25.5	23.2	20.9	20.5	21.3	22.0	21.7	19.7	20.6	16.4	17.1	16.7	20.5	24.1	17.2	16.4	15.6	16.4	20.3	28.0	25.0	37.6	**22.1**	**37.6**	**15.6**
4	35.6	21.2	18.7	16.9	22.4	21.1	32.1	32.5	26.6	19.4	32.3	33.4	29.0	15.6	17.6	27.2	28.2	21.8	20.5	13.7	14.1	9.1	14.5	15.1	**22.4**	**35.6**	**9.1**
5	14.8	25.5	20.2	23.5	22.7	23.3	25.4	34.8	25.5	22.2	30.6	27.0	22.7	21.9	23.8	31.3	22.6	20.5	23.2	21.2	24.3	25.7	22.3	18.0	**23.9**	**34.8**	**14.8**
6	20.0	22.4	21.7	20.6	22.8	23.2	21.6	21.3	22.3	28.3	22.9	24.7	20.6	25.0	28.1	26.3	19.1	16.0	13.6	12.4	11.9	17.3	15.7	17.4	**20.6**	**28.3**	**11.9**
7	15.9	16.4	17.5	17.6	19.7	16.8	16.7	15.8	18.3	28.6	29.7	51.5	63.2	---	---	---	---	---	---	---	---	---	19.4	17.7	**---**	**---**	**---**
8	11.5	---	---	---	---	8.3	---	13.2	30.4	30.3	---	---	---	---	---	---	---	---	10.1	10.3	19.2	17.2	20.4	23.8	**---**	**---**	**---**
9	27.1	27.8	25.9	15.9	21.5	22.8	17.4	21.0	27.3	36.7	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
10	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
11	---	---	---	---	---	6.9	7.3	9.3	11.4	10.9	17.1	9.6	11.6	22.8	39.3	16.0	10.3	12.0	10.5	11.3	17.3	11.1	10.2	13.7	**13.6**	**39.3**	**6.9**
12	19.3	18.9	14.2	16.2	14.0	15.6	16.8	24.1	17.3	14.1	13.3	17.1	22.3	28.1	15.9	14.5	24.3	15.0	14.8	15.2	15.0	18.3	22.0	26.4	**18.0**	**28.1**	**13.3**
13	53.3	48.3	48.4	44.8	24.0	53.5	72.3	74.8	38.9	28.1	19.3	17.8	27.1	25.5	32.2	31.7	27.3	36.3	30.8	45.5	19.0	16.1	21.0	21.8	**35.7**	**74.8**	**16.1**
14	30.8	21.0	17.7	17.7	25.4	27.7	28.8	28.3	31.0	31.0	30.8	25.9	23.9	25.5	26.9	23.5	20.6	24.3	19.3	22.7	24.7	17.4	16.6	9.5	**23.8**	**31.0**	**9.5**
15	9.3	14.3	12.6	12.2	15.3	13.9	15.7	15.0	15.0	10.3	9.2	8.8	8.0	9.1	---	---	10.0	10.7	9.6	7.5	9.3	11.9	14.5	16.1	**11.7**	**16.1**	**7.5**
16	17.1	22.3	21.2	22.4	19.0	15.1	15.5	13.5	12.5	10.2	10.1	10.5	10.9	11.4	11.0	9.8	10.6	12.5	24.2	18.4	15.2	13.1	15.8	16.2	**14.9**	**24.2**	**9.8**
17	16.4	12.9	14.1	12.3	17.1	22.1	43.0	30.1	37.1	39.3	40.6	39.2	29.2	31.6	24.2	31.4	28.9	30.2	24.0	21.0	23.9	22.6	22.5	20.2	**26.4**	**43.0**	**12.3**
18	28.6	18.9	19.7	19.3	21.4	25.1	37.8	32.6	32.0	26.3	24.1	18.2	19.7	20.4	26.6	28.4	30.2	23.4	22.2	20.2	21.4	17.2	18.5	18.8	**23.8**	**37.8**	**17.2**
19	16.4	20.1	25.5	31.2	30.8	33.9	44.0	34.2	27.8	16.7	17.2	15.9	15.1	11.6	12.4	10.2	12.0	9.7	7.8	8.7	14.0	11.7	22.4	27.2	**19.9**	**44.0**	**7.8**
20	29.7	47.1	33.4	30.2	36.7	38.3	35.4	41.2	26.3	25.7	22.8	20.4	17.8	19.0	26.2	18.6	18.4	13.8	15.5	17.1	14.3	18.1	21.3	27.5	**25.6**	**47.1**	**13.8**
21	---	26.4	25.4	23.3	32.5	39.4	35.5	31.7	26.6	23.9	27.6	30.7	29.8	26.2	30.9	21.6	24.1	27.9	23.3	21.8	40.0	32.0	31.4	26.2	**28.6**	**40.0**	**21.6**
22	33.3	32.4	30.5	28.4	33.9	28.6	31.8	28.5	27.6	29.0	25.5	23.0	23.3	24.8	26.1	27.4	28.1	24.6	25.7	19.6	23.0	23.3	23.4	20.8	**26.8**	**33.9**	**19.6**
23	20.3	23.2	18.2	20.4	15.4	16.6	18.7	25.3	31.1	45.3	49.1	44.9	44.1	53.1	42.8	38.7	44.1	37.8	33.5	32.3	37.5	31.5	27.1	23.3	**32.3**	**53.1**	**15.4**
24	28.6	28.7	26.4	17.8	15.5	14.1	15.5	19.3	23.1	50.0	---	---	---	---	---	---	---	---	---	---	18.3	20.2	18.5	19.2	**---**	**---**	**---**
25	19.2	19.3	20.2	17.0	18.5	21.6	22.3	36.3	33.0	21.4	17.8	20.8	22.9	21.3	24.1	30.5	25.7	26.0	21.0	21.4	20.1	21.7	23.2	18.9	**22.7**	**36.3**	**17.0**
26	20.5	19.8	27.9	27.0	38.4	32.6	38.5	35.7	42.2	40.1	33.1	27.8	26.0	31.4	28.7	22.2	27.4	24.5	21.5	24.1	29.7	20.1	19.7	9.9	**27.9**	**42.2**	**9.9**
27	8.6	10.4	9.8	9.8	10.5	11.3	10.9	11.6	12.9	9.6	10.5	13.6	---	---	---	14.1	13.1	15.4	17.4	15.9	21.0	25.6	14.7	14.6	**13.4**	**25.6**	**8.6**
28	10.5	10.1	7.8	7.3	7.2	7.7	6.5	7.7	6.6	7.2	8.3	8.5	11.8	9.0	10.3	12.7	11.9	11.3	15.9	17.0	21.3	19.2	22.3	23.7	**11.7**	**23.7**	**6.5**
29	22.6	35.6	42.7	41.6	30.2	55.3	58.2	47.5	43.8	35.2	26.5	28.4	21.2	22.3	18.8	17.6	17.2	16.5	18.8	27.6	17.1	19.1	18.7	17.2	**29.2**	**58.2**	**16.5**
30	15.1	14.4	19.2	28.8	14.0	15.1	15.4	19.5	19.2	22.7	20.7	21.9	18.7	19.6	23.3	21.9	19.5	21.6	12.4	14.0	12.4	19.3	---	---	**18.6**	**28.8**	**12.4**
MEAN	**23.2**	**23.3**	**21.9**	**21.3**	**21.5**	**22.8**	**26.6**	**26.2**	**24.9**	**24.7**	**22.9**	**22.7**	**22.7**	**21.9**	**23.8**	**22.7**	**21.7**	**20.6**	**19.5**	**18.8**	**20.5**	**19.9**	**20.3**	**20.4**	**22.3**		
MAX	**53.3**	**48.3**	**48.4**	**44.8**	**38.4**	**55.3**	**72.3**	**74.8**	**43.8**	**50.0**	**49.1**	**51.5**	**63.2**	**53.1**	**42.8**	**38.7**	**44.1**	**37.8**	**41.8**	**45.5**	**40.0**	**33.3**	**31.9**	**37.6**		**74.8**	
MIN	**8.6**	**10.1**	**7.8**	**7.3**	**7.2**	**6.9**	**6.5**	**7.7**	**6.6**	**7.2**	**8.3**	**8.5**	**8.0**	**8.2**	**7.3**	**9.8**	**10.0**	**9.7**	**7.8**	**7.5**	**9.3**	**9.1**	**10.2**	**9.5**			**6.5**

POSSIBLE NUMBER OF OBSERVATIONS = 720 ACTUAL NUMBER OF OBSERVATIONS = 637 DATA RECOVERY RATE = 88.5% DATA CAPTURE RATE = 83.3%

MONTHLY MEAN = 22.3 µg/m3

MAXIMUM PM10 = 74.8 µg/m3 DATE OF OCCURRENCE = 6/13 at 800 MAXIMUM DAILY MEAN = 35.7 µg/m3 DATE OF OCCURRENCE = 6/13

SECOND MAXIMUM PM10 = 72.3 µg/m3 DATE OF OCCURRENCE = 6/13 at 700 SECOND MAXIMUM DAILY MEAN = 32.3 µg/m3 DATE OF OCCURRENCE = 6/23

MINIMUM PM10 = 6.5 µg/m3 DATE OF OCCURRENCE = 6/28 at 700 MINUMUM DAILY MEAN = 11.7 µg/m3 DATE OF OCCURRENCE = 6/15

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

Draft

CSX AQ6 Modulair

HOURLY AVERAGES of PM2.5 in µg/m3 for APRIL, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	9.9	9.1	9.5	10.3	8.4	9.6	9.6	12.9	7.9	6.5	4.3	2.9	2.0	1.9	2.5	4.0	3.0	3.7	5.8	8.4	5.7	4.3	4.2	5.4	**6.3**	**12.9**	**1.9**
2	5.9	8.0	9.3	5.8	4.6	7.1	6.2	7.3	9.6	4.4	2.3	1.6	1.7	2.2	2.0	2.5	0.8	0.7	0.8	1.0	1.5	1.3	1.0	1.0	**3.6**	**9.6**	**0.7**
3	1.2	2.1	2.0	2.1	2.7	2.8	1.9	1.2	1.7	2.6	3.0	0.8	0.6	0.4	0.5	2.9	0.4	0.4	1.1	3.1	2.0	2.9	5.9	2.7	**1.9**	**5.9**	**0.4**
4	1.9	2.4	4.7	4.9	4.5	---	---	6.9	9.2	9.6	6.2	5.3	4.1	4.7	4.3	3.3	0.9	0.6	0.7	0.8	1.1	1.4	1.3	1.3	**3.6**	**9.6**	**0.6**
5	1.4	1.2	1.2	1.2	1.5	2.1	2.8	8.3	6.7	5.9	3.3	2.2	2.1	3.0	2.9	2.2	---	---	---	2.7	1.7	1.7	1.8	1.8	**2.7**	**8.3**	**1.2**
6	2.2	2.3	2.7	2.2	1.9	2.2	2.1	2.7	3.0	3.2	2.0	1.4	1.4	1.5	1.6	1.8	2.0	1.9	2.6	2.4	2.8	3.8	4.6	4.9	**2.4**	**4.9**	**1.4**
7	4.4	3.7	3.9	4.7	4.2	5.7	4.0	3.3	2.9	2.2	1.8	1.1	1.2	1.4	1.5	1.5	1.4	1.3	1.4	1.6	2.2	3.5	5.8	4.0	**2.8**	**5.8**	**1.1**
8	4.1	5.9	5.7	6.5	5.6	5.4	6.4	9.6	14.7	8.0	8.8	4.6	3.2	4.7	3.7	2.6	2.3	2.0	2.0	2.2	2.2	2.9	3.3	6.1	**5.1**	**14.7**	**2.0**
9	8.3	12.0	11.1	9.3	8.2	8.4	9.4	13.3	17.5	11.0	8.2	11.7	4.4	6.8	6.0	5.3	6.4	8.9	17.4	19.7	20.8	22.4	23.4	23.8	**12.2**	**23.8**	**4.4**
10	24.6	26.1	27.4	30.5	22.9	23.4	24.8	27.0	27.9	35.1	25.6	12.0	9.3	7.4	8.9	7.9	7.2	6.4	7.8	9.3	13.9	9.1	10.3	14.3	**17.4**	**35.1**	**6.4**
11	14.0	13.8	11.5	10.4	11.7	11.3	11.6	9.7	7.9	5.5	5.2	5.2	5.9	5.9	7.0	7.5	8.5	9.8	9.8	9.7	11.2	11.5	12.8	13.3	**9.6**	**14.0**	**5.2**
12	12.6	9.0	8.6	2.8	2.4	2.7	3.2	4.3	1.5	0.6	1.7	2.5	---	---	---	---	---	3.4	2.2	3.3	2.7	1.0	0.8	1.8	**3.5**	**12.6**	**0.6**
13	---	---	---	1.1	1.9	1.7	1.7	1.9	2.6	2.9	---	---	---	---	3.4	---	3.3	3.0	2.7	2.7	2.7	3.1	3.7	4.1	**---**	**---**	**---**
14	4.3	4.7	11.5	3.3	4.1	3.9	4.6	5.2	4.6	3.5	3.2	3.6	4.2	7.2	8.0	12.9	11.2	6.4	6.3	6.4	7.4	8.1	8.8	9.1	**6.3**	**12.9**	**3.2**
15	4.3	3.9	5.1	8.2	6.3	5.2	7.0	10.0	8.0	7.9	8.8	8.7	9.5	8.2	8.7	8.1	8.8	8.6	---	9.9	12.1	15.5	17.1	16.8	**8.9**	**17.1**	**3.9**
16	8.6	5.4	4.0	4.4	5.3	5.3	5.6	7.3	6.2	4.0	2.7	3.0	3.8	3.8	3.4	4.3	5.0	4.0	3.6	4.0	5.1	5.6	6.0	7.3	**4.9**	**8.6**	**2.7**
17	6.4	4.8	4.9	4.9	4.9	5.8	5.5	5.6	7.1	6.1	7.5	13.0	6.9	7.3	8.0	6.9	7.7	10.1	6.8	10.4	9.2	6.1	8.2	9.4	**7.2**	**13.0**	**4.8**
18	13.8	17.8	16.9	16.2	17.5	18.3	20.9	19.0	18.5	19.1	18.3	14.1	13.0	10.6	10.2	9.3	10.9	9.2	8.6	6.7	7.7	12.1	12.9	13.7	**13.9**	**20.9**	**6.7**
19	9.8	7.0	6.2	4.0	3.4	3.1	2.5	2.9	3.3	3.5	3.4	4.4	5.4	9.5	10.0	7.5	8.4	9.4	8.4	8.5	7.5	7.9	6.4	9.3	**6.3**	**10.0**	**2.5**
20	9.4	8.0	7.4	8.6	9.7	10.9	12.9	15.8	17.5	18.8	15.9	9.7	6.9	5.3	4.7	4.3	3.9	5.7	3.3	4.1	4.4	4.4	4.1	3.5	**8.2**	**18.8**	**3.3**
21	3.0	2.8	2.8	2.7	3.3	3.8	2.4	2.6	3.0	2.7	3.0	2.8	3.0	4.9	5.3	5.3	6.2	5.6	5.4	5.2	5.3	5.8	8.4	23.2	**4.9**	**23.2**	**2.4**
22	10.4	8.6	7.9	7.3	6.5	6.7	5.8	7.4	8.2	7.2	5.4	6.4	7.1	7.6	7.3	6.4	6.5	6.0	4.9	4.5	3.7	4.3	5.3	5.1	**6.5**	**10.4**	**3.7**
23	7.2	5.9	5.9	7.0	7.6	8.1	9.8	12.8	17.4	16.3	10.3	5.1	5.5	4.7	4.1	4.1	5.0	5.8	8.2	4.3	4.7	4.3	4.2	4.1	**7.1**	**17.4**	**4.1**
24	4.6	5.8	7.1	8.2	8.7	9.7	10.7	11.1	11.0	---	6.3	5.6	---	---	---	---	---	---	---	---	4.8	3.3	3.4	3.2	**---**	**---**	**---**
25	3.4	3.6	4.2	4.1	3.9	2.9	2.4	2.5	2.9	3.3	4.2	4.9	3.5	3.6	5.2	9.9	8.5	7.4	4.9	5.7	5.6	5.6	5.8	5.2	**4.7**	**9.9**	**2.4**
26	5.0	7.1	9.9	6.7	5.9	5.9	6.2	6.6	6.4	5.6	6.2	4.3	3.2	2.5	1.8	2.0	1.6	1.7	2.3	2.6	4.6	3.0	4.2	4.4	**4.5**	**9.9**	**1.6**
27	3.1	3.7	3.6	2.5	3.4	3.7	2.7	4.4	3.3	2.9	3.9	4.1	4.2	4.9	4.1	3.8	3.8	3.7	3.7	4.9	3.3	3.2	3.5	3.8	**3.6**	**4.9**	**2.5**
28	4.3	4.7	5.5	6.1	5.9	5.0	5.3	5.9	10.5	15.0	11.6	10.0	10.3	10.6	10.5	10.5	10.4	11.3	13.1	11.7	11.8	11.7	14.9	15.6	**9.6**	**15.6**	**4.3**
29	16.6	14.7	13.6	14.4	14.9	14.2	14.8	15.2	15.0	18.6	23.6	12.7	11.8	12.3	10.2	9.6	9.5	9.2	9.3	10.1	10.0	10.6	11.0	10.8	**13.0**	**23.6**	**9.2**
30	13.8	14.7	14.6	18.3	18.3	15.3	16.6	15.6	15.9	15.0	14.5	14.7	15.1	12.6	12.4	13.6	12.4	9.9	9.7	10.6	11.8	---	5.4	6.0	**13.3**	**18.3**	**5.4**
MEAN	**7.5**	**7.5**	**7.9**	**7.3**	**7.0**	**7.2**	**7.6**	**8.6**	**9.1**	**8.5**	**7.6**	**6.2**	**5.5**	**5.8**	**5.7**	**5.9**	**5.8**	**5.6**	**5.7**	**6.1**	**6.3**	**6.2**	**7.0**	**7.8**	**6.9**		
MAX	**24.6**	**26.1**	**27.4**	**30.5**	**22.9**	**23.4**	**24.8**	**27.0**	**27.9**	**35.1**	**25.6**	**14.7**	**15.1**	**12.6**	**12.4**	**13.6**	**12.4**	**11.3**	**17.4**	**19.7**	**20.8**	**22.4**	**23.4**	**23.8**		**35.1**	
MIN	**1.2**	**1.2**	**1.2**	**1.1**	**1.5**	**1.7**	**1.7**	**1.2**	**1.5**	**0.6**	**1.7**	**0.8**	**0.6**	**0.4**	**0.5**	**1.5**	**0.4**	**0.4**	**0.7**	**0.8**	**1.1**	**1.0**	**0.8**	**1.0**			**0.4**

POSSIBLE NUMBER OF OBSERVATIONS = 720 ACTUAL NUMBER OF OBSERVATIONS = 691 DATA RECOVERY RATE = 96.0% DATA CAPTURE RATE = 93.3%

MONTHLY MEAN = 6.9 µg/m3

MAXIMUM PM2.5 = 35.1 µg/m3 DATE OF OCCURRENCE = 4/10 at 1000 MAXIMUM DAILY MEAN = 17.4 µg/m3 DATE OF OCCURRENCE = 4/10

SECOND MAXIMUM PM2.5 = 30.5 µg/m3 DATE OF OCCURRENCE = 4/10 at 400 SECOND MAXIMUM DAILY MEAN = 13.9 µg/m3 DATE OF OCCURRENCE = 4/18

MINIMUM PM2.5 = 0.4 µg/m3 DATE OF OCCURRENCE = 4/3 at 1400 MINUMUM DAILY MEAN = 1.9 µg/m3 DATE OF OCCURRENCE = 4/3

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

Draft

CSX AQ6 Modulair

HOURLY AVERAGES of PM2.5 in µg/m3 for MAY, 2024

Hr Beg Hr End Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	7.5	5.7	6.5	6.5	6.5	7.0	7.3	8.8	7.6	6.3	6.1	6.3	6.7	5.8	6.4	6.2	6.2	6.0	5.6	5.9	6.1	7.0	6.2	7.3	**6.5**	**8.8**	**5.6**
2	8.5	8.2	9.4	9.4	9.8	10.4	12.7	15.7	15.9	11.9	9.2	9.4	10.7	9.5	9.7	10.3	10.1	9.1	9.4	10.1	11.1	14.1	15.7	18.5	**11.1**	**18.5**	**8.2**
3	19.9	15.1	11.4	8.8	5.4	5.2	5.7	6.3	6.6	5.8	5.6	5.6	5.2	6.8	8.0	8.4	6.4	5.8	6.7	7.0	6.3	4.8	3.7	3.2	**7.2**	**19.9**	**3.2**
4	3.7	4.7	4.8	4.3	4.2	5.3	5.4	5.0	3.6	3.4	5.4	4.8	4.1	4.5	1.8	1.1	1.3	1.4	1.0	2.6	3.9	5.3	6.5	7.0	**3.9**	**7.0**	**1.0**
5	6.0	5.4	5.8	8.0	6.8	4.6	2.9	2.3	2.4	3.0	2.8	4.3	3.7	5.1	4.5	5.4	5.7	4.3	5.0	4.7	14.2	13.0	8.1	10.5	**5.7**	**14.2**	**2.3**
6	11.4	12.2	13.5	8.8	9.3	14.1	9.8	12.1	9.5	7.3	9.7	13.6	14.8	12.1	11.7	10.5	6.7	8.8	13.4	14.2	17.7	14.7	14.8	16.4	**11.9**	**17.7**	**6.7**
7	17.3	13.1	14.3	15.5	16.1	15.0	12.9	13.3	14.8	17.5	13.9	8.9	9.1	7.1	10.3	11.0	11.1	15.5	20.3	21.9	15.9	9.4	7.7	7.4	**13.3**	**21.9**	**7.1**
8	7.0	6.4	7.4	9.0	9.2	9.6	10.5	11.8	12.7	13.2	12.6	13.4	9.7	8.0	7.4	7.8	7.0	7.1	6.9	7.2	7.3	8.5	8.8	9.7	**9.0**	**13.4**	**6.4**
9	6.8	7.0	7.4	7.5	7.5	7.8	8.5	6.4	4.3	3.1	3.8	4.1	4.5	4.4	5.2	6.7	5.2	3.8	3.8	5.0	5.1	5.5	7.0	5.1	**5.6**	**8.5**	**3.1**
10	6.0	3.6	3.0	3.0	3.1	3.8	4.7	5.1	5.6	4.8	3.8	2.9	1.5	1.4	1.2	1.1	0.9	0.9	1.2	1.0	0.7	1.1	1.0	1.5	**2.6**	**6.0**	**0.7**
11	1.7	2.2	2.5	2.6	2.5	3.0	3.4	4.0	3.6	2.4	2.0	1.3	1.1	1.3	1.4	1.8	1.8	2.7	1.7	2.9	3.0	3.2	5.1	5.6	**2.6**	**5.6**	**1.1**
12	4.6	4.6	2.5	3.0	3.5	5.1	4.6	7.0	7.7	5.1	---	---	---	---	2.5	2.8	2.5	2.1	3.7	3.3	3.3	2.1	4.4	9.0	**4.1**	**9.0**	**2.1**
13	7.4	5.3	6.0	5.9	5.7	9.0	7.1	7.9	6.9	6.8	6.9	4.4	5.9	6.0	---	4.8	5.0	4.9	4.6	4.2	4.8	4.7	5.3	6.3	**5.9**	**9.0**	**4.2**
14	5.4	6.8	12.5	7.8	8.8	8.1	9.6	10.2	9.7	7.6	7.9	7.8	5.2	7.5	8.1	10.4	7.9	12.3	4.3	7.6	6.8	26.3	8.2	6.9	**8.9**	**26.3**	**4.3**
15	4.3	4.2	3.6	3.8	5.1	5.1	4.4	3.5	4.3	7.6	8.7	2.4	3.4	2.6	4.1	4.9	4.7	3.9	5.4	6.0	5.3	5.5	6.7	8.3	**4.9**	**8.7**	**2.4**
16	8.1	7.6	7.7	8.9	9.1	9.0	11.7	10.3	6.3	4.4	3.7	3.6	4.4	3.9	3.3	---	---	3.4	3.2	3.0	2.2	1.9	2.2	2.7	**5.4**	**11.7**	**1.9**
17	3.6	3.8	3.5	3.2	3.5	3.2	2.8	3.5	4.7	4.9	3.7	2.7	2.5	2.8	4.1	3.6	3.1	3.0	2.7	2.9	3.4	4.0	5.4	6.1	**3.6**	**6.1**	**2.5**
18	6.2	6.5	7.3	7.6	8.4	8.6	9.0	8.7	8.5	8.6	8.7	9.9	7.3	8.7	4.5	6.7	7.6	8.9	14.8	16.0	15.4	18.1	22.4	22.8	**10.4**	**22.8**	**4.5**
19	23.9	23.5	17.7	15.8	15.6	15.6	11.8	12.2	12.7	17.1	19.8	20.1	15.2	11.8	16.8	8.8	10.4	12.6	13.1	14.2	14.7	15.8	17.1	16.0	**15.5**	**23.9**	**8.8**
20	18.1	5.7	4.9	2.1	2.8	2.1	3.8	3.6	5.1	2.8	2.8	3.3	4.2	4.7	6.6	8.2	7.7	6.1	6.9	7.7	7.9	15.7	12.9	14.7	**6.6**	**18.1**	**2.1**
21	12.1	12.8	14.0	11.3	11.9	11.2	13.3	14.4	11.9	8.3	8.3	17.6	11.3	8.8	7.6	7.9	6.3	5.5	5.0	4.5	4.4	5.5	5.8	7.4	**9.4**	**17.6**	**4.4**
22	7.0	8.5	7.4	7.3	7.1	6.9	5.5	5.4	5.5	6.0	5.5	5.2	5.8	9.6	8.4	9.2	8.2	7.6	7.5	7.3	8.4	9.0	7.5	7.2	**7.2**	**9.6**	**5.2**
23	8.6	10.1	13.8	15.7	17.0	19.5	21.9	24.4	26.0	21.9	17.2	15.9	16.5	14.4	11.5	5.9	6.8	6.9	7.7	8.2	12.2	15.5	15.9	19.7	**14.7**	**26.0**	**5.9**
24	19.8	20.7	17.6	16.4	15.9	16.6	17.0	21.2	16.4	11.6	7.6	6.8	4.4	3.1	3.0	4.6	5.0	5.7	5.4	8.7	10.4	14.3	16.3	15.8	**11.8**	**21.2**	**3.0**
25	16.6	17.6	19.6	20.4	19.7	21.3	22.3	23.9	20.3	19.2	14.8	17.1	14.1	11.8	10.0	9.6	9.1	7.9	8.7	9.9	9.8	12.2	6.9	7.9	**14.6**	**23.9**	**6.9**
26	9.7	11.5	13.0	12.3	11.3	10.0	10.9	13.1	11.3	7.7	6.4	6.6	6.6	6.8	6.8	6.6	6.8	11.0	8.5	9.0	10.8	10.9	11.7	9.8	**9.5**	**13.1**	**6.4**
27	9.7	10.5	9.1	9.1	9.2	10.3	10.5	7.9	7.0	7.1	8.2	7.9	8.0	6.8	6.9	7.8	7.2	8.2	8.2	7.7	5.5	4.9	3.3	4.0	**7.7**	**10.5**	**3.3**
28	4.1	4.4	5.0	6.2	6.9	7.5	6.5	5.1	4.9	4.7	4.9	4.9	6.1	8.4	---	---	---	---	7.3	5.3	6.4	---	5.9	5.8	**5.8**	**8.4**	**4.1**
29	5.1	5.1	5.1	5.0	6.0	6.0	7.2	6.3	6.2	4.4	4.1	3.4	3.3	4.2	3.1	3.4	6.5	12.2	9.0	8.5	6.4	7.2	6.4	5.5	**5.8**	**12.2**	**3.1**
30	4.9	4.7	4.7	4.2	4.1	3.7	4.0	4.9	5.2	4.8	5.2	5.1	5.2	5.5	5.6	5.8	5.4	5.6	5.3	4.7	4.7	5.4	6.3	7.3	**5.0**	**7.3**	**3.7**
31	7.0	6.1	5.2	4.4	4.8	4.9	5.1	4.8	4.9	5.9	4.8	4.6	4.8	5.7	4.9	4.9	4.6	4.6	4.7	4.8	5.7	16.8	17.8	14.2	**6.5**	**17.8**	**4.4**
MEAN	**9.1**	**8.5**	**8.6**	**8.2**	**8.3**	**8.7**	**8.8**	**9.3**	**8.8**	**7.9**	**7.5**	**7.5**	**6.8**	**6.6**	**6.4**	**6.4**	**6.1**	**6.6**	**6.8**	**7.3**	**7.7**	**9.4**	**8.8**	**9.3**	**7.9**		
MAX	**23.9**	**23.5**	**19.6**	**20.4**	**19.7**	**21.3**	**22.3**	**24.4**	**26.0**	**21.9**	**19.8**	**20.1**	**16.5**	**14.4**	**16.8**	**11.0**	**11.1**	**15.5**	**20.3**	**21.9**	**17.7**	**26.3**	**22.4**	**22.8**		**26.3**	
MIN	**1.7**	**2.2**	**2.5**	**2.1**	**2.5**	**2.1**	**2.8**	**2.3**	**2.4**	**2.4**	**2.0**	**1.3**	**1.1**	**1.3**	**1.2**	**1.1**	**0.9**	**0.9**	**1.0**	**1.0**	**0.7**	**1.1**	**1.0**	**1.5**			**0.7**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 732 DATA RECOVERY RATE = 98.4% DATA CAPTURE RATE = 100.0%

MONTHLY MEAN = 7.9 µg/m3

MAXIMUM PM2.5 = 26.3 µg/m3 DATE OF OCCURRENCE = 5/14 at 2200 MAXIMUM DAILY MEAN = 15.5 µg/m3 DATE OF OCCURRENCE = 5/19

SECOND MAXIMUM PM2.5 = 26.0 µg/m3 DATE OF OCCURRENCE = 5/23 at 900 SECOND MAXIMUM DAILY MEAN = 14.7 µg/m3 DATE OF OCCURRENCE = 5/23

MINIMUM PM2.5 = 0.7 µg/m3 DATE OF OCCURRENCE = 5/10 at 2100 MINUMUM DAILY MEAN = 2.6 µg/m3 DATE OF OCCURRENCE = 5/10

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

Draft

CSX AQ6 Modulair

HOURLY AVERAGES of PM2.5 in µg/m3 for JUNE, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	12.7	8.6	6.7	6.3	6.1	8.0	9.2	7.8	6.7	6.0	5.3	3.4	2.9	2.8	3.0	4.6	5.1	4.1	4.0	4.9	5.5	6.9	8.7	8.4	**6.1**	**12.7**	**2.8**
2	12.7	10.9	9.4	9.9	9.1	9.3	11.7	11.3	11.2	12.0	12.3	12.4	10.6	12.2	14.0	16.4	16.9	16.0	15.9	13.2	15.7	16.9	17.3	15.9	**13.0**	**17.3**	**9.1**
3	17.8	16.8	15.7	15.2	15.5	15.0	15.3	16.2	15.0	15.9	16.8	13.9	13.4	10.4	7.8	10.0	8.4	8.2	7.8	7.7	11.1	15.3	15.2	16.7	**13.3**	**17.8**	**7.7**
4	17.4	13.4	11.4	11.4	12.5	11.7	12.3	15.3	17.4	12.5	12.9	12.4	9.0	6.9	6.9	13.8	16.2	13.8	15.0	9.5	9.3	6.2	7.8	7.5	**11.7**	**17.4**	**6.2**
5	7.9	9.0	9.1	10.8	8.1	9.4	10.3	14.3	10.7	11.9	14.9	15.3	16.8	18.8	20.9	13.0	10.6	10.4	10.4	11.0	11.3	13.2	11.1	8.7	**11.9**	**20.9**	**7.9**
6	10.9	10.6	11.5	13.1	13.7	13.8	14.1	12.6	13.5	14.0	14.5	14.7	13.9	14.7	13.4	13.2	10.6	8.6	7.2	6.8	7.4	11.6	11.1	10.6	**11.9**	**14.7**	**6.8**
7	9.1	8.5	7.7	7.1	7.0	7.8	7.3	7.0	6.5	5.1	4.6	6.1	10.1	14.5	---	---	---	---	---	---	---	---	3.6	4.3	**---**	**---**	**---**
8	4.7	---	---	---	---	3.8	---	4.5	7.6	6.8	---	---	---	---	---	---	5.9	---	3.8	3.8	4.6	6.3	9.2	11.0	**---**	**---**	**---**
9	12.8	11.7	10.7	8.0	8.0	10.1	6.9	7.2	7.9	7.7	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
10	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
11	---	---	---	---	---	4.1	4.6	5.0	5.4	5.7	6.2	4.4	4.8	6.7	8.6	5.7	6.0	6.2	6.6	6.5	8.3	7.3	7.2	7.9	**6.1**	**8.6**	**4.1**
12	10.1	10.0	8.5	8.9	8.2	8.0	9.8	10.4	8.5	6.6	7.4	8.9	9.8	11.5	9.1	7.4	8.8	8.9	7.5	7.7	7.6	9.6	11.4	13.6	**9.0**	**13.6**	**6.6**
13	15.7	13.7	14.9	15.0	14.6	16.8	18.5	15.5	12.8	13.8	12.2	12.2	13.1	12.5	13.9	13.5	13.0	12.4	10.5	9.6	8.2	6.8	7.8	8.8	**12.7**	**18.5**	**6.8**
14	13.8	9.4	10.0	11.4	15.7	15.7	18.4	18.1	21.5	22.4	22.9	17.1	15.9	17.2	16.7	13.9	12.6	16.2	14.3	14.3	12.8	7.2	7.0	4.4	**14.5**	**22.9**	**4.4**
15	5.0	5.1	6.7	6.8	9.9	10.0	10.0	9.6	7.8	6.7	6.3	6.0	5.9	6.9	---	---	6.5	6.7	6.4	6.3	6.9	8.0	9.3	9.8	**7.3**	**10.0**	**5.0**
16	10.5	12.1	14.5	12.7	12.2	11.6	10.6	9.8	8.3	6.8	6.2	5.8	6.4	7.2	7.6	7.2	7.8	7.5	9.0	8.6	8.2	6.9	7.0	6.6	**8.7**	**14.5**	**5.8**
17	7.6	5.6	6.4	6.6	8.7	8.2	9.0	7.7	7.5	8.4	10.1	9.4	11.4	13.1	13.8	15.3	13.8	12.3	9.9	8.8	7.6	6.3	5.6	5.4	**9.1**	**15.3**	**5.4**
18	6.9	6.1	5.9	6.0	6.5	6.5	6.7	7.0	8.2	10.6	9.2	9.7	10.9	12.2	12.1	13.6	13.7	13.7	13.5	11.0	9.7	6.7	4.9	5.2	**9.0**	**13.7**	**4.9**
19	5.1	5.7	5.8	6.3	5.8	6.4	6.6	5.6	6.0	4.9	5.5	4.9	6.2	7.0	6.1	3.9	3.7	4.0	3.4	3.6	4.4	4.7	5.6	5.6	**5.2**	**7.0**	**3.4**
20	6.6	11.1	8.9	7.2	7.9	8.6	8.9	7.1	7.0	7.7	7.0	6.1	6.7	6.5	7.9	7.1	6.5	6.2	6.2	4.7	4.5	5.6	6.0	5.7	**6.9**	**11.1**	**4.5**
21	---	7.5	7.4	6.7	7.0	9.0	9.0	8.7	8.7	10.3	12.0	10.7	9.8	10.4	12.2	12.0	11.6	10.4	8.9	8.3	10.7	10.9	11.0	9.8	**9.6**	**12.2**	**6.7**
22	11.7	9.9	9.2	10.3	11.5	11.3	12.3	14.1	17.0	19.0	16.4	13.8	14.9	16.1	16.8	17.2	15.1	14.5	14.2	11.5	12.4	13.0	12.6	12.0	**13.6**	**19.0**	**9.2**
23	12.7	12.1	11.1	12.2	9.6	10.5	10.5	10.5	12.8	15.7	18.9	20.8	19.9	25.4	18.9	18.7	18.6	18.2	19.4	19.1	20.1	16.4	14.6	14.1	**15.8**	**25.4**	**9.6**
24	16.0	18.1	17.3	13.7	11.5	10.2	10.4	8.9	8.3	12.6	---	---	---	---	---	---	---	---	---	---	11.0	12.3	11.7	12.4	**---**	**---**	**---**
25	12.4	13.0	13.9	13.4	13.5	14.0	13.7	14.8	13.9	13.5	12.5	12.9	13.6	13.4	14.7	14.7	14.1	14.9	12.3	9.4	9.6	8.8	8.3	9.0	**12.6**	**14.9**	**8.3**
26	9.6	11.6	15.0	15.5	17.5	16.6	16.3	17.0	18.9	20.0	19.0	14.4	14.5	14.5	14.7	13.2	12.1	12.6	13.8	13.4	10.3	7.8	10.9	5.7	**13.9**	**20.0**	**5.7**
27	5.3	5.5	5.0	5.2	5.2	5.0	5.2	5.5	5.4	4.2	5.2	5.9	---	---	---	7.8	5.2	9.0	7.3	10.0	9.2	12.3	9.6	7.0	**6.6**	**12.3**	**4.2**
28	5.7	5.3	4.7	4.7	4.7	4.6	4.3	3.4	3.3	3.4	3.5	3.5	3.9	4.2	4.6	5.6	4.9	4.3	4.8	5.1	5.4	5.3	4.4	4.1	**4.4**	**5.7**	**3.3**
29	3.5	6.4	11.4	13.4	5.0	11.9	13.8	6.6	8.8	8.0	8.3	8.1	8.0	8.5	8.8	8.7	9.0	8.1	7.7	8.3	6.9	6.6	7.5	8.7	**8.4**	**13.8**	**3.5**
30	5.9	6.5	7.8	8.3	9.1	9.6	10.1	11.6	13.1	16.4	17.2	17.0	15.2	16.9	19.8	19.5	14.9	13.5	4.7	4.3	7.9	12.5	---	---	**11.9**	**19.8**	**4.3**
MEAN	**10.0**	**9.8**	**9.9**	**9.9**	**9.8**	**9.9**	**10.6**	**10.1**	**10.3**	**10.6**	**11.1**	**10.4**	**10.7**	**11.6**	**11.8**	**11.5**	**10.4**	**10.4**	**9.4**	**8.7**	**9.1**	**9.3**	**9.1**	**8.8**	**10.1**		
MAX	**17.8**	**18.1**	**17.3**	**15.5**	**17.5**	**16.8**	**18.5**	**18.1**	**21.5**	**22.4**	**22.9**	**20.8**	**19.9**	**25.4**	**20.9**	**19.5**	**18.6**	**18.2**	**19.4**	**19.1**	**20.1**	**16.9**	**17.3**	**16.7**		**25.4**	
MIN	**3.5**	**5.1**	**4.7**	**4.7**	**4.7**	**3.8**	**4.3**	**3.4**	**3.3**	**3.4**	**3.5**	**3.4**	**2.9**	**2.8**	**3.0**	**3.9**	**3.7**	**4.0**	**3.4**	**3.6**	**4.4**	**4.7**	**3.6**	**4.1**			**2.8**

POSSIBLE NUMBER OF OBSERVATIONS = 720 ACTUAL NUMBER OF OBSERVATIONS = 639 DATA RECOVERY RATE = 88.8% DATA CAPTURE RATE = 83.3%

MONTHLY MEAN = 10.1 µg/m3

MAXIMUM PM2.5 = 25.4 µg/m3 DATE OF OCCURRENCE = 6/23 at 1400 MAXIMUM DAILY MEAN = 15.8 µg/m3 DATE OF OCCURRENCE = 6/23

SECOND MAXIMUM PM2.5 = 22.9 µg/m3 DATE OF OCCURRENCE = 6/14 at 1100 SECOND MAXIMUM DAILY MEAN = 14.5 µg/m3 DATE OF OCCURRENCE = 6/14

MINIMUM PM2.5 = 2.8 µg/m3 DATE OF OCCURRENCE = 6/1 at 1400 MINUMUM DAILY MEAN = 4.4 µg/m3 DATE OF OCCURRENCE = 6/28

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

Draft

CSX AQ7 Modulair

HOURLY AVERAGES of PM10 in µg/m3 for APRIL, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	16.4	12.3	15.2	15.8	11.4	15.8	15.1	23.3	13.1	9.9	6.2	4.1	1.8	2.6	4.1	4.7	6.0	7.4	9.4	10.9	9.2	7.9	10.5	14.6	**10.3**	**23.3**	**1.8**
2	14.3	10.2	12.1	10.3	6.6	13.2	8.9	21.1	34.1	5.1	4.6	2.8	3.1	3.0	3.1	5.2	0.8	0.6	1.0	1.1	1.8	1.6	1.1	0.9	**6.9**	**34.1**	**0.6**
3	1.2	2.7	1.8	1.9	2.3	2.6	1.8	1.1	3.4	7.0	8.9	1.6	1.3	0.4	0.5	7.9	0.9	0.4	1.1	3.1	2.2	---	---	---	**2.6**	**8.9**	**0.4**
4	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
5	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
6	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
7	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
8	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
9	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
10	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
11	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
12	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
13	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
14	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
15	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
16	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
17	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
18	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
19	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
20	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
21	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
22	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
23	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
24	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
25	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
26	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
27	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
28	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
29	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
30	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
MEAN	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**6.8**		
MAX	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**		**34.1**	
MIN	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**			**0.4**

POSSIBLE NUMBER OF OBSERVATIONS = 720 ACTUAL NUMBER OF OBSERVATIONS = 69 DATA RECOVERY RATE = 9.6% DATA CAPTURE RATE = 10.0%

MONTHLY MEAN = 6.8 µg/m3

MAXIMUM PM10 = 34.1 µg/m3 DATE OF OCCURRENCE = 4/2 at 900 MAXIMUM DAILY MEAN = 10.3 µg/m3 DATE OF OCCURRENCE = 4/1

SECOND MAXIMUM PM10 = 23.3 µg/m3 DATE OF OCCURRENCE = 4/1 at 800 SECOND MAXIMUM DAILY MEAN = 6.9 µg/m3 DATE OF OCCURRENCE = 4/2

MINIMUM PM10 = 0.4 µg/m3 DATE OF OCCURRENCE = 4/3 at 1400 MINUMUM DAILY MEAN = 2.6 µg/m3 DATE OF OCCURRENCE = 4/3

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

Draft

CSX AQ7 Modulair

HOURLY AVERAGES of PM10 in µg/m3 for MAY, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
2	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
3	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
4	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
5	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
6	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
7	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
8	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
9	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
10	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
11	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
12	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
13	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
14	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
15	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
16	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
17	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
18	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
19	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
20	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
21	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
22	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
23	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
24	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
25	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
26	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
27	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
28	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
29	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
30	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	6.6	-257.0	8.4	9.1	4.7	5.8	6.1	7.7	9.1	---	---	---
31	8.8	6.0	5.0	-127.3	4.9	6.5	6.8	7.6	5.7	5.2	6.0	4.8	4.6	5.9	5.8	5.6	5.7	7.3	6.7	8.6	5.9	11.1	15.5	17.2	**1.7**	**17.2**	**-127.3**
MEAN	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**-4.8**		
MAX	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---		**17.2**	
MIN	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---			**-257.0**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 33 DATA RECOVERY RATE = 4.4% DATA CAPTURE RATE = 3.2%

MONTHLY MEAN = -4.8 µg/m3

MAXIMUM PM10 = 17.2 µg/m3 DATE OF OCCURRENCE = 5/31 at 2400 MAXIMUM DAILY MEAN = 1.7 µg/m3 DATE OF OCCURRENCE = 5/31

SECOND MAXIMUM PM10 = 15.5 µg/m3 DATE OF OCCURRENCE = 5/31 at 2300 SECOND MAXIMUM DAILY MEAN = -1000.0 µg/m3 DATE OF OCCURRENCE = 5/0

MINIMUM PM10 = -257.0 µg/m3 DATE OF OCCURRENCE = 5/30 at 1700 MINUMUM DAILY MEAN = 1.7 µg/m3 DATE OF OCCURRENCE = 5/31

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

Draft

CSX AQ7 Modulair

HOURLY AVERAGES of PM10 in µg/m3 for JUNE, 2024

Hr Beg Hr End Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	15.9	8.2	6.5	8.1	9.3	10.2	10.9	11.1	10.0	8.6	8.2	6.6	5.3	5.3	5.4	6.7	6.9	6.6	7.4	6.3	7.1	8.7	9.2	8.4	**8.2**	**15.9**	**5.3**
2	8.3	9.4	11.1	15.7	10.3	9.3	12.7	11.7	11.7	12.2	13.6	15.1	13.5	14.4	13.8	17.0	15.9	17.0	13.3	9.2	19.9	14.8	20.0	26.8	**14.0**	**26.8**	**8.3**
3	18.7	14.1	15.1	14.8	13.3	13.0	13.7	15.8	19.7	23.8	20.7	17.7	14.2	15.4	18.5	22.3	13.7	16.8	14.9	18.5	15.4	16.3	18.5	16.1	**16.7**	**23.8**	**13.0**
4	15.3	10.9	13.1	13.5	23.7	20.0	22.9	20.3	23.9	24.6	29.1	24.1	19.0	11.9	17.1	25.8	23.2	20.3	21.0	16.6	15.2	16.3	16.8	15.5	**19.2**	**29.1**	**10.9**
5	15.0	18.9	16.6	15.2	19.9	22.8	23.9	23.4	20.5	20.6	24.4	24.4	27.6	29.1	27.5	13.6	12.5	13.5	12.6	15.8	17.3	13.7	12.9	10.8	**18.9**	**29.1**	**10.8**
6	12.2	12.6	12.1	12.9	11.1	11.9	10.7	12.0	12.8	12.8	14.0	14.7	14.0	13.2	13.7	12.6	9.2	8.5	5.6	7.5	8.8	7.7	6.5	8.6	**11.1**	**14.7**	**5.6**
7	9.0	9.8	5.3	6.1	6.0	7.0	9.2	9.4	21.4	37.6	12.4	31.8	15.5	27.5	37.1	17.1	20.8	29.9	25.9	23.6	19.6	17.0	16.4	6.6	**17.6**	**37.6**	**5.3**
8	17.7	25.8	5.2	7.1	21.8	25.6	29.2	11.1	30.1	25.1	24.9	22.0	10.2	20.4	16.9	7.5	22.7	17.5	15.0	15.2	16.6	6.9	9.9	9.9	**17.3**	**30.1**	**5.2**
9	11.6	10.0	10.0	8.9	8.2	8.2	7.4	10.4	11.1	13.9	24.1	20.6	24.1	49.8	33.8	32.3	36.3	17.2	26.9	13.7	18.4	4.1	4.1	5.9	**17.1**	**49.8**	**4.1**
10	19.6	27.5	5.9	3.3	4.1	4.5	6.9	7.0	8.6	7.5	11.7	14.0	8.8	12.2	19.7	22.1	20.3	18.2	11.1	6.6	6.5	12.9	11.2	6.6	**11.5**	**27.5**	**3.3**
11	6.5	4.0	3.2	3.0	5.5	5.7	5.6	6.3	7.9	6.9	8.4	5.1	4.9	9.0	12.0	11.5	10.0	7.5	6.0	7.5	8.4	7.7	7.5	12.4	**7.2**	**12.4**	**3.0**
12	20.3	14.7	14.7	11.2	11.4	14.8	15.0	15.4	13.5	10.7	11.4	11.2	10.0	17.7	13.3	13.3	16.3	12.9	13.2	12.1	10.6	11.4	12.1	11.4	**13.3**	**20.3**	**10.0**
13	12.1	12.8	13.0	14.0	15.2	32.4	35.0	23.2	15.9	19.9	18.7	16.6	18.3	---	---	---	---	---	---	---	11.1	9.5	9.9	10.8	**---**	**---**	**---**
14	10.7	12.5	11.8	11.7	12.9	13.8	15.3	17.6	15.9	19.9	---	23.5	22.3	21.0	---	---	---	---	---	13.7	---	---	8.3	6.4	**---**	**---**	**---**
15	6.4	6.2	6.2	7.1	9.4	7.9	7.9	7.7	7.4	6.6	6.3	6.9	6.5	6.9	6.9	6.0	6.3	7.0	6.4	6.1	7.0	7.7	9.9	11.0	**7.2**	**11.0**	**6.0**
16	10.8	11.5	10.9	11.1	12.5	11.8	10.3	10.5	10.8	10.3	10.1	11.9	10.4	10.5	8.0	10.5	10.5	11.8	14.3	14.4	---	---	9.9	8.6	**11.0**	**14.4**	**8.0**
17	8.0	7.0	7.8	7.4	8.3	9.3	10.7	12.1	11.1	12.1	13.6	16.1	17.3	20.8	24.9	25.6	19.8	17.0	14.4	14.1	11.8	9.3	8.5	8.9	**13.2**	**25.6**	**7.0**
18	8.1	8.2	8.6	8.2	8.4	9.8	9.9	9.3	11.0	13.6	16.1	34.7	55.7	27.1	20.9	24.1	20.7	19.8	19.2	16.7	14.5	9.3	7.2	9.3	**16.3**	**55.7**	**7.2**
19	6.7	6.9	7.8	8.2	8.6	8.7	12.0	9.6	9.6	8.7	11.7	38.1	36.4	50.5	47.2	10.0	6.1	5.9	5.1	5.8	5.0	6.5	8.8	8.5	**13.9**	**50.5**	**5.0**
20	8.1	9.7	11.3	11.2	10.1	10.8	12.9	13.4	10.8	9.8	10.7	30.4	21.9	45.6	24.3	19.3	10.7	10.4	---	6.8	7.9	---	---	---	**14.8**	**45.6**	**6.8**
21	---	9.0	8.4	---	9.5	15.7	17.0	12.5	12.2	12.7	13.5	21.2	28.8	---	34.2	18.5	---	12.9	12.5	9.9	9.8	10.0	11.1	11.6	**14.6**	**34.2**	**8.4**
22	10.3	11.0	12.4	10.8	11.4	11.9	13.2	14.6	14.6	---	---	21.5	---	23.6	26.0	25.0	20.0	19.4	19.2	15.5	15.4	14.3	14.8	16.5	**16.3**	**26.0**	**10.3**
23	13.1	13.3	12.5	12.0	9.8	8.6	8.9	11.7	13.0	15.0	16.5	26.4	22.7	31.9	27.1	23.5	27.7	20.8	20.5	33.1	27.4	17.9	14.0	14.7	**18.4**	**33.1**	**8.6**
24	11.6	16.3	26.5	9.5	21.3	18.1	15.9	33.1	41.1	62.6	64.7	55.5	42.0	57.9	51.2	41.3	---	36.3	35.0	12.5	10.9	8.9	8.7	10.3	**30.1**	**64.7**	**8.7**
25	15.7	23.3	22.4	21.2	19.4	20.9	28.0	20.9	24.5	34.9	28.2	24.6	15.6	24.8	42.4	45.1	39.4	57.6	---	21.1	13.2	12.3	11.0	11.1	**25.1**	**57.6**	**11.0**
26	11.3	12.2	15.7	14.4	18.8	22.5	20.5	18.3	35.1	32.0	21.9	20.3	24.0	26.3	25.9	17.6	18.2	12.3	14.5	15.8	14.5	11.0	17.1	6.2	**18.6**	**35.1**	**6.2**
27	5.5	4.2	4.2	5.1	5.9	5.0	5.3	6.3	18.8	26.2	20.3	8.9	---	---	21.4	9.6	9.8	16.5	13.0	13.9	13.2	14.9	19.1	16.6	**12.0**	**26.2**	**4.2**
28	8.3	10.6	9.6	6.4	7.5	5.8	5.5	---	---	5.0	4.8	8.6	7.9	8.3	13.3	20.9	10.2	7.1	8.3	7.7	9.8	8.1	7.7	7.5	**8.6**	**20.9**	**4.8**
29	7.4	13.5	23.7	20.0	11.9	21.7	25.3	14.6	15.0	10.1	10.8	11.0	10.5	10.9	11.0	11.4	11.2	10.8	9.8	8.6	7.9	7.8	8.4	10.6	**12.7**	**25.3**	**7.4**
30	5.5	7.2	15.4	28.4	7.5	8.6	7.8	9.5	10.6	12.0	12.4	13.1	15.2	19.7	37.6	23.4	11.2	10.1	6.2	5.4	7.5	12.1	---	23.3	**13.5**	**37.6**	**5.4**
MEAN	**11.4**	**12.0**	**11.6**	**11.3**	**11.8**	**13.2**	**14.3**	**13.8**	**16.2**	**17.8**	**17.3**	**19.9**	**18.7**	**22.7**	**23.3**	**19.1**	**16.5**	**16.5**	**14.3**	**12.9**	**12.5**	**11.0**	**11.4**	**11.4**	**15.0**		
MAX	**20.3**	**27.5**	**26.5**	**28.4**	**23.7**	**32.4**	**35.0**	**33.1**	**41.1**	**62.6**	**64.7**	**55.5**	**55.7**	**57.9**	**51.2**	**45.1**	**39.4**	**57.6**	**35.0**	**33.1**	**27.4**	**17.9**	**20.0**	**26.8**		**64.7**	
MIN	**5.5**	**4.0**	**3.2**	**3.0**	**4.1**	**4.5**	**5.3**	**6.3**	**7.4**	**5.0**	**4.8**	**5.1**	**4.9**	**5.3**	**5.4**	**6.0**	**6.1**	**5.9**	**5.1**	**5.4**	**5.0**	**4.1**	**4.1**	**5.9**			**3.0**

POSSIBLE NUMBER OF OBSERVATIONS = 720 ACTUAL NUMBER OF OBSERVATIONS = 685 DATA RECOVERY RATE = 95.1% DATA CAPTURE RATE = 93.3%

MONTHLY MEAN = 15.0 µg/m3

MAXIMUM PM10 = 64.7 µg/m3 DATE OF OCCURRENCE = 6/24 at 1100 MAXIMUM DAILY MEAN = 30.1 µg/m3 DATE OF OCCURRENCE = 6/24

SECOND MAXIMUM PM10 = 62.6 µg/m3 DATE OF OCCURRENCE = 6/24 at 1000 SECOND MAXIMUM DAILY MEAN = 25.1 µg/m3 DATE OF OCCURRENCE = 6/25

MINIMUM PM10 = 3.0 µg/m3 DATE OF OCCURRENCE = 6/11 at 400 MINUMUM DAILY MEAN = 7.2 µg/m3 DATE OF OCCURRENCE = 6/11

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

Draft

CSX AQ7 Modulair

HOURLY AVERAGES of PM2.5 in µg/m3 for APRIL, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	10.4	10.9	13.0	12.9	10.4	11.5	10.3	10.3	9.1	4.8	3.5	2.5	1.7	2.5	3.9	4.5	5.8	7.1	8.9	10.2	8.0	7.0	7.7	7.8	**7.6**	**13.0**	**1.7**
2	7.6	8.7	8.0	7.8	5.9	8.3	6.5	6.8	7.2	2.6	1.8	1.5	1.7	2.3	2.0	1.5	0.6	0.5	0.8	0.8	1.4	1.4	1.0	0.8	**3.6**	**8.7**	**0.5**
3	1.0	1.7	1.3	1.5	1.8	1.9	1.4	1.0	1.1	1.9	2.0	0.6	0.4	0.2	0.2	1.6	0.3	0.3	1.0	2.8	2.0	---	---	---	**1.2**	**2.8**	**0.2**
4	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
5	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
6	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
7	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
8	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
9	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
10	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
11	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
12	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
13	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
14	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
15	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
16	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
17	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
18	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
19	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
20	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
21	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
22	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
23	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
24	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
25	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
26	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
27	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
28	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
29	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
30	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
MEAN	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**4.3**		
MAX	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**		**13.0**	
MIN	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**			**0.2**

POSSIBLE NUMBER OF OBSERVATIONS = 720 ACTUAL NUMBER OF OBSERVATIONS = 69 DATA RECOVERY RATE = 9.6% DATA CAPTURE RATE = 10.0%

MONTHLY MEAN = 4.3 µg/m3

MAXIMUM PM2.5 = 13.0 µg/m3 DATE OF OCCURRENCE = 4/1 at 300 MAXIMUM DAILY MEAN = 7.6 µg/m3 DATE OF OCCURRENCE = 4/1

SECOND MAXIMUM PM2.5 = 12.9 µg/m3 DATE OF OCCURRENCE = 4/1 at 400 SECOND MAXIMUM DAILY MEAN = 3.6 µg/m3 DATE OF OCCURRENCE = 4/2

MINIMUM PM2.5 = 0.2 µg/m3 DATE OF OCCURRENCE = 4/3 at 1400 MINUMUM DAILY MEAN = 1.2 µg/m3 DATE OF OCCURRENCE = 4/3

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

Draft

CSX AQ7 Modulair

HOURLY AVERAGES of PM2.5 in µg/m3 for MAY, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
2	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
3	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
4	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
5	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
6	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
7	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
8	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
9	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
10	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
11	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
12	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
13	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
14	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
15	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
16	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
17	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
18	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
19	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
20	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
21	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
22	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
23	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
24	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
25	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
26	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
27	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
28	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
29	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
30	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	5.1	-260.0	5.4	5.2	3.3	3.2	3.9	4.5	5.9	---	---	---
31	5.1	3.6	3.1	-128.6	3.0	3.6	3.6	4.3	3.6	3.1	4.2	3.8	3.3	3.8	3.9	3.7	3.6	3.8	3.5	4.5	4.0	8.7	12.4	14.4	**-0.8**	**14.4**	**-128.6**
MEAN	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**-7.3**		
MAX	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---		**14.4**	
MIN	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---			**-260.0**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 33 DATA RECOVERY RATE = 4.4% DATA CAPTURE RATE = 3.2%

MONTHLY MEAN = -7.3 µg/m3

MAXIMUM PM2.5 = 14.4 µg/m3 DATE OF OCCURRENCE = 5/31 at 2400 MAXIMUM DAILY MEAN = -0.8 µg/m3 DATE OF OCCURRENCE = 5/31

SECOND MAXIMUM PM2.5 = 12.4 µg/m3 DATE OF OCCURRENCE = 5/31 at 2300 SECOND MAXIMUM DAILY MEAN = -1000.0 µg/m3 DATE OF OCCURRENCE = 5/0

MINIMUM PM2.5 = -260.0 µg/m3 DATE OF OCCURRENCE = 5/30 at 1700 MINUMUM DAILY MEAN = -0.8 µg/m3 DATE OF OCCURRENCE = 5/31

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

Draft

CSX AQ7 Modulair

HOURLY AVERAGES of PM2.5 in µg/m3 for JUNE, 2024

Hr Beg Hr End Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	13.1	6.2	5.8	7.1	7.9	7.8	9.0	8.6	7.8	7.0	6.8	5.0	4.2	4.4	4.3	5.2	5.2	5.3	6.2	5.5	5.9	7.6	8.2	7.4	**6.7**	**13.1**	**4.2**
2	7.5	8.2	9.2	10.2	9.0	7.5	8.8	10.6	10.4	11.0	12.0	14.2	12.4	11.2	10.5	14.5	13.5	13.6	10.7	8.0	9.7	9.7	11.0	10.7	**10.5**	**14.5**	**7.5**
3	12.7	11.8	11.3	12.9	10.0	8.8	8.0	11.8	14.7	14.4	16.9	15.7	13.2	14.0	15.4	18.9	12.7	9.9	13.5	17.0	14.2	15.0	17.0	14.5	**13.5**	**18.9**	**8.0**
4	13.5	9.3	9.9	9.6	13.7	11.8	13.0	15.1	21.4	23.5	25.5	20.6	14.7	11.0	14.6	19.2	19.4	19.0	19.7	15.5	14.3	15.9	16.0	14.1	**15.8**	**25.5**	**9.3**
5	13.8	13.3	14.4	13.3	17.7	20.9	21.0	18.9	18.0	18.4	21.4	22.1	26.2	28.0	25.6	11.2	9.6	9.6	9.5	12.7	10.7	10.2	11.0	9.3	**16.1**	**28.0**	**9.3**
6	10.1	10.6	10.6	11.2	9.4	9.9	9.4	10.8	11.8	11.8	13.1	13.4	13.1	12.4	12.2	11.5	7.9	7.4	4.8	6.8	8.0	6.7	5.5	7.3	**9.8**	**13.4**	**4.8**
7	7.9	7.5	3.7	4.7	3.9	4.5	5.1	4.8	8.0	12.7	4.9	11.3	6.6	12.2	14.6	6.9	8.4	12.2	10.4	11.6	6.8	5.5	4.4	3.0	**7.5**	**14.6**	**3.0**
8	5.7	6.9	2.7	3.3	7.1	7.7	7.4	4.1	9.6	8.3	8.9	9.1	4.9	7.9	7.3	4.0	8.8	6.9	5.8	5.5	6.1	5.7	8.3	7.0	**6.6**	**9.6**	**2.7**
9	8.5	8.2	7.6	6.7	7.0	6.7	5.2	6.1	6.4	7.2	11.2	10.1	12.3	23.0	14.7	17.1	15.5	8.1	10.0	5.7	6.9	3.4	2.9	3.5	**8.9**	**23.0**	**2.9**
10	6.8	7.6	3.8	2.4	2.9	3.0	3.2	3.7	5.5	4.8	6.0	7.6	5.2	6.8	11.1	10.9	10.1	10.4	7.1	4.1	4.2	7.2	6.4	4.8	**6.0**	**11.1**	**2.4**
11	4.6	3.1	2.6	2.5	4.5	4.0	4.7	5.5	5.8	5.1	5.7	4.4	4.2	6.7	7.3	7.0	7.4	5.2	5.4	6.8	6.7	6.6	6.6	8.0	**5.4**	**8.0**	**2.5**
12	12.0	9.7	10.0	7.6	6.9	7.8	9.6	10.9	9.4	8.2	7.7	8.8	8.1	10.8	10.5	11.1	12.7	12.0	11.7	10.3	9.5	10.7	10.8	10.6	**9.8**	**12.7**	**6.9**
13	11.1	11.7	11.3	11.7	12.6	14.3	17.6	15.7	14.5	18.0	18.1	15.1	15.6	---	---	---	---	---	---	---	9.4	8.2	8.3	9.6	**---**	**---**	**---**
14	8.7	11.1	10.7	10.2	11.8	12.4	13.7	16.0	14.4	18.1	---	21.6	20.9	19.7	---	---	---	---	---	12.4	---	---	6.6	5.6	**---**	**---**	**---**
15	5.6	4.8	4.8	5.8	8.0	6.4	7.0	6.6	5.8	5.6	5.4	5.4	5.9	5.8	5.8	5.4	5.8	6.1	5.7	5.6	6.5	7.0	9.2	8.9	**6.2**	**9.2**	**4.8**
16	9.6	10.2	9.9	10.6	11.4	11.1	9.5	9.7	10.3	9.8	9.5	10.9	9.6	9.8	7.5	9.4	9.7	10.2	12.2	12.6	---	---	8.6	7.5	**9.9**	**12.6**	**7.5**
17	7.0	6.3	6.7	6.7	7.0	7.6	8.6	9.1	8.4	9.0	11.1	13.8	15.8	19.6	23.3	25.1	18.3	15.3	12.6	11.3	9.2	7.4	6.5	6.0	**11.3**	**25.1**	**6.0**
18	5.8	6.2	6.4	6.8	6.5	6.8	7.0	6.9	8.1	10.9	14.2	18.0	24.0	18.2	18.8	20.8	19.5	17.9	18.3	15.1	13.0	8.1	5.8	7.0	**12.0**	**24.0**	**5.8**
19	5.2	5.3	5.4	5.3	5.4	5.4	6.0	5.8	6.3	6.9	9.0	14.0	14.3	19.0	17.4	9.9	5.0	5.3	4.6	4.7	4.5	5.4	6.1	5.6	**7.5**	**19.0**	**4.5**
20	5.2	5.6	7.0	6.6	6.2	6.3	7.2	7.7	7.3	7.7	8.5	17.4	11.1	18.2	13.9	12.2	8.7	8.5	---	5.8	6.0	---	---	---	**8.8**	**18.2**	**5.2**
21	---	5.7	6.1	---	6.1	7.3	10.3	8.1	9.2	10.2	11.5	14.0	15.4	---	19.0	13.3	---	11.2	10.0	8.3	7.5	7.9	9.0	9.0	**9.9**	**19.0**	**5.7**
22	8.0	8.6	8.4	8.7	9.5	9.4	10.5	12.7	13.4	---	---	20.7	---	22.7	23.6	23.6	18.6	18.4	17.4	14.4	14.2	12.8	13.3	14.0	**14.4**	**23.6**	**8.0**
23	12.1	12.0	11.4	11.2	9.2	7.6	7.6	7.7	9.0	11.8	12.8	19.0	16.9	23.1	20.1	20.8	19.7	17.3	13.9	18.0	15.9	13.6	11.9	12.0	**13.9**	**23.1**	**7.6**
24	10.4	11.3	14.6	7.8	11.8	9.9	8.5	17.4	16.7	30.7	33.4	34.6	21.2	31.4	28.3	30.8	25.6	30.2	20.4	10.7	8.4	7.2	7.2	8.4	**18.2**	**34.6**	**7.2**
25	11.3	13.3	13.5	13.3	12.5	13.4	17.5	15.2	14.0	18.2	16.7	15.2	12.1	14.7	20.9	22.8	20.3	23.2	---	14.2	12.5	11.0	9.8	9.9	**15.0**	**23.2**	**9.8**
26	10.1	10.4	10.9	10.9	10.7	11.4	11.4	13.1	18.0	19.8	14.0	17.9	19.7	19.0	14.6	13.1	12.3	9.4	13.2	13.4	10.6	8.8	12.4	4.8	**12.9**	**19.8**	**4.8**
27	3.3	2.7	2.6	3.4	3.8	3.8	3.7	4.6	8.8	11.7	9.6	6.4	---	---	12.4	7.9	8.8	12.8	11.7	11.7	11.4	11.1	13.0	10.9	**8.0**	**13.0**	**2.6**
28	6.7	7.1	6.6	5.4	5.6	5.2	5.0	---	---	4.5	4.5	5.7	5.8	6.2	7.5	10.2	6.6	6.0	6.2	6.0	6.4	5.7	4.6	4.3	**5.9**	**10.2**	**4.3**
29	4.3	7.0	17.7	13.5	5.3	14.0	20.6	9.4	10.1	7.6	8.6	9.0	10.0	9.7	10.1	10.3	10.0	9.7	8.5	7.8	6.8	6.8	6.8	6.2	**9.5**	**20.6**	**4.3**
30	4.2	5.8	6.7	10.3	6.9	7.8	7.1	8.7	9.7	11.2	11.8	12.0	14.7	16.4	21.8	16.2	11.0	9.2	5.4	4.5	6.3	10.1	---	11.5	**9.9**	**21.8**	**4.2**
MEAN	**8.4**	**8.3**	**8.4**	**8.3**	**8.3**	**8.7**	**9.4**	**9.8**	**10.8**	**11.9**	**12.1**	**13.8**	**12.8**	**14.9**	**14.8**	**13.9**	**12.3**	**11.8**	**10.6**	**9.9**	**9.0**	**8.7**	**8.8**	**8.3**	**10.5**		
MAX	**13.8**	**13.3**	**17.7**	**13.5**	**17.7**	**20.9**	**21.0**	**18.9**	**21.4**	**30.7**	**33.4**	**34.6**	**26.2**	**31.4**	**28.3**	**30.8**	**25.6**	**30.2**	**20.4**	**18.0**	**15.9**	**15.9**	**17.0**	**14.5**		**34.6**	
MIN	**3.3**	**2.7**	**2.6**	**2.4**	**2.9**	**3.0**	**3.2**	**3.7**	**5.5**	**4.5**	**4.5**	**4.4**	**4.2**	**4.4**	**4.3**	**4.0**	**5.0**	**5.2**	**4.6**	**4.1**	**4.2**	**3.4**	**2.9**	**3.0**			**2.4**

POSSIBLE NUMBER OF OBSERVATIONS = 720 ACTUAL NUMBER OF OBSERVATIONS = 686 DATA RECOVERY RATE = 95.3% DATA CAPTURE RATE = 93.3%

MONTHLY MEAN = 10.5 µg/m3

MAXIMUM PM2.5 = 34.6 µg/m3 DATE OF OCCURRENCE = 6/24 at 1200 MAXIMUM DAILY MEAN = 18.2 µg/m3 DATE OF OCCURRENCE = 6/24

SECOND MAXIMUM PM2.5 = 33.4 µg/m3 DATE OF OCCURRENCE = 6/24 at 1100 SECOND MAXIMUM DAILY MEAN = 16.1 µg/m3 DATE OF OCCURRENCE = 6/5

MINIMUM PM2.5 = 2.4 µg/m3 DATE OF OCCURRENCE = 6/10 at 400 MINUMUM DAILY MEAN = 5.4 µg/m3 DATE OF OCCURRENCE = 6/11

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

Draft

CSX AQ8A Modulair

HOURLY AVERAGES of PM10 in µg/m3 for APRIL, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	16.7	17.4	21.1	27.3	17.8	23.2	21.6	25.4	18.6	10.8	6.6	6.0	3.3	4.0	6.5	7.1	8.4	11.3	13.2	15.3	14.1	11.2	16.1	24.8	**14.5**	**27.3**	**3.3**
2	26.6	15.8	14.7	14.2	10.1	14.8	13.5	13.6	31.2	11.5	10.5	7.6	6.2	6.2	4.6	12.3	3.6	1.5	1.7	2.4	2.8	3.2	1.8	2.1	**9.7**	**31.2**	**1.5**
3	2.4	6.7	4.2	4.1	6.6	7.3	4.4	1.6	8.7	13.5	15.0	4.7	3.2	1.6	1.5	13.3	1.1	1.0	2.1	4.1	3.0	6.9	7.1	4.2	**5.3**	**15.0**	**1.0**
4	2.7	2.7	4.3	4.3	4.5	6.0	5.9	7.1	11.2	11.8	8.5	7.5	7.1	11.9	16.9	5.7	2.3	2.1	1.7	2.1	1.3	2.5	1.8	1.5	**5.6**	**16.9**	**1.3**
5	1.8	1.3	1.6	1.4	1.6	3.1	5.2	5.6	7.4	6.2	3.7	3.0	3.5	5.8	4.7	3.7	6.1	5.6	4.2	5.3	3.3	2.3	2.6	2.2	**3.8**	**7.4**	**1.3**
6	2.3	2.5	2.3	2.0	1.9	1.9	2.1	3.0	3.6	5.3	5.1	3.6	3.2	3.0	3.0	2.9	3.3	3.2	3.7	4.5	4.8	4.6	5.2	6.3	**3.5**	**6.3**	**1.9**
7	6.7	5.5	5.7	8.2	7.5	8.6	6.1	5.1	5.1	5.2	3.7	3.3	3.0	3.2	2.4	2.5	2.6	2.6	3.6	4.0	5.5	11.8	11.2	7.0	**5.4**	**11.8**	**2.4**
8	6.4	11.0	8.4	9.5	9.7	16.8	21.1	48.8	30.7	24.9	21.9	25.5	16.3	26.2	30.3	19.9	12.2	13.6	9.7	9.1	9.5	12.8	16.5	17.0	**17.8**	**48.8**	**6.4**
9	19.2	22.0	17.8	16.3	15.0	23.3	53.2	86.0	48.0	25.0	46.6	66.6	32.5	52.0	31.4	32.3	42.1	32.8	29.0	33.8	32.0	32.9	34.4	32.1	**35.7**	**86.0**	**15.0**
10	36.3	50.1	50.4	57.2	39.1	41.4	41.6	55.5	87.7	89.7	43.0	15.6	13.4	17.1	27.4	41.9	33.4	27.5	33.6	29.8	36.7	30.4	29.6	31.3	**40.0**	**89.7**	**13.4**
11	21.7	19.6	14.7	18.4	25.9	27.3	32.3	32.5	29.3	35.6	36.0	58.0	58.3	52.6	81.5	57.6	37.8	32.6	31.0	22.5	25.8	35.0	35.0	34.4	**35.6**	**81.5**	**14.7**
12	25.1	16.0	15.1	6.9	7.3	9.0	14.3	11.5	6.7	3.5	5.5	6.6	5.7	9.5	7.5	10.5	6.4	5.7	3.9	2.5	3.2	1.7	1.1	2.5	**7.8**	**25.1**	**1.1**
13	2.3	3.0	2.3	2.1	12.3	2.4	3.3	3.5	4.1	5.1	8.1	9.5	6.4	14.4	6.7	6.5	7.7	7.2	5.6	4.4	4.4	4.8	8.1	7.4	**5.9**	**14.4**	**2.1**
14	12.1	6.9	40.8	5.1	6.5	5.6	7.4	8.2	6.8	6.4	7.7	8.7	11.5	15.0	19.2	25.7	25.2	15.0	16.9	13.7	16.8	15.9	17.9	23.4	**14.1**	**40.8**	**5.1**
15	11.9	9.1	19.5	38.2	31.6	11.3	16.8	28.4	20.6	18.5	35.0	55.8	65.2	36.1	23.2	22.9	23.7	21.3	26.5	24.2	53.8	53.3	37.5	52.1	**30.7**	**65.2**	**9.1**
16	20.9	30.6	39.1	11.8	15.2	14.0	19.3	46.6	31.1	19.5	19.8	37.4	30.4	25.3	41.9	74.4	57.1	31.5	19.5	14.1	16.2	16.1	12.2	14.5	**27.4**	**74.4**	**11.8**
17	12.7	12.0	10.1	12.7	17.2	19.1	31.5	26.9	35.1	27.0	33.1	41.8	28.5	22.3	42.8	23.4	22.2	39.4	31.3	27.4	30.4	29.1	35.9	41.2	**27.2**	**42.8**	**10.1**
18	48.3	45.4	40.0	36.7	34.6	37.6	110.2	133.7	52.6	36.3	30.1	29.8	31.5	40.9	38.7	27.5	25.3	22.0	28.1	16.1	17.9	30.3	25.5	27.9	**40.3**	**133.7**	**16.1**
19	25.8	20.1	13.8	9.5	6.3	6.9	7.4	13.6	18.6	17.5	15.8	19.2	21.0	27.0	32.2	30.9	20.4	19.5	19.4	21.5	19.1	19.1	23.8	21.6	**18.8**	**32.2**	**6.3**
20	18.5	19.0	18.5	18.0	14.5	15.8	19.1	22.9	21.7	23.1	19.0	11.6	9.7	8.0	10.1	9.5	8.3	8.4	7.4	9.0	8.5	8.3	9.6	8.6	**13.6**	**23.1**	**7.4**
21	6.8	6.4	10.0	6.2	7.3	4.7	4.1	3.9	9.3	6.3	4.8	5.5	6.2	7.7	6.0	6.9	8.4	6.9	6.9	7.3	7.5	8.4	12.0	16.2	**7.3**	**16.2**	**3.9**
22	12.2	10.3	9.8	8.7	9.0	6.9	7.3	12.3	22.8	11.1	7.6	10.1	9.5	13.8	14.1	11.7	11.1	9.5	9.1	12.8	18.2	12.1	12.3	9.2	**11.3**	**22.8**	**6.9**
23	13.6	15.1	17.5	10.1	16.4	17.0	42.7	35.6	46.3	45.4	54.3	29.0	35.1	30.2	34.9	34.9	32.0	35.5	33.9	14.9	14.8	17.8	16.6	13.6	**27.4**	**54.3**	**10.1**
24	12.7	12.6	15.2	14.3	15.9	23.1	21.6	31.7	25.3	22.3	21.3	16.1	23.2	16.3	14.0	16.3	16.1	13.9	14.8	8.9	7.6	12.9	8.9	5.7	**16.3**	**31.7**	**5.7**
25	6.5	9.0	9.4	9.6	9.8	12.6	11.4	14.1	11.9	11.5	12.3	14.5	13.6	19.9	26.0	31.5	25.9	24.2	20.7	19.4	25.8	40.8	33.8	27.8	**18.4**	**40.8**	**6.5**
26	31.6	33.0	33.0	55.4	42.2	39.3	42.9	38.8	33.9	25.5	25.8	35.9	23.2	43.8	29.9	31.0	21.6	16.0	18.1	19.8	11.3	28.0	10.2	9.8	**29.2**	**55.4**	**9.8**
27	7.6	7.4	7.9	10.0	11.3	11.7	14.3	10.2	24.6	28.3	20.6	19.0	22.7	25.4	19.7	17.3	16.0	16.0	18.5	17.7	19.0	22.3	21.3	20.5	**17.1**	**28.3**	**7.4**
28	23.3	24.2	25.9	31.5	37.8	28.8	25.8	26.6	42.0	45.3	37.8	41.6	46.1	35.6	26.1	26.9	27.3	31.1	29.6	26.6	26.4	24.1	22.5	23.9	**30.7**	**46.1**	**22.5**
29	24.4	22.1	21.2	24.1	24.6	28.5	42.9	32.2	34.4	69.3	76.5	52.8	51.3	64.5	71.3	46.4	35.2	27.4	22.4	22.5	22.3	25.9	26.6	27.4	**37.3**	**76.5**	**21.2**
30	26.6	23.2	23.6	29.5	28.0	33.4	39.7	35.2	33.2	37.5	40.8	33.2	28.2	29.4	30.4	27.5	30.4	24.9	23.1	23.2	23.8	45.3	9.6	12.6	**28.8**	**45.3**	**9.6**
MEAN	**16.2**	**16.0**	**17.3**	**16.8**	**16.3**	**16.7**	**23.0**	**27.3**	**25.4**	**23.3**	**22.6**	**22.7**	**20.6**	**22.3**	**23.5**	**22.7**	**19.1**	**17.0**	**16.3**	**14.6**	**16.2**	**19.0**	**16.9**	**17.6**	**19.6**		
MAX	**48.3**	**50.1**	**50.4**	**57.2**	**42.2**	**41.4**	**110.2**	**133.7**	**87.7**	**89.7**	**76.5**	**66.6**	**65.2**	**64.5**	**81.5**	**74.4**	**57.1**	**39.4**	**33.9**	**33.8**	**53.8**	**53.3**	**37.5**	**52.1**		**133.7**	
MIN	**1.8**	**1.3**	**1.6**	**1.4**	**1.6**	**1.9**	**2.1**	**1.6**	**3.6**	**3.5**	**3.7**	**3.0**	**3.0**	**1.6**	**1.5**	**2.5**	**1.1**	**1.0**	**1.7**	**2.1**	**1.3**	**1.7**	**1.1**	**1.5**			**1.0**

POSSIBLE NUMBER OF OBSERVATIONS = 720 ACTUAL NUMBER OF OBSERVATIONS = 720 DATA RECOVERY RATE = 100.0% DATA CAPTURE RATE = 100.0%

MONTHLY MEAN = 19.6 µg/m3

MAXIMUM PM10 = 133.7 µg/m3 DATE OF OCCURRENCE = 4/18 at 800 MAXIMUM DAILY MEAN = 40.3 µg/m3 DATE OF OCCURRENCE = 4/18

SECOND MAXIMUM PM10 = 110.2 µg/m3 DATE OF OCCURRENCE = 4/18 at 700 SECOND MAXIMUM DAILY MEAN = 40.0 µg/m3 DATE OF OCCURRENCE = 4/10

MINIMUM PM10 = 1.0 µg/m3 DATE OF OCCURRENCE = 4/3 at 1800 MINUMUM DAILY MEAN = 3.5 µg/m3 DATE OF OCCURRENCE = 4/6

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

Draft

CSX AQ8A Modulair

HOURLY AVERAGES of PM10 in µg/m3 for MAY, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	14.3	9.9	12.9	12.6	12.0	11.5	12.5	14.5	12.5	13.1	12.4	10.7	13.5	14.0	12.9	12.9	12.5	12.1	11.9	15.6	23.8	18.1	13.6	14.7	**13.5**	**23.8**	**9.9**
2	12.6	13.9	16.6	18.5	14.7	20.6	31.2	23.7	38.0	51.6	40.5	76.0	32.3	18.1	17.4	18.0	16.4	18.4	16.7	20.3	27.7	26.2	29.1	27.3	**26.1**	**76.0**	**12.6**
3	32.7	32.4	21.4	17.5	18.5	15.8	16.2	20.8	24.0	16.1	18.2	27.1	37.8	56.5	74.4	42.6	41.6	29.6	31.6	24.7	29.8	21.7	18.5	18.6	**28.7**	**74.4**	**15.8**
4	21.6	28.7	25.2	17.9	8.6	12.6	22.6	20.6	8.6	7.6	11.1	11.1	15.2	22.2	6.4	4.6	5.1	8.3	20.9	22.2	18.7	31.4	46.6	47.2	**18.5**	**47.2**	**4.6**
5	36.0	36.3	32.3	51.6	24.8	14.6	8.7	5.6	6.4	7.9	7.5	10.5	8.4	13.6	11.6	15.4	19.1	20.2	18.8	25.8	38.0	43.6	33.6	35.8	**21.9**	**51.6**	**5.6**
6	36.2	---	---	---	---	---	---	---	---	---	---	25.0	24.5	22.7	25.3	32.3	35.9	35.6	32.6	31.0	27.8	19.1	20.1	24.8	**---**	**---**	**---**
7	24.0	20.3	23.5	22.9	26.3	27.2	22.6	23.1	25.9	35.0	27.4	29.5	45.8	36.8	41.3	39.7	32.9	39.0	38.6	33.9	25.6	17.2	17.0	14.0	**28.7**	**45.8**	**14.0**
8	11.5	13.4	12.1	14.9	16.0	16.2	18.0	21.6	22.3	28.0	23.9	22.5	18.4	21.1	20.3	21.9	24.9	16.8	13.5	15.3	22.1	19.1	16.9	16.4	**18.6**	**28.0**	**11.5**
9	15.0	17.4	23.6	20.1	22.5	19.5	34.6	20.9	23.9	26.6	22.2	20.7	16.4	16.0	22.4	22.4	21.7	16.8	16.6	16.0	17.4	19.8	31.4	29.0	**21.4**	**34.6**	**15.0**
10	20.6	23.0	15.0	21.1	20.5	21.4	24.3	24.6	29.9	23.6	16.6	12.2	7.6	6.8	4.6	4.7	5.6	5.1	5.9	3.5	2.7	3.9	5.2	6.6	**13.1**	**29.9**	**2.7**
11	7.5	10.2	12.0	14.3	13.1	13.0	11.5	11.3	8.8	7.9	7.3	4.3	5.7	9.0	10.7	12.0	8.5	5.0	5.8	5.9	6.7	8.3	22.0	15.2	**9.8**	**22.0**	**4.3**
12	10.6	8.0	10.4	11.9	11.3	11.4	10.8	10.8	9.9	7.0	6.8	7.5	9.1	10.5	10.6	9.3	10.1	7.8	9.0	6.2	10.8	8.8	11.4	10.7	**9.6**	**11.9**	**6.2**
13	17.9	13.9	13.7	13.5	11.4	12.7	14.7	15.2	14.3	13.1	11.9	13.0	20.5	15.1	14.1	15.8	15.4	16.0	18.0	12.6	14.4	16.6	13.3	13.9	**14.6**	**20.5**	**11.4**
14	13.0	19.6	12.8	13.4	14.8	17.1	33.8	25.9	22.5	26.4	23.4	22.9	31.9	29.1	30.8	17.3	15.7	15.3	20.1	26.7	21.2	19.7	16.9	17.1	**21.1**	**33.8**	**12.8**
15	16.2	17.7	12.0	12.6	13.6	11.7	12.4	9.7	6.4	6.1	9.8	7.1	6.2	7.2	13.9	12.9	12.1	12.0	18.2	18.6	18.3	15.2	13.8	14.0	**12.4**	**18.6**	**6.1**
16	13.5	13.5	13.7	14.7	14.3	13.8	17.5	23.1	15.3	12.9	15.1	17.3	19.8	37.7	33.6	21.8	25.8	20.6	14.6	16.0	14.2	10.5	9.5	8.1	**17.4**	**37.7**	**8.1**
17	10.2	10.9	7.7	7.5	8.3	11.0	11.9	12.9	18.3	15.3	17.2	17.5	14.9	17.9	21.8	23.9	21.7	13.1	19.8	19.8	9.7	13.3	9.7	9.8	**14.3**	**23.9**	**7.5**
18	8.4	8.1	9.0	8.8	11.1	9.3	10.0	10.5	12.2	12.6	15.6	19.5	28.5	40.4	24.8	27.7	37.2	27.4	24.1	24.4	22.9	24.1	26.6	26.9	**19.6**	**40.4**	**8.1**
19	30.3	32.6	42.5	31.0	34.4	38.2	27.9	19.3	19.4	22.9	26.1	25.4	23.2	26.4	26.5	23.5	26.9	32.1	19.0	17.5	19.9	20.5	23.1	23.4	**26.3**	**42.5**	**17.5**
20	21.3	24.7	17.4	13.6	14.9	18.3	25.0	22.5	35.1	30.3	28.2	18.8	15.2	30.2	57.7	36.0	36.3	25.2	23.5	17.0	16.2	16.2	17.6	22.9	**24.3**	**57.7**	**13.6**
21	19.0	19.5	19.7	21.0	16.9	18.6	27.2	28.3	34.2	37.9	35.1	29.4	29.9	32.3	33.7	25.4	19.5	18.1	14.8	11.8	10.8	15.2	20.1	21.1	**23.3**	**37.9**	**10.8**
22	11.3	9.8	12.3	13.2	13.0	18.7	24.8	24.5	19.6	22.3	30.7	28.0	23.0	57.0	28.8	25.3	25.6	29.6	20.1	18.6	19.9	20.2	19.5	16.4	**22.2**	**57.0**	**9.8**
23	17.3	20.4	20.5	27.7	25.9	33.1	37.8	40.3	31.9	27.6	27.7	23.8	26.3	29.2	20.4	26.7	33.4	27.4	19.1	21.8	19.9	17.5	19.6	28.0	**26.0**	**40.3**	**17.3**
24	24.4	24.5	26.7	25.1	21.5	24.5	43.0	54.1	57.6	32.2	33.6	32.5	29.0	27.2	27.1	40.3	28.2	25.7	28.8	21.1	34.8	26.1	23.4	22.6	**30.6**	**57.6**	**21.1**
25	23.8	26.8	28.2	26.2	33.1	26.6	26.9	32.6	47.2	52.4	60.6	66.9	48.6	36.6	33.1	25.7	31.1	29.2	24.6	29.4	21.6	33.4	13.8	13.9	**33.0**	**66.9**	**13.8**
26	16.5	20.4	23.6	21.4	21.4	19.2	19.2	27.2	28.1	23.9	22.6	22.1	27.4	28.8	37.1	60.8	51.9	43.4	20.2	18.6	19.8	20.8	18.2	18.3	**26.3**	**60.8**	**16.5**
27	17.2	17.4	16.3	15.2	17.5	16.6	17.6	17.1	13.5	16.8	17.2	21.3	17.6	17.0	22.6	21.0	17.5	20.3	17.9	22.7	23.4	53.8	38.0	33.4	**21.2**	**53.8**	**13.5**
28	31.0	29.5	37.7	24.3	14.6	15.7	14.6	13.1	12.4	11.1	10.4	11.0	9.5	9.0	13.1	12.1	9.5	11.4	11.9	7.9	7.3	8.9	12.4	10.2	**14.5**	**37.7**	**7.3**
29	9.7	10.9	8.7	11.0	10.7	18.0	24.9	21.3	13.2	12.3	10.6	11.5	32.6	31.2	13.3	14.4	15.4	30.0	22.8	17.5	13.0	12.6	10.1	9.7	**16.1**	**32.6**	**8.7**
30	8.7	10.3	10.3	11.5	11.0	10.9	9.9	10.7	12.6	14.5	13.0	12.3	12.2	12.5	14.7	15.8	13.3	12.9	15.2	12.8	9.6	41.2	22.6	14.8	**13.9**	**41.2**	**8.7**
31	17.5	13.2	12.6	13.8	14.1	12.5	14.0	17.0	23.8	16.5	18.7	18.4	24.5	19.2	19.5	17.9	14.0	14.2	12.9	12.2	16.2	29.1	20.6	18.0	**17.1**	**29.1**	**12.2**
MEAN	**18.4**	**18.6**	**18.3**	**18.3**	**17.0**	**17.7**	**20.9**	**20.8**	**21.6**	**21.1**	**20.7**	**21.8**	**21.8**	**24.2**	**24.0**	**22.6**	**22.1**	**20.6**	**19.0**	**18.3**	**18.8**	**21.0**	**19.8**	**19.4**	**20.3**		
MAX	**36.2**	**36.3**	**42.5**	**51.6**	**34.4**	**38.2**	**43.0**	**54.1**	**57.6**	**52.4**	**60.6**	**76.0**	**48.6**	**57.0**	**74.4**	**60.8**	**51.9**	**43.4**	**38.6**	**33.9**	**38.0**	**53.8**	**46.6**	**47.2**		**76.0**	
MIN	**7.5**	**8.0**	**7.7**	**7.5**	**8.3**	**9.3**	**8.7**	**5.6**	**6.4**	**6.1**	**6.8**	**4.3**	**5.7**	**6.8**	**4.6**	**4.6**	**5.1**	**5.0**	**5.8**	**3.5**	**2.7**	**3.9**	**5.2**	**6.6**			**2.7**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 734 DATA RECOVERY RATE = 98.7% DATA CAPTURE RATE = 96.8%

MONTHLY MEAN = 20.3 µg/m3

MAXIMUM PM10 = 76.0 µg/m3 DATE OF OCCURRENCE = 5/2 at 1200 MAXIMUM DAILY MEAN = 33.0 µg/m3 DATE OF OCCURRENCE = 5/25

SECOND MAXIMUM PM10 = 74.4 µg/m3 DATE OF OCCURRENCE = 5/3 at 1500 SECOND MAXIMUM DAILY MEAN = 30.6 µg/m3 DATE OF OCCURRENCE = 5/24

MINIMUM PM10 = 2.7 µg/m3 DATE OF OCCURRENCE = 5/10 at 2100 MINUMUM DAILY MEAN = 9.6 µg/m3 DATE OF OCCURRENCE = 5/12

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

Draft

CSX AQ8A Modulair

HOURLY AVERAGES of PM10 in µg/m3 for JUNE, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	20.3	11.7	9.8	13.5	13.1	16.2	20.9	15.0	16.6	18.4	25.8	24.8	32.1	23.7	18.0	21.9	41.3	30.7	12.3	10.9	17.6	14.9	18.8	14.4	**19.3**	**41.3**	**9.8**
2	14.4	14.1	13.0	14.0	13.0	14.3	15.9	20.1	24.9	21.8	18.9	23.9	30.0	19.6	19.2	22.7	23.9	27.6	20.8	18.1	18.3	19.7	19.8	24.3	**19.7**	**30.0**	**13.0**
3	20.4	20.9	23.6	20.0	19.3	18.2	21.5	20.1	26.8	23.7	26.4	24.2	22.1	23.5	47.8	43.6	27.1	17.5	37.6	22.9	36.5	29.7	25.9	27.4	**26.1**	**47.8**	**17.5**
4	26.3	17.8	20.0	19.4	41.8	23.0	46.0	51.9	44.4	39.7	61.3	53.8	58.5	48.1	55.4	76.5	80.2	45.5	39.0	35.0	25.9	18.2	22.9	25.0	**40.7**	**80.2**	**17.8**
5	24.1	22.3	28.3	26.9	31.4	36.1	37.7	40.4	39.2	33.3	46.5	58.3	39.3	49.3	52.7	55.7	25.1	19.7	22.6	25.7	25.1	23.6	24.5	20.1	**33.7**	**58.3**	**19.7**
6	22.4	22.9	22.0	19.7	21.0	19.9	18.9	17.7	18.0	19.3	20.5	19.3	20.7	20.6	21.3	19.0	16.9	17.2	10.7	12.4	14.2	15.4	13.3	17.0	**18.3**	**22.9**	**10.7**
7	16.3	16.2	15.2	14.7	15.7	16.1	16.2	14.6	18.3	28.3	33.0	38.3	47.7	42.1	31.1	28.5	30.1	25.0	25.0	22.7	17.1	15.9	17.7	15.9	**23.4**	**47.7**	**14.6**
8	12.6	9.8	10.9	8.9	8.8	8.8	11.5	14.0	11.7	13.5	13.4	10.7	9.4	8.9	15.4	11.7	10.1	9.9	14.7	11.2	21.1	12.7	16.8	19.6	**12.3**	**21.1**	**8.8**
9	18.8	18.6	16.3	15.4	19.2	15.6	14.9	14.7	15.5	17.4	36.0	23.4	19.2	22.2	12.9	17.0	11.6	9.0	7.0	10.7	14.5	15.8	10.5	12.7	**16.2**	**36.0**	**7.0**
10	10.0	11.0	9.6	12.4	12.4	11.4	18.6	15.3	18.6	11.7	17.5	22.0	17.1	21.9	17.7	22.5	19.2	15.7	14.7	---	---	---	---	---	**15.8**	**22.5**	**9.6**
11	9.7	6.5	9.6	7.0	15.0	10.6	11.8	14.4	18.4	17.1	13.5	10.2	8.3	10.7	15.2	10.6	14.5	12.9	10.8	15.2	29.3	18.2	15.8	30.9	**14.0**	**30.9**	**6.5**
12	24.5	17.9	15.2	13.7	20.0	13.9	15.2	22.7	16.2	13.5	14.7	13.6	13.8	14.4	21.8	38.5	48.4	34.7	23.5	21.4	17.0	22.3	20.6	24.0	**20.9**	**48.4**	**13.5**
13	17.3	26.4	23.9	29.4	37.7	37.9	47.5	64.6	34.3	36.3	43.5	50.6	50.7	45.4	47.5	43.9	40.4	39.4	37.8	34.8	25.3	26.0	21.2	20.1	**36.7**	**64.6**	**17.3**
14	24.4	21.1	21.7	22.5	20.4	23.3	23.4	35.3	31.6	34.6	35.6	52.4	48.8	47.5	63.8	42.5	43.7	39.2	31.9	35.9	31.7	23.3	18.2	13.0	**32.7**	**63.8**	**13.0**
15	12.8	15.9	13.5	14.6	14.6	15.2	17.1	17.1	15.2	17.0	13.5	14.5	16.0	17.6	13.7	18.4	13.4	18.7	17.0	19.6	18.3	16.7	22.6	20.3	**16.4**	**22.6**	**12.8**
16	18.5	28.9	19.2	15.9	15.6	23.4	20.5	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
17	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
18	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
19	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
20	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
21	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
22	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
23	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
24	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
25	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
26	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
27	---	---	---	---	---	---	---	---	---	---	13.4	14.1	13.1	14.2	14.9	15.3	38.0	25.8	27.3	20.4	47.5	33.1	21.2	31.4	**---**	**---**	**---**
28	32.0	27.3	16.8	22.1	27.5	22.6	17.8	23.9	37.2	37.7	32.9	31.0	24.6	43.3	42.6	60.4	34.5	24.0	32.7	32.7	45.0	51.8	49.1	38.7	**33.7**	**60.4**	**16.8**
29	36.4	36.9	49.3	46.0	42.2	49.7	78.2	64.9	46.3	34.4	37.0	32.8	39.6	58.2	55.2	42.4	36.4	26.0	28.2	23.0	17.7	20.0	19.0	17.4	**39.1**	**78.2**	**17.4**
30	10.5	11.7	18.3	25.8	13.4	14.3	17.0	17.5	18.2	21.0	20.5	18.7	20.4	20.7	18.9	19.3	14.9	14.5	11.3	12.3	13.0	18.0	31.7	11.8	**17.2**	**31.7**	**10.5**
MEAN	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**24.2**		
MAX	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---		**80.2**	
MIN	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---			**6.5**

POSSIBLE NUMBER OF OBSERVATIONS = 720 ACTUAL NUMBER OF OBSERVATIONS = 448 DATA RECOVERY RATE = 62.2% DATA CAPTURE RATE = 60.0%

MONTHLY MEAN = 24.2 µg/m3

MAXIMUM PM10 = 80.2 µg/m3 DATE OF OCCURRENCE = 6/4 at 1700 MAXIMUM DAILY MEAN = 40.7 µg/m3 DATE OF OCCURRENCE = 6/4

SECOND MAXIMUM PM10 = 78.2 µg/m3 DATE OF OCCURRENCE = 6/29 at 700 SECOND MAXIMUM DAILY MEAN = 39.1 µg/m3 DATE OF OCCURRENCE = 6/29

MINIMUM PM10 = 6.5 µg/m3 DATE OF OCCURRENCE = 6/11 at 200 MINUMUM DAILY MEAN = 12.3 µg/m3 DATE OF OCCURRENCE = 6/8

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

Draft

CSX AQ8A Modulair

HOURLY AVERAGES of PM2.5 in µg/m3 for APRIL, 2024

Hr Beg Hr End Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	12.2	12.4	14.1	14.7	13.4	13.5	11.8	10.2	10.3	7.4	5.2	4.0	2.6	3.5	5.4	6.0	7.5	10.2	11.0	11.7	10.4	9.4	9.6	10.4	**9.4**	**14.7**	**2.6**
2	9.8	10.9	10.1	8.8	7.9	8.9	7.2	6.9	6.4	3.9	3.1	2.2	2.1	3.0	2.8	2.1	1.0	0.8	0.9	1.1	1.8	1.5	1.1	1.0	**4.3**	**10.9**	**0.8**
3	1.1	2.0	1.9	1.9	2.2	2.4	1.7	1.0	1.3	1.6	1.7	0.7	0.6	0.5	0.5	1.1	0.3	0.4	1.4	3.3	2.1	2.6	4.8	2.8	**1.6**	**4.8**	**0.3**
4	2.0	1.8	3.8	3.7	3.3	4.3	4.5	4.7	10.2	10.3	6.1	5.3	5.0	8.6	8.6	4.0	1.0	0.5	0.5	0.6	0.8	1.4	1.0	1.0	**3.8**	**10.3**	**0.5**
5	1.0	0.9	0.9	0.9	1.3	2.1	3.2	3.7	5.1	4.3	2.6	1.7	1.7	2.8	2.5	2.0	4.2	4.1	3.0	2.4	1.8	1.6	1.5	1.4	**2.3**	**5.1**	**0.9**
6	1.7	1.7	1.6	1.5	1.3	1.4	1.5	2.2	2.6	2.9	2.6	2.0	1.8	1.9	2.0	2.1	2.3	2.2	2.7	3.0	3.1	3.5	4.1	5.3	**2.3**	**5.3**	**1.3**
7	5.4	3.9	4.5	6.4	6.1	6.3	4.7	3.3	3.1	2.7	2.0	1.5	1.7	1.7	1.8	1.7	1.7	1.6	1.7	2.0	2.5	4.6	7.4	5.2	**3.4**	**7.4**	**1.5**
8	4.1	5.2	5.3	6.3	5.3	4.5	4.1	7.1	14.8	15.2	10.5	6.5	6.5	7.2	6.6	5.0	3.3	3.1	2.8	3.2	4.3	4.7	5.9	6.6	**6.1**	**15.2**	**2.8**
9	8.1	10.0	7.6	6.8	6.4	7.3	10.0	13.6	16.6	10.1	17.4	20.9	10.8	14.0	11.7	11.0	15.1	18.5	21.1	24.1	25.5	26.3	27.6	27.9	**15.3**	**27.9**	**6.4**
10	29.0	29.1	31.1	35.0	27.0	25.8	26.6	30.5	35.2	38.6	20.8	9.5	8.6	9.7	13.9	17.2	19.9	16.7	16.0	14.0	16.6	13.0	15.2	16.1	**21.4**	**38.6**	**8.6**
11	15.7	14.6	11.8	11.9	13.3	12.8	12.8	11.7	9.4	7.0	6.7	7.8	6.8	6.6	7.7	7.1	8.1	9.1	8.9	8.6	9.4	10.9	11.9	11.9	**10.1**	**15.7**	**6.6**
12	10.7	7.8	7.6	3.5	3.0	3.2	4.0	4.4	1.1	0.5	1.4	2.5	2.9	3.4	3.1	2.6	1.4	0.6	1.0	1.2	0.8	0.4	0.5	0.7	**2.8**	**10.7**	**0.4**
13	1.3	1.4	1.0	0.8	1.9	1.3	1.3	1.6	1.8	2.1	2.6	2.8	2.7	3.4	2.8	2.8	2.7	2.4	2.2	2.1	2.2	2.8	4.1	4.4	**2.2**	**4.4**	**0.8**
14	5.3	4.2	37.4	3.7	4.3	4.1	4.9	6.5	4.3	3.3	2.9	3.3	4.5	8.0	7.9	12.6	8.9	6.3	7.0	7.3	7.3	8.6	9.9	11.2	**7.6**	**37.4**	**2.9**
15	6.1	4.5	5.8	8.1	7.7	5.4	6.9	8.8	7.7	7.6	12.2	16.9	16.0	10.2	7.7	7.7	8.5	9.2	12.0	13.1	17.1	19.4	19.4	20.4	**10.7**	**20.4**	**4.5**
16	10.3	9.2	8.0	5.8	6.3	6.4	7.3	10.6	8.3	5.9	5.8	7.8	7.4	7.3	8.3	10.4	9.8	6.0	5.4	5.4	6.6	7.6	7.6	7.7	**7.5**	**10.6**	**5.4**
17	7.6	7.5	6.7	6.4	6.4	6.5	6.9	8.6	9.4	6.3	7.5	13.1	9.4	9.6	10.8	10.0	11.5	16.5	12.7	11.9	10.6	8.2	9.1	10.3	**9.3**	**16.5**	**6.3**
18	15.4	18.3	18.2	17.9	17.9	18.4	22.9	25.7	24.6	23.4	22.7	22.9	23.7	23.7	21.5	18.2	19.7	15.2	14.1	10.3	10.9	16.8	17.2	16.7	**19.0**	**25.7**	**10.3**
19	13.9	11.3	9.6	6.5	4.7	4.2	3.3	4.1	7.6	5.8	5.4	6.6	8.7	11.8	16.0	14.7	11.7	11.6	10.3	9.2	8.6	9.2	11.5	10.7	**9.0**	**16.0**	**3.3**
20	9.3	9.6	8.8	9.2	9.5	10.9	12.5	14.9	16.0	16.8	14.4	8.8	6.2	4.1	3.6	3.7	3.2	3.2	2.7	4.4	4.9	4.8	5.0	4.2	**7.9**	**16.8**	**2.7**
21	3.9	3.8	4.4	4.0	3.9	3.3	2.8	2.7	3.1	3.1	2.9	3.6	5.0	5.3	5.1	5.2	5.3	5.4	5.3	5.7	5.8	6.2	9.1	13.3	**4.9**	**13.3**	**2.7**
22	8.6	8.3	8.4	7.1	6.6	5.8	5.5	6.8	7.2	6.2	5.2	5.8	6.2	6.8	8.3	5.9	4.8	5.5	5.1	6.1	5.7	5.8	5.7	5.3	**6.3**	**8.6**	**4.8**
23	6.7	7.2	6.5	6.0	6.1	6.8	8.8	11.0	18.8	19.4	20.0	9.4	9.2	6.6	5.4	5.2	5.4	5.9	6.0	5.0	5.6	6.4	5.4	5.9	**8.2**	**20.0**	**5.0**
24	6.3	6.8	8.3	9.0	9.9	11.1	11.7	10.0	8.5	8.2	5.7	4.5	5.9	5.2	5.8	4.9	5.3	5.9	6.1	4.8	4.2	4.7	5.1	3.9	**6.7**	**11.7**	**3.9**
25	4.4	5.4	6.0	6.4	6.5	5.5	3.9	4.2	4.7	5.1	5.9	7.0	6.4	8.4	10.7	19.6	16.6	15.0	12.4	10.7	8.1	8.0	8.1	5.7	**8.1**	**19.6**	**3.9**
26	7.8	7.1	6.2	6.5	6.1	6.2	7.1	7.5	9.2	8.7	6.3	6.4	5.7	6.8	5.2	5.2	3.9	3.5	3.2	3.4	4.8	4.4	3.4	3.4	**5.7**	**9.2**	**3.2**
27	3.5	3.4	3.1	3.2	3.7	3.7	3.4	3.3	4.9	4.5	4.4	4.2	5.0	5.5	6.6	5.0	4.9	5.2	6.2	4.6	3.9	4.2	4.3	4.4	**4.3**	**6.6**	**3.1**
28	4.6	4.9	5.1	6.1	6.0	5.3	5.5	6.4	11.1	17.8	17.3	21.6	18.4	16.5	16.7	16.7	17.3	18.2	17.6	17.3	17.1	17.2	14.7	17.1	**13.1**	**21.6**	**4.6**
29	18.0	14.6	13.5	15.5	14.8	14.7	15.0	14.9	15.6	22.8	26.3	21.9	19.0	23.9	19.9	16.8	15.0	14.4	13.6	15.3	15.4	15.9	16.2	16.9	**17.0**	**26.3**	**13.5**
30	16.3	15.2	15.7	20.2	19.3	18.8	18.6	15.2	15.7	15.7	15.3	15.8	15.1	15.7	13.5	12.0	13.8	12.5	10.5	10.5	12.0	11.3	5.5	4.9	**14.1**	**20.2**	**4.9**
MEAN	**8.3**	**8.1**	**9.1**	**8.1**	**7.7**	**7.7**	**8.0**	**8.7**	**9.8**	**9.6**	**8.8**	**8.2**	**7.5**	**8.1**	**8.1**	**8.0**	**7.8**	**7.7**	**7.4**	**7.4**	**7.7**	**8.0**	**8.4**	**8.6**	**8.2**		
MAX	**29.0**	**29.1**	**37.4**	**35.0**	**27.0**	**25.8**	**26.6**	**30.5**	**35.2**	**38.6**	**26.3**	**22.9**	**23.7**	**23.9**	**21.5**	**19.6**	**19.9**	**18.5**	**21.1**	**24.1**	**25.5**	**26.3**	**27.6**	**27.9**		**38.6**	
MIN	**1.0**	**0.9**	**0.9**	**0.8**	**1.3**	**1.3**	**1.3**	**1.0**	**1.1**	**0.5**	**1.4**	**0.7**	**0.6**	**0.5**	**0.5**	**1.1**	**0.3**	**0.4**	**0.5**	**0.6**	**0.8**	**0.4**	**0.5**	**0.7**			**0.3**

POSSIBLE NUMBER OF OBSERVATIONS = 720 ACTUAL NUMBER OF OBSERVATIONS = 720 DATA RECOVERY RATE = 100.0% DATA CAPTURE RATE = 100.0%

MONTHLY MEAN = 8.2 µg/m3

MAXIMUM PM2.5 = 38.6 µg/m3 DATE OF OCCURRENCE = 4/10 at 1000 MAXIMUM DAILY MEAN = 21.4 µg/m3 DATE OF OCCURRENCE = 4/10

SECOND MAXIMUM PM2.5 = 37.4 µg/m3 DATE OF OCCURRENCE = 4/14 at 300 SECOND MAXIMUM DAILY MEAN = 19.0 µg/m3 DATE OF OCCURRENCE = 4/18

MINIMUM PM2.5 = 0.3 µg/m3 DATE OF OCCURRENCE = 4/3 at 1700 MINUMUM DAILY MEAN = 1.6 µg/m3 DATE OF OCCURRENCE = 4/3

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

Draft

CSX AQ8A Modulair

HOURLY AVERAGES of PM2.5 in µg/m3 for MAY, 2024

Hr Beg Hr End Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	7.2	5.6	6.1	6.2	6.3	6.5	6.9	7.3	6.7	6.9	6.8	5.6	6.5	5.9	5.9	6.0	6.0	5.9	5.1	6.4	9.6	9.5	8.5	8.9	**6.7**	**9.6**	**5.1**
2	8.3	8.9	9.4	10.0	9.2	9.1	10.1	13.1	19.9	24.1	16.9	20.6	12.4	8.5	9.0	7.8	8.0	7.8	8.5	10.2	13.2	15.1	18.2	18.8	**12.3**	**24.1**	**7.8**
3	20.6	18.7	13.5	10.9	7.7	7.4	8.0	9.0	8.9	8.3	7.6	7.3	6.5	8.4	9.2	8.9	8.5	7.3	8.0	7.5	7.8	6.3	5.1	4.1	**8.9**	**20.6**	**4.1**
4	5.2	6.2	6.2	5.4	4.6	5.6	6.0	5.6	4.6	4.1	7.2	5.8	5.0	5.5	2.3	1.5	1.5	1.5	1.4	2.6	3.8	5.2	6.8	7.3	**4.6**	**7.3**	**1.4**
5	7.3	6.5	6.0	7.6	6.5	4.6	2.9	2.6	2.7	3.8	4.3	6.0	5.9	7.5	8.3	9.9	9.0	5.7	6.5	10.4	14.6	21.6	9.3	10.2	**7.4**	**21.6**	**2.6**
6	10.7	11.9	13.7	14.9	13.4	12.9	10.8	11.0	11.1	11.2	12.5	18.4	18.3	18.1	18.6	16.0	20.1	20.2	22.6	19.1	18.6	13.4	13.1	15.0	**15.2**	**22.6**	**10.7**
7	13.6	11.9	13.8	14.1	16.3	14.7	13.1	14.4	16.5	20.3	20.8	20.9	23.9	18.2	19.1	20.3	18.5	18.3	24.9	25.8	18.1	10.6	8.9	7.8	**16.8**	**25.8**	**7.8**
8	6.9	7.2	7.7	8.2	8.5	8.6	9.6	11.7	13.5	15.9	12.3	11.3	7.8	6.6	6.0	6.2	6.4	5.8	6.3	6.7	8.1	8.6	9.1	7.7	**8.6**	**15.9**	**5.8**
9	6.8	7.3	7.9	8.4	7.8	8.1	9.5	6.7	5.7	5.8	5.6	5.8	5.9	6.2	7.2	9.2	7.5	5.8	5.4	6.8	6.9	8.0	9.4	6.8	**7.1**	**9.5**	**5.4**
10	6.6	5.1	4.0	3.8	4.7	5.5	5.9	6.1	6.0	5.3	4.2	3.1	1.9	1.9	1.6	1.5	1.4	1.2	1.6	1.4	1.0	1.4	1.3	1.9	**3.2**	**6.6**	**1.0**
11	2.0	2.5	2.6	2.7	2.7	2.7	3.0	3.7	3.8	3.6	3.9	2.6	2.1	2.8	2.5	3.0	3.0	2.5	2.6	3.1	3.9	5.5	9.4	5.2	**3.3**	**9.4**	**2.0**
12	3.7	2.8	2.6	2.7	2.8	4.1	4.9	6.6	6.5	4.4	4.0	4.5	5.3	6.3	4.6	5.0	4.9	4.8	5.3	4.4	6.7	4.3	6.9	5.6	**4.7**	**6.9**	**2.6**
13	8.3	7.1	6.1	5.8	6.4	7.4	8.2	9.0	8.1	8.0	8.3	7.2	8.3	6.9	6.4	6.9	6.6	6.4	6.5	6.3	6.3	6.1	5.8	6.4	**7.0**	**9.0**	**5.8**
14	6.5	6.9	6.5	6.5	6.7	7.1	8.6	9.8	10.7	10.5	11.3	12.5	12.5	13.0	11.7	10.0	10.4	10.5	12.3	16.1	7.7	7.1	5.7	5.6	**9.4**	**16.1**	**5.6**
15	6.8	7.4	6.5	5.7	6.2	6.4	6.1	4.8	3.6	4.3	5.5	4.2	3.7	4.1	5.4	6.5	6.0	6.1	7.6	8.3	8.2	7.6	6.5	7.2	**6.0**	**8.3**	**3.6**
16	6.8	6.6	6.9	7.8	7.7	7.6	10.1	9.0	6.5	5.0	5.2	6.4	5.9	8.4	7.6	5.5	6.7	6.3	5.1	5.5	5.6	3.6	3.5	4.0	**6.3**	**10.1**	**3.5**
17	4.5	4.6	3.9	3.8	4.5	4.6	4.4	4.7	7.0	6.5	7.0	6.9	7.8	7.9	10.3	10.8	9.8	6.9	7.6	7.0	5.9	6.7	6.4	6.6	**6.5**	**10.8**	**3.8**
18	5.4	5.6	6.2	6.7	7.8	7.5	7.9	8.0	8.7	9.6	10.1	13.2	10.8	13.2	10.0	11.6	13.5	13.4	14.9	16.0	14.7	16.8	19.8	20.5	**11.3**	**20.5**	**5.4**
19	23.7	24.8	19.9	16.1	15.1	17.2	15.3	14.1	15.1	18.8	22.7	21.6	19.6	20.3	20.2	19.0	21.4	22.2	15.1	13.5	13.9	15.5	16.9	17.1	**18.2**	**24.8**	**13.5**
20	15.7	11.1	8.7	5.3	5.2	8.9	13.5	9.3	13.9	9.0	7.9	7.2	8.2	17.0	17.8	12.3	13.0	12.3	13.3	10.0	11.6	11.6	12.2	11.9	**11.1**	**17.8**	**5.2**
21	11.0	11.7	11.9	11.7	10.3	9.8	10.7	15.2	19.8	21.7	18.8	17.4	16.7	15.3	11.6	10.9	8.6	8.6	7.7	6.8	6.5	7.9	10.0	8.4	**12.0**	**21.7**	**6.5**
22	7.1	6.9	7.2	7.4	7.3	7.8	7.3	7.5	8.7	10.1	11.8	10.8	11.1	20.7	13.3	13.5	12.7	11.5	10.8	10.8	11.5	11.7	10.0	8.8	**10.2**	**20.7**	**6.9**
23	9.6	11.6	12.9	16.3	16.7	19.5	22.7	24.4	25.4	19.9	15.8	15.6	16.6	18.5	15.2	14.3	15.3	13.0	11.3	13.6	13.0	12.9	16.2	19.7	**16.2**	**25.4**	**9.6**
24	19.1	19.1	17.5	15.6	14.4	14.5	16.2	18.5	18.1	13.0	12.1	13.0	11.6	10.8	11.1	11.5	11.7	11.6	12.5	11.6	19.7	16.0	15.8	15.2	**14.5**	**19.7**	**10.8**
25	17.2	19.9	20.6	19.4	19.8	19.3	20.3	25.7	32.9	35.3	36.1	36.5	29.0	19.8	14.9	13.7	11.7	12.1	13.0	14.1	14.4	13.3	6.4	7.2	**19.6**	**36.5**	**6.4**
26	9.4	11.3	12.4	11.5	10.3	9.5	9.6	13.4	15.1	14.6	13.8	14.3	15.3	17.7	19.9	16.1	17.4	20.9	12.8	12.3	15.6	16.4	14.9	13.6	**14.0**	**20.9**	**9.4**
27	13.4	13.4	11.9	11.1	13.2	11.8	11.1	9.6	9.2	11.3	12.2	11.2	11.2	9.3	10.0	11.4	10.9	11.5	11.2	9.0	4.5	4.8	3.5	3.6	**10.0**	**13.4**	**3.5**
28	3.3	3.6	4.6	5.3	5.6	6.8	5.7	5.2	4.5	3.9	4.2	4.7	3.9	4.3	5.0	5.4	4.7	5.1	5.0	4.3	4.9	5.5	6.5	4.9	**4.8**	**6.8**	**3.3**
29	4.9	4.7	5.1	5.8	5.6	6.7	6.7	6.6	6.2	5.1	4.6	4.7	7.3	8.4	6.7	8.2	6.6	10.0	9.8	8.0	6.2	6.3	5.3	5.1	**6.4**	**10.0**	**4.6**
30	4.7	3.8	4.3	4.6	4.0	3.6	3.7	4.8	5.8	7.2	7.7	5.9	5.7	6.3	6.6	6.7	6.2	6.9	7.7	6.4	5.3	7.3	7.4	7.2	**5.8**	**7.7**	**3.6**
31	7.3	7.0	6.4	5.7	5.9	5.1	5.0	5.7	7.0	6.7	5.9	6.2	6.4	6.4	6.3	5.9	5.8	5.5	6.5	5.8	6.5	11.7	14.1	12.8	**6.9**	**14.1**	**5.0**
MEAN	**9.1**	**9.1**	**8.8**	**8.6**	**8.5**	**8.7**	**9.2**	**9.8**	**10.7**	**10.8**	**10.6**	**10.7**	**10.1**	**10.5**	**9.8**	**9.5**	**9.5**	**9.3**	**9.3**	**9.3**	**9.5**	**9.6**	**9.4**	**9.2**	**9.6**		
MAX	**23.7**	**24.8**	**20.6**	**19.4**	**19.8**	**19.5**	**22.7**	**25.7**	**32.9**	**35.3**	**36.1**	**36.5**	**29.0**	**20.7**	**20.2**	**20.3**	**21.4**	**22.2**	**24.9**	**25.8**	**19.7**	**21.6**	**19.8**	**20.5**		**36.5**	
MIN	**2.0**	**2.5**	**2.6**	**2.7**	**2.7**	**2.7**	**2.9**	**2.6**	**2.7**	**3.6**	**3.9**	**2.6**	**1.9**	**1.9**	**1.6**	**1.5**	**1.4**	**1.2**	**1.4**	**1.4**	**1.0**	**1.4**	**1.3**	**1.9**			**1.0**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 744 DATA RECOVERY RATE = 100.0% DATA CAPTURE RATE = 100.0%

MONTHLY MEAN = 9.6 µg/m3

MAXIMUM PM2.5 = 36.5 µg/m3 DATE OF OCCURRENCE = 5/25 at 1200 MAXIMUM DAILY MEAN = 19.6 µg/m3 DATE OF OCCURRENCE = 5/25

SECOND MAXIMUM PM2.5 = 36.1 µg/m3 DATE OF OCCURRENCE = 5/25 at 1100 SECOND MAXIMUM DAILY MEAN = 18.2 µg/m3 DATE OF OCCURRENCE = 5/19

MINIMUM PM2.5 = 1.0 µg/m3 DATE OF OCCURRENCE = 5/10 at 2100 MINUMUM DAILY MEAN = 3.2 µg/m3 DATE OF OCCURRENCE = 5/10

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

Draft

CSX AQ8A Modulair

HOURLY AVERAGES of PM2.5 in µg/m3 for JUNE, 2024

Hr Beg Hr End Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	13.9	6.6	6.2	7.7	7.3	8.5	10.1	8.5	7.8	7.9	9.1	8.0	8.1	8.1	8.6	6.3	9.9	9.6	6.5	6.3	7.4	9.0	10.1	8.4	**8.3**	**13.9**	**6.2**
2	9.0	9.4	9.4	9.8	9.4	9.3	10.4	11.4	12.5	13.0	13.9	15.2	14.8	12.9	13.4	15.5	16.1	16.2	12.3	12.0	12.6	14.8	13.9	13.7	**12.5**	**16.2**	**9.0**
3	15.7	16.0	15.7	15.6	14.9	14.2	14.1	14.6	16.0	17.5	19.9	16.2	14.9	14.6	19.1	20.1	14.1	10.9	17.8	17.3	17.7	17.9	18.9	16.7	**16.2**	**20.1**	**10.9**
4	17.6	13.7	11.6	11.6	14.4	11.5	12.9	18.2	25.5	26.4	29.4	26.0	18.5	15.6	17.9	22.8	24.5	22.5	23.5	19.1	17.2	16.3	18.4	17.8	**18.8**	**29.4**	**11.5**
5	17.4	16.0	16.6	15.9	18.7	21.0	22.7	22.0	21.4	20.0	22.6	23.4	24.5	26.8	25.4	17.2	16.3	14.0	14.7	15.7	14.5	12.8	14.2	12.2	**18.5**	**26.8**	**12.2**
6	11.7	12.4	12.9	12.2	12.7	11.9	12.0	11.7	12.3	13.0	14.0	13.6	14.6	14.2	13.7	13.2	9.1	8.4	6.5	8.0	9.6	10.2	9.6	10.9	**11.6**	**14.6**	**6.5**
7	9.8	8.4	7.2	7.0	6.9	7.5	7.9	6.2	5.1	4.0	4.1	5.2	4.4	4.7	3.8	4.0	4.0	4.0	5.2	4.4	4.0	3.4	3.4	4.0	**5.3**	**9.8**	**3.4**
8	5.5	5.0	4.9	3.8	3.0	3.2	4.0	3.5	3.8	3.4	3.1	2.7	2.7	2.4	4.3	2.9	3.0	3.3	4.0	4.1	5.9	6.8	10.2	11.9	**4.4**	**11.9**	**2.4**
9	12.6	12.2	10.0	8.7	9.5	9.0	7.8	6.7	6.2	5.0	7.0	8.2	9.3	5.6	3.7	3.5	3.9	3.5	4.2	4.4	6.2	7.1	7.0	7.3	**7.0**	**12.6**	**3.5**
10	5.4	5.7	5.2	4.9	5.6	4.7	5.4	5.3	4.8	4.7	5.2	5.3	5.1	6.2	6.4	6.6	5.9	5.8	6.4	---	---	---	---	---	**5.5**	**6.6**	**4.7**
11	4.1	3.8	4.2	4.6	5.5	5.6	5.5	5.4	6.1	6.4	6.1	4.4	4.0	5.3	4.7	4.6	6.2	5.6	6.5	7.5	10.5	9.1	8.3	10.2	**6.0**	**10.5**	**3.8**
12	14.5	9.9	9.5	8.6	8.5	8.2	9.7	10.9	8.9	6.4	8.2	8.6	8.3	9.0	11.5	14.1	13.3	13.1	12.2	12.1	12.2	12.4	13.2	13.2	**10.6**	**14.5**	**6.4**
13	12.4	14.5	15.1	13.8	14.7	15.5	16.7	22.1	16.9	19.0	21.9	19.7	19.8	20.7	22.5	21.9	20.5	18.1	15.1	12.6	12.8	12.4	11.1	12.0	**16.7**	**22.5**	**11.1**
14	12.5	14.1	15.1	15.5	15.4	15.2	16.7	21.0	23.5	25.7	27.3	29.3	28.4	29.4	30.4	22.5	21.9	23.5	20.4	19.7	19.6	11.8	8.7	7.3	**19.7**	**30.4**	**7.3**
15	6.8	6.5	6.3	6.6	9.0	9.9	10.4	10.6	9.2	9.2	8.5	8.1	8.3	8.1	8.7	9.9	8.6	10.0	9.5	8.6	9.3	10.0	11.8	11.9	**8.9**	**11.9**	**6.3**
16	11.4	14.1	15.3	13.5	12.3	13.3	12.9	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
17	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
18	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
19	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
20	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
21	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
22	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
23	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
24	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
25	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
26	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
27	---	---	---	---	---	---	---	---	---	---	5.3	5.6	7.4	7.0	7.4	9.1	12.5	13.9	13.7	13.2	16.1	14.8	14.1	17.3	**---**	**---**	**---**
28	12.7	11.6	9.1	9.3	10.6	10.3	8.0	7.2	8.7	9.4	7.4	6.8	7.3	10.0	7.6	7.8	7.9	7.9	8.3	9.7	10.4	10.2	10.2	7.4	**8.9**	**12.7**	**6.8**
29	7.3	6.9	8.7	6.6	6.1	8.2	16.2	15.2	12.2	10.7	11.3	11.8	11.8	14.0	14.8	13.8	12.9	11.4	10.7	10.1	9.3	9.4	9.5	7.9	**10.7**	**16.2**	**6.1**
30	4.8	5.7	7.1	9.3	8.7	8.7	9.0	10.7	12.7	15.7	16.5	15.6	18.3	18.3	16.8	16.7	12.9	10.6	6.7	6.1	8.2	12.5	11.7	5.6	**11.2**	**18.3**	**4.8**
MEAN	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**11.3**		
MAX	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**		**30.4**	
MIN	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**			**2.4**

POSSIBLE NUMBER OF OBSERVATIONS = 720 ACTUAL NUMBER OF OBSERVATIONS = 448 DATA RECOVERY RATE = 62.2% DATA CAPTURE RATE = 60.0%

MONTHLY MEAN = 11.3 µg/m3

MAXIMUM PM2.5 = 30.4 µg/m3 DATE OF OCCURRENCE = 6/14 at 1500 MAXIMUM DAILY MEAN = 19.7 µg/m3 DATE OF OCCURRENCE = 6/14

SECOND MAXIMUM PM2.5 = 29.4 µg/m3 DATE OF OCCURRENCE = 6/4 at 1100 SECOND MAXIMUM DAILY MEAN = 18.8 µg/m3 DATE OF OCCURRENCE = 6/4

MINIMUM PM2.5 = 2.4 µg/m3 DATE OF OCCURRENCE = 6/8 at 1400 MINUMUM DAILY MEAN = 4.4 µg/m3 DATE OF OCCURRENCE = 6/8

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

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APPENDIX J. INVALID DATA PERIODS AND CORRECTIVE ACTION FORMS FOR SECOND QUARTER 2024

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AQS Null Code Description	
AN - Machine Malfunction	BA - Maintenance/Routine Repairs

CSX AQ5 - Invalid Data Periods

Parameter	Start Date	Start Time	End Date	End Time	Hours Invalid	AQS NULL Code	Description
Wind speed, direction, gust	04/04/2024	02:01	04/07/2024	08:00	78	AN	Sensor malfunction, unknown
$PM_{10/CF/2.5}$	04/24/2024	09:01	04/24/2024	10:00	1	BA	Maintenance, Flow Check
	05/30/2024	08:01	05/30/2024	09:00	1	BA	Maintenance, Flow Check
	06/21/2024	15:01	06/27/2024	07:00	136	AN	Bypass flow alarm
	06/27/2024	07:01	06/27/2024	09:00	2	BA	Maintenance, Flow Check
	06/27/2024	09:01	07/01/2024	00:00	87	AN	Bypass flow error

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AQS Null Code Description	
AV - Power Failure	AN - Machine Malfunction
BA - Maintenance/Routine Repairs	AS - Poor Quality Assurance Results

CSX AQ8 - Invalid Data Periods

Parameter	Start Date	Start Time	End Date	End Time	Hours Invalid	AQS NULL Code	Description
Shelter Temperature	06/20/2024	00:01	06/27/2024	08:00	176	AV	Power Outage
	06/27/2024	08:01	06/27/2024	09:00	1	BA	Replace webswitch power
$PM_{10/CF/2.5}$	04/24/2024	11:01	04/24/2024	12:00	1	BA	Maintenance, Flow check
	04/30/2024	20:01	05/01/2024	00:00	4	AN	Span dust warning, alarms
	05/01/2024	00:01	05/04/2024	08:00	80	AN	Span dust warning, alarms
	05/04/2024	08:01	05/04/2024	10:00	2	BA	Maintenance, Flow check
	05/04/2024	10:01	05/07/2024	17:00	79	AN	Instrument will not boot up
	05/07/2024	17:01	05/07/2024	19:00	2	BA	Maintenance, Flow check
	05/07/2024	19:01	05/14/2024	07:00	156	AN	Instrument will not boot up
	05/14/2024	07:01	05/30/2024	14:00	391	BA	Maintenance, unit removed
	05/30/2024	14:01	06/01/2024	00:00	34	AS	Poor Quality Assurance Results
	06/01/2024	00:01	06/27/2024	08:00	632	AS	Poor Quality Assurance Results
	06/27/2024	08:01	06/27/2024	10:00	2	BA	Maintenance, Flow check

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CORRECTIVE ACTION REPORT

PROJECT NAME CSX - AQ5

Identification of a Problem or Deficiency:

Created By: Data management team
Assigned To: Nick Bratton
Date: 06/21/2024

Summary: T640X bypass flow alarm started on 6/21. Bypass flow readings appear to be erroneous.

Corrective Action Taken and Results:

From: Nick Bratton/Mike Peterson

Corrective Action Description: As found flow check performed on 6/27. The unit did not pass the flow check, and the bypass flow sensor appears to be malfunctioning.

Action remains open.

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CORRECTIVE ACTION REPORT

PROJECT NAME CSX - AQ8

Identification of a Problem or Deficiency:

Created By: Data management team
Assigned To: Nick Bratton
Date: 04/30/2024

Summary: T640X check PMT span alarm present. Erroneous consistently climbing concentrations are being reported, site visit required asap.

Corrective Action Taken and Results:

From: Nick Bratton/Mike Peterson

Corrective Action Description: 5/4/2024: Site visit occurred by the Trinity technician on May 4 to diagnose the errors. The technician noted some debris in the downtube, and an optical chamber cleaning was performed. The unit would not boot back up after the maintenance. On May 14, the unit was removed from the site to troubleshoot the bootup error and was ultimately reinstalled after maintenance on May 30. The design flow rate was still out of tolerance. On June 27, maintenance was performed, and the internal pump was replaced. The unit then passed all flow check criteria, but a slope alarm is still present.

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APPENDIX K. CALIBRATION FIELD DATA SHEETS

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CONTINUOUS PARTICULATE SAMPLER
CALIBRATION

SITE NAME	CSX AQ5	**Date**	4/24/2024	**Start Time**	10:00
PROJECT	234501.0038			**Stop Time**	10:45
SITE OPERATOR	Trintiy				

Analyzer Mfg	T-API
Analyzer Model	T640X
Analyzer s/n	1690

= Enter Flow Check Data
= Cell Containing Equations

REFERENCE EQUIPMENT:

	Model	Serial Number
Temperature Standard	Delta Cal	210062
Pressure Standard	Delta Cal	210062
Flow Standard	Delta Cal	210062
Certification Date	6/7/2023	

ZERO TEST / LEAK CHECK

PM Channel	Indicated Conc.	
PM_{10}	0.1	µg/m3
$PM_{2.5}$	0.1	µg/m3

CRITERIA:
PM < 0.2 µg/m3

TEMPERATURE SENSOR CALIBRATION

Indicated Temp.	Ref. Std. Temp.	Difference	
19.5	20.0	0.5	°C
			°C

CRITERIA:
DIFFERENCE < ±2°C

PRESSURE SENSOR CALIBRATION

Indicated Pressure		Ref. Std. Pressure	Difference
kPa	mmHg	mmHg	mmHg
101.2	759.1	759.0	-0.1

CRITERIA:
DIFFERENCE < ±10 mm Hg

Sample FLOW VERIFICATION

Target Flow L/min	Indicated Flow (I) L/min	Ref. Std. Flow (R) L/min	Difference Ref. Flow %	Difference Design Flow %
5.00	4.95	4.96	-0.2%	-0.8%
5.00				

CRITERIA:
±4% OF REFERENCE, OR ±5% OF DESIGN FLOW (5.0 L/min)

Bypass FLOW VERIFICATION

Target Flow L/min	Indicated Flow (I) L/min	Ref. Std. Flow (R) L/min	Difference Ref. Flow %	Difference Design Flow %	
11.67	11.59	11.58	0.1%	-0.8%	as found.
11.67					Calibrated

CRITERIA:
±4% OF REFERENCE, OR ±5% OF DESIGN FLOW (11.7 L/min)

PMT VERIFICATION

Peak Channel	Indicated Value	Difference	
10.9	10.8	-0.1	as found.
10.9	10.9	0.0	Calibrated

CRITERIA:
10.9 ±1.5

COMMENTS

Cleaned unit and inlet head. Changed internal and external DFU filters. O-ring in inlet head cracked and broken. Calibrated PMT, no additional changes or calibrations required.

Calibrated by: Nick Bratton

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CONTINUOUS PARTICULATE SAMPLER
CALIBRATION

SITE NAME	CSX AQ8	**Date**	4/24/2024	**Start Time**	12:15
PROJECT	234501.0038			**Stop Time**	12:45
SITE OPERATOR	Trintiy				

Analyzer Mfg	T-API
Analyzer Model	T640X
Analyzer s/n	1689

= Enter Flow Check Data
= Cell Containing Equations

REFERENCE EQUIPMENT:

	Model	Serial Number
Temperature Standard	Delta Cal	210062
Pressure Standard	Delta Cal	210062
Flow Standard	Delta Cal	210062
Certification Date	6/7/2023	

ZERO TEST / LEAK CHECK

PM Channel	Indicated Conc.	
PM_{10}	0.1	µg/m3
$PM_{2.5}$	0.1	µg/m3

CRITERIA:
PM < 0.2 µg/m3

TEMPERATURE SENSOR CALIBRATION

Indicated Temp.	Ref. Std. Temp.	Difference	
21.9	22.0	0.1	°C
			°C

CRITERIA:
DIFFERENCE < ±2°C

PRESSURE SENSOR CALIBRATION

Indicated Pressure		Ref. Std. Pressure	Difference
kPa	mmHg	mmHg	mmHg
101.2	759.1	759.0	-0.1

CRITERIA:
DIFFERENCE < ±10 mm Hg

Sample FLOW VERIFICATION

Target Flow L/min	Indicated Flow (I) L/min	Ref. Std. Flow (R) L/min	Difference Ref. Flow %	Difference Design Flow %
5.00	5.00	5.14	-2.7%	2.8%
5.00	5.03	5.03	0.0%	0.6%

CRITERIA:
±4% OF REFERENCE, OR ±5% OF DESIGN FLOW (5.0 L/min)

Bypass FLOW VERIFICATION

Target Flow L/min	Indicated Flow (I) L/min	Ref. Std. Flow (R) L/min	Difference Ref. Flow %	Difference Design Flow %	
11.67	11.66	11.73	-0.6%	0.5%	as found.
11.67					Calibrated

CRITERIA:
±4% OF REFERENCE, OR ±5% OF DESIGN FLOW (11.7 L/min)

PMT VERIFICATION

Peak Channel	Indicated Value	Difference	
10.9	11.0	0.1	as found.
10.9	10.9	0.0	Calibrated

CRITERIA:
10.9 ±1.5

COMMENTS

Cleaned unit and inlet head. Changed internal and external DFU filter. Calibrated sample flow and PMT. No additional changes or calibrations required.

Calibrated by: Nick Bratton

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CONTINUOUS PARTICULATE SAMPLER
CALIBRATION

SITE NAME	CSX AQ8	**Date**	6/27/2024	**Start Time**	9:15
PROJECT	234501.0038			**Stop Time**	11:00
SITE OPERATOR	Trinity				

Analyzer Mfg	T-API
Analyzer Model	T640X
Analyzer s/n	1689

= Enter Flow Check Data
= Cell Containing Equations

REFERENCE EQUIPMENT:

	Model	Serial Number
Temperature Standard	Delta Cal	1264
Pressure Standard	Delta Cal	1264
Flow Standard	Delta Cal	1264
Certification Date	1/24/2024	1264

ZERO TEST / LEAK CHECK

PM Channel	Indicated Conc.	
PM_{10}	0.0	µg/m3
$PM_{2.5}$	0.0	µg/m3

CRITERIA:
PM < 0.2 µg/m3

TEMPERATURE SENSOR CALIBRATION

Indicated Temp.	Ref. Std. Temp.	Difference	
24.7	24.7	0.0	°C
24.6	25.2	0.6	°C

CRITERIA:
DIFFERENCE < ±2°C

PRESSURE SENSOR CALIBRATION

Indicated Pressure		Ref. Std. Pressure	Difference
kPa	mmHg	mmHg	mmHg
100.9	756.8	757.5	0.7
100.9	756.8	757.5	0.7

CRITERIA:
DIFFERENCE < ±10 mm Hg

Sample FLOW VERIFICATION

Target Flow L/min	Indicated Flow (I) L/min	Ref. Std. Flow (R) L/min	Difference Ref. Flow %	Difference Design Flow %
5.00	4.39	4.37	0.5%	-12.6%
5.00	5.01	5.00	0.2%	0.0%

CRITERIA:
±4% OF REFERENCE, OR ±5% OF DESIGN FLOW (5.0 L/min)

Bypass FLOW VERIFICATION

Target Flow L/min	Indicated Flow (I) L/min	Ref. Std. Flow (R) L/min	Difference Ref. Flow %	Difference Design Flow %	
11.67	11.65	11.63	0.2%	-0.3%	as found.
11.67	11.67	11.69	-0.2%	0.2%	Calibrated

CRITERIA:
±4% OF REFERENCE, OR ±5% OF DESIGN FLOW (11.7 L/min)

PMT VERIFICATION

Ref. Peak Channel	Indicated Value	Difference	
10.9	10.8	-0.1	as found.
10.9	10.9	0.0	Calibrated

CRITERIA:
10.9 ±1.5

COMMENTS

Resolved the power issue at this site. Replaced internal sample pump. Quickly cleaned the optical chamber without disassembling. Fixed time on unit. Cleaned unit and inlet head. Changed sample and bypass DFU filters. Performed all monthly flow checks - first row for each parameter is the as-found check, the second row is the as-left check. Leak checks passed on both. Reset sample flow slope and calibrated both the sample and bypass flow, no additional calibrations required. Sample flow slope warning is still present.

Calibrated by: Nick Bratton

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APPENDIX L. $PM_{10}/PM_{2.5}$ FLOW CHECKS AND FLOW CHECK EQUIPMENT CERTIFICATE AND FIELD CALIBRATION SHEETS FOR SECOND QUARTER 2024

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CONTINUOUS PARTICULATE SAMPLER
FLOW CHECK

SITE NAME	CSX AQ5	**Date**	4/24/2024	**Start Time**	10:00
PROJECT	234501.0038			**Stop Time**	10:45
SITE OPERATOR	Trintiy				

Analyzer Mfg	T-API
Analyzer Model	T640X
Analyzer s/n	1690

= Enter Flow Check Data
= Cell Containing Equations

REFERENCE EQUIPMENT:

	Model	Serial Number
Temperature Standard	Delta Cal	210062
Pressure Standard	Delta Cal	210062
Flow Standard	Delta Cal	210062
Certification Date	6/7/2023	

ZERO TEST / LEAK CHECK

PM Channel	Indicated Conc.	
PM_{10}	0.1	µg/m3
$PM_{2.5}$	0.1	µg/m3

CRITERIA:
PM < 0.2 µg/m3

TEMPERATURE SENSOR CALIBRATION

Indicated Temp.	Ref. Std. Temp.	Difference	
19.5	20.0	0.5	°C
			°C

CRITERIA:
DIFFERENCE < ±2°C

PRESSURE SENSOR CALIBRATION

Indicated Pressure		Ref. Std. Pressure	Difference
kPa	mmHg	mmHg	mmHg
101.2	759.1	759.0	-0.1

CRITERIA:
DIFFERENCE < ±10 mm Hg

Sample FLOW VERIFICATION

Target Flow L/min	Indicated Flow (I) L/min	Ref. Std. Flow (R) L/min	Difference Ref. Flow %	Difference Design Flow %
5.00	4.95	4.96	-0.2%	-0.8%
5.00				

CRITERIA:
±4% OF REFERENCE, OR ±5% OF DESIGN FLOW (5.0 L/min)

Bypass FLOW VERIFICATION

Target Flow L/min	Indicated Flow (I) L/min	Ref. Std. Flow (R) L/min	Difference Ref. Flow %	Difference Design Flow %	
11.67	11.59	11.58	0.1%	-0.8%	as found.
11.67					

CRITERIA:
±4% OF REFERENCE, OR ±5% OF DESIGN FLOW (11.7 L/min)

PMT VERIFICATION

Peak Channel	Indicated Value	Difference	
10.9	10.8	-0.1	as found.
10.9	10.9	0.0	Calibrated

CRITERIA:
10.9 ±1.5

COMMENTS

Cleaned unit and inlet head. Changed internal and external DFU filters. O-ring in inlet head cracked and broken. Calibrated PMT, no additional changes or calibrations required.

Flow Check by: Nick Bratton

Draft

Trinity Consultants

CONTINUOUS PARTICULATE SAMPLER

FLOW CHECK

SITE NAME	CSX AQ5	**Date**	5/30/2024	**Start Time**	9:00
PROJECT	234501.0038			**Stop Time**	10:00
SITE OPERATOR	Trintiy				

Analyzer Mfg	T-API
Analyzer Model	T640X
Analyzer s/n	1690

= Enter Flow Check Data
= Cell Containing Equations

REFERENCE EQUIPMENT:

	Model	Serial Number
Temperature Standard	Delta Cal	210062
Pressure Standard	Delta Cal	210062
Flow Standard	Delta Cal	210062
Certification Date	6/7/2023	210062

ZERO TEST / LEAK CHECK

PM Channel	Indicated Conc.	
PM_{10}	0.1	µg/m3
$PM_{2.5}$	0.1	µg/m3

CRITERIA:
PM < 0.2 µg/m3

TEMPERATURE SENSOR CALIBRATION

Indicated Temp.	Ref. Std. Temp.	Difference	
20.9	20.2	-0.7	°C
			°C

CRITERIA:
DIFFERENCE < ±2°C

PRESSURE SENSOR CALIBRATION

Indicated Pressure		Ref. Std. Pressure	Difference
kPa	mmHg	mmHg	mmHg
101.8	763.6	763.5	-0.1

CRITERIA:
DIFFERENCE < ±10 mm Hg

Sample FLOW VERIFICATION

Target Flow L/min	Indicated Flow (I) L/min	Ref. Std. Flow (R) L/min	Difference Ref. Flow %	Difference Design Flow %
5.00	4.95	5.04	-1.8%	0.8%
5.00				

CRITERIA:
±4% OF REFERENCE, OR ±5% OF DESIGN FLOW (5.0 L/min)

Bypass FLOW VERIFICATION

Target Flow L/min	Indicated Flow (I) L/min	Ref. Std. Flow (R) L/min	Difference Ref. Flow %	Difference Design Flow %	
11.67	11.59	11.62	-0.3%	-0.4%	as found.
11.67					

CRITERIA:
±4% OF REFERENCE, OR ±5% OF DESIGN FLOW (11.7 L/min)

PMT VERIFICATION

Peak Channel	Indicated Value	Difference	
10.9	10.8	-0.1	as found.

CRITERIA:
10.9 ±1.5

COMMENTS

Flow Check by: Nick Bratton

Draft

CONTINUOUS PARTICULATE SAMPLER
FLOW CHECK

SITE NAME	CSX AQ5	**Date**	6/27/2024	**Start Time**	8:15
PROJECT	234501.0038			**Stop Time**	9:15
SITE OPERATOR	Trinity				

Analyzer Mfg	T-API
Analyzer Model	T640X
Analyzer s/n	1690

= Enter Flow Check Data
= Cell Containing Equations

REFERENCE EQUIPMENT:

	Model	Serial Number
Temperature Standard	Delta Cal	1264
Pressure Standard	Delta Cal	1264
Flow Standard	Delta Cal	1264
Certification Date	1/24/2024	1264

ZERO TEST / LEAK CHECK

PM Channel	Indicated Conc.	
PM_{10}	0.0	µg/m3
$PM_{2.5}$	0.0	µg/m3

CRITERIA:
PM < 0.2 µg/m3

TEMPERATURE SENSOR CALIBRATION

Indicated Temp.	Ref. Std. Temp.	Difference	
24.5	23.8	-0.7	°C
			°C

CRITERIA:
DIFFERENCE < ±2°C

PRESSURE SENSOR CALIBRATION

Indicated Pressure		Ref. Std. Pressure	Difference
kPa	mmHg	mmHg	mmHg
100.9	756.8	757.5	0.7

CRITERIA:
DIFFERENCE < ±10 mm Hg

Sample FLOW VERIFICATION

Target Flow L/min	Indicated Flow (I) L/min	Ref. Std. Flow (R) L/min	Difference Ref. Flow %	Difference Design Flow %
5.00	4.92	5.04	-2.4%	0.8%
5.00	5.00	5.00	0.0%	0.0%

CRITERIA:
±4% OF REFERENCE, OR ±5% OF DESIGN FLOW (5.0 L/min)

Bypass FLOW VERIFICATION

Target Flow L/min	Indicated Flow (I) L/min	Ref. Std. Flow (R) L/min	Difference Ref. Flow %	Difference Design Flow %	
11.67	-3.89	15.32	-125.4%	31.3%	as found.
11.67	-3.90	15.31	-125.5%	31.2%	Calibrated

CRITERIA:
±4% OF REFERENCE, OR ±5% OF DESIGN FLOW (11.7 L/min)

PMT VERIFICATION

Ref. Peak Channel	Indicated Value	Difference	
10.9	10.8	-0.1	as found.
			Calibrated

CRITERIA:
10.9 ±1.5

COMMENTS

Cleaned unit and inlet head. Changed sample and bypass DFU filters. O-ring in inlet head was cracked and broke during cleaning, will need replacement. Joint is temporarily sealed with electrical tape. Calibrated sample flow and attempted to calibrate bypass flow. Reset bypass flow slope to zero and power cycled the unit but bypass flow is still acting up.

Flow Check by: Nick Bratton

Draft

Trinity Consultants

CONTINUOUS PARTICULATE SAMPLER

FLOW CHECK

SITE NAME	CSX AQ8	**Date**	4/24/2024	**Start Time**	12:15
PROJECT	234501.0038			**Stop Time**	12:45
SITE OPERATOR	Trintiy				

Analyzer Mfg	T-API
Analyzer Model	T640X
Analyzer s/n	1689

= Enter Flow Check Data
= Cell Containing Equations

REFERENCE EQUIPMENT:

	Model	Serial Number
Temperature Standard	Delta Cal	210062
Pressure Standard	Delta Cal	210062
Flow Standard	Delta Cal	210062
Certification Date	6/7/2023	

ZERO TEST / LEAK CHECK

PM Channel	Indicated Conc.	
PM_{10}	0.1	µg/m3
$PM_{2.5}$	0.1	µg/m3

CRITERIA:
PM < 0.2 µg/m3

TEMPERATURE SENSOR CALIBRATION

Indicated Temp.	Ref. Std. Temp.	Difference	
21.9	22.0	0.1	°C
			°C

CRITERIA:
DIFFERENCE < ±2°C

PRESSURE SENSOR CALIBRATION

Indicated Pressure		Ref. Std. Pressure	Difference
kPa	mmHg	mmHg	mmHg
101.2	759.1	759.0	-0.1

CRITERIA:
DIFFERENCE < ±10 mm Hg

Sample FLOW VERIFICATION

Target Flow L/min	Indicated Flow (I) L/min	Ref. Std. Flow (R) L/min	Difference Ref. Flow %	Difference Design Flow %	
5.00	5.00	5.14	-2.7%	2.8%	as found.
5.00	5.03	5.03	0.0%	0.6%	Calibrated

CRITERIA:
±4% OF REFERENCE, OR ±5% OF DESIGN FLOW (5.0 L/min)

Bypass FLOW VERIFICATION

Target Flow L/min	Indicated Flow (I) L/min	Ref. Std. Flow (R) L/min	Difference Ref. Flow %	Difference Design Flow %	
11.67	11.66	11.73	-0.6%	0.5%	as found.

CRITERIA:
±4% OF REFERENCE, OR ±5% OF DESIGN FLOW (11.7 L/min)

PMT VERIFICATION

Peak Channel	Indicated Value	Difference	
10.9	11.0	0.1	as found.
10.9	10.9	0.0	Calibrated

CRITERIA:
10.9 ±1.5

COMMENTS

Cleaned unit and inlet head. Changed internal and external DFU filter. Calibrated sample flow and PMT. No additional changes or calibrations required.

Flow Check by: Nick Bratton

Draft

Trinity Consultants

CONTINUOUS PARTICULATE SAMPLER

FLOW CHECK

SITE NAME	CSX AQ8	**Date**	5/4/2024	**Start Time**	9:00
PROJECT	234501.0038			**Stop Time**	11:00
SITE OPERATOR	Trintiy				

Analyzer Mfg	T-API
Analyzer Model	T640X
Analyzer s/n	1689

= Enter Flow Check Data
= Cell Containing Equations

REFERENCE EQUIPMENT:

	Model	Serial Number
Temperature Standard	Delta Cal	210062
Pressure Standard	Delta Cal	210062
Flow Standard	Delta Cal	210062
Certification Date	6/7/2023	210062

ZERO TEST / LEAK CHECK

PM Channel	Indicated Conc.	
PM_{10}	58.1	µg/m3
$PM_{2.5}$	2.5	µg/m3

CRITERIA:
PM < 0.2 µg/m3

TEMPERATURE SENSOR CALIBRATION

Indicated Temp.	Ref. Std. Temp.	Difference	
12.7	13.1	0.4	°C
			°C

CRITERIA:
DIFFERENCE < ±2°C

PRESSURE SENSOR CALIBRATION

Indicated Pressure		Ref. Std. Pressure	Difference
kPa	mmHg	mmHg	mmHg
102.3	767.3	767.5	0.2

CRITERIA:
DIFFERENCE < ±10 mm Hg

Sample FLOW VERIFICATION

Target Flow L/min	Indicated Flow (I) L/min	Ref. Std. Flow (R) L/min	Difference Ref. Flow %	Difference Design Flow %
5.00	4.96	4.81	3.1%	-3.8%
5.00				

CRITERIA:
±4% OF REFERENCE, OR ±5% OF DESIGN FLOW (5.0 L/min)

Bypass FLOW VERIFICATION

Target Flow L/min	Indicated Flow (I) L/min	Ref. Std. Flow (R) L/min	Difference Ref. Flow %	Difference Design Flow %	
11.67	11.68	11.70	-0.2%	0.3%	as found.
11.67					Calibrated

CRITERIA:
±4% OF REFERENCE, OR ±5% OF DESIGN FLOW (11.7 L/min)

PMT VERIFICATION

Peak Channel	Indicated Value	Difference	
10.9	10.9	0.0	as found.
			Calibrated

CRITERIA:
10.9 ±1.5

COMMENTS

As-found flow checks only. Unit would not boot all the way up so I could not perform as-left checks. Performed optical chamber cleaning and general cleaning/unit maintenance. There was some sort of fiber stick in the downtube to the optical chamber and quite a bit of dust. Likely the cause of high readings.

Flow Check by: Nick Bratton

Draft

Trinity Consultants

CONTINUOUS PARTICULATE SAMPLER

FLOW CHECK

SITE NAME	CSX AQ8	**Date**	5/30/2024	**Start Time**	12:00
PROJECT	234501.0038			**Stop Time**	13:00
SITE OPERATOR	Trintiy				

Analyzer Mfg	T-API
Analyzer Model	T640X
Analyzer s/n	1689

= Enter Flow Check Data
= Cell Containing Equations

REFERENCE EQUIPMENT:

	Model	Serial Number
Temperature Standard	Delta Cal	210062
Pressure Standard	Delta Cal	210062
Flow Standard	Delta Cal	210062
Certification Date	6/7/2023	210062

ZERO TEST / LEAK CHECK

PM Channel	Indicated Conc.	
PM_{10}	0.1	µg/m3
$PM_{2.5}$	0.1	µg/m3

CRITERIA:
PM < 0.2 µg/m3

TEMPERATURE SENSOR CALIBRATION

Indicated Temp.	Ref. Std. Temp.	Difference	
22.0	21.7	-0.3	°C
			°C

CRITERIA:
DIFFERENCE < ±2°C

PRESSURE SENSOR CALIBRATION

Indicated Pressure		Ref. Std. Pressure	Difference
kPa	mmHg	mmHg	mmHg
101.6	762.1	762.5	0.4

CRITERIA:
DIFFERENCE < ±10 mm Hg

Sample FLOW VERIFICATION

Target Flow L/min	Indicated Flow (I) L/min	Ref. Std. Flow (R) L/min	Difference Ref. Flow %	Difference Design Flow %	
5.00	5.14	3.70	38.9%	-26.0%	as found.
5.00	4.78	4.79	-0.2%	-4.2%	Calibrated

CRITERIA:
±4% OF REFERENCE, OR ±5% OF DESIGN FLOW (5.0 L/min)

Bypass FLOW VERIFICATION

Target Flow L/min	Indicated Flow (I) L/min	Ref. Std. Flow (R) L/min	Difference Ref. Flow %	Difference Design Flow %	
11.67	11.68	12.05	-3.1%	3.3%	as found.
11.67	11.67	11.67	0.0%	0.0%	Calibrated

CRITERIA:
±4% OF REFERENCE, OR ±5% OF DESIGN FLOW (11.7 L/min)

PMT VERIFICATION

Peak Channel	Indicated Value	Difference	
10.9	21.2	10.3	as found.
10.9	10.9	0.0	Calibrated

CRITERIA:
10.9 ±1.5

COMMENTS

Service code password login 929. Sample flow design flow out of tolerance as found and as left.

Flow Check by: Nick Bratton

Draft

Trinity Consultants

CONTINUOUS PARTICULATE SAMPLER

FLOW CHECK

SITE NAME	CSX AQ8	**Date**	6/27/2024	**Start Time**	9:15
PROJECT	234501.0038			**Stop Time**	11:00
SITE OPERATOR	Trinity				

Analyzer Mfg	T-API
Analyzer Model	T640X
Analyzer s/n	1689

= Enter Flow Check Data
= Cell Containing Equations

REFERENCE EQUIPMENT:

	Model	Serial Number
Temperature Standard	Delta Cal	1264
Pressure Standard	Delta Cal	1264
Flow Standard	Delta Cal	1264
Certification Date	1/24/2024	1264

ZERO TEST / LEAK CHECK

PM Channel	Indicated Conc.	
PM_{10}	0.0	µg/m3
$PM_{2.5}$	0.0	µg/m3

CRITERIA:
PM < 0.2 µg/m3

TEMPERATURE SENSOR CALIBRATION

Indicated Temp.	Ref. Std. Temp.	Difference	
24.7	24.7	0.0	°C
24.6	25.2	0.6	°C

CRITERIA:
DIFFERENCE < ±2°C

PRESSURE SENSOR CALIBRATION

Indicated Pressure		Ref. Std. Pressure	Difference
kPa	mmHg	mmHg	mmHg
100.9	756.8	757.5	0.7
100.9	756.8	757.5	0.7

CRITERIA:
DIFFERENCE < ±10 mm Hg

Sample FLOW VERIFICATION

Target Flow L/min	Indicated Flow (I) L/min	Ref. Std. Flow (R) L/min	Difference Ref. Flow %	Difference Design Flow %
5.00	4.39	4.37	0.5%	-12.6%
5.00	5.01	5.00	0.2%	0.0%

CRITERIA:
±4% OF REFERENCE, OR ±5% OF DESIGN FLOW (5.0 L/min)

Bypass FLOW VERIFICATION

Target Flow L/min	Indicated Flow (I) L/min	Ref. Std. Flow (R) L/min	Difference Ref. Flow %	Difference Design Flow %	
11.67	11.65	11.63	0.2%	-0.3%	as found.
11.67	11.67	11.69	-0.2%	0.2%	Calibrated

CRITERIA:
±4% OF REFERENCE, OR ±5% OF DESIGN FLOW (11.7 L/min)

PMT VERIFICATION

Ref. Peak Channel	Indicated Value	Difference	
10.9	10.8	-0.1	as found.
10.9	10.9	0.0	Calibrated

CRITERIA:
10.9 ±1.5

COMMENTS

Resolved the power issue at this site. Replaced internal sample pump. Quickly cleaned the optical chamber without disassembling. Fixed time on unit. Cleaned unit and inlet head. Changed sample and bypass DFU filters. Performed all monthly flow checks - first row for each parameter is the as-found check, the second row is the as-left check. Leak checks passed on both. Reset sample flow slope and calibrated both the sample and bypass flow, no additional calibrations required. Sample flow slope warning is still present.

Flow Check by: Nick Bratton

Draft

Flow Rate Transfer Standard Audit

Type: **BGI deltaCal DC1 Volumetric Air Flow Calibrator, Version 4.00P**
S/N: **1264**
Flow Rate: **1.5 - 19.5 liters/min**
Owner: **Trinity Consultants**
Audit Date: **1/24/2024**
Engineer: MAK

Qa is actual, or volumetric, air flow rate
Qs is standard air flow rate, based on standard conditions BPs = 760 mm Hg and Ts = 25°C

	Sonic Nozzle Apparatus				Read directly from instrument					Qa	diff. from	difference
Pt	P(amb) (mmHg)	T(amb) °C	Qa (l/min)	Qs (l/min)	BP (mmHg)	T fil (°C)	Ta (°C)	Qa (l/min)	Qs (l/min)	abs diff. (l/min)	reading (%)	full scale (%)
1	658.2	22.2	19.24	16.82	659.5	22.2	22.5	19.49	17.06	0.25	1.29%	1.27%
2	658.2	22.2	16.67	14.57	659.5	22.2	22.5	16.83	14.73	0.16	0.95%	0.81%
3	658.2	22.3	13.67	11.95	659.5	22.3	22.5	13.83	12.10	0.16	1.14%	0.80%
4	658.2	22.3	10.00	8.74	659.5	22.3	22.5	10.14	8.87	0.14	1.41%	0.72%
5	658.2	22.3	6.67	5.83	659.5	22.3	22.5	6.80	5.94	0.13	1.91%	0.65%
6	658.1	22.3	5.00	4.37	659.5	22.3	22.6	5.02	4.39	0.02	0.37%	0.10%
7	658.1	22.3	1.74	1.52	659.5	22.3	22.6	1.78	1.55	0.03	1.88%	0.17%

Note: These flow rate audits were performed at the specific laboratory conditions of temperature and pressure. Each individual sensor was not audited, only the values read directly from the instrument, as indicated above. This audit should not be construed as a comprehensive system audit, as individual sensors were not challenged through the full operating range.

Audited against Chinook Engineering's NIST traceable critical flow venturis sonic nozzle apparatus.

Critical Flow Venturis:

S/N 10961, CEESI (NIST) Data File 98FSY152, Disc No. 0698-001
S/N 10962, CEESI (NIST) Data File 98FSY153, Disc No. 0698-001
S/N 10963, CEESI (NIST) Data File 98FSY151, Disc No. 0698-001
S/N 18491, CEESI (NIST) Data File 04FSY001, Job No. 7066
S/N 30421, CEESI (NIST) Data File 17FSY-0468, Job No. CE06195

Temperature Standards:

T080604, CFV#1, CFV#2 and CFV#3, which are traceable through NIST traceable Hg-in-glass thermometer 3L9452. Miller & Weber Hg-in-glass thermometer S/N 3L9452 is traceable to NIST Thermometer 40350, through Transfer Standards 3C4465.

Pressure Standards:

Precision Absolute Manometer Model No. 355-AI0900 S/N 913930-M1, NIST traceable to Ruska Deadweight Tester S/N 38342/C-85.

Certified By: MAK
Marty A. Kjorstad

Date: January 24, 2024

Exhibit 3
Page 1241 of 1445

CSX PTO Comments – Appendix 17d

MesaLabs

Mesa Labs 12100 W. 6th Ave
Lakewood, CO 80228
NIST Traceable Calibration Facility

CERTIFICATE OF CALIBRATION - NIST TRACEABILITY

Calibration Report #: 210062-07062023
DeltaCal Serial Number: 210062
Calibration Technician: Leigh Clark
Date: 7-Jun-2023
Recommended Recal Date: 7-Jun-2024

Critical Venturi Flow Meter

Max Uncertainty = 0.346%

TE20005	6 - 30.00 LPM	Calibration Due:	11-Jul-2023
TE20007	1.40 - 6.0 LPM	Calibration Due:	11-Jul-2023

Room Temperature: +- 0.03°C from -5°C - 70°C **Room Temperature:** 21.4 °C

Brand: Eutechnics

TE Number:	TE12242	**Serial Number:**	A11441
Std Cal Date:	5-Oct-22	**Std Cal Due Date:**	5-Oct-23

Ambient Temperature (set): 21.2 °C
Aux (filter) Temperature (set): 21.2 °C

Draft

Barometric and Absolute Pressure

Vaisala Model PTB330 (50-1100) Digital Accuracy: 0.03371%

TE Number:	TE12311	**Serial Number:**	H0850001
Std Cal Date:	6-Feb-23	**Std Cal Due Date:**	6-Feb-24

DeltaCal:
Barometric pressure (set): 617.0 mmHg

Results of Venturi Calibration

Flow Rate (Q) vs. Pressure Drop (ΔP). Where: Q=Lpm, ΔP= Cm of H2O

Venturi

TE20005	Q= 3.95970	ΔP ^	0.51615	Overall Uncertainty: 0.35%
TE20007	Q= 3.89503	ΔP ^	0.53776	Overall Uncertainty: 0.35%

MesaLabs

Mesa Labs 12100 W. 6th Ave Lakewood, CO 80228
NIST Traceable Calibration Facility

As Shipped Calibration Data for DeltaCal

Unit Type:	DC 1
Flow Range:	1.5-19.5 LPM
Serial No. :	210062
Firmware Version:	4.00P

Date	Technician
07Jun2023	Leigh Clark

Ambient Pressure:	617.0	mmHg
Ambient Temperature:	21.4	°C

Range 1

Venturi	TE20005
Type	1B
Flow range	6 - 30.00 LPM

Test #	Static Pressure mmHg	Barometric Pressure mmHg	Venturi Qa LPM	DUT Qa LPM	% error %
1	134.19	616.5	6.506	6.525	0.292
2	204.74	616.5	9.982	10.004	0.220
3	266.57	616.5	13.021	13.020	-0.008
4	327.72	616.5	16.041	16.047	0.037
5	367.19	616.5	17.984	18.002	0.100
6	394.55	616.5	19.331	19.369	0.197
	Maximum allowable error at any flow rate is 0.75%.			Average	0.140
				Result	PASS

Range 2

Venturi	TE20007
Type	2B
Flow range	1.40 - 6.0 LPM

Test #	Static Pressure mmHg	Barometric Pressure mmHg	Venturi Qa LPM	DUT Qa LPM	% error %
1	145.24	616.5	2.012	2.013	0.050
2	214.80	616.5	3.005	3.010	0.166
3	268.58	616.5	3.772	3.779	0.186
4	322.33	617.0	4.533	4.550	0.375
5	373.87	616.5	5.274	5.279	0.095
6	413.97	616.5	5.846	5.881	0.599
	Maximum allowable error at any flow rate is 0.75%.			Average	0.245
				Result	PASS

Draft

Performed By: Leigh Clark **Date:** 7-Jun-2023

Leigh Clark

Approved By: Norma Aragon QC Inspector **Date:** 08 Jun 2023

Norma Aragon

APPENDIX M. MONITORING ENCLOSURE TEMPERATURES FOR SECOND QUARTER 2024

Draft

CSX AQ5

SHELTER TEMPERATURE in deg C for APRIL, 2024

Hr Beg Hr End Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	21.4	21.6	21.8	22.1	20.9	19.6	19.1	19.1	19.3	19.4	19.6	20.7	22.5	23.5	23.8	24.1	24.0	23.3	22.8	22.5	22.3	21.9	21.8	21.9	**21.6**	**24.1**	**19.1**
2	21.8	21.1	19.8	19.7	19.0	18.3	18.3	17.9	17.6	18.2	19.1	19.2	19.5	20.1	19.2	19.4	20.2	20.0	19.8	19.1	18.2	18.4	18.4	18.2	**19.2**	**21.8**	**17.6**
3	17.9	17.4	17.4	17.3	17.5	17.4	17.5	17.5	17.5	17.5	17.8	17.7	18.5	18.8	18.4	18.7	18.7	19.0	18.7	18.3	17.8	17.1	16.5	17.2	**17.8**	**19.0**	**16.5**
4	17.4	16.1	15.6	15.6	15.4	15.1	16.0	21.4	22.2	23.4	24.0	24.5	23.7	22.0	22.7	21.1	16.8	16.9	17.5	16.1	16.0	15.9	15.4	15.1	**18.6**	**24.5**	**15.1**
5	14.7	14.5	14.3	14.0	14.0	14.2	15.7	19.8	21.7	21.1	20.4	21.9	21.1	20.6	20.8	20.5	19.5	19.0	17.0	15.8	15.3	15.1	14.7	13.8	**17.5**	**21.9**	**13.8**
6	13.2	12.7	12.4	12.2	12.0	12.1	13.8	17.1	18.8	19.7	21.7	22.0	22.4	22.8	22.8	22.4	22.2	23.1	22.0	20.6	20.7	20.6	20.2	19.3	**18.6**	**23.1**	**12.0**
7	18.8	18.1	17.6	17.3	16.9	16.4	16.4	20.2	22.9	22.7	23.4	23.4	23.6	23.6	23.6	23.4	23.5	23.6	24.3	24.7	23.9	22.8	21.6	20.9	**21.4**	**24.7**	**16.4**
8	19.6	18.4	17.9	17.8	17.8	17.3	19.4	22.8	24.0	22.5	24.0	24.1	24.4	24.3	25.2	23.9	23.6	24.1	24.6	24.4	23.6	23.0	22.9	22.8	**22.2**	**25.2**	**17.3**
9	22.2	21.7	21.7	21.6	21.5	21.5	22.6	22.9	22.8	22.6	23.0	22.6	22.8	22.9	23.0	23.2	23.1	23.4	23.7	23.6	23.8	24.0	24.0	23.9	**22.8**	**24.0**	**21.5**
10	24.3	24.6	24.3	24.4	24.4	24.4	24.2	24.2	23.7	23.4	22.5	21.9	22.3	22.7	23.1	23.2	23.0	23.2	23.3	23.4	23.6	23.7	23.8	23.7	**23.6**	**24.6**	**21.9**
11	23.9	23.9	23.8	23.9	23.9	24.1	24.2	23.7	23.3	22.8	22.8	23.1	23.1	23.0	23.3	23.9	24.2	24.1	24.1	24.1	24.1	24.1	24.8	24.3	**23.8**	**24.8**	**22.8**
12	24.4	24.8	24.2	24.2	24.2	24.1	23.8	23.6	23.9	22.2	23.4	23.4	23.0	23.4	23.3	23.4	23.6	23.8	24.7	25.4	23.5	22.7	23.3	23.4	**23.7**	**25.4**	**22.2**
13	23.1	22.2	21.9	21.0	20.2	20.3	20.8	21.9	23.2	23.8	24.2	24.1	24.0	23.8	23.9	24.0	24.0	24.2	24.6	24.7	24.2	23.8	23.1	22.6	**23.1**	**24.7**	**20.2**
14	22.2	21.3	20.5	20.3	19.8	19.6	21.6	23.0	22.0	21.7	21.8	22.0	22.0	22.0	21.7	21.5	21.5	21.7	22.3	22.5	22.6	22.8	23.2	23.8	**21.8**	**23.8**	**19.6**
15	23.7	23.8	23.9	24.1	24.0	24.4	23.5	22.7	21.1	21.6	21.6	22.1	21.5	20.4	20.5	20.7	20.9	21.2	22.4	23.1	23.1	23.1	23.4	23.2	**22.5**	**24.4**	**20.4**
16	23.5	24.5	25.0	24.7	24.2	23.7	22.9	21.8	21.6	21.8	22.1	22.6	23.0	23.3	23.1	23.1	22.9	23.1	23.6	24.0	24.3	24.4	24.6	25.1	**23.5**	**25.1**	**21.6**
17	25.2	24.8	24.8	24.8	24.7	24.3	24.8	23.6	23.4	23.5	24.7	23.7	23.1	23.8	23.2	23.1	23.7	23.9	23.6	24.1	25.5	25.5	25.3	25.0	**24.3**	**25.5**	**23.1**
18	25.0	24.4	24.5	24.0	24.0	24.4	24.4	24.9	24.5	24.3	23.6	23.2	23.3	23.7	23.4	23.5	23.8	24.4	24.8	24.3	23.0	22.3	21.8	21.5	**23.8**	**25.0**	**21.5**
19	21.4	21.3	21.2	20.9	21.0	20.5	20.2	20.1	20.6	21.1	21.7	22.3	23.8	24.4	24.2	23.1	22.9	24.0	24.3	24.7	24.4	24.4	24.9	24.8	**22.6**	**24.9**	**20.1**
20	24.8	24.4	25.1	24.6	24.9	24.9	25.2	24.8	24.5	23.8	22.7	22.5	22.6	22.8	22.6	22.6	22.8	23.2	24.1	24.7	25.1	24.3	23.1	21.9	**23.8**	**25.2**	**21.9**
21	20.9	20.2	19.7	18.8	18.0	17.6	18.4	19.6	21.6	23.2	24.8	24.3	23.8	24.4	24.3	24.5	23.0	22.4	21.6	20.6	19.9	19.2	18.2	17.3	**21.1**	**24.8**	**17.3**
22	16.8	16.3	15.8	15.3	14.5	13.9	16.0	20.4	22.5	22.3	22.7	23.1	23.4	23.4	23.5	23.4	23.4	23.8	24.4	23.9	22.5	21.5	21.1	20.3	**20.6**	**24.4**	**13.9**
23	19.5	18.9	18.3	17.6	17.1	17.1	20.6	22.2	22.3	22.5	23.7	23.7	23.2	23.1	23.2	23.0	23.4	24.1	25.0	24.1	23.1	22.8	22.7	23.1	**21.8**	**25.0**	**17.1**
24	23.6	24.6	25.0	24.9	24.5	24.7	24.6	24.3	23.2	21.2	22.4	22.2	22.5	22.4	22.6	22.7	23.1	23.2	23.7	24.4	24.8	24.6	24.9	24.5	**23.7**	**25.0**	**21.2**
25	23.6	22.7	22.1	22.0	21.3	20.6	20.2	21.3	24.3	24.2	23.9	23.5	23.8	23.9	24.1	24.4	24.6	24.7	25.0	23.3	21.3	19.7	18.8	18.4	**22.6**	**25.0**	**18.4**
26	18.3	18.3	18.1	17.9	18.1	18.6	19.7	22.9	23.4	23.3	23.3	23.8	24.0	24.0	24.0	24.2	24.0	24.6	25.3	23.8	22.6	21.6	21.5	21.3	**21.9**	**25.3**	**17.9**
27	21.0	21.0	21.1	21.4	21.5	21.4	21.6	22.1	22.3	22.5	22.7	22.9	22.0	21.6	21.7	22.7	23.6	24.3	24.4	23.9	23.6	24.0	24.5	25.0	**22.6**	**25.0**	**21.0**
28	25.5	25.2	25.2	25.3	25.4	25.5	24.3	23.8	22.6	22.0	22.3	22.6	23.1	22.9	22.5	22.4	22.4	22.4	22.5	22.9	23.0	23.1	23.3	23.3	**23.5**	**25.5**	**22.0**
29	23.3	23.3	23.7	23.7	23.8	23.8	22.5	21.2	21.4	21.3	20.7	21.3	21.8	21.2	21.1	21.4	21.9	21.6	22.2	22.5	22.7	22.9	23.0	23.1	**22.3**	**23.8**	**20.7**
30	23.1	23.4	23.6	23.7	23.7	23.8	22.9	22.3	22.3	21.4	21.2	20.5	20.7	20.6	20.2	21.1	21.3	22.0	22.3	22.6	22.9	23.2	23.5	24.2	**22.4**	**24.2**	**20.2**
MEAN	**21.5**	**21.2**	**21.0**	**20.8**	**20.6**	**20.5**	**20.8**	**21.8**	**22.2**	**22.0**	**22.4**	**22.5**	**22.6**	**22.6**	**22.6**	**22.6**	**22.5**	**22.7**	**23.0**	**22.7**	**22.4**	**22.1**	**21.9**	**21.8**	**22.0**		
MAX	**25.5**	**25.2**	**25.2**	**25.3**	**25.4**	**25.5**	**25.2**	**24.9**	**24.5**	**24.3**	**24.8**	**24.5**	**24.4**	**24.4**	**25.2**	**24.5**	**24.6**	**24.7**	**25.3**	**25.4**	**25.5**	**25.5**	**25.3**	**25.1**		**25.5**	
MIN	**13.2**	**12.7**	**12.4**	**12.2**	**12.0**	**12.1**	**13.8**	**17.1**	**17.5**	**17.5**	**17.8**	**17.7**	**18.5**	**18.8**	**18.4**	**18.7**	**16.8**	**16.9**	**17.0**	**15.8**	**15.3**	**15.1**	**14.7**	**13.8**			**12.0**

POSSIBLE NUMBER OF OBSERVATIONS = 720 ACTUAL NUMBER OF OBSERVATIONS = 720 DATA RECOVERY RATE = 100.0%

MONTHLY MEAN = 22.0 deg C

MAXIMUM SHELTER TEMPERATURE = 25.5 deg C DATE OF OCCURRENCE = 4/17 AT 2100 MAXIMUM DAILY MEAN = 24.3 deg C DATE OF OCCURRENCE = 4/17

MINIMUM SHELTER TEMPERATURE = 12.0 deg C DATE OF OCCURRENCE = 4/6 AT 0500 MINUMUM DAILY MEAN = 17.5 deg C DATE OF OCCURRENCE = 4/5

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

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CSX AQ5

SHELTER TEMPERATURE in deg C for MAY, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	23.8	23.9	24.1	23.9	24.0	24.0	23.0	22.1	21.6	21.4	21.6	21.9	21.8	21.7	21.6	21.6	21.7	22.0	22.5	23.0	23.3	23.3	23.6	23.7	**22.7**	**24.1**	**21.4**
2	23.9	23.9	23.9	24.1	24.2	24.2	23.0	22.2	21.8	21.4	21.3	20.8	20.1	19.6	19.8	19.8	20.0	20.7	21.4	22.3	22.7	23.1	23.2	23.4	**22.1**	**24.2**	**19.6**
3	23.5	23.6	23.5	24.0	24.3	24.4	24.0	22.8	22.6	22.5	22.7	23.2	23.4	23.8	24.0	23.9	24.3	24.6	24.7	23.7	23.2	22.8	22.6	22.7	**23.5**	**24.7**	**22.5**
4	22.1	20.7	20.4	20.4	20.4	20.4	20.6	21.2	21.2	21.0	21.2	21.7	21.5	21.7	21.2	21.0	20.9	20.8	21.0	21.1	21.4	21.4	21.8	22.0	**21.1**	**22.1**	**20.4**
5	22.2	22.3	21.8	21.2	21.6	21.8	22.0	22.5	23.3	24.5	24.9	25.3	25.5	24.3	24.2	23.8	23.2	23.5	23.7	23.5	24.0	23.8	23.7	23.5	**23.3**	**25.5**	**21.2**
6	23.6	23.6	23.9	23.7	23.7	23.6	23.5	23.5	23.5	23.3	22.9	23.0	22.9	23.0	23.2	23.0	23.2	23.3	23.3	23.4	23.4	23.6	23.4	23.6	**23.4**	**23.9**	**22.9**
7	23.6	23.6	23.6	23.6	23.7	23.6	23.4	23.3	23.1	22.2	22.3	22.3	22.6	22.4	22.5	22.9	22.9	23.0	23.0	23.3	23.2	23.4	23.4	23.4	**23.1**	**23.7**	**22.2**
8	23.5	23.6	23.7	23.6	23.6	23.6	23.3	23.0	22.5	21.8	21.5	20.6	20.7	20.5	20.7	21.1	21.4	21.8	22.3	22.6	22.8	23.1	23.0	23.3	**22.4**	**23.7**	**20.5**
9	23.7	23.7	24.1	24.1	24.0	23.7	23.2	23.1	23.2	23.3	23.2	23.2	23.2	23.2	23.0	23.0	23.3	23.8	24.2	24.5	24.2	24.2	24.8	24.1	**23.7**	**24.8**	**23.0**
10	23.3	23.7	23.9	24.3	24.5	24.2	23.6	22.4	21.7	21.2	21.7	22.0	22.1	22.1	21.8	21.7	21.8	21.2	20.9	20.5	20.8	20.9	21.2	21.1	**22.2**	**24.5**	**20.5**
11	21.2	21.0	20.8	21.0	20.8	20.0	21.9	22.9	22.1	22.2	22.5	23.0	23.7	23.5	23.9	24.1	24.2	25.1	24.2	22.7	22.9	23.3	22.8	21.5	**22.6**	**25.1**	**20.0**
12	19.7	20.0	20.7	21.2	21.7	22.6	23.3	22.8	22.3	22.5	23.9	23.5	23.8	24.0	24.2	24.6	24.6	24.7	24.6	25.0	24.5	24.7	24.7	24.6	**23.3**	**25.0**	**19.7**
13	24.5	23.8	24.2	25.0	25.1	24.9	24.4	23.6	22.4	21.9	22.0	22.8	22.8	22.4	22.7	22.8	22.9	23.1	23.4	23.8	24.1	24.1	23.8	24.0	**23.5**	**25.1**	**21.9**
14	24.3	24.6	24.7	24.3	24.7	24.1	23.7	23.2	23.1	23.1	22.9	23.2	23.2	23.6	23.7	23.9	23.8	23.7	23.8	23.7	24.1	24.1	24.6	24.3	**23.9**	**24.7**	**22.9**
15	24.8	24.5	24.7	24.9	24.4	25.6	25.0	25.2	24.3	24.0	23.9	23.6	23.6	23.8	23.2	23.5	23.6	24.0	23.8	23.8	24.0	24.3	24.7	25.4	**24.3**	**25.6**	**23.2**
16	25.6	25.6	25.3	24.7	24.3	24.3	23.3	21.9	21.5	21.4	21.4	21.7	22.1	22.5	22.1	22.3	22.5	22.7	23.0	23.1	23.4	23.8	24.4	23.9	**23.2**	**25.6**	**21.4**
17	23.9	23.7	23.7	23.7	23.9	23.9	23.5	23.6	23.3	23.2	23.1	23.4	23.2	22.9	23.0	23.1	23.3	23.5	23.7	23.5	23.7	23.7	23.6	23.7	**23.5**	**23.9**	**22.9**
18	23.7	23.7	23.9	23.8	23.9	23.9	24.1	23.9	24.5	23.9	23.1	23.3	23.0	23.3	23.4	23.4	23.6	23.5	23.6	23.7	23.6	23.7	23.8	23.6	**23.7**	**24.5**	**23.0**
19	23.7	23.9	23.9	24.0	23.9	24.1	23.8	23.5	23.3	23.1	22.8	22.8	22.9	22.7	22.8	22.9	22.8	23.0	23.2	23.3	23.6	23.7	23.9	23.9	**23.4**	**24.1**	**22.7**
20	23.9	24.1	24.3	24.5	24.7	24.4	24.1	23.7	23.7	23.4	23.1	22.8	22.9	23.0	23.1	23.2	23.4	23.2	23.1	23.4	23.6	23.8	23.7	23.9	**23.6**	**24.7**	**22.8**
21	24.0	23.9	24.1	24.0	24.2	23.9	23.1	22.3	22.0	21.9	22.2	22.2	22.2	22.1	21.9	21.9	22.2	22.3	22.8	22.9	23.2	23.4	23.7	23.5	**22.9**	**24.2**	**21.9**
22	23.8	23.9	23.9	24.0	23.9	23.7	23.2	22.2	21.6	21.5	21.8	22.0	21.6	20.9	20.8	21.0	21.6	22.1	22.3	22.6	22.7	22.8	22.9	22.9	**22.5**	**24.0**	**20.8**
23	22.9	23.0	23.0	23.2	23.1	23.1	23.0	22.8	22.3	22.3	22.5	22.5	21.7	21.5	21.9	22.2	22.1	22.3	22.5	22.8	22.9	23.0	23.1	23.0	**22.6**	**23.2**	**21.5**
24	23.1	23.2	23.2	23.3	23.3	23.2	23.0	21.9	20.8	21.0	21.3	21.8	21.7	21.5	21.2	21.3	21.5	21.7	22.2	22.5	22.8	22.9	22.9	23.2	**22.3**	**23.3**	**20.8**
25	23.1	23.4	23.4	23.5	23.4	23.3	22.7	21.8	21.4	21.1	20.9	21.3	21.4	20.9	20.7	20.9	21.2	21.5	22.1	22.5	22.6	23.2	23.2	23.2	**22.2**	**23.5**	**20.7**
26	23.2	23.4	23.3	23.5	23.5	23.5	22.6	21.6	21.0	20.9	21.1	21.1	21.4	21.2	20.7	20.9	21.3	21.7	22.1	22.3	22.5	22.6	22.7	22.7	**22.1**	**23.5**	**20.7**
27	22.7	22.8	22.8	23.0	23.1	23.0	22.5	22.3	22.5	22.3	22.6	22.4	22.6	22.6	22.2	22.3	22.2	22.4	22.5	24.2	23.7	23.5	23.5	23.7	**22.8**	**24.2**	**22.2**
28	23.6	23.8	23.8	24.2	23.8	23.9	23.1	22.1	21.7	21.4	21.3	21.3	21.5	21.4	21.3	21.4	21.8	22.0	22.7	22.9	23.2	23.3	23.7	23.9	**22.6**	**24.2**	**21.3**
29	24.1	24.5	24.1	24.1	24.4	24.0	23.0	22.0	21.6	21.5	21.8	22.3	23.0	23.3	23.1	23.8	24.3	23.9	24.3	23.9	23.9	24.5	25.4	25.3	**23.6**	**25.4**	**21.5**
30	24.6	24.0	23.8	23.7	23.6	24.1	23.9	22.3	21.9	21.9	21.6	21.8	22.1	22.2	22.3	22.0	22.3	22.7	22.8	23.5	23.6	23.8	24.3	24.5	**23.1**	**24.6**	**21.6**
31	24.5	25.0	24.6	24.0	23.3	23.0	23.9	22.0	21.5	21.5	21.3	21.8	21.8	22.0	21.9	21.8	22.0	22.2	22.5	23.1	23.6	23.8	24.3	24.2	**22.9**	**25.0**	**21.3**
MEAN	**23.5**	**23.5**	**23.5**	**23.6**	**23.6**	**23.5**	**23.2**	**22.7**	**22.4**	**22.2**	**22.3**	**22.4**	**22.5**	**22.4**	**22.3**	**22.4**	**22.6**	**22.8**	**23.0**	**23.1**	**23.3**	**23.4**	**23.6**	**23.5**	**23.0**		
MAX	**25.6**	**25.6**	**25.3**	**25.0**	**25.1**	**25.6**	**25.0**	**25.2**	**24.5**	**24.5**	**24.9**	**25.3**	**25.5**	**24.3**	**24.2**	**24.6**	**24.6**	**25.1**	**24.7**	**25.0**	**24.5**	**24.7**	**25.4**	**25.4**		**25.6**	
MIN	**19.7**	**20.0**	**20.4**	**20.4**	**20.4**	**20.0**	**20.6**	**21.2**	**20.8**	**20.9**	**20.9**	**20.6**	**20.1**	**19.6**	**19.8**	**19.8**	**20.0**	**20.7**	**20.9**	**20.5**	**20.8**	**20.9**	**21.2**	**21.1**			**19.6**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 744 DATA RECOVERY RATE = 100.0%

MONTHLY MEAN = 23.0 deg C

MAXIMUM SHELTER TEMPERATURE = 25.6 deg C DATE OF OCCURRENCE = 5/15 AT 0600 MAXIMUM DAILY MEAN = 24.3 deg C DATE OF OCCURRENCE = 5/15

MINIMUM SHELTER TEMPERATURE = 19.6 deg C DATE OF OCCURRENCE = 5/2 AT 1400 MINUMUM DAILY MEAN = 21.1 deg C DATE OF OCCURRENCE = 5/4

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

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CSX AQ5

SHELTER TEMPERATURE in deg C for JUNE, 2024

Hr Beg Hr End Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	24.7	25.3	24.3	25.1	25.2	24.4	22.9	21.2	20.8	20.7	21.1	21.5	21.6	21.7	21.9	22.0	22.0	22.0	22.4	22.6	23.0	23.2	23.3	23.5	**22.8**	**25.3**	**20.7**
2	23.8	23.7	24.1	23.9	24.0	23.7	23.0	22.6	22.0	21.7	20.8	20.5	20.3	20.9	21.2	21.0	21.8	22.0	22.4	22.5	22.8	22.8	22.8	22.9	**22.4**	**24.1**	**20.3**
3	23.0	23.0	23.1	23.2	23.2	23.0	22.6	21.3	21.7	20.7	20.8	20.6	20.7	21.5	21.7	21.1	20.6	21.5	21.9	22.2	22.5	22.6	22.8	22.7	**22.0**	**23.2**	**20.6**
4	23.0	23.1	23.3	23.3	23.3	23.2	22.3	21.2	20.8	20.8	20.5	20.8	20.7	20.8	20.8	21.5	21.8	22.0	22.3	22.6	22.7	22.8	22.8	22.8	**22.1**	**23.3**	**20.5**
5	22.7	22.8	22.9	22.8	22.8	23.0	22.7	22.7	22.8	22.7	22.4	22.3	21.9	21.9	22.1	22.6	22.7	22.7	22.7	22.7	22.6	22.6	22.7	22.7	**22.6**	**23.0**	**21.9**
6	22.6	22.7	22.6	22.7	22.8	22.6	22.4	22.0	22.0	20.8	19.8	20.8	20.9	20.1	20.1	20.9	21.6	21.1	21.5	22.0	22.3	22.5	22.6	22.8	**21.8**	**22.8**	**19.8**
7	22.8	22.9	22.9	23.1	23.1	23.0	22.6	21.2	20.6	20.0	20.1	20.7	20.7	20.5	20.5	21.0	21.1	21.4	22.1	22.6	23.0	23.2	23.3	23.8	**21.9**	**23.8**	**20.0**
8	23.6	23.9	24.1	24.2	24.2	23.8	22.5	21.5	20.9	20.7	20.8	21.0	21.0	21.0	20.8	20.7	21.0	21.4	21.6	22.5	22.8	22.9	23.0	23.1	**22.2**	**24.2**	**20.7**
9	23.3	23.4	23.4	23.2	23.2	22.8	22.7	22.7	21.6	20.5	20.8	21.6	21.1	20.9	21.2	21.5	21.8	21.9	22.3	22.8	23.0	23.3	23.5	23.3	**22.3**	**23.5**	**20.5**
10	23.5	23.9	24.1	24.3	24.3	23.7	22.5	21.5	20.9	20.7	21.1	21.2	21.3	21.3	21.4	21.3	21.8	22.3	22.6	22.6	23.1	23.0	23.1	23.3	**22.5**	**24.3**	**20.7**
11	23.7	23.5	23.5	24.0	24.3	24.2	23.2	22.7	22.6	22.1	21.4	22.0	22.0	22.0	22.1	22.2	22.3	22.5	22.9	23.0	23.4	23.6	23.6	23.7	**22.9**	**24.3**	**21.4**
12	24.5	24.1	24.6	24.5	25.1	24.4	22.8	22.0	21.1	20.9	20.9	20.8	21.1	21.1	21.6	22.0	22.2	22.3	22.5	22.8	23.0	23.2	23.3	23.3	**22.7**	**25.1**	**20.8**
13	23.3	23.4	23.6	23.5	23.7	23.3	22.8	22.5	21.2	20.6	21.0	21.1	20.8	20.5	20.0	20.1	20.6	21.1	21.9	22.2	22.4	22.4	22.4	22.5	**22.0**	**23.7**	**20.0**
14	23.0	22.7	22.9	22.8	23.1	23.0	22.3	21.4	20.3	19.6	20.5	20.7	20.6	21.0	20.2	20.7	21.3	21.3	21.5	22.2	22.6	23.1	23.1	23.0	**21.8**	**23.1**	**19.6**
15	23.0	23.2	23.4	23.3	23.6	23.3	22.7	21.8	21.2	20.9	20.7	21.2	21.0	20.8	21.0	20.9	21.0	21.5	21.9	22.6	22.9	23.1	23.0	23.2	**22.1**	**23.6**	**20.7**
16	23.4	23.7	23.7	23.9	23.7	23.5	22.7	22.0	21.7	21.4	21.7	21.6	21.4	21.4	21.4	21.3	21.5	21.6	21.9	22.3	22.6	22.7	22.7	22.8	**22.4**	**23.9**	**21.3**
17	22.8	23.0	23.0	23.0	23.1	23.1	22.5	21.8	21.0	20.4	20.3	20.1	19.5	20.0	19.6	20.1	20.4	21.1	21.4	22.0	22.3	22.4	22.4	22.5	**21.6**	**23.1**	**19.5**
18	22.6	22.6	22.7	22.8	22.7	22.7	22.2	21.2	20.3	20.3	20.3	20.6	20.6	19.9	19.4	19.5	20.1	20.3	21.1	21.7	22.1	22.3	22.4	22.5	**21.4**	**22.8**	**19.4**
19	22.6	22.8	22.8	22.8	23.0	22.8	22.4	21.2	20.5	20.3	20.5	20.8	20.8	21.0	20.3	20.4	20.1	20.9	21.5	22.1	22.3	22.4	22.5	22.7	**21.6**	**23.0**	**20.1**
20	22.9	22.9	23.1	23.0	23.0	23.0	22.3	21.8	20.4	19.6	19.9	20.4	20.5	20.5	19.7	20.4	20.3	20.7	21.1	21.7	22.1	22.4	22.5	22.6	**21.5**	**23.1**	**19.6**
21	22.9	22.8	23.0	22.8	23.1	22.9	22.3	21.0	19.4	18.6	19.2	19.7	19.8	19.4	19.7	18.7	18.5	19.4	20.5	21.6	21.9	22.0	22.1	22.2	**21.0**	**23.1**	**18.5**
22	22.3	22.4	22.6	22.7	22.7	22.6	21.9	20.1	18.2	17.6	18.1	18.0	18.8	18.1	18.3	18.6	18.5	18.2	19.2	20.5	21.1	20.9	21.4	21.4	**20.2**	**22.7**	**17.6**
23	21.4	21.6	21.8	21.9	22.0	21.9	21.1	20.6	19.1	18.1	18.8	19.0	18.5	18.0	18.4	17.8	18.3	18.3	20.2	20.5	20.3	20.9	20.8	21.3	**20.0**	**22.0**	**17.8**
24	21.2	21.4	21.6	21.5	21.7	21.9	21.3	20.7	19.9	19.3	19.5	19.7	20.1	19.8	20.3	19.9	20.4	20.9	21.2	21.8	22.3	22.8	22.7	23.0	**21.0**	**23.0**	**19.3**
25	23.2	23.2	23.3	23.5	23.7	23.2	22.4	20.8	19.7	19.2	19.3	19.2	19.0	19.0	18.5	19.5	19.9	20.6	21.2	21.6	21.9	22.0	22.2	22.4	**21.2**	**23.7**	**18.5**
26	22.4	22.4	22.5	22.7	22.6	22.5	21.6	20.4	19.5	17.9	18.4	18.1	18.2	18.9	18.7	18.1	17.8	18.8	19.7	20.5	21.0	22.0	22.7	22.9	**20.4**	**22.9**	**17.8**
27	22.8	23.1	22.8	23.1	22.8	23.0	22.7	23.2	22.4	21.7	20.8	20.1	20.2	18.5	20.0	20.3	20.6	20.9	20.8	21.7	22.0	21.8	22.3	22.5	**21.7**	**23.2**	**18.5**
28	22.9	22.9	23.2	23.2	23.2	23.5	22.8	22.6	22.1	21.4	21.5	21.9	21.6	21.8	21.6	21.6	21.7	21.8	22.0	22.3	22.5	22.8	22.7	23.0	**22.4**	**23.5**	**21.4**
29	23.0	22.8	22.9	22.8	22.7	22.6	22.3	22.1	21.8	21.1	21.2	20.1	19.6	19.0	19.2	19.0	20.1	20.1	20.6	20.9	21.4	21.5	21.7	22.1	**21.3**	**23.0**	**19.0**
30	22.0	22.1	22.1	22.1	22.0	21.9	21.9	21.7	21.4	20.5	20.1	19.3	18.0	18.0	18.7	18.5	18.3	19.9	20.9	21.5	21.0	21.6	22.2	22.6	**20.8**	**22.6**	**18.0**
MEAN	**23.0**	**23.0**	**23.1**	**23.2**	**23.3**	**23.1**	**22.4**	**21.7**	**20.9**	**20.4**	**20.4**	**20.5**	**20.4**	**20.3**	**20.3**	**20.4**	**20.7**	**21.0**	**21.5**	**22.0**	**22.3**	**22.5**	**22.6**	**22.8**	**21.7**		
MAX	**24.7**	**25.3**	**24.6**	**25.1**	**25.2**	**24.4**	**23.2**	**23.2**	**22.8**	**22.7**	**22.4**	**22.3**	**22.0**	**22.0**	**22.1**	**22.6**	**22.7**	**22.7**	**22.9**	**23.0**	**23.4**	**23.6**	**23.6**	**23.8**		**25.3**	
MIN	**21.2**	**21.4**	**21.6**	**21.5**	**21.7**	**21.9**	**21.1**	**20.1**	**18.2**	**17.6**	**18.1**	**18.0**	**18.0**	**18.0**	**18.3**	**17.8**	**17.8**	**18.2**	**19.2**	**20.5**	**20.3**	**20.9**	**20.8**	**21.3**			**17.6**

POSSIBLE NUMBER OF OBSERVATIONS = 720 ACTUAL NUMBER OF OBSERVATIONS = 720 DATA RECOVERY RATE = 100.0%

MONTHLY MEAN = 21.7 deg C

MAXIMUM SHELTER TEMPERATURE = 25.3 deg C DATE OF OCCURRENCE = 6/1 AT 0200 MAXIMUM DAILY MEAN = 22.9 deg C DATE OF OCCURRENCE = 6/11

MINIMUM SHELTER TEMPERATURE = 17.6 deg C DATE OF OCCURRENCE = 6/22 AT 1000 MINUMUM DAILY MEAN = 20.0 deg C DATE OF OCCURRENCE = 6/23

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

Draft

CSX AQ8

SHELTER TEMPERATURE in deg C for APRIL, 2024

Hr Beg Hr End Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	22.8	23.0	23.1	23.7	22.4	21.2	20.6	20.5	20.6	20.5	20.4	21.6	24.5	26.3	25.6	26.5	27.0	26.7	25.8	25.0	24.9	24.7	24.5	24.1	**23.6**	**27.0**	**20.4**
2	23.9	22.8	21.4	21.7	20.9	20.3	20.2	19.2	19.6	20.7	21.1	20.8	21.0	21.7	21.3	21.5	21.7	21.3	20.8	20.0	19.6	20.0	20.2	20.4	**20.9**	**23.9**	**19.2**
3	20.1	19.7	19.5	19.6	19.7	19.7	19.7	19.8	19.4	19.0	20.0	20.0	20.4	20.1	19.8	19.6	19.7	20.0	19.4	18.8	18.6	18.0	17.3	18.0	**19.4**	**20.4**	**17.3**
4	18.2	17.1	16.7	16.7	16.5	16.2	15.9	19.2	22.8	24.3	24.0	25.4	25.5	24.0	24.3	21.9	17.9	18.3	18.8	17.3	17.1	16.9	16.4	16.2	**19.5**	**25.5**	**15.9**
5	15.7	15.5	15.1	14.7	14.6	14.4	15.0	18.2	21.1	21.7	21.4	23.0	22.4	21.9	22.6	22.6	21.7	21.3	18.6	17.2	16.6	16.4	16.1	15.2	**18.5**	**23.0**	**14.4**
6	14.4	13.9	13.6	13.4	13.2	13.2	14.0	16.8	19.4	20.6	22.7	22.9	23.3	23.8	23.8	23.5	23.7	25.0	23.5	21.9	22.0	21.9	21.7	20.5	**19.7**	**25.0**	**13.2**
7	19.7	19.3	19.0	18.7	18.0	17.5	17.5	19.9	23.5	26.2	27.7	29.2	29.1	28.3	28.0	27.8	27.6	27.6	27.7	26.4	25.1	23.4	22.0	21.4	**23.8**	**29.2**	**17.5**
8	20.8	20.2	19.6	19.0	18.5	18.1	18.6	23.1	26.7	27.9	27.5	27.3	27.1	26.7	27.8	27.0	27.1	27.5	28.0	27.0	26.3	25.5	25.0	24.6	**24.5**	**28.0**	**18.1**
9	23.9	23.3	23.0	22.8	22.7	22.5	22.9	26.6	27.4	27.0	26.7	26.4	26.1	26.0	25.9	26.2	26.5	26.8	27.3	27.6	27.7	27.9	28.0	27.8	**25.8**	**28.0**	**22.5**
10	28.8	28.7	28.3	28.3	28.4	28.4	28.4	28.1	27.7	27.1	26.5	26.1	25.8	26.0	26.2	26.0	25.9	26.3	27.1	27.1	27.4	27.5	27.5	27.7	**27.3**	**28.8**	**25.8**
11	27.7	27.9	27.7	27.9	28.9	29.0	29.0	28.0	27.3	26.8	26.6	26.9	26.9	26.7	27.3	27.7	28.1	29.0	29.3	28.2	28.6	28.5	28.1	28.2	**27.9**	**29.3**	**26.6**
12	28.4	28.0	27.7	28.1	28.2	28.4	28.5	26.0	25.1	23.0	25.6	28.3	27.5	27.6	27.5	27.8	27.4	28.1	28.0	26.9	24.7	23.8	24.1	24.1	**26.8**	**28.5**	**23.0**
13	23.9	23.3	23.1	22.2	21.4	21.5	21.9	22.8	24.3	25.9	27.5	29.1	29.3	28.2	28.1	27.8	27.7	28.5	27.1	26.2	25.5	25.1	24.5	24.0	**25.4**	**29.3**	**21.4**
14	23.0	21.8	21.0	20.7	20.3	20.1	20.6	23.9	27.2	27.4	26.7	26.3	26.0	25.6	25.2	25.1	24.9	25.1	26.0	26.3	26.7	26.6	27.0	27.6	**24.6**	**27.6**	**20.1**
15	27.9	27.6	27.9	27.9	28.1	28.3	28.4	27.6	26.2	25.9	25.6	25.6	25.0	24.6	24.4	24.4	24.4	24.9	25.9	26.9	27.1	26.8	27.1	27.8	**26.5**	**28.4**	**24.4**
16	28.2	27.6	26.2	25.5	25.0	24.5	24.8	27.6	27.4	26.7	26.4	26.2	26.1	25.9	25.6	25.5	25.8	26.2	27.4	28.3	28.0	28.1	27.8	27.4	**26.6**	**28.3**	**24.5**
17	26.9	26.2	26.2	26.2	26.3	26.1	26.6	27.8	27.5	27.3	26.4	27.1	26.8	27.1	26.8	26.8	26.9	27.1	27.2	27.7	27.7	27.6	27.0	27.6	**27.0**	**27.8**	**26.1**
18	26.8	26.9	27.1	27.8	28.5	28.4	28.8	28.8	27.7	28.2	27.2	26.6	26.7	26.9	26.1	26.2	26.2	26.4	27.4	27.0	25.6	25.2	25.0	24.6	**26.9**	**28.8**	**24.6**
19	24.5	24.0	23.7	23.4	22.9	22.6	22.8	23.0	23.4	23.7	23.9	24.6	25.8	26.1	26.3	25.2	24.6	25.4	25.6	25.6	25.7	25.9	26.2	26.6	**24.6**	**26.6**	**22.6**
20	27.1	26.9	26.4	25.2	25.5	25.6	25.9	26.4	26.8	28.6	28.0	27.2	27.0	27.0	26.7	26.4	26.4	26.7	28.0	27.6	26.4	25.2	23.7	22.3	**26.4**	**28.6**	**22.3**
21	21.3	20.6	19.9	19.1	18.4	17.9	18.2	19.6	21.7	23.7	25.5	27.3	28.4	28.0	28.2	26.6	24.7	23.6	22.6	21.3	20.5	19.8	19.0	18.1	**22.3**	**28.4**	**17.9**
22	17.6	17.0	16.5	16.0	15.5	15.1	15.5	19.2	23.3	26.8	28.6	28.2	28.4	28.0	28.0	27.3	27.1	27.2	27.7	26.2	23.9	22.4	21.8	21.6	**22.9**	**28.6**	**15.1**
23	20.9	20.2	19.6	19.0	18.5	18.1	18.6	23.9	27.9	27.3	27.2	26.9	26.7	26.6	26.5	26.5	26.8	27.4	28.0	26.0	24.6	24.1	23.9	24.1	**24.1**	**28.0**	**18.1**
24	24.5	25.3	26.3	26.4	26.7	26.4	26.4	27.1	28.3	27.5	27.2	25.8	26.9	27.0	26.7	26.8	27.4	27.4	28.5	28.5	27.8	26.8	25.9	25.2	**26.8**	**28.5**	**24.5**
25	24.1	23.2	22.6	22.4	21.7	20.9	20.5	21.2	23.5	25.6	27.7	27.6	27.4	26.9	27.0	28.2	28.8	27.3	27.4	25.5	23.2	21.2	19.9	19.3	**24.3**	**28.8**	**19.3**
26	19.2	19.1	19.0	18.8	18.9	19.1	19.4	21.8	26.4	28.3	27.8	27.6	27.2	27.0	26.4	26.2	26.3	27.1	27.9	25.8	24.2	23.0	22.9	22.7	**23.8**	**28.3**	**18.8**
27	22.4	22.4	22.4	22.8	23.0	22.9	23.0	23.5	24.0	24.3	24.3	24.5	23.6	23.0	23.3	24.3	25.2	26.2	26.1	25.3	25.1	25.4	25.8	26.3	**24.1**	**26.3**	**22.4**
28	26.9	26.8	26.9	26.7	26.2	26.3	27.2	28.1	27.3	27.1	26.6	26.4	26.2	26.0	25.7	25.3	25.5	25.4	25.9	26.7	27.1	27.1	27.2	27.5	**26.6**	**28.1**	**25.3**
29	27.6	27.3	27.5	27.6	28.0	28.0	27.8	26.3	25.7	25.4	24.9	24.9	24.9	24.0	23.9	24.0	24.1	24.5	25.6	26.2	26.5	26.6	26.7	26.8	**26.0**	**28.0**	**23.9**
30	27.0	27.2	27.4	27.8	28.2	27.9	28.2	26.9	26.4	25.9	25.4	24.9	24.5	24.2	24.2	24.7	25.0	25.4	25.9	26.2	26.7	27.7	27.6	28.6	**26.4**	**28.6**	**24.2**
MEAN	**23.5**	**23.1**	**22.8**	**22.7**	**22.5**	**22.3**	**22.5**	**23.7**	**24.9**	**25.3**	**25.6**	**25.8**	**25.9**	**25.7**	**25.6**	**25.5**	**25.4**	**25.7**	**25.8**	**25.2**	**24.7**	**24.3**	**24.0**	**23.9**	**24.4**		
MAX	**28.8**	**28.7**	**28.3**	**28.3**	**28.9**	**29.0**	**29.0**	**28.8**	**28.3**	**28.6**	**28.6**	**29.2**	**29.3**	**28.3**	**28.2**	**28.2**	**28.8**	**29.0**	**29.3**	**28.5**	**28.6**	**28.5**	**28.1**	**28.6**		**29.3**	
MIN	**14.4**	**13.9**	**13.6**	**13.4**	**13.2**	**13.2**	**14.0**	**16.8**	**19.4**	**19.0**	**20.0**	**20.0**	**20.4**	**20.1**	**19.8**	**19.6**	**17.9**	**18.3**	**18.6**	**17.2**	**16.6**	**16.4**	**16.1**	**15.2**			**13.2**

POSSIBLE NUMBER OF OBSERVATIONS = 720 ACTUAL NUMBER OF OBSERVATIONS = 720 DATA RECOVERY RATE = 100.0%

MONTHLY MEAN = 24.4 deg C

MAXIMUM SHELTER TEMPERATURE = 29.3 deg C DATE OF OCCURRENCE = 4/11 AT 1900 MAXIMUM DAILY MEAN = 27.9 deg C DATE OF OCCURRENCE = 4/11

MINIMUM SHELTER TEMPERATURE = 13.2 deg C DATE OF OCCURRENCE = 4/6 AT 0500 MINUMUM DAILY MEAN = 18.5 deg C DATE OF OCCURRENCE = 4/5

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

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CSX AQ8

SHELTER TEMPERATURE in deg C for MAY, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	29.2	28.1	27.9	28.1	28.3	29.3	29.1	27.8	26.7	26.3	26.0	25.7	25.4	25.2	25.0	24.7	24.7	24.9	25.7	27.0	27.1	27.6	27.7	27.9	**26.9**	**29.3**	**24.7**
2	28.2	28.1	28.0	28.9	28.9	28.7	27.9	26.7	26.2	25.6	25.3	24.6	24.4	24.1	24.0	23.4	23.7	23.9	24.8	26.0	26.2	26.8	26.8	27.1	**26.2**	**28.9**	**23.4**
3	27.2	27.5	27.5	28.0	28.0	28.9	28.3	27.4	26.7	26.4	26.0	26.2	26.5	27.1	27.4	26.8	26.9	27.9	27.6	25.8	25.3	25.0	24.8	24.8	**26.8**	**28.9**	**24.8**
4	24.4	22.6	22.4	22.3	22.2	22.1	22.0	22.8	18.3	15.1	20.7	23.2	23.6	24.0	23.7	23.1	23.0	23.1	23.2	23.2	23.4	23.6	23.9	23.9	**22.5**	**24.4**	**15.1**
5	24.1	24.4	24.0	23.1	23.4	23.4	23.5	23.9	24.7	26.5	27.2	27.6	27.9	27.3	27.2	26.7	26.9	27.2	27.0	27.0	27.2	27.1	27.0	27.0	**25.9**	**27.9**	**23.1**
6	27.3	27.1	27.0	27.1	27.2	27.1	27.2	26.8	26.6	26.6	26.2	26.1	26.0	26.1	26.1	26.0	25.8	26.3	26.5	26.5	26.6	26.7	26.9	26.9	**26.6**	**27.3**	**25.8**
7	26.9	27.0	27.1	27.0	27.0	27.0	26.6	26.5	26.1	25.6	25.4	25.2	24.9	25.0	25.1	25.6	25.8	25.1	25.0	26.6	26.8	27.2	26.8	27.1	**26.2**	**27.2**	**24.9**
8	27.0	27.1	26.9	27.2	26.9	27.0	26.8	26.3	25.7	25.4	24.9	24.6	24.4	24.3	24.3	24.3	24.6	25.0	25.3	25.8	26.0	26.4	26.5	26.5	**25.8**	**27.2**	**24.3**
9	26.9	27.1	28.4	27.6	28.9	27.4	27.2	26.5	26.4	26.4	26.2	26.4	26.8	26.8	25.9	26.4	26.8	28.0	27.9	28.0	27.8	27.6	27.7	25.9	**27.1**	**28.9**	**25.9**
10	24.4	25.2	25.5	25.7	25.8	25.9	25.5	24.4	23.8	23.2	24.0	24.4	24.6	24.5	24.1	23.3	23.1	21.6	21.1	20.7	20.8	21.0	21.4	21.5	**23.6**	**25.9**	**20.7**
11	21.5	21.2	20.9	20.9	21.1	20.6	21.7	24.3	27.5	27.1	26.8	26.1	26.2	26.0	25.8	26.3	27.8	27.1	25.9	23.3	23.3	23.6	23.1	21.7	**24.2**	**27.8**	**20.6**
12	19.7	20.0	20.9	21.5	21.8	22.4	23.3	25.2	27.9	27.8	28.3	25.8	27.5	27.0	27.2	27.3	27.6	26.9	26.6	27.1	26.6	26.1	25.8	25.4	**25.2**	**28.3**	**19.7**
13	25.5	24.6	24.6	25.4	25.7	25.4	26.3	27.7	27.6	26.8	26.2	26.0	25.8	25.2	25.0	25.3	25.4	25.9	27.1	28.6	28.3	28.0	28.0	28.1	**26.4**	**28.6**	**24.6**
14	27.8	27.5	27.4	27.2	27.3	27.7	28.5	27.1	22.5	26.4	27.0	27.0	27.4	25.8	23.5	22.8	22.9	23.0	22.8	22.4	21.7	21.2	20.9	20.7	**24.9**	**28.5**	**20.7**
15	20.4	20.4	20.5	20.6	20.4	20.1	20.1	20.3	20.3	21.0	21.5	22.7	23.3	23.7	25.5	25.6	24.8	23.6	22.9	22.4	21.6	20.5	20.0	19.5	**21.7**	**25.6**	**19.5**
16	19.3	19.0	18.6	18.3	18.0	18.2	20.3	23.7	27.0	26.8	26.2	25.9	25.9	26.4	25.5	25.9	26.2	27.2	27.6	26.6	25.4	24.2	22.7	21.6	**23.6**	**27.6**	**18.0**
17	21.8	21.9	22.1	22.2	22.2	22.0	22.8	23.3	24.0	26.0	26.7	27.3	26.8	26.1	26.7	25.9	26.9	26.4	25.7	24.3	23.2	22.8	22.6	22.2	**24.2**	**27.3**	**21.8**
18	22.0	21.8	21.4	21.1	21.1	20.9	20.7	20.6	20.7	21.8	24.3	26.0	26.3	26.3	27.0	27.2	26.0	24.2	23.8	23.0	22.6	22.3	22.3	22.3	**23.2**	**27.2**	**20.6**
19	22.3	21.8	21.2	20.8	20.8	21.1	21.8	22.9	24.6	26.5	26.9	26.4	25.8	25.1	25.2	25.7	24.6	24.3	26.0	26.6	24.8	23.5	22.5	21.9	**23.9**	**26.9**	**20.8**
20	21.8	21.8	21.0	20.2	19.6	20.1	21.3	23.4	26.1	26.9	25.7	25.5	25.3	25.0	24.7	24.3	24.8	24.9	26.4	26.3	24.7	23.5	22.7	22.1	**23.7**	**26.9**	**19.6**
21	21.5	21.1	20.7	20.2	19.8	20.1	22.6	26.1	25.9	25.3	25.1	24.9	24.4	23.7	23.5	23.4	23.6	23.8	25.2	27.0	26.0	25.2	24.3	23.6	**23.6**	**27.0**	**19.8**
22	22.9	22.4	22.1	21.7	21.1	21.6	24.0	26.6	25.2	24.9	24.8	24.3	24.0	22.9	23.0	23.0	24.3	24.9	25.5	26.4	27.9	27.7	27.2	26.9	**24.4**	**27.9**	**21.1**
23	26.6	26.3	26.3	26.2	26.0	26.2	26.4	26.6	26.5	25.8	26.9	26.1	24.5	23.9	23.6	23.7	24.2	24.7	26.4	27.7	27.3	26.9	26.9	26.5	**25.9**	**27.7**	**23.6**
24	26.0	25.6	25.3	25.1	24.9	25.1	26.3	26.2	24.7	24.2	23.9	23.8	23.9	23.2	22.6	22.4	22.5	23.0	24.1	26.2	27.7	27.5	27.1	26.5	**24.9**	**27.7**	**22.4**
25	25.9	25.2	24.4	23.9	23.6	23.8	26.0	25.6	24.6	24.1	23.8	23.6	23.6	23.7	22.9	23.0	23.1	23.9	25.2	26.3	26.4	24.9	24.8	25.1	**24.5**	**26.4**	**22.9**
26	25.2	25.0	24.6	24.4	24.2	24.5	27.1	25.8	24.9	24.5	24.1	23.9	23.6	23.2	23.0	22.5	22.9	24.2	25.3	27.0	26.3	28.0	28.1	27.7	**25.0**	**28.1**	**22.5**
27	27.0	26.9	26.7	26.3	26.0	25.8	26.6	26.0	25.9	25.2	26.0	25.7	26.5	25.6	25.3	25.1	25.4	25.4	26.3	23.9	22.4	22.4	22.5	22.4	**25.3**	**27.0**	**22.4**
28	22.2	21.9	21.7	21.9	22.0	22.3	24.2	27.1	26.6	25.8	25.2	24.9	24.7	24.4	24.3	24.2	24.3	24.2	26.2	27.2	26.6	26.0	24.8	23.8	**24.4**	**27.2**	**21.7**
29	22.7	22.0	21.3	20.4	19.8	19.9	23.0	27.4	26.6	26.3	25.6	24.7	25.3	26.6	25.8	25.0	22.2	21.9	21.4	21.2	21.0	20.4	19.4	18.8	**22.9**	**27.4**	**18.8**
30	18.4	18.0	17.9	17.7	17.7	18.2	20.4	23.4	26.0	28.0	27.7	23.8	25.0	26.7	26.6	25.8	26.6	26.9	27.2	28.3	28.4	28.2	28.9	28.7	**24.4**	**28.9**	**17.7**
31	27.9	26.8	25.9	25.2	24.5	24.4	26.0	28.3	28.0	27.4	27.1	26.6	26.6	26.3	26.0	25.7	25.4	25.6	26.1	27.6	27.5	28.5	28.6	28.3	**26.7**	**28.6**	**24.4**
MEAN	**24.3**	**24.0**	**23.9**	**23.7**	**23.7**	**23.8**	**24.6**	**25.4**	**25.3**	**25.3**	**25.5**	**25.3**	**25.4**	**25.2**	**25.0**	**24.9**	**24.9**	**25.0**	**25.4**	**25.7**	**25.4**	**25.2**	**24.9**	**24.6**	**24.9**		
MAX	**29.2**	**28.1**	**28.4**	**28.9**	**28.9**	**29.3**	**29.1**	**28.3**	**28.0**	**28.0**	**28.3**	**27.6**	**27.9**	**27.3**	**27.4**	**27.3**	**27.8**	**28.0**	**27.9**	**28.6**	**28.4**	**28.5**	**28.9**	**28.7**		**29.3**	
MIN	**18.4**	**18.0**	**17.9**	**17.7**	**17.7**	**18.2**	**20.1**	**20.3**	**18.3**	**15.1**	**20.7**	**22.7**	**23.3**	**22.9**	**22.6**	**22.4**	**22.2**	**21.6**	**21.1**	**20.7**	**20.8**	**20.4**	**19.4**	**18.8**			**15.1**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 744 DATA RECOVERY RATE = 100.0%

MONTHLY MEAN = 24.9 deg C

MAXIMUM SHELTER TEMPERATURE = 29.3 deg C DATE OF OCCURRENCE = 5/1 AT 0600 MAXIMUM DAILY MEAN = 27.1 deg C DATE OF OCCURRENCE = 5/9

MINIMUM SHELTER TEMPERATURE = 15.1 deg C DATE OF OCCURRENCE = 5/4 AT 1000 MINUMUM DAILY MEAN = 21.7 deg C DATE OF OCCURRENCE = 5/15

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

Draft

CSX AQ8

SHELTER TEMPERATURE in deg C for JUNE, 2024

Hr Beg Hr End Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	28.1	27.9	27.7	27.6	26.9	26.7	27.9	26.8	26.2	25.8	25.5	25.4	25.1	24.8	24.6	24.3	24.1	24.6	25.5	26.9	27.5	27.8	28.2	28.2	**26.4**	**28.2**	**24.1**
2	28.2	28.8	29.2	29.2	28.4	28.2	27.6	27.0	26.5	26.0	25.2	24.8	24.4	24.5	25.0	24.5	25.4	25.8	26.0	26.4	26.4	26.4	26.7	26.9	**26.6**	**29.2**	**24.4**
3	26.8	27.0	26.9	27.1	27.2	27.3	26.9	26.1	25.9	25.4	25.0	24.4	24.6	24.5	24.9	23.6	23.1	23.7	25.0	26.2	26.4	26.9	26.9	27.0	**25.8**	**27.3**	**23.1**
4	27.0	27.6	27.2	27.8	27.7	27.3	26.6	26.0	25.6	25.0	24.9	24.1	24.0	23.3	23.5	24.2	24.8	25.3	26.0	26.9	27.2	27.2	27.1	27.1	**26.0**	**27.8**	**23.3**
5	27.3	27.1	27.2	27.2	27.3	27.1	26.9	26.6	26.8	26.8	26.4	25.8	25.5	25.6	25.9	26.9	27.3	27.3	27.3	27.5	27.3	27.2	27.2	27.1	**26.9**	**27.5**	**25.5**
6	27.0	27.1	27.2	27.1	27.2	26.8	26.8	26.2	26.3	25.6	25.0	25.1	24.8	24.4	23.6	25.4	25.8	24.7	25.1	26.1	26.6	26.7	27.0	27.0	**26.0**	**27.2**	**23.6**
7	27.1	27.1	27.3	27.4	27.8	27.2	27.2	26.5	26.0	25.4	25.1	24.8	25.0	24.6	24.5	24.4	24.4	25.1	25.7	26.9	27.2	27.6	28.0	27.9	**26.3**	**28.0**	**24.4**
8	28.2	29.0	29.2	29.2	29.1	28.6	27.7	27.1	26.5	26.2	25.9	25.4	25.3	25.0	24.5	23.9	24.1	24.1	24.4	26.3	26.7	27.1	27.2	27.6	**26.6**	**29.2**	**23.9**
9	27.7	28.0	27.5	27.5	28.0	27.6	27.3	27.1	25.7	25.0	25.3	25.5	25.3	24.8	24.9	24.8	24.9	24.8	25.4	26.8	27.2	27.2	27.6	28.0	**26.4**	**28.0**	**24.8**
10	27.8	28.2	28.4	28.8	28.9	28.5	27.7	27.1	26.8	26.1	26.2	25.7	25.4	25.1	25.3	25.2	25.5	26.6	26.9	27.3	28.3	27.8	27.9	28.0	**27.1**	**28.9**	**25.1**
11	28.6	28.8	28.7	28.6	28.0	27.9	28.3	28.3	27.7	26.9	26.9	26.4	26.4	26.5	26.0	26.2	25.8	26.0	27.3	27.8	28.3	28.5	28.3	28.9	**27.5**	**28.9**	**25.8**
12	29.0	28.5	28.3	27.9	27.8	27.8	27.9	27.2	26.7	25.9	25.7	25.4	25.1	24.8	24.1	24.1	24.6	24.7	25.3	26.6	27.0	27.2	27.4	27.7	**26.5**	**29.0**	**24.1**
13	27.4	27.6	27.6	27.7	27.8	27.7	27.0	26.5	25.7	25.0	24.5	24.1	23.8	23.6	22.5	22.8	23.1	24.6	25.5	26.1	26.6	26.5	26.5	26.8	**25.7**	**27.8**	**22.5**
14	27.6	27.2	27.5	27.3	27.3	27.2	26.7	26.2	25.4	24.9	24.0	23.9	23.5	23.9	23.0	23.0	24.7	25.0	25.7	26.3	27.0	27.8	27.4	27.5	**25.8**	**27.8**	**23.0**
15	27.5	27.7	28.0	28.5	28.7	28.7	27.7	27.2	26.7	25.9	25.7	25.2	25.2	24.7	24.3	24.1	24.0	24.0	24.6	26.3	26.7	26.9	27.0	27.2	**26.4**	**28.7**	**24.0**
16	27.6	28.0	28.2	28.2	28.3	28.1	26.9	26.3	25.5	24.8	24.6	24.3	23.9	22.9	23.1	22.5	22.9	23.2	23.9	25.5	27.1	27.7	27.7	27.4	**25.8**	**28.3**	**22.5**
17	26.8	26.3	26.3	26.1	25.8	25.7	26.8	26.1	25.2	24.7	23.8	23.5	22.9	22.8	22.5	22.7	22.7	22.9	24.0	25.3	27.2	26.3	27.3	27.7	**25.1**	**27.7**	**22.5**
18	27.8	27.8	27.6	27.3	27.1	27.3	26.1	25.3	24.8	24.0	23.9	23.5	23.1	22.6	22.0	22.0	22.3	22.7	23.5	25.7	26.1	26.1	27.7	27.9	**25.2**	**27.9**	**22.0**
19	27.8	27.3	26.8	26.3	25.8	26.0	26.7	25.4	24.6	24.6	23.8	23.9	23.8	23.2	22.5	22.2	22.3	22.5	23.8	25.6	26.1	27.4	27.9	27.7	**25.2**	**27.9**	**22.2**
20	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
21	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
22	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
23	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
24	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
25	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
26	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
27	---	---	---	---	---	---	---	---	---	25.3	24.6	23.7	23.1	22.4	22.3	21.5	22.3	22.3	23.2	24.8	25.6	25.3	25.8	26.7	**---**	**---**	**---**
28	26.9	26.9	27.8	27.2	27.9	27.5	26.7	26.0	25.6	25.0	24.4	24.4	23.9	23.7	23.9	23.3	24.3	24.2	25.0	25.7	26.4	26.7	27.4	27.4	**25.8**	**27.9**	**23.3**
29	27.5	27.1	27.0	26.9	26.6	26.6	26.2	25.8	25.3	24.8	24.8	23.7	23.2	22.7	22.5	22.7	23.3	23.2	24.5	25.2	25.6	25.6	26.0	26.3	**25.1**	**27.5**	**22.5**
30	26.5	26.7	26.7	26.3	26.1	26.2	26.2	25.8	25.5	24.8	24.5	23.5	23.3	22.8	22.7	21.2	22.9	23.8	25.0	25.6	25.5	26.0	26.3	27.2	**25.0**	**27.2**	**21.2**
MEAN	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**25.4**	**25.0**	**24.6**	**24.4**	**24.1**	**23.8**	**23.7**	**24.1**	**24.4**	**25.2**	**26.3**	**26.8**	**27.0**	**27.2**	**27.4**	**26.0**		
MAX	**29.0**	**29.0**	**29.2**	**29.2**	**29.1**	**28.7**	**28.3**	**28.3**	**27.7**	**26.9**	**26.9**	**26.4**	**26.4**	**26.5**	**26.0**	**26.9**	**27.3**	**27.3**	**27.3**	**27.8**	**28.3**	**28.5**	**28.3**	**28.9**		**29.2**	
MIN	**26.5**	**26.3**	**26.3**	**26.1**	**25.8**	**25.7**	**26.1**	**25.3**	**24.6**	**24.0**	**23.8**	**23.5**	**22.9**	**22.4**	**22.0**	**21.2**	**22.3**	**22.3**	**23.2**	**24.8**	**25.5**	**25.3**	**25.8**	**26.3**			**21.2**

POSSIBLE NUMBER OF OBSERVATIONS = 720 ACTUAL NUMBER OF OBSERVATIONS = 543 DATA RECOVERY RATE = 75.4%

MONTHLY MEAN = 26.0 deg C

MAXIMUM SHELTER TEMPERATURE = 29.2 deg C DATE OF OCCURRENCE = 6/2 AT 0300 MAXIMUM DAILY MEAN = 27.5 deg C DATE OF OCCURRENCE = 6/11

MINIMUM SHELTER TEMPERATURE = 21.2 deg C DATE OF OCCURRENCE = 6/30 AT 1600 MINUMUM DAILY MEAN = 25.0 deg C DATE OF OCCURRENCE = 6/30

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

Draft

CSX Transportation, Inc. Comments on Renewal of State Permit to Operate No. 510-2263 for CSX Transportation Curtis Bay Piers

Appendix 17e: *2024 Q3 Fenceline Monitoring Report submitted Dec. 2024*

SUMMARY OF METEOROLOGICAL AND CONTINUOUS PM_{10} AND $PM_{2.5}$ MONITORING DATA AT CSXT CURTIS BAY PIERS FACILITY MONITORING STATIONS THIRD QUARTER 2024

CSXT Transportation, Inc.

TRINITY CONSULTANTS
4525 Wasatch Blvd.
Suite 200
Salt Lake City, Utah
801-272-3000

October 2024

Project 234501.0038

SISEC

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1.0 EXECUTIVE SUMMARY

This report, prepared by Trinity Consultants, summarizes the PM_{10} and $PM_{2.5}$ monitoring data collected from July 1 through September 30, 2024 from the monitoring stations. CSXT, Curtis Bay Piers operates a coal, ore, limestone, and other dry material storage, transfer, and shipment terminal (Curtis Bay Piers Facility) pursuant to State Permit to Operate No. 510-2263. To meet the requirements of the Permit, CSXT is operating a fenceline network of continuous particulate matter with a diameter of 10 microns or less (PM_{10}) and particulate matter with a diameter of 2.5 microns or smaller ($PM_{2.5}$) monitors and a weather station. CSX installed Federal Equivalent Method (FEM) monitors at two monitoring stations, identified as AQ5 and AQ8, to measure both PM_{10} and $PM_{2.5}$ at the Curtis Bay Piers Facility, a network of eight (8) non-regulatory, community based PM_{10} and $PM_{2.5}$ monitors along the perimeter of the CSX Curtis Bay Piers facility, and a 10-meter tower to collect continuous wind speed and wind direction, temperature, relative humidity, barometric pressure, and precipitation near AQ5. Wind speed and wind direction measurements are also being collected at the perimeter monitoring locations (AQ1, AQ2, AQ3, AQ4, AQ6, and AQ7).

The equipment being operated in and around the perimeter of the Curtis Bay Piers Facility is presented in Table 1-1. The results of the hourly and 24-hour average PM_{10} and $PM_{2.5}$ concentrations collected from the FEM monitors at AQ5 and AQ8 are presented in Tables 1-2 and 1-3.

Table 1-1 Particulate and Meteorological Instrumentation at CSX Monitoring Stations

Station	Parameter	Equipment Manufacturer	Model Number	Serial Number
AQ1	PM_{10}, $PM_{2.5}$	QuantAQ MODULAIR Aeroqual	MODULAIR-PM	MOD264 21092023-2432
AQ2	PM_{10}, $PM_{2.5}$	QuantAQ MODULAIR	MODULAIR-PM	MOD387
AQ3	PM_{10}, $PM_{2.5}$	QuantAQ MODULAIR	MODULAIR-PM	MOD266
AQ4	PM_{10}, $PM_{2.5}$	QuantAQ MODULAIR	MODULAIR-PM	MOD383
AQ5	PM_{10}, $PM_{2.5}$	Teledyne-API	T640X	1690/CSX5
	Wind Direction	Met One	020D	C21028
	Wind Speed	Met One	010C	C21557
	Temperature	Campbell Scientific Inc.	HygroVUE10	E4240
	Relative Humidity	Campbell Scientific Inc.	HygroVUE10	E4240
	Barometric Pressure	Campbell Scientific Inc.	BaroVUE10	1808
	Precipitation	Texas Electronics	TR-525U	93490-1222
	Data Aq. System	Campbell Scientific Inc.	CR1000X	45777
AQ5A	PM_{10}, $PM_{2.5}$	QuantAQ MODULAIR	MODULAIR-PM	MOD384
AQ5B	PM_{10}, $PM_{2.5}$	QuantAQ MODULAIR	MODULAIR-PM	MOD385
AQ5C	PM_{10}, $PM_{2.5}$	QuantAQ MODULAIR Aeroqual	MODULAIR-PM	MOD388 15062020-1263
AQ6	PM_{10}, $PM_{2.5}$	QuantAQ MODULAIR	MODULAIR-PM	MOD267
AQ7	PM_{10}, $PM_{2.5}$	QuantAQ MODULAIR	MODULAIR-PM	MOD265
AQ8	PM_{10}, $PM_{2.5}$	Teledyne-API	T640X	1689/CSX8
	Data Aq. System	Campbell Scientific Inc.	CR310	16073
AQ8A	PM_{10}, $PM_{2.5}$	QuantAQ MODULAIR	MODULAIR-PM	MOD386

Table 1-2 AQ5 PM_{10} and $PM_{2.5}$ Concentrations for July 1 – September 30 (Third Quarter) 2024 in Micrograms per Cubic Meter

Statistics	July ($\mu g/m^3$)	August ($\mu g/m^3$)	September ($\mu g/m^3$)	Third Quarter 2024 ($\mu g/m^3$)
Monthly Mean PM_{10}	17.5	25.8	18.6	20.6
Maximum Hourly PM_{10}	30.2	246.5	196.1	246.5
Second Highest Hourly PM_{10}	27.6	191.4	93.1	191.4
Maximum 24-hour PM_{10}	18.7	50.3	33.0	50.3
Second Highest 24-hour PM_{10}	16.2	37.7	26.8	37.7
Monthly Mean $PM_{2.5}$	8.8	11.8	7.2	9.3
Maximum Hourly $PM_{2.5}$	14.8	50.1	39.5	50.1
Second Highest Hourly $PM_{2.5}$	14.5	42.4	20.2	42.4
Maximum 24-hour $PM_{2.5}$	8.5	21.6	12.0	21.6
Second Highest 24-hour $PM_{2.5}$	8.1	18.5	10.8	18.5

Table 1-3 AQ8 PM_{10} and $PM_{2.5}$ Concentrations for July 1 – September 30 (Third Quarter) 2024 in Micrograms per Cubic Meter

Statistics	July ($\mu g/m^3$)	August ($\mu g/m^3$)	September ($\mu g/m^3$)	Third Quarter 2024 ($\mu g/m^3$)
Monthly Mean PM_{10}	17.8	29.2	26.0	24.3
Maximum Hourly PM_{10}	42.7	178.6	565.9	565.9
Second Highest Hourly PM_{10}	40.1	164.0	142.7	164.0
Maximum 24-hour PM_{10}	22.2	58.8	58.8	58.8
Second Highest 24-hour PM_{10}	17.9	47.6	42.1	47.6
Monthly Mean $PM_{2.5}$	5.5	10.2	8.7	8.1
Maximum Hourly $PM_{2.5}$	12.8	24.6	60.3	60.3
Second Highest Hourly $PM_{2.5}$	12.4	24.2	27.8	27.8
Maximum 24-hour $PM_{2.5}$	6.2	18.2	14.1	18.2
Second Highest 24-hour $PM_{2.5}$	5.5	12.0	13.4	13.4

MODULAIR samplers are operated around the perimeter of the CSXT Curtis Bay facility to give an indication of the $PM_{10}/PM_{2.5}$ at each network location and to show $PM_{10}/PM_{2.5}$ trends. These data are not intended to be used for compliance with the National Ambient Air Quality Standards (NAAQS). The results of the hourly and 24-hour average PM_{10} and $PM_{2.5}$ concentrations collected from the MODULAIR samplers are presented in Tables 1-4 and 1-5.

Table 1-4 Perimeter Network MODULAIR PM_{10} Concentrations for July 1 – September 30 (Third Quarter) 2024 in Micrograms per Cubic Meter

Month	Statistic	Station									
		AQ1	AQ2	AQ3	AQ4	AQ5A	AQ5B	AQ5C	AQ6	AQ7	AQ8A
July	Mean	18.8	21.7	22.5	23.1	22.3	19.6	15.5	16.9	13.3	22.1
	Hourly Maximum	59.0	61.1	81.6	67.0	72.0	61.9	31.5	78.1	45.7	97.2
	Second High	55.9	61.0	75.0	65.9	64.1	57.4	30.3	48.5	44.3	74.8
	Maximum 24-hour	28.1	36.5	34.3	34.8	33.6	31.4	23.2	31.9	23.1	40.3
	Second High 24-hour	27.0	35.5	31.2	33.9	31.4	30.6	18.0	26.2	21.6	35.4
August	Mean	22.0	24.3	26.0	26.5	25.0	20.2	17.2	17.6	11.9	21.8
	Hourly Maximum	80.8	110.4	98.8	103.4	136.0	103.3	77.7	90.3	51.4	124.3
	Second High	79.3	94.4	95.3	97.0	108.4	79.5	61.1	52.1	45.8	79.6
	Maximum 24-hour	37.8	42.0	50.2	42.6	45.1	41.1	29.7	27.5	21.5	38.0
	Second High 24-hour	35.8	41.9	40.1	40.3	41.6	30.3	26.9	27.1	20.9	34.9
September	Mean	25.7	26.2	29.6	27.0	25.3	20.1	18.8	16.2	9.6	24.8
	Hourly Maximum	106.8	123.9	169.1	106.5	93.5	78.2	108.6	120.4	41.2	92.1
	Second High	91.8	106.9	128.4	76.8	70.2	73.7	69.6	90.5	37.0	84.3
	Maximum 24-hour	42.8	55.6	54.8	46.6	43.6	44.4	35.0	27.8	16.5	40.1
	Second High 24-hour	41.9	41.5	48.3	44.8	41.7	42.2	29.1	21.8	14.8	36.9

NA – Not available

Table 1-5 Perimeter Network MODULAIR $PM_{2.5}$ Concentrations for July 1 – September 30 (Third Quarter) 2024 in Micrograms per Cubic Meter

Month	Statistic	Station									
		AQ1	AQ2	AQ3	AQ4	AQ5A	AQ5B	AQ5C	AQ6	AQ7	AQ8A
July	Mean	10.6	13.4	12.3	13.7	14.1	11.3	8.9	10.4	10.7	12.7
	Hourly Maximum	43.8	51.0	54.9	62.7	59.2	48.6	18.4	41.8	45.2	49.3
	Second High	37.2	50.8	51.6	57.7	56.7	47.4	18.2	40.8	36.3	48.6
	Maximum 24-hour	19.7	28.4	26.0	28.5	28.1	24.4	13.8	17.7	20.4	25.4
	Second High 24-hour	15.8	20.5	19.9	23.5	21.7	19.8	12.2	17.7	16.2	20.8
August	Mean	10.0	11.9	11.3	12.7	12.5	8.4	8.4	9.5	9.7	11.6
	Hourly Maximum	32.8	36.8	64.0	40.0	89.6	75.5	59.4	28.3	31.7	39.8
	Second High	32.3	34.5	32.7	38.8	36.9	24.6	25.2	27.8	30.3	37.7
	Maximum 24-hour	20.4	23.0	20.5	23.5	23.3	15.4	16.3	19.0	18.7	23.7
	Second High 24-hour	17.7	22.0	20.2	22.2	22.7	14.7	15.7	17.8	18.6	20.8
September	Mean	7.1	8.2	8.0	8.7	8.4	5.7	5.3	6.2	6.7	8.5
	Hourly Maximum	19.5	19.9	52.4	25.9	22.4	20.2	34.1	21.6	18.3	28.3
	Second High	19.5	19.3	37.0	22.7	21.2	17.0	14.6	19.4	18.2	18.8
	Maximum 24-hour	12.4	15.0	13.7	15.5	15.2	9.8	11.2	10.5	12.6	14.4
	Second High 24-hour	10.3	12.6	12.0	12.7	12.4	7.8	8.1	8.8	10.3	12.5

NA – Not available

Figures 1.1 through 1.4 present the MODULAIR PM sampler PM_{10} and $PM_{2.5}$ concentrations compared with the FEM reference PM_{10} and $PM_{2.5}$ samplers at AQ5 and AQ8 for the third quarter 2024. Tables 1-6 and 1-7 present the EPA performance metrics and target values, and the comparison of the collocated data to the EPA performance target values.

Figure 1.1 AQ5A MODULAIR Serial Number MOD384 PM Collocation and Comparison Data for July through September 2024

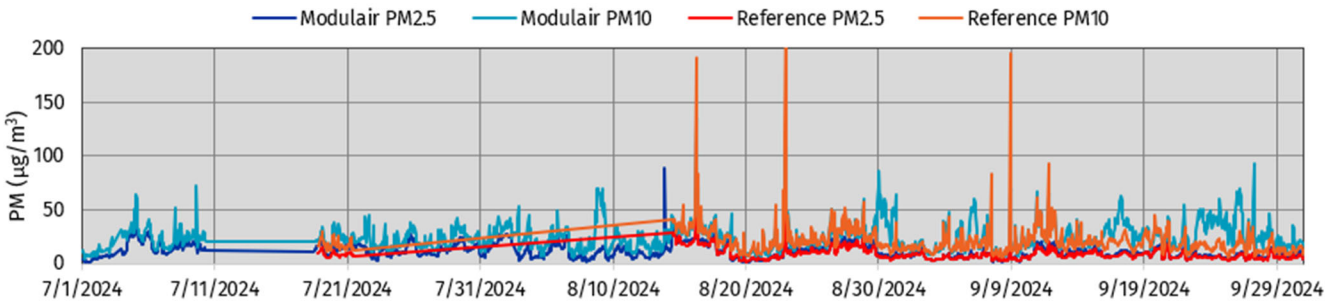


Figure 1.2 AQ5B MODULAIR Serial Number MOD385 PM Collocation and Comparison Data for July through September 2024

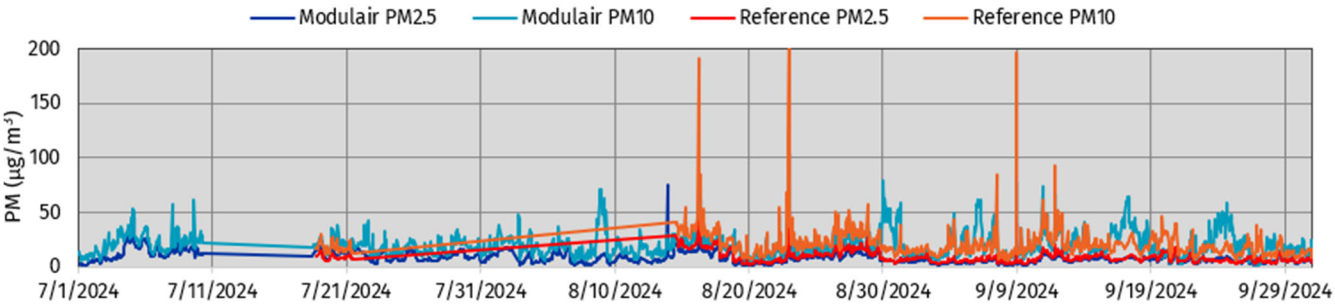


Figure 1.3 AQ5C MODULAIR Serial Number MOD388 PM Collocation and Comparison Data for July through September 2024

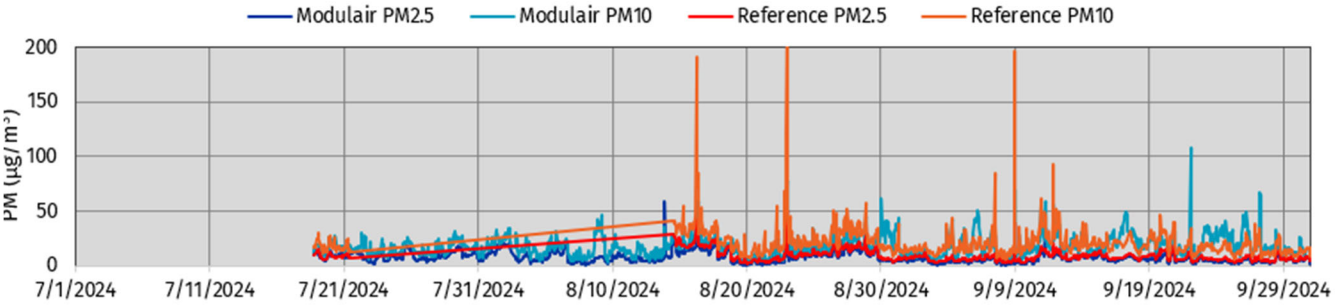


Figure 1.4 AQ8A MODULAIR Serial Number MOD 386 PM Collocation and Comparison Data for July through September 2024

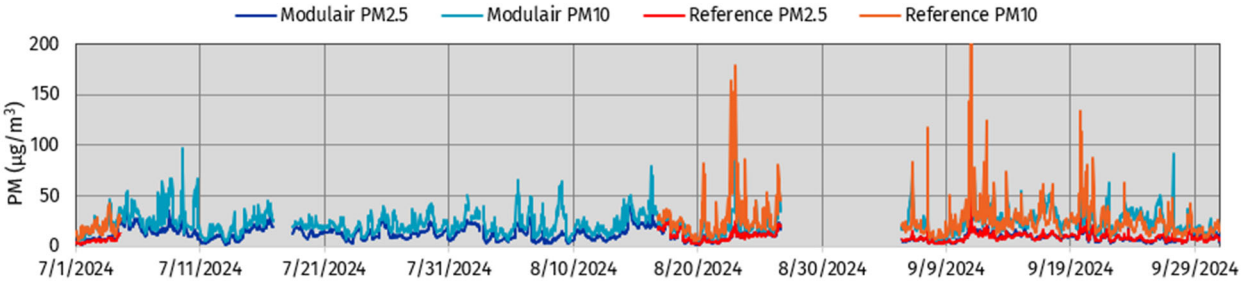


Table 1-6 EPA Recommended Performance Metrics and Target Values for Non-Regulatory PM Monitors

Performance Metric		Target Value
Precision	Standard Deviation	≤5 µg/m³
	CV	≤30%
Bias	Slope (m)	1.0±0.35
	Intercept (b)	-5 ≤ b ≤ 5 µg/m³
Linearity	R^2	≥0.70
Error	RSME	≤7 µg/m³

Table 1-7 AQ5 and AQ8 MODULAIR and FEM Collocation Statistics for Third Quarter 2024

Statistics	AQ5A Modulair 384		AQ5B Modulair 385		AQ5C Modulair 388		AQ8A Modulair 386	
	$PM_{2.5}$	PM_{10}	$PM_{2.5}$	PM_{10}	$PM_{2.5}$	PM_{10}	$PM_{2.5}$	PM_{10}
Correlation Coefficient (r2)	0.875	0.336	0.761	0.237	0.822	0.310	0.829	0.464
Slope (m)	1.053	0.538	0.678	0.451	0.754	0.428	0.856	0.468
Intercept (b)	1.033	14.336	1.197	11.294	0.064	9.635	1.263	10.994
RMSW	9.203	18.158	7.421	17.057	5.378	13.523	9.982	23.121
Precision (CV)	13.810	21.390	18.750	26.060	20.480	22.200	12.900	16.180
Precision (SD)	7.508	14.998	6.954	15.757	5.306	13.313	8.039	21.334

From the AQ5 meteorological tower, the most frequent (and predominant) winds during the third quarter were from the east-southeast followed by the south. The percentage of winds that were calm was 0.0 percent and the percentage of wind speeds that were not calm and less than or equal to 24.2 miles per hour (mph) was 100 percent. Wind speeds measured to be greater than 24.2 mph was 0.0 percent. The peak wind gust for the period was 51.2 mph which occurred on July 16.

The hourly minimum temperature during the monitoring period was 11.5°C on September 1 at 16:00 and the hourly maximum temperature was 37.7°C on July 16 at 17:00. The mean relative humidity and barometric pressure during the third quarter was 71% and 1016.3 millibars, respectively. 13.52 inches of precipitation was measured by the precipitation gauge at the AQ5 meteorological tower.

PM_{10} and $PM_{2.5}$ concentration and meteorological data collected at the CSX monitoring stations have been subjected to a series of quality control procedures to document the validity of the data and increase the integrity of the data sets. Visual inspection of the meteorological tower, sensors, continuous FEM PM_{10}/$PM_{2.5}$ monitors, and network samplers is performed at least every month or more frequently when problems are indicated. The data loggers at the AQ5 and AQ8 meteorological tower and PM_{10}/$PM_{2.5}$ monitoring stations are interrogated every day to download and process the data. PM_{10} and $PM_{2.5}$ concentration from the MODULAIR samplers are downloaded from the QuantAQ Cloud daily. Abnormal conditions are logged and reported immediately to the program manager for corrective action.

Calibrations of the meteorological equipment are performed every six months or whenever a sensor exceeds specified control limits or undergoes major maintenance or repair. The FEM T640X PM_{10}/$PM_{2.5}$ samplers are calibrated by Trinity personnel every three months or when problems are identified. The AQ5 and AQ8 T640X PM_{10}/$PM_{2.}$ samplers were calibrated on September 18, 2024. The meteorological equipment was calibrated on September 18, 2024. No calibrations are performed on the MODULAIR samplers. All calibrations are performed using certified reference standards.

In addition, monthly flow rate, temperature, and pressure checks are performed on the FEM PM_{10} and $PM_{2.5}$ samplers. All flow rate and leak checks are performed using certified flow, temperature, and pressure reference standards.

A software program is utilized to perform a series of quality control (QC) checks of the data. When the QC program identifies values that exceed the criteria set for that parameter, the data file is inspected visually by data management specialists. Data failures or discrepancies that would invalidate an hourly average PM_{10} and/or $PM_{2.5}$ concentration are:

- Loss of more than three five-minute average in a one-hour period,
- Visual evidence, on the stacked parameter/time plots for example, that the 5-minute value is an outlier,
- Data collected during calibrations and audits,
- Equipment malfunction,
- T640 reports a status error,
- Shelter temperature less than 0°C,
- $PM_{2.5}$ and PM_{10} concentrations set to missing,
- PM_{10} less than -5 $\mu g/m^3$, concentrations set to missing, and
- $PM_{2.5}$ less than -10 $\mu g/m^3$, concentrations set to missing.

Data recoveries for the meteorological parameters and AQ5 and AQ8 station PM_{10} and $PM_{2.5}$ data for July 1 through September 30, 2024, in percent possible, are provided in Tables 1-8 and 1-9. Table 1-10 presents the data recovery for the perimeter MODULAIR sampling units.

Table 1-8 AQ5 Station – Meteorological, PM_{10}, and $PM_{2.5}$ Data Recovery in Percent for July 1 through September 30, 2024

Month	Level (m)	Wind Speed (%)	Wind Dir. (%)	Wind Gust (%)	Temp. (%)	Rel. Hum. (%)	Bar. Press. (%)	Prec. (%)	PM_{10} (%)[1]	$PM_{2.5}$ (%)[1]
July	1.5	--	--	--	--	--	100	100	9.3	9.3
	2.0	--	--	--	100	100	--	--		
	10.0	100	100	100	--	--	--	--		
August	1.5	--	--	--	--	--	100	100	56.5	56.5
	2.0	--	--	--	100	100	--	--		
	10.0	100	100	100	--	--	--	--		
September	1.5	--	--	--	--	--	100	100	99.6	99.6
	2.0	--	--	--	99.7	99.7	--	--		
	10.0	99.7	99.7	99.7	--	--	--	--		
Third Quarter 2024	1.5	--	--	--	--	--	100	100	55.1	55.1
	2.0	--	--	--	99.9	99.9	--	--		
	10.0	99.9	99.9	99.9	--	--	--	--		

[1] Data capture rate based on valid sample days.

Table 1-9 AQ8 Station - PM_{10} and $PM_{2.5}$ Measurement Data Recovery in Percent for Third Quarter 2024

Month	PM_{10} (%)[1]	$PM_{2.5}$ (%)[1]
July	11.4	11.4
August	32.0	32.0
September	84.9	84.9
Third Quarter	42.7	42.7

[1] Data capture rate based on valid sample days.

Table 1-10 MODULAIR Perimeter Stations - PM_{10} and $PM_{2.5}$ Measurement Data Recovery in Percent for Third Quarter

Station	July (%)	August (%)	September (%)
AQ1 PM_{10}	98.5	98.0	92.6
AQ1 $PM_{2.5}$	98.7	98.1	93.1
AQ2 PM_{10}	90.3	96.8	88.9
AQ2 $PM_{2.5}$	90.6	96.8	89.0
AQ3 PM_{10}	97.0	96.0	90.8
AQ3 $PM_{2.5}$	97.2	96.4	91.1
AQ4 PM_{10}	97.0	95.7	93.8
AQ4 $PM_{2.5}$	97.2	96.6	94.3
AQ5A PM_{10}	70.2	97.6	99.9
AQ5A $PM_{2.5}$	70.2	97.8	100.0
AQ5B PM_{10}	73.8	97.2	99.7
AQ5B $PM_{2.5}$	73.8	97.7	100.0
AQ5C PM_{10}	42.9	95.4	100.0
AQ5C $PM_{2.5}$	42.9	96.1	100.0
AQ6 PM_{10}	93.5	96.1	88.2
AQ6 $PM_{2.5}$	93.5	96.1	88.2
AQ7 PM_{10}	88.8	99.2	89.4
AQ7 $PM_{2.5}$	89.0	99.2	89.4
AQ8A PM_{10}	95.0	81.3	85.3
AQ8A $PM_{2.5}$	95.0	81.7	85.4

2.0 INTRODUCTION

This report, prepared for CSX Transportation, Inc. (CSX) by Trinity Consultants summarizes the third quarter 2024 (July 1 through September 30) meteorological, federal equivalent method (FEM) continuous particulate matter with a diameter of 10 microns or less (PM_{10}) and particulate matter with a diameter of 2.5 microns or smaller ($PM_{2.5}$), being collected at two monitoring stations, identified as AQ5 and AQ8, operated at the Curtis Bay Piers Facility. In addition, a network of eight (8) non-regulatory PM_{10} and $PM_{2.5}$ monitors are being operated along the perimeter of the CSX Curtis Bay Piers facility and these data are presented in this report. The CSX Curtis Bay Piers is a dry material storage, transfer, and shipment terminal located at 1910 Benhill Avenue, in Baltimore, Maryland.

2.1 Background

CSXT, Curtis Bay Piers operates a coal, ore, limestone, and other dry material storage, transfer, and shipment terminal (Curtis Bay Piers Facility) pursuant to State Permit to Operate No. 510-2263. To meet the requirements of the Permit to Construct 510-2263 issued on September 7, 2022, CSXT was required to submit a fenceline monitoring plan to the MDE describing the installation, operation, and maintenance of a network of PM_{10} and $PM_{2.5}$ monitors and a weather station. Per the Permit to Construct, CSX is required to install one FEM monitor to measure both PM_{10} and $PM_{2.5}$, install multiple sensors capable of measuring PM_{10} and $PM_{2.5}$, and operate a 10-meter meteorological tower that meets current U.S. EPA protocols and guidance. Meteorological measurements from a 10-meter tower consist of wind speed and wind direction at 10-meters, temperature at two-meters, relative humidity at two-meters, barometric pressure at 5 feet, and precipitation at 4 feet.

PM_{10}, $PM_{2.5}$, and meteorological data collection officially began at the CSX monitoring sites on March 24, 2023 at 01:00 Eastern Standard Time (EST). Table 2-1 summarizes the parameters collected at the monitoring sites and the units for each parameter.

Table 2-1 Measured Meteorological and Air Quality Parameters

Parameter	Units
Wind Speed	meters per second (m/s)
Wind Direction	degrees from true north (°)
Temperature	degrees Celsius (°C)
Relative Humidity	percent (%)
Barometric Pressure	millibars (mb)
Precipitation	inches (in)
Continuous PM_{10}	micrograms per cubic meter ($\mu g/m^3$)
Continuous $PM_{2.5}$	micrograms per cubic meter ($\mu g/m^3$)
Time	Eastern Standard Time (EST)

The latitude and longitude coordinates of the monitoring stations are presented in Table 2-2.

Table 2-2 Location of CSX Curtis Bay Piers Facility Monitoring Stations

Site ID	Latitude (Decimal degrees)	Longitude (Decimal degrees)
AQ1	39.22169	-76.58194
AQ2	39.22169	-76.58455
AQ3	39.22710	-76.58483
AQ4	39.22968	-76.58538
AQ5	39.22773	-76.58096
AQ6	39.22485	-76.58015
AQ7	39.22147	-76.57630
AQ8	39.22320	-76.58400
Meteorological Tower (at AQ5)	39.22773	-76.58096

Figure 2.1 presents a Google Earth image showing the location of CSX monitoring stations. Photographs of the AQ5 and AQ8 monitoring stations, where the FEM PM_{10}/$PM_{2.5}$ monitors are located, are presented as Figures 2.2 and 2.3.

Figure 2.1 Google Earth Image Showing Location of CSX Monitoring Stations



Figure 2.2 Photograph of CSX AQ5 PM and Meteorological Monitoring Station



Figure 2.3 Photograph of CSX AQ8 PM Monitoring Station



2.2 Meteorological and Particulate Instrumentation

The meteorological parameters provide information on the local meteorology and particulate concentrations at the Curtis Bay Piers Facility. The objective of the particulate and meteorological monitoring is to obtain representative particulate and meteorological information for the Curtis Bay Piers Facility that may be used for informational purposes, including community awareness and comparison with regional air quality. Table 2-3 presents a list of meteorological and PM equipment at the CSX Curtis Bay Piers Facility monitoring stations.

Table 2-3 Particulate and Meteorological Instrumentation at CSX Monitoring Stations

Station	Parameter	Equipment Manufacturer	Model Number	Serial Number
AQ1	PM_{10}, $PM_{2.5}$	QuantAQ MODULAIR Aeroqual	MODULAIR-PM	MOD264 21092023-2432
AQ2	PM_{10}, $PM_{2.5}$	QuantAQ MODULAIR	MODULAIR-PM	MOD387
AQ3	PM_{10}, $PM_{2.5}$	QuantAQ MODULAIR	MODULAIR-PM	MOD266
AQ4	PM_{10}, $PM_{2.5}$	QuantAQ MODULAIR	MODULAIR-PM	MOD383
AQ5	PM_{10}, $PM_{2.5}$	Teledyne-API	T640X	1690/CSX5
	Wind Direction	Met One	020D	C21028
	Wind Speed	Met One	010C	C21557
	Temperature	Campbell Scientific Inc.	HygroVUE10	E4240
	Relative Humidity	Campbell Scientific Inc.	HygroVUE10	E4240
	Barometric Pressure	Campbell Scientific Inc.	BaroVUE10	1808
	Precipitation	Texas Electronics	TR-525U	93490-1222
	Data Aq. System	Campbell Scientific Inc.	CR1000X	45777
AQ5A	PM_{10}, $PM_{2.5}$	QuantAQ MODULAIR	MODULAIR-PM	MOD384
AQ5B	PM_{10}, $PM_{2.5}$	QuantAQ MODULAIR	MODULAIR-PM	MOD385
AQ5C	PM_{10}, $PM_{2.5}$	QuantAQ MODULAIR Aeroqual	MODULAIR-PM	MOD388 15062020-1263
AQ6	PM_{10}, $PM_{2.5}$	QuantAQ MODULAIR	MODULAIR-PM	MOD267
AQ7	PM_{10}, $PM_{2.5}$	QuantAQ MODULAIR	MODULAIR-PM	MOD265
AQ8	PM_{10}, $PM_{2.5}$	Teledyne-API	T640X	1689/CSX8
	Data Aq. System	Campbell Scientific Inc.	CR310	16073
AQ8A	PM_{10}, $PM_{2.5}$	QuantAQ MODULAIR	MODULAIR-PM	MOD386

2.3 Data Acquisition

Campbell Scientific Inc. (CSI) CR1000x data acquisition systems (DASs) are used to store data from the 10-meter tower meteorological sensors and continuous Teledyne-API (T-API) T640X FEM PM_{10}/$PM_{2.5}$ monitors. Tower meteorological data are sampled every second and recorded as five-minute averages on the data logger. T640X particulate data are stored as five-minute and hourly averages. An hourly average is computed from at least nine five-minute averages that are available for the hour. Data from the QuantAQ MODULAIR samplers are sampled every minute and stored on internal data loggers that send data to a cloud server.

Each CSI CR1000x DAS has the capability of being polled locally through an RS232 connector or remotely via modem. An on-site display allows users to view current values of the parameters being measured.

The CSI CR1000x DASs are interrogated by Trinity daily via a static IP address and the data are copied to duplicate computer files. Each data logger's telecommunications software performs dynamic error checking during download to ensure that an exact duplicate file is created. Any failures in instrumentation or data acquisition are identified daily so that field personnel can correct problems in a timely manner to prevent excessive data loss. The data collected during each interrogation are checked for consistency and the parameters are plotted for visual inspection.

The MODULAIR produces data which are saved to the onboard µSD card every minute. These values are averaged and pushed to the cloud where they are available on the QuantAQ Cloud for retrieval. Data from the MODULAIR are obtained from the QuantAQ Cloud daily.

The quality assurance stacked parameter/time plots for the third quarter (July through September) 2024 are presented in Appendix A. Data presented in Appendix A represent the final, quality assured data set. Hourly values provided are computed by the data logger. If fewer than 45 minutes are available, the hour is considered "missing".

3.0 METEOROLOGICAL TOWER AND FEDERAL EQUIVALENT METHOD CONTINUOUS PARTICULATE DATA SUMMARY

This section of the report summarizes the data results and data recovery for the third quarter 2024 (July 1 through September 30). Hourly data for the period are tabulated in the appendices. These appendix tables display the hourly average of measurements recorded in the hour "ending"; that is, the first hour of the day is labeled 01, meaning the hour beginning at 00:00:01 and ending at 01:00:00 a.m. The second hour is labeled 02, meaning the values collected from 01:00:01 a.m. to 02:00:00 a.m.

3.1 Meteorological Data

Meteorological data records from the CSX Curtis Bay Piers Facility meteorological monitoring station consists of wind speed and wind direction at 10-meters, temperature at two-meters, relative humidity at two-meters, barometric pressure at 5 feet, and precipitation at 4 feet.

3.1.1 Wind Direction and Horizontal Wind Speed

The most frequent (and predominant) winds during the third quarter at the 10-meter level were from the east-southeast followed by the south. Reported wind directions represent the directions from which the wind is blowing.

For the third quarter 2024, the percentage of winds that were calm was 0.0 percent at the 10-meter level. The percentage of wind speeds that were not calm and less than or equal to 10.8 meters per second (m/s), which translates to 24.2 mph was 100 percent at the 10-meter level. For the quarter, the percentage of winds greater than 10.8 m/s was 0.0 percent at the 10-meter level.

The sector with the highest average wind speed for the quarter at the 10-meter level was from the east-southeast at 3.9 m/s (8.7 mph).

Figures 3.1 through 3.3 provide diagrams of the joint frequency of occurrence distributions (wind rose) of wind speed and wind direction by month for the period for the 10-meter level. Figure 3.4 presents the third quarter 10-meter level wind rose. Summary tables of hourly average wind direction and wind speed for the 10-meter level for the third quarter are presented in Appendix B.

Figure 3.1 10-Meter Level Wind Rose, July 2024.

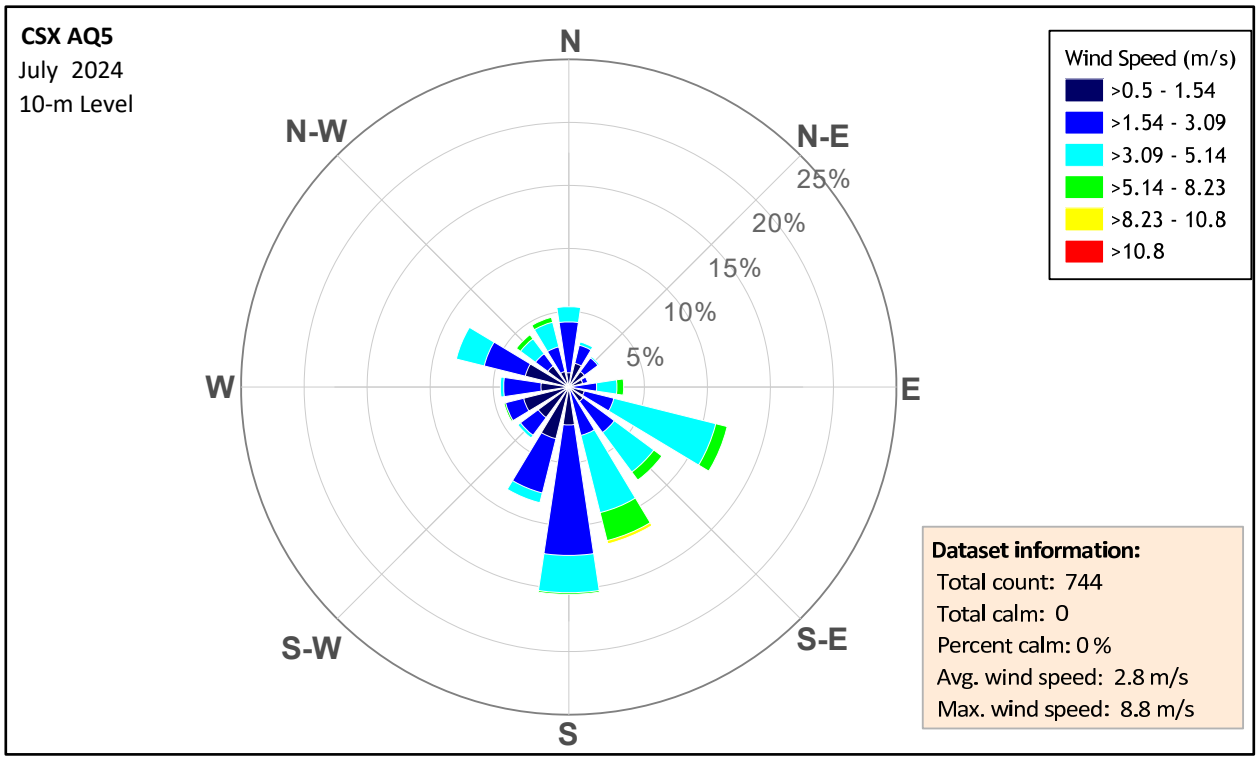


Figure 3.2 10-Meter Level Wind Rose, August 2024.

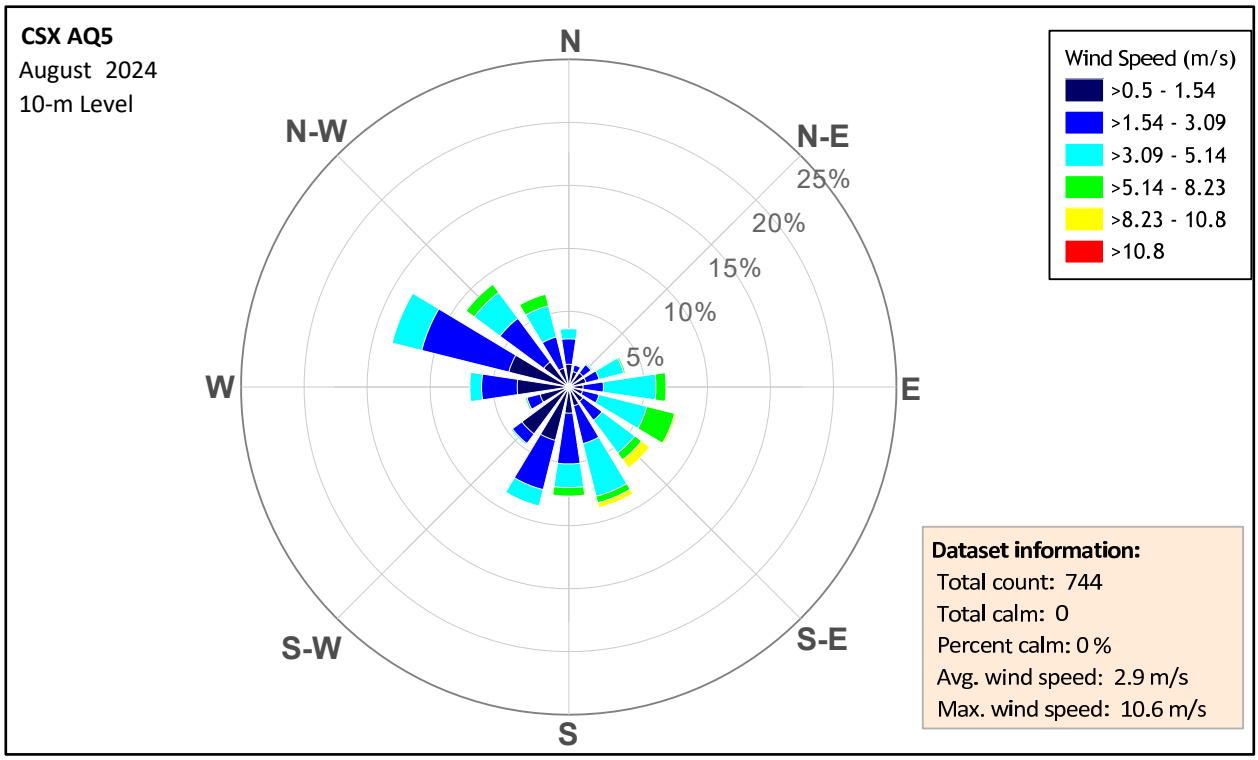


Figure 3.3 10-Meter Level Wind Rose, September 2024.

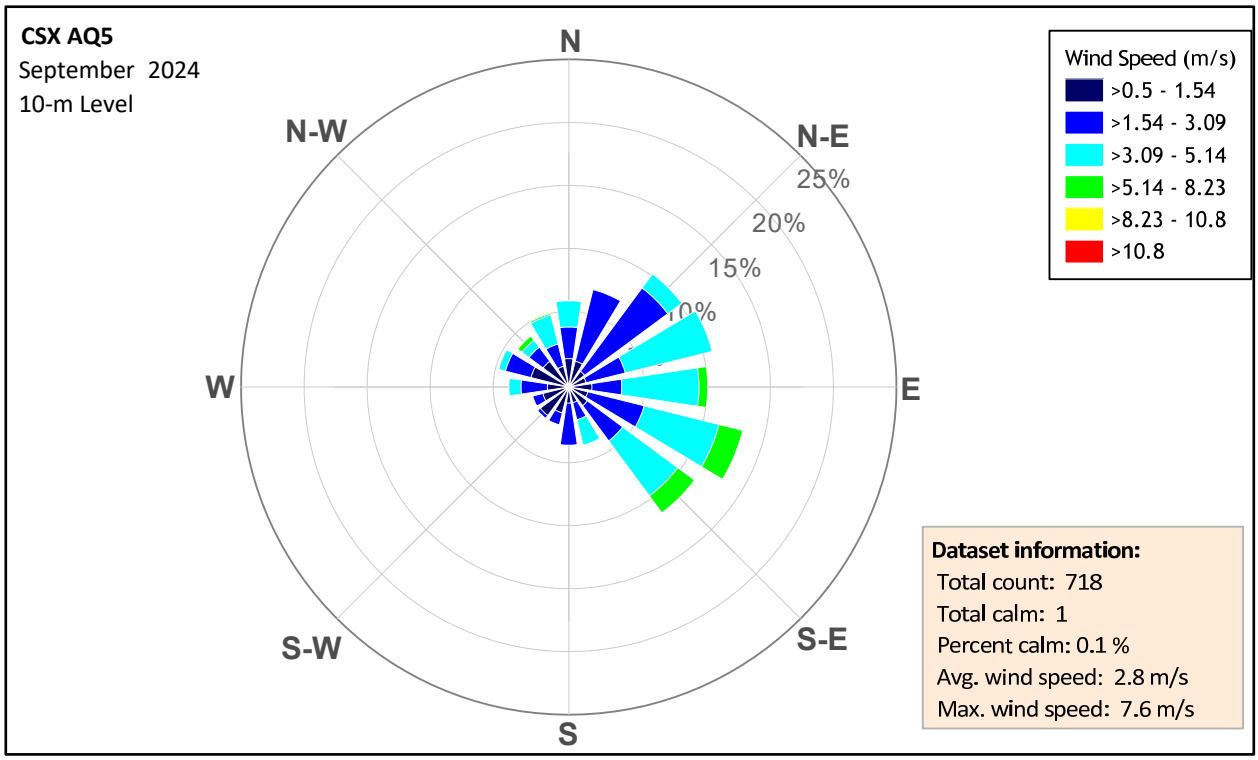
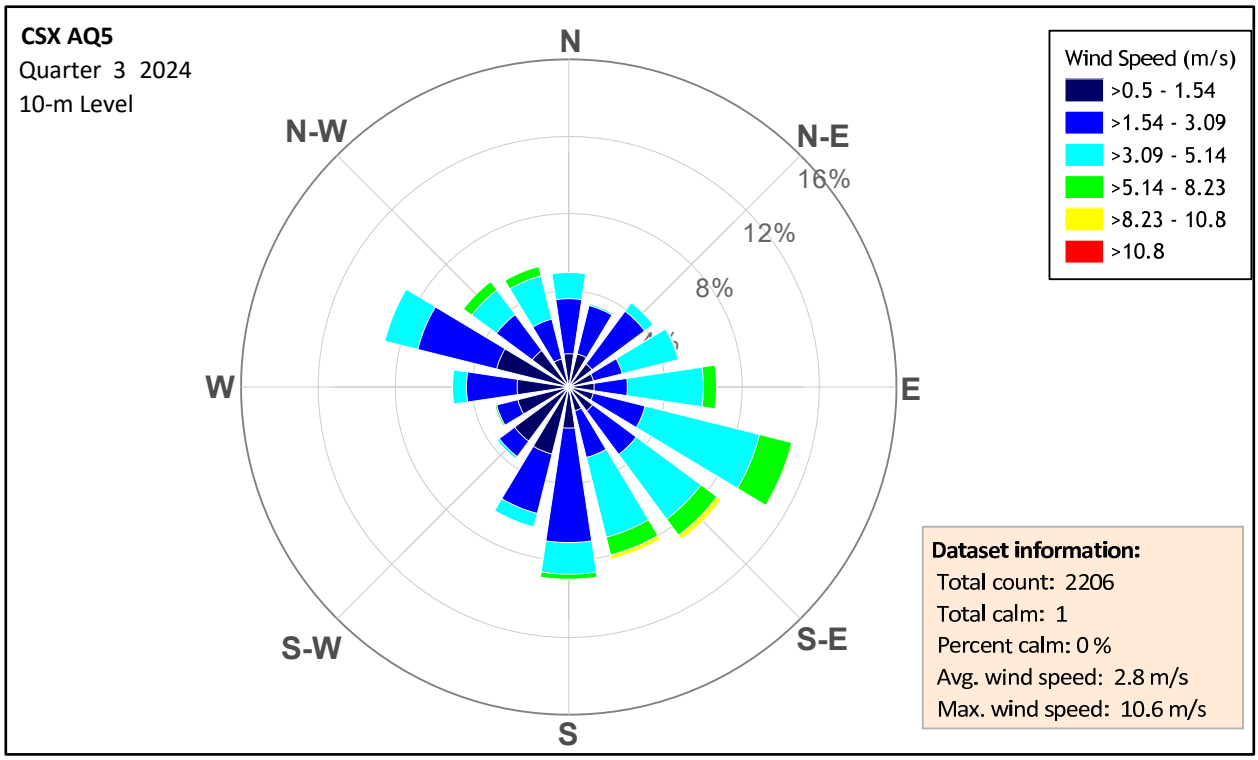


Figure 3.4 10-Meter Level Wind Rose, Third Quarter 2024.



3.1.2 Wind Gust

At the 10-meter level, the peak wind gust during the period was 22.9 m/s (51.2 mph) which occurred on July 16 at 21:00. Wind gust information is presented in Table 3-1 and in Appendix B.

Table 3-1 Wind Gust Summary in Meters per Second for Third Quarter 2024

Month	Monthly Mean (m/s)	Maximum Hour (m/s)	Minimum Hour (m/s)
July	5.4	22.9	1.0
August	5.5	18.5	1.0
September	5.3	12.9	1.0

3.1.3 Temperature

The temperature is measured at the 2-meter level. The ambient daily mean temperatures for the third quarter 2024 ranged from a low of 17.2 degrees centigrade (°C) in September to a high of 31.5°C in July. The hourly minimum temperature was 11.5°C on September 9 at 06:00; the hourly maximum temperature was 37.7°C on July 16 at 17:00. Hourly temperature data for the third quarter 2024 are presented in Appendix C. Temperature data for the period are summarized in Table 3-2.

Table 3-2 Summary of Temperature in Degrees Centigrade (°C) for Third Quarter 2024

Month	Monthly Mean (°C)	Maximum Daily Mean (°C)	Minimum Daily Mean (°C)	Maximum Hour (°C)	Minimum Hour (°C)
July	27.1	31.5	22.5	37.7	18.6
August	24.9	29.6	19.3	36.5	14.1
September	21.4	25.6	17.2	30.4	11.5

3.1.4 Relative Humidity

Table 3-3 presents the monthly means, maximum and minimum relative humidity information for the third quarter 2024. Relative humidity data are presented in Appendix D.

Table 3-3 Summary of Relative Humidity in Percent for Third Quarter 2024

Month	Monthly Mean (%)	Maximum Daily Mean (%)	Minimum Daily Mean (%)	Maximum Hour (%)	Minimum Hour (%)
July	69	86	52	95	37
August	71	91	54	95	36
September	74	96	48	98	27

3.1.5 Barometric Pressure

Barometric pressure data for the third quarter 2024 are presented in Table 3-4 and in Appendix E.

Table 3-4 Barometric Pressure Data in Millibars (mb) for Third Quarter 2024

Month	Monthly Mean (mb)	Maximum Daily Mean (mb)	Minimum Daily Mean (mb)	Maximum Hour (mb)	Minimum Hour (mb)
July	1015	1023	1009	1024	1006
August	1016	1025	1007	1027	1005
September	1018	1029	1010	1031	1009

3.1.6 Precipitation

For the third quarter 2024, 13.52 inches of precipitation were measured at the site. The precipitation data are summarized in Table 3-5 and are presented in Appendix F.

Table 3-5 Summary of Precipitation in Inches for Third Quarter 2024

Month	Monthly Total (in.)	Maximum Daily Total (in.)	Maximum Hourly Total (in.)
July	4.10	1.78	1.19
August	5.88	2.50	1.73
September	3.54	1.81	1.59

3.2 Particulate Data

PM_{10} and $PM_{2.5}$ data are measured at the AQ5 and AQ8 monitoring stations using continuous T-API Model T640X samplers. The T-API Model T640X samplers have Federal Equivalent Method (FEM) certifications of EQPM-0516-239 for PM_{10} and EQPM-0516-238 for $PM_{2.5}$.

3.2.1 AQ5 – PM_{10}

Hourly and 24-hour average PM_{10} concentrations collected at the AQ5 station during the third quarter 2024 are presented in Table 3-6. The ten highest 24-hour average PM_{10} concentrations for the 2024 monitoring year at the AQ5 monitoring station are presented in Table 3-7. Third quarter AQ5 station PM_{10} data are summarized in Appendix G.

Table 3-6 AQ5 PM_{10} Concentrations Third Quarter 2024 in Micrograms per Cubic Meter

AQ5 Statistics	July ($\mu g/m^3$)	August ($\mu g/m^3$)	September ($\mu g/m^3$)	Third Quarter 2024 ($\mu g/m^3$)
Monthly Mean	17.5	25.8	18.6	20.6
Maximum Hourly PM_{10}	30.2	246.5	196.1	246.5
Second Highest Hourly PM_{10}	27.6	191.4	93.1	191.4
Maximum 24-hour PM_{10}	18.7	50.3	33.0	50.3
Second Highest 24-hour PM_{10}	16.2	37.7	26.8	37.7

Table 3-7 AQ5 Station Ten Highest 24-Hour Average PM_{10} Concentrations in Micrograms per Cubic Meter for 2024 Monitoring Year

Number	24-hour Concentration (µg/m³)	Date of Occurrence
1	57.8	03/14/2024
2	55.8	02/10/2024
3	50.3	08/16/2024
4	43.6	02/07/2024
5	42.4	01/24/2024
6	41.8	03/20/2024
7	40.5	01/18/2024
8	38.4	01/25/2024
9	37.7	08/22/2024
10	36.5	04/10/2024

3.2.2 AQ5 – $PM_{2.5}$

Hourly and 24-hour average $PM_{2.5}$ concentrations collected at the AQ5 station during the third quarter 2024 are presented in Table 3-8. The ten highest 24-hour average $PM_{2.5}$ concentrations for the 2024 monitoring year at the AQ5 monitoring station are presented in Table 3-9. Third quarter AQ5 station $PM_{2.5}$ data are summarized in Appendix G.

Table 3-8 AQ5 $PM_{2.5}$ Concentrations Third Quarter 2024 in Micrograms per Cubic Meter

AQ5 Statistics	July (µg/m³)	August (µg/m³)	September (µg/m³)	Third Quarter 2024 (µg/m³)
Monthly Mean	8.8	11.8	7.2	9.3
Maximum Hourly $PM_{2.5}$	14.8	50.1	39.5	50.1
Second Highest Hourly $PM_{2.5}$	14.5	42.4	20.2	42.4
Maximum 24-hour $PM_{2.5}$	8.5	21.6	12.0	21.6
Second Highest 24-hour $PM_{2.5}$	8.1	18.5	10.8	18.5

Table 3-9 AQ5 Station Ten Highest 24-Hour Average $PM_{2.5}$ Concentrations in Micrograms per Cubic Meter for 2024 Monitoring Year

Number	24-hour Concentration ($\mu g/m^3$)	Date of Occurrence
1	29.1	02/10/2024
2	28.2	01/24/2024
3	26.5	01/25/2024
4	21.6	08/16/2024
5	21.2	01/23/2024
6	19.7	02/27/2024
7	18.5	08/15/2024
8	18.2	02/23/2024
9	18.2	08/17/2024
10	17.9	03/14/2024

3.2.3 AQ8 – PM_{10}

Hourly and 24-hour average PM_{10} concentrations for the third quarter 2024 are presented in Table 3-10 for the AQ8 monitoring station. The ten highest 24-hour average PM_{10} concentrations at the AQ8 station for the 2024 monitoring year are presented in Table 3-11. The third quarter AQ8 station PM_{10} data are summarized in Appendix H.

Table 3-10 AQ8 Station PM_{10} Concentration for Third Quarter 2024 in Micrograms per Cubic Meter

AQ8 Statistics	July ($\mu g/m^3$)	August ($\mu g/m^3$)	September ($\mu g/m^3$)	Third Quarter 2024 ($\mu g/m^3$)
Monthly Mean	17.8	29.2	26.0	24.3
Maximum Hourly PM_{10}	42.7	178.6	565.9	565.9
Second Highest Hourly PM_{10}	40.1	164.0	142.7	164.0
Maximum 24-hour PM_{10}	22.2	58.8	58.8	58.8
Second Highest 24-hour PM_{10}	17.9	47.6	42.1	47.6

NA -Not available.

Table 3-11 AQ8 Station Ten Highest 24-Hour Average PM_{10} Concentrations in Micrograms per Cubic Meter for 2024 Monitoring Year

Number	24-hour Concentration ($\mu g/m^3$)	Date of Occurrence
1	80.5	03/14/2024
2	58.8	08/22/2024
3	58.7	09/10/2024
4	57.5	02/10/2024
5	55.4	03/13/2024
6	51.0	02/07/2024
7	47.5	08/23/2024
8	47.4	02/08/2024
9	42.7	01/25/2024
10	42.1	09/11/2024

3.2.4 AQ8 – $PM_{2.5}$

Hourly and 24-hour average $PM_{2.5}$ concentrations for the third quarter 2024 are presented in Table 3-12 for the AQ8 monitoring station. The ten highest 24-hour average $PM_{2.5}$ concentrations at the AQ8 station for the 2024 monitoring year are presented in Table 3-13. The third quarter AQ8 station $PM_{2.5}$ data are summarized in Appendix H.

Table 3-12 AQ8 Station $PM_{2.5}$ Concentration for Third Quarter 2024 in Micrograms per Cubic Meter

AQ8 Statistics	July ($\mu g/m^3$)	August ($\mu g/m^3$)	September ($\mu g/m^3$)	Third Quarter 2024 ($\mu g/m^3$)
Monthly Mean	5.5	10.2	8.7	8.1
Maximum Hourly $PM_{2.5}$	12.8	24.6	60.3	60.3
Second Highest Hourly $PM_{2.5}$	12.4	24.2	27.8	27.8
Maximum 24-hour $PM_{2.5}$	6.2	18.2	14.1	18.2
Second Highest 24-hour $PM_{2.5}$	5.5	12.0	13.4	13.4

NA – Not available.

Table 3-13 AQ8 Station Ten Highest 24-Hour Average $PM_{2.5}$ Concentrations in Micrograms per Cubic Meter for 2024 Monitoring Year

Number	24-hour Concentration ($\mu g/m^3$)	Date of Occurrence
1	28.0	01/25/2024
2	26.3	02/10/2024
3	24.9	01/24/2024
4	18.6	01/23/2024
5	18.2	03/14/2024
6	18.2	08/17/2024
7	16.9	02/27/2024
8	16.7	02/12/2024
9	16.3	04/10/2024
10	16.1	02/23/2024

3.3 Data Recovery

Data recoveries for the meteorological parameters and AQ5 and AQ8 station PM_{10} and $PM_{2.5}$ data for the third quarter 2024 in percent possible are provided in Tables 3-14 and 3-15.

Table 3-14 AQ5 Station – Meteorological, PM_{10}, and $PM_{2.5}$ Measurement Data Recovery in Percent for Third Quarter 2024

Month	Level (m)	Wind Speed (%)	Wind Dir. (%)	Wind Gust (%)	Temp. (%)	Rel. Hum. (%)	Bar. Press. (%)	Prec. (%)	PM_{10} (%)[1]	$PM_{2.5}$ (%)[1]
July	1.5	--	--	--	--	--	100	100	9.3	9.3
	2.0	--	--	--	100	100	--	--		
	10.0	100	100	100	--	--	--	--		
August	1.5	--	--	--	--	--	100	100	56.5	56.5
	2.0	--	--	--	100	100	--	--		
	10.0	100	100	100	--	--	--	--		
September	1.5	--	--	--	--	--	100	100	99.6	99.6
	2.0	--	--	--	99.7	99.7	--	--		
	10.0	99.7	99.7	99.7	--	--	--	--		
Third Quarter 2024	1.5	--	--	--	--	--	100	100	55.1	55.1
	2.0	--	--	--	99.9	99.9	--	--		
	10.0	99.9	99.9	99.9	--	--	--	--		

[1] Data capture rate based on valid sample days.

Table 3-15 AQ8 Station - PM_{10} and $PM_{2.5}$ Measurement Data Recovery in Percent for Third Quarter 2024

Month	PM_{10} (%)[1]	$PM_{2.5}$ (%)[1]
July	11.4	11.4
August	32.0	32.0
September	84.9	84.9
Third Quarter	42.7	42.7

[1] Data capture rate based on valid sample days.

4.0 PM_{10} AND $PM_{2.5}$ PERIMETER NETWORK MONITORING

At eight locations around the perimeter of the at the Curtis Bay Piers Facility, QuantAQ MODULAIR non-regulatory, community based $PM_{10}/PM_{2.5}$ samplers are operated. Three (3) MODULAIR samplers are being operated at AQ5 and one (1) MODULAIR sampler is operated at AQ8. These samplers are operated to give an indication of the $PM_{10}/PM_{2.5}$ at each network location and to show $PM_{10}/PM_{2.5}$ trends. These data are not intended to be used for compliance with the National Ambient Air Quality Standards (NAAQS). Summaries of the third quarter 2024 MODULAIR PM_{10} and $PM_{2.5}$ data, in micrograms per cubic meter, are presented in Tables 4-1 and 4-2.

Table 4-1 Third Quarter 2024 MODULAIR PM_{10} Data in Micrograms per Cubic Meter

Month	Statistic	Station									
		AQ1	AQ2	AQ3	AQ4	AQ5A	AQ5B	AQ5C	AQ6	AQ7	AQ8A
July	Mean	18.8	21.7	22.5	23.1	22.3	19.6	15.5	16.9	13.3	22.1
	Hourly Maximum	59.0	61.1	81.6	67.0	72.0	61.9	31.5	78.1	45.7	97.2
	Second High	55.9	61.0	75.0	65.9	64.1	57.4	30.3	48.5	44.3	74.8
	Maximum 24-hour	28.1	36.5	34.3	34.8	33.6	31.4	23.2	31.9	23.1	40.3
	Second High 24-hour	27.0	35.5	31.2	33.9	31.4	30.6	18.0	26.2	21.6	35.4
August	Mean	22.0	24.3	26.0	26.5	25.0	20.2	17.2	17.6	11.9	21.8
	Hourly Maximum	80.8	110.4	98.8	103.4	136.0	103.3	77.7	90.3	51.4	124.3
	Second High	79.3	94.4	95.3	97.0	108.4	79.5	61.1	52.1	45.8	79.6
	Maximum 24-hour	37.8	42.0	50.2	42.6	45.1	41.1	29.7	27.5	21.5	38.0
	Second High 24-hour	35.8	41.9	40.1	40.3	41.6	30.3	26.9	27.1	20.9	34.9
September	Mean	25.7	26.2	29.6	27.0	25.3	20.1	18.8	16.2	9.6	24.8
	Hourly Maximum	106.8	123.9	169.1	106.5	93.5	78.2	108.6	120.4	41.2	92.1
	Second High	91.8	106.9	128.4	76.8	70.2	73.7	69.6	90.5	37.0	84.3
	Maximum 24-hour	42.8	55.6	54.8	46.6	43.6	44.4	35.0	27.8	16.5	40.1
	Second High 24-hour	41.9	41.5	48.3	44.8	41.7	42.2	29.1	21.8	14.8	36.9

Table 4-2 Third Quarter 2024 MODULAIR $PM_{2.5}$ Data in Micrograms per Cubic Meter

Month	Statistic	Station									
		AQ1	AQ2	AQ3	AQ4	AQ5A	AQ5B	AQ5C	AQ6	AQ7	AQ8A
July	Mean	10.6	13.4	12.3	13.7	14.1	11.3	8.9	10.4	10.7	12.7
	Hourly Maximum	43.8	51.0	54.9	62.7	59.2	48.6	18.4	41.8	45.2	49.3
	Second High	37.2	50.8	51.6	57.7	56.7	47.4	18.2	40.8	36.3	48.6
	Maximum 24-hour	19.7	28.4	26.0	28.5	28.1	24.4	13.8	17.7	20.4	25.4
	Second High 24-hour	15.8	20.5	19.9	23.5	21.7	19.8	12.2	17.7	16.2	20.8
August	Mean	10.0	11.9	11.3	12.7	12.5	8.4	8.4	9.5	9.7	11.6
	Hourly Maximum	32.8	36.8	64.0	40.0	89.6	75.5	59.4	28.3	31.7	39.8
	Second High	32.3	34.5	32.7	38.8	36.9	24.6	25.2	27.8	30.3	37.7
	Maximum 24-hour	20.4	23.0	20.5	23.5	23.3	15.4	16.3	19.0	18.7	23.7
	Second High 24-hour	17.7	22.0	20.2	22.2	22.7	14.7	15.7	17.8	18.6	20.8
September	Mean	7.1	8.2	8.0	8.7	8.4	5.7	5.3	6.2	6.7	8.5
	Hourly Maximum	19.5	19.9	52.4	25.9	22.4	20.2	34.1	21.6	18.3	28.3
	Second High	19.5	19.3	37.0	22.7	21.2	17.0	14.6	19.4	18.2	18.8
	Maximum 24-hour	12.4	15.0	13.7	15.5	15.2	9.8	11.2	10.5	12.6	14.4
	Second High 24-hour	10.3	12.6	12.0	12.7	12.4	7.8	8.1	8.8	10.3	12.5

4.1 Data Recovery

Data recoveries for the MODULAIR PM_{10} and $PM_{2.5}$ sampler data for the third quarter 2024 in percent possible are provided in Table 4-3.

Table 4-3 Third Quarter 2024 MODULAIR PM_{10} and $PM_{2.5}$ Data Recovery in Percent

Station	July (%)	August (%)	September (%)
AQ1 PM_{10}	98.5	98.0	92.6
AQ1 $PM_{2.5}$	98.7	98.1	93.1
AQ2 PM_{10}	90.3	96.8	88.9
AQ2 $PM_{2.5}$	90.6	96.8	89.0
AQ3 PM_{10}	97.0	96.0	90.8
AQ3 $PM_{2.5}$	97.2	96.4	91.1
AQ4 PM_{10}	97.0	95.7	93.8
AQ4 $PM_{2.5}$	97.2	96.6	94.3
AQ5A PM_{10}	70.2	97.6	99.9
AQ5A $PM_{2.5}$	70.2	97.8	100.0
AQ5B PM_{10}	73.8	97.2	99.7
AQ5B $PM_{2.5}$	73.8	97.7	100.0
AQ5C PM_{10}	42.9	95.4	100.0
AQ5C $PM_{2.5}$	42.9	96.1	100.0
AQ6 PM_{10}	93.5	96.1	88.2
AQ6 $PM_{2.5}$	93.5	96.1	88.2
AQ7 PM_{10}	88.8	99.2	89.4
AQ7 $PM_{2.5}$	89.0	99.2	89.4
AQ8A PM_{10}	95.0	81.3	85.3
AQ8A $PM_{2.5}$	95.0	81.7	85.4

4.2 MODULAIR Sampler PM_{10} and $PM_{2.5}$ Concentration Comparison with FEM reference PM_{10} and $PM_{2.5}$ Samplers

Figures 4.1 through 4.4 present the perimeter network MODULAIR sampler PM_{10} and $PM_{2.5}$ concentrations compared with the FEM reference PM_{10} and $PM_{2.5}$ samplers at AQ5 and AQ8 for the third quarter 2024. QuantAQ MODULAIR hourly sampler data, and network collocation and comparison data are presented in Appendix I.

Figure 4.1 AQ5A MODULAIR Serial Number MOD384 PM Collocation and Comparison Data for July through September 2024

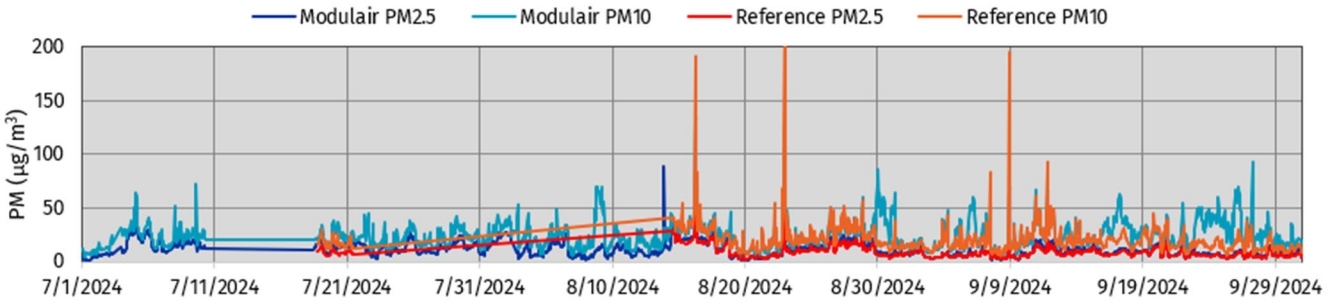


Figure 4.2 AQ5B MODULAIR Serial Number MOD385 PM Collocation and Comparison Data for July through September 2024

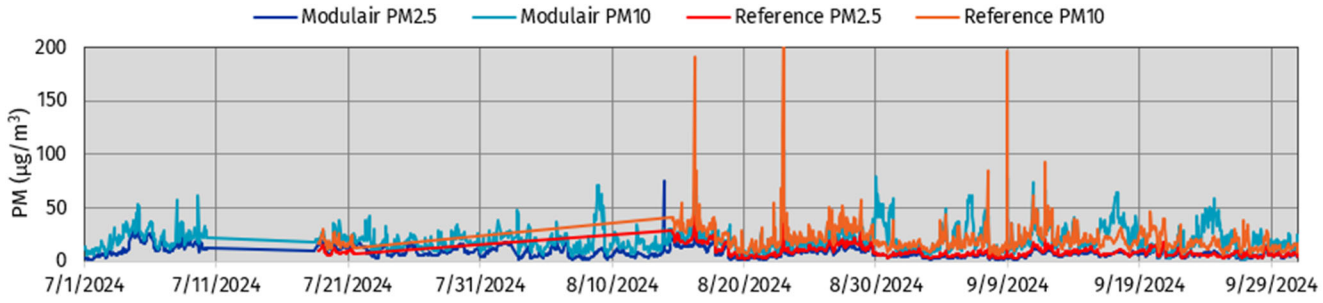


Figure 4.3 AQ5C MODULAIR Serial Number MOD388 PM Collocation and Comparison Data for July through September 2024

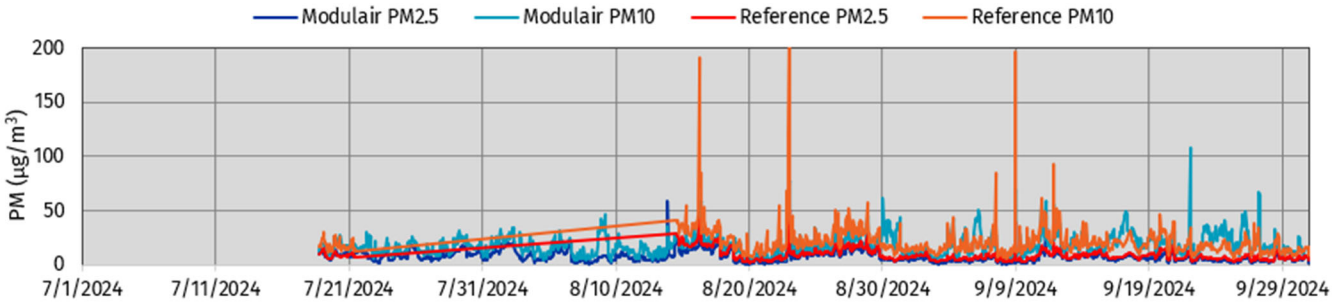
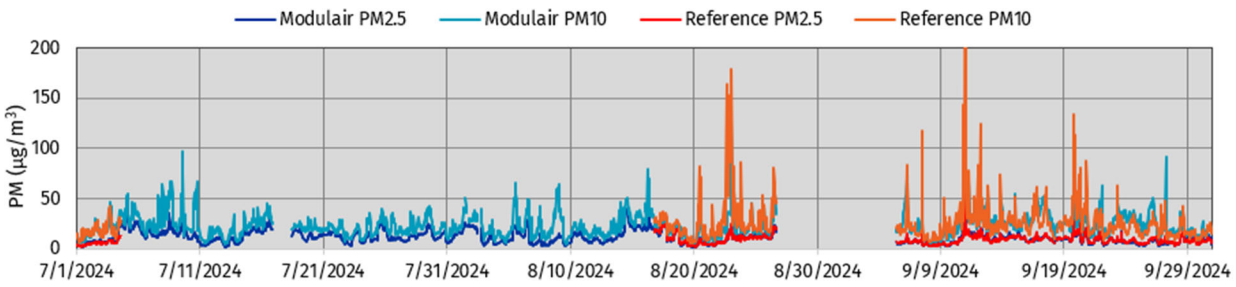


Figure 4.4 AQ8A MODULAIR Serial Number MOD 386 PM Collocation and Comparison Data for July through September 2024



Measurement error statistics were calculated via co-location of the MODULAIR and the FEM samplers at AQ5 and AQ8. The bias is determined from the slope and intercept measurements; the linearity is determined from the coefficient of determination (R^2). The root-mean-square error (RSME) is a measure of the expected error. Precision is the degree of agreement within a set of observations, and it is presented as the standard deviation (SD) or coefficient of determination (CV). The EPA recommended performance metrics for the non-regulatory MODULAIR sensors are presented in Table 4-4. The performance metric results of the third quarter collocation of the MODULAIR and FEM samplers at AQ5 and AQ8 are presented in Table 4-5.

Table 4-4 EPA Recommended Performance Metrics and Target Values

Performance Metric		Target Value
Precision	Standard Deviation	≤5 µg/m³
	CV	≤30%
Bias	Slope (m)	1.0±0.35
	Intercept (b)	-5 ≤ b ≤ 5 µg/m³
Linearity	R^2	≥0.70
Error	RSME	≤7 µg/m³

Table 4-5 AQ5 and AQ8 MODULAIR and FEM Collocation Statistics for Third Quarter 2024

Statistics	AQ5A Modulair 384		AQ5B Modulair 385		AQ5C Modulair 388		AQ8A Modulair 386	
	$PM_{2.5}$	PM_{10}	$PM_{2.5}$	PM_{10}	$PM_{2.5}$	PM_{10}	$PM_{2.5}$	PM_{10}
Correlation Coefficient (r2)	0.875	0.336	0.761	0.237	0.822	0.310	0.829	0.464
Slope (m)	1.053	0.538	0.678	0.451	0.754	0.428	0.856	0.468
Intercept (b)	1.033	14.336	1.197	11.294	0.064	9.635	1.263	10.994
RMSW	9.203	18.158	7.421	17.057	5.378	13.523	9.982	23.121
Precision (CV)	13.810	21.390	18.750	26.060	20.480	22.200	12.900	16.180
Precision (SD)	7.508	14.998	6.954	15.757	5.306	13.313	8.039	21.334

5.0 QUALITY CONTROL

Meteorological, and PM_{10} and $PM_{2.5}$ concentration data collected at CSX monitoring stations have been subjected to a series of quality control procedures to document the validity of the data and increase the integrity of the data sets. The quality control performed for these data is described in this section.

5.1 Visual Inspection of Equipment

Visual inspection of the meteorological tower, sensors, continuous FEM PM_{10}/$PM_{2.5}$ monitors, and network samplers is performed at least every month or more frequently when problems are indicated. Abnormal conditions are logged and reported immediately to the program manager for corrective action.

5.2 Remote Interrogation of the Monitoring Stations

The data loggers at the AQ5 and AQ8 meteorological tower and PM_{10}/$PM_{2.5}$ monitoring stations are interrogated every day to download and process the data. PM_{10} and $PM_{2.5}$ concentration from the MODULAIR samplers are downloaded from the QuantAQ Cloud daily. Abnormal data values or apparent problems are reported immediately to the program manager who initiates corrective action and determines if a special visit to the site is required.

5.3 Quality Control Data Inspections

During data acquisition, the data loggers at AQ5 and AQ8 collect and save 5-minute averages of each measured meteorological parameter, and PM_{10} and $PM_{2.5}$ concentrations. These values are stored in memory for subsequent retrieval via telephone, modem, and internet. Minutely MODULAIR data are downloaded daily. After the AQ5 and AQ8 data loggers are interrogated and MODULAIR data are downloaded from the Cloud, collecting all data since the last interrogation, the data are stored on Trinity computers in Salt Lake City.

The meteorological, PM_{10}, and $PM_{2.5}$ data files are input to a program which performs a series of quality control (QC) tests as listed in Table 5-1. The QC program produces a report that identifies each value in the data file that fails one or more of the listed tests. This report also provides means, maxima, and minima for each variable.

Table 5-1 Quality Control Checks Imposed by Data QC Program

Parameter	Less Than	Greater Than	Constant For
Wind Speed	0 m/s	35 m/s	2 hours
Wind Direction	0 deg	360 deg	2 hours
Temperature	-30 deg C	45 deg C	30 minutes
Relative Humidity	3%	102%	16 hours
Barometric Pressure	-20 mb < 7 day Avg.	20 mb > 7 day Avg.	2 hours
Precipitation	0 inches	1 inch in 24 hours	N/A
PM_{10}	-5 ug/m^3	150 ug/m^3	4 hours
$PM_{2.5}$	-10 ug/m^3	35 ug/m^3	4 hours
Shelter Temperature	20 deg C	30 deg C	N/A
Battery Voltage	11.5 V	16 V	N/A

5.4 Data Validation

When the QC program identifies values that exceed the criteria set for that parameter, the data file is inspected visually. In most cases, a flagged value is not invalid; it merely fell outside of expected ranges or "normal" rates of change for that parameter. If, after investigation, an air quality meteorologist determines that the value is reasonable, the value is not invalidated. If there is a reason to suspect the data point, the value is reset to "missing" (This is done on the data management file only, not on the raw data file collected from the data logger; the raw data file is never manipulated).

For the purposes of this data report, data failures or discrepancies that would invalidate an hourly average for the meteorological sensors, T640x analyzers, and MODULAIR samplers are listed below:

- Loss of more than three five-minute average in a one-hour period,
- Visual evidence, on the stacked parameter/time plots for example, that the 5-minute value is an outlier,
- Data collected during calibrations and audits,
- Equipment malfunction,
- T640 reports a status error,
- Shelter temperature less than 0°C, $PM_{2.5}$ and PM_{10} concentrations set to missing,
- PM_{10} less than -5 µg/m^3, concentrations set to missing, and
- $PM_{2.5}$ less than -10 µg/m^3, concentrations set to missing.

In the third quarter 2024, the T640x particulate samplers at the AQ5 and AQ8 monitoring stations experienced numerous issues that were believed to be related to water or condensation damage. Detailed descriptions of the repairs and actions taken are provided in the corrective action reports.

Invalid data parameters and the corrective action reports for the third quarter 2024 and corresponding times are presented in Appendix J.

5.5 Equipment Calibration

Calibrations of the meteorological equipment are performed every six months or whenever a sensor exceeds specified control limits or undergoes major maintenance or repair. The FEM T640X $PM_{10}/PM_{2.5}$ samplers are calibrated by Trinity personnel every three months or when problems are identified. The AQ5 and AQ8 T640X $PM_{10}/PM_{2.}$samplers were calibrated on September 18, 2024. The meteorological equipment was calibrated on September 18, 2024. No calibrations are performed on the MODULAIR samplers. All calibrations are performed using certified reference standards. Copies of the field calibration data sheets are presented in Appendix K.

5.6 T-API T640X PM_{10} and $PM_{2.5}$ Flow and Leak Checks

Field quality control activities for the T-API Model T640X samplers include flow rate, temperature, and pressure checks. The T640X $PM_{2.5}/PM_{10}$ continuous samplers quality control checks and calibrations are performed using a certified flow transfer standard**.**

Monthly flow checks are performed on the T-API T640x continuous $PM_{10}/PM_{2.5}$. Copies of the monthly flow checks are included in Appendix L. The results of the monthly flow checks are presented in Table 5-2. The measured flow rates of the particulate samplers should not exceed ±4 percent of the sampler flow rate or within ±5 percent of the design flow rate of 16.7 L/min. Flow rate difference is calculated using the following equation:

$$d_i = \frac{Y_i - X_i}{(X_i)} x100$$

Where d_i is the percent difference, Y_i is the sampler indicated flow, and X_i is the flow as measured by the reference flow standard.

Table 5-2 AQ5 and AQ8 $PM_{10}/PM_{2.5}$ T640X Third Quarter Monthly Flow Check Results

Month	Target Flow Rate (L/min)	Sampler Indicated Flow (L/min)	Reference Flow (L/min)	Percent Difference Ref. Flow (%)	Percent Difference Design Flow (%)
AQ5 PM_{10}/ $PM_{2.5}$					
July	5.00	5.00	5.01	-0.2	0.2
	11.67	11.58	11.53	0.4	-1.2
August	5.00	5.00	4.99	0.2	-0.2
	11.67	11.67	11.70	-0.3	0.3
September	5.00	5.00	4.95	1.0	-1.0
	11.67	11.88	11.80	0.7	1.1
AQ8 PM_{10}/ $PM_{2.5}$					
July	5.00	5.04	5.07	-0.6	1.4
	11.67	11.66	11.67	-0.1	0.0
August	5.00	5.02	5.07	-1.0	1.4
	11.67	11.67	11.67	0.0	0.0
September	5.00	5.00	5.00	0.0	-1.2
	11.67	11.67	11.69	-0.2	0.4

5.7 T-API T640X PM_{10} and $PM_{2.5}$ Statistics for Assessment

Calculations for the PM_{10} and $PM_{2.5}$ T-API T640X data quality assessment were made based 40 CFR 58 Appendix A.

The bias estimator is an upper bound on the mean absolute value of the percent differences. The bias estimate equation is presented as equation (2).

$$|AB| = AB + t_{0.95,n-1}\frac{AS}{\sqrt{n}} \quad (2)$$

Where: *n* is the number of single point checks being aggregated; $t_{0.95,\ n-1}$ is the 95th quantile of a T-distribution with *n-1* degrees of freedom.

The quantity *AB* is the mean of the absolute values of the *d* i's and is calculated for PM_{10} and $PM_{2.5}$ using equation (3).

$$AB = \frac{1}{n}\sum_{i=0}^{n}|d_i| \quad (3)$$

The standard deviation of the absolute value of the *d*i's is calculated for PM_{10} using equation 4.

$$AS = \sqrt{\frac{n\sum_{i=0}^{n}|d_i^2| - \left(\sum_{i=0}^{n}|d_i|\right)^2}{n(n-1)}} \quad (4)$$

The mean percent difference, precision, and bias estimates limits for PM_{10} and $PM_{2.5}$ for the third quarter 2024 are presented in Table 5-3.

Table 5-3 Third Quarter 2024 Bias Statistics for T-API T640X Continuous $PM_{10}/PM_{2.5}$ Samplers

Statistics	AQ5 $PM_{10}/PM_{2.5}$	AQ8 $PM_{10}/PM_{2.5}$
Mean Percent Difference	0.311	-0.306
AB	0.463	0.306
AS	0.325	0.400
Bias Estimate	+0.73	-0.63

NA = Not available.

5.8 T-API T640X Monitoring Enclosure Temperature

The T-API T640X enclosure's role in quality control is to provide a temperature-controlled environment in which the continuous particulate monitoring equipment can operate at optimum performance. The mean enclosure temperature should be approximately 25°C. Enclosure interior temperature is monitored by the datalogger and reported along with other measurements. Deviations greater than ±5°C from the 25°C optimum shelter temperatures indicate a need to readjust the temperature control system. Table 5-4 presents the average, maximum, and minimum interior shelter temperatures for the monitoring period. Figures 5.1 and 5.2 present plots of the internal enclosure temperatures and a running 24-hour standard deviations of the enclosure temperatures for AQ5 and AQ8. Appendix M contains the hourly shelter temperatures for the third quarter 2024.

Table 5-4 Monitoring Enclosure Interior Temperature in Degrees Centigrade for Third Quarter 2024 – AQ5 and AQ8 Monitoring Stations

Month	Average Temperature	Maximum Temperature	Minimum Temperature	ABS Deviation from 25°C
		AQ5		
July	21.1	29.2	16.7	2.99
August	28.9	41.6	17.1	7.89
September	32.6	41.7	20.4	7.63
		AQ8		
July	25.3	29.0	20.9	2.24
August	30.3	41.1	19.6	5.88
September	34.4	41.5	22.1	7.27

Figure 5.1 AQ5 Enclosure Temperature and Temperature Standard Deviation

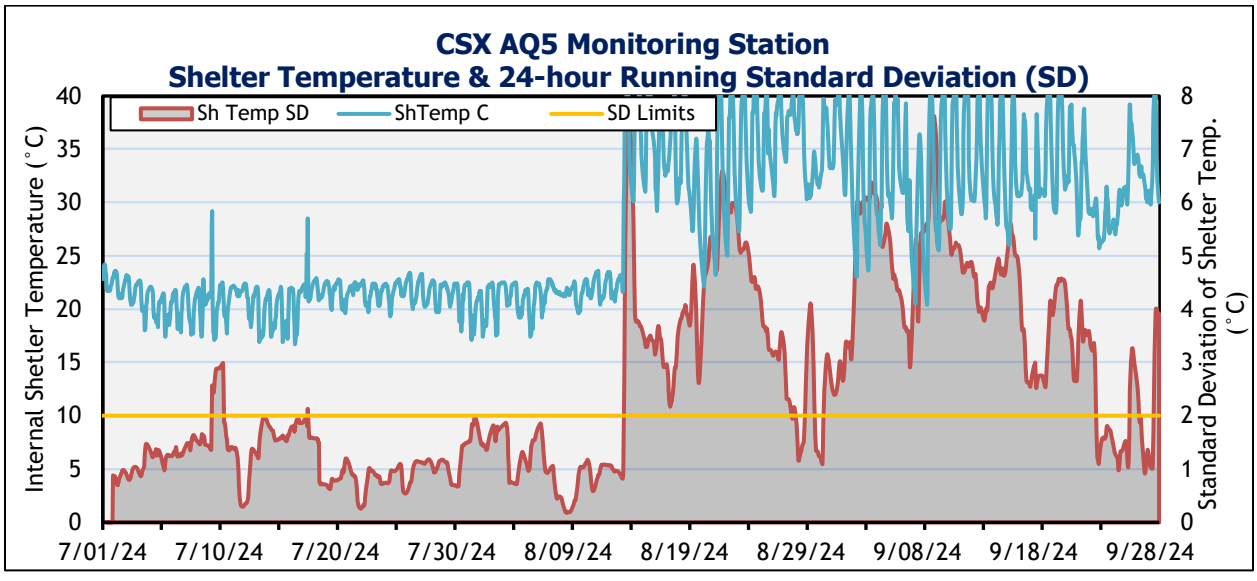
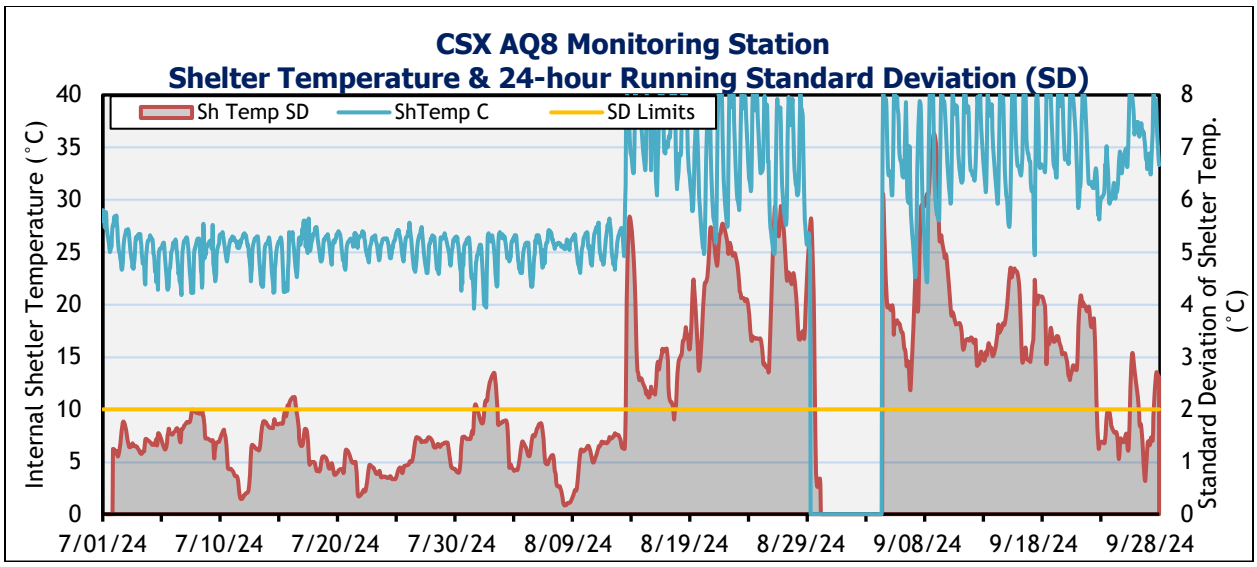


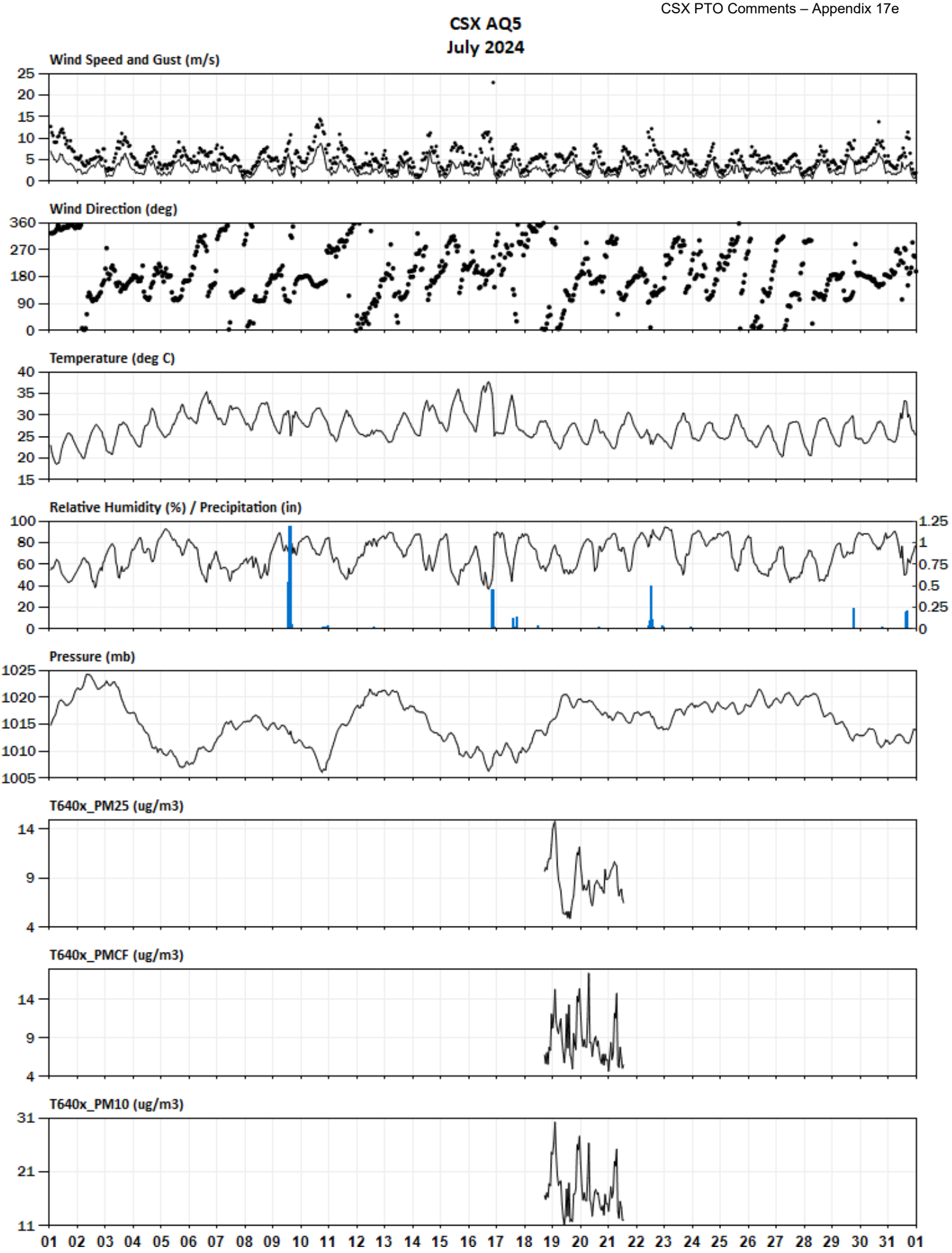
Figure 5.2 AQ8 Enclosure Temperature and Temperature Standard Deviation

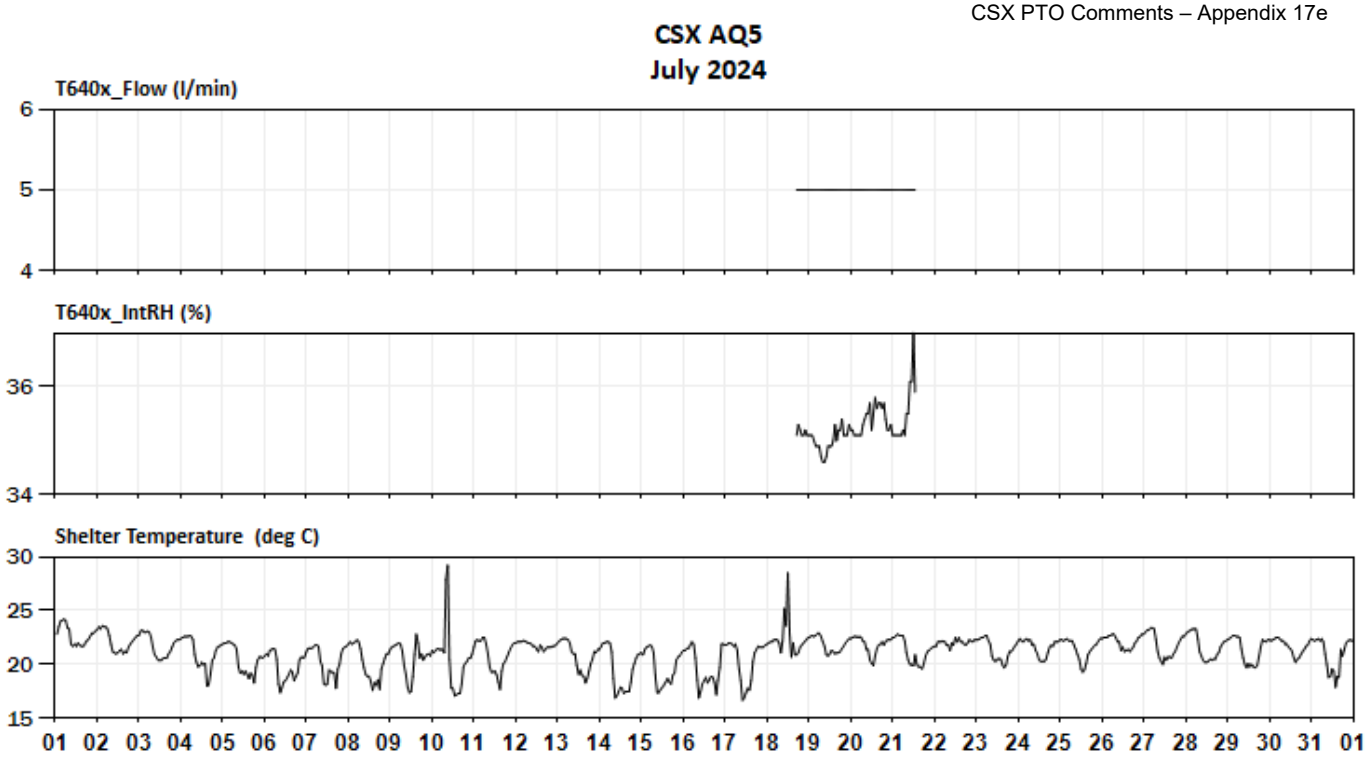


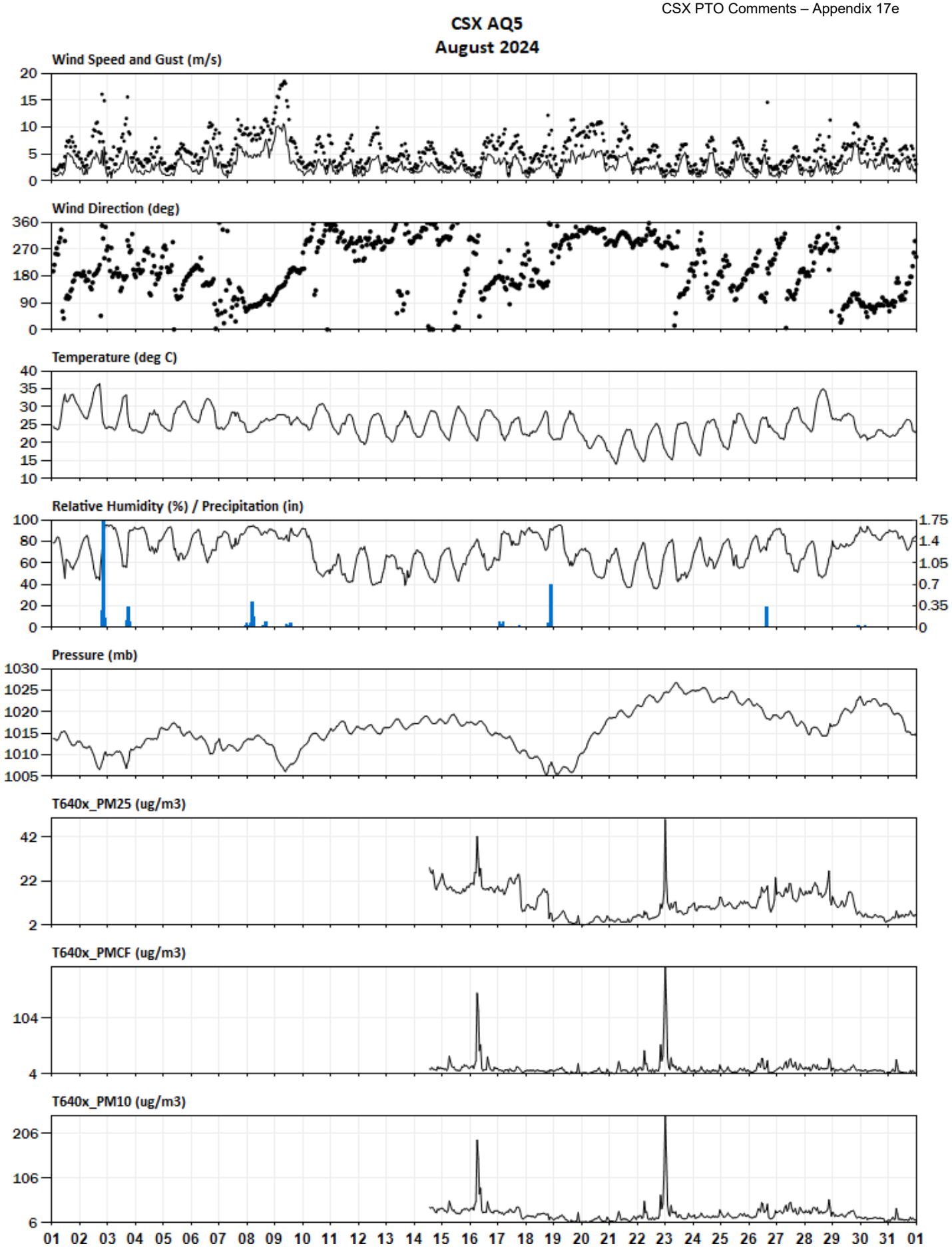
6.0 QUALITY ASSURANCE AUDITS

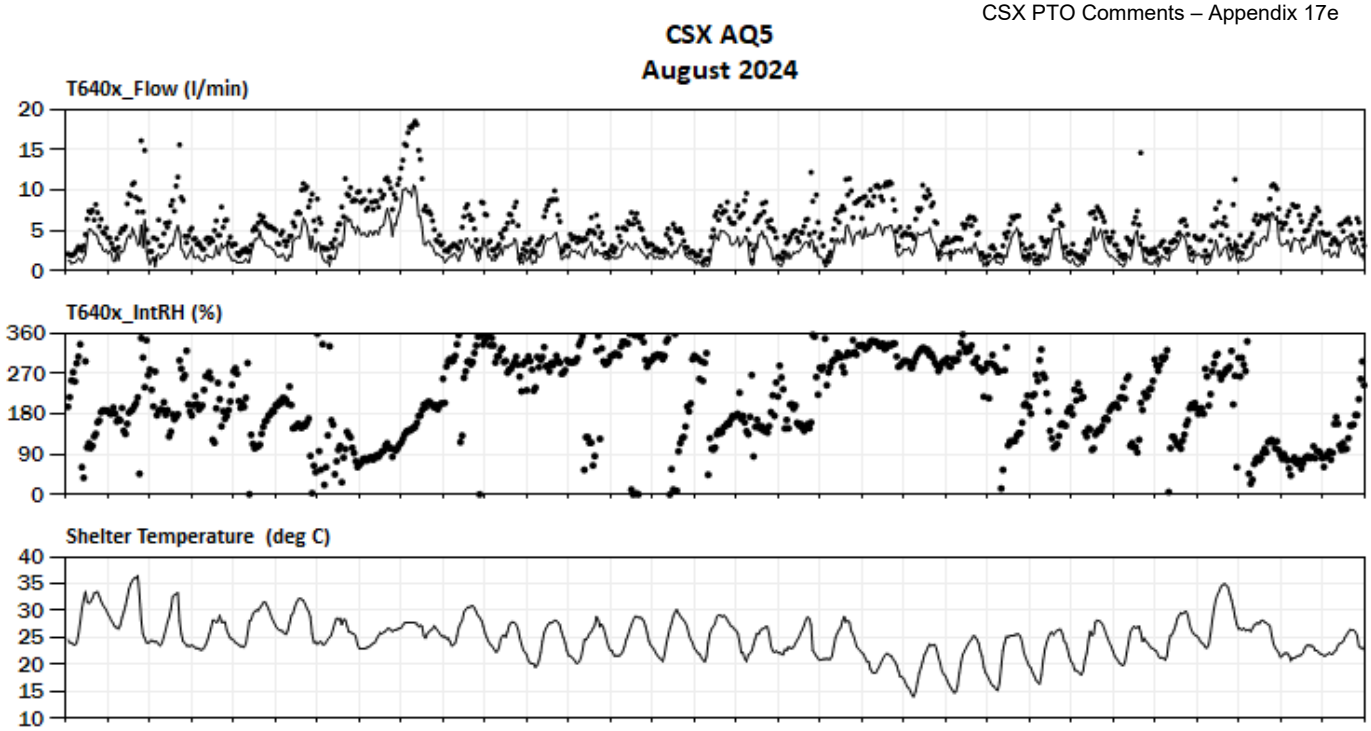
To comply with EPA requirements, a performance audit of meteorological instrumentation is conducted every six months, every three months for the particulate sampling equipment, or within 60 days after installation. Reference standards used in performance audits are independent of those used for calibration checks. Audits will be performed once the quality assurance project plan developed for this project has been approved.

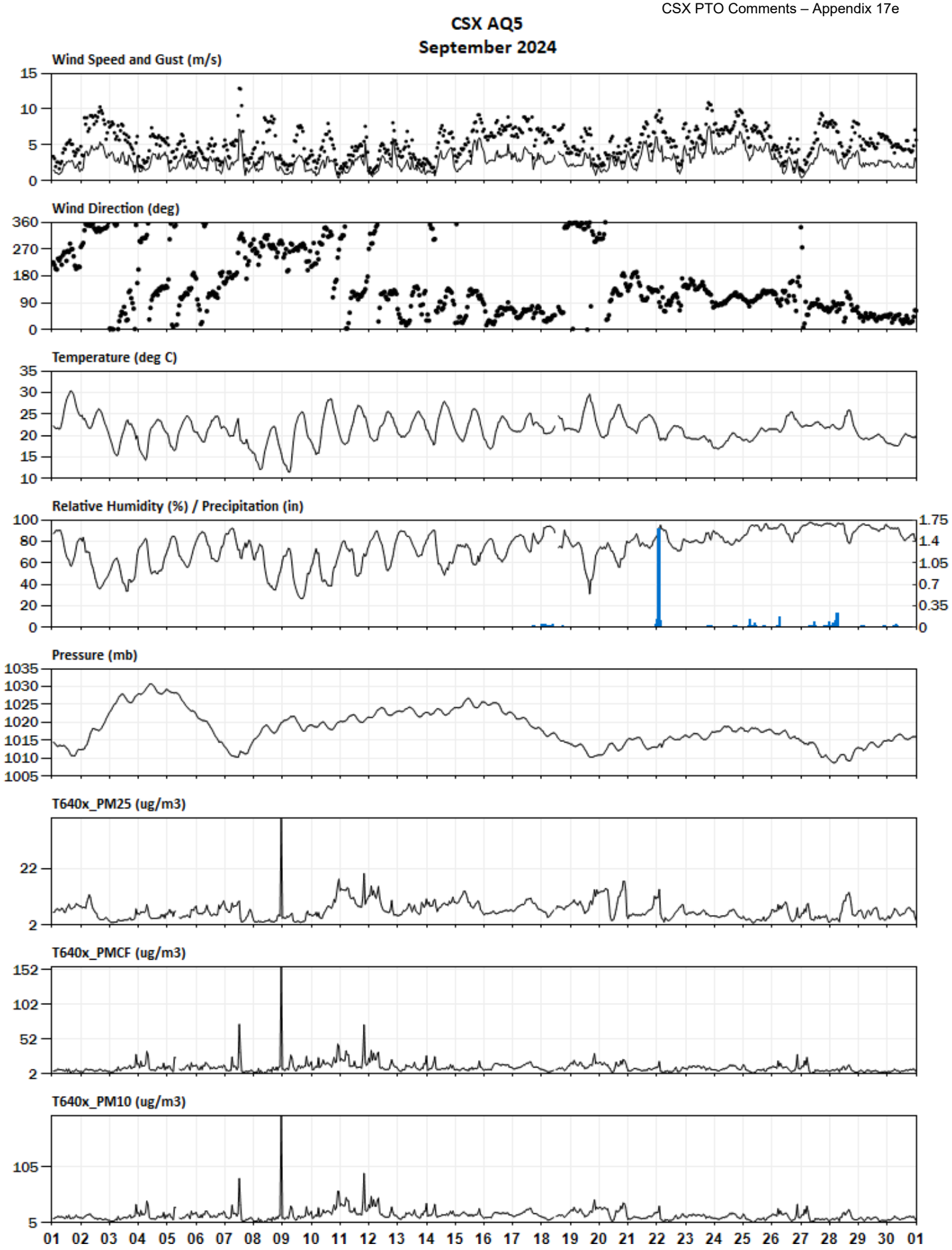
APPENDIX A. STACKED PARAMETER PLOTS FOR THIRD QUARTER 2024

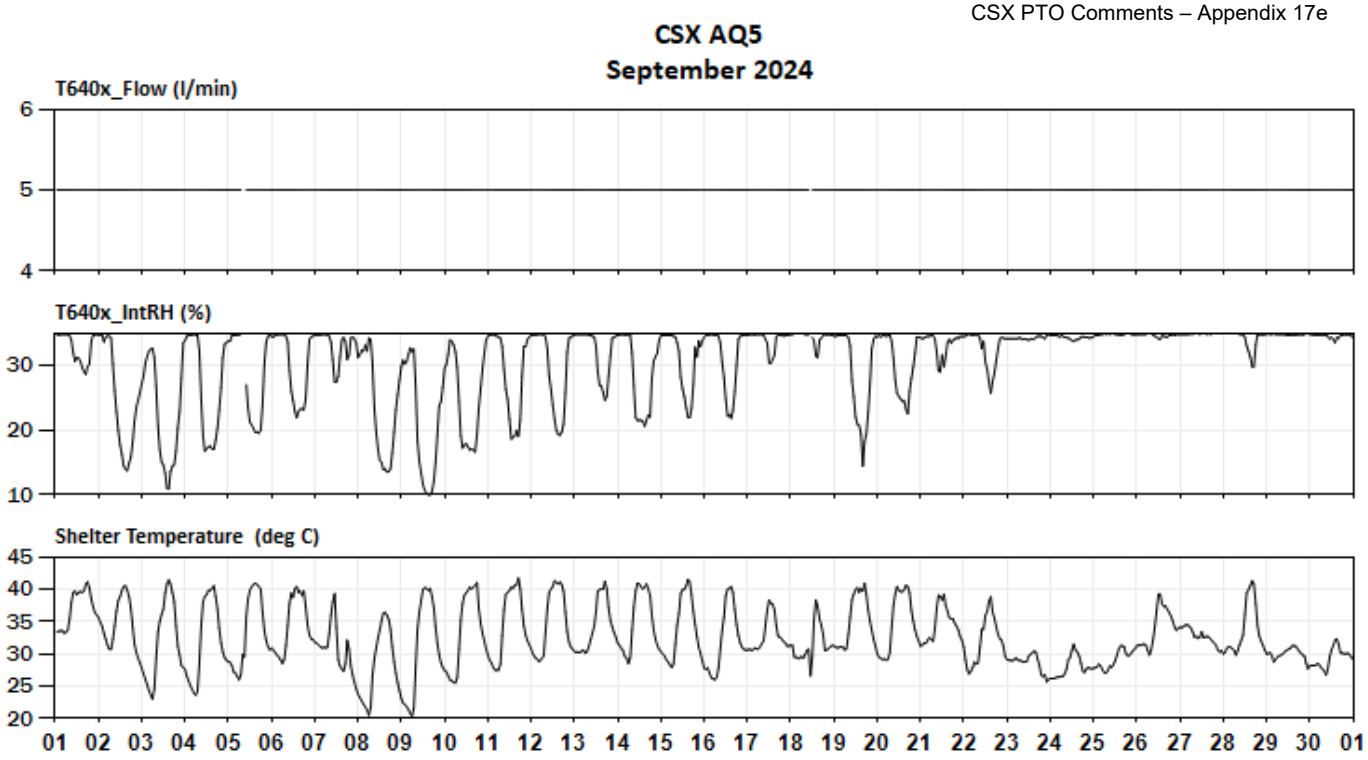

CSX AQ5
July 2024
Wind Speed and Gust (m/s)
25
20
15
10
5
0
Wind Direction (deg)
360
270
180
90
0
Temperature (deg C)
40
35
30
25
20
15
Relative Humidity (%) / Precipitation (in)
100
80
60
40
20
0
1.25
1
0.75
0.5
0.25
0
Pressure (mb)
1025
1020
1015
1010
1005
T640x_PM25 (ug/m3)
14
9
4
T640x_PMCF (ug/m3)
14
9
4
T640x_PM10 (ug/m3)
31
21
11
01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 01

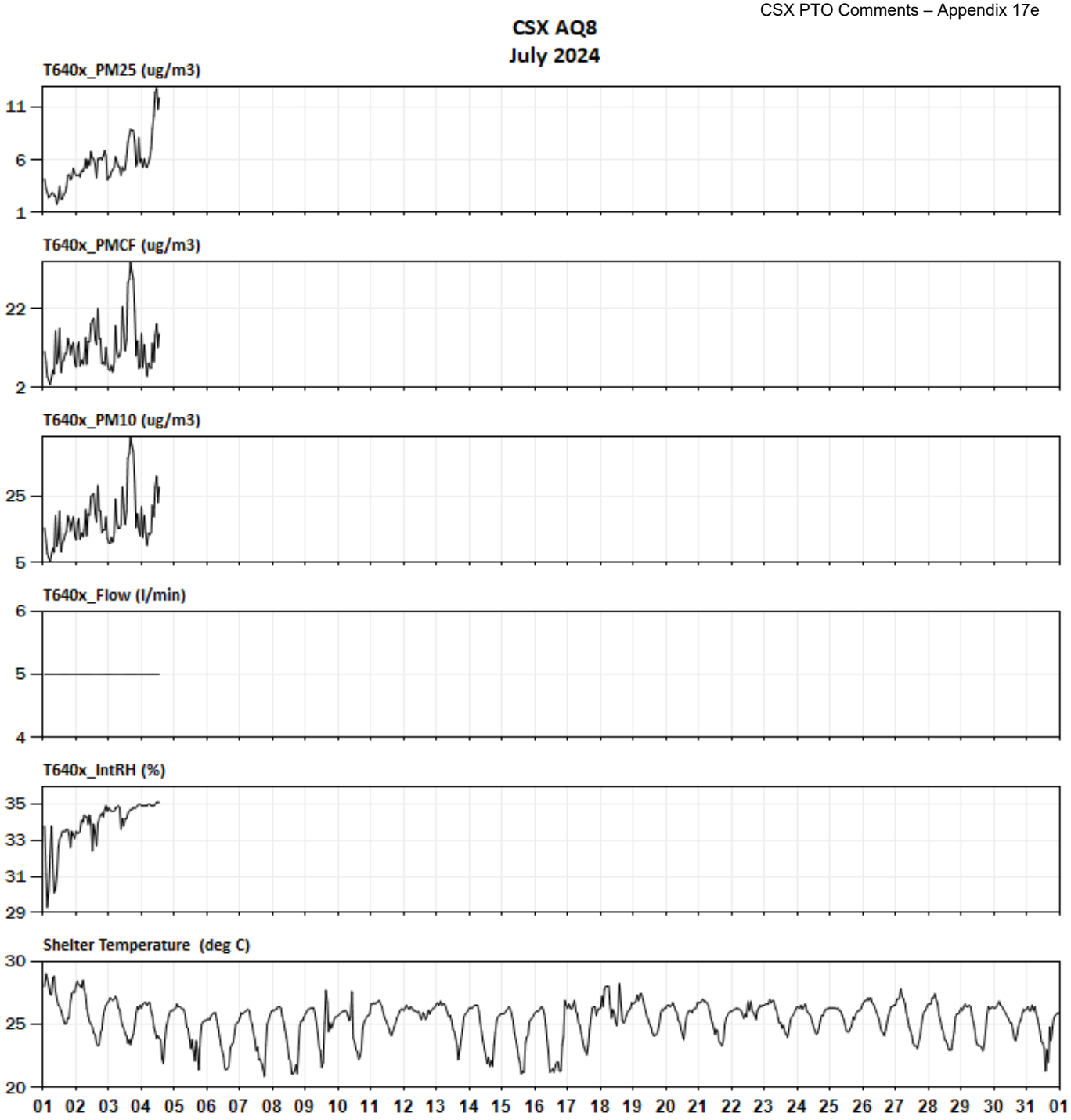

CSX AQ5
July 2024
T640x_Flow (l/min)
6
5
4
T640x_IntRH (%)
36
34
Shelter Temperature (deg C)
30
25
20
15
01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 01

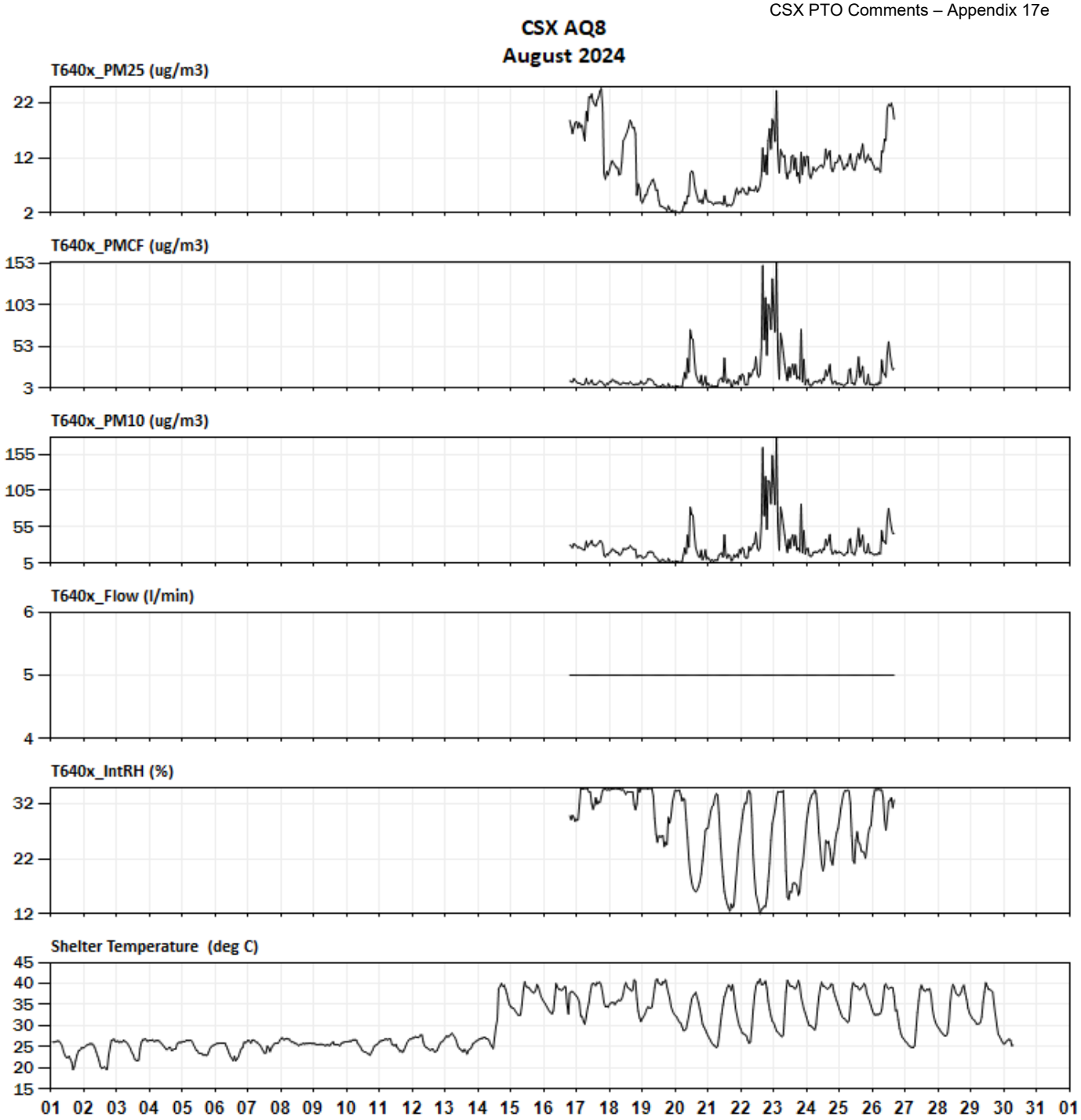

CSX AQ5
August 2024
Wind Speed and Gust (m/s)
20
15
10
5
0
Wind Direction (deg)
360
270
180
90
0
Temperature (deg C)
40
35
30
25
20
15
10
Relative Humidity (%) / Precipitation (in)
100
80
60
40
20
0
1.75
1.4
1.05
0.7
0.35
0
Pressure (mb)
1030
1025
1020
1015
1010
1005
T640x_PM25 (ug/m3)
42
22
2
T640x_PMCF (ug/m3)
104
4
T640x_PM10 (ug/m3)
206
106
6
01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 01

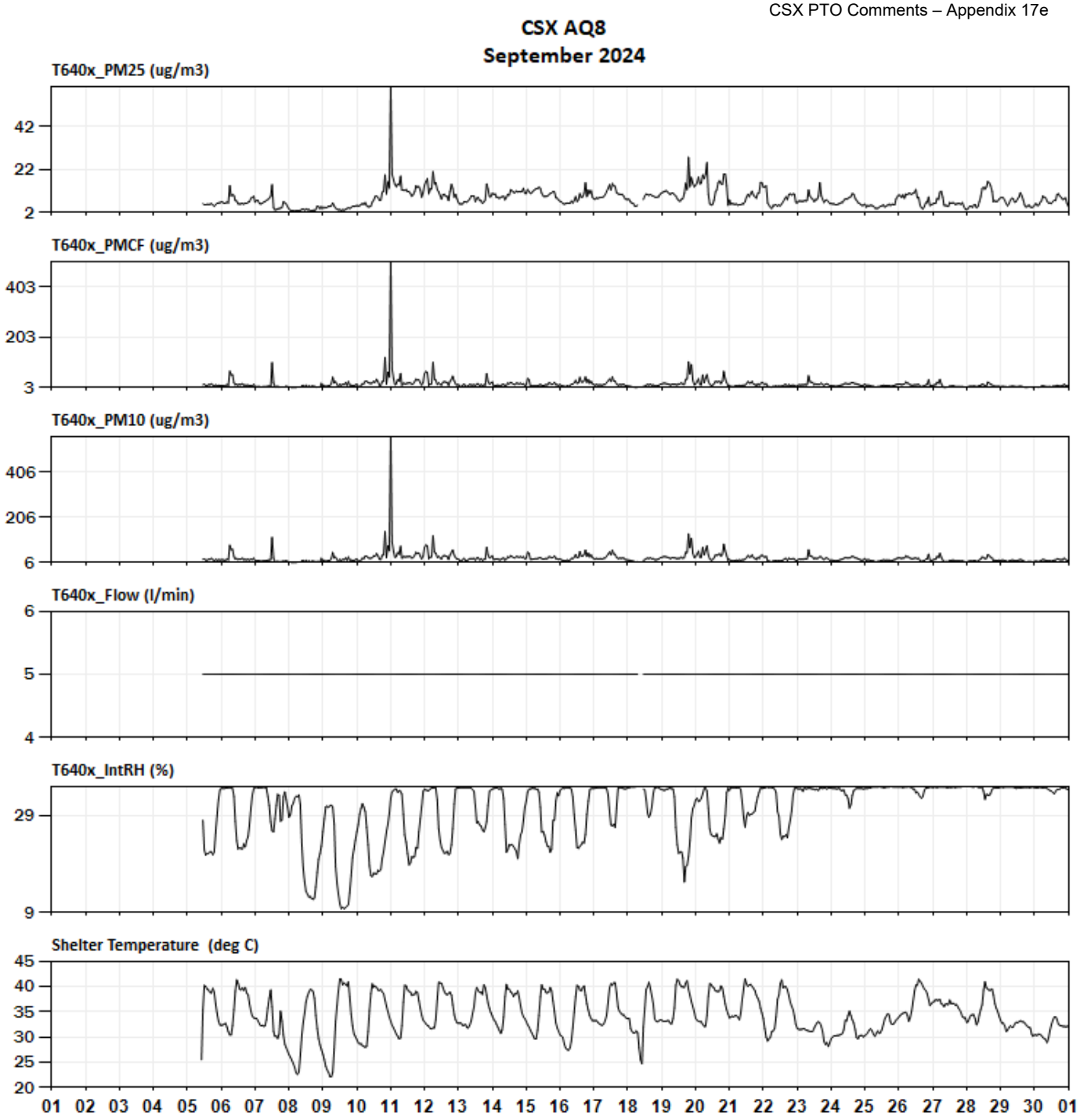

CSX AQ5
August 2024
T640x_Flow (l/min)
20
15
10
5
0
T640x_IntRH (%)
360
270
180
90
0
Shelter Temperature (deg C)
40
35
30
25
20
15
10


CSX AQ5
September 2024
Wind Speed and Gust (m/s)
15
10
5
0
Wind Direction (deg)
360
270
180
90
0
Temperature (deg C)
35
30
25
20
15
10
Relative Humidity (%) / Precipitation (in)
100
80
60
40
20
0
1.75
1.4
1.05
0.7
0.35
0
Pressure (mb)
1035
1030
1025
1020
1015
1010
1005
T640x_PM25 (ug/m3)
22
2
T640x_PMCF (ug/m3)
152
102
52
2
T640x_PM10 (ug/m3)
105
5
01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 01


CSX AQ5
September 2024
T640x_Flow (l/min)
6
5
4
T640x_IntRH (%)
30
20
10
Shelter Temperature (deg C)
45
40
35
30
25
20
01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 01


CSX AQ8
July 2024
T640x_PM25 (ug/m3)
11
6
1
T640x_PMCF (ug/m3)
22
2
T640x_PM10 (ug/m3)
25
5
T640x_Flow (l/min)
6
5
4
T640x_IntRH (%)
35
33
31
29
Shelter Temperature (deg C)
30
25
20
01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 01


CSX AQ8
August 2024
T640x_PM25 (ug/m3)
22
12
2
T640x_PMCF (ug/m3)
153
103
53
3
T640x_PM10 (ug/m3)
155
105
55
5
T640x_Flow (l/min)
6
5
4
T640x_IntRH (%)
32
22
12
Shelter Temperature (deg C)
45
40
35
30
25
20
15
01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 01


CSX AQ8
September 2024
T640x_PM25 (ug/m3)
42
22
2
T640x_PMCF (ug/m3)
403
203
3
T640x_PM10 (ug/m3)
406
206
6
T640x_Flow (l/min)
6
5
4
T640x_IntRH (%)
29
9
Shelter Temperature (deg C)
45
40
35
30
25
20
01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 01

APPENDIX B. HOURLY WIND DATA FOR THIRD QUARTER 2024

CSX AQ5

Unit Vector Wind Speed and Direction in mps for July, 2024

Hr Beg Hr End Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13
1	325/07.0	326/06.2	325/05.8	327/05.0	331/05.0	338/04.4	350/04.8	349/05.1	337/06.4	336/06.1	338/06.2	346/05.1	343/04.7
2	344/02.7	345/02.8	353/02.5	008/01.7	003/01.8	002/02.1	007/01.8	054/02.0	114/02.6	126/02.9	117/03.2	105/03.5	098/03.5
3	275/01.1	190/01.3	172/01.5	186/01.3	209/01.3	217/01.2	204/01.9	200/02.7	158/03.5	148/03.9	160/04.2	159/03.7	130/04.5
4	177/02.6	181/01.9	177/02.1	164/01.9	169/01.8	166/01.9	177/01.9	216/01.6	129/01.6	112/02.4	109/03.5	105/04.2	103/04.8
5	182/01.5	163/02.1	192/01.9	207/01.6	179/01.4	185/02.0	179/02.1	183/01.6	128/02.7	104/02.9	101/04.3	108/04.3	104/04.5
6	185/02.2	186/02.0	212/02.0	209/02.7	252/02.2	263/02.1	280/02.1	298/02.7	312/04.7	311/03.8	298/03.3	292/03.3	317/03.9
7	316/02.4	329/02.5	336/03.6	337/03.9	339/03.1	337/03.1	336/03.2	349/02.9	350/02.9	004/02.3	027/01.9	128/01.9	116/03.5
8	321/01.3	014/01.2	020/00.9	029/00.9	354/01.0	347/01.5	024/01.5	102/02.0	114/02.4	099/03.0	099/03.6	098/03.7	100/04.6
9	176/03.0	177/02.9	185/03.0	186/02.4	200/01.5	205/01.3	184/01.8	216/01.6	139/01.9	116/03.0	102/04.9	101/05.6	098/06.4
10	177/02.2	180/02.6	182/02.4	181/02.7	182/02.7	181/03.4	178/03.8	171/04.0	164/04.1	154/04.3	152/05.6	149/06.0	151/07.3
11	278/02.2	261/01.4	271/01.8	272/02.4	267/02.0	247/02.0	277/02.8	270/03.3	297/04.6	301/04.8	302/04.1	297/03.9	280/03.0
12	023/01.2	358/01.9	007/01.6	040/01.6	023/01.8	055/02.0	044/01.7	032/02.2	058/01.9	022/01.7	075/01.7	332/01.7	089/03.2
13	190/02.2	189/01.9	221/01.1	184/01.3	287/00.9	174/00.8	208/01.4	115/01.0	122/01.1	049/01.0	027/01.4	128/03.0	111/03.8
14	201/01.3	213/00.7	256/00.7	324/00.7	257/00.6	268/00.9	203/01.1	206/01.8	249/02.9	274/02.7	280/02.2	142/02.9	102/04.4
15	231/01.4	200/01.4	212/00.9	220/00.7	281/01.1	258/01.5	292/01.9	299/02.4	311/04.0	305/04.5	315/04.1	301/03.7	282/02.9
16	217/02.0	225/01.7	263/01.4	231/01.4	193/01.4	204/01.9	216/01.5	194/01.3	142/02.6	146/03.2	190/02.8	200/03.3	187/04.6
17	322/00.6	219/01.3	254/01.0	186/01.7	200/02.3	206/01.4	244/01.4	286/02.5	276/02.3	258/02.9	257/02.8	253/02.5	285/03.4
18	322/01.1	279/01.5	302/01.2	349/02.4	347/02.1	340/02.7	331/02.9	341/03.0	333/03.1	331/03.5	353/02.7	351/02.9	349/03.2
19	300/01.8	288/01.9	343/02.9	008/02.5	005/02.3	012/02.8	020/02.5	041/02.6	055/02.6	066/02.2	133/02.9	128/03.3	119/03.5
20	197/01.6	223/01.3	190/01.2	239/01.0	293/00.8	240/00.8	197/01.0	186/01.1	158/02.3	158/02.7	159/03.4	163/05.0	158/05.1
21	295/01.5	304/01.3	314/01.5	290/01.5	296/01.6	291/01.6	306/01.3	054/00.9	126/01.6	122/02.2	107/03.1	107/04.8	103/05.8
22	178/02.5	182/02.3	196/01.4	207/01.0	194/01.1	183/01.2	187/01.2	162/02.3	168/02.8	093/03.8	098/02.5	010/01.7	124/03.0
23	250/01.4	220/01.9	251/01.6	225/02.1	240/01.7	239/01.6	278/02.6	291/03.2	303/03.8	297/03.5	304/03.1	310/02.6	283/02.5
24	256/01.0	173/01.7	178/02.0	186/01.3	254/01.2	301/01.0	264/00.8	184/01.2	181/01.2	219/01.1	209/01.2	132/02.0	107/03.0
25	251/00.8	246/00.8	203/01.2	225/01.1	245/01.5	221/01.6	248/01.7	266/02.3	289/02.6	304/03.6	287/02.3	266/01.8	293/03.7
26	297/01.7	306/02.3	013/03.3	017/02.5	011/03.0	030/02.6	046/02.3	042/02.2	009/02.8	011/02.3	015/01.9	097/02.3	137/02.4
27	294/01.9	300/01.9	304/01.7	305/02.4	309/01.9	314/02.0	005/02.0	017/02.1	034/01.9	082/02.2	083/02.3	079/02.0	118/03.5
28	293/01.3	297/01.4	298/01.7	303/01.2	300/01.6	300/01.1	023/00.6	106/01.6	127/02.3	125/02.9	121/03.1	118/03.5	113/03.9
29	187/02.6	185/02.6	187/01.7	171/01.6	185/01.5	174/01.9	178/01.9	186/01.9	192/02.0	133/01.7	104/02.9	101/04.3	102/05.1
30	187/02.8	186/02.6	183/02.6	182/02.8	180/02.5	178/03.0	181/03.3	175/03.7	179/03.7	169/03.5	166/04.3	172/04.0	162/04.2
31	180/02.2	178/02.2	201/01.6	196/01.7	188/01.7	194/01.7	264/01.5	272/02.0	219/01.9	258/02.1	233/02.2	104/04.4	226/03.3
MEAN	**248/02.0**	**230/02.0**	**242/01.9**	**235/01.9**	**260/01.8**	**247/01.9**	**257/02.0**	**219/02.3**	**150/02.8**	**097/03.0**	**108/03.2**	**118/03.4**	**120/04.0**
MAX	**325/07.0**	**326/06.2**	**325/05.8**	**327/05.0**	**331/05.0**	**338/04.4**	**350/04.8**	**349/05.1**	**337/06.4**	**336/06.1**	**338/06.2**	**149/06.0**	**151/07.3**
MIN	**322/00.6**	**213/00.7**	**256/00.7**	**324/00.7**	**257/00.6**	**174/00.8**	**023/00.6**	**054/00.9**	**122/01.1**	**049/01.0**	**209/01.2**	**332/01.7**	**137/02.4**

MEANS REQUIRE 75% VALID DATA

MISSING DATA DENOTED BY ---

CSX AQ5

Unit Vector Wind Speed and Direction in mps for July, 2024

Hr Beg / Hr End / Day	13 / 14	14 / 15	15 / 16	16 / 17	17 / 18	18 / 19	19 / 20	20 / 21	21 / 22	22 / 23	23 / 24	MEAN	MAX SPD	MIN SPD
1	343/04.3	349/04.1	344/03.9	355/04.0	356/04.2	352/03.9	351/03.7	348/03.2	342/02.7	347/02.2	351/02.8	**342/04.6**	**325/07.0**	**347/02.2**
2	105/03.8	104/03.2	102/03.9	111/04.4	114/04.7	123/04.1	128/03.7	152/03.3	158/03.7	167/03.7	207/02.2	**093/03.1**	**114/04.7**	**008/01.7**
3	138/05.6	152/05.1	143/06.1	140/06.5	149/05.5	157/05.3	161/04.3	165/03.5	172/03.1	170/02.8	184/02.7	**170/03.4**	**140/06.5**	**275/01.1**
4	111/04.3	144/03.7	156/04.1	162/04.7	185/03.8	209/02.7	203/02.5	191/01.6	222/02.0	213/01.8	196/01.4	**167/02.7**	**103/04.8**	**196/01.4**
5	101/04.7	104/05.0	109/04.8	114/03.5	137/03.5	160/04.0	167/04.1	167/03.6	165/03.5	166/02.9	168/02.6	**149/03.1**	**104/05.0**	**179/01.4**
6	281/03.2	266/02.6	116/03.6	128/04.3	149/04.1	142/03.1	153/02.2	153/02.4	158/02.2	199/02.4	305/04.1	**232/03.0**	**312/04.7**	**186/02.0**
7	111/03.5	114/03.9	119/03.8	125/03.6	125/03.4	130/02.3	128/02.4	136/01.4	135/00.6	288/00.5	301/01.0	**042/02.7**	**337/03.9**	**288/00.5**
8	100/04.9	100/05.1	100/05.3	111/04.5	127/04.7	152/04.6	156/03.0	161/03.3	173/02.8	184/02.3	176/02.7	**099/03.0**	**100/05.3**	**020/00.9**
9	097/05.4	317/04.3	310/01.8	347/01.4	128/00.9	155/03.1	167/03.5	172/03.4	177/03.1	179/03.1	176/02.8	**163/03.0**	**098/06.4**	**128/00.9**
10	147/08.0	152/07.9	156/08.6	158/08.8	157/08.1	161/06.7	163/05.9	166/04.2	267/02.7	261/02.5	282/02.8	**173/04.9**	**158/08.8**	**177/02.2**
11	297/03.7	300/03.3	321/02.4	116/02.2	335/02.8	328/03.0	342/02.8	357/02.7	357/02.0	360/01.6	049/01.3	**303/02.8**	**301/04.8**	**049/01.3**
12	095/02.2	104/02.8	082/02.8	096/02.8	122/02.5	112/01.8	148/02.2	168/02.2	170/02.9	168/03.3	173/03.8	**076/02.2**	**173/03.8**	**023/01.2**
13	104/03.8	111/03.4	109/03.1	113/04.0	121/04.7	129/04.8	154/03.1	197/01.7	179/02.3	199/01.4	180/02.3	**150/02.3**	**129/04.8**	**174/00.8**
14	121/07.2	149/06.6	167/04.6	163/04.2	159/04.2	166/04.3	177/04.1	179/02.9	182/02.1	215/01.0	194/01.6	**199/02.7**	**121/07.2**	**257/00.6**
15	264/03.2	282/03.2	126/03.9	144/04.4	169/03.7	202/02.9	219/01.6	208/01.9	213/01.9	204/01.8	212/01.7	**242/02.5**	**305/04.5**	**220/00.7**
16	154/05.6	167/05.2	186/04.8	189/05.5	196/04.4	195/04.0	200/03.2	245/06.1	145/01.6	285/01.2	297/00.5	**201/03.0**	**245/06.1**	**297/00.5**
17	137/05.0	119/05.4	055/03.7	031/03.3	354/03.2	295/02.5	289/01.1	295/00.9	322/01.3	251/01.0	284/01.1	**267/02.3**	**119/05.4**	**322/00.6**
18	352/02.8	006/02.3	359/02.7	003/02.6	006/02.5	023/01.9	047/01.6	078/01.3	052/00.9	304/01.3	294/01.8	**348/02.3**	**331/03.5**	**052/00.9**
19	117/03.6	102/04.6	101/04.3	101/04.3	118/05.3	141/04.8	152/03.4	175/02.0	177/01.8	184/01.7	186/01.9	**099/03.0**	**118/05.3**	**184/01.7**
20	170/04.6	174/03.6	169/03.0	180/03.0	163/01.8	130/02.7	179/02.1	251/01.0	246/01.1	295/01.3	293/01.8	**196/02.2**	**158/05.1**	**293/00.8**
21	113/04.9	119/04.7	146/03.5	160/04.1	154/04.0	161/03.2	163/02.5	168/02.5	177/03.0	181/02.8	182/02.7	**156/02.8**	**103/05.8**	**054/00.9**
22	116/03.7	128/02.8	148/03.5	118/03.6	126/04.7	129/04.6	135/03.8	135/04.3	138/04.2	141/03.7	176/02.3	**148/02.8**	**126/04.7**	**207/01.0**
23	263/02.3	283/01.9	300/02.7	285/02.9	127/05.3	138/04.9	147/03.4	147/02.9	190/02.0	203/02.1	235/01.8	**251/02.7**	**127/05.3**	**250/01.4**
24	104/04.1	108/04.2	116/05.0	117/04.9	129/05.3	154/03.4	170/02.4	168/02.1	204/01.3	224/00.9	211/01.0	**178/02.2**	**129/05.3**	**264/00.8**
25	300/03.7	311/03.7	357/02.2	006/02.1	125/03.1	134/03.0	161/02.3	186/01.6	240/00.6	256/00.7	264/01.4	**256/02.1**	**293/03.7**	**240/00.6**
26	128/02.7	126/03.2	122/02.9	116/02.9	126/03.5	142/03.0	171/02.5	199/01.6	216/01.7	229/01.2	268/01.9	**076/02.4**	**126/03.5**	**229/01.2**
27	122/03.1	123/03.7	125/03.8	121/03.3	122/03.3	121/03.4	104/02.5	192/01.4	219/01.2	223/00.6	297/00.9	**080/02.3**	**125/03.8**	**223/00.6**
28	122/05.0	113/05.1	116/04.8	103/04.2	116/04.8	133/04.3	154/03.3	171/02.3	169/01.9	184/02.1	183/02.3	**136/02.8**	**113/05.1**	**023/00.6**
29	105/06.2	106/05.8	110/05.3	118/05.0	128/04.9	228/04.0	289/01.7	192/01.9	184/02.0	192/01.9	192/02.1	**162/03.0**	**105/06.2**	**185/01.5**
30	153/04.6	153/05.4	146/06.5	155/05.6	153/05.4	153/05.2	157/04.4	186/03.1	185/01.8	185/02.1	181/02.3	**171/03.7**	**146/06.5**	**185/01.8**
31	275/03.0	269/02.8	209/03.7	151/03.6	190/04.0	194/03.2	210/01.7	294/01.1	250/00.7	246/00.7	198/01.2	**218/02.3**	**104/04.4**	**250/00.7**
MEAN	**122/04.3**	**127/04.1**	**121/04.0**	**122/04.0**	**135/04.1**	**151/03.7**	**164/02.9**	**180/02.5**	**190/02.1**	**214/01.9**	**222/02.0**	**178/02.8**		
MAX	**147/08.0**	**152/07.9**	**156/08.6**	**158/08.8**	**157/08.1**	**161/06.7**	**163/05.9**	**245/06.1**	**138/04.2**	**167/03.7**	**305/04.1**		**158/08.8**	
MIN	**095/02.2**	**283/01.9**	**310/01.8**	**347/01.4**	**128/00.9**	**112/01.8**	**289/01.1**	**295/00.9**	**135/00.6**	**288/00.5**	**297/00.5**			**288/00.5**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 744 DATA RECOVERY RATE = 100.0%

MONTHLY MEAN = 178/02.8 MAXIMUM WIND SPEED = 08.8 AT 158 DEGREES DATE OF OCCURRENCE = 7/10 AT 1700

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

CSX AQ5

Unit Vector Wind Speed and Direction in mps for August, 2024

Hr Beg Hr End Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13
1	196/01.2	217/01.3	254/00.9	273/01.0	252/01.0	292/01.3	307/01.6	335/01.4	061/01.1	038/01.6	297/02.0	105/04.0	115/05.2
2	181/02.5	180/02.1	194/01.2	181/01.2	163/02.3	169/01.3	165/02.4	193/02.3	142/02.5	135/03.3	158/04.1	183/04.4	187/04.1
3	233/01.4	196/01.7	274/00.5	177/01.9	187/02.1	190/01.5	189/01.7	206/02.2	178/02.1	188/02.3	130/03.0	140/03.4	178/03.1
4	199/01.7	220/01.6	202/01.8	189/01.8	194/01.4	199/01.2	233/01.2	264/01.9	263/02.0	273/01.7	258/01.7	122/01.6	116/01.9
5	281/01.3	269/01.0	208/01.0	193/01.1	203/01.0	195/01.2	216/01.5	293/01.1	001/01.1	133/02.3	113/03.0	103/03.9	106/03.9
6	198/01.7	207/01.8	204/01.8	215/02.1	215/01.8	211/01.3	203/01.3	241/02.0	200/01.7	148/03.7	149/03.9	153/04.1	158/04.2
7	097/03.5	055/02.4	335/01.6	022/01.2	061/01.1	132/01.2	330/00.6	165/01.8	156/01.5	045/01.5	074/02.3	100/03.3	109/03.5
8	071/04.4	079/04.6	081/04.7	076/04.3	077/04.3	082/04.9	084/04.8	078/04.4	084/04.9	088/04.9	084/04.5	090/05.4	096/05.5
9	124/10.0	134/10.1	140/10.2	143/09.7	143/09.8	146/09.2	149/10.6	150/10.4	160/09.1	175/06.7	176/06.7	188/05.4	201/03.3
10	204/01.0	285/01.3	297/01.6	302/01.8	297/01.8	299/02.1	309/02.1	335/01.7	355/01.2	117/02.0	132/02.1	260/03.1	275/03.9
11	356/03.1	351/01.8	332/01.9	349/01.3	332/01.4	294/01.3	308/01.7	308/02.1	322/02.8	326/02.0	295/03.0	298/03.1	272/02.8
12	308/01.5	298/02.2	278/00.9	231/01.2	239/01.0	307/02.0	284/01.7	300/01.8	306/02.0	328/03.2	286/03.7	286/04.0	274/03.9
13	296/02.3	294/02.6	296/02.4	296/02.5	304/02.1	333/02.4	341/01.9	353/01.8	055/01.6	128/02.6	128/02.8	116/03.1	116/03.6
14	309/01.7	313/01.6	315/01.6	313/01.6	309/01.8	330/01.8	341/02.7	341/02.8	338/03.1	336/03.5	358/03.0	011/02.8	360/02.6
15	309/01.6	308/01.6	312/01.8	309/01.5	311/01.6	302/01.5	309/01.7	341/02.3	347/02.4	360/01.9	057/01.6	012/02.1	357/02.5
16	306/00.9	303/01.3	258/00.9	297/01.1	253/00.5	294/00.7	315/00.7	044/00.6	126/01.2	102/02.7	100/03.4	105/04.6	134/04.0
17	180/04.2	227/03.0	169/03.4	175/03.5	161/04.3	141/04.2	135/03.4	173/01.3	266/00.7	085/00.9	151/03.4	167/02.8	154/04.4
18	287/00.7	261/00.6	235/01.0	147/02.5	166/01.5	148/02.3	201/01.5	202/01.9	192/02.3	199/02.2	160/02.4	154/02.3	157/02.7
19	278/01.7	285/01.2	347/00.5	244/00.6	272/01.1	284/01.1	296/01.8	300/02.6	302/03.7	316/04.0	312/03.4	305/03.7	285/04.0
20	333/04.1	324/05.3	327/04.3	331/04.4	341/04.6	343/04.5	340/04.6	342/05.1	338/05.7	331/05.8	332/05.3	337/04.4	324/05.3
21	297/02.6	297/02.6	296/02.9	283/02.4	282/02.0	295/02.4	305/03.2	314/04.7	319/04.5	324/04.5	327/04.4	326/04.7	319/04.8
22	304/02.2	287/01.9	285/01.3	302/02.3	297/02.1	302/02.6	300/02.6	315/02.6	338/02.4	357/02.2	327/02.8	318/02.2	325/02.7
23	215/01.0	292/01.3	311/01.5	289/01.8	283/01.1	273/01.1	275/01.0	014/00.8	055/01.0	277/01.9	328/01.7	110/02.8	119/03.3
24	180/01.7	220/01.4	224/00.8	267/00.7	253/00.8	300/00.7	323/01.2	268/02.1	260/01.3	226/01.8	185/01.5	142/02.7	125/03.8
25	178/01.5	234/00.9	210/00.7	248/00.6	230/00.7	215/01.1	217/00.8	138/01.3	129/02.3	148/02.0	145/02.6	100/04.6	103/05.4
26	201/01.5	202/01.3	194/01.2	216/00.8	217/00.8	239/00.5	214/00.8	258/01.7	264/01.8	109/01.4	115/02.4	105/03.9	106/04.7
27	288/01.1	276/00.6	290/01.1	306/01.9	301/01.7	306/01.6	322/01.4	006/01.3	103/02.3	129/02.4	128/02.7	119/02.7	110/03.1
28	180/02.1	192/02.0	193/01.6	180/02.0	280/00.9	263/00.8	199/01.0	224/01.4	274/02.5	292/02.6	309/03.8	314/03.0	270/01.8
29	263/01.8	305/01.3	290/01.5	275/01.3	341/01.4	047/01.6	024/01.7	033/02.0	068/03.3	079/03.5	083/03.1	076/03.1	081/03.9
30	079/03.1	091/03.3	082/03.3	076/03.8	058/03.4	043/02.4	077/03.5	083/04.1	071/03.9	069/03.8	077/03.7	058/02.8	070/02.2
31	062/02.1	084/02.5	089/02.5	096/02.6	078/01.7	093/02.0	158/02.3	173/02.1	158/01.7	110/02.8	100/03.6	115/03.6	101/04.0
MEAN	**246/02.3**	**264/02.2**	**263/02.0**	**255/02.1**	**260/02.0**	**270/02.1**	**277/02.2**	**299/02.4**	**357/02.6**	**086/02.8**	**109/03.1**	**106/03.5**	**124/03.7**
MAX	**124/10.0**	**134/10.1**	**140/10.2**	**143/09.7**	**143/09.8**	**146/09.2**	**149/10.6**	**150/10.4**	**160/09.1**	**175/06.7**	**176/06.7**	**090/05.4**	**096/05.5**
MIN	**287/00.7**	**261/00.6**	**274/00.5**	**244/00.6**	**253/00.5**	**239/00.5**	**330/00.6**	**044/00.6**	**266/00.7**	**085/00.9**	**185/01.5**	**122/01.6**	**270/01.8**

MEANS REQUIRE 75% VALID DATA

MISSING DATA DENOTED BY ---

CSX AQ5

Unit Vector Wind Speed and Direction in mps for August, 2024

Hr Beg Hr End Day	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX SPD	MIN SPD
1	104/05.1	109/04.9	130/04.5	136/04.6	161/04.2	165/03.3	183/03.3	188/02.6	188/02.4	187/02.6	186/02.1	**180/02.6**	**115/05.2**	**254/00.9**
2	189/05.3	197/04.6	203/04.2	217/03.2	046/03.3	349/05.7	305/02.9	239/06.3	344/02.5	266/01.4	279/00.8	**193/03.1**	**239/06.3**	**279/00.8**
3	168/04.1	174/05.0	179/05.6	299/04.8	280/02.7	259/02.5	266/01.8	320/01.5	201/02.0	185/02.4	176/03.0	**201/02.6**	**179/05.6**	**274/00.5**
4	192/03.1	249/02.1	213/02.0	152/03.4	186/02.8	169/03.1	176/03.3	188/02.0	207/01.8	245/01.3	275/01.3	**209/02.0**	**152/03.4**	**199/01.2**
5	108/04.1	111/04.9	136/03.9	151/03.8	163/03.2	166/03.1	177/03.0	178/03.0	187/02.7	185/02.6	199/02.1	**172/02.5**	**111/04.9**	**269/01.0**
6	151/04.1	149/05.2	156/06.5	153/06.2	161/05.5	169/04.2	086/02.7	003/04.3	065/02.8	050/02.4	358/03.4	**169/03.3**	**156/06.5**	**211/01.3**
7	028/03.0	083/03.8	101/06.2	140/06.7	132/06.1	128/06.4	104/05.4	093/05.4	074/04.6	062/05.5	067/05.1	**086/03.5**	**140/06.7**	**330/00.6**
8	098/05.6	109/06.8	114/07.7	103/06.9	104/06.1	084/04.3	101/05.8	098/05.7	104/06.8	112/07.3	116/08.3	**092/05.5**	**116/08.3**	**076/04.3**
9	194/03.2	205/03.6	207/03.7	204/03.2	198/03.1	195/02.4	199/02.0	190/02.1	199/02.0	203/01.7	258/01.7	**178/05.8**	**149/10.6**	**203/01.7**
10	296/04.0	298/03.4	290/02.9	295/03.2	315/02.7	332/02.0	352/01.2	001/01.5	353/02.8	334/04.1	343/03.0	**311/02.4**	**334/04.1**	**204/01.0**
11	279/03.2	280/03.2	288/03.3	296/04.0	307/03.7	290/02.1	263/00.9	230/01.1	290/00.9	296/02.0	232/01.3	**300/02.3**	**296/04.0**	**263/00.9**
12	293/04.0	289/04.2	294/04.6	309/04.7	298/03.5	293/02.9	269/01.4	271/01.6	277/01.8	300/01.9	295/01.6	**289/02.6**	**309/04.7**	**278/00.9**
13	065/02.3	086/01.9	320/02.7	353/02.3	124/02.1	326/02.2	297/01.7	290/01.5	292/01.5	296/01.4	308/01.6	**333/02.2**	**116/03.6**	**296/01.4**
14	354/03.4	002/03.3	001/02.9	350/02.7	357/02.3	340/02.1	300/01.9	285/01.5	294/02.1	298/02.1	301/02.0	**331/02.4**	**336/03.5**	**285/01.5**
15	009/02.2	096/02.8	115/03.3	126/03.2	129/02.9	152/01.9	196/01.7	185/01.5	203/01.6	301/01.4	310/01.2	**333/02.0**	**115/03.3**	**310/01.2**
16	142/03.8	137/05.0	139/04.9	150/04.9	153/04.7	159/04.5	157/04.3	167/03.3	176/03.2	176/03.4	175/03.6	**160/02.8**	**137/05.0**	**253/00.5**
17	147/04.4	152/04.9	142/04.1	146/04.3	138/03.4	153/03.0	184/02.8	221/01.4	176/01.4	250/01.9	218/00.8	**169/03.0**	**152/04.9**	**266/00.7**
18	149/03.0	142/03.4	153/03.6	157/03.5	148/02.9	161/03.9	356/03.7	352/02.3	262/03.0	223/01.8	283/01.8	**187/02.4**	**161/03.9**	**261/00.6**
19	272/03.4	309/05.5	316/05.7	313/04.8	314/04.3	344/03.2	317/04.3	312/04.7	332/04.6	331/05.0	334/04.1	**305/03.3**	**316/05.7**	**347/00.5**
20	326/05.4	334/05.3	333/05.6	333/05.6	337/04.9	336/04.3	308/02.4	285/01.8	287/02.0	292/02.2	297/02.7	**326/04.4**	**331/05.8**	**285/01.8**
21	323/04.7	310/05.3	314/04.2	305/03.6	294/03.4	288/02.7	275/01.3	283/01.4	293/02.0	298/02.1	296/02.2	**303/03.3**	**310/05.3**	**275/01.3**
22	321/02.8	332/02.2	294/03.1	295/03.5	305/02.7	283/02.4	281/01.3	275/01.3	218/00.6	280/00.8	292/00.6	**302/02.1**	**295/03.5**	**218/00.6**
23	117/04.2	120/04.6	120/04.8	131/05.3	137/04.8	137/03.0	160/01.8	199/01.3	203/01.4	221/01.1	195/01.3	**194/02.2**	**131/05.3**	**014/00.8**
24	105/05.2	108/05.1	112/05.2	131/05.3	155/04.0	159/02.8	155/01.5	153/01.7	184/01.3	192/01.1	194/01.1	**186/02.3**	**131/05.3**	**267/00.7**
25	134/03.8	141/04.0	145/04.7	143/05.1	153/04.3	168/03.3	171/02.4	167/02.3	187/01.8	194/01.9	199/01.7	**170/02.5**	**103/05.4**	**248/00.6**
26	094/05.0	122/03.1	204/03.6	188/02.3	227/01.1	216/01.6	220/01.0	235/00.9	235/00.9	253/00.9	301/01.3	**204/01.9**	**094/05.0**	**239/00.5**
27	111/03.6	102/04.2	121/04.5	134/04.2	155/03.6	165/02.4	192/01.3	201/01.2	193/01.1	204/01.9	192/01.9	**169/02.2**	**121/04.5**	**276/00.6**
28	257/02.0	267/02.6	271/02.9	280/03.0	279/02.1	285/01.3	320/01.7	201/02.0	265/03.7	061/01.5	305/01.1	**260/02.1**	**309/03.8**	**263/00.8**
29	094/04.1	103/04.3	094/03.7	117/04.7	121/06.2	122/07.2	116/07.1	103/06.3	119/06.8	099/04.1	089/03.3	**080/03.6**	**122/07.2**	**305/01.3**
30	080/02.7	085/03.0	085/02.9	081/02.9	084/03.3	108/04.4	081/03.1	097/05.0	097/04.6	092/03.6	082/02.6	**079/03.4**	**097/05.0**	**070/02.2**
31	102/04.2	126/04.2	154/03.4	155/02.6	156/02.2	177/02.1	177/03.1	213/02.6	257/01.8	297/02.2	244/01.3	**134/02.6**	**102/04.2**	**244/01.3**
MEAN	**116/03.8**	**127/04.1**	**159/04.2**	**163/04.1**	**164/03.6**	**188/03.2**	**215/02.6**	**221/02.6**	**225/02.5**	**250/02.4**	**261/02.3**	**223/02.9**		
MAX	**098/05.6**	**109/06.8**	**114/07.7**	**103/06.9**	**121/06.2**	**122/07.2**	**116/07.1**	**239/06.3**	**104/06.8**	**112/07.3**	**116/08.3**		**149/10.6**	
MIN	**257/02.0**	**086/01.9**	**213/02.0**	**353/02.3**	**227/01.1**	**285/01.3**	**263/00.9**	**235/00.9**	**218/00.6**	**280/00.8**	**292/00.6**			**274/00.5**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 744 DATA RECOVERY RATE = 100.0%

MONTHLY MEAN = 223/02.9 MAXIMUM WIND SPEED = 10.6 AT 149 DEGREES DATE OF OCCURRENCE = 8/9 AT 700

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

CSX AQ5

Unit Vector Wind Speed and Direction in mps for September, 2024

Hr Beg Hr End Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13
1	225/01.5	216/01.4	204/01.1	201/01.1	238/01.0	232/00.9	241/01.1	217/01.2	249/01.7	260/02.3	259/02.2	231/02.6	264/02.6
2	284/01.5	290/01.8	333/03.5	353/04.1	350/04.1	350/03.5	353/03.8	348/04.3	356/04.9	355/04.5	340/04.3	334/04.4	328/04.7
3	002/03.9	003/04.0	001/03.7	355/02.9	349/02.7	352/02.8	002/03.2	029/02.5	046/02.9	060/03.8	056/04.0	076/03.3	054/02.3
4	297/01.3	293/01.3	306/01.4	306/02.0	306/01.6	307/01.5	317/01.6	356/01.7	034/01.9	073/02.5	100/03.3	113/03.8	118/03.7
5	168/02.3	303/01.3	355/01.4	017/01.7	009/01.9	346/01.8	350/01.7	017/01.9	052/02.6	081/02.8	108/02.8	103/03.6	110/03.8
6	101/03.2	083/02.6	067/02.4	019/01.9	026/01.7	358/01.8	346/01.8	355/01.8	062/01.4	108/02.3	121/03.2	117/03.4	118/02.9
7	162/02.8	173/02.1	191/01.6	192/01.6	177/02.4	172/02.6	182/02.2	183/02.6	184/02.7	191/02.9	257/02.9	304/07.2	313/06.9
8	271/01.9	255/01.4	260/01.7	218/01.3	246/01.6	291/01.7	278/01.6	281/02.7	308/04.1	316/04.0	303/03.8	316/04.0	284/03.4
9	242/01.2	254/00.9	270/01.0	195/00.9	200/01.0	261/01.1	288/01.3	285/01.0	265/01.7	268/02.7	271/02.6	275/03.2	266/03.3
10	215/01.4	290/01.1	222/01.3	221/00.7	257/01.0	236/01.0	292/01.7	287/02.2	286/02.6	315/02.9	340/01.8	342/02.2	336/03.3
11	306/01.3	316/01.0	316/01.8	345/01.2	004/01.1	004/01.1	022/01.3	057/01.6	106/02.0	126/02.9	127/02.2	113/02.8	114/03.1
12	321/01.1	288/00.8	289/00.6	322/01.1	330/01.0	345/01.2	351/01.3	027/01.5	073/02.3	119/02.9	119/03.5	123/03.4	127/03.1
13	053/02.0	040/01.7	023/01.3	028/01.6	030/01.8	024/02.1	014/02.5	024/02.9	022/02.2	031/01.7	079/01.6	116/03.2	126/02.0
14	051/01.4	031/01.2	352/01.4	340/01.2	338/01.1	301/01.2	304/00.7	063/01.5	059/01.9	074/03.0	093/03.7	093/04.2	067/03.2
15	353/01.3	024/01.3	042/01.7	043/01.6	026/01.9	023/02.1	031/02.3	039/02.4	046/02.6	076/02.9	114/02.7	132/02.8	136/02.3
16	061/02.7	015/02.4	024/02.5	031/02.8	026/02.8	027/02.9	021/02.9	018/02.8	028/02.8	047/03.8	062/04.2	048/03.3	073/03.6
17	057/03.3	060/03.9	042/02.9	039/02.7	043/03.1	042/02.7	049/02.9	056/03.1	068/04.3	063/04.7	062/04.4	067/04.3	067/03.9
18	056/03.3	030/02.6	030/02.4	027/02.3	038/02.7	038/02.5	033/02.7	037/02.6	046/02.8	048/03.0	049/03.6	---	---
19	355/02.1	003/02.4	358/02.1	358/02.0	358/02.1	348/02.2	351/02.2	346/02.1	358/02.2	355/02.2	337/02.9	338/03.9	357/03.8
20	304/01.3	304/01.2	306/01.5	319/01.6	360/01.4	033/01.3	036/01.5	049/01.8	095/03.1	100/03.5	121/03.5	132/02.6	137/02.1
21	143/03.4	150/03.0	176/02.2	185/01.8	191/01.6	190/01.7	193/01.4	176/02.0	157/02.8	147/03.2	112/03.7	100/04.6	100/05.5
22	128/04.6	092/04.2	077/04.0	142/04.9	109/02.7	063/03.1	061/03.4	083/03.1	087/03.2	098/03.2	083/03.1	094/02.9	107/03.2
23	140/03.6	139/03.6	148/03.8	169/02.5	158/03.1	163/03.3	149/03.1	134/04.7	135/05.5	136/05.2	143/04.1	146/03.9	150/03.9
24	090/04.7	082/04.1	081/03.7	084/03.8	087/04.1	084/04.1	087/03.7	094/04.1	089/04.0	096/04.6	101/04.3	105/04.4	109/04.5
25	101/05.7	099/04.3	094/04.1	089/03.6	078/02.8	095/03.1	095/03.5	093/03.6	098/04.9	099/04.7	104/04.4	114/04.2	109/04.3
26	119/03.0	125/03.8	119/03.0	102/03.2	091/02.6	091/02.6	081/02.0	102/02.5	130/01.1	125/01.0	130/01.3	099/01.7	092/03.0
27	275/00.5	007/00.6	021/00.9	093/01.2	050/01.4	050/01.6	073/02.1	078/02.3	088/02.5	082/02.3	088/02.8	087/03.2	087/03.1
28	070/03.8	074/04.3	093/03.6	086/04.3	080/04.0	061/02.9	087/02.4	069/02.8	084/03.0	087/03.0	087/02.1	027/01.7	040/01.7
29	041/02.3	047/02.2	045/01.9	029/02.5	041/02.0	055/02.5	043/02.3	038/02.4	043/02.1	055/02.5	049/02.4	043/02.5	051/02.4
30	042/02.7	051/02.7	052/02.6	024/02.1	038/02.0	036/01.8	047/02.0	046/02.3	049/02.5	051/02.3	033/02.0	028/02.1	020/01.9
MEAN	**052/02.5**	**022/02.3**	**022/02.2**	**033/02.2**	**027/02.1**	**019/02.2**	**020/02.2**	**042/02.5**	**063/02.8**	**077/03.1**	**084/03.1**	**083/03.4**	**085/03.4**
MAX	**101/05.7**	**099/04.3**	**094/04.1**	**142/04.9**	**350/04.1**	**084/04.1**	**353/03.8**	**134/04.7**	**135/05.5**	**136/05.2**	**062/04.4**	**304/07.2**	**313/06.9**
MIN	**275/00.5**	**007/00.6**	**289/00.6**	**221/00.7**	**238/01.0**	**232/00.9**	**304/00.7**	**285/01.0**	**130/01.1**	**125/01.0**	**130/01.3**	**099/01.7**	**040/01.7**

MEANS REQUIRE 75% VALID DATA

MISSING DATA DENOTED BY ---

CSX AQ5

Unit Vector Wind Speed and Direction in mps for September, 2024

Hr Beg Hr End Day	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX SPD	MIN SPD
1	260/02.8	288/02.6	269/02.8	270/02.8	246/02.3	214/01.8	203/01.8	207/02.3	211/01.9	210/01.3	277/01.6	**237/01.9**	**260/02.8**	**232/00.9**
2	338/04.4	340/04.8	329/05.4	336/05.0	336/05.1	338/04.6	340/03.9	341/03.3	346/03.2	359/03.8	004/03.5	**340/04.0**	**329/05.4**	**284/01.5**
3	031/02.7	034/02.2	126/03.6	131/03.2	106/02.8	089/02.7	071/01.7	002/01.2	350/01.9	156/03.3	201/02.0	**042/02.9**	**003/04.0**	**002/01.2**
4	122/03.7	129/03.2	116/03.0	137/03.8	132/03.0	142/03.4	145/03.6	138/03.6	140/04.0	147/03.5	141/03.5	**114/02.7**	**140/04.0**	**297/01.3**
5	114/02.8	123/02.2	123/01.6	118/01.8	137/02.6	133/02.0	140/02.6	183/01.8	190/01.7	178/02.0	171/02.2	**106/02.2**	**110/03.8**	**303/01.3**
6	127/02.7	123/03.1	111/02.9	119/01.5	107/01.5	140/01.5	189/01.3	180/01.0	193/01.5	158/02.5	154/03.3	**107/02.2**	**117/03.4**	**180/01.0**
7	322/05.7	306/03.4	296/01.9	241/00.8	171/01.8	217/01.4	230/01.2	282/01.6	287/01.8	265/01.9	302/02.7	**230/02.7**	**304/07.2**	**241/00.8**
8	277/03.7	272/04.0	284/04.0	275/03.3	271/02.8	243/01.7	259/01.4	287/01.5	297/02.0	297/01.8	287/01.5	**278/02.5**	**308/04.1**	**218/01.3**
9	279/03.6	284/03.4	278/03.4	288/02.9	283/02.5	272/01.3	228/01.4	199/01.4	229/01.5	263/01.5	211/01.7	**258/01.9**	**279/03.6**	**254/00.9**
10	311/03.4	313/02.6	328/02.8	317/02.8	108/02.7	138/03.0	160/01.7	167/01.1	241/00.5	268/00.4	306/01.0	**278/01.9**	**311/03.4**	**268/00.4**
11	119/02.9	101/03.3	117/03.3	111/03.6	113/03.0	124/02.5	127/02.2	136/05.2	162/03.4	178/01.8	270/01.0	**099/02.3**	**136/05.2**	**316/01.0**
12	111/02.5	102/02.6	101/02.7	120/02.4	129/02.1	119/01.9	121/05.9	133/05.2	128/03.8	120/03.3	069/02.1	**091/02.4**	**121/05.9**	**289/00.6**
13	142/01.6	142/01.8	145/01.5	137/01.9	116/01.8	081/01.3	051/01.1	085/01.4	121/02.0	129/00.9	031/01.1	**073/01.8**	**116/03.2**	**129/00.9**
14	073/03.1	086/03.1	110/03.3	131/03.8	137/04.1	134/04.4	129/04.6	124/04.6	097/03.5	085/02.0	023/01.6	**071/02.7**	**129/04.6**	**304/00.7**
15	120/03.8	125/05.1	129/05.7	129/05.5	129/04.3	113/05.7	104/06.0	115/05.8	103/04.8	092/04.4	085/04.0	**084/03.5**	**104/06.0**	**353/01.3**
16	075/03.2	052/03.5	072/03.4	067/03.6	066/03.6	073/03.6	092/05.1	070/03.9	073/04.0	073/03.0	068/03.7	**053/03.3**	**092/05.1**	**015/02.4**
17	068/03.8	067/03.9	079/03.7	039/01.6	054/02.3	058/02.9	073/02.9	079/03.9	074/03.0	059/03.6	059/03.4	**059/03.4**	**063/04.7**	**039/01.6**
18	076/04.1	066/03.7	059/03.7	055/03.5	058/03.6	341/03.1	348/02.6	342/02.3	348/02.0	358/02.1	356/02.3	**032/02.9**	**076/04.1**	**348/02.0**
19	360/03.2	345/03.2	359/03.8	078/02.0	329/02.6	318/01.7	295/01.4	295/00.8	307/01.4	303/01.9	322/02.0	**343/02.3**	**338/03.9**	**295/00.8**
20	133/02.1	125/02.7	117/03.4	116/02.9	118/02.4	182/01.6	189/01.7	179/02.0	153/02.8	143/03.6	130/04.1	**116/02.3**	**130/04.1**	**304/01.2**
21	099/05.2	099/05.6	107/04.7	142/03.8	134/02.8	137/02.8	125/02.7	132/04.2	133/04.7	131/06.1	133/06.1	**141/03.6**	**131/06.1**	**193/01.4**
22	114/03.8	115/03.3	120/02.6	108/01.3	091/01.5	065/01.0	081/01.5	172/01.8	145/04.2	149/04.9	151/04.3	**105/03.2**	**142/04.9**	**065/01.0**
23	160/03.2	147/03.9	135/03.8	132/04.9	124/07.0	125/07.5	119/07.6	117/06.7	093/04.5	075/03.8	077/03.8	**135/04.5**	**119/07.6**	**169/02.5**
24	113/04.5	114/05.1	115/05.1	123/04.8	124/06.3	112/06.0	110/06.0	115/06.9	115/06.7	109/06.0	102/05.2	**102/04.9**	**115/06.9**	**081/03.7**
25	110/04.8	116/04.4	127/04.0	132/04.2	124/04.7	121/05.3	129/05.2	126/05.2	127/04.1	129/03.7	130/03.0	**110/04.2**	**101/05.7**	**078/02.8**
26	114/03.3	157/03.1	160/02.5	163/02.0	112/01.1	098/01.2	063/02.0	160/03.0	176/01.7	147/00.9	343/00.5	**118/02.2**	**125/03.8**	**343/00.5**
27	101/03.6	077/04.6	084/05.1	081/05.2	075/04.8	069/04.2	066/04.3	071/04.6	074/04.2	060/04.4	063/03.8	**070/03.1**	**081/05.2**	**275/00.5**
28	126/02.3	109/02.6	115/03.1	104/03.2	083/03.2	065/03.7	069/03.8	066/03.4	065/04.0	076/04.2	056/03.8	**078/03.2**	**074/04.3**	**027/01.7**
29	035/02.0	029/02.2	038/02.2	043/02.9	040/02.8	037/02.8	044/02.7	044/02.5	048/02.8	045/02.5	048/02.8	**043/02.4**	**043/02.9**	**045/01.9**
30	034/02.0	027/01.9	047/02.4	037/02.4	023/01.9	023/01.9	026/01.9	029/01.8	044/01.9	065/03.2	064/02.7	**039/02.2**	**065/03.2**	**036/01.8**
MEAN	**093/03.4**	**088/03.4**	**100/03.4**	**108/03.1**	**104/03.1**	**106/03.0**	**110/03.1**	**123/03.1**	**119/03.0**	**116/02.9**	**067/02.8**	**077/02.8**		
MAX	**322/05.7**	**099/05.6**	**129/05.7**	**129/05.5**	**124/07.0**	**125/07.5**	**119/07.6**	**115/06.9**	**115/06.7**	**131/06.1**	**133/06.1**		**119/07.6**	
MIN	**142/01.6**	**142/01.8**	**145/01.5**	**241/00.8**	**112/01.1**	**065/01.0**	**051/01.1**	**295/00.8**	**241/00.5**	**268/00.4**	**343/00.5**			**268/00.4**

POSSIBLE NUMBER OF OBSERVATIONS = 720 ACTUAL NUMBER OF OBSERVATIONS = 718 DATA RECOVERY RATE = 99.7%

MONTHLY MEAN = 077/02.8 MAXIMUM WIND SPEED = 07.6 AT 119 DEGREES DATE OF OCCURRENCE = 9/23 AT 2000

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

CSX AQ5

Joint Frequency Distribution for July, 2024

Percentage frequency of occurence of hourly wind velocities for all stability classes

Wind Direction		Wind Speed (mps) 0.5 - 1.54	1.54 - 3.09	3.09 - 5.14	5.14 - 8.23	8.23 - 10.8	OVER 10.8	TOTAL	AVG SPEED
N	348.75 - 11.25	0.1	4.0	1.2	0.0	0.0	0.0	**5.4**	**2.7**
NNE	11.25 - 33.75	0.9	1.5	0.3	0.0	0.0	0.0	**2.7**	**1.9**
NE	33.75 - 56.25	0.5	1.3	0.1	0.0	0.0	0.0	**2.0**	**1.9**
ENE	56.25 - 78.75	0.1	0.4	0.0	0.0	0.0	0.0	**0.5**	**1.8**
E	78.75 - 101.25	0.0	1.2	1.6	0.5	0.0	0.0	**3.4**	**3.8**
ESE	101.25 - 123.75	0.3	2.4	8.3	0.9	0.0	0.0	**12.0**	**3.8**
SE	123.75 - 146.25	0.4	3.1	3.9	0.8	0.0	0.0	**8.2**	**3.5**
SSE	146.25 - 168.75	0.0	3.0	6.3	2.3	0.3	0.0	**11.8**	**4.1**
S	168.75 - 191.25	2.0	10.3	3.0	0.1	0.0	0.0	**15.5**	**2.5**
SSW	191.25 - 213.75	3.2	4.4	0.8	0.0	0.0	0.0	**8.5**	**1.9**
SW	213.75 - 236.25	2.0	1.7	0.3	0.0	0.0	0.0	**4.0**	**1.6**
WSW	236.25 - 258.75	2.7	1.5	0.0	0.1	0.0	0.0	**4.3**	**1.6**
W	258.75 - 281.25	1.2	3.0	0.3	0.0	0.0	0.0	**4.4**	**2.1**
WNW	281.25 - 303.75	2.8	3.4	2.3	0.0	0.0	0.0	**8.5**	**2.2**
NW	303.75 - 326.25	1.1	1.2	1.5	0.4	0.0	0.0	**4.2**	**2.9**
NNW	326.25 - 348.75	0.3	2.0	2.0	0.4	0.0	0.0	**4.7**	**3.4**
	CALM							**0.0**	
	TOTAL	**17.7**	**44.5**	**31.9**	**5.6**	**0.3**	**0.0**	**100.0**	**2.8**

TOTAL NUMBER OF OBSERVATIONS = 744

POSSIBLE NUMBER OF OBSERVATIONS = 744

DATA RECOVERY = 100.0%

CSX AQ5

Joint Frequency Distribution for August, 2024

Percentage frequency of occurence of hourly wind velocities for all stability classes

Wind Direction		Wind Speed (mps) 0.5 - 1.54	1.54 - 3.09	3.09 - 5.14	5.14 - 8.23	8.23 - 10.8	OVER 10.8	TOTAL	AVG SPEED
N	348.75 - 11.25	0.8	2.0	0.8	0.0	0.0	0.0	**3.6**	**2.4**
NNE	11.25 - 33.75	0.3	0.5	0.0	0.0	0.0	0.0	**0.8**	**1.8**
NE	33.75 - 56.25	0.4	0.8	0.1	0.0	0.0	0.0	**1.3**	**1.8**
ENE	56.25 - 78.75	0.4	1.1	2.0	0.1	0.0	0.0	**3.6**	**3.2**
E	78.75 - 101.25	0.1	1.6	4.2	0.8	0.0	0.0	**6.7**	**3.8**
ESE	101.25 - 123.75	0.1	1.3	3.9	2.3	0.1	0.0	**7.8**	**4.5**
SE	123.75 - 146.25	0.4	1.9	3.2	0.7	0.8	0.0	**7.0**	**4.4**
SSE	146.25 - 168.75	0.5	3.1	4.3	0.5	0.4	0.0	**8.9**	**3.6**
S	168.75 - 191.25	1.1	4.0	1.9	0.7	0.0	0.0	**7.7**	**2.8**
SSW	191.25 - 213.75	3.4	4.0	1.3	0.0	0.0	0.0	**8.7**	**1.9**
SW	213.75 - 236.25	3.6	0.9	0.1	0.0	0.0	0.0	**4.7**	**1.3**
WSW	236.25 - 258.75	1.6	1.1	0.0	0.1	0.0	0.0	**2.8**	**1.5**
W	258.75 - 281.25	3.2	2.8	0.9	0.0	0.0	0.0	**7.0**	**1.8**
WNW	281.25 - 303.75	3.9	7.1	2.4	0.0	0.0	0.0	**13.4**	**2.2**
NW	303.75 - 326.25	1.5	4.3	2.6	0.8	0.0	0.0	**9.1**	**2.8**
NNW	326.25 - 348.75	0.7	2.6	2.6	0.9	0.0	0.0	**6.7**	**3.3**
	CALM							**0.0**	
	TOTAL	**22.0**	**39.2**	**30.4**	**7.0**	**1.3**	**0.0**	**100.0**	**2.9**

TOTAL NUMBER OF OBSERVATIONS = 744

POSSIBLE NUMBER OF OBSERVATIONS = 744

DATA RECOVERY = 100.0%

CSX AQ5

Joint Frequency Distribution for September, 2024

Percentage frequency of occurence of hourly wind velocities for all stability classes

Wind Direction		Wind Speed (mps) 0.5 - 1.54	1.54 - 3.09	3.09 - 5.14	5.14 - 8.23	8.23 - 10.8	OVER 10.8	TOTAL	AVG SPEED
N	348.75 - 11.25	1.3	2.5	2.1	0.0	0.0	0.0	**5.8**	**2.5**
NNE	11.25 - 33.75	1.1	5.8	0.0	0.0	0.0	0.0	**7.0**	**2.1**
NE	33.75 - 56.25	0.6	8.2	1.4	0.0	0.0	0.0	**10.2**	**2.5**
ENE	56.25 - 78.75	0.4	3.2	7.1	0.0	0.0	0.0	**10.7**	**3.3**
E	78.75 - 101.25	0.8	2.4	6.1	0.7	0.0	0.0	**10.0**	**3.5**
ESE	101.25 - 123.75	0.6	4.6	6.1	1.9	0.0	0.0	**13.2**	**3.6**
SE	123.75 - 146.25	0.8	3.5	5.4	1.7	0.0	0.0	**11.4**	**3.6**
SSE	146.25 - 168.75	0.3	1.4	2.1	0.0	0.0	0.0	**3.8**	**3.0**
S	168.75 - 191.25	0.3	3.3	0.0	0.0	0.0	0.0	**3.6**	**2.0**
SSW	191.25 - 213.75	1.1	1.0	0.0	0.0	0.0	0.0	**2.1**	**1.5**
SW	213.75 - 236.25	1.8	0.3	0.0	0.0	0.0	0.0	**2.1**	**1.4**
WSW	236.25 - 258.75	1.3	0.8	0.0	0.0	0.0	0.0	**2.1**	**1.4**
W	258.75 - 281.25	0.8	2.1	1.0	0.0	0.0	0.0	**3.9**	**2.3**
WNW	281.25 - 303.75	2.1	2.1	0.6	0.0	0.0	0.0	**4.7**	**1.9**
NW	303.75 - 326.25	1.5	1.4	0.7	0.4	0.0	0.0	**4.0**	**2.5**
NNW	326.25 - 348.75	0.8	1.8	2.4	0.1	0.0	0.0	**5.2**	**3.0**
	CALM							**0.1**	
	TOTAL	**15.6**	**44.4**	**35.0**	**4.9**	**0.0**	**0.0**	**100.0**	**2.8**

TOTAL NUMBER OF OBSERVATIONS = 718

POSSIBLE NUMBER OF OBSERVATIONS = 720

DATA RECOVERY = 99.7%

CSX AQ5

10M Joint Frequency Distribution for July - September 2024

Percentage frequency of occurence of hourly wind velocities for all stability classes

Wind Direction		Wind Speed (mps) 0.5 - 1.54	1.54 - 3.09	3.09 - 5.14	5.14 - 8.23	8.23 - 10.8	OVER 10.8	TOTAL	AVG SPEED
N	348.75 - 11.25	0.7	2.9	1.4	0.0	0.0	0.0	**4.9**	**2.6**
NNE	11.25 - 33.75	0.8	2.6	0.1	0.0	0.0	0.0	**3.4**	**2.0**
NE	33.75 - 56.25	0.5	3.4	0.5	0.0	0.0	0.0	**4.4**	**2.3**
ENE	56.25 - 78.75	0.3	1.5	3.0	0.0	0.0	0.0	**4.9**	**3.2**
E	78.75 - 101.25	0.3	1.7	3.9	0.7	0.0	0.0	**6.7**	**3.6**
ESE	101.25 - 123.75	0.3	2.8	6.1	1.7	0.0	0.0	**11.0**	**3.9**
SE	123.75 - 146.25	0.5	2.8	4.2	1.0	0.3	0.0	**8.8**	**3.7**
SSE	146.25 - 168.75	0.3	2.5	4.3	1.0	0.2	0.0	**8.2**	**3.7**
S	168.75 - 191.25	1.1	5.9	1.6	0.3	0.0	0.0	**9.0**	**2.5**
SSW	191.25 - 213.75	2.6	3.2	0.7	0.0	0.0	0.0	**6.5**	**1.8**
SW	213.75 - 236.25	2.5	1.0	0.1	0.0	0.0	0.0	**3.6**	**1.4**
WSW	236.25 - 258.75	1.9	1.1	0.0	0.1	0.0	0.0	**3.1**	**1.5**
W	258.75 - 281.25	1.8	2.6	0.7	0.0	0.0	0.0	**5.1**	**2.0**
WNW	281.25 - 303.75	2.9	4.2	1.8	0.0	0.0	0.0	**8.9**	**2.1**
NW	303.75 - 326.25	1.4	2.3	1.6	0.5	0.0	0.0	**5.8**	**2.8**
NNW	326.25 - 348.75	0.6	2.1	2.3	0.5	0.0	0.0	**5.5**	**3.3**
	CALM							**0.0**	
	TOTAL	**18.5**	**42.7**	**32.4**	**5.8**	**0.5**	**0.0**	**100.0**	**2.8**

TOTAL NUMBER OF OBSERVATIONS = 2206

POSSIBLE NUMBER OF OBSERVATIONS = 2208

DATA RECOVERY = 99.9%

CSX AQ5

WIND GUST in mps for JULY, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	12.7	11.3	10.6	9.1	9.0	9.1	10.3	10.5	11.3	11.9	12.1	11.2	10.1	8.6	9.4	7.8	8.0	9.4	7.5	7.0	6.9	5.5	5.3	5.5	**9.2**	**12.7**	**5.3**
2	5.0	5.3	5.9	4.4	3.9	3.6	3.6	4.7	4.2	4.2	5.0	5.1	5.1	5.3	5.4	5.6	7.1	6.8	5.7	5.0	5.3	7.5	7.5	4.7	**5.2**	**7.5**	**3.6**
3	2.9	2.4	3.1	2.8	2.7	2.9	4.5	5.4	6.4	7.7	9.2	7.6	9.1	11.1	8.5	9.5	10.2	9.3	9.0	8.1	8.3	6.3	5.7	5.6	**6.6**	**11.1**	**2.4**
4	5.3	3.9	4.4	3.8	3.4	3.2	3.5	3.3	3.5	4.6	5.1	6.0	6.5	6.4	5.3	6.8	8.0	7.3	5.7	6.7	3.2	4.3	3.9	2.8	**4.9**	**8.0**	**2.8**
5	2.9	3.6	3.9	3.7	3.0	3.9	4.1	3.7	4.2	4.5	5.8	5.8	6.6	7.1	9.1	7.0	5.6	5.9	7.8	7.1	6.1	5.7	5.0	5.1	**5.3**	**9.1**	**2.9**
6	5.1	4.3	4.6	5.8	4.4	4.4	4.7	6.6	7.7	7.4	6.9	6.8	7.0	6.0	6.3	5.8	6.6	6.7	6.8	3.9	4.3	3.9	7.6	8.4	**5.9**	**8.4**	**3.9**
7	4.9	5.0	6.3	7.8	6.4	6.2	5.8	5.3	5.3	5.3	4.7	4.8	5.0	5.6	5.9	5.7	5.4	4.9	3.4	3.4	2.3	1.3	2.4	1.8	**4.8**	**7.8**	**1.3**
8	2.1	2.3	2.1	1.9	1.9	2.8	3.4	3.5	3.7	4.4	4.6	5.5	6.3	6.8	6.8	7.4	6.8	7.6	7.9	5.8	5.6	4.7	5.3	4.9	**4.8**	**7.9**	**1.9**
9	5.0	5.4	5.5	4.7	3.4	3.0	3.5	3.7	4.5	5.4	7.0	7.4	8.8	9.3	10.8	4.3	3.0	1.6	6.4	7.1	6.7	5.6	5.5	4.7	**5.5**	**10.8**	**1.6**
10	4.4	4.5	4.3	4.5	5.3	6.4	7.9	7.4	7.2	7.3	9.2	10.4	12.6	13.1	12.5	14.4	14.0	13.1	11.5	11.0	7.5	6.6	8.4	8.5	**8.8**	**14.4**	**4.3**
11	4.8	3.0	4.1	5.4	4.4	4.1	5.6	7.5	10.9	9.0	8.3	7.5	6.8	7.7	7.4	5.9	4.9	5.7	5.3	5.2	4.8	4.0	3.2	2.9	**5.8**	**10.9**	**2.9**
12	2.3	3.3	3.2	3.1	3.9	3.7	4.2	6.5	3.9	3.7	4.5	3.7	6.3	5.1	4.7	5.3	4.7	4.3	3.3	3.8	3.7	5.2	6.1	7.1	**4.4**	**7.1**	**2.3**
13	5.3	4.3	2.5	2.5	2.5	1.8	2.6	2.1	2.2	2.3	3.7	4.3	5.7	5.2	4.7	4.3	6.3	6.7	6.5	4.9	3.5	5.3	3.1	4.4	**4.0**	**6.7**	**1.8**
14	3.3	1.5	1.4	1.5	1.0	1.4	2.9	4.9	6.5	5.1	5.6	6.6	10.7	10.6	11.2	7.9	7.0	6.6	7.0	8.1	5.8	4.3	2.2	3.3	**5.3**	**11.2**	**1.0**
15	3.1	2.6	1.8	1.7	2.7	3.5	3.7	4.6	7.2	7.9	7.8	8.9	8.4	7.0	7.6	7.8	8.0	7.7	6.7	3.8	4.5	4.4	3.8	4.0	**5.4**	**8.9**	**1.7**
16	6.2	4.5	3.5	4.1	2.7	5.8	3.1	3.0	4.1	7.5	6.7	10.7	10.1	11.2	11.3	10.8	11.4	9.2	9.9	7.5	22.9	4.1	4.0	1.8	**7.3**	**22.9**	**1.8**
17	1.5	2.4	2.1	3.5	4.2	3.3	4.6	4.6	4.7	5.9	5.3	6.2	7.3	8.0	7.5	8.5	7.7	7.3	5.0	3.9	1.9	2.6	2.2	2.8	**4.7**	**8.5**	**1.5**
18	2.7	3.5	2.3	4.3	4.3	5.2	4.9	5.3	5.2	5.7	5.3	5.5	6.2	6.0	5.7	5.4	5.5	6.3	4.5	3.6	2.7	1.6	1.8	3.1	**4.4**	**6.3**	**1.6**
19	3.5	3.7	6.2	5.8	5.7	6.3	5.7	5.9	5.2	4.4	4.4	4.9	5.3	5.6	6.2	6.7	6.3	7.7	7.5	5.9	3.5	2.9	3.7	3.9	**5.3**	**7.7**	**2.9**
20	2.9	2.5	2.2	2.3	2.0	1.6	2.3	2.1	4.0	4.7	6.6	8.2	8.5	7.6	6.7	5.7	6.9	4.0	4.0	4.1	1.9	2.2	2.7	3.1	**4.1**	**8.5**	**1.6**
21	2.6	2.3	2.4	2.6	2.8	2.9	2.4	1.9	2.9	3.4	4.5	7.1	8.0	7.5	7.5	6.8	6.2	6.7	5.4	4.3	4.2	5.7	5.1	5.5	**4.6**	**8.0**	**1.9**
22	4.3	4.7	3.4	2.1	2.3	2.5	2.5	3.7	6.2	11.4	10.2	7.1	12.2	9.6	8.4	7.3	7.0	6.8	6.2	5.1	6.7	6.6	5.7	5.3	**6.1**	**12.2**	**2.1**
23	3.3	4.5	3.3	4.0	3.6	3.7	5.9	6.8	6.3	6.7	6.4	5.3	6.0	4.5	4.3	5.9	6.2	7.3	6.5	6.1	4.6	4.1	4.7	4.2	**5.2**	**7.3**	**3.3**
24	2.7	2.8	3.8	2.5	2.0	1.8	1.7	2.3	2.2	2.7	2.7	3.8	4.5	5.9	5.9	7.0	7.9	8.7	5.4	4.0	3.7	3.3	2.3	2.1	**3.8**	**8.7**	**1.7**
25	2.6	1.6	2.3	2.5	3.6	3.3	3.7	4.8	5.0	6.4	4.8	4.4	7.0	6.6	7.2	4.9	5.0	5.8	4.5	3.7	3.1	1.3	2.7	2.7	**4.1**	**7.2**	**1.3**
26	2.8	5.9	8.0	5.8	6.4	7.0	6.1	4.5	6.0	5.1	4.2	5.2	4.4	5.4	5.4	4.3	5.8	5.6	4.5	4.2	2.7	3.0	2.4	4.0	**4.9**	**8.0**	**2.4**
27	3.6	3.1	2.9	3.6	2.9	3.0	4.7	4.7	4.1	4.6	5.2	5.3	5.7	5.8	6.2	6.3	6.0	4.6	4.7	4.2	3.0	1.8	1.5	2.1	**4.2**	**6.3**	**1.5**
28	2.2	2.3	2.7	2.9	3.1	2.7	1.9	3.4	3.3	3.9	4.7	4.7	6.2	8.1	7.1	6.8	5.9	6.8	7.0	4.9	3.8	2.8	4.5	4.4	**4.4**	**8.1**	**1.9**
29	4.9	4.4	3.9	2.8	3.2	3.3	3.2	4.7	4.5	4.1	4.4	6.0	7.2	8.7	8.9	8.2	7.5	7.6	9.5	4.4	4.1	4.3	4.7	4.3	**5.4**	**9.5**	**2.8**
30	5.4	5.5	4.7	5.1	4.6	5.6	5.7	6.4	6.4	6.8	7.2	7.7	6.9	8.6	9.5	13.8	8.9	8.2	9.3	7.7	5.9	4.4	4.6	5.9	**6.9**	**13.8**	**4.4**
31	4.5	3.9	3.7	3.5	3.1	3.2	2.9	3.7	5.0	5.6	5.6	6.0	7.7	6.6	5.7	10.2	11.4	9.9	6.5	4.2	2.8	1.9	1.7	2.0	**5.1**	**11.4**	**1.7**
MEAN	**4.0**	**3.9**	**3.9**	**3.9**	**3.7**	**3.9**	**4.2**	**4.8**	**5.3**	**5.8**	**6.1**	**6.4**	**7.4**	**7.4**	**7.4**	**7.2**	**7.1**	**7.0**	**6.5**	**5.4**	**5.0**	**4.1**	**4.2**	**4.2**	**5.4**		
MAX	**12.7**	**11.3**	**10.6**	**9.1**	**9.0**	**9.1**	**10.3**	**10.5**	**11.3**	**11.9**	**12.1**	**11.2**	**12.6**	**13.1**	**12.5**	**14.4**	**14.0**	**13.1**	**11.5**	**11.0**	**22.9**	**7.5**	**8.4**	**8.5**		**22.9**	
MIN	**1.5**	**1.5**	**1.4**	**1.5**	**1.0**	**1.4**	**1.7**	**1.9**	**2.2**	**2.3**	**2.7**	**3.7**	**4.4**	**4.5**	**4.3**	**4.3**	**3.0**	**1.6**	**3.3**	**3.4**	**1.9**	**1.3**	**1.5**	**1.8**			**1.0**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 744 DATA RECOVERY RATE = 100.0%

MONTHLY MEAN = 5.4 mps

MAXIMUM WIND GUST = 22.9 mps DATE OF OCCURRENCE = 7/16 AT 2100 MAXIMUM DAILY MEAN = 9.2 mps DATE OF OCCURRENCE = 7/1

MINIMUM WIND GUST = 1.0 mps DATE OF OCCURRENCE = 7/14 AT 0500 MINUMUM DAILY MEAN = 3.8 mps DATE OF OCCURRENCE = 7/24

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

CSX AQ5

WIND GUST in mps for AUGUST, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	2.1	2.0	1.9	2.0	2.2	2.6	3.0	2.9	2.5	3.1	4.5	6.4	7.4	7.2	7.5	6.3	8.2	7.2	5.5	6.4	4.8	4.6	5.3	4.1	**4.6**	**8.2**	**1.9**
2	4.1	3.4	2.8	2.6	4.0	2.9	4.7	5.2	5.1	5.5	8.3	9.5	9.3	10.7	10.9	9.1	7.3	8.8	16.1	7.3	14.9	5.1	3.5	2.4	**6.8**	**16.1**	**2.4**
3	2.4	4.1	1.4	3.9	6.3	3.1	3.1	4.6	5.9	5.4	6.0	8.1	8.7	7.4	10.5	11.6	15.6	9.1	8.7	4.3	3.5	4.3	5.0	5.3	**6.2**	**15.6**	**1.4**
4	3.9	4.0	3.3	3.5	3.1	2.7	2.7	3.9	4.1	3.4	4.0	3.7	5.0	6.2	4.4	4.4	7.9	5.4	6.2	6.3	3.5	4.2	3.1	3.3	**4.3**	**7.9**	**2.7**
5	3.3	2.2	1.9	2.2	2.6	2.4	2.8	2.3	2.5	3.2	5.0	5.4	5.1	5.9	6.9	6.2	6.7	5.9	5.6	5.4	5.5	5.3	5.2	5.0	**4.4**	**6.9**	**1.9**
6	3.4	3.3	4.5	4.9	3.7	3.1	3.7	4.3	4.3	6.0	5.5	7.1	7.3	7.1	10.0	10.8	10.1	10.4	7.9	8.7	9.5	6.2	5.0	8.9	**6.5**	**10.8**	**3.1**
7	6.5	5.9	2.9	2.7	2.8	2.7	1.7	3.4	2.9	3.9	5.0	5.8	5.8	7.9	6.7	11.4	9.5	9.3	10.3	8.6	8.8	8.7	9.7	9.8	**6.4**	**11.4**	**1.7**
8	8.5	8.7	8.8	7.5	7.8	9.9	8.5	7.6	8.6	8.6	7.9	9.9	9.0	9.4	11.3	11.5	11.0	10.2	7.6	9.5	8.9	10.7	11.4	12.7	**9.4**	**12.7**	**7.5**
9	13.7	15.7	15.5	17.1	17.8	17.7	18.1	18.5	18.1	14.9	13.8	11.4	7.5	8.0	7.3	7.4	7.0	6.2	5.1	3.8	3.6	4.4	3.2	3.5	**10.8**	**18.5**	**3.2**
10	2.5	2.6	2.4	2.9	3.0	3.3	3.2	3.0	2.7	3.6	5.4	6.7	7.8	8.2	6.9	6.3	6.4	5.2	3.8	2.3	2.7	8.5	8.4	7.0	**4.8**	**8.5**	**2.3**
11	6.9	3.5	3.7	2.6	2.6	1.9	2.9	3.3	4.6	4.1	5.1	5.2	5.9	7.0	6.9	6.1	7.9	8.5	5.6	1.5	2.0	2.7	3.4	2.4	**4.4**	**8.5**	**1.5**
12	3.4	3.9	2.6	2.3	2.3	3.2	3.3	3.7	4.2	6.7	7.5	8.1	8.7	8.7	8.8	9.9	8.8	6.9	6.1	2.3	2.6	3.1	3.2	3.0	**5.1**	**9.9**	**2.3**
13	4.5	3.9	4.2	4.1	3.5	4.1	3.8	3.7	4.0	3.9	4.6	5.0	6.6	4.9	4.6	6.9	5.5	4.1	4.7	3.3	2.2	2.2	1.9	2.6	**4.1**	**6.9**	**1.9**
14	3.1	2.3	2.8	5.3	4.3	3.6	5.3	5.3	5.1	6.1	5.8	7.2	5.8	6.5	7.1	6.0	5.3	5.1	4.0	3.5	3.0	3.2	3.3	3.2	**4.7**	**7.2**	**2.3**
15	2.5	2.8	2.7	2.3	2.4	2.3	2.6	4.5	5.2	4.0	3.4	5.8	5.2	4.9	4.9	5.2	4.7	3.7	2.9	2.9	2.2	2.3	2.4	2.2	**3.5**	**5.8**	**2.2**
16	1.8	1.9	1.9	2.5	1.1	1.4	1.4	1.5	2.5	4.2	5.1	6.8	7.3	6.3	8.0	7.1	7.4	7.4	8.5	6.5	6.0	5.9	5.9	7.4	**4.8**	**8.5**	**1.1**
17	8.1	6.6	6.9	7.1	8.7	9.6	5.1	3.3	1.3	2.6	6.0	6.3	6.8	6.9	8.3	7.3	8.5	6.1	5.4	6.3	5.2	4.9	4.1	1.8	**6.0**	**9.6**	**1.3**
18	1.8	1.5	2.3	4.3	3.4	3.7	4.1	4.6	4.9	5.0	4.1	3.6	4.8	4.7	5.5	6.3	6.4	4.5	12.2	8.6	4.8	9.4	6.0	4.1	**5.0**	**12.2**	**1.5**
19	4.6	3.1	1.1	1.3	1.8	2.3	3.8	5.2	6.4	7.2	6.0	7.5	8.0	7.6	11.3	9.4	11.4	9.9	6.6	8.4	8.5	8.7	8.9	6.5	**6.5**	**11.4**	**1.1**
20	9.1	9.2	8.1	8.5	10.0	8.1	9.2	10.5	10.6	10.3	9.2	8.7	10.5	10.9	10.6	11.0	10.8	8.8	7.5	4.9	3.1	5.4	4.3	4.6	**8.5**	**11.0**	**3.1**
21	4.7	4.5	5.4	4.5	4.4	4.0	6.4	7.7	7.4	7.7	10.6	9.2	9.0	10.0	9.4	8.0	8.4	6.1	5.9	2.1	2.4	3.1	3.5	3.5	**6.2**	**10.6**	**2.1**
22	4.1	3.5	2.3	3.7	3.9	4.1	4.0	4.0	3.9	5.8	5.3	5.7	6.4	6.7	5.6	6.6	6.3	4.5	4.7	2.1	2.2	1.7	1.7	1.0	**4.2**	**6.7**	**1.0**
23	1.9	2.9	3.1	2.7	1.8	2.0	1.9	1.8	3.1	4.6	4.1	4.8	5.8	6.7	6.4	6.7	6.8	6.8	4.5	3.3	1.8	2.7	1.7	2.0	**3.7**	**6.8**	**1.7**
24	2.9	3.1	2.1	1.4	1.3	1.8	4.1	3.7	3.0	3.5	3.8	6.7	6.3	7.4	7.4	8.1	7.6	5.9	5.6	2.9	3.0	2.2	2.1	2.4	**4.1**	**8.1**	**1.3**
25	3.3	2.1	2.0	1.7	1.5	1.9	1.5	2.5	3.4	3.8	7.1	7.2	7.3	6.5	7.9	7.5	7.2	6.7	6.1	4.8	4.1	3.6	4.1	4.8	**4.5**	**7.9**	**1.5**
26	3.2	3.2	2.5	1.8	2.0	1.5	2.0	4.1	3.8	3.3	3.6	5.9	6.6	7.4	5.7	14.6	4.2	2.7	2.7	2.3	2.1	2.6	2.2	2.8	**3.9**	**14.6**	**1.5**
27	2.2	1.5	3.1	3.5	3.7	2.7	2.3	2.7	3.5	3.5	3.8	3.7	4.5	4.7	6.1	6.3	6.3	5.6	4.5	2.9	2.1	2.3	4.3	4.0	**3.7**	**6.3**	**1.5**
28	3.9	3.9	3.9	4.3	2.5	1.8	1.9	3.7	5.6	5.5	7.7	6.0	8.5	4.4	5.9	6.6	5.6	3.9	3.2	2.7	8.2	11.3	3.1	2.4	**4.9**	**11.3**	**1.8**
29	4.4	2.2	3.1	3.0	3.6	3.7	4.0	4.6	6.3	6.9	5.8	6.1	6.8	6.6	6.6	6.4	6.9	8.9	10.5	10.7	10.5	10.1	7.7	6.0	**6.3**	**10.7**	**2.2**
30	5.2	5.8	5.9	6.8	7.4	5.0	8.2	8.0	7.9	8.0	6.9	6.1	3.9	4.9	5.0	5.1	5.7	6.3	6.9	6.8	7.8	7.4	5.9	4.8	**6.3**	**8.2**	**3.9**
31	4.6	4.5	4.5	4.6	3.3	3.8	4.0	3.7	3.3	5.7	5.8	4.9	6.1	6.3	6.5	5.9	4.4	3.5	3.9	6.5	6.0	4.7	3.9	3.1	**4.7**	**6.5**	**3.1**
MEAN	**4.4**	**4.1**	**3.9**	**4.1**	**4.2**	**4.0**	**4.3**	**4.8**	**5.1**	**5.5**	**6.0**	**6.6**	**6.9**	**7.0**	**7.4**	**7.8**	**7.6**	**6.6**	**6.4**	**5.1**	**5.0**	**5.2**	**4.6**	**4.4**	**5.5**		
MAX	**13.7**	**15.7**	**15.5**	**17.1**	**17.8**	**17.7**	**18.1**	**18.5**	**18.1**	**14.9**	**13.8**	**11.4**	**10.5**	**10.9**	**11.3**	**14.6**	**15.6**	**10.4**	**16.1**	**10.7**	**14.9**	**11.3**	**11.4**	**12.7**		**18.5**	
MIN	**1.8**	**1.5**	**1.1**	**1.3**	**1.1**	**1.4**	**1.4**	**1.5**	**1.3**	**2.6**	**3.4**	**3.6**	**3.9**	**4.4**	**4.4**	**4.4**	**4.2**	**2.7**	**2.7**	**1.5**	**1.8**	**1.7**	**1.7**	**1.0**			**1.0**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 744 DATA RECOVERY RATE = 100.0%

MONTHLY MEAN = 5.5 mps

MAXIMUM WIND GUST = 18.5 mps DATE OF OCCURRENCE = 8/9 AT 0800 MAXIMUM DAILY MEAN = 10.8 mps DATE OF OCCURRENCE = 8/9

MINIMUM WIND GUST = 1.0 mps DATE OF OCCURRENCE = 8/22 AT 2400 MINUMUM DAILY MEAN = 3.5 mps DATE OF OCCURRENCE = 8/15

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

CSX AQ5

WIND GUST in mps for SEPTEMBER, 2024

Hr Beg Hr End Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	3.4	3.1	2.0	2.6	2.6	1.7	2.4	2.7	3.9	4.5	4.4	5.1	5.3	5.4	5.7	5.1	5.1	4.1	3.5	3.9	4.4	4.3	2.5	4.8	**3.9**	**5.7**	**1.7**
2	3.6	3.5	8.8	7.9	8.8	6.9	7.3	9.1	9.1	8.9	7.9	9.1	8.3	8.9	9.6	10.3	9.8	9.4	8.5	7.9	5.8	6.7	8.2	7.5	**8.0**	**10.3**	**3.5**
3	7.7	8.2	7.9	6.7	5.8	6.2	7.7	5.7	7.0	7.9	7.7	6.6	5.7	6.4	5.4	6.1	5.1	4.7	4.4	3.8	2.0	5.3	6.2	3.4	**6.0**	**8.2**	**2.0**
4	2.1	2.0	1.9	2.9	2.5	2.6	2.7	3.2	4.2	6.2	7.4	6.5	6.2	6.1	5.1	6.0	6.3	4.9	6.0	5.7	5.8	5.5	5.3	6.0	**4.7**	**7.4**	**1.9**
5	5.0	2.6	2.7	4.0	4.1	3.2	3.3	4.4	5.1	5.2	5.5	6.5	6.3	5.6	4.7	3.4	3.7	4.1	3.3	3.9	3.4	3.0	3.5	3.9	**4.2**	**6.5**	**2.6**
6	5.4	4.6	4.3	4.1	3.8	3.3	3.0	3.0	2.9	4.5	5.1	4.9	5.9	4.1	4.9	5.1	3.0	3.1	2.8	2.2	2.6	2.6	4.8	5.7	**4.0**	**5.9**	**2.2**
7	5.0	4.3	3.4	3.2	5.2	5.0	5.4	4.9	5.7	5.6	9.1	12.9	12.8	10.5	6.9	3.6	2.9	3.1	2.9	2.5	3.2	3.2	3.8	4.4	**5.4**	**12.9**	**2.5**
8	4.6	2.3	5.4	2.6	3.1	3.1	3.3	5.3	8.8	8.5	6.9	8.2	7.1	8.3	9.0	8.1	8.6	6.3	3.2	3.1	3.1	3.5	3.0	2.4	**5.3**	**9.0**	**2.3**
9	2.6	2.2	2.3	1.6	2.1	2.3	2.2	2.3	3.5	5.6	5.5	6.4	7.6	7.4	7.7	7.4	6.9	4.5	2.7	3.0	2.4	3.2	3.5	4.2	**4.1**	**7.7**	**1.6**
10	3.6	2.7	2.8	1.8	2.5	3.0	3.5	4.4	4.7	5.6	4.1	6.5	6.5	8.0	6.9	5.9	5.8	5.0	4.5	2.9	2.3	1.1	1.0	1.7	**4.0**	**8.0**	**1.0**
11	2.0	1.7	2.4	2.1	2.5	1.9	3.6	2.9	3.6	4.7	3.5	4.2	4.8	4.2	4.6	4.9	5.1	4.9	3.5	5.5	7.6	6.1	4.0	1.4	**3.8**	**7.6**	**1.4**
12	1.8	1.1	1.2	1.5	1.7	1.9	2.1	3.0	4.2	4.9	5.2	5.0	4.5	3.9	4.2	4.3	3.7	3.1	5.3	8.1	7.0	5.6	5.1	4.5	**3.9**	**8.1**	**1.1**
13	3.5	4.1	3.3	3.4	4.4	4.7	5.5	6.9	4.8	3.8	3.2	5.7	3.7	3.3	3.0	2.1	2.5	2.9	2.3	2.1	2.5	3.1	2.3	3.0	**3.6**	**6.9**	**2.1**
14	2.7	2.5	2.3	1.9	1.8	1.9	1.3	3.4	4.6	5.3	6.7	7.3	7.7	6.3	7.0	5.5	5.5	5.4	6.6	6.6	6.8	6.0	4.4	3.5	**4.7**	**7.7**	**1.3**
15	2.7	3.3	3.8	3.7	4.5	4.3	4.5	5.1	5.0	5.9	5.4	4.1	3.5	6.9	7.1	8.1	8.2	6.9	9.2	9.2	8.6	8.1	6.9	7.2	**5.9**	**9.2**	**2.7**
16	6.1	6.2	5.7	6.2	6.2	6.7	6.3	6.1	6.2	8.1	8.4	6.7	7.2	6.5	7.7	7.0	7.4	7.1	7.6	8.9	7.7	7.8	6.3	7.3	**7.0**	**8.9**	**5.7**
17	6.2	7.5	6.5	6.1	7.3	7.1	6.8	6.7	8.9	8.9	8.6	8.3	8.6	7.2	7.1	8.9	3.2	4.9	5.7	7.2	7.3	6.9	6.9	7.2	**7.1**	**8.9**	**3.2**
18	6.4	6.7	5.3	5.4	6.4	5.8	5.8	5.4	5.5	7.5	7.5	---	---	7.1	7.1	7.3	7.4	7.8	5.4	4.9	3.9	4.5	3.8	4.0	**6.0**	**7.8**	**3.8**
19	3.9	4.7	4.8	4.4	3.7	4.3	3.6	4.1	6.1	4.4	5.5	7.3	6.9	6.5	6.5	7.3	6.4	4.5	3.0	2.3	2.1	2.1	3.5	3.1	**4.6**	**7.3**	**2.1**
20	2.3	2.1	2.5	2.2	3.9	3.6	3.1	3.6	5.5	5.9	6.2	3.9	3.3	2.9	3.8	4.8	3.9	3.8	2.6	2.6	4.1	4.9	5.7	5.6	**3.9**	**6.2**	**2.1**
21	5.9	5.2	4.3	3.3	3.6	3.7	2.3	4.1	4.7	5.3	6.5	6.5	7.5	7.3	8.2	7.9	6.2	4.9	5.1	4.1	6.8	6.7	8.9	9.2	**5.8**	**9.2**	**2.3**
22	8.4	9.8	8.2	8.7	6.8	6.9	6.7	6.0	5.5	5.4	5.9	4.7	5.6	5.6	4.8	4.8	3.3	2.4	2.2	2.3	2.8	7.3	7.9	8.0	**5.8**	**9.8**	**2.2**
23	6.0	6.1	6.9	4.4	5.5	5.3	4.6	7.1	7.6	7.2	6.0	6.3	5.9	5.1	5.6	5.3	7.9	10.1	10.9	10.6	10.6	9.8	6.8	7.9	**7.1**	**10.9**	**4.4**
24	8.0	7.1	6.6	6.3	7.1	7.2	6.6	7.1	7.5	7.5	7.1	6.9	6.7	7.1	7.3	7.7	8.2	9.6	9.1	9.1	9.9	9.7	9.5	7.9	**7.8**	**9.9**	**6.3**
25	8.4	7.6	7.0	6.0	4.7	4.9	7.3	6.9	7.7	7.1	7.5	6.7	6.9	6.8	6.6	6.2	5.8	7.0	8.1	7.3	7.7	6.2	6.1	4.3	**6.7**	**8.4**	**4.3**
26	4.7	5.0	4.3	4.8	4.4	3.9	3.4	4.6	2.5	2.1	2.7	4.1	4.7	5.1	5.9	4.3	3.9	1.7	2.6	4.0	5.8	4.4	1.8	1.5	**3.8**	**5.9**	**1.5**
27	1.5	1.3	2.9	2.3	2.6	3.4	3.7	3.9	4.5	4.5	5.3	6.7	5.7	5.8	8.0	8.6	9.4	9.1	7.7	8.1	8.2	7.5	7.9	8.2	**5.7**	**9.4**	**1.3**
28	7.9	8.4	7.5	8.1	7.9	6.9	6.8	5.2	5.3	4.8	3.8	3.4	3.6	3.7	4.2	4.1	4.7	5.7	7.5	8.3	6.7	8.1	8.0	7.9	**6.2**	**8.4**	**3.4**
29	6.2	4.9	4.4	5.8	4.3	5.4	5.1	5.3	4.9	5.9	5.3	5.2	4.8	4.5	4.6	5.2	6.6	6.5	6.1	6.5	6.3	5.8	6.2	6.1	**5.5**	**6.6**	**4.3**
30	5.7	5.6	5.3	4.7	4.9	3.9	5.1	4.7	5.1	4.7	4.7	4.5	4.3	4.3	4.4	5.6	5.6	4.4	4.2	4.0	4.2	4.9	7.1	5.7	**4.9**	**7.1**	**3.9**
MEAN	**4.8**	**4.5**	**4.6**	**4.3**	**4.5**	**4.4**	**4.5**	**4.9**	**5.5**	**5.9**	**6.0**	**6.2**	**6.1**	**6.0**	**6.1**	**6.0**	**5.7**	**5.4**	**5.2**	**5.4**	**5.4**	**5.5**	**5.4**	**5.3**	**5.3**		
MAX	**8.4**	**9.8**	**8.8**	**8.7**	**8.8**	**7.2**	**7.7**	**9.1**	**9.1**	**8.9**	**9.1**	**12.9**	**12.8**	**10.5**	**9.6**	**10.3**	**9.8**	**10.1**	**10.9**	**10.6**	**10.6**	**9.8**	**9.5**	**9.2**		**12.9**	
MIN	**1.5**	**1.1**	**1.2**	**1.5**	**1.7**	**1.7**	**1.3**	**2.3**	**2.5**	**2.1**	**2.7**	**3.4**	**3.3**	**2.9**	**3.0**	**2.1**	**2.5**	**1.7**	**2.2**	**2.1**	**2.0**	**1.1**	**1.0**	**1.4**			**1.0**

POSSIBLE NUMBER OF OBSERVATIONS = 720 ACTUAL NUMBER OF OBSERVATIONS = 718 DATA RECOVERY RATE = 99.7%

MONTHLY MEAN = 5.3 mps

MAXIMUM WIND GUST = 12.9 mps DATE OF OCCURRENCE = 9/7 AT 1200 MAXIMUM DAILY MEAN = 8.0 mps DATE OF OCCURRENCE = 9/2

MINIMUM WIND GUST = 1.0 mps DATE OF OCCURRENCE = 9/10 AT 2300 MINUMUM DAILY MEAN = 3.6 mps DATE OF OCCURRENCE = 9/13

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

APPENDIX C. HOURLY TEMPERATURE DATA FOR THIRD QUARTER 2024

CSX AQ5

TEMPERATURE in Deg C for JULY, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	23.0	21.3	20.3	19.6	18.9	18.6	18.8	18.9	20.1	21.7	22.7	23.6	24.2	24.8	25.5	25.8	25.8	25.4	25.3	24.5	23.9	23.3	22.7	22.2	**22.5**	**25.8**	**18.6**
2	21.6	21.2	20.9	20.2	19.9	20.1	21.1	22.4	23.4	24.1	25.1	25.9	26.5	26.9	27.5	27.8	27.6	27.2	26.8	26.4	26.1	24.8	24.5	23.1	**24.2**	**27.8**	**19.9**
3	21.8	21.5	21.3	21.3	21.0	20.9	22.4	23.2	24.7	25.6	27.0	27.8	27.7	27.8	28.3	28.2	27.9	27.7	27.2	26.5	25.8	25.3	25.1	24.7	**25.0**	**28.3**	**20.9**
4	24.2	23.6	23.1	22.8	22.7	22.7	23.5	25.3	26.6	27.4	27.6	27.7	28.2	29.0	30.8	31.6	31.3	30.6	29.5	28.2	27.2	26.8	26.4	26.0	**26.8**	**31.6**	**22.7**
5	25.6	25.1	24.8	24.9	25.3	25.5	25.6	26.3	27.0	27.9	27.9	28.6	29.2	30.3	30.6	30.8	32.0	32.5	32.0	30.7	30.2	29.6	29.2	29.1	**28.4**	**32.5**	**24.8**
6	29.4	29.2	28.8	28.5	28.3	28.0	28.7	30.3	31.6	32.5	33.4	33.9	34.4	35.0	35.4	34.0	32.7	33.3	32.6	32.1	31.4	30.6	30.2	29.4	**31.4**	**35.4**	**28.0**
7	28.9	29.2	29.2	28.6	27.9	27.8	27.8	28.7	29.6	31.0	32.1	32.0	31.2	31.5	31.6	31.6	31.7	31.6	31.3	30.7	30.1	29.5	29.0	28.2	**30.0**	**32.1**	**27.8**
8	27.7	28.1	27.7	27.2	26.5	26.6	28.1	28.5	28.9	30.0	30.7	31.8	32.2	32.7	32.7	32.7	32.4	32.9	32.8	31.9	30.6	29.8	29.1	28.4	**30.0**	**32.9**	**26.5**
9	27.6	27.1	26.5	26.1	25.7	25.7	27.2	28.7	30.0	30.3	30.0	30.8	31.0	29.6	25.2	26.2	29.9	29.4	30.8	30.6	29.8	29.2	28.9	28.6	**28.5**	**31.0**	**25.2**
10	28.1	28.0	27.6	27.4	27.2	27.2	27.6	28.4	29.4	30.4	30.7	31.0	31.4	31.5	31.6	31.6	31.1	30.4	29.8	29.4	28.9	28.5	27.7	26.6	**29.2**	**31.6**	**26.6**
11	25.8	25.3	25.4	25.1	24.4	23.9	24.3	25.0	26.3	27.2	28.0	28.7	29.6	30.4	31.1	30.8	29.7	30.0	29.5	28.9	28.0	27.4	27.0	26.5	**27.4**	**31.1**	**23.9**
12	26.0	25.8	25.5	25.5	25.5	25.2	25.1	25.0	25.4	25.3	25.3	25.9	26.5	25.6	25.9	26.4	26.5	26.3	26.3	26.3	26.2	25.9	25.5	25.2	**25.8**	**26.5**	**25.0**
13	24.6	24.2	23.7	23.7	23.8	23.9	24.4	25.6	26.3	26.7	27.7	27.9	28.6	29.2	29.8	30.5	30.5	30.1	29.6	29.1	28.3	28.0	27.2	26.9	**27.1**	**30.5**	**23.7**
14	26.3	25.7	25.5	25.3	25.2	25.2	26.7	28.8	30.8	31.7	32.8	33.4	32.2	30.9	31.5	32.0	32.3	31.8	31.2	30.2	29.4	28.8	28.1	28.2	**29.3**	**33.4**	**25.2**
15	28.2	27.6	27.0	26.5	26.2	26.7	27.9	29.8	31.4	32.4	33.3	34.0	34.7	35.5	36.0	35.0	33.3	33.1	32.0	30.8	30.3	30.1	29.3	28.9	**30.8**	**36.0**	**26.2**
16	28.4	28.1	27.7	27.2	26.4	26.1	27.5	29.7	31.0	32.9	35.3	36.1	36.8	35.3	35.9	37.4	37.7	37.2	36.1	35.0	31.6	25.1	25.9	25.9	**31.5**	**37.7**	**25.1**
17	25.9	25.7	25.8	25.7	25.7	25.7	26.7	28.3	29.5	30.9	32.2	33.5	34.6	33.4	31.9	29.9	27.5	27.2	26.6	26.5	26.5	26.2	26.2	25.7	**28.2**	**34.6**	**25.7**
18	25.6	25.2	25.1	25.0	24.8	24.8	24.9	25.5	25.5	25.8	27.1	27.8	28.5	28.5	28.5	28.4	28.6	28.6	28.1	27.3	27.0	26.2	25.2	24.5	**26.5**	**28.6**	**24.5**
19	24.0	23.5	23.6	23.2	22.5	22.1	22.3	23.0	23.9	25.2	25.4	25.8	26.4	27.1	27.4	27.8	28.0	28.1	28.1	27.6	26.9	26.2	25.3	25.0	**25.4**	**28.1**	**22.1**
20	24.3	23.8	23.5	23.3	23.2	23.1	23.8	24.7	25.6	26.2	27.4	28.8	28.9	28.7	27.6	26.3	25.8	26.0	26.2	25.9	25.1	24.7	24.4	24.0	**25.5**	**28.9**	**23.1**
21	23.6	22.9	22.5	22.3	22.2	22.5	23.4	25.0	26.1	26.7	27.4	27.8	27.7	28.7	29.6	30.3	30.6	30.4	30.0	29.2	28.2	27.5	27.0	26.5	**26.6**	**30.6**	**22.2**
22	26.0	25.6	25.0	24.7	24.8	25.0	25.5	25.9	26.6	25.6	25.6	23.3	24.2	23.2	24.0	24.4	25.1	25.6	25.5	25.1	24.9	24.7	24.3	23.9	**24.9**	**26.6**	**23.2**
23	23.9	23.6	23.2	22.7	22.4	22.2	23.2	24.2	25.4	26.7	27.5	28.2	28.4	28.7	29.6	30.4	30.4	28.9	28.4	28.4	28.2	27.3	25.9	24.7	**26.4**	**30.4**	**22.2**
24	24.5	24.6	24.4	24.2	24.0	24.1	24.5	25.2	25.7	26.4	27.4	27.8	28.1	28.2	28.3	28.1	28.0	26.4	26.2	25.9	25.4	25.0	24.8	24.7	**25.9**	**28.3**	**24.0**
25	24.6	24.6	24.4	24.3	24.7	24.6	24.9	25.4	26.4	27.6	28.1	29.2	30.0	30.0	29.9	29.1	28.5	27.4	27.0	26.9	26.1	25.1	24.7	24.1	**26.6**	**30.0**	**24.1**
26	24.1	23.9	23.9	23.3	23.1	22.7	22.5	22.7	23.4	23.7	24.6	25.2	25.7	26.4	26.7	27.2	27.6	27.1	26.8	26.2	24.9	24.1	23.8	23.3	**24.7**	**27.6**	**22.5**
27	22.2	21.5	21.0	20.9	20.3	20.6	23.2	24.3	25.6	26.8	27.9	28.2	28.1	28.4	28.4	28.4	28.5	28.4	28.2	27.5	26.2	25.4	24.2	23.3	**25.3**	**28.5**	**20.3**
28	22.6	22.2	21.8	20.8	20.7	20.6	22.6	24.4	24.9	26.0	27.3	28.3	28.8	28.8	29.1	29.2	29.3	29.2	28.9	28.4	27.4	26.7	25.8	25.4	**25.8**	**29.3**	**20.6**
29	24.8	24.2	23.3	23.1	22.9	22.7	22.9	24.6	26.0	27.2	27.8	28.2	28.2	28.5	28.9	29.3	29.7	29.7	26.7	24.7	24.7	24.5	24.4	24.6	**25.9**	**29.7**	**22.7**
30	24.5	24.2	23.6	23.4	23.5	23.6	23.8	24.2	24.7	25.3	25.9	26.2	26.7	27.5	28.3	28.2	28.6	28.3	28.0	27.6	26.7	25.5	25.0	24.4	**25.7**	**28.6**	**23.4**
31	24.3	24.3	24.1	23.9	23.7	23.8	24.3	25.3	27.0	28.9	30.4	29.2	31.4	33.2	33.3	33.0	29.5	30.1	29.1	27.2	26.4	26.3	25.6	25.3	**27.5**	**33.3**	**23.7**
MEAN	**25.2**	**24.9**	**24.5**	**24.2**	**24.0**	**23.9**	**24.7**	**25.7**	**26.7**	**27.6**	**28.4**	**28.9**	**29.4**	**29.5**	**29.7**	**29.8**	**29.6**	**29.4**	**28.9**	**28.2**	**27.5**	**26.7**	**26.2**	**25.7**	**27.1**		
MAX	**29.4**	**29.2**	**29.2**	**28.6**	**28.3**	**28.0**	**28.7**	**30.3**	**31.6**	**32.9**	**35.3**	**36.1**	**36.8**	**35.5**	**36.0**	**37.4**	**37.7**	**37.2**	**36.1**	**35.0**	**31.6**	**30.6**	**30.2**	**29.4**		**37.7**	
MIN	**21.6**	**21.2**	**20.3**	**19.6**	**18.9**	**18.6**	**18.8**	**18.9**	**20.1**	**21.7**	**22.7**	**23.3**	**24.2**	**23.2**	**24.0**	**24.4**	**25.1**	**25.4**	**25.3**	**24.5**	**23.9**	**23.3**	**22.7**	**22.2**			**18.6**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 744 DATA RECOVERY RATE = 100.0%

MONTHLY MEAN = 27.1 Deg C

MAXIMUM TEMPERATURE = 37.7 Deg C DATE OF OCCURRENCE = 7/16 AT 1700 MAXIMUM DAILY MEAN = 31.5 Deg C DATE OF OCCURRENCE = 7/16

MINIMUM TEMPERATURE = 18.6 Deg C DATE OF OCCURRENCE = 7/1 AT 0600 MINUMUM DAILY MEAN = 22.5 Deg C DATE OF OCCURRENCE = 7/1

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

CSX AQ5

TEMPERATURE in Deg C for AUGUST, 2024

Hr Beg Hr End Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	24.6	24.1	24.0	23.8	23.6	24.1	25.6	27.9	30.4	32.1	33.5	31.6	31.4	31.7	32.3	33.2	33.3	33.5	32.7	31.8	31.1	30.6	30.1	29.3	**29.4**	**33.5**	**23.6**
2	28.8	28.1	27.6	27.0	26.9	26.6	27.3	28.7	29.7	30.9	32.4	34.0	35.0	35.6	36.0	36.0	36.5	33.0	28.3	25.6	24.9	24.1	24.0	24.2	**29.6**	**36.5**	**24.0**
3	24.5	24.3	24.2	24.2	23.8	23.5	24.1	25.2	26.4	27.8	28.8	30.3	32.5	32.9	33.1	33.3	28.0	25.6	24.3	24.0	23.5	23.5	23.4	23.6	**26.5**	**33.3**	**23.4**
4	23.4	23.1	23.0	23.0	22.7	22.8	23.1	23.7	24.5	25.6	26.8	28.2	28.2	27.8	28.0	29.1	27.9	27.9	27.9	26.4	25.6	24.9	24.8	24.5	**25.5**	**29.1**	**22.7**
5	24.1	23.9	23.6	23.4	23.4	23.2	23.9	25.8	28.1	28.3	29.4	29.8	30.1	30.0	30.5	31.0	31.5	31.6	31.0	30.3	29.4	28.5	27.9	27.2	**27.7**	**31.6**	**23.2**
6	26.7	26.4	26.3	26.2	25.8	25.6	26.3	27.7	29.1	29.5	30.7	31.5	32.1	32.3	32.1	31.9	31.2	30.4	29.9	28.8	25.7	24.1	24.2	23.8	**28.3**	**32.3**	**23.8**
7	24.1	24.3	23.8	23.7	24.1	24.7	25.0	25.5	26.6	27.7	28.6	28.3	28.6	27.4	28.3	28.3	27.2	26.1	26.0	25.8	25.7	25.2	23.7	23.0	**25.9**	**28.6**	**23.0**
8	22.9	22.9	22.9	23.1	23.2	23.4	23.7	23.9	24.1	24.8	25.3	25.9	25.7	26.0	26.2	26.6	26.7	26.5	26.1	26.4	26.4	26.6	26.7	26.8	**25.1**	**26.8**	**22.9**
9	27.3	27.7	27.8	27.8	27.8	27.8	27.8	27.7	27.6	27.0	27.3	27.1	25.3	24.9	25.7	26.1	26.4	26.6	27.2	26.7	26.3	25.8	25.3	25.2	**26.8**	**27.8**	**24.9**
10	25.2	24.8	24.9	24.3	23.5	23.7	24.0	25.3	26.9	27.6	28.2	29.7	30.2	30.6	30.6	30.8	30.9	30.5	29.8	29.1	28.7	28.2	27.2	25.9	**27.5**	**30.9**	**23.5**
11	25.1	24.3	23.8	23.5	23.0	22.4	22.4	23.1	24.7	25.3	25.5	25.1	26.1	27.3	27.7	27.9	27.8	27.4	26.6	25.0	23.8	22.7	22.3	21.8	**24.8**	**27.9**	**21.8**
12	20.7	20.3	20.2	20.1	19.5	19.9	20.7	22.2	24.3	25.9	26.7	27.3	27.7	27.7	27.9	28.2	28.1	27.8	27.3	26.0	25.0	24.1	22.6	21.7	**24.2**	**28.2**	**19.5**
13	21.6	21.3	21.0	20.4	20.2	20.5	21.2	22.6	24.6	24.6	25.1	25.8	26.1	26.7	27.3	28.9	28.3	27.0	27.5	26.8	25.6	24.3	23.2	22.6	**24.3**	**28.9**	**20.2**
14	22.5	21.7	21.6	21.6	21.6	21.9	22.4	23.3	24.6	25.4	26.5	27.4	28.2	28.9	28.9	28.7	28.7	28.6	28.1	27.2	25.9	24.4	23.6	23.2	**25.2**	**28.9**	**21.6**
15	22.8	22.1	21.7	21.2	21.0	20.6	21.9	23.9	25.3	26.7	27.7	29.0	29.7	30.2	29.5	29.0	28.6	28.2	27.7	26.9	25.5	24.6	24.1	23.0	**25.5**	**30.2**	**20.6**
16	22.7	22.1	22.0	21.3	20.9	20.5	21.4	24.1	25.8	26.6	27.1	27.6	28.9	29.2	29.1	28.9	29.1	28.8	28.3	27.7	27.2	27.0	26.6	26.3	**25.8**	**29.2**	**20.5**
17	25.8	24.2	22.2	22.2	21.1	20.6	21.8	22.1	22.5	23.7	24.8	25.8	25.6	26.3	26.6	26.7	27.0	27.0	25.6	23.5	22.5	22.3	22.5	22.2	**23.9**	**27.0**	**20.6**
18	22.2	22.0	21.8	22.8	22.6	23.2	23.1	23.0	23.2	23.9	24.5	25.0	25.9	26.5	27.3	28.3	28.8	28.5	27.3	22.6	22.1	21.6	21.1	20.8	**24.1**	**28.8**	**20.8**
19	20.9	21.0	21.0	21.1	21.0	21.0	21.6	23.4	25.0	25.8	26.5	26.9	28.1	28.9	27.9	28.2	27.9	26.2	25.6	24.7	23.4	23.0	22.6	22.2	**24.3**	**28.9**	**20.9**
20	22.0	21.2	20.6	20.5	19.1	18.6	18.4	18.4	19.0	19.6	20.3	21.0	21.6	22.0	22.0	21.7	21.6	21.0	20.6	19.9	18.8	17.8	17.7	17.4	**20.0**	**22.0**	**17.4**
21	16.7	15.9	15.7	15.0	14.2	14.1	15.1	16.7	18.4	19.4	20.6	21.8	22.4	23.2	23.8	23.5	23.6	23.7	22.8	21.4	20.3	18.8	18.2	17.9	**19.3**	**23.8**	**14.1**
22	17.1	16.3	15.8	15.2	14.8	14.9	16.1	18.4	20.4	21.9	22.5	23.2	23.8	24.3	24.7	25.3	25.2	24.7	24.0	22.5	21.6	19.6	18.5	18.0	**20.4**	**25.3**	**14.8**
23	17.3	16.6	16.1	15.9	15.4	15.2	16.6	19.7	22.7	24.1	25.2	25.1	25.3	25.4	25.4	25.5	25.6	25.6	25.2	24.0	22.2	21.3	20.5	19.7	**21.5**	**25.6**	**15.2**
24	19.4	18.5	17.9	17.1	16.7	16.4	18.0	20.7	22.8	24.1	25.0	25.8	26.0	25.5	26.0	26.3	26.5	26.5	25.8	24.4	24.0	22.9	21.5	20.6	**22.4**	**26.5**	**16.4**
25	20.2	19.0	18.9	18.7	18.3	18.1	18.9	21.0	22.1	24.5	26.2	25.4	25.7	27.9	28.2	28.1	27.9	27.5	26.7	25.7	24.9	24.0	23.4	22.5	**23.5**	**28.2**	**18.1**
26	21.6	21.1	20.7	20.2	20.0	19.8	20.5	22.3	24.1	26.0	26.6	27.1	26.8	26.9	27.1	25.9	24.3	24.9	24.3	24.0	23.5	23.1	23.0	22.7	**23.6**	**27.1**	**19.8**
27	22.5	21.7	21.2	21.3	21.2	20.8	21.6	24.1	25.4	25.6	26.3	27.3	28.6	29.1	29.6	29.4	29.7	29.9	29.1	27.5	26.4	25.8	25.5	25.3	**25.6**	**29.9**	**20.8**
28	25.0	24.4	24.0	23.8	23.2	23.1	23.8	25.8	28.3	30.4	32.0	33.0	33.6	34.5	34.8	35.0	34.7	34.3	33.1	32.0	30.6	28.9	27.5	26.6	**29.3**	**35.0**	**23.1**
29	26.7	26.4	26.8	26.3	26.4	26.5	26.1	26.7	27.3	27.6	27.7	27.6	28.1	28.2	27.9	27.7	27.4	27.2	25.5	23.9	23.1	22.7	22.2	21.4	**26.1**	**28.2**	**21.4**
30	21.6	22.0	22.1	22.1	21.7	20.7	21.2	21.2	21.4	21.6	21.7	21.8	22.2	23.1	23.5	23.6	23.5	23.5	23.2	22.6	22.6	22.2	22.0	21.9	**22.2**	**23.6**	**20.7**
31	21.6	21.7	21.9	22.2	21.9	22.0	22.4	22.7	23.5	23.9	24.0	24.3	25.0	25.5	26.0	26.5	26.4	26.4	26.1	25.4	23.4	23.1	23.1	22.7	**23.8**	**26.5**	**21.6**
MEAN	**22.8**	**22.4**	**22.1**	**21.9**	**21.6**	**21.5**	**22.1**	**23.4**	**24.8**	**25.7**	**26.6**	**27.1**	**27.6**	**28.0**	**28.2**	**28.4**	**28.1**	**27.6**	**26.9**	**25.8**	**24.8**	**24.1**	**23.5**	**23.0**	**24.9**		
MAX	**28.8**	**28.1**	**27.8**	**27.8**	**27.8**	**27.8**	**27.8**	**28.7**	**30.4**	**32.1**	**33.5**	**34.0**	**35.0**	**35.6**	**36.0**	**36.0**	**36.5**	**34.3**	**33.1**	**32.0**	**31.1**	**30.6**	**30.1**	**29.3**		**36.5**	
MIN	**16.7**	**15.9**	**15.7**	**15.0**	**14.2**	**14.1**	**15.1**	**16.7**	**18.4**	**19.4**	**20.3**	**21.0**	**21.6**	**22.0**	**22.0**	**21.7**	**21.6**	**21.0**	**20.6**	**19.9**	**18.8**	**17.8**	**17.7**	**17.4**			**14.1**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 744 DATA RECOVERY RATE = 100.0%

MONTHLY MEAN = 24.9 Deg C

MAXIMUM TEMPERATURE = 36.5 Deg C DATE OF OCCURRENCE = 8/2 AT 1700 MAXIMUM DAILY MEAN = 29.6 Deg C DATE OF OCCURRENCE = 8/2

MINIMUM TEMPERATURE = 14.1 Deg C DATE OF OCCURRENCE = 8/21 AT 0600 MINUMUM DAILY MEAN = 19.3 Deg C DATE OF OCCURRENCE = 8/21

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

CSX AQ5

TEMPERATURE in Deg C for SEPTEMBER, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	22.2	22.0	21.7	21.6	21.8	21.5	21.7	22.8	24.1	25.8	27.1	28.3	29.0	29.5	30.2	30.4	30.0	29.5	28.3	27.0	26.0	25.3	24.7	24.5	**25.6**	**30.4**	**21.5**
2	24.7	23.8	24.0	23.4	22.6	22.0	21.7	21.7	22.1	22.9	23.9	24.6	25.4	25.8	26.2	25.9	25.5	24.7	23.7	22.8	22.2	21.4	20.6	19.6	**23.4**	**26.2**	**19.6**
3	18.8	17.9	16.8	16.0	15.6	15.3	15.7	17.0	18.5	19.6	20.6	21.3	22.4	23.3	23.6	22.7	22.6	22.7	22.0	21.5	20.6	19.2	19.9	17.9	**19.6**	**23.6**	**15.3**
4	16.7	16.2	15.6	15.3	14.7	14.3	15.1	17.6	20.0	21.4	21.9	22.1	22.6	22.9	23.4	23.8	23.5	23.5	23.2	22.3	21.6	21.1	20.7	20.5	**20.0**	**23.8**	**14.3**
5	19.8	18.3	17.5	17.4	16.8	16.5	16.8	18.3	20.0	21.0	21.6	22.3	23.0	23.6	24.0	24.5	24.5	24.2	23.7	23.3	22.0	21.0	20.9	20.7	**20.9**	**24.5**	**16.5**
6	20.8	20.1	19.6	19.2	18.7	18.5	18.6	19.5	20.7	21.5	21.9	22.5	23.5	23.5	24.0	24.4	24.4	24.5	24.0	22.6	21.7	21.9	22.1	21.9	**21.7**	**24.5**	**18.5**
7	21.6	21.1	20.3	19.8	20.0	19.9	19.9	20.8	22.1	23.0	23.9	21.2	18.9	18.7	18.2	18.1	18.2	19.1	18.2	17.0	16.7	16.5	16.0	16.0	**19.4**	**23.9**	**16.0**
8	15.7	14.2	13.9	13.2	12.2	12.1	12.4	14.1	16.0	17.1	18.2	19.3	20.1	21.2	21.7	22.0	22.1	21.8	20.4	19.1	17.8	16.9	15.9	14.5	**17.2**	**22.1**	**12.1**
9	13.7	13.2	13.1	12.1	11.6	11.5	12.6	15.5	18.4	20.8	22.5	23.3	24.3	24.8	25.1	25.5	25.4	24.7	23.2	21.2	19.9	19.3	19.1	18.5	**19.1**	**25.5**	**11.5**
10	18.0	17.0	16.6	15.6	16.0	15.9	17.3	19.5	22.0	23.6	25.0	26.4	27.6	28.2	28.2	28.5	28.4	26.5	25.3	24.5	23.0	22.0	20.8	19.8	**22.3**	**28.5**	**15.6**
11	19.0	18.4	18.2	17.9	18.2	18.3	18.7	20.2	21.3	22.2	23.1	24.6	25.8	26.2	27.0	26.8	26.7	26.2	25.3	24.4	24.4	23.4	22.0	20.9	**22.5**	**27.0**	**17.9**
12	19.7	19.4	19.1	18.7	18.8	19.0	19.0	20.4	21.8	22.2	22.4	22.8	23.5	24.6	25.4	25.6	25.3	25.1	24.3	24.1	23.0	22.3	21.8	20.7	**22.0**	**25.6**	**18.7**
13	20.3	20.1	19.6	19.8	19.8	19.7	20.1	20.5	20.7	21.1	22.1	23.0	23.5	24.1	24.7	25.3	25.6	25.5	24.8	24.4	24.0	23.6	22.3	21.3	**22.3**	**25.6**	**19.6**
14	21.2	20.4	19.7	19.0	18.7	17.8	18.1	20.8	22.3	23.9	24.8	25.8	26.8	27.6	27.9	27.4	26.9	26.6	25.7	24.8	24.0	23.0	22.0	21.3	**23.2**	**27.9**	**17.8**
15	20.6	20.1	19.7	19.2	19.1	18.6	18.9	19.8	20.6	21.8	22.8	23.5	24.4	25.8	26.1	26.2	26.0	25.6	24.9	23.9	22.5	21.6	20.1	19.2	**22.1**	**26.2**	**18.6**
16	19.0	18.4	17.5	17.2	16.9	17.0	17.3	18.1	19.8	21.1	21.9	23.1	23.3	24.0	24.5	24.4	24.0	23.7	23.3	22.6	21.9	21.6	21.3	21.2	**21.0**	**24.5**	**16.9**
17	21.0	21.0	20.9	20.9	21.0	20.9	21.1	21.4	21.7	22.7	23.9	24.4	24.8	25.2	25.0	23.5	22.4	22.9	23.1	23.0	22.8	22.3	22.1	22.0	**22.5**	**25.2**	**20.9**
18	21.7	20.5	20.5	20.4	20.5	20.6	20.6	20.8	21.0	21.6	22.2	---	---	24.6	24.1	23.9	23.9	22.5	21.2	21.6	21.6	21.7	21.7	21.5	**21.8**	**24.6**	**20.4**
19	21.5	21.5	21.3	21.3	21.2	20.8	20.9	21.6	22.7	24.3	25.6	26.6	27.6	28.7	29.1	29.6	27.9	27.6	26.5	25.0	23.5	22.4	21.6	20.9	**24.2**	**29.6**	**20.8**
20	20.0	19.7	19.6	19.5	20.0	20.0	20.3	21.9	23.2	23.8	23.9	24.4	25.2	26.0	26.7	27.2	27.1	26.2	25.2	24.3	23.7	23.1	22.3	22.0	**23.1**	**27.2**	**19.5**
21	21.9	21.8	21.5	21.5	21.2	21.0	20.5	21.2	22.3	23.1	23.4	23.6	23.9	24.2	24.2	24.4	24.8	24.8	24.5	24.3	23.8	23.2	22.7	21.9	**22.9**	**24.8**	**20.5**
22	20.8	19.4	18.9	19.4	19.1	19.4	18.9	19.2	20.3	20.7	21.0	21.5	21.8	22.2	22.3	22.1	22.2	22.1	21.8	21.9	21.6	21.0	19.8	19.6	**20.7**	**22.3**	**18.9**
23	19.4	19.5	19.5	19.3	19.2	19.2	19.2	19.2	19.2	19.1	19.1	19.4	19.5	19.7	19.9	19.8	19.2	19.1	18.5	19.0	18.8	17.6	17.2	17.1	**19.0**	**19.9**	**17.1**
24	17.2	17.0	16.9	17.0	17.3	17.4	17.5	18.0	18.3	18.8	18.8	19.4	19.9	20.2	20.6	20.6	20.4	20.0	19.7	19.6	19.6	19.4	19.0	18.9	**18.8**	**20.6**	**16.9**
25	18.9	19.1	19.1	18.7	18.5	18.6	18.8	18.9	19.4	19.6	20.0	20.4	20.9	21.3	21.8	21.6	21.4	21.0	21.0	21.2	21.5	21.5	21.5	21.5	**20.3**	**21.8**	**18.5**
26	21.5	21.5	21.5	21.5	21.3	20.9	20.8	21.2	21.7	22.2	23.3	24.5	24.7	24.7	25.3	25.5	25.4	24.6	23.8	23.8	23.4	22.9	22.6	22.2	**23.0**	**25.5**	**20.8**
27	22.0	22.1	22.2	22.4	22.4	22.2	22.2	22.2	22.3	22.5	22.7	23.0	23.0	23.2	23.1	22.5	22.6	22.2	22.0	21.7	21.8	21.9	22.0	21.8	**22.3**	**23.2**	**21.7**
28	22.2	22.5	22.5	22.1	21.8	21.7	21.5	21.5	21.6	21.8	22.1	23.0	24.5	24.6	25.7	25.9	25.8	24.7	23.4	22.2	21.7	21.0	20.5	19.9	**22.7**	**25.9**	**19.9**
29	19.7	19.4	19.3	19.1	19.2	19.4	19.4	19.1	19.1	19.3	19.4	19.5	19.7	19.9	20.0	20.3	20.3	20.0	19.7	19.6	19.3	18.8	18.4	18.3	**19.4**	**20.3**	**18.3**
30	18.1	18.1	18.1	17.9	17.8	17.7	17.7	17.6	17.6	17.9	18.6	19.2	19.6	20.0	20.4	20.3	20.0	20.0	19.9	19.7	19.6	19.5	19.8	19.4	**18.9**	**20.4**	**17.6**
MEAN	**19.9**	**19.5**	**19.2**	**18.9**	**18.7**	**18.6**	**18.8**	**19.7**	**20.7**	**21.5**	**22.3**	**22.9**	**23.4**	**23.9**	**24.3**	**24.3**	**24.1**	**23.7**	**23.0**	**22.4**	**21.8**	**21.2**	**20.7**	**20.2**	**21.4**		
MAX	**24.7**	**23.8**	**24.0**	**23.4**	**22.6**	**22.2**	**22.2**	**22.8**	**24.1**	**25.8**	**27.1**	**28.3**	**29.0**	**29.5**	**30.2**	**30.4**	**30.0**	**29.5**	**28.3**	**27.0**	**26.0**	**25.3**	**24.7**	**24.5**		**30.4**	
MIN	**13.7**	**13.2**	**13.1**	**12.1**	**11.6**	**11.5**	**12.4**	**14.1**	**16.0**	**17.1**	**18.2**	**19.2**	**18.9**	**18.7**	**18.2**	**18.1**	**18.2**	**19.1**	**18.2**	**17.0**	**16.7**	**16.5**	**15.9**	**14.5**			**11.5**

POSSIBLE NUMBER OF OBSERVATIONS = 720 ACTUAL NUMBER OF OBSERVATIONS = 718 DATA RECOVERY RATE = 99.7%

MONTHLY MEAN = 21.4 Deg C

MAXIMUM TEMPERATURE = 30.4 Deg C DATE OF OCCURRENCE = 9/1 AT 1600 MAXIMUM DAILY MEAN = 25.6 Deg C DATE OF OCCURRENCE = 9/1

MINIMUM TEMPERATURE = 11.5 Deg C DATE OF OCCURRENCE = 9/9 AT 0600 MINUMUM DAILY MEAN = 17.2 Deg C DATE OF OCCURRENCE = 9/8

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

APPENDIX D. HOURLY RELATIVE HUMIDITY DATA FOR THIRD QUARTER 2024

CSX AQ5

RELATIVE HUMIDITY in % for JULY, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	55	57	56	58	62	64	63	62	57	53	50	49	47	46	45	43	43	44	45	47	49	51	53	54	**52**	**64**	**43**
2	57	59	60	64	66	66	64	62	62	60	56	48	44	44	38	40	48	52	55	57	54	61	63	67	**56**	**67**	**38**
3	70	72	75	76	78	79	77	76	62	58	48	47	53	58	53	54	56	57	57	59	65	70	74	73	**64**	**79**	**47**
4	75	77	79	82	84	85	82	74	71	71	71	74	75	73	66	63	63	66	72	77	82	84	85	86	**76**	**86**	**63**
5	88	90	92	93	92	91	89	86	85	82	83	82	80	77	77	76	71	68	70	74	76	81	83	83	**82**	**93**	**68**
6	80	80	78	77	75	76	74	66	59	55	51	50	48	44	44	54	60	56	61	64	65	70	72	68	**64**	**80**	**44**
7	63	61	56	56	57	57	57	56	54	48	45	47	54	53	54	54	55	56	57	60	61	60	63	64	**56**	**64**	**45**
8	66	61	63	65	66	67	57	61	66	62	58	53	47	47	51	53	60	52	50	55	65	70	73	75	**60**	**75**	**47**
9	79	81	84	87	89	89	84	77	73	73	77	75	72	72	79	79	70	75	70	69	74	80	81	81	**78**	**89**	**69**
10	84	83	85	85	86	85	83	80	77	75	74	73	69	69	69	69	71	75	77	80	83	84	84	85	**79**	**86**	**69**
11	75	70	65	62	64	66	66	63	57	54	52	51	49	47	46	48	56	52	51	52	56	58	59	63	**58**	**75**	**46**
12	67	66	67	69	68	71	77	80	78	81	82	79	77	84	83	80	77	82	83	84	85	86	86	84	**78**	**86**	**66**
13	84	87	89	90	89	89	88	82	80	80	76	76	74	73	70	67	68	68	74	76	77	78	81	84	**79**	**90**	**67**
14	86	87	87	88	88	88	83	75	64	60	55	55	63	68	63	56	54	58	62	67	73	78	82	84	**72**	**88**	**54**
15	83	84	86	88	88	81	70	59	53	51	49	47	45	43	41	49	55	55	54	57	60	60	60	61	**62**	**88**	**41**
16	64	67	69	71	75	77	74	67	64	54	46	43	41	53	48	39	37	39	42	46	58	88	87	90	**60**	**90**	**37**
17	89	88	85	89	89	87	79	70	66	61	58	51	44	56	65	71	78	80	85	84	85	88	86	88	**76**	**89**	**44**
18	87	88	86	80	78	77	76	74	74	72	65	63	58	56	58	59	56	54	57	59	61	65	70	74	**69**	**88**	**54**
19	76	78	74	69	68	68	65	59	55	52	55	55	52	51	55	53	52	54	55	56	59	63	67	71	**61**	**78**	**51**
20	75	77	80	81	83	83	83	81	81	79	69	54	56	58	67	76	76	72	74	76	79	82	83	84	**75**	**84**	**54**
21	84	85	87	88	89	88	84	78	73	74	72	76	75	70	65	58	54	54	55	60	70	77	80	82	**74**	**89**	**54**
22	84	85	87	89	89	87	86	84	82	76	77	87	85	92	88	87	86	85	84	83	86	88	90	94	**86**	**94**	**76**
23	95	94	94	92	91	92	86	81	73	66	63	61	60	59	56	50	53	66	70	69	69	76	83	87	**74**	**95**	**50**
24	88	89	89	90	91	91	89	86	84	82	78	77	78	80	82	83	83	85	83	84	85	88	88	89	**85**	**91**	**77**
25	87	86	88	89	89	90	90	87	78	66	65	62	55	55	54	60	59	72	74	74	80	83	84	86	**76**	**90**	**54**
26	85	85	70	66	62	60	59	56	53	54	51	51	51	51	51	50	49	56	55	56	61	62	62	63	**59**	**85**	**49**
27	71	73	76	74	77	75	59	55	53	49	46	43	47	46	48	48	47	47	48	48	52	52	59	63	**57**	**77**	**43**
28	66	67	69	73	72	72	68	66	65	62	58	50	44	46	46	45	44	47	50	49	54	58	61	65	**58**	**73**	**44**
29	69	73	76	78	79	79	79	73	68	66	67	68	71	71	69	71	71	70	79	83	85	88	89	89	**75**	**89**	**66**
30	88	87	88	88	88	88	88	87	85	83	80	79	78	76	74	76	74	77	78	80	86	89	84	85	**83**	**89**	**74**
31	85	86	87	89	90	90	88	84	78	72	66	77	62	50	50	52	65	63	61	66	69	72	76	78	**73**	**90**	**50**
MEAN	**77**	**78**	**78**	**79**	**79**	**79**	**76**	**72**	**69**	**65**	**63**	**61**	**60**	**60**	**60**	**60**	**61**	**62**	**64**	**66**	**70**	**74**	**76**	**77**	**69**		
MAX	**95**	**94**	**94**	**93**	**92**	**92**	**90**	**87**	**85**	**83**	**83**	**87**	**85**	**92**	**88**	**87**	**86**	**85**	**85**	**84**	**86**	**89**	**90**	**94**		**95**	
MIN	**55**	**57**	**56**	**56**	**57**	**57**	**57**	**55**	**53**	**48**	**45**	**43**	**41**	**43**	**38**	**39**	**37**	**39**	**42**	**46**	**49**	**51**	**53**	**54**			**37**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 744 DATA RECOVERY RATE = 100.0%

MONTHLY MEAN = 69 %

MAXIMUM RELATIVE HUMIDITY = 95 % DATE OF OCCURRENCE = 7/23 AT 0100 MAXIMUM DAILY MEAN = 86 % DATE OF OCCURRENCE = 7/22

MINIMUM RELATIVE HUMIDITY = 37 % DATE OF OCCURRENCE = 7/16 AT 1700 MINUMUM DAILY MEAN = 52 % DATE OF OCCURRENCE = 7/1

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

CSX AQ5

RELATIVE HUMIDITY in % for AUGUST, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	79	79	81	83	84	83	78	71	63	56	46	63	63	61	60	56	56	54	57	59	62	64	67	71	**66**	**84**	**46**
2	74	78	81	83	84	86	83	76	73	68	62	55	50	46	47	46	44	60	71	86	89	95	95	95	**72**	**95**	**44**
3	94	95	95	94	91	93	91	87	83	77	73	67	57	57	57	56	67	88	90	90	91	91	93	92	**82**	**95**	**56**
4	92	91	92	92	93	93	93	90	87	82	76	72	71	75	73	69	73	70	74	81	80	81	83	85	**82**	**93**	**69**
5	87	89	91	93	93	94	92	84	73	73	67	66	62	68	69	68	63	64	66	67	70	73	77	82	**76**	**94**	**62**
6	85	87	88	88	90	91	89	83	77	77	71	67	62	60	65	65	69	72	72	72	72	80	84	83	**77**	**91**	**60**
7	85	84	87	89	89	88	88	86	80	77	73	76	76	83	77	78	81	86	87	86	87	88	91	93	**84**	**93**	**73**
8	94	93	94	94	95	94	93	93	93	91	89	86	86	88	89	89	87	89	91	91	91	90	90	90	**91**	**95**	**86**
9	88	85	83	83	83	83	82	82	84	86	81	80	89	92	89	87	86	86	85	86	88	90	92	92	**86**	**92**	**80**
10	92	92	88	84	85	82	80	72	64	61	61	54	52	51	50	49	47	48	51	52	52	53	50	54	**63**	**92**	**47**
11	53	57	58	58	61	68	68	63	52	49	49	50	46	43	43	42	42	43	43	52	57	63	68	68	**54**	**68**	**42**
12	73	74	73	73	75	70	67	62	55	47	42	40	40	40	41	41	42	42	42	47	51	55	62	67	**55**	**75**	**40**
13	66	66	66	67	67	67	66	63	55	54	56	55	55	50	50	39	43	53	46	48	54	61	66	69	**57**	**69**	**39**
14	68	72	71	70	70	69	66	63	58	55	53	50	47	46	45	45	42	42	45	48	54	62	66	68	**57**	**72**	**42**
15	69	72	72	73	73	74	70	64	59	55	53	48	45	43	48	52	56	59	59	58	65	67	68	72	**61**	**74**	**43**
16	73	75	75	78	80	82	80	74	72	68	66	69	58	54	53	54	56	56	58	62	65	64	62	63	**67**	**82**	**53**
17	62	72	87	87	90	88	87	87	87	85	80	76	80	78	77	77	77	77	84	90	89	88	86	89	**83**	**90**	**62**
18	90	92	93	90	90	88	88	89	89	88	87	86	83	82	79	74	72	73	75	85	92	91	90	92	**86**	**93**	**72**
19	93	94	94	95	95	95	93	84	74	69	67	65	61	58	61	57	59	62	68	66	68	71	72	73	**75**	**95**	**57**
20	72	73	74	71	71	70	69	64	59	54	51	49	48	47	47	46	46	46	46	50	55	63	62	61	**58**	**74**	**46**
21	64	68	68	69	73	74	69	64	58	54	50	44	42	40	38	37	37	37	39	45	51	58	62	63	**54**	**74**	**37**
22	68	71	73	76	79	78	71	62	55	50	46	45	41	37	37	36	37	38	41	48	52	63	68	70	**56**	**79**	**36**
23	74	76	79	79	81	82	77	65	56	44	43	46	45	49	49	48	51	46	47	51	53	56	61	66	**59**	**82**	**43**
24	70	72	75	79	81	84	81	72	67	62	59	57	59	65	63	63	61	55	56	59	62	65	67	71	**67**	**84**	**55**
25	75	78	79	80	81	83	80	74	73	63	58	65	67	58	56	55	56	56	56	58	62	64	64	69	**67**	**83**	**55**
26	74	77	80	82	84	85	84	79	74	70	72	73	75	74	72	78	83	81	85	86	89	90	91	92	**80**	**92**	**70**
27	91	92	92	88	86	87	84	72	68	68	69	67	60	59	53	53	53	51	55	61	63	64	64	66	**69**	**92**	**51**
28	70	73	76	77	78	80	80	77	72	63	55	48	49	48	46	48	48	49	54	58	64	66	72	81	**64**	**81**	**46**
29	76	76	74	73	73	75	77	76	76	75	75	78	77	76	77	77	78	79	82	86	85	87	88	93	**79**	**93**	**73**
30	92	89	89	89	89	94	92	91	89	86	85	86	85	83	82	81	81	82	85	85	87	88	88	88	**87**	**94**	**81**
31	91	90	89	89	89	90	89	88	83	83	84	85	82	80	77	73	72	74	75	79	83	83	84	85	**83**	**91**	**72**
MEAN	**78**	**80**	**81**	**81**	**82**	**83**	**81**	**76**	**71**	**67**	**64**	**63**	**62**	**61**	**60**	**59**	**60**	**62**	**64**	**67**	**70**	**73**	**75**	**77**	**71**		
MAX	**94**	**95**	**95**	**95**	**95**	**95**	**93**	**93**	**93**	**91**	**89**	**86**	**89**	**92**	**89**	**89**	**87**	**89**	**91**	**91**	**92**	**95**	**95**	**95**		**95**	
MIN	**53**	**57**	**58**	**58**	**61**	**67**	**66**	**62**	**52**	**44**	**42**	**40**	**40**	**37**	**37**	**36**	**37**	**37**	**39**	**45**	**51**	**53**	**50**	**54**			**36**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 744 DATA RECOVERY RATE = 100.0%

MONTHLY MEAN = 71 %

MAXIMUM RELATIVE HUMIDITY = 95 % DATE OF OCCURRENCE = 8/2 AT 2200 MAXIMUM DAILY MEAN = 91 % DATE OF OCCURRENCE = 8/8

MINIMUM RELATIVE HUMIDITY = 36 % DATE OF OCCURRENCE = 8/22 AT 1600 MINUMUM DAILY MEAN = 54 % DATE OF OCCURRENCE = 8/11

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

CSX AQ5

RELATIVE HUMIDITY in % for SEPTEMBER, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	87	88	90	90	90	91	90	87	83	76	70	66	64	63	58	57	60	63	67	73	80	81	83	83	**77**	**91**	**57**
2	80	84	78	70	70	70	70	64	59	56	51	46	42	38	37	36	38	39	41	44	45	47	49	52	**54**	**84**	**36**
3	54	58	61	62	64	64	62	58	52	46	42	41	39	34	34	44	44	42	43	44	47	56	67	72	**51**	**72**	**34**
4	75	76	78	79	81	83	81	69	59	53	50	51	52	52	50	50	53	53	53	55	61	66	68	72	**63**	**83**	**50**
5	74	78	82	84	85	85	82	78	71	67	66	63	62	60	58	56	56	58	61	65	69	74	77	80	**70**	**85**	**56**
6	82	85	87	88	89	88	88	85	80	77	76	70	64	64	63	62	61	61	64	69	75	75	78	85	**76**	**89**	**61**
7	87	87	87	90	91	92	92	88	82	77	72	72	65	64	72	75	78	75	77	81	80	75	70	64	**79**	**92**	**64**
8	63	69	70	74	77	76	76	70	58	51	45	41	41	38	38	36	35	35	38	43	48	51	55	62	**54**	**77**	**35**
9	66	67	67	71	74	73	69	58	47	41	37	33	30	29	27	27	27	30	35	43	50	50	52	57	**48**	**74**	**27**
10	59	64	69	73	69	69	57	50	44	43	44	43	40	39	39	39	39	51	56	56	61	65	69	72	**55**	**73**	**39**
11	76	79	81	80	75	73	73	71	73	73	69	58	49	48	48	50	50	56	65	68	66	68	74	76	**67**	**81**	**48**
12	80	81	83	84	87	90	90	86	82	79	77	71	65	58	53	53	55	57	62	66	73	78	82	85	**74**	**90**	**53**
13	88	89	90	89	89	89	86	85	85	84	81	78	76	74	71	68	66	66	67	67	72	76	78	81	**79**	**90**	**66**
14	82	86	87	88	90	91	90	76	67	59	59	58	54	51	49	53	55	54	61	61	60	60	66	70	**68**	**91**	**49**
15	74	77	76	77	75	76	75	75	78	77	74	73	68	61	59	59	58	60	66	61	69	69	72	75	**70**	**78**	**58**
16	77	78	80	82	82	83	81	78	71	68	67	64	64	63	61	63	64	66	69	73	76	78	80	81	**73**	**83**	**61**
17	82	84	85	85	85	86	86	85	84	80	75	73	72	70	71	80	88	84	81	80	78	80	81	82	**81**	**88**	**70**
18	85	93	93	94	94	94	94	93	93	92	88	---	---	74	76	75	74	81	90	86	85	84	81	78	**86**	**94**	**74**
19	76	75	76	76	77	79	79	77	74	69	62	54	50	46	43	31	44	45	49	57	67	69	72	73	**63**	**79**	**31**
20	75	73	74	75	73	75	79	77	74	71	71	69	65	62	60	57	56	64	64	64	66	76	80	79	**70**	**80**	**56**
21	79	80	81	82	83	85	87	84	79	76	77	79	77	76	76	76	74	74	75	76	80	82	84	85	**79**	**87**	**74**
22	88	92	95	92	91	90	91	89	83	79	78	76	75	74	74	73	71	71	71	72	77	82	82	81	**81**	**95**	**71**
23	80	80	79	79	80	79	80	81	81	80	79	79	79	79	79	82	88	87	88	83	82	87	90	89	**82**	**90**	**79**
24	87	88	87	86	84	84	83	80	79	79	80	79	78	77	77	78	80	82	82	80	80	82	83	84	**82**	**88**	**77**
25	86	86	87	90	93	94	95	95	94	95	95	95	93	90	90	92	93	96	97	95	92	92	92	92	**92**	**97**	**86**
26	92	92	92	92	93	94	96	96	95	95	92	88	87	87	83	80	79	83	88	87	88	89	91	93	**90**	**96**	**79**
27	94	95	95	95	96	96	98	98	97	97	96	95	96	95	95	95	94	95	96	96	97	97	96	97	**96**	**98**	**94**
28	96	96	95	94	94	96	97	97	96	96	97	95	87	86	80	78	78	83	87	89	89	91	92	93	**91**	**97**	**78**
29	94	95	96	96	96	95	95	95	95	94	92	92	92	91	91	90	89	91	92	92	92	95	96	94	**93**	**96**	**89**
30	94	93	92	93	92	92	92	92	93	90	87	85	84	81	81	82	83	84	85	86	87	87	82	81	**87**	**94**	**81**
MEAN	**80**	**82**	**83**	**84**	**84**	**84**	**84**	**80**	**77**	**74**	**72**	**69**	**66**	**64**	**63**	**63**	**64**	**66**	**69**	**70**	**73**	**75**	**77**	**79**	**74**		
MAX	**96**	**96**	**96**	**96**	**96**	**96**	**98**	**98**	**97**	**97**	**97**	**95**	**96**	**95**	**95**	**95**	**94**	**96**	**97**	**96**	**97**	**97**	**96**	**97**		**98**	
MIN	**54**	**58**	**61**	**62**	**64**	**64**	**57**	**50**	**44**	**41**	**37**	**33**	**30**	**29**	**27**	**27**	**27**	**30**	**35**	**43**	**45**	**47**	**49**	**52**			**27**

POSSIBLE NUMBER OF OBSERVATIONS = 720 ACTUAL NUMBER OF OBSERVATIONS = 718 DATA RECOVERY RATE = 99.7%

MONTHLY MEAN = 74 %

MAXIMUM RELATIVE HUMIDITY = 98 % DATE OF OCCURRENCE = 9/27 AT 0800 MAXIMUM DAILY MEAN = 96 % DATE OF OCCURRENCE = 9/27

MINIMUM RELATIVE HUMIDITY = 27 % DATE OF OCCURRENCE = 9/9 AT 1600 MINUMUM DAILY MEAN = 48 % DATE OF OCCURRENCE = 9/9

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

APPENDIX E. HOURLY BAROMETRIC PRESSURE DATA FOR THIRD QUARTER 2024

CSX AQ5

PRESSURE in mb for JULY, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	1015	1015	1016	1016	1017	1018	1018	1019	1019	1020	1019	1019	1019	1019	1019	1019	1019	1019	1019	1020	1020	1021	1021	1022	**1019**	**1022**	**1015**
2	1022	1021	1022	1022	1022	1023	1024	1024	1024	1024	1024	1024	1023	1023	1023	1022	1022	1022	1022	1022	1022	1022	1022	1023	**1023**	**1024**	**1021**
3	1023	1023	1022	1022	1022	1023	1023	1023	1022	1022	1022	1021	1020	1020	1019	1019	1018	1018	1017	1017	1017	1017	1017	1017	**1020**	**1023**	**1017**
4	1017	1017	1016	1015	1015	1015	1015	1015	1014	1014	1013	1013	1013	1012	1012	1011	1011	1011	1011	1011	1010	1010	1010	1010	**1013**	**1017**	**1010**
5	1010	1010	1009	1009	1009	1010	1010	1010	1010	1010	1009	1009	1009	1008	1008	1007	1007	1007	1007	1007	1008	1008	1008	1008	**1009**	**1010**	**1007**
6	1008	1008	1008	1008	1009	1009	1010	1011	1011	1011	1011	1011	1011	1010	1010	1010	1010	1010	1010	1010	1011	1012	1012	1012	**1010**	**1012**	**1008**
7	1013	1013	1013	1013	1014	1015	1015	1015	1015	1015	1016	1016	1015	1015	1014	1014	1014	1014	1015	1015	1015	1015	1016	1015	**1015**	**1016**	**1013**
8	1016	1016	1016	1016	1016	1016	1016	1017	1017	1017	1016	1016	1016	1016	1015	1015	1014	1014	1014	1014	1015	1015	1015	1015	**1015**	**1017**	**1014**
9	1015	1015	1014	1014	1014	1014	1015	1015	1015	1015	1014	1014	1013	1013	1014	1013	1012	1012	1012	1012	1012	1012	1012	1012	**1013**	**1015**	**1012**
10	1012	1011	1011	1011	1011	1011	1011	1011	1011	1010	1010	1009	1009	1008	1008	1007	1006	1006	1007	1007	1007	1008	1008	1009	**1009**	**1012**	**1006**
11	1009	1010	1011	1012	1012	1013	1014	1014	1014	1015	1015	1015	1015	1015	1015	1015	1015	1016	1016	1017	1017	1018	1018	1018	**1015**	**1018**	**1009**
12	1018	1018	1018	1019	1018	1019	1020	1020	1020	1021	1022	1021	1021	1021	1021	1020	1020	1021	1021	1021	1021	1021	1021	1021	**1020**	**1022**	**1018**
13	1021	1021	1020	1021	1021	1021	1021	1021	1021	1021	1021	1020	1019	1019	1018	1018	1018	1018	1018	1018	1018	1018	1018	1018	**1020**	**1021**	**1018**
14	1018	1018	1017	1018	1017	1017	1017	1017	1017	1017	1017	1016	1015	1015	1014	1014	1014	1014	1013	1013	1013	1013	1013	1013	**1015**	**1018**	**1013**
15	1012	1012	1012	1012	1012	1013	1013	1013	1013	1013	1013	1012	1012	1011	1011	1009	1009	1009	1009	1009	1010	1010	1010	1009	**1011**	**1013**	**1009**
16	1009	1009	1009	1010	1010	1010	1011	1011	1010	1010	1010	1010	1009	1008	1007	1007	1006	1007	1007	1007	1009	1010	1010	1010	**1009**	**1011**	**1006**
17	1010	1009	1009	1009	1010	1010	1011	1012	1011	1011	1011	1010	1010	1009	1009	1008	1008	1009	1010	1010	1010	1011	1010	1010	**1010**	**1012**	**1008**
18	1010	1010	1010	1011	1011	1012	1013	1013	1014	1014	1014	1014	1014	1014	1014	1013	1013	1013	1013	1014	1015	1015	1016	1016	**1013**	**1016**	**1010**
19	1016	1016	1016	1017	1018	1019	1020	1020	1020	1021	1021	1021	1020	1020	1019	1019	1018	1018	1018	1019	1019	1020	1020	1020	**1019**	**1021**	**1016**
20	1019	1019	1019	1019	1019	1019	1019	1019	1019	1019	1019	1019	1018	1018	1018	1017	1017	1017	1017	1017	1017	1017	1017	1016	**1018**	**1019**	**1016**
21	1017	1016	1016	1016	1016	1017	1017	1017	1017	1017	1017	1017	1017	1016	1016	1016	1015	1015	1015	1016	1016	1017	1017	1017	**1016**	**1017**	**1015**
22	1017	1017	1017	1017	1017	1017	1017	1017	1017	1017	1017	1017	1016	1016	1016	1015	1015	1014	1014	1014	1014	1015	1014	1014	**1016**	**1017**	**1014**
23	1014	1014	1014	1014	1015	1016	1016	1017	1017	1018	1018	1018	1018	1018	1017	1017	1017	1017	1018	1018	1018	1019	1019	1019	**1017**	**1019**	**1014**
24	1018	1018	1019	1018	1018	1019	1019	1019	1019	1019	1019	1019	1019	1018	1018	1017	1017	1018	1018	1019	1019	1019	1019	1018	**1018**	**1019**	**1017**
25	1018	1018	1018	1018	1018	1018	1018	1019	1019	1019	1019	1019	1018	1017	1017	1017	1017	1017	1017	1018	1018	1019	1019	1018	**1018**	**1019**	**1017**
26	1018	1018	1019	1019	1020	1020	1020	1021	1021	1021	1021	1021	1020	1020	1019	1018	1018	1018	1019	1019	1019	1019	1020	1020	**1020**	**1021**	**1018**
27	1020	1019	1019	1019	1019	1020	1020	1021	1021	1021	1021	1021	1020	1020	1020	1019	1019	1019	1019	1019	1019	1020	1020	1020	**1020**	**1021**	**1019**
28	1020	1020	1020	1020	1020	1020	1021	1021	1021	1021	1020	1020	1019	1018	1018	1017	1016	1016	1017	1017	1017	1017	1017	1017	**1019**	**1021**	**1016**
29	1016	1016	1015	1015	1015	1015	1015	1016	1015	1015	1015	1014	1014	1013	1013	1012	1012	1012	1013	1013	1013	1013	1013	1013	**1014**	**1016**	**1012**
30	1013	1013	1013	1013	1013	1014	1014	1014	1014	1014	1014	1014	1013	1013	1012	1011	1011	1011	1011	1011	1012	1012	1012	1012	**1013**	**1014**	**1011**
31	1011	1011	1012	1012	1012	1012	1013	1013	1013	1013	1013	1013	1013	1012	1012	1012	1012	1012	1012	1013	1013	1014	1014	1014	**1012**	**1014**	**1011**
MEAN	**1015**	**1015**	**1015**	**1015**	**1016**	**1016**	**1016**	**1017**	**1017**	**1017**	**1016**	**1016**	**1016**	**1015**	**1015**	**1014**	**1014**	**1014**	**1014**	**1015**	**1015**	**1015**	**1015**	**1015**	**1015**		
MAX	**1023**	**1023**	**1022**	**1022**	**1022**	**1023**	**1024**	**1024**	**1024**	**1024**	**1024**	**1024**	**1023**	**1023**	**1023**	**1022**	**1022**	**1022**	**1022**	**1022**	**1022**	**1022**	**1022**	**1023**		**1024**	
MIN	**1008**	**1008**	**1008**	**1008**	**1009**	**1009**	**1010**	**1010**	**1010**	**1010**	**1009**	**1009**	**1009**	**1008**	**1007**	**1007**	**1006**	**1006**	**1007**	**1007**	**1007**	**1008**	**1008**	**1008**			**1006**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 744 DATA RECOVERY RATE = 100.0%

MONTHLY MEAN = 1015 mb

MAXIMUM PRESSURE = 1024 mb DATE OF OCCURRENCE = 7/2 AT 0800 MAXIMUM DAILY MEAN = 1023 mb DATE OF OCCURRENCE = 7/2

MINIMUM PRESSURE = 1006 mb DATE OF OCCURRENCE = 7/10 AT 1800 MINUMUM DAILY MEAN = 1009 mb DATE OF OCCURRENCE = 7/5

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

CSX AQ5

PRESSURE in mb for AUGUST, 2024

Hr Beg / Hr End / Day	0 / 1	1 / 2	2 / 3	3 / 4	4 / 5	5 / 6	6 / 7	7 / 8	8 / 9	9 / 10	10 / 11	11 / 12	12 / 13	13 / 14	14 / 15	15 / 16	16 / 17	17 / 18	18 / 19	19 / 20	20 / 21	21 / 22	22 / 23	23 / 24	MEAN	MAX	MIN
1	1014	1014	1014	1013	1014	1014	1015	1015	1015	1016	1015	1015	1015	1014	1013	1013	1012	1012	1012	1012	1013	1013	1013	1013	**1014**	**1016**	**1012**
2	1013	1012	1012	1012	1012	1012	1012	1012	1012	1011	1011	1010	1009	1008	1007	1007	1007	1007	1008	1009	1010	1011	1010	1010	**1010**	**1013**	**1007**
3	1010	1010	1010	1010	1010	1010	1011	1011	1011	1011	1011	1010	1009	1008	1008	1007	1008	1009	1011	1011	1011	1011	1011	1012	**1010**	**1012**	**1007**
4	1012	1012	1012	1012	1012	1012	1013	1013	1014	1014	1014	1014	1014	1014	1014	1014	1014	1014	1014	1015	1016	1016	1016	1016	**1014**	**1016**	**1012**
5	1016	1016	1016	1016	1016	1017	1017	1017	1017	1017	1017	1016	1017	1016	1015	1015	1015	1014	1015	1015	1015	1015	1015	1015	**1016**	**1017**	**1014**
6	1014	1014	1014	1014	1014	1014	1014	1014	1014	1014	1014	1013	1013	1012	1011	1010	1010	1010	1011	1011	1013	1013	1013	1014	**1013**	**1014**	**1010**
7	1012	1012	1011	1011	1011	1012	1012	1012	1012	1012	1012	1012	1012	1011	1011	1011	1011	1011	1012	1012	1013	1013	1013	1014	**1012**	**1014**	**1011**
8	1014	1014	1014	1014	1014	1014	1014	1014	1015	1015	1014	1014	1014	1014	1013	1013	1013	1013	1012	1012	1012	1012	1012	1011	**1013**	**1015**	**1011**
9	1010	1009	1009	1008	1008	1007	1007	1006	1006	1007	1007	1007	1008	1008	1008	1008	1008	1009	1009	1010	1011	1011	1012	1012	**1008**	**1012**	**1006**
10	1012	1012	1013	1013	1013	1014	1015	1015	1015	1015	1015	1015	1015	1014	1014	1014	1014	1013	1014	1014	1015	1015	1016	1016	**1014**	**1016**	**1012**
11	1016	1016	1016	1016	1017	1017	1017	1018	1018	1018	1018	1018	1017	1016	1015	1015	1015	1015	1015	1016	1016	1017	1017	1017	**1016**	**1018**	**1015**
12	1016	1016	1016	1016	1016	1016	1016	1017	1017	1017	1017	1017	1016	1016	1015	1015	1015	1015	1015	1015	1016	1016	1016	1016	**1016**	**1017**	**1015**
13	1016	1016	1016	1017	1017	1017	1018	1018	1018	1018	1018	1018	1017	1017	1016	1016	1016	1016	1016	1017	1017	1017	1017	1017	**1017**	**1018**	**1016**
14	1017	1017	1017	1017	1018	1018	1018	1019	1019	1019	1019	1019	1018	1018	1017	1017	1017	1017	1017	1018	1018	1018	1018	1018	**1018**	**1019**	**1017**
15	1018	1017	1017	1017	1018	1018	1019	1019	1019	1019	1019	1019	1018	1018	1017	1017	1017	1017	1017	1017	1018	1018	1017	1018	**1018**	**1019**	**1017**
16	1018	1017	1017	1017	1017	1017	1018	1018	1018	1018	1017	1017	1017	1016	1016	1015	1015	1015	1015	1015	1015	1015	1015	1015	**1016**	**1018**	**1015**
17	1015	1015	1015	1014	1014	1014	1014	1014	1014	1014	1014	1013	1013	1012	1012	1011	1011	1011	1010	1011	1011	1011	1011	1011	**1013**	**1015**	**1010**
18	1010	1010	1009	1009	1009	1009	1009	1010	1010	1010	1009	1009	1008	1008	1007	1006	1006	1005	1006	1007	1008	1008	1007	1007	**1008**	**1010**	**1005**
19	1006	1006	1006	1006	1006	1006	1007	1007	1007	1007	1007	1007	1006	1006	1006	1006	1006	1007	1007	1008	1009	1010	1010	1010	**1007**	**1010**	**1006**
20	1010	1011	1011	1012	1013	1013	1014	1014	1015	1015	1015	1015	1015	1015	1015	1015	1016	1016	1017	1017	1018	1018	1018	1019	**1015**	**1019**	**1010**
21	1019	1019	1019	1019	1019	1019	1020	1020	1020	1020	1020	1020	1020	1019	1019	1019	1019	1019	1019	1020	1020	1021	1021	1022	**1020**	**1022**	**1019**
22	1022	1021	1021	1021	1022	1022	1023	1023	1024	1024	1024	1024	1023	1023	1023	1022	1022	1022	1023	1023	1023	1024	1024	1025	**1023**	**1025**	**1021**
23	1025	1025	1025	1025	1025	1026	1026	1026	1027	1027	1026	1026	1026	1025	1025	1024	1024	1024	1024	1024	1025	1025	1025	1025	**1025**	**1027**	**1024**
24	1025	1025	1025	1025	1025	1025	1025	1026	1026	1026	1025	1025	1024	1024	1023	1023	1022	1022	1022	1023	1023	1023	1023	1023	**1024**	**1026**	**1022**
25	1023	1023	1023	1023	1023	1023	1024	1025	1025	1025	1024	1024	1024	1023	1022	1022	1022	1022	1022	1022	1022	1023	1023	1023	**1023**	**1025**	**1022**
26	1023	1022	1022	1021	1021	1022	1022	1022	1021	1021	1021	1020	1020	1019	1019	1018	1018	1018	1018	1019	1019	1019	1019	1019	**1020**	**1023**	**1018**
27	1019	1019	1018	1019	1019	1019	1020	1020	1020	1020	1020	1020	1019	1019	1018	1017	1017	1017	1017	1017	1018	1018	1017	1017	**1018**	**1020**	**1017**
28	1016	1016	1015	1015	1015	1016	1016	1016	1016	1016	1016	1016	1015	1015	1014	1014	1014	1014	1014	1015	1016	1017	1017	1017	**1016**	**1017**	**1014**
29	1017	1017	1017	1017	1018	1018	1019	1020	1020	1021	1021	1021	1020	1020	1020	1020	1020	1020	1021	1021	1023	1023	1023	1024	**1020**	**1024**	**1017**
30	1023	1022	1022	1022	1022	1022	1022	1023	1022	1023	1023	1023	1023	1023	1022	1022	1021	1021	1022	1022	1022	1022	1022	1021	**1022**	**1023**	**1021**
31	1021	1021	1020	1020	1019	1019	1020	1020	1020	1019	1019	1019	1018	1017	1016	1015	1015	1015	1015	1015	1015	1015	1015	1014	**1018**	**1021**	**1014**
MEAN	**1016**	**1016**	**1016**	**1016**	**1016**	**1016**	**1017**	**1017**	**1017**	**1017**	**1017**	**1017**	**1016**	**1016**	**1015**	**1015**	**1015**	**1015**	**1015**	**1016**	**1016**	**1016**	**1016**	**1016**	**1016**		
MAX	**1025**	**1025**	**1025**	**1025**	**1025**	**1026**	**1026**	**1026**	**1027**	**1027**	**1026**	**1026**	**1026**	**1025**	**1025**	**1024**	**1024**	**1024**	**1024**	**1024**	**1025**	**1025**	**1025**	**1025**		**1027**	
MIN	**1006**	**1006**	**1006**	**1006**	**1006**	**1006**	**1007**	**1006**	**1006**	**1007**	**1007**	**1007**	**1006**	**1006**	**1006**	**1006**	**1006**	**1005**	**1006**	**1007**	**1008**	**1008**	**1007**	**1007**			**1005**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 744 DATA RECOVERY RATE = 100.0%

MONTHLY MEAN = 1016 mb

MAXIMUM PRESSURE = 1027 mb DATE OF OCCURRENCE = 8/23 AT 0900 MAXIMUM DAILY MEAN = 1025 mb DATE OF OCCURRENCE = 8/23

MINIMUM PRESSURE = 1005 mb DATE OF OCCURRENCE = 8/18 AT 1800 MINUMUM DAILY MEAN = 1007 mb DATE OF OCCURRENCE = 8/19

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

CSX AQ5

PRESSURE in mb for SEPTEMBER, 2024

Hr Beg / Hr End / Day	0 / 1	1 / 2	2 / 3	3 / 4	4 / 5	5 / 6	6 / 7	7 / 8	8 / 9	9 / 10	10 / 11	11 / 12	12 / 13	13 / 14	14 / 15	15 / 16	16 / 17	17 / 18	18 / 19	19 / 20	20 / 21	21 / 22	22 / 23	23 / 24	MEAN	MAX	MIN
1	1015	1014	1014	1014	1013	1014	1014	1013	1014	1014	1013	1013	1013	1012	1011	1011	1011	1011	1011	1011	1012	1013	1012	1012	**1013**	**1015**	**1011**
2	1013	1013	1013	1013	1014	1015	1016	1017	1018	1018	1018	1018	1018	1018	1018	1018	1018	1019	1020	1020	1021	1022	1022	1023	**1018**	**1023**	**1013**
3	1023	1024	1025	1025	1025	1026	1027	1027	1028	1028	1028	1028	1027	1027	1026	1026	1026	1026	1026	1026	1027	1027	1028	1028	**1026**	**1028**	**1023**
4	1028	1028	1028	1028	1029	1029	1030	1030	1031	1031	1031	1030	1030	1030	1029	1028	1028	1028	1028	1028	1028	1029	1029	1029	**1029**	**1031**	**1028**
5	1029	1029	1029	1028	1028	1028	1028	1028	1028	1028	1027	1026	1026	1026	1025	1025	1024	1024	1023	1023	1023	1023	1023	1022	**1026**	**1029**	**1022**
6	1022	1021	1021	1021	1021	1021	1021	1020	1020	1020	1019	1019	1018	1018	1017	1016	1016	1015	1015	1015	1015	1014	1014	1013	**1018**	**1022**	**1013**
7	1013	1012	1012	1011	1011	1011	1011	1011	1011	1010	1010	1011	1012	1012	1012	1012	1011	1011	1012	1012	1013	1014	1015	1015	**1012**	**1015**	**1010**
8	1015	1016	1016	1016	1017	1017	1018	1019	1019	1019	1019	1019	1018	1018	1018	1017	1017	1017	1018	1018	1019	1019	1020	1020	**1018**	**1020**	**1015**
9	1021	1021	1021	1021	1021	1021	1022	1022	1022	1022	1021	1020	1020	1019	1019	1018	1018	1018	1018	1019	1019	1019	1019	1019	**1020**	**1022**	**1018**
10	1019	1019	1019	1019	1019	1019	1020	1020	1020	1020	1020	1019	1019	1019	1018	1018	1018	1018	1019	1019	1020	1020	1020	1020	**1019**	**1020**	**1018**
11	1020	1020	1020	1020	1021	1021	1022	1022	1022	1022	1022	1022	1022	1021	1021	1020	1020	1020	1020	1020	1021	1021	1021	1022	**1021**	**1022**	**1020**
12	1021	1021	1021	1022	1022	1023	1023	1024	1024	1024	1024	1024	1024	1023	1023	1022	1022	1022	1022	1022	1023	1023	1023	1023	**1023**	**1024**	**1021**
13	1023	1023	1023	1023	1023	1024	1024	1024	1024	1024	1024	1024	1024	1023	1023	1022	1022	1022	1022	1022	1022	1023	1023	1023	**1023**	**1024**	**1022**
14	1023	1023	1022	1022	1022	1023	1023	1024	1024	1024	1024	1024	1023	1023	1022	1022	1022	1022	1023	1023	1024	1024	1024	1024	**1023**	**1024**	**1022**
15	1024	1024	1024	1024	1024	1025	1025	1026	1026	1027	1027	1027	1026	1025	1025	1024	1024	1024	1024	1025	1025	1026	1026	1026	**1025**	**1027**	**1024**
16	1026	1025	1025	1025	1025	1025	1025	1026	1026	1026	1025	1025	1025	1024	1023	1023	1022	1022	1022	1023	1023	1023	1023	1022	**1024**	**1026**	**1022**
17	1022	1022	1021	1021	1021	1021	1021	1021	1021	1021	1021	1020	1020	1019	1019	1019	1019	1018	1018	1018	1019	1019	1018	1018	**1020**	**1022**	**1018**
18	1018	1017	1017	1016	1016	1016	1017	1017	1017	1017	1017	1017	1016	1016	1015	1015	1015	1015	1015	1015	1014	1014	1014	1014	**1016**	**1018**	**1014**
19	1014	1014	1013	1013	1013	1014	1014	1014	1014	1014	1013	1013	1012	1011	1011	1010	1010	1010	1010	1011	1011	1011	1011	1011	**1012**	**1014**	**1010**
20	1011	1011	1011	1011	1012	1013	1013	1014	1014	1014	1014	1014	1013	1013	1012	1012	1012	1013	1013	1013	1014	1015	1015	1015	**1013**	**1015**	**1011**
21	1016	1015	1015	1015	1015	1016	1016	1016	1016	1016	1015	1015	1014	1013	1013	1013	1013	1013	1013	1013	1013	1013	1013	1013	**1014**	**1016**	**1013**
22	1013	1014	1014	1013	1014	1015	1015	1015	1016	1016	1016	1016	1016	1015	1015	1015	1015	1015	1015	1016	1016	1016	1016	1016	**1015**	**1016**	**1013**
23	1016	1016	1016	1016	1016	1017	1017	1017	1017	1017	1017	1016	1016	1016	1015	1015	1015	1016	1016	1016	1017	1017	1017	1017	**1016**	**1017**	**1015**
24	1017	1018	1018	1018	1018	1018	1019	1019	1019	1019	1019	1019	1019	1018	1018	1018	1018	1017	1018	1018	1018	1019	1018	1018	**1018**	**1019**	**1017**
25	1018	1018	1018	1017	1018	1018	1019	1018	1018	1019	1018	1018	1018	1018	1017	1017	1017	1018	1018	1018	1018	1018	1018	1018	**1018**	**1019**	**1017**
26	1017	1017	1017	1017	1017	1017	1017	1017	1018	1018	1018	1017	1017	1016	1016	1016	1016	1016	1016	1016	1016	1016	1015	1015	**1016**	**1018**	**1015**
27	1015	1015	1014	1014	1014	1014	1014	1014	1014	1014	1014	1014	1013	1013	1011	1011	1010	1010	1010	1011	1011	1010	1010	1010	**1013**	**1015**	**1010**
28	1009	1009	1009	1009	1009	1009	1010	1010	1011	1011	1011	1011	1011	1010	1010	1009	1009	1010	1011	1012	1012	1013	1013	1013	**1010**	**1013**	**1009**
29	1013	1013	1013	1012	1012	1013	1013	1014	1014	1014	1014	1014	1014	1014	1013	1013	1013	1014	1014	1014	1015	1015	1015	1015	**1014**	**1015**	**1012**
30	1015	1015	1015	1015	1015	1016	1016	1016	1017	1017	1017	1017	1016	1016	1015	1015	1015	1015	1016	1016	1016	1016	1016	1016	**1016**	**1017**	**1015**
MEAN	**1018**	**1018**	**1018**	**1018**	**1018**	**1019**	**1019**	**1019**	**1019**	**1019**	**1019**	**1019**	**1019**	**1018**	**1018**	**1017**	**1017**	**1017**	**1017**	**1018**	**1018**	**1018**	**1018**	**1018**	**1018**		
MAX	**1029**	**1029**	**1029**	**1028**	**1029**	**1029**	**1030**	**1030**	**1031**	**1031**	**1031**	**1030**	**1030**	**1030**	**1029**	**1028**	**1028**	**1028**	**1028**	**1028**	**1028**	**1029**	**1029**	**1029**		**1031**	
MIN	**1009**	**1009**	**1009**	**1009**	**1009**	**1009**	**1010**	**1010**	**1011**	**1010**	**1010**	**1011**	**1011**	**1010**	**1010**	**1009**	**1009**	**1010**	**1010**	**1011**	**1011**	**1010**	**1010**	**1010**			**1009**

POSSIBLE NUMBER OF OBSERVATIONS = 720 ACTUAL NUMBER OF OBSERVATIONS = 720 DATA RECOVERY RATE = 100.0%

MONTHLY MEAN = 1018 mb

MAXIMUM PRESSURE = 1031 mb DATE OF OCCURRENCE = 9/4 AT 1000 MAXIMUM DAILY MEAN = 1029 mb DATE OF OCCURRENCE = 9/4

MINIMUM PRESSURE = 1009 mb DATE OF OCCURRENCE = 9/28 AT 0300 MINUMUM DAILY MEAN = 1010 mb DATE OF OCCURRENCE = 9/28

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

APPENDIX F. HOURLY PRECIPITATION DATA FOR THIRD QUARTER 2024

CSX AQ5

PRECIPITATION in in for JULY, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	TOTAL	MAX HR
1																									0.00	0.00
2																									0.00	0.00
3																									0.00	0.00
4																									0.00	0.00
5																									0.00	0.00
6																									0.00	0.00
7																									0.00	0.00
8																									0.00	0.00
9														0.54	1.19	0.05									1.78	1.19
10																				0.01			0.02	0.03	0.06	0.03
11																									0.00	0.00
12															0.01										0.01	0.01
13																									0.00	0.00
14																									0.00	0.00
15																									0.00	0.00
16																					0.45	0.02			0.47	0.45
17															0.12	0.02		0.14							0.28	0.14
18												0.03													0.03	0.03
19																									0.00	0.00
20																0.01									0.01	0.01
21																									0.00	0.00
22											0.04	0.09	0.49	0.11	0.01								0.03	0.02	0.79	0.49
23																							0.01		0.01	0.01
24																									0.00	0.00
25																									0.00	0.00
26																									0.00	0.00
27																									0.00	0.00
28																									0.00	0.00
29																			0.24						0.24	0.24
30																				0.02					0.02	0.02
31																0.19	0.21								0.40	0.21
TOTAL	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.04**	**0.12**	**0.49**	**0.65**	**1.33**	**0.27**	**0.21**	**0.14**	**0.24**	**0.03**	**0.45**	**0.02**	**0.06**	**0.05**	**4.10**	
MAX	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.04**	**0.09**	**0.49**	**0.54**	**1.19**	**0.19**	**0.21**	**0.14**	**0.24**	**0.02**	**0.45**	**0.02**	**0.03**	**0.03**		**1.19**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 744 DATA RECOVERY RATE = 100.0%

TOTAL PRECIPITATION FOR MONTH = 4.10 in

MAXIMUM DAILY PRECIPITATION = 1.78 in DATE OF OCCURRENCE = 7/9

MAXIMUM HOURLY PRECIPITATION = 1.19 in DATE OF OCCURRENCE = 7/9 AT 1500

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

CSX AQ5

PRECIPITATION in in for AUGUST, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	TOTAL	MAX HR
1																									0.00	0.00
2																			0.27	0.35	1.73	0.15			2.50	1.73
3																	0.11	0.33	0.32	0.09					0.85	0.33
4																									0.00	0.00
5																									0.00	0.00
6																									0.00	0.00
7																							0.01	0.07	0.08	0.07
8	0.02	0.01	0.02	0.06	0.41	0.16								0.01	0.02	0.08	0.08								0.87	0.41
9										0.05			0.02	0.06											0.13	0.06
10																									0.00	0.00
11																									0.00	0.00
12																									0.00	0.00
13																									0.00	0.00
14																									0.00	0.00
15																									0.00	0.00
16																									0.00	0.00
17		0.09	0.04	0.03	0.08														0.03						0.27	0.09
18																				0.07	0.05	0.70	0.01		0.83	0.70
19																									0.00	0.00
20																									0.00	0.00
21																									0.00	0.00
22																									0.00	0.00
23																									0.00	0.00
24																									0.00	0.00
25																									0.00	0.00
26																0.32									0.32	0.32
27																									0.00	0.00
28																									0.00	0.00
29																							0.02		0.02	0.02
30					0.01																				0.01	0.01
31																									0.00	0.00
TOTAL	**0.02**	**0.10**	**0.06**	**0.09**	**0.50**	**0.16**	**0.00**	**0.00**	**0.00**	**0.05**	**0.00**	**0.00**	**0.02**	**0.07**	**0.02**	**0.40**	**0.19**	**0.33**	**0.62**	**0.51**	**1.78**	**0.85**	**0.04**	**0.07**	**5.88**	
MAX	**0.02**	**0.09**	**0.04**	**0.06**	**0.41**	**0.16**	**0.00**	**0.00**	**0.00**	**0.05**	**0.00**	**0.00**	**0.02**	**0.06**	**0.02**	**0.32**	**0.11**	**0.33**	**0.32**	**0.35**	**1.73**	**0.70**	**0.02**	**0.07**		**1.73**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 744 DATA RECOVERY RATE = 100.0%

TOTAL PRECIPITATION FOR MONTH = 5.88 in

MAXIMUM DAILY PRECIPITATION = 2.50 in DATE OF OCCURRENCE = 8/2

MAXIMUM HOURLY PRECIPITATION = 1.73 in DATE OF OCCURRENCE = 8/2 AT 2100

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

CSX AQ5

PRECIPITATION in in for SEPTEMBER, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	TOTAL	MAX HR
1																									0.00	0.00
2																									0.00	0.00
3																									0.00	0.00
4																									0.00	0.00
5																									0.00	0.00
6																									0.00	0.00
7																									0.00	0.00
8																									0.00	0.00
9																									0.00	0.00
10																									0.00	0.00
11																									0.00	0.00
12																									0.00	0.00
13																									0.00	0.00
14																									0.00	0.00
15																									0.00	0.00
16																									0.00	0.00
17																		0.01							0.01	0.01
18	0.04	0.04	0.05	0.01		0.03	0.02		0.01	0.05								0.01							0.26	0.05
19																									0.00	0.00
20																									0.00	0.00
21																								0.04	0.04	0.04
22	0.12	1.59	0.10																						1.81	1.59
23																			0.03		0.01	0.01			0.05	0.03
24																	0.02	0.02							0.04	0.02
25					0.01	0.13	0.01		0.02	0.06	0.01							0.02							0.26	0.13
26					0.02	0.03	0.17																		0.22	0.17
27								0.01	0.01	0.03		0.09	0.01							0.01	0.02	0.01	0.03	0.08	0.30	0.09
28	0.02		0.07		0.01	0.10	0.22																		0.42	0.22
29			0.01	0.01	0.01																	0.02			0.05	0.02
30						0.01		0.04	0.03																0.08	0.04
TOTAL	**0.18**	**1.63**	**0.23**	**0.02**	**0.05**	**0.30**	**0.42**	**0.05**	**0.07**	**0.14**	**0.01**	**0.09**	**0.01**	**0.00**	**0.00**	**0.00**	**0.02**	**0.06**	**0.03**	**0.01**	**0.03**	**0.04**	**0.03**	**0.12**	**3.54**	
MAX	**0.12**	**1.59**	**0.10**	**0.01**	**0.02**	**0.13**	**0.22**	**0.04**	**0.03**	**0.06**	**0.01**	**0.09**	**0.01**	**0.00**	**0.00**	**0.00**	**0.02**	**0.02**	**0.03**	**0.01**	**0.02**	**0.02**	**0.03**	**0.08**		**1.59**

POSSIBLE NUMBER OF OBSERVATIONS = 720 ACTUAL NUMBER OF OBSERVATIONS = 720 DATA RECOVERY RATE = 100.0%

TOTAL PRECIPITATION FOR MONTH = 3.54 in

MAXIMUM DAILY PRECIPITATION = 1.81 in DATE OF OCCURRENCE = 9/22

MAXIMUM HOURLY PRECIPITATION = 1.59 in DATE OF OCCURRENCE = 9/22 AT 0200

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

APPENDIX G. HOURLY AQ5 PM_{10} AND $PM_{2.5}$ CONCENTRATION DATA FOR THIRD QUARTER 2024

CSX AQ5 T640x

HOURLY AVERAGES of PM10 in µg/m3 for JULY, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
2	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
3	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
4	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
5	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
6	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
7	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
8	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
9	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
10	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
11	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
12	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
13	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
14	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
15	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
16	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
17	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
18	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	16.6	15.9	17.1	16.3	18.8	18.4	24.6	24.3	---	---	---
19	26.4	30.2	24.3	20.4	18.5	19.1	19.3	15.0	12.5	11.2	12.8	17.8	12.8	18.9	11.8	12.2	11.8	16.8	16.9	17.9	26.0	25.1	27.6	22.6	**18.7**	**30.2**	**11.2**
20	18.4	15.8	17.1	15.8	15.6	19.8	26.3	15.8	15.0	12.8	15.2	17.2	17.7	16.9	17.1	15.6	14.3	13.9	14.7	13.0	16.8	15.1	15.1	13.7	**16.2**	**26.3**	**12.8**
21	16.0	18.2	16.2	17.3	22.9	22.1	25.2	13.7	12.4	15.5	14.4	12.1	12.0	---	---	---	---	---	---	---	---	---	---	---	---	---	---
22	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
23	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
24	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
25	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
26	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
27	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
28	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
29	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
30	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
31	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MEAN	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**17.5**		
MAX	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---		**30.2**	
MIN	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---			**11.2**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 69 DATA RECOVERY RATE = 9.3% DATA CAPTURE RATE = 6.5%

MONTHLY MEAN = 17.5 µg/m3

MAXIMUM PM10 = 30.2 µg/m3 DATE OF OCCURRENCE = 7/19 at 200 MAXIMUM DAILY MEAN = 18.7 µg/m3 DATE OF OCCURRENCE = 7/19

SECOND MAXIMUM PM10 = 27.6 µg/m3 DATE OF OCCURRENCE = 7/19 at 2300 SECOND MAXIMUM DAILY MEAN = 16.2 µg/m3 DATE OF OCCURRENCE = 7/20

MINIMUM PM10 = 11.2 µg/m3 DATE OF OCCURRENCE = 7/19 at 1000 MINUMUM DAILY MEAN = 16.2 µg/m3 DATE OF OCCURRENCE = 7/20

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

CSX AQ5 T640x

HOURLY AVERAGES of PM10 in µg/m3 for AUGUST, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
2	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
3	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
4	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
5	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
6	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
7	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
8	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
9	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
10	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
11	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
12	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
13	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
14	---	---	---	---	---	---	---	---	---	---	---	---	41.3	38.6	41.1	39.6	35.1	30.3	28.5	36.9	33.9	37.4	38.2	38.9	**---**	**---**	**---**
15	36.6	32.9	32.7	28.5	34.4	55.1	47.0	37.5	33.2	34.9	29.2	27.4	27.6	27.6	25.8	28.6	34.4	34.6	37.8	36.1	38.4	35.5	32.7	36.5	**34.4**	**55.1**	**25.8**
16	38.0	39.7	34.4	47.0	53.5	191.4	149.8	70.4	84.0	34.3	28.6	29.5	30.3	30.0	53.3	41.1	33.8	30.4	29.2	27.8	33.2	32.0	33.3	32.7	**50.3**	**191.4**	**27.8**
17	28.3	29.2	27.4	28.4	23.7	27.3	29.7	31.2	30.0	36.2	35.6	31.2	30.3	29.6	33.4	40.2	41.6	40.0	33.5	19.9	14.9	14.7	17.9	19.5	**28.9**	**41.6**	**14.7**
18	22.1	21.8	20.7	21.1	19.8	21.0	19.4	17.4	20.9	25.4	25.7	25.0	25.8	26.6	27.3	27.0	24.6	24.8	25.5	13.0	19.4	17.3	14.7	12.1	**21.6**	**27.3**	**12.1**
19	14.3	16.1	17.8	16.5	20.5	20.7	23.8	19.8	18.9	13.8	12.4	10.8	7.6	7.8	11.9	9.9	8.6	8.1	10.1	11.1	28.7	8.2	7.9	8.0	**13.9**	**28.7**	**7.6**
20	8.0	8.1	8.1	8.7	6.8	7.3	8.8	9.5	11.0	11.7	14.1	15.0	15.1	18.6	20.7	14.6	11.6	10.4	9.9	7.7	10.8	18.9	14.6	9.7	**11.7**	**20.7**	**6.8**
21	10.1	10.2	9.4	8.1	8.5	12.2	19.7	31.1	23.5	11.7	13.4	15.2	14.3	14.1	13.7	11.4	9.0	9.3	13.6	15.1	21.0	17.5	13.3	19.8	**14.4**	**31.1**	**8.1**
22	18.5	22.4	21.3	16.1	18.0	54.1	28.6	31.0	16.4	13.1	15.5	12.9	18.1	13.8	13.5	17.3	16.4	15.6	22.5	67.9	37.1	47.7	120.6	246.5	**37.7**	**246.5**	**12.9**
23	153.3	46.0	26.4	21.1	44.9	28.6	30.5	27.4	30.8	19.1	18.5	24.2	23.0	17.5	15.4	15.0	15.1	15.3	17.5	27.5	21.5	19.4	19.9	20.7	**29.1**	**153.3**	**15.0**
24	23.7	15.7	17.4	18.7	19.3	21.7	27.9	22.7	19.7	18.3	18.2	21.9	18.9	19.4	17.3	18.2	21.9	18.3	20.4	19.6	18.6	20.5	34.8	28.9	**20.9**	**34.8**	**15.7**
25	24.3	19.3	18.9	20.2	24.0	28.2	23.0	21.4	18.8	16.7	17.3	17.3	17.6	18.2	20.7	24.7	26.7	23.0	22.1	27.6	21.1	20.6	24.3	19.8	**21.5**	**28.2**	**16.7**
26	19.2	17.1	17.5	17.4	20.3	19.1	26.5	36.8	36.4	30.6	51.2	48.5	29.9	30.8	34.4	47.9	19.0	15.3	14.5	16.0	17.5	22.1	33.5	28.5	**27.1**	**51.2**	**14.5**
27	29.6	32.0	33.2	29.3	27.1	31.0	40.9	45.2	31.8	36.8	49.7	52.0	38.6	31.0	31.2	38.3	27.1	24.8	27.8	40.9	35.8	31.0	28.4	29.0	**34.3**	**52.0**	**24.8**
28	33.6	29.6	29.2	33.7	26.0	28.9	38.6	41.0	38.9	33.8	40.2	27.7	27.8	32.2	28.3	28.4	28.6	30.6	32.0	37.0	57.8	40.1	20.8	29.2	**33.1**	**57.8**	**20.8**
29	28.2	20.1	23.3	20.7	20.7	22.4	24.1	25.5	22.4	20.3	18.8	23.3	26.0	29.3	27.8	32.6	32.3	33.7	27.4	20.8	16.6	19.2	19.0	17.8	**23.8**	**33.7**	**16.6**
30	17.4	15.2	15.2	18.6	17.8	13.2	15.1	15.4	15.5	15.6	16.4	17.7	18.1	16.5	15.8	16.1	17.2	15.5	15.6	15.0	9.0	7.8	10.6	11.7	**15.1**	**18.6**	**7.8**
31	11.3	11.1	14.9	18.8	13.9	14.3	38.1	25.4	13.3	15.2	12.6	14.0	13.2	11.7	13.0	12.8	11.4	12.1	18.6	13.9	16.8	13.9	12.3	12.3	**15.2**	**38.1**	**11.1**
MEAN	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**25.8**		
MAX	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---		**246.5**	
MIN	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---			**6.8**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 420 DATA RECOVERY RATE = 56.5% DATA CAPTURE RATE = 54.8%

MONTHLY MEAN = 25.8 µg/m3

MAXIMUM PM10 = 246.5 µg/m3 DATE OF OCCURRENCE = 8/22 at 2400 MAXIMUM DAILY MEAN = 50.3 µg/m3 DATE OF OCCURRENCE = 8/16

SECOND MAXIMUM PM10 = 191.4 µg/m3 DATE OF OCCURRENCE = 8/16 at 600 SECOND MAXIMUM DAILY MEAN = 37.7 µg/m3 DATE OF OCCURRENCE = 8/22

MINIMUM PM10 = 6.8 µg/m3 DATE OF OCCURRENCE = 8/20 at 500 MINUMUM DAILY MEAN = 11.7 µg/m3 DATE OF OCCURRENCE = 8/20

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

CSX AQ5 T640x

HOURLY AVERAGES of PM10 in µg/m3 for SEPTEMBER, 2024

Hr Beg Hr End Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	12.5	13.0	14.6	15.1	16.9	15.5	15.4	16.1	15.0	13.9	12.3	16.9	13.8	18.4	13.0	12.5	14.2	13.5	15.1	18.5	15.7	15.3	13.7	14.5	**14.8**	**18.5**	**12.3**
2	13.0	13.4	15.8	17.2	19.0	19.2	20.4	20.5	17.2	15.7	13.8	12.2	13.5	10.9	12.3	13.0	12.1	10.4	10.4	11.7	11.6	10.1	9.1	9.1	**13.8**	**20.5**	**9.1**
3	7.6	8.0	7.9	9.0	11.3	9.6	16.2	11.7	10.6	12.7	13.6	14.9	15.1	13.4	14.4	16.8	18.9	13.7	14.9	16.1	16.9	37.7	22.2	22.7	**14.8**	**37.7**	**7.6**
4	16.8	27.0	19.7	20.3	19.9	24.2	43.6	36.7	14.9	12.3	12.1	12.3	12.0	11.2	13.1	17.0	15.5	15.1	15.9	16.2	23.2	12.8	18.6	15.7	**18.6**	**43.6**	**11.2**
5	19.7	20.8	15.6	14.1	10.6	32.4	32.3	---	---	13.8	12.6	12.0	14.3	13.8	15.9	18.9	20.3	16.5	12.3	25.6	20.3	20.8	22.0	23.6	**18.6**	**32.4**	**10.6**
6	19.0	14.8	14.6	19.0	14.4	20.8	19.8	26.2	25.8	21.8	19.5	14.9	16.3	15.3	18.2	15.8	15.2	16.5	21.7	19.7	22.1	20.3	25.2	22.6	**19.1**	**26.2**	**14.4**
7	14.8	15.0	12.7	13.6	14.8	36.4	20.9	22.1	21.2	17.1	21.5	84.1	36.8	9.5	7.5	8.8	8.9	11.4	10.2	12.7	13.5	14.4	11.6	7.6	**18.6**	**84.1**	**7.5**
8	7.5	8.2	6.9	13.4	6.9	10.4	7.1	5.9	7.5	6.8	9.1	12.3	10.7	11.6	8.5	15.0	11.2	11.3	15.5	12.5	17.6	18.1	196.1	13.4	**18.5**	**196.1**	**5.9**
9	13.7	11.3	13.7	15.6	12.9	23.9	34.9	30.8	16.4	12.3	9.7	10.6	16.8	17.3	13.1	16.1	14.3	16.3	16.9	33.7	23.3	18.6	22.0	25.2	**18.3**	**34.9**	**9.7**
10	13.2	14.1	16.9	19.6	16.6	31.6	15.8	17.4	21.0	27.9	23.5	23.0	25.8	26.5	24.8	23.1	20.1	28.1	36.8	28.5	32.4	61.2	60.6	35.4	**26.8**	**61.2**	**13.2**
11	38.8	36.4	35.5	35.8	49.8	45.0	44.3	25.4	24.7	24.5	25.4	31.4	22.8	20.1	20.2	20.5	20.8	18.8	40.6	93.1	27.7	25.2	27.5	37.4	**33.0**	**93.1**	**18.8**
12	31.7	51.8	34.5	46.2	35.0	34.5	44.7	49.2	23.2	19.8	20.2	16.9	15.9	14.8	15.6	14.5	16.2	23.4	33.2	23.9	18.8	17.8	17.9	15.1	**26.5**	**51.8**	**14.5**
13	12.6	11.8	11.3	15.2	15.2	15.0	22.7	20.7	22.5	22.6	19.5	18.1	21.3	27.9	19.2	16.3	15.5	13.4	14.2	21.2	18.8	25.4	25.2	39.3	**19.4**	**39.3**	**11.3**
14	16.8	18.3	18.6	18.3	21.5	29.0	38.0	18.6	15.0	16.5	16.9	17.0	19.6	18.9	19.2	18.6	21.5	18.1	21.0	25.4	21.1	26.1	18.7	17.9	**20.4**	**38.0**	**15.0**
15	18.6	18.4	17.7	18.7	21.0	22.7	24.7	22.5	20.8	19.4	16.7	20.1	17.5	19.9	16.6	18.7	19.9	19.4	22.4	30.1	19.7	18.0	15.1	12.8	**19.6**	**30.1**	**12.8**
16	14.8	14.3	14.6	14.7	15.0	13.9	18.7	22.0	23.6	23.1	23.1	22.4	22.0	20.6	22.8	22.3	22.3	21.6	22.4	22.5	19.2	19.3	18.6	17.3	**19.6**	**23.6**	**13.9**
17	15.9	16.9	18.6	19.1	20.0	20.4	21.8	22.6	24.6	24.5	28.2	28.9	28.8	31.0	30.8	24.6	21.9	21.3	21.7	20.5	19.1	17.2	16.7	15.7	**22.1**	**31.0**	**15.7**
18	15.4	13.9	13.8	12.0	9.6	9.9	10.7	11.9	13.1	14.8	---	16.4	17.3	18.4	19.3	17.8	19.5	17.2	14.5	16.9	19.2	22.1	23.2	26.8	**16.2**	**26.8**	**9.6**
19	28.0	26.3	32.5	27.8	25.1	23.0	25.4	29.6	27.1	22.1	20.4	15.5	17.7	17.5	19.6	24.5	26.1	23.5	34.7	45.8	29.1	33.0	30.1	32.3	**26.5**	**45.8**	**15.5**
20	32.9	29.4	29.6	32.4	31.3	29.2	29.8	21.5	15.2	9.3	8.4	9.9	16.6	26.8	24.5	25.0	27.2	34.8	30.4	40.3	39.0	31.9	17.2	10.8	**25.1**	**40.3**	**8.4**
21	12.5	11.4	13.0	14.1	16.1	15.3	15.1	14.3	14.2	13.4	12.1	12.6	13.2	12.6	13.8	13.8	17.3	17.0	15.9	16.5	19.2	22.6	22.8	23.0	**15.5**	**23.0**	**11.4**
22	23.9	34.6	12.0	9.8	9.0	6.5	10.9	9.4	10.7	8.2	9.5	9.2	10.4	11.8	16.5	18.3	12.9	13.3	14.2	15.9	20.5	20.3	16.3	16.3	**14.2**	**34.6**	**6.5**
23	14.3	16.9	19.4	18.8	17.5	20.4	19.9	18.3	17.6	19.7	19.4	18.6	17.0	18.0	20.2	17.8	13.2	15.6	14.8	16.5	13.8	13.8	13.2	13.3	**17.0**	**20.4**	**13.2**
24	13.0	12.2	11.4	11.2	13.0	13.4	14.9	14.1	15.6	15.6	17.6	19.7	22.5	20.1	22.7	20.9	21.2	18.7	15.5	14.1	13.2	13.0	16.0	20.7	**16.3**	**22.7**	**11.2**
25	18.4	12.3	11.3	11.2	9.9	9.2	7.3	6.0	6.8	7.4	10.7	12.3	11.7	11.3	10.7	12.3	14.0	9.3	10.2	13.8	14.7	16.6	17.0	19.5	**11.8**	**19.5**	**6.0**
26	20.7	18.7	18.8	17.2	29.9	20.7	26.3	20.7	19.8	20.4	22.2	22.1	18.0	14.2	11.2	8.6	9.3	10.6	11.6	18.5	38.0	14.6	13.7	15.7	**18.4**	**38.0**	**8.6**
27	19.9	18.7	28.6	21.8	34.8	25.5	13.4	7.8	6.7	8.6	8.1	12.7	11.5	11.8	12.1	10.2	11.1	11.6	11.0	11.0	13.0	11.5	9.0	8.8	**14.1**	**34.8**	**6.7**
28	10.3	12.0	11.8	10.6	12.0	14.1	12.0	8.4	15.2	15.1	22.0	23.2	18.7	22.1	25.5	28.6	24.3	16.9	12.6	11.5	10.2	10.1	10.4	12.2	**15.4**	**28.6**	**8.4**
29	13.2	14.9	13.0	9.8	8.7	10.6	14.1	14.6	13.9	10.9	11.6	13.5	14.3	15.4	14.1	12.7	8.8	7.8	9.0	9.7	8.6	9.4	8.4	9.4	**11.5**	**15.4**	**7.8**
30	10.9	9.4	10.1	11.9	13.2	16.9	15.5	13.5	13.3	10.9	10.3	12.3	12.0	12.6	13.8	15.6	14.9	16.0	16.8	15.1	15.7	16.0	12.7	8.8	**13.3**	**16.9**	**8.8**
MEAN	**17.3**	**18.1**	**17.2**	**17.8**	**18.4**	**20.6**	**21.9**	**19.3**	**17.0**	**16.0**	**16.2**	**18.9**	**17.5**	**17.1**	**17.0**	**17.3**	**17.0**	**16.7**	**18.5**	**22.6**	**19.8**	**20.4**	**25.0**	**18.8**	**18.6**		
MAX	**38.8**	**51.8**	**35.5**	**46.2**	**49.8**	**45.0**	**44.7**	**49.2**	**27.1**	**27.9**	**28.2**	**84.1**	**36.8**	**31.0**	**30.8**	**28.6**	**27.2**	**34.8**	**40.6**	**93.1**	**39.0**	**61.2**	**196.1**	**39.3**		**196.1**	
MIN	**7.5**	**8.0**	**6.9**	**9.0**	**6.9**	**6.5**	**7.1**	**5.9**	**6.7**	**6.8**	**8.1**	**9.2**	**10.4**	**9.5**	**7.5**	**8.6**	**8.8**	**7.8**	**9.0**	**9.7**	**8.6**	**9.4**	**8.4**	**7.6**			**5.9**

POSSIBLE NUMBER OF OBSERVATIONS = 720 ACTUAL NUMBER OF OBSERVATIONS = 717 DATA RECOVERY RATE = 99.6% DATA CAPTURE RATE = 100.0%

MONTHLY MEAN = 18.6 µg/m3

MAXIMUM PM10 = 196.1 µg/m3 DATE OF OCCURRENCE = 9/8 at 2300 MAXIMUM DAILY MEAN = 33.0 µg/m3 DATE OF OCCURRENCE = 9/11

SECOND MAXIMUM PM10 = 93.1 µg/m3 DATE OF OCCURRENCE = 9/11 at 2000 SECOND MAXIMUM DAILY MEAN = 26.8 µg/m3 DATE OF OCCURRENCE = 9/10

MINIMUM PM10 = 5.9 µg/m3 DATE OF OCCURRENCE = 9/8 at 800 MINUMUM DAILY MEAN = 11.5 µg/m3 DATE OF OCCURRENCE = 9/29

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

CSX AQ5 T640x

HOURLY AVERAGES of PM2.5 in µg/m3 for JULY, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
2	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
3	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
4	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
5	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
6	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
7	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
8	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
9	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
10	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
11	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
12	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
13	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
14	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
15	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
16	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
17	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
18	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	9.7	10.1	9.9	10.7	11.0	11.0	12.4	14.0	---	---	---
19	14.5	14.8	13.1	10.3	8.9	8.3	7.7	6.3	5.4	5.4	5.3	5.6	5.0	5.6	4.9	5.9	6.7	7.2	8.8	10.3	11.6	11.4	12.2	10.3	**8.5**	**14.8**	**4.9**
20	9.2	7.8	8.3	7.9	7.8	8.2	8.8	7.4	6.6	6.2	7.0	8.3	8.5	8.8	8.5	8.4	8.0	8.1	7.7	7.5	9.9	8.9	8.9	9.0	**8.1**	**9.9**	**6.2**
21	9.3	9.8	10.0	10.3	10.7	10.4	10.3	8.1	7.2	7.7	7.9	6.9	6.5	---	---	---	---	---	---	---	---	---	---	---	---	---	---
22	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
23	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
24	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
25	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
26	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
27	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
28	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
29	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
30	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
31	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MEAN	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**8.8**		
MAX	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---		**14.8**	
MIN	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---			**4.9**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 69 DATA RECOVERY RATE = 9.3% DATA CAPTURE RATE = 6.5%

MONTHLY MEAN = 8.8 µg/m3

MAXIMUM PM2.5 = 14.8 µg/m3 DATE OF OCCURRENCE = 7/19 at 200 MAXIMUM DAILY MEAN = 8.5 µg/m3 DATE OF OCCURRENCE = 7/19

SECOND MAXIMUM PM2.5 = 14.5 µg/m3 DATE OF OCCURRENCE = 7/19 at 100 SECOND MAXIMUM DAILY MEAN = 8.1 µg/m3 DATE OF OCCURRENCE = 7/20

MINIMUM PM2.5 = 4.9 µg/m3 DATE OF OCCURRENCE = 7/19 at 1500 MINUMUM DAILY MEAN = 8.1 µg/m3 DATE OF OCCURRENCE = 7/20

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

CSX AQ5 T640x

HOURLY AVERAGES of PM2.5 in µg/m3 for AUGUST, 2024

Hr Beg Hr End Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
2	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
3	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
4	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
5	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
6	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
7	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
8	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
9	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
10	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
11	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
12	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
13	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
14	---	---	---	---	---	---	---	---	---	---	---	---	28.2	26.1	25.6	27.0	22.8	18.7	18.1	20.0	20.9	22.1	23.5	25.4	**---**	**---**	**---**
15	23.0	20.5	19.8	18.4	18.4	19.2	19.5	19.0	17.6	18.1	17.4	16.7	16.9	17.0	16.4	16.5	17.2	18.6	17.3	17.7	19.4	19.5	19.3	20.8	**18.5**	**23.0**	**16.4**
16	20.8	21.2	20.5	26.0	25.8	42.4	32.3	24.4	27.8	19.7	18.5	18.5	18.2	18.4	18.7	17.9	19.2	19.2	18.7	17.7	16.8	18.4	18.8	19.7	**21.6**	**42.4**	**16.8**
17	17.9	17.6	17.6	18.3	16.1	16.2	18.3	19.3	21.9	23.3	23.5	21.9	21.2	20.8	22.9	23.3	25.0	25.1	21.5	10.2	8.2	8.7	8.5	10.0	**18.2**	**25.1**	**8.2**
18	11.2	11.4	10.7	9.8	10.2	10.1	9.1	9.1	10.6	14.2	15.3	15.6	16.1	17.2	18.4	18.3	16.9	17.4	15.9	5.0	7.5	7.2	3.9	3.8	**11.8**	**18.4**	**3.8**
19	4.5	5.1	5.2	5.6	6.5	7.0	7.7	8.6	7.9	6.4	5.0	4.5	3.2	3.2	3.2	2.8	2.9	2.6	3.2	3.1	6.3	2.5	2.2	2.4	**4.6**	**8.6**	**2.2**
20	2.0	2.1	2.2	2.3	2.3	2.5	3.1	3.3	3.5	3.8	5.1	5.7	6.0	5.9	5.6	4.6	3.9	3.5	3.4	3.7	4.4	6.2	5.6	4.2	**3.9**	**6.2**	**2.0**
21	4.3	4.3	4.0	3.6	3.6	4.1	4.8	4.7	4.3	3.3	3.3	3.5	3.5	3.4	3.4	4.8	3.4	3.5	4.2	5.4	5.8	5.8	5.9	6.6	**4.3**	**6.6**	**3.3**
22	6.5	6.6	6.2	5.5	5.6	8.3	6.9	7.7	5.4	4.7	4.8	5.0	5.3	5.3	5.5	5.7	6.0	6.4	7.2	11.6	9.7	12.0	17.6	50.1	**8.9**	**50.1**	**4.7**
23	23.2	12.4	10.7	9.1	11.9	9.8	10.4	12.3	12.6	8.0	7.7	8.5	8.4	8.1	7.2	6.8	7.3	7.4	7.7	10.2	10.2	10.4	11.0	11.7	**10.1**	**23.2**	**6.8**
24	12.1	9.0	8.5	9.6	10.6	10.0	10.8	10.3	10.3	10.2	10.4	10.6	10.2	10.6	9.3	9.3	9.8	9.3	9.6	10.2	10.7	11.5	14.6	14.6	**10.5**	**14.6**	**8.5**
25	13.2	11.2	10.5	10.6	11.4	11.3	12.4	11.9	11.1	10.0	9.7	9.7	9.5	10.7	10.9	11.9	12.7	12.1	11.6	12.9	12.0	12.2	12.5	11.4	**11.3**	**13.2**	**9.5**
26	10.7	10.0	9.9	10.0	10.2	9.6	11.0	13.1	14.9	14.5	19.3	17.8	16.8	17.8	18.4	19.9	12.7	9.3	8.0	9.3	10.8	13.3	23.6	16.0	**13.6**	**23.6**	**8.0**
27	16.7	17.0	16.5	15.3	15.0	15.3	17.8	19.0	16.8	17.7	21.0	20.7	17.4	14.1	13.7	13.1	12.7	13.6	15.1	18.9	17.8	16.5	15.6	16.0	**16.3**	**21.0**	**12.7**
28	17.4	16.2	16.6	17.6	16.3	16.9	19.2	19.9	21.4	20.0	19.8	15.9	16.2	16.6	14.7	15.1	15.7	16.7	18.7	22.0	26.7	13.7	11.2	15.0	**17.4**	**26.7**	**11.2**
29	13.8	12.0	11.2	10.3	10.2	10.7	11.4	13.0	12.1	10.4	11.0	12.8	15.2	17.0	17.1	17.0	15.9	13.4	10.8	8.9	6.9	7.5	8.2	7.5	**11.8**	**17.1**	**6.9**
30	7.0	6.0	5.9	6.9	7.1	5.8	5.9	5.8	5.6	5.4	5.6	6.5	6.8	6.2	5.7	5.9	6.1	5.9	5.7	5.4	3.9	3.2	3.8	4.0	**5.6**	**7.1**	**3.2**
31	4.2	4.4	4.9	5.8	5.3	5.5	8.4	6.9	5.3	6.5	5.8	6.7	6.4	5.7	6.9	6.8	6.4	6.7	8.4	7.6	6.5	6.0	6.8	6.2	**6.2**	**8.4**	**4.2**
MEAN	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**11.8**		
MAX	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---		**50.1**	
MIN	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---			**2.0**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 420 DATA RECOVERY RATE = 56.5% DATA CAPTURE RATE = 54.8%

MONTHLY MEAN = 11.8 µg/m3

MAXIMUM PM2.5 = 50.1 µg/m3 DATE OF OCCURRENCE = 8/22 at 2400 MAXIMUM DAILY MEAN = 21.6 µg/m3 DATE OF OCCURRENCE = 8/16

SECOND MAXIMUM PM2.5 = 42.4 µg/m3 DATE OF OCCURRENCE = 8/16 at 600 SECOND MAXIMUM DAILY MEAN = 18.5 µg/m3 DATE OF OCCURRENCE = 8/15

MINIMUM PM2.5 = 2.0 µg/m3 DATE OF OCCURRENCE = 8/20 at 100 MINUMUM DAILY MEAN = 3.9 µg/m3 DATE OF OCCURRENCE = 8/20

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

CSX AQ5 T640x

HOURLY AVERAGES of PM2.5 in µg/m3 for SEPTEMBER, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	6.5	6.6	7.3	7.7	7.7	7.2	7.3	8.0	7.7	6.7	6.4	7.9	8.4	9.4	8.1	7.7	7.9	8.3	8.5	9.5	9.3	9.0	8.6	8.7	**7.9**	**9.5**	**6.4**
2	8.1	8.3	8.3	8.0	10.1	11.4	12.7	11.8	9.4	8.0	7.2	6.5	6.2	4.8	4.3	4.0	3.9	3.9	3.9	4.4	4.7	4.3	3.7	3.4	**6.7**	**12.7**	**3.4**
3	2.9	2.9	2.9	3.0	3.0	3.1	3.9	3.7	3.5	3.6	3.6	3.8	3.9	3.8	3.8	4.2	4.6	3.8	3.9	4.0	4.5	7.7	5.9	6.1	**4.0**	**7.7**	**2.9**
4	5.8	6.7	6.5	6.7	6.4	7.0	9.2	7.5	5.2	4.6	4.3	4.4	4.4	4.4	4.4	4.5	4.6	4.6	5.7	5.0	5.7	4.5	6.0	5.8	**5.5**	**9.2**	**4.3**
5	6.6	7.5	6.3	6.8	5.1	6.7	6.9	---	---	4.7	4.5	4.6	5.0	5.1	5.0	5.4	5.5	4.9	4.7	7.5	7.4	7.2	8.3	8.7	**6.1**	**8.7**	**4.5**
6	6.4	6.0	6.0	6.2	5.9	6.4	6.5	7.7	9.0	7.3	6.7	5.7	5.3	5.6	6.0	5.7	5.5	5.7	9.0	7.8	9.0	9.4	10.6	9.1	**7.0**	**10.6**	**5.3**
7	7.5	7.5	6.6	6.5	7.4	9.8	8.4	8.8	8.8	9.0	10.1	10.5	4.3	3.1	3.2	3.5	3.9	4.8	5.3	6.7	7.6	6.8	5.0	3.7	**6.6**	**10.5**	**3.1**
8	3.1	3.2	3.0	3.6	3.1	3.3	3.0	3.0	3.3	3.4	3.5	3.6	4.1	3.3	3.3	3.2	3.0	3.5	3.6	5.2	5.7	5.2	39.5	4.5	**5.1**	**39.5**	**3.0**
9	4.8	4.4	4.5	5.2	4.8	5.2	5.8	6.2	3.5	3.2	3.0	3.3	3.4	3.2	2.9	3.1	3.3	3.3	3.7	6.3	6.9	5.6	5.8	5.5	**4.4**	**6.9**	**2.9**
10	5.2	5.6	5.7	6.5	5.1	6.4	4.7	4.5	4.4	5.7	6.5	7.2	8.1	8.7	8.6	8.2	8.0	9.2	11.1	10.2	12.7	16.2	18.2	14.2	**8.3**	**18.2**	**4.4**
11	14.8	14.4	14.4	14.3	14.3	15.2	14.8	12.4	11.4	11.4	11.8	11.1	9.6	9.2	8.6	8.6	8.5	8.4	12.0	20.2	9.4	10.7	11.3	12.4	**12.0**	**20.2**	**8.4**
12	12.4	15.8	12.6	14.2	12.3	11.5	13.4	15.6	11.7	9.6	8.2	7.3	6.9	6.8	6.7	6.4	6.5	7.6	10.7	7.0	5.5	5.7	5.5	5.4	**9.3**	**15.8**	**5.4**
13	5.4	5.6	5.7	6.5	7.2	6.9	7.5	7.8	9.4	9.4	8.1	6.7	8.0	9.0	7.2	6.6	6.1	5.8	6.3	10.0	9.3	8.3	9.0	11.2	**7.6**	**11.2**	**5.4**
14	9.4	10.1	8.6	8.9	8.8	10.6	11.1	8.5	6.8	7.8	8.2	8.4	9.2	9.5	9.8	9.3	9.2	9.0	10.4	9.7	10.3	11.9	10.1	10.1	**9.4**	**11.9**	**6.8**
15	9.7	9.9	10.3	11.3	12.0	12.7	13.9	14.0	13.1	11.6	10.0	10.0	8.7	8.4	8.0	8.7	9.5	9.9	10.6	9.7	7.5	6.9	6.3	5.6	**9.9**	**14.0**	**5.6**
16	6.0	6.1	6.0	6.1	6.3	6.3	6.8	6.9	6.3	6.0	6.1	6.3	6.7	6.6	6.7	6.9	7.1	7.2	7.3	6.9	7.1	7.4	7.3	6.9	**6.6**	**7.4**	**6.0**
17	6.9	7.4	8.0	8.5	8.6	8.9	9.2	9.3	9.2	9.7	11.1	11.1	11.2	11.4	11.5	10.2	9.6	9.8	9.4	8.6	7.7	7.6	7.5	7.2	**9.1**	**11.5**	**6.9**
18	6.9	6.6	6.7	6.0	4.7	5.0	5.4	6.1	6.6	7.3	---	7.7	8.7	8.5	8.5	8.4	8.2	7.7	7.6	8.5	8.6	8.7	9.1	9.5	**7.4**	**9.5**	**4.7**
19	9.8	10.2	10.9	9.9	9.6	9.0	9.8	10.4	9.4	8.6	7.3	6.1	6.7	6.9	7.6	9.8	10.6	9.3	11.4	14.5	12.2	14.4	13.2	13.5	**10.0**	**14.5**	**6.1**
20	13.8	13.9	13.9	14.0	14.9	14.7	14.5	10.5	5.3	3.7	3.7	4.1	5.6	7.6	9.8	12.0	12.2	13.8	14.3	17.4	17.5	14.3	5.4	4.3	**10.8**	**17.5**	**3.7**
21	5.5	5.4	5.5	6.0	5.8	5.5	5.6	5.5	5.6	5.5	5.5	6.0	5.7	5.6	6.2	6.7	7.2	7.3	7.6	7.9	9.2	12.2	11.3	11.9	**6.9**	**12.2**	**5.4**
22	11.6	14.6	6.0	4.5	4.0	3.1	4.6	4.1	3.7	3.6	3.9	4.3	4.8	5.3	6.2	6.7	7.1	7.7	8.4	8.5	9.3	9.0	6.4	5.9	**6.3**	**14.6**	**3.1**
23	5.7	6.2	6.4	6.3	6.4	6.7	6.4	6.1	5.8	5.6	6.1	5.9	6.5	6.9	7.3	6.9	5.8	6.1	5.6	5.3	5.1	5.3	5.2	5.2	**6.0**	**7.3**	**5.1**
24	5.1	5.1	4.8	4.7	5.0	5.1	5.3	5.1	5.3	5.5	5.8	6.7	7.2	6.9	7.5	7.6	6.9	6.2	5.5	5.0	4.8	4.5	4.4	5.1	**5.6**	**7.6**	**4.4**
25	4.5	3.9	3.8	4.1	4.2	3.9	3.2	2.8	2.9	3.3	3.9	3.9	3.9	3.7	3.5	4.0	4.9	3.6	3.7	4.5	4.6	5.2	6.2	7.4	**4.1**	**7.4**	**2.8**
26	7.4	6.7	7.1	6.9	9.2	7.6	8.8	7.8	8.9	9.2	10.2	9.8	7.5	5.8	4.6	3.5	3.3	3.6	4.1	5.3	8.1	4.8	4.6	5.2	**6.6**	**10.2**	**3.3**
27	6.3	6.1	7.7	6.7	9.1	9.6	7.2	4.4	3.9	4.0	3.7	5.0	4.7	4.3	5.3	4.3	4.7	4.9	5.0	4.7	5.5	4.3	3.1	3.0	**5.3**	**9.6**	**3.0**
28	3.5	4.2	4.1	3.8	4.1	4.5	3.8	3.2	6.0	6.9	9.5	10.7	10.5	12.6	12.7	13.5	12.0	9.1	5.8	5.5	5.3	5.5	6.1	7.0	**7.0**	**13.5**	**3.2**
29	7.0	7.3	6.4	4.8	4.3	5.0	6.6	7.2	6.8	5.5	6.1	7.3	7.8	8.1	8.1	6.9	4.6	4.0	4.3	4.6	4.1	3.7	4.1	4.6	**5.7**	**8.1**	**3.7**
30	5.2	4.3	4.8	5.7	6.4	7.8	7.6	7.1	6.2	5.5	5.4	5.8	6.0	6.0	6.5	7.6	8.0	8.2	8.0	7.2	6.8	6.9	4.9	3.7	**6.3**	**8.2**	**3.7**
MEAN	**7.1**	**7.4**	**7.0**	**7.1**	**7.2**	**7.5**	**7.8**	**7.4**	**6.9**	**6.5**	**6.6**	**6.7**	**6.6**	**6.7**	**6.7**	**6.8**	**6.7**	**6.7**	**7.2**	**7.9**	**7.7**	**7.8**	**8.4**	**7.2**	**7.2**		
MAX	**14.8**	**15.8**	**14.4**	**14.3**	**14.9**	**15.2**	**14.8**	**15.6**	**13.1**	**11.6**	**11.8**	**11.1**	**11.2**	**12.6**	**12.7**	**13.5**	**12.2**	**13.8**	**14.3**	**20.2**	**17.5**	**16.2**	**39.5**	**14.2**		**39.5**	
MIN	**2.9**	**2.9**	**2.9**	**3.0**	**3.0**	**3.1**	**3.0**	**2.8**	**2.9**	**3.2**	**3.0**	**3.3**	**3.4**	**3.1**	**2.9**	**3.1**	**3.0**	**3.3**	**3.6**	**4.0**	**4.1**	**3.7**	**3.1**	**3.0**			**2.8**

POSSIBLE NUMBER OF OBSERVATIONS = 720 ACTUAL NUMBER OF OBSERVATIONS = 717 DATA RECOVERY RATE = 99.6% DATA CAPTURE RATE = 100.0%

MONTHLY MEAN = 7.2 µg/m3

MAXIMUM PM2.5 = 39.5 µg/m3 DATE OF OCCURRENCE = 9/8 at 2300 MAXIMUM DAILY MEAN = 12.0 µg/m3 DATE OF OCCURRENCE = 9/11

SECOND MAXIMUM PM2.5 = 20.2 µg/m3 DATE OF OCCURRENCE = 9/11 at 2000 SECOND MAXIMUM DAILY MEAN = 10.8 µg/m3 DATE OF OCCURRENCE = 9/20

MINIMUM PM2.5 = 2.8 µg/m3 DATE OF OCCURRENCE = 9/25 at 800 MINUMUM DAILY MEAN = 4.0 µg/m3 DATE OF OCCURRENCE = 9/3

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

APPENDIX H. HOURLY AQ8 PM_{10} AND $PM_{2.5}$ CONCENTRATION DATA FOR THIRD QUARTER 2024

CSX AQ8 T640x

HOURLY AVERAGES of PM10 in µg/m3 for JULY, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	15.4	11.6	7.8	6.4	5.4	7.4	9.3	8.1	19.1	9.9	12.4	20.6	8.2	11.0	11.6	13.5	14.2	19.1	17.5	14.5	16.8	18.7	13.2	11.8	**12.6**	**20.6**	**5.4**
2	16.9	18.2	12.0	13.9	12.8	14.7	20.9	13.1	19.6	19.2	25.0	25.3	25.7	19.7	17.2	28.2	20.6	20.6	14.0	14.8	14.8	18.7	12.3	11.0	**17.9**	**28.2**	**11.0**
3	10.8	12.6	11.2	13.9	24.1	17.2	15.2	15.3	16.4	27.7	21.9	16.5	20.4	36.4	37.8	42.7	40.1	38.5	29.4	15.5	19.7	14.9	13.1	21.8	**22.2**	**42.7**	**10.8**
4	12.5	19.1	14.0	10.2	13.9	13.4	14.0	22.2	18.8	27.7	30.9	23.0	27.7	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
5	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
6	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
7	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
8	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
9	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
10	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
11	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
12	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
13	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
14	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
15	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
16	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
17	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
18	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
19	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
20	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
21	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
22	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
23	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
24	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
25	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
26	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
27	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
28	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
29	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
30	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
31	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
MEAN	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**17.8**		
MAX	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**		**42.7**	
MIN	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**			**5.4**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 85 DATA RECOVERY RATE = 11.4% DATA CAPTURE RATE = 9.7%

MONTHLY MEAN = 17.8 µg/m3

MAXIMUM PM10 = 42.7 µg/m3 DATE OF OCCURRENCE = 7/3 at 1600 MAXIMUM DAILY MEAN = 22.2 µg/m3 DATE OF OCCURRENCE = 7/3

SECOND MAXIMUM PM10 = 40.1 µg/m3 DATE OF OCCURRENCE = 7/3 at 1700 SECOND MAXIMUM DAILY MEAN = 17.9 µg/m3 DATE OF OCCURRENCE = 7/2

MINIMUM PM10 = 5.4 µg/m3 DATE OF OCCURRENCE = 7/1 at 500 MINUMUM DAILY MEAN = 12.6 µg/m3 DATE OF OCCURRENCE = 7/1

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

CSX AQ8 T640x

HOURLY AVERAGES of PM10 in µg/m3 for AUGUST, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
2	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
3	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
4	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
5	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
6	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
7	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
8	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
9	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
10	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
11	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
12	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
13	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
14	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
15	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
16	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	30.5	28.9	26.4	32.1	30.6	28.9	**---**	**---**	**---**
17	26.5	27.5	25.9	25.0	23.6	23.5	35.2	27.3	31.3	32.9	36.5	30.4	29.5	28.7	30.8	32.9	35.9	35.2	30.9	16.1	13.7	18.2	16.6	20.2	**27.3**	**36.5**	**13.7**
18	21.2	25.1	22.9	22.5	19.8	20.6	17.0	16.6	19.6	24.9	24.8	24.5	25.4	25.8	29.3	27.5	24.9	24.2	24.3	12.6	15.4	14.8	15.9	13.0	**21.4**	**29.3**	**12.6**
19	12.2	13.8	14.9	20.1	20.7	20.7	20.7	19.0	14.2	13.1	11.1	8.4	8.5	8.7	10.8	8.9	7.0	5.8	11.7	8.9	6.0	7.7	5.7	8.5	**12.0**	**20.7**	**5.7**
20	7.8	7.3	6.6	6.3	7.2	16.6	26.1	18.4	43.7	27.2	82.2	72.4	71.0	44.8	25.9	20.7	14.9	13.2	23.0	9.9	14.4	23.5	10.8	13.2	**25.3**	**82.2**	**6.3**
21	10.7	7.6	10.3	8.3	9.2	9.1	9.1	16.5	18.1	19.3	13.7	44.2	16.7	12.3	17.2	15.7	8.9	9.3	16.8	14.0	17.4	13.0	23.9	18.8	**15.0**	**44.2**	**7.6**
22	26.6	24.0	13.5	12.1	13.0	28.1	22.7	25.4	31.4	31.7	47.2	26.8	22.6	27.0	59.0	164.0	70.5	124.2	51.8	118.9	115.8	86.9	153.2	115.0	**58.8**	**164.0**	**12.1**
23	85.7	178.6	59.4	23.0	82.5	72.3	57.8	44.0	30.4	20.2	37.7	25.6	39.1	44.4	29.3	43.4	23.3	26.0	21.0	86.4	19.6	49.8	17.7	24.6	**47.6**	**178.6**	**17.7**
24	25.7	15.8	14.5	15.6	20.2	20.4	20.9	19.9	22.4	23.7	19.4	24.9	23.8	38.1	29.6	35.4	44.8	23.5	17.5	20.4	22.8	18.8	20.0	21.1	**23.3**	**44.8**	**14.5**
25	19.5	18.6	16.0	16.7	19.6	19.4	36.8	38.8	19.7	19.0	16.5	22.9	35.6	53.3	28.2	36.1	43.6	22.6	19.0	20.3	32.1	19.2	19.8	18.6	**25.5**	**53.3**	**16.0**
26	17.0	17.0	18.3	16.9	20.0	18.0	49.9	35.6	35.0	31.8	65.9	80.4	65.8	54.1	46.2	45.7	---	---	---	---	---	---	---	---	**---**	**---**	**---**
27	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
28	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
29	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
30	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
31	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
MEAN	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**29.2**		
MAX	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**		**178.6**	
MIN	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**			**5.7**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 238 DATA RECOVERY RATE = 32.0% DATA CAPTURE RATE = 29.0%

MONTHLY MEAN = 29.2 µg/m3

MAXIMUM PM10 = 178.6 µg/m3 DATE OF OCCURRENCE = 8/23 at 200 MAXIMUM DAILY MEAN = 58.8 µg/m3 DATE OF OCCURRENCE = 8/22

SECOND MAXIMUM PM10 = 164.0 µg/m3 DATE OF OCCURRENCE = 8/22 at 1600 SECOND MAXIMUM DAILY MEAN = 47.6 µg/m3 DATE OF OCCURRENCE = 8/23

MINIMUM PM10 = 5.7 µg/m3 DATE OF OCCURRENCE = 8/19 at 2300 MINUMUM DAILY MEAN = 12.0 µg/m3 DATE OF OCCURRENCE = 8/19

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

CSX AQ8 T640x

HOURLY AVERAGES of PM10 in µg/m3 for SEPTEMBER, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
2	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
3	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
4	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
5	---	---	---	---	---	---	---	---	---	---	20.4	22.7	17.7	17.0	20.7	20.1	25.1	19.0	14.3	19.8	16.5	19.1	17.2	18.5	**---**	**---**	**---**
6	19.0	16.0	16.1	22.5	17.3	83.0	63.4	64.9	32.0	21.8	24.6	18.8	22.6	20.7	25.6	18.2	19.9	18.6	20.3	17.8	20.9	19.0	25.6	14.2	**26.8**	**83.0**	**14.2**
7	13.9	15.4	13.6	11.8	12.5	13.9	13.8	14.9	16.8	17.4	18.7	117.4	25.8	11.4	7.9	13.0	8.4	10.3	10.4	13.0	11.4	15.0	11.2	9.7	**17.8**	**117.4**	**7.9**
8	8.6	6.4	6.5	6.9	6.9	8.4	8.2	8.1	13.5	16.3	8.9	16.9	8.3	14.1	8.1	12.4	11.1	11.3	8.0	11.4	10.5	9.1	25.0	9.1	**10.6**	**25.0**	**6.4**
9	17.7	9.0	13.6	15.7	15.9	24.5	50.8	26.2	31.1	19.5	9.7	20.3	15.3	19.8	18.4	26.5	16.5	31.6	17.7	17.1	16.0	15.1	18.9	21.8	**20.4**	**50.8**	**9.0**
10	12.7	11.5	17.1	25.6	23.2	35.3	34.4	27.2	25.4	24.9	27.9	36.4	33.8	46.1	36.6	20.8	19.5	38.3	39.6	142.7	27.6	79.7	58.1	565.9	**58.8**	**565.9**	**11.5**
11	97.9	56.5	29.9	32.6	51.0	42.2	78.3	24.8	33.9	29.3	32.7	31.3	33.9	32.6	25.5	28.4	37.9	51.8	46.0	49.1	33.7	22.2	35.2	73.7	**42.1**	**97.9**	**22.2**
12	83.8	80.4	22.9	30.2	31.6	124.1	51.4	48.7	28.1	33.7	26.1	21.6	34.9	37.9	34.1	33.6	19.7	38.6	51.2	62.2	38.1	29.2	21.0	22.5	**41.9**	**124.1**	**19.7**
13	14.3	12.6	18.9	25.1	15.3	13.7	19.0	23.5	23.5	22.8	24.5	16.3	26.7	27.9	18.2	23.2	15.8	21.0	20.6	74.4	39.9	26.5	30.4	36.8	**24.6**	**74.4**	**12.6**
14	18.6	22.2	20.5	23.0	18.0	19.1	24.3	26.5	16.9	22.3	32.0	28.2	36.7	32.8	28.6	26.5	32.7	31.8	29.6	32.3	28.3	32.3	22.7	25.4	**26.3**	**36.7**	**16.9**
15	52.1	46.7	20.1	20.6	22.1	22.4	22.7	23.2	26.5	29.1	23.2	21.2	21.7	24.7	23.0	31.6	31.6	26.8	29.0	35.7	24.1	23.4	19.7	22.9	**26.8**	**52.1**	**19.7**
16	18.0	16.0	14.1	13.3	18.3	14.1	17.4	24.6	23.9	29.8	41.7	27.2	30.0	55.0	35.8	33.7	41.5	61.3	33.4	48.0	31.0	40.9	27.3	24.0	**30.0**	**61.3**	**13.3**
17	20.4	24.9	21.5	22.8	22.8	21.9	25.3	26.2	34.8	43.6	52.7	39.7	61.7	43.9	42.9	29.0	23.7	26.2	24.8	25.7	26.3	19.8	18.1	17.2	**29.8**	**61.7**	**17.2**
18	17.1	13.7	13.0	12.2	9.5	9.0	10.3	---	---	---	16.2	18.4	23.5	26.1	24.1	26.8	22.7	23.8	18.8	18.4	20.3	21.6	28.3	29.1	**19.2**	**29.1**	**9.0**
19	31.8	32.6	31.4	29.8	27.6	23.2	27.0	28.7	25.7	26.4	21.4	26.3	24.6	30.9	24.9	27.2	51.7	50.4	133.3	71.7	113.3	48.0	28.8	31.6	**40.3**	**133.3**	**21.4**
20	43.0	57.0	30.8	29.8	73.2	39.9	60.2	80.1	39.3	22.5	16.6	19.2	26.0	40.2	37.5	42.1	45.2	34.2	43.1	87.6	57.8	37.7	15.1	21.3	**41.6**	**87.6**	**15.1**
21	12.5	13.7	13.2	15.3	16.9	15.1	18.1	15.7	18.3	18.4	20.4	27.4	38.0	29.8	32.0	40.1	27.4	24.7	18.9	30.0	23.8	34.6	40.2	34.4	**24.1**	**40.2**	**12.5**
22	28.6	34.2	13.4	12.4	10.6	8.3	13.7	12.8	15.6	12.5	14.7	13.0	15.2	17.3	22.9	24.6	15.7	25.3	21.5	22.2	23.5	22.6	14.5	16.6	**18.0**	**34.2**	**8.3**
23	22.1	19.8	22.3	19.5	23.8	21.1	22.3	62.8	35.4	33.9	30.7	21.1	26.9	23.5	26.1	32.2	31.4	23.8	18.8	25.2	26.5	22.7	16.5	17.2	**26.1**	**62.8**	**16.5**
24	16.3	15.6	13.5	14.5	15.5	17.5	20.1	20.9	25.1	29.3	26.3	27.4	26.3	30.4	34.2	31.6	26.2	26.8	22.5	20.6	17.3	16.0	18.6	24.1	**22.4**	**34.2**	**13.5**
25	12.5	18.9	17.7	15.4	13.8	13.3	10.0	9.2	11.3	11.1	14.4	15.9	18.0	16.0	17.1	15.9	17.9	14.2	14.4	17.7	17.7	23.3	25.7	26.8	**16.2**	**26.8**	**9.2**
26	26.8	23.3	26.8	25.8	36.5	30.8	30.7	25.2	23.5	23.2	25.3	26.3	23.5	24.9	14.0	10.7	12.7	14.7	20.8	22.1	43.4	16.9	15.7	17.3	**23.4**	**43.4**	**10.7**
27	20.6	20.2	33.7	27.6	47.3	30.5	17.6	9.7	9.5	10.5	10.1	16.4	15.4	16.9	16.5	12.9	13.2	13.6	13.5	12.6	14.1	10.9	9.6	8.8	**17.2**	**47.3**	**8.8**
28	11.1	12.8	13.3	12.1	15.1	14.3	10.5	13.4	18.4	21.2	31.6	28.0	23.1	24.8	41.7	37.1	30.1	26.6	13.6	17.1	14.6	15.6	16.4	15.2	**19.9**	**41.7**	**10.5**
29	16.7	16.8	14.9	12.7	10.1	13.7	15.1	17.8	16.8	14.5	13.6	15.8	17.1	19.3	17.7	13.9	10.4	8.9	9.5	11.2	10.6	9.9	8.7	11.2	**13.6**	**19.3**	**8.7**
30	12.7	11.2	10.1	12.4	16.3	19.7	18.2	16.3	13.8	13.4	14.2	11.8	15.8	16.3	16.7	23.0	21.2	18.4	18.9	17.8	25.9	19.8	16.6	14.6	**16.5**	**25.9**	**10.1**
MEAN	**26.0**	**24.3**	**18.8**	**19.6**	**22.8**	**27.2**	**27.3**	**27.1**	**23.3**	**22.8**	**23.0**	**26.3**	**25.5**	**26.9**	**25.0**	**25.2**	**24.2**	**26.6**	**27.4**	**35.5**	**28.2**	**25.0**	**22.5**	**43.5**	**26.0**		
MAX	**97.9**	**80.4**	**33.7**	**32.6**	**73.2**	**124.1**	**78.3**	**80.1**	**39.3**	**43.6**	**52.7**	**117.4**	**61.7**	**55.0**	**42.9**	**42.1**	**51.7**	**61.3**	**133.3**	**142.7**	**113.3**	**79.7**	**58.1**	**565.9**		**565.9**	
MIN	**8.6**	**6.4**	**6.5**	**6.9**	**6.9**	**8.3**	**8.2**	**8.1**	**9.5**	**10.5**	**8.9**	**11.8**	**8.3**	**11.4**	**7.9**	**10.7**	**8.4**	**8.9**	**8.0**	**11.2**	**10.5**	**9.1**	**8.7**	**8.8**			**6.4**

POSSIBLE NUMBER OF OBSERVATIONS = 720 ACTUAL NUMBER OF OBSERVATIONS = 611 DATA RECOVERY RATE = 84.9% DATA CAPTURE RATE = 83.3%

MONTHLY MEAN = 26.0 µg/m3

MAXIMUM PM10 = 565.9 µg/m3 DATE OF OCCURRENCE = 9/10 at 2400 MAXIMUM DAILY MEAN = 58.8 µg/m3 DATE OF OCCURRENCE = 9/10

SECOND MAXIMUM PM10 = 142.7 µg/m3 DATE OF OCCURRENCE = 9/10 at 2000 SECOND MAXIMUM DAILY MEAN = 42.1 µg/m3 DATE OF OCCURRENCE = 9/11

MINIMUM PM10 = 6.4 µg/m3 DATE OF OCCURRENCE = 9/8 at 200 MINUMUM DAILY MEAN = 10.6 µg/m3 DATE OF OCCURRENCE = 9/8

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

CSX AQ8 T640x

HOURLY AVERAGES of PM2.5 in µg/m3 for JULY, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	4.2	3.3	2.9	2.4	2.6	2.8	2.9	2.6	2.6	1.8	2.4	3.5	2.3	2.3	2.7	2.9	3.4	4.5	4.6	4.1	4.3	5.2	4.8	4.5	**3.3**	**5.2**	**1.8**
2	4.5	4.6	4.4	5.0	4.9	5.2	6.1	5.2	6.0	5.5	6.8	6.2	6.1	5.5	4.3	6.1	6.1	6.2	6.0	6.4	6.9	6.4	4.1	4.4	**5.5**	**6.9**	**4.1**
3	4.4	4.9	5.1	5.3	6.3	5.9	5.4	5.3	4.5	5.3	5.0	5.1	6.3	7.7	8.3	8.9	8.8	8.8	7.8	5.4	5.9	8.1	5.8	6.1	**6.2**	**8.9**	**4.4**
4	5.3	6.1	5.4	5.3	5.7	6.2	7.1	9.0	10.2	12.4	12.8	10.8	11.9	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
5	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
6	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
7	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
8	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
9	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
10	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
11	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
12	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
13	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
14	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
15	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
16	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
17	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
18	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
19	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
20	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
21	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
22	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
23	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
24	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
25	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
26	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
27	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
28	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
29	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
30	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
31	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
MEAN	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**5.5**		
MAX	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**		**12.8**	
MIN	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**			**1.8**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 85 DATA RECOVERY RATE = 11.4% DATA CAPTURE RATE = 9.7%

MONTHLY MEAN = 5.5 µg/m3

MAXIMUM PM2.5 = 12.8 µg/m3 DATE OF OCCURRENCE = 7/4 at 1100 MAXIMUM DAILY MEAN = 6.2 µg/m3 DATE OF OCCURRENCE = 7/3

SECOND MAXIMUM PM2.5 = 12.4 µg/m3 DATE OF OCCURRENCE = 7/4 at 1000 SECOND MAXIMUM DAILY MEAN = 5.5 µg/m3 DATE OF OCCURRENCE = 7/2

MINIMUM PM2.5 = 1.8 µg/m3 DATE OF OCCURRENCE = 7/1 at 1000 MINUMUM DAILY MEAN = 3.3 µg/m3 DATE OF OCCURRENCE = 7/1

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

CSX AQ8 T640x

HOURLY AVERAGES of PM2.5 in µg/m3 for AUGUST, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
2	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
3	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
4	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
5	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
6	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
7	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
8	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
9	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
10	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
11	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
12	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
13	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
14	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
15	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
16	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	18.8	17.7	16.4	17.4	18.4	18.6	**---**	**---**	**---**
17	17.4	18.4	17.6	17.9	16.3	15.1	20.4	18.7	23.1	22.9	23.6	22.3	21.8	21.4	22.5	23.0	24.1	24.6	21.2	9.2	8.1	9.5	8.9	9.8	**18.2**	**24.6**	**8.1**
18	10.9	11.5	11.0	10.7	10.2	10.2	8.9	9.1	11.2	15.1	15.5	16.1	16.8	17.6	18.8	18.4	17.4	17.5	16.3	5.2	7.3	6.5	4.3	3.8	**12.0**	**18.8**	**3.8**
19	4.4	5.2	5.2	6.2	6.9	7.2	7.9	8.1	7.2	6.1	6.2	4.3	3.3	3.2	3.1	2.9	2.8	2.4	3.3	2.7	2.3	2.5	2.2	2.3	**4.4**	**8.1**	**2.2**
20	2.2	2.1	2.0	2.2	2.2	3.1	4.0	3.6	5.1	5.0	9.1	9.6	9.4	7.3	5.9	5.1	4.1	4.0	4.4	3.7	4.8	6.2	4.6	4.1	**4.7**	**9.6**	**2.0**
21	4.0	4.0	3.8	3.5	3.8	3.8	3.8	3.9	3.8	3.8	3.5	5.1	3.7	3.2	3.5	3.5	3.3	3.6	4.3	5.6	6.5	5.4	5.9	5.7	**4.2**	**6.5**	**3.2**
22	6.5	6.3	5.7	5.4	5.4	6.7	6.1	6.2	6.1	6.0	6.8	5.8	6.2	6.9	8.8	13.8	9.5	12.5	9.0	15.1	17.3	13.6	19.0	18.3	**9.2**	**19.0**	**5.4**
23	15.0	24.2	13.2	9.3	13.5	12.8	12.2	12.4	9.3	8.2	9.4	9.4	12.2	12.5	9.9	12.0	8.7	9.3	7.5	13.0	9.0	12.2	10.5	12.3	**11.5**	**24.2**	**7.5**
24	12.2	8.9	8.3	9.0	10.3	9.8	9.6	10.1	10.3	10.6	10.7	10.2	10.9	13.6	11.8	12.6	13.3	10.1	9.5	10.1	11.2	11.1	11.5	12.5	**10.7**	**13.6**	**8.3**
25	11.8	11.0	9.9	10.0	10.8	10.5	11.9	12.7	10.9	10.0	9.7	10.9	12.2	12.8	11.8	13.3	14.5	12.1	11.2	11.9	12.6	11.6	11.9	11.1	**11.5**	**14.5**	**9.7**
26	10.6	9.9	9.8	10.2	9.9	9.4	13.2	13.1	15.4	15.2	21.0	21.7	21.4	21.9	21.0	19.0	---	---	---	---	---	---	---	---	**---**	**---**	**---**
27	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
28	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
29	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
30	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
31	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
MEAN	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**10.2**		
MAX	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**		**24.6**	
MIN	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**			**2.0**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 238 DATA RECOVERY RATE = 32.0% DATA CAPTURE RATE = 29.0%

MONTHLY MEAN = 10.2 µg/m3

MAXIMUM PM2.5 = 24.6 µg/m3 DATE OF OCCURRENCE = 8/17 at 1800 MAXIMUM DAILY MEAN = 18.2 µg/m3 DATE OF OCCURRENCE = 8/17

SECOND MAXIMUM PM2.5 = 24.2 µg/m3 DATE OF OCCURRENCE = 8/23 at 200 SECOND MAXIMUM DAILY MEAN = 12.0 µg/m3 DATE OF OCCURRENCE = 8/18

MINIMUM PM2.5 = 2.0 µg/m3 DATE OF OCCURRENCE = 8/20 at 300 MINUMUM DAILY MEAN = 4.2 µg/m3 DATE OF OCCURRENCE = 8/21

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

CSX AQ8 T640x

HOURLY AVERAGES of PM2.5 in µg/m3 for SEPTEMBER, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
2	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
3	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
4	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
5	---	---	---	---	---	---	---	---	---	---	6.2	5.6	5.6	5.9	5.8	5.9	6.2	5.6	4.9	5.7	6.4	6.6	6.6	7.1	**---**	**---**	**---**
6	6.8	6.3	6.5	6.9	6.5	14.6	9.8	10.4	10.0	7.6	7.4	6.1	6.1	6.1	6.4	5.9	6.5	6.3	6.8	7.0	8.7	9.1	9.6	6.8	**7.6**	**14.6**	**5.9**
7	7.8	7.8	6.2	6.1	6.4	6.9	7.1	7.8	8.1	8.7	9.6	15.0	4.3	3.3	3.4	3.8	3.9	4.1	4.4	7.0	6.7	6.1	4.7	3.8	**6.3**	**15.0**	**3.3**
8	3.1	2.9	2.9	2.7	2.9	2.9	2.9	3.1	3.5	3.7	3.2	3.8	3.3	3.5	2.8	2.8	3.2	2.9	3.4	5.0	4.7	3.8	4.8	3.9	**3.4**	**5.0**	**2.7**
9	4.6	4.2	4.4	5.1	4.9	5.2	6.5	5.1	4.1	3.6	3.3	3.4	3.0	3.3	3.2	3.5	3.9	4.3	4.0	4.3	5.0	4.9	5.1	5.3	**4.3**	**6.5**	**3.0**
10	5.0	5.3	5.6	6.4	5.7	6.7	5.3	4.7	4.7	5.1	6.8	7.9	9.5	9.8	9.2	7.8	7.7	11.5	11.9	19.6	10.7	16.3	13.5	60.3	**10.7**	**60.3**	**4.7**
11	20.0	17.4	15.1	14.1	15.4	14.8	19.0	12.4	12.5	12.3	12.8	11.8	11.8	10.9	9.6	10.3	11.7	14.6	13.7	14.2	12.4	9.2	11.3	14.8	**13.4**	**20.0**	**9.2**
12	16.5	17.8	10.8	13.1	13.0	21.1	15.5	16.0	12.7	11.7	10.0	8.3	10.4	10.6	9.6	9.6	7.6	11.7	15.2	13.4	9.2	10.6	8.4	6.7	**12.0**	**21.1**	**6.7**
13	6.0	6.0	6.1	7.1	7.0	6.8	7.6	8.2	9.8	9.7	9.8	7.1	8.7	9.2	7.6	7.6	6.3	6.9	7.9	15.4	12.9	9.5	9.5	11.0	**8.4**	**15.4**	**6.0**
14	10.4	10.8	9.0	9.3	8.6	9.2	9.4	9.6	8.0	9.3	10.5	10.1	12.7	12.2	11.5	11.3	12.1	11.6	11.8	11.7	11.9	13.4	11.0	10.9	**10.6**	**13.4**	**8.0**
15	12.8	11.9	10.9	11.4	12.1	12.7	13.2	13.2	14.0	13.3	11.0	9.9	9.4	9.8	9.6	10.3	10.9	11.2	11.8	11.7	8.9	8.8	7.8	7.3	**10.9**	**14.0**	**7.3**
16	7.0	6.2	6.0	6.2	6.5	6.3	6.4	7.4	6.5	7.6	9.5	7.2	8.0	10.9	9.1	9.4	10.9	15.9	9.5	12.6	10.8	12.3	9.0	8.5	**8.7**	**15.9**	**6.0**
17	8.2	9.0	8.6	9.0	9.1	9.2	9.5	10.4	11.9	13.3	15.0	12.6	15.6	14.5	14.2	11.3	10.8	10.6	10.5	10.6	9.7	8.5	8.1	8.3	**10.7**	**15.6**	**8.1**
18	8.1	6.8	6.5	6.2	5.0	5.1	5.5	---	---	---	8.1	9.8	10.7	10.4	10.1	10.5	10.0	9.8	9.3	9.1	9.3	9.5	10.7	11.2	**8.6**	**11.2**	**5.0**
19	11.6	11.8	12.3	11.7	11.0	10.4	11.2	11.0	10.4	9.7	8.6	7.6	7.3	8.2	8.5	11.0	15.7	12.7	27.8	14.1	18.4	15.7	14.1	14.7	**12.3**	**27.8**	**7.3**
20	15.8	18.6	15.5	15.7	19.6	17.8	19.9	25.3	10.6	6.1	5.5	5.9	7.6	11.6	12.6	15.9	16.9	15.6	15.2	19.9	20.0	14.7	5.4	8.0	**14.1**	**25.3**	**5.4**
21	5.9	6.2	6.0	5.9	6.0	5.4	5.8	5.7	6.1	6.1	7.2	9.2	10.6	9.4	10.8	12.0	10.1	9.4	8.7	10.9	11.3	16.1	15.9	14.0	**8.9**	**16.1**	**5.4**
22	13.9	14.5	6.6	5.4	4.6	3.9	5.4	5.4	5.7	5.0	5.6	5.2	6.1	7.0	8.3	9.4	8.1	10.5	10.8	10.1	10.8	10.6	6.7	6.6	**7.7**	**14.5**	**3.9**
23	7.4	7.3	7.4	7.1	7.8	7.4	7.6	12.6	9.7	8.8	8.3	7.1	8.1	8.1	9.6	16.0	10.0	8.2	6.7	7.8	7.9	7.2	6.2	6.2	**8.3**	**16.0**	**6.2**
24	6.1	6.1	5.6	5.7	6.0	6.2	6.7	6.7	7.6	8.5	8.2	8.7	9.1	9.5	10.9	10.6	8.7	7.7	6.7	6.4	5.8	5.3	5.5	6.0	**7.2**	**10.9**	**5.3**
25	4.5	5.3	5.2	5.4	5.3	5.0	4.1	4.0	4.0	4.5	5.0	5.2	5.6	4.6	5.2	5.4	6.0	5.3	5.9	5.8	5.6	8.4	9.5	10.2	**5.6**	**10.2**	**4.0**
26	10.0	9.0	10.3	8.7	10.7	10.3	11.0	10.9	10.5	11.0	11.4	12.8	8.9	9.1	5.5	4.2	3.8	4.8	6.7	6.7	9.3	5.3	5.6	6.1	**8.4**	**12.8**	**3.8**
27	6.3	6.4	8.7	8.1	11.5	12.0	9.3	5.4	5.4	5.2	4.9	6.7	6.4	6.6	6.6	5.8	6.1	6.2	6.2	5.9	6.7	4.9	3.6	3.4	**6.5**	**12.0**	**3.4**
28	3.9	4.9	5.0	4.4	5.5	5.8	4.2	4.9	7.1	9.5	13.2	13.9	12.9	14.0	16.5	15.9	14.5	12.0	7.0	7.6	7.1	7.4	8.3	8.9	**8.9**	**16.5**	**3.9**
29	9.1	8.9	7.7	6.2	5.2	6.3	7.9	8.7	8.4	6.8	7.2	8.3	9.3	11.3	9.9	8.0	5.5	4.6	4.9	5.6	4.7	4.4	4.6	5.4	**7.0**	**11.3**	**4.4**
30	6.3	5.4	5.4	6.7	7.4	9.8	9.2	8.9	7.3	6.5	6.6	6.2	7.2	7.8	7.6	10.5	10.8	9.7	9.1	8.1	8.6	8.8	6.4	4.9	**7.7**	**10.8**	**4.9**
MEAN	**8.7**	**8.7**	**7.8**	**7.8**	**8.1**	**8.9**	**8.8**	**9.1**	**8.3**	**8.1**	**8.3**	**8.3**	**8.4**	**8.8**	**8.6**	**9.0**	**8.8**	**9.0**	**9.3**	**9.9**	**9.4**	**9.1**	**8.2**	**10.0**	**8.7**		
MAX	**20.0**	**18.6**	**15.5**	**15.7**	**19.6**	**21.1**	**19.9**	**25.3**	**14.0**	**13.3**	**15.0**	**15.0**	**15.6**	**14.5**	**16.5**	**16.0**	**16.9**	**15.9**	**27.8**	**19.9**	**20.0**	**16.3**	**15.9**	**60.3**		**60.3**	
MIN	**3.1**	**2.9**	**2.9**	**2.7**	**2.9**	**2.9**	**2.9**	**3.1**	**3.5**	**3.6**	**3.2**	**3.4**	**3.0**	**3.3**	**2.8**	**2.8**	**3.2**	**2.9**	**3.4**	**4.3**	**4.7**	**3.8**	**3.6**	**3.4**			**2.7**

POSSIBLE NUMBER OF OBSERVATIONS = 720 ACTUAL NUMBER OF OBSERVATIONS = 611 DATA RECOVERY RATE = 84.9% DATA CAPTURE RATE = 83.3%

MONTHLY MEAN = 8.7 µg/m3

MAXIMUM PM2.5 = 60.3 µg/m3 DATE OF OCCURRENCE = 9/10 at 2400 MAXIMUM DAILY MEAN = 14.1 µg/m3 DATE OF OCCURRENCE = 9/20

SECOND MAXIMUM PM2.5 = 27.8 µg/m3 DATE OF OCCURRENCE = 9/19 at 1900 SECOND MAXIMUM DAILY MEAN = 13.4 µg/m3 DATE OF OCCURRENCE = 9/11

MINIMUM PM2.5 = 2.7 µg/m3 DATE OF OCCURRENCE = 9/8 at 400 MINUMUM DAILY MEAN = 3.4 µg/m3 DATE OF OCCURRENCE = 9/8

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

APPENDIX I. MODULAIR PM_{10} AND $PM_{2.5}$ COLLOCATION AND COMPARISON DATA

Trinity Consultants

MODULAIR PM COLLOCATION & COMPARISON SHEET

As Found

SITE NAME CSX MOD 386 - AQ8A
PROJECT CSX

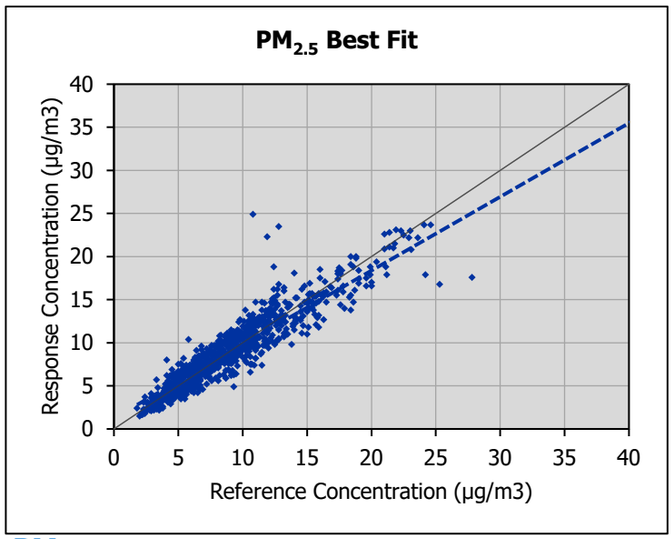
Date 7/1/2024 **Start Time** 1:00
Date 10/1/2024 **Stop Time** 0:00

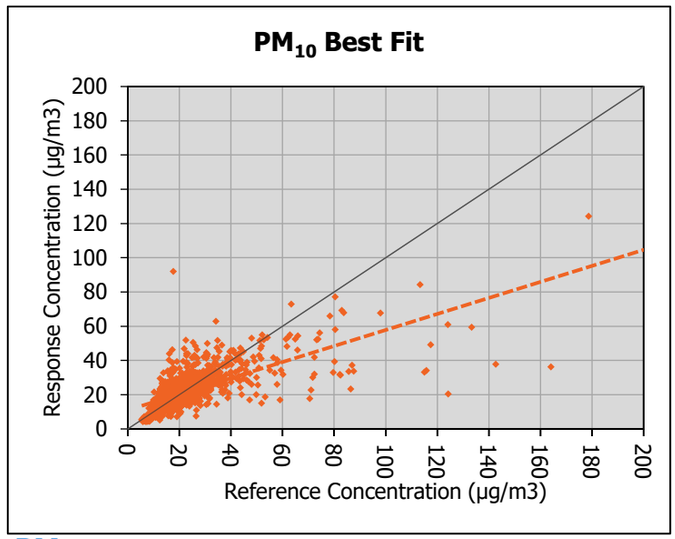
REFERENCE STANDARD:

Reference: AQ8 **Serial #:** 1689
Model: T640X

Analyzer:

Analyzer s/n MOD386
Anal. Range 0- 2000 **µg/m3**



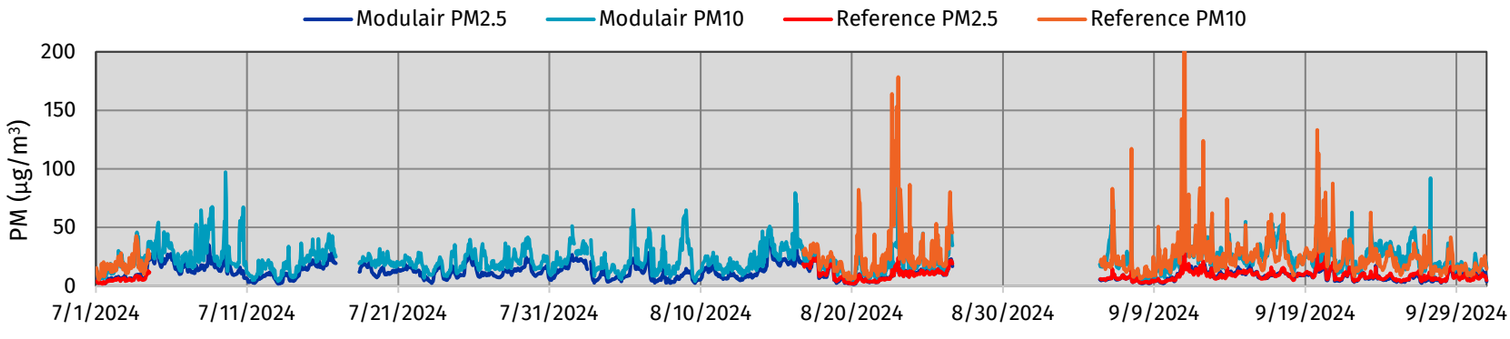


$PM_{2.5}$:

Correlation Coefficent(r2)	0.829	≥ 0.70
Slope(m)	0.856	1.0 ± 0.35
Intercept(b)	1.263	0 ± 5.0
RMSE	9.982	≤ 7.0
Precision CV(%)	12.900	≤ 30.0
Precision SD	8.039	≤ 5.0

PM_{10}:

Correlation Coefficent(r2)	0.464	≥ 0.70
Slope(m)	0.468	1.0 ± 0.35
Intercept(b)	10.994	0 ± 5.0
RMSE	23.121	≤ 7.0
Precision CV(%)	16.180	≤ 30.0
Precision SD	21.334	≤ 5.0



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MODULAIR PM COLLOCATION & COMPARISON SHEET

As Found

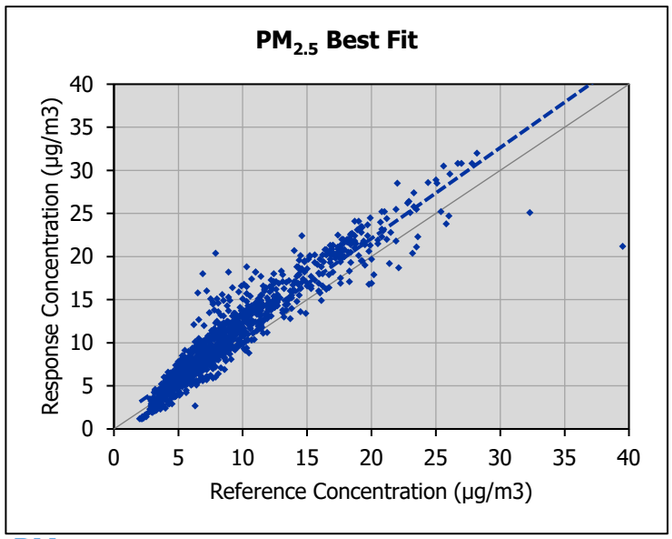
SITE NAME CSX MOD 384 - AQ5A | **Date** 7/1/2024 | **Start Time** 1:00
PROJECT CSX | **Date** 10/1/2024 | **Stop Time** 0:00

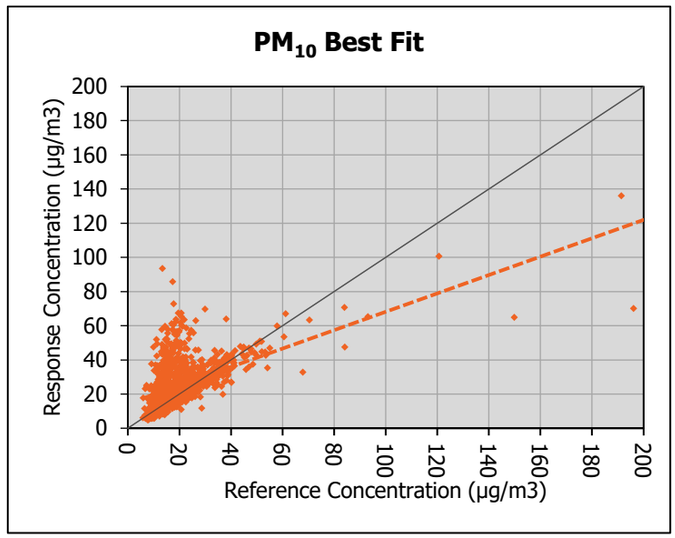
REFERENCE STANDARD:

Reference: AQ5 **Serial #:** 1690
Model: T640X

Analyzer:

Analyzer s/n MOD384
Anal. Range 0- 2000 **µg/m3**



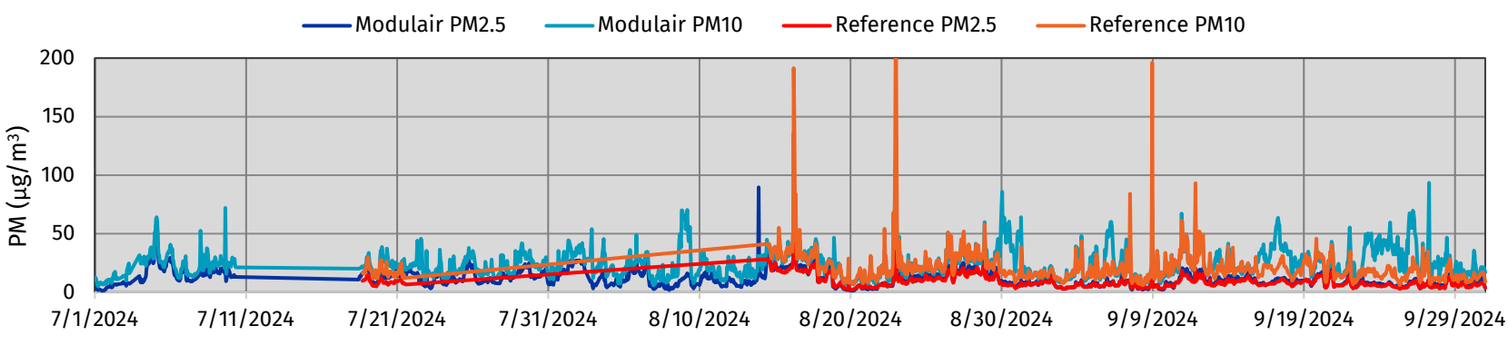


$PM_{2.5}$:

Correlation Coefficent(r2)	0.875	≥ 0.70
Slope(m)	1.053	1.0 ± 0.35
Intercept(b)	1.033	0 ± 5.0
RMSE	9.203	≤ 7.0
Precision CV(%)	13.810	≤ 30.0
Precision SD	7.508	≤ 5.0

PM_{10}:

Correlation Coefficent(r2)	0.336	≥ 0.70
Slope(m)	0.538	1.0 ± 0.35
Intercept(b)	14.336	0 ± 5.0
RMSE	18.158	≤ 7.0
Precision CV(%)	21.390	≤ 30.0
Precision SD	14.998	≤ 5.0



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MODULAIR PM COLLOCATION & COMPARISON SHEET

As Found

SITE NAME CSX MOD 388 - AQ5C
PROJECT CSX

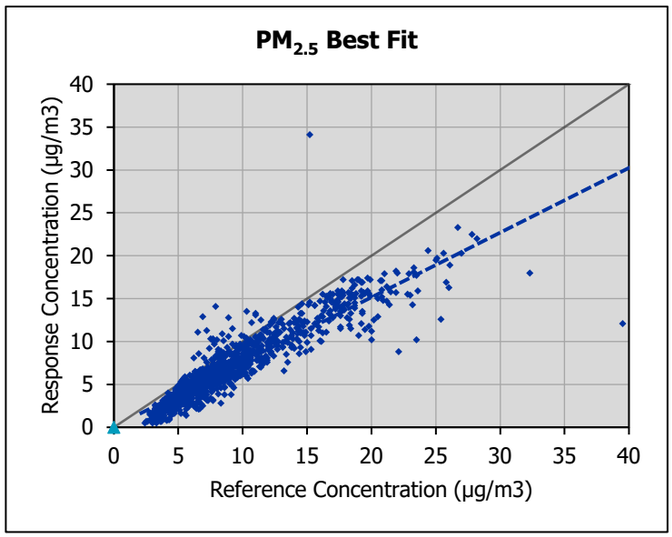
Date 7/1/2024 **Start Time** 1:00
Date 10/1/2024 **Stop Time** 0:00

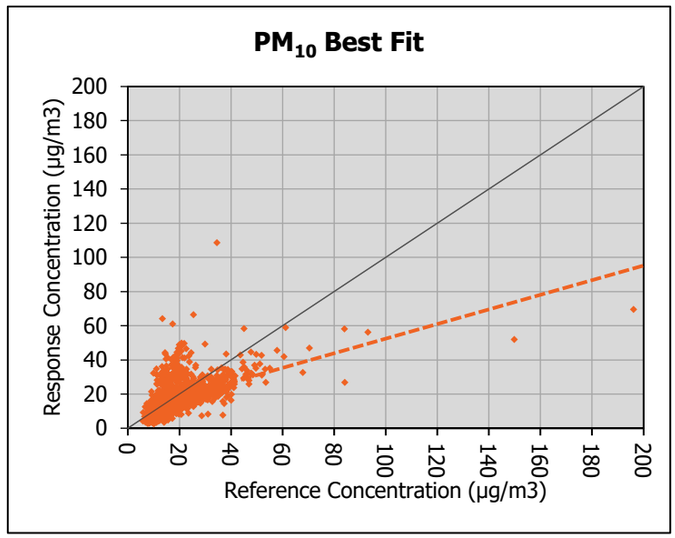
REFERENCE STANDARD:

Reference: AQ5 **Serial #:** 1690
Model: T640X

Analyzer:

Analyzer s/n MOD388
Anal. Range 0- 2000 **µg/m3**



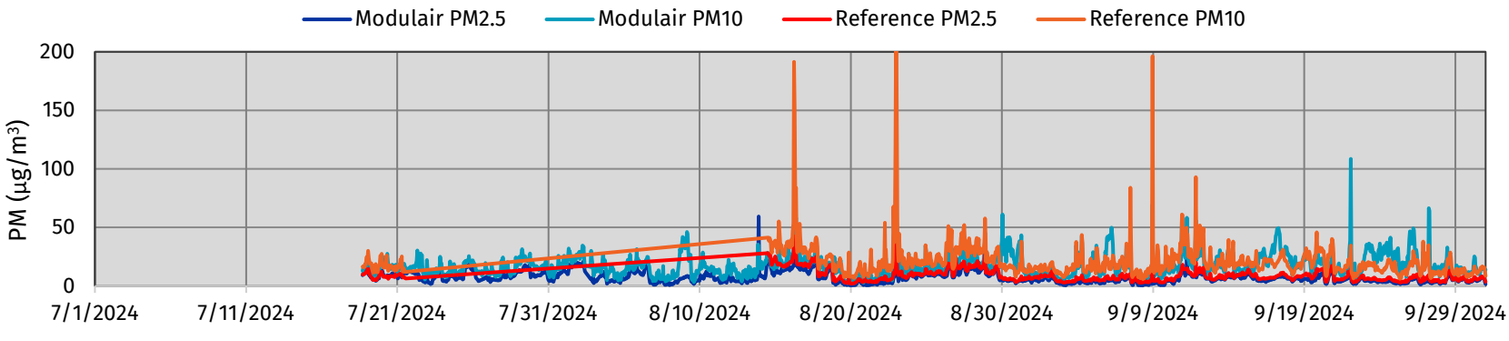


$PM_{2.5}$:

Correlation Coefficent(r2)	0.822	≥ 0.70
Slope(m)	0.754	1.0 ± 0.35
Intercept(b)	0.064	0 ± 5.0
RMSE	5.378	≤ 7.0
Precision CV(%)	20.480	≤ 30.0
Precision SD	5.306	≤ 5.0

PM_{10}:

Correlation Coefficent(r2)	0.310	≥ 0.70
Slope(m)	0.428	1.0 ± 0.35
Intercept(b)	9.635	0 ± 5.0
RMSE	13.523	≤ 7.0
Precision CV(%)	22.200	≤ 30.0
Precision SD	13.313	≤ 5.0



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MODULAIR PM COLLOCATION & COMPARISON SHEET

As Found

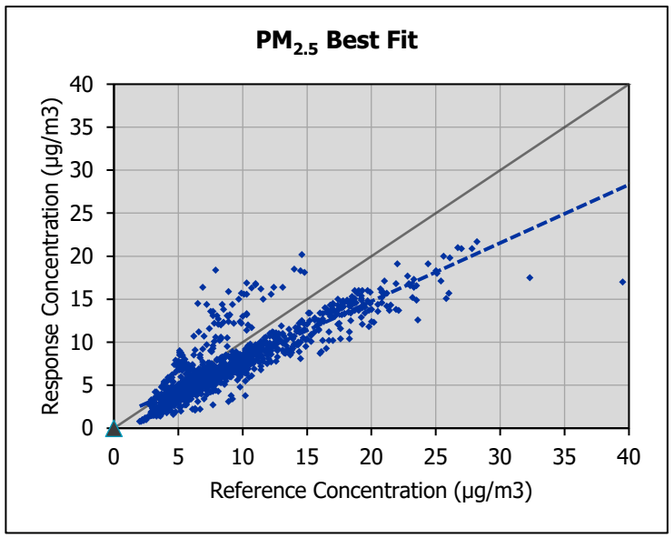
SITE NAME CSX MOD 385 - AQ5B | **Date** 7/1/2024 | **Start Time** 1:00
PROJECT CSX | **Date** 10/1/2024 | **Stop Time** 0:00

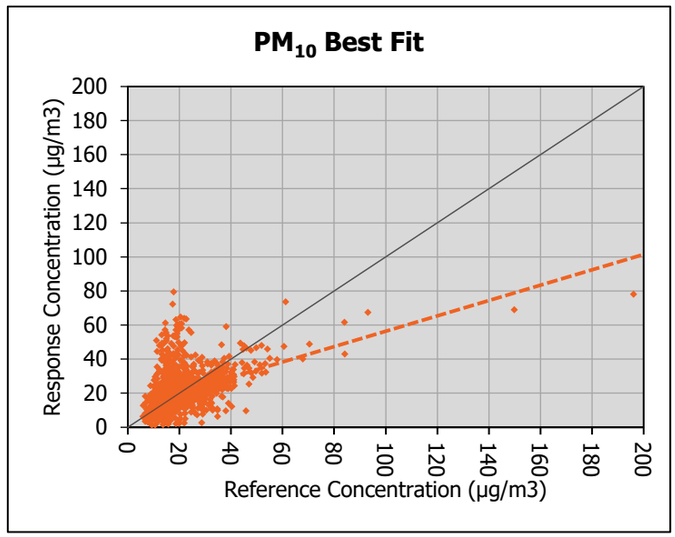
REFERENCE STANDARD:

Reference: AQ5 **Serial #:** 1690
Model: T640X

Analyzer:

Analyzer s/n MOD385
Anal. Range 0- 2000 µg/m3



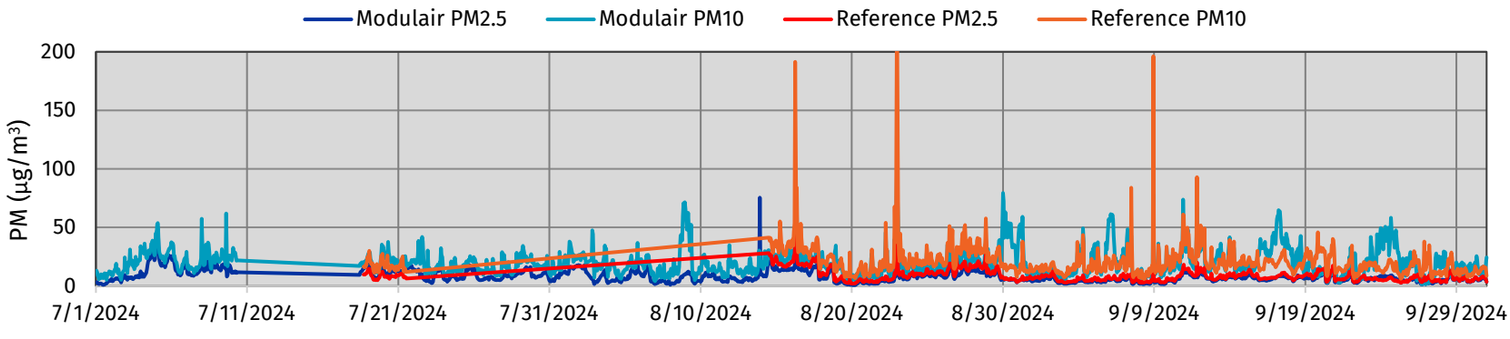


$PM_{2.5}$:

Correlation Coefficent(r2)	0.761	≥ 0.70
Slope(m)	0.678	1.0 ± 0.35
Intercept(b)	1.197	0 ± 5.0
RMSE	7.421	≤ 7.0
Precision CV(%)	18.750	≤ 30.0
Precision SD	6.954	≤ 5.0

PM_{10}:

Correlation Coefficent(r2)	0.237	≥ 0.70
Slope(m)	0.451	1.0 ± 0.35
Intercept(b)	11.294	0 ± 5.0
RMSE	17.057	≤ 7.0
Precision CV(%)	26.060	≤ 30.0
Precision SD	15.757	≤ 5.0



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CSX AQ1 Modulair

HOURLY AVERAGES of PM10 in µg/m3 for JULY, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	20.3	12.5	13.2	9.7	6.6	5.9	7.0	8.8	14.3	21.1	53.8	---	18.3	43.0	22.0	19.8	22.8	13.3	31.4	28.1	24.9	---	24.0	14.5	**19.8**	**53.8**	**5.9**
2	17.3	11.6	11.1	11.2	12.9	11.8	10.7	18.9	11.2	9.6	10.5	12.5	11.3	---	---	---	---	---	12.4	14.1	13.3	11.5	10.0	8.4	**12.1**	**18.9**	**8.4**
3	7.9	8.5	14.5	11.8	14.0	30.4	18.7	14.2	21.4	18.1	30.0	32.0	18.6	25.4	40.6	18.3	20.2	---	---	15.6	12.3	13.7	16.9	17.0	**19.1**	**40.6**	**7.9**
4	17.2	16.1	17.6	16.9	20.1	20.4	20.7	19.5	16.4	21.1	26.8	28.6	29.8	35.3	29.8	21.2	22.0	26.2	21.7	15.5	16.5	19.3	25.7	21.7	**21.9**	**35.3**	**15.5**
5	34.4	46.7	40.6	25.1	19.7	22.2	20.0	32.3	20.8	21.0	23.5	24.2	19.9	25.1	28.1	29.0	24.6	32.4	26.2	20.1	20.4	21.6	25.8	27.6	**26.3**	**46.7**	**19.7**
6	23.7	21.3	22.1	15.5	16.1	14.3	14.1	15.6	20.1	23.4	16.7	14.6	11.2	16.3	11.3	14.0	17.1	17.4	15.3	22.0	20.0	15.6	19.8	19.2	**17.4**	**23.7**	**11.2**
7	20.1	22.4	19.1	23.9	27.9	24.2	25.9	33.0	30.1	20.6	17.2	11.9	14.2	15.5	16.6	16.2	15.7	13.8	14.5	15.3	17.4	20.9	40.8	31.0	**21.2**	**40.8**	**11.9**
8	30.1	39.4	36.4	36.6	28.2	38.8	46.4	26.1	20.3	36.1	32.1	35.3	25.4	24.1	29.4	28.0	27.5	29.6	26.1	20.5	12.3	13.0	16.8	15.4	**28.1**	**46.4**	**12.3**
9	14.1	12.6	13.7	12.5	15.8	20.2	22.0	20.8	19.2	30.0	37.5	28.2	24.9	36.6	47.8	16.5	12.0	17.8	23.5	18.1	14.3	14.4	15.8	15.7	**21.0**	**47.8**	**12.0**
10	15.0	15.7	15.6	16.5	17.1	15.8	15.4	14.7	13.9	16.6	16.4	16.3	18.3	19.5	20.7	21.2	23.8	26.5	13.8	16.8	17.5	17.0	12.8	10.0	**17.0**	**26.5**	**10.0**
11	10.4	10.6	11.8	11.2	8.3	6.7	8.5	7.3	6.0	8.5	10.7	5.7	8.8	8.6	10.0	8.7	12.1	13.3	13.9	18.8	17.4	18.7	24.3	28.7	**12.0**	**28.7**	**5.7**
12	11.5	21.1	23.8	16.2	12.0	14.9	14.9	13.0	19.8	18.3	16.4	14.1	14.8	20.0	13.0	12.4	11.5	11.4	9.8	10.7	5.9	5.7	5.9	5.7	**13.5**	**23.8**	**5.7**
13	4.0	4.0	4.6	5.9	6.1	6.0	8.2	6.5	7.4	14.2	15.3	15.3	12.4	13.4	15.3	11.1	13.4	14.5	9.7	7.4	5.3	6.9	5.8	5.0	**9.1**	**15.3**	**4.0**
14	4.8	5.0	6.6	6.7	9.0	9.2	10.9	9.6	9.5	11.3	14.4	17.0	---	22.2	24.2	18.2	13.6	13.2	13.8	14.8	14.9	16.0	16.3	17.1	**13.0**	**24.2**	**4.8**
15	16.1	18.1	16.1	21.9	21.9	23.9	27.4	28.1	26.0	30.3	31.0	37.0	25.7	20.2	23.7	18.8	31.3	21.5	21.5	14.6	16.4	16.1	16.0	12.5	**22.3**	**37.0**	**12.5**
16	12.4	14.1	17.5	18.0	23.2	29.9	22.8	23.4	38.2	42.6	41.6	26.9	27.4	33.0	40.9	34.3	28.9	27.5	27.1	23.2	19.1	19.6	15.5	24.5	**26.3**	**42.6**	**12.4**
17	17.1	18.9	22.4	18.5	21.3	17.6	19.6	21.1	20.0	17.8	12.9	11.4	11.6	12.5	25.3	34.2	22.9	21.1	26.4	18.4	16.7	18.0	18.3	15.7	**19.2**	**34.2**	**11.4**
18	16.4	17.0	17.7	15.2	17.1	15.6	17.7	26.5	22.2	22.7	23.4	21.5	18.5	27.4	24.2	21.3	23.5	22.4	21.1	17.9	19.3	20.6	22.1	24.2	**20.6**	**27.4**	**15.2**
19	35.5	27.5	23.7	22.0	18.7	17.6	19.2	17.9	14.6	13.6	14.3	13.2	15.2	14.9	17.5	13.5	19.2	20.2	17.6	15.0	14.8	17.0	21.6	21.6	**18.6**	**35.5**	**13.2**
20	15.2	16.2	16.1	18.2	20.0	21.6	26.4	24.0	23.6	19.7	18.4	38.2	20.6	16.3	13.4	18.4	15.5	12.9	14.0	15.5	13.6	15.9	19.3	19.2	**18.8**	**38.2**	**12.9**
21	14.9	15.7	18.2	23.7	19.4	21.5	18.6	18.8	17.0	15.0	23.0	18.5	18.0	15.3	17.0	15.5	12.5	12.4	12.9	13.6	16.2	13.2	14.1	12.8	**16.6**	**23.7**	**12.4**
22	11.4	13.4	13.0	15.0	17.9	22.1	35.4	27.7	40.6	28.9	20.1	18.9	19.8	20.1	19.3	13.7	6.8	15.3	16.6	20.2	14.6	15.7	16.3	11.1	**18.9**	**40.6**	**6.8**
23	10.0	9.2	10.6	9.3	9.4	10.4	9.1	14.0	13.6	13.3	15.1	15.5	14.4	16.2	17.7	19.9	21.1	21.6	21.9	18.1	17.1	14.3	9.7	8.1	**14.2**	**21.9**	**8.1**
24	9.0	8.1	7.7	8.7	8.9	8.4	17.3	12.4	15.6	14.5	11.9	18.4	24.6	16.4	18.6	19.6	21.4	38.4	31.6	21.6	9.8	11.9	12.2	11.8	**15.8**	**38.4**	**7.7**
25	12.0	13.9	14.2	12.6	13.5	12.4	16.9	17.2	18.0	26.8	28.2	21.8	32.4	33.2	31.8	28.2	27.6	34.4	26.4	28.3	24.7	23.4	25.8	27.6	**23.0**	**34.4**	**12.0**
26	29.5	33.4	28.6	22.7	21.7	20.6	13.9	16.2	19.5	15.0	18.2	14.2	22.0	16.0	13.6	16.4	11.8	15.4	28.9	44.3	19.2	18.2	13.6	10.4	**20.1**	**44.3**	**10.4**
27	13.8	14.5	14.7	15.4	18.1	16.1	19.1	16.8	13.1	13.1	11.5	10.8	12.9	10.9	11.3	10.7	10.2	8.7	11.2	23.5	12.7	12.0	13.9	17.5	**13.9**	**23.5**	**8.7**
28	17.3	17.0	19.0	15.5	16.2	19.7	23.5	15.3	14.5	12.6	12.2	11.1	11.9	12.7	13.8	18.7	24.9	22.3	17.7	15.7	14.5	15.7	15.7	14.6	**16.3**	**24.9**	**11.1**
29	13.2	13.5	17.2	23.5	37.6	46.1	42.2	27.3	21.0	35.9	33.4	30.2	33.1	42.8	33.9	31.8	27.9	27.8	28.2	20.5	19.2	14.4	13.9	13.3	**27.0**	**46.1**	**13.2**
30	12.9	10.3	13.9	12.8	14.0	14.9	18.1	14.3	13.9	19.2	26.0	20.9	33.0	59.0	37.3	55.9	18.6	22.9	34.4	37.9	16.2	15.2	10.5	8.1	**22.5**	**59.0**	**8.1**
31	7.0	7.5	8.1	10.1	15.9	18.0	13.5	11.3	13.1	13.3	16.6	22.4	17.4	---	14.4	23.4	17.8	11.5	13.8	12.9	17.2	17.9	18.5	23.1	**15.0**	**23.4**	**7.0**
MEAN	**16.0**	**16.6**	**17.1**	**16.2**	**17.1**	**18.6**	**19.5**	**18.5**	**18.5**	**20.1**	**21.9**	**20.2**	**19.5**	**23.2**	**22.8**	**21.0**	**19.3**	**20.2**	**20.1**	**19.3**	**15.9**	**15.8**	**17.3**	**16.6**	**18.8**		
MAX	**35.5**	**46.7**	**40.6**	**36.6**	**37.6**	**46.1**	**46.4**	**33.0**	**40.6**	**42.6**	**53.8**	**38.2**	**33.1**	**59.0**	**47.8**	**55.9**	**31.3**	**38.4**	**34.4**	**44.3**	**24.9**	**23.4**	**40.8**	**31.0**		**59.0**	
MIN	**4.0**	**4.0**	**4.6**	**5.9**	**6.1**	**5.9**	**7.0**	**6.5**	**6.0**	**8.5**	**10.5**	**5.7**	**8.8**	**8.6**	**10.0**	**8.7**	**6.8**	**8.7**	**9.7**	**7.4**	**5.3**	**5.7**	**5.8**	**5.0**			**4.0**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 733 DATA RECOVERY RATE = 98.5% DATA CAPTURE RATE = 100.0%

MONTHLY MEAN = 18.8 µg/m3

MAXIMUM PM10 = 59.0 µg/m3 DATE OF OCCURRENCE = 7/30 at 1400 MAXIMUM DAILY MEAN = 28.1 µg/m3 DATE OF OCCURRENCE = 7/8

SECOND MAXIMUM PM10 = 55.9 µg/m3 DATE OF OCCURRENCE = 7/30 at 1600 SECOND MAXIMUM DAILY MEAN = 27.0 µg/m3 DATE OF OCCURRENCE = 7/29

MINIMUM PM10 = 4.0 µg/m3 DATE OF OCCURRENCE = 7/13 at 100 MINUMUM DAILY MEAN = 9.1 µg/m3 DATE OF OCCURRENCE = 7/13

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

CSX AQ1 Modulair

HOURLY AVERAGES of PM10 in µg/m3 for AUGUST, 2024

Hr Beg Hr End Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	20.7	18.3	18.6	20.0	23.3	31.2	30.3	35.3	35.5	34.3	---	41.1	31.2	28.6	31.3	---	---	19.9	21.3	21.2	18.8	18.9	24.7	19.6	**25.9**	**41.1**	**18.3**
2	24.8	23.4	24.9	36.5	38.8	41.6	34.8	20.8	30.9	23.2	27.3	---	---	---	---	---	---	21.3	26.7	28.1	22.7	13.1	8.2	10.3	**25.4**	**41.6**	**8.2**
3	12.8	14.1	13.8	13.1	12.4	15.8	15.5	10.6	14.7	16.4	26.6	14.6	13.2	18.4	20.5	22.4	17.9	20.1	11.0	9.2	9.2	10.0	11.5	12.7	**14.9**	**26.6**	**9.2**
4	11.4	13.0	14.4	18.6	20.7	18.1	13.8	12.3	11.7	10.4	10.1	9.1	12.0	8.9	4.8	7.0	7.0	4.4	6.4	8.0	9.1	8.1	10.9	14.0	**11.0**	**20.7**	**4.4**
5	15.7	14.1	18.3	19.3	21.9	20.7	15.7	15.5	24.3	33.1	30.2	30.5	35.0	27.0	26.9	37.8	17.3	40.1	39.7	38.6	19.4	13.2	16.8	14.5	**24.4**	**40.1**	**13.2**
6	17.6	12.7	12.2	11.5	12.1	18.0	16.9	18.9	22.7	27.0	63.6	27.9	35.5	40.5	36.6	37.0	13.2	11.6	8.9	10.6	21.4	6.1	7.9	11.9	**20.9**	**63.6**	**6.1**
7	9.4	6.6	13.0	14.6	10.2	16.8	19.9	14.4	15.8	8.9	8.1	9.6	9.0	20.7	8.3	15.1	12.2	10.0	12.0	9.8	13.7	15.7	7.4	5.1	**11.9**	**20.7**	**5.1**
8	7.4	9.7	10.4	9.1	20.0	21.4	10.8	11.8	17.7	21.8	17.7	12.7	21.8	21.5	27.7	34.8	43.0	36.3	31.0	63.7	58.9	60.4	59.9	59.0	**28.7**	**63.7**	**7.4**
9	73.7	44.0	34.6	37.9	39.0	30.5	27.2	32.8	29.0	20.1	8.6	6.9	5.9	5.6	4.4	6.0	6.0	6.7	9.4	8.6	10.1	9.5	12.6	11.8	**20.0**	**73.7**	**4.4**
10	13.5	14.6	17.1	22.0	26.5	22.1	24.5	21.8	19.3	18.9	26.5	14.0	13.4	14.2	18.2	18.6	14.1	22.2	19.0	32.5	27.7	29.3	25.1	26.3	**20.9**	**32.5**	**13.4**
11	17.2	15.2	13.8	15.8	18.0	25.5	17.1	16.1	14.1	13.6	10.6	9.6	10.0	11.4	8.5	10.2	10.2	10.5	9.8	16.1	14.7	16.5	22.4	16.4	**14.3**	**25.5**	**8.5**
12	13.2	17.0	15.8	23.6	30.6	19.4	14.9	16.9	17.2	19.0	15.9	15.7	12.9	16.2	15.7	13.9	22.3	10.5	17.0	10.9	11.7	10.4	12.2	12.3	**16.1**	**30.6**	**10.4**
13	14.8	11.8	16.2	14.7	15.6	20.1	28.2	28.9	15.2	11.5	18.6	19.5	20.7	19.4	22.4	13.3	14.2	15.2	23.2	16.1	23.7	27.9	22.1	22.8	**19.0**	**28.9**	**11.5**
14	16.9	30.1	15.5	20.7	20.9	26.5	24.5	27.9	26.3	37.7	42.6	37.6	36.4	42.0	37.4	44.7	43.8	39.7	37.4	27.0	24.9	24.7	28.0	24.8	**30.8**	**44.7**	**15.5**
15	35.4	34.5	20.4	20.8	21.5	22.7	42.4	40.6	32.6	28.3	21.8	24.4	29.8	29.0	23.8	29.3	30.3	21.5	24.3	27.9	23.9	22.7	28.0	44.4	**28.3**	**44.4**	**20.4**
16	26.3	30.1	22.5	20.7	23.4	73.7	80.8	61.2	79.3	43.0	30.6	32.2	37.2	36.9	41.4	33.6	31.3	30.6	30.2	23.4	17.3	18.3	17.7	18.0	**35.8**	**80.8**	**17.3**
17	19.0	18.8	16.2	16.9	16.1	23.8	36.4	18.7	25.3	25.8	25.2	20.5	20.6	21.2	22.0	26.1	28.4	30.8	20.2	10.3	10.7	15.5	13.6	18.9	**20.9**	**36.4**	**10.3**
18	22.2	19.1	20.8	15.7	13.7	20.7	11.0	9.5	14.5	14.2	16.6	16.6	15.9	17.1	19.4	16.6	14.9	16.6	19.4	11.9	19.6	18.4	26.1	13.3	**16.8**	**26.1**	**9.5**
19	11.1	12.1	11.7	19.3	17.9	13.8	17.4	16.3	14.0	12.2	11.0	12.2	8.8	9.6	10.0	7.2	10.3	6.8	8.5	9.8	9.8	14.4	16.4	9.4	**12.1**	**19.3**	**6.8**
20	11.8	13.8	11.4	8.1	12.7	14.5	33.0	31.0	37.1	26.0	37.4	28.1	48.9	55.6	68.7	34.4	46.9	32.3	23.3	11.9	8.9	13.7	12.1	13.5	**26.5**	**68.7**	**8.1**
21	15.3	18.7	14.8	9.6	13.9	11.2	16.9	21.6	22.2	27.8	26.3	30.7	45.1	39.1	22.0	9.4	6.5	5.5	8.0	9.8	10.3	11.8	15.3	11.4	**17.6**	**45.1**	**5.5**
22	14.0	11.3	10.5	11.3	18.1	23.0	23.7	28.0	24.4	19.3	23.3	11.6	18.5	17.8	15.0	18.4	12.1	20.4	15.8	14.4	13.7	16.9	23.4	15.4	**17.5**	**28.0**	**10.5**
23	14.7	18.9	17.4	26.1	25.3	39.4	42.2	66.5	24.5	15.9	17.5	22.5	21.5	21.3	15.5	14.2	17.6	12.2	10.3	15.8	16.3	16.5	15.4	20.4	**22.0**	**66.5**	**10.3**
24	17.2	12.4	12.0	15.7	18.7	30.3	24.9	20.1	13.9	17.7	18.2	21.2	17.1	18.2	15.3	19.2	22.7	12.5	12.1	18.4	18.4	15.6	16.1	15.2	**17.6**	**30.3**	**12.0**
25	17.5	14.1	14.6	12.6	13.6	13.8	15.2	16.6	14.4	13.8	13.9	14.7	14.4	13.7	15.0	14.6	18.7	14.6	16.1	15.2	17.5	12.9	13.7	10.9	**14.7**	**18.7**	**10.9**
26	10.0	11.6	12.5	14.5	18.7	25.1	34.1	43.1	28.8	28.4	53.6	47.3	36.2	38.4	40.3	39.9	16.3	10.0	12.0	13.4	16.4	19.5	22.9	24.3	**25.7**	**53.6**	**10.0**
27	28.9	30.2	31.5	21.4	21.5	24.8	33.0	39.1	28.3	33.9	39.7	39.3	35.4	22.9	24.6	21.1	19.2	14.4	18.7	23.4	22.8	21.5	16.1	19.5	**26.3**	**39.7**	**14.4**
28	17.0	18.5	19.9	29.6	20.4	37.6	61.4	26.7	27.2	24.4	34.8	24.6	---	---	---	---	---	21.4	24.4	52.4	32.6	25.2	23.6	40.5	**29.6**	**61.4**	**17.0**
29	19.9	17.4	14.3	21.4	24.3	22.9	22.3	24.2	25.8	23.2	22.7	25.8	25.2	29.6	27.3	36.1	39.5	36.1	41.3	33.3	27.3	37.6	54.1	60.5	**29.7**	**60.5**	**14.3**
30	73.2	44.3	41.6	60.7	44.3	39.8	32.6	42.3	43.4	34.4	38.5	47.0	44.9	38.3	30.0	33.2	36.1	31.4	31.5	27.6	20.0	15.6	24.9	30.7	**37.8**	**73.2**	**15.6**
31	35.4	38.3	51.5	47.1	40.1	42.1	---	47.7	29.5	19.3	14.2	19.3	13.6	9.4	12.4	9.5	8.2	9.1	9.9	9.7	9.3	10.1	12.2	9.4	**22.1**	**51.5**	**8.2**
MEAN	**21.2**	**19.6**	**18.8**	**20.9**	**21.7**	**26.0**	**27.4**	**27.0**	**25.1**	**22.7**	**25.1**	**22.9**	**23.8**	**23.9**	**22.9**	**22.3**	**20.7**	**19.2**	**19.3**	**20.3**	**18.7**	**18.4**	**20.0**	**20.6**	**22.0**		
MAX	**73.7**	**44.3**	**51.5**	**60.7**	**44.3**	**73.7**	**80.8**	**66.5**	**79.3**	**43.0**	**63.6**	**47.3**	**48.9**	**55.6**	**68.7**	**44.7**	**46.9**	**40.1**	**41.3**	**63.7**	**58.9**	**60.4**	**59.9**	**60.5**		**80.8**	
MIN	**7.4**	**6.6**	**10.4**	**8.1**	**10.2**	**11.2**	**10.8**	**9.5**	**11.7**	**8.9**	**8.1**	**6.9**	**5.9**	**5.6**	**4.4**	**6.0**	**6.0**	**4.4**	**6.4**	**8.0**	**8.9**	**6.1**	**7.4**	**5.1**			**4.4**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 729 DATA RECOVERY RATE = 98.0% DATA CAPTURE RATE = 100.0%

MONTHLY MEAN = 22.0 µg/m3

MAXIMUM PM10 = 80.8 µg/m3 DATE OF OCCURRENCE = 8/16 at 700 MAXIMUM DAILY MEAN = 37.8 µg/m3 DATE OF OCCURRENCE = 8/30

SECOND MAXIMUM PM10 = 79.3 µg/m3 DATE OF OCCURRENCE = 8/16 at 900 SECOND MAXIMUM DAILY MEAN = 35.8 µg/m3 DATE OF OCCURRENCE = 8/16

MINIMUM PM10 = 4.4 µg/m3 DATE OF OCCURRENCE = 8/4 at 1800 MINUMUM DAILY MEAN = 11.0 µg/m3 DATE OF OCCURRENCE = 8/4

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

CSX AQ1 Modulair

HOURLY AVERAGES of PM10 in µg/m3 for SEPTEMBER, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	8.8	8.5	12.4	11.2	11.4	10.3	11.6	10.3	9.9	11.6	7.7	7.9	10.8	11.1	9.8	10.2	10.8	8.7	12.7	13.8	8.2	8.1	8.3	13.0	**10.3**	**13.8**	**7.7**
2	12.9	10.9	25.0	37.8	47.7	39.3	31.3	37.2	32.4	29.3	27.2	34.2	25.5	30.8	39.0	37.0	43.0	48.0	53.5	27.5	24.5	15.1	13.8	12.7	**30.7**	**53.5**	**10.9**
3	10.7	12.3	8.5	20.6	12.9	17.4	21.0	12.0	16.0	21.9	29.3	28.2	22.3	15.4	14.0	20.2	21.3	14.5	12.3	11.5	24.2	48.2	20.4	17.6	**18.9**	**48.2**	**8.5**
4	16.8	17.0	15.8	26.4	21.4	25.9	36.6	41.4	15.5	16.3	16.9	14.1	13.3	27.4	21.8	24.0	15.3	14.1	16.3	18.6	18.1	28.4	17.5	20.0	**20.8**	**41.4**	**13.3**
5	19.8	19.5	28.3	24.7	16.3	37.5	40.0	26.7	16.3	18.0	15.6	12.3	16.8	14.8	16.8	17.7	20.0	17.3	23.0	29.2	24.4	28.0	31.1	37.7	**23.0**	**40.0**	**12.3**
6	57.9	49.2	50.9	37.8	34.9	58.0	54.0	43.3	29.8	24.7	25.6	19.4	11.6	19.7	28.9	12.3	14.7	12.7	27.6	22.7	22.3	20.2	21.8	18.7	**29.9**	**58.0**	**11.6**
7	22.4	19.5	18.0	23.9	37.5	---	57.6	37.8	33.7	21.7	15.4	45.5	30.8	9.9	6.0	10.7	10.0	9.7	9.1	11.9	9.5	10.0	8.7	6.3	**20.2**	**57.6**	**6.0**
8	5.3	4.8	5.7	5.3	4.4	4.6	4.2	4.7	8.5	10.8	11.3	10.4	6.4	9.3	6.5	9.3	7.8	6.5	8.5	13.4	8.3	6.8	8.5	7.4	**7.4**	**13.4**	**4.2**
9	8.6	9.4	9.5	11.9	31.4	30.8	44.1	35.9	24.2	11.0	11.2	8.7	14.5	12.8	12.0	13.4	16.3	12.0	26.7	18.6	16.2	13.0	17.6	20.3	**17.9**	**44.1**	**8.6**
10	10.6	10.9	19.0	23.5	91.8	75.4	21.5	22.2	17.9	30.0	25.9	24.0	33.4	29.4	27.5	24.9	17.9	38.7	36.7	26.5	23.8	24.9	22.8	37.4	**29.9**	**91.8**	**10.6**
11	53.4	35.6	34.3	46.7	44.4	39.3	32.3	27.6	31.7	25.0	28.1	27.2	43.2	37.1	19.5	37.2	39.1	38.6	38.4	41.6	35.5	19.2	24.6	22.9	**34.3**	**53.4**	**19.2**
12	40.5	40.0	20.7	34.8	32.3	52.7	47.0	33.2	23.9	24.4	27.6	20.8	24.2	20.9	20.1	13.5	15.8	18.5	30.9	35.7	23.7	25.4	18.0	17.8	**27.6**	**52.7**	**13.5**
13	19.1	21.2	18.9	22.9	22.2	19.8	22.5	23.1	25.1	36.6	27.7	22.1	25.3	28.3	22.1	17.5	16.5	15.9	22.7	42.7	33.1	32.4	31.6	39.7	**25.4**	**42.7**	**15.9**
14	29.1	29.5	32.7	46.8	39.9	29.9	24.8	19.3	25.3	20.3	28.0	25.2	25.3	24.6	18.8	19.8	21.2	18.5	30.5	23.8	21.9	25.2	18.0	20.1	**25.8**	**46.8**	**18.0**
15	29.0	30.0	22.3	20.3	17.0	16.4	19.7	19.0	21.1	20.6	17.2	19.4	18.6	21.7	18.2	25.1	28.3	28.7	29.0	40.0	34.0	26.6	27.3	33.2	**24.3**	**40.0**	**16.4**
16	33.2	28.0	24.0	27.5	21.2	22.1	22.2	29.6	32.9	41.3	47.2	26.9	25.8	24.7	25.4	29.1	31.5	28.3	38.3	67.0	42.1	41.8	36.8	33.2	**32.5**	**67.0**	**21.2**
17	34.3	38.2	40.6	47.8	48.0	48.8	49.8	48.7	54.6	43.3	54.1	42.2	45.8	43.6	39.4	34.3	29.5	37.1	34.2	38.3	31.7	33.0	27.5	25.1	**40.4**	**54.6**	**25.1**
18	24.5	18.0	21.9	10.8	9.8	11.6	13.6	20.1	25.8	30.4	20.8	24.2	23.7	20.2	22.2	24.3	30.7	22.8	24.1	22.8	30.0	35.1	34.2	36.4	**23.3**	**36.4**	**9.8**
19	38.7	36.6	28.8	26.0	26.1	33.9	30.6	35.1	31.0	30.0	22.5	21.2	22.5	20.2	29.8	37.4	33.5	36.7	72.1	38.0	40.2	27.0	26.0	32.8	**32.4**	**72.1**	**20.2**
20	24.0	32.8	20.8	31.3	32.8	27.8	27.5	21.2	23.4	15.9	13.7	10.8	16.6	26.5	20.5	25.8	22.6	27.4	39.1	41.9	26.4	24.2	15.4	21.2	**24.6**	**41.9**	**10.8**
21	11.5	10.7	10.9	11.3	19.7	18.3	21.7	23.7	41.6	25.1	16.9	17.6	40.5	42.7	38.4	32.3	14.2	13.2	13.3	19.2	20.0	36.8	44.8	41.5	**24.4**	**44.8**	**10.7**
22	38.4	106.8	22.5	25.8	20.2	9.2	18.9	23.9	17.3	15.0	19.2	15.1	13.9	13.1	17.2	14.1	10.5	16.0	19.0	17.8	15.7	21.0	19.6	24.2	**22.3**	**106.8**	**9.2**
23	28.5	33.9	37.6	33.4	38.5	---	59.0	56.6	56.3	55.4	45.5	39.5	64.8	34.1	27.7	27.9	38.5	44.5	46.6	38.4	42.6	49.6	38.6	46.2	**42.8**	**64.8**	**27.7**
24	39.4	30.2	35.5	29.5	35.1	38.7	39.8	36.7	39.4	38.2	45.5	46.2	33.0	45.2	57.6	58.0	52.0	56.9	46.3	44.6	37.8	37.6	42.5	40.4	**41.9**	**58.0**	**29.5**
25	35.6	35.6	37.3	43.0	43.0	32.8	21.3	15.8	22.8	27.7	43.0	40.7	36.4	24.6	17.9	27.5	39.6	22.0	34.0	57.9	39.5	55.7	58.7	58.3	**36.3**	**58.7**	**15.8**
26	65.8	59.4	52.2	56.9	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
27	---	---	---	---	---	---	---	7.2	6.1	10.7	9.7	22.7	22.5	22.3	18.3	17.8	16.3	19.6	16.2	15.4	22.8	17.1	10.7	14.2	**---**	**---**	**---**
28	17.1	18.1	25.2	19.0	26.8	23.4	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
29	---	---	---	---	---	---	16.5	17.9	16.7	9.4	11.9	13.6	14.0	14.7	12.6	10.7	7.9	8.2	12.9	13.7	11.7	9.5	10.7	10.0	**12.4**	**17.9**	**7.9**
30	10.4	7.7	10.3	13.0	19.8	27.1	23.8	17.1	14.9	13.7	12.1	12.8	12.1	11.3	13.1	15.5	17.2	17.1	16.2	15.9	15.5	15.8	15.6	13.6	**15.1**	**27.1**	**7.7**
MEAN	**26.7**	**27.7**	**24.6**	**27.5**	**29.9**	**30.0**	**30.1**	**26.7**	**25.5**	**24.2**	**24.2**	**23.3**	**24.8**	**23.4**	**22.2**	**23.1**	**22.9**	**23.3**	**28.2**	**28.9**	**25.1**	**26.3**	**24.0**	**25.8**	**25.7**		
MAX	**65.8**	**106.8**	**52.2**	**56.9**	**91.8**	**75.4**	**59.0**	**56.6**	**56.3**	**55.4**	**54.1**	**46.2**	**64.8**	**45.2**	**57.6**	**58.0**	**52.0**	**56.9**	**72.1**	**67.0**	**42.6**	**55.7**	**58.7**	**58.3**		**106.8**	
MIN	**5.3**	**4.8**	**5.7**	**5.3**	**4.4**	**4.6**	**4.2**	**4.7**	**6.1**	**9.4**	**7.7**	**7.9**	**6.4**	**9.3**	**6.0**	**9.3**	**7.8**	**6.5**	**8.5**	**11.5**	**8.2**	**6.8**	**8.3**	**6.3**			**4.2**

POSSIBLE NUMBER OF OBSERVATIONS = 720 ACTUAL NUMBER OF OBSERVATIONS = 667 DATA RECOVERY RATE = 92.6% DATA CAPTURE RATE = 90.0%

MONTHLY MEAN = 25.7 µg/m3

MAXIMUM PM10 = 106.8 µg/m3 DATE OF OCCURRENCE = 9/22 at 200 MAXIMUM DAILY MEAN = 42.8 µg/m3 DATE OF OCCURRENCE = 9/23

SECOND MAXIMUM PM10 = 91.8 µg/m3 DATE OF OCCURRENCE = 9/10 at 500 SECOND MAXIMUM DAILY MEAN = 41.9 µg/m3 DATE OF OCCURRENCE = 9/24

MINIMUM PM10 = 4.2 µg/m3 DATE OF OCCURRENCE = 9/8 at 700 MINUMUM DAILY MEAN = 7.4 µg/m3 DATE OF OCCURRENCE = 9/8

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

CSX AQ1 Modulair

HOURLY AVERAGES of PM2.5 in µg/m3 for JULY, 2024

Hr Beg Hr End Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	4.9	4.0	4.2	2.5	2.2	2.4	2.7	3.4	4.7	4.5	6.9	10.7	3.7	6.2	6.8	4.0	4.7	5.2	9.1	7.8	8.4	---	7.6	7.0	**5.3**	**10.7**	**2.2**
2	7.6	5.8	5.7	6.1	5.5	6.1	6.7	7.4	6.1	5.7	5.7	6.2	5.5	---	---	---	---	---	6.0	6.8	7.5	7.2	4.9	3.2	**6.0**	**7.6**	**3.2**
3	3.7	4.8	5.3	5.1	5.4	6.3	5.3	4.8	4.3	3.5	5.3	4.2	4.5	6.1	7.4	6.2	6.1	---	---	5.6	4.0	4.1	7.1	5.3	**5.1**	**7.4**	**3.5**
4	4.8	4.6	4.9	5.2	6.0	6.1	8.6	9.3	10.1	15.3	19.6	21.0	20.9	22.6	22.6	16.6	17.2	19.7	16.0	14.1	13.8	17.0	23.1	20.0	**14.1**	**23.1**	**4.6**
5	31.3	43.8	37.2	21.1	16.7	16.2	12.8	15.7	14.1	16.8	18.5	17.4	16.1	16.8	18.2	18.5	19.3	22.0	19.5	15.5	15.4	16.1	17.8	18.2	**19.7**	**43.8**	**12.8**
6	16.2	15.1	17.8	11.6	11.9	10.3	9.4	11.8	13.1	12.2	11.6	11.0	9.5	10.3	9.2	10.7	13.3	13.8	12.0	14.6	12.3	12.6	14.1	16.3	**12.5**	**17.8**	**9.2**
7	13.4	10.9	12.4	12.7	12.4	11.5	11.6	12.3	13.8	10.5	9.5	8.5	9.7	10.0	10.2	10.2	10.8	10.4	10.9	11.5	11.2	12.7	14.1	13.1	**11.4**	**14.1**	**8.5**
8	14.3	17.4	15.4	14.2	14.1	15.3	19.0	13.2	12.9	18.9	28.0	27.0	19.5	13.9	13.0	15.8	17.2	18.6	17.4	13.2	8.5	9.8	12.0	12.1	**15.8**	**28.0**	**8.5**
9	11.3	10.0	9.6	9.1	10.5	9.7	13.0	11.6	11.1	15.6	18.7	17.4	17.5	17.6	17.1	9.6	9.3	12.5	14.2	12.5	10.4	8.8	8.0	6.7	**12.1**	**18.7**	**6.7**
10	6.7	7.2	6.8	7.8	9.4	7.4	6.8	6.8	7.5	8.5	10.3	10.9	10.0	9.7	8.7	8.8	9.3	10.2	6.9	6.3	5.3	4.6	5.3	5.4	**7.7**	**10.9**	**4.6**
11	5.2	2.6	2.8	2.9	3.1	3.6	3.7	3.6	3.0	3.9	4.2	2.4	3.4	4.0	4.4	4.8	4.9	5.5	5.6	6.2	7.9	7.1	8.8	9.0	**4.6**	**9.0**	**2.4**
12	6.4	9.5	9.9	7.7	7.2	8.1	8.8	7.9	9.3	9.0	9.6	8.8	8.8	9.8	8.7	8.4	7.7	7.1	5.9	5.6	4.3	3.6	2.4	1.9	**7.3**	**9.9**	**1.9**
13	1.2	1.2	1.7	1.9	2.1	2.3	2.9	2.4	4.0	9.3	9.2	9.4	8.8	7.9	8.5	7.5	7.5	6.2	3.7	3.6	3.3	3.5	3.8	3.3	**4.8**	**9.4**	**1.2**
14	3.3	3.4	4.5	4.8	5.8	5.9	6.5	6.8	6.4	6.5	9.4	14.4	---	13.6	11.3	12.7	11.7	9.3	9.9	10.0	8.9	9.8	11.0	12.1	**8.6**	**14.4**	**3.3**
15	11.4	14.1	12.5	17.6	17.4	17.1	14.8	16.8	18.3	18.7	18.0	20.0	16.1	14.4	15.6	14.4	17.7	14.4	11.8	10.1	10.8	9.2	9.1	7.7	**14.5**	**20.0**	**7.7**
16	8.4	9.6	11.4	14.1	14.1	14.3	10.1	13.4	18.7	20.9	17.7	15.8	16.9	17.7	22.7	20.7	15.7	15.6	18.6	15.9	14.7	19.8	6.3	7.6	**15.0**	**22.7**	**6.3**
17	8.9	10.2	9.9	9.8	10.5	8.4	9.7	10.4	11.1	10.7	7.6	7.5	7.0	8.3	12.5	16.5	16.9	14.8	16.4	11.1	11.7	11.5	12.4	10.8	**11.0**	**16.9**	**7.0**
18	10.7	11.1	10.4	9.9	10.2	8.7	8.9	14.3	11.7	13.0	13.8	14.6	14.1	18.7	17.5	16.1	17.6	17.6	16.3	15.3	15.2	15.3	15.3	15.9	**13.8**	**18.7**	**8.7**
19	19.0	18.5	16.5	15.1	12.0	10.5	11.1	9.7	7.2	7.0	7.3	7.0	6.5	6.5	6.5	7.0	9.9	10.8	9.6	10.8	11.7	11.9	12.7	14.0	**10.7**	**19.0**	**6.5**
20	10.2	8.6	8.1	9.5	9.3	9.6	9.9	10.3	9.9	7.8	8.3	9.6	9.1	9.6	8.9	8.7	8.6	8.5	10.6	10.9	9.8	11.6	13.9	13.2	**9.7**	**13.9**	**7.8**
21	10.7	11.0	12.7	14.4	12.6	13.2	12.4	13.1	13.3	11.8	16.9	14.5	13.3	12.0	13.7	12.8	10.8	11.0	11.0	11.2	12.5	10.6	9.9	9.0	**12.2**	**16.9**	**9.0**
22	8.9	10.0	9.8	10.5	11.8	11.9	12.1	15.0	14.4	9.0	6.7	8.4	8.5	8.4	6.4	6.6	3.8	7.2	8.1	6.4	5.6	6.3	7.1	4.1	**8.6**	**15.0**	**3.8**
23	3.4	2.3	3.3	2.4	2.1	2.3	4.2	7.3	8.9	9.8	11.9	12.3	11.2	12.2	13.4	14.9	15.9	15.0	15.0	14.1	13.8	9.6	5.5	4.0	**8.9**	**15.9**	**2.1**
24	5.6	4.7	5.1	5.2	5.1	5.0	6.7	7.6	6.8	8.3	8.5	12.8	14.9	10.9	11.2	12.6	13.9	13.1	8.1	9.5	5.7	5.5	6.8	6.8	**8.3**	**14.9**	**4.7**
25	7.6	8.4	7.6	7.8	7.4	5.9	7.5	7.4	11.4	19.7	19.8	17.9	23.9	26.4	25.0	23.1	24.5	22.7	19.7	16.3	17.1	16.3	16.4	18.9	**15.7**	**26.4**	**5.9**
26	21.6	24.3	16.9	12.8	10.9	9.3	7.3	7.4	9.4	7.8	7.7	6.5	7.8	7.1	6.8	7.7	8.6	7.9	7.5	9.5	8.4	8.1	9.0	7.1	**9.8**	**24.3**	**6.5**
27	8.8	10.1	10.7	10.4	10.1	9.4	8.2	8.0	8.0	7.4	7.0	6.5	6.5	6.5	6.5	6.3	6.3	6.1	6.9	8.0	7.1	7.6	9.3	11.0	**8.0**	**11.0**	**6.1**
28	11.4	10.9	12.1	10.9	10.7	10.1	11.0	12.2	11.2	10.5	9.4	8.3	9.7	10.2	10.3	11.6	12.7	12.4	11.4	9.9	10.2	12.1	11.4	9.7	**10.8**	**12.7**	**8.3**
29	9.1	8.5	11.5	12.6	13.4	13.6	13.4	11.6	12.8	19.1	20.2	19.8	20.7	20.3	18.7	19.5	20.8	21.0	14.1	11.4	10.1	8.2	7.5	6.7	**14.3**	**21.0**	**6.7**
30	6.7	6.2	7.1	7.1	7.5	7.5	8.4	8.0	7.1	7.6	8.2	8.1	10.6	14.6	14.1	15.8	13.2	12.9	15.5	13.6	9.6	9.7	5.7	4.3	**9.5**	**15.8**	**4.3**
31	3.9	4.1	4.1	3.8	5.1	6.1	6.0	5.8	6.6	7.8	10.7	11.8	10.5	---	9.4	9.3	9.3	9.1	11.0	8.5	13.9	14.8	14.4	14.8	**8.7**	**14.8**	**3.8**
MEAN	**9.6**	**10.1**	**9.9**	**9.2**	**9.1**	**8.8**	**9.0**	**9.5**	**9.9**	**10.9**	**11.8**	**12.0**	**11.5**	**12.1**	**12.2**	**11.9**	**12.2**	**12.4**	**11.6**	**10.5**	**10.0**	**10.2**	**10.1**	**9.7**	**10.6**		
MAX	**31.3**	**43.8**	**37.2**	**21.1**	**17.4**	**17.1**	**19.0**	**16.8**	**18.7**	**20.9**	**28.0**	**27.0**	**23.9**	**26.4**	**25.0**	**23.1**	**24.5**	**22.7**	**19.7**	**16.3**	**17.1**	**19.8**	**23.1**	**20.0**		**43.8**	
MIN	**1.2**	**1.2**	**1.7**	**1.9**	**2.1**	**2.3**	**2.7**	**2.4**	**3.0**	**3.5**	**4.2**	**2.4**	**3.4**	**4.0**	**4.4**	**4.0**	**3.8**	**5.2**	**3.7**	**3.6**	**3.3**	**3.5**	**2.4**	**1.9**			**1.2**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 734 DATA RECOVERY RATE = 98.7% DATA CAPTURE RATE = 100.0%

MONTHLY MEAN = 10.6 µg/m3

MAXIMUM PM2.5 = 43.8 µg/m3 DATE OF OCCURRENCE = 7/5 at 200 MAXIMUM DAILY MEAN = 19.7 µg/m3 DATE OF OCCURRENCE = 7/5

SECOND MAXIMUM PM2.5 = 37.2 µg/m3 DATE OF OCCURRENCE = 7/5 at 300 SECOND MAXIMUM DAILY MEAN = 15.8 µg/m3 DATE OF OCCURRENCE = 7/8

MINIMUM PM2.5 = 1.2 µg/m3 DATE OF OCCURRENCE = 7/13 at 100 MINUMUM DAILY MEAN = 4.6 µg/m3 DATE OF OCCURRENCE = 7/11

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

CSX AQ1 Modulair

HOURLY AVERAGES of PM2.5 in µg/m3 for AUGUST, 2024

Hr Beg Hr End Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	13.8	13.0	12.8	14.1	13.9	14.6	15.8	19.4	23.5	22.0	---	24.4	20.8	19.3	20.6	---	---	14.7	15.2	14.8	13.9	14.7	15.4	15.8	**16.7**	**24.4**	**12.8**
2	18.4	17.9	19.5	19.9	17.8	20.0	17.0	13.9	16.4	12.8	11.3	---	---	---	---	---	---	13.5	13.6	7.5	5.1	5.0	2.7	3.8	**13.1**	**20.0**	**2.7**
3	4.7	4.5	4.6	4.2	4.8	5.5	5.4	5.4	7.5	8.0	11.4	8.4	7.8	9.2	11.4	12.7	8.1	8.5	4.2	3.0	3.6	3.5	3.5	3.2	**6.3**	**12.7**	**3.0**
4	3.5	3.6	4.3	4.9	5.5	5.3	5.4	5.0	5.1	5.6	5.9	6.4	7.6	5.5	3.9	5.1	4.4	2.3	3.8	5.5	5.2	3.8	6.2	7.1	**5.0**	**7.6**	**2.3**
5	7.9	7.8	7.8	7.7	7.9	7.6	6.9	10.4	15.9	17.0	17.2	16.4	17.0	15.5	14.8	15.6	10.8	10.6	12.5	19.7	11.7	9.1	10.3	10.3	**12.0**	**19.7**	**6.9**
6	10.6	7.3	7.3	7.3	6.5	10.3	10.2	12.5	14.4	17.4	20.5	15.9	17.0	18.5	13.4	8.6	4.0	3.6	3.2	5.0	7.3	2.7	2.4	4.3	**9.5**	**20.5**	**2.4**
7	2.7	3.5	4.3	4.7	4.6	6.1	5.3	5.7	4.9	4.9	5.1	6.4	5.8	9.3	4.6	4.7	2.5	2.9	2.5	3.3	5.9	5.8	2.3	1.3	**4.5**	**9.3**	**1.3**
8	1.7	2.7	3.1	2.3	2.6	2.9	3.4	3.9	4.6	6.4	6.0	5.2	5.3	5.1	6.3	7.3	8.2	8.2	7.5	8.8	9.2	9.5	9.0	9.5	**5.7**	**9.5**	**1.7**
9	11.4	10.0	10.0	10.8	10.7	10.4	11.3	12.1	11.9	8.1	4.2	3.5	2.8	2.1	2.1	3.2	3.2	3.2	3.4	3.4	3.6	3.5	4.2	4.3	**6.3**	**12.1**	**2.1**
10	4.7	6.9	9.1	11.8	12.2	12.7	12.9	14.7	13.4	13.2	14.2	8.7	8.7	8.5	12.3	11.6	10.6	12.7	14.4	17.2	16.1	17.6	12.2	11.6	**12.0**	**17.6**	**4.7**
11	9.1	9.1	9.3	7.9	8.1	9.1	8.5	7.8	7.7	7.0	5.4	5.9	5.2	5.0	4.4	5.2	5.8	5.7	5.8	7.4	9.8	8.0	10.6	9.1	**7.3**	**10.6**	**4.4**
12	8.5	8.8	8.4	8.8	9.1	8.0	7.6	6.6	5.9	6.3	5.7	4.7	5.3	4.3	5.7	5.0	6.9	4.8	5.4	6.7	7.8	6.6	6.9	7.8	**6.7**	**9.1**	**4.3**
13	7.8	6.4	7.4	8.0	7.6	8.6	10.4	9.5	7.0	5.1	6.4	6.6	7.3	8.1	8.9	8.1	6.9	7.2	9.9	10.4	12.3	12.8	13.2	13.1	**8.7**	**13.2**	**5.1**
14	11.8	12.9	11.4	10.9	11.3	11.0	11.5	14.4	15.7	24.2	32.8	32.0	31.8	32.1	29.3	32.3	26.3	21.5	21.3	18.8	18.3	17.7	21.3	19.7	**20.4**	**32.8**	**10.9**
15	20.8	19.6	16.7	16.6	16.1	16.0	17.6	21.3	21.1	19.7	17.8	18.7	20.3	19.4	17.4	17.4	16.9	16.3	15.5	15.0	15.7	14.8	16.2	18.1	**17.7**	**21.3**	**14.8**
16	17.1	17.1	15.3	15.2	15.4	17.0	20.2	24.7	28.5	21.0	19.3	19.5	15.8	17.3	17.0	17.6	17.8	16.6	14.0	11.6	10.8	11.0	11.9	12.2	**16.8**	**28.5**	**10.8**
17	11.3	10.7	10.2	9.6	9.7	13.9	17.7	14.2	21.1	19.8	16.7	15.6	17.7	17.2	17.3	17.9	20.4	20.4	14.7	4.6	6.4	7.2	7.7	8.0	**13.7**	**21.1**	**4.6**
18	8.3	8.7	7.8	7.0	7.4	8.9	6.0	5.3	7.0	8.4	11.4	11.4	10.9	13.0	15.2	13.1	12.2	13.9	12.0	4.9	5.9	4.4	2.8	3.3	**8.7**	**15.2**	**2.8**
19	2.5	3.6	3.4	4.0	4.5	5.6	6.6	9.3	8.8	7.9	6.6	8.2	5.9	4.1	4.4	3.8	5.1	4.0	3.3	4.2	4.4	4.6	4.0	2.1	**5.0**	**9.3**	**2.1**
20	3.3	3.6	3.2	3.0	3.5	3.2	7.2	7.2	7.5	8.0	9.6	8.7	11.2	9.7	11.2	7.7	8.4	6.7	5.1	5.2	4.6	7.1	6.4	8.3	**6.6**	**11.2**	**3.0**
21	8.8	10.0	7.4	4.7	4.2	7.8	8.3	9.3	10.2	7.6	6.7	6.0	8.7	8.1	5.3	3.0	3.1	2.9	3.7	6.3	6.2	5.8	6.0	5.9	**6.5**	**10.2**	**2.9**
22	6.4	6.1	5.7	5.7	5.9	8.1	7.7	8.6	7.7	6.0	7.4	5.2	6.4	7.2	6.5	5.3	5.1	6.8	5.9	7.0	7.6	8.8	9.6	10.1	**6.9**	**10.1**	**5.1**
23	9.6	11.2	9.6	9.2	8.5	9.3	9.2	21.6	9.6	7.1	8.0	10.0	9.3	8.5	7.4	7.3	6.9	7.2	6.9	8.7	9.0	10.8	12.2	13.5	**9.6**	**21.6**	**6.9**
24	11.2	7.4	9.0	10.0	10.1	11.0	11.7	10.5	7.5	9.4	9.8	8.4	9.8	11.2	9.6	9.8	9.5	7.4	6.9	10.7	11.9	11.9	11.7	12.3	**9.9**	**12.3**	**6.9**
25	12.5	11.0	10.5	9.5	10.1	9.1	9.7	11.1	10.1	9.4	8.4	9.7	9.9	9.4	9.9	10.2	11.6	8.6	7.7	8.7	8.7	9.3	8.8	7.7	**9.6**	**12.5**	**7.7**
26	6.6	7.2	7.3	8.5	9.0	9.6	9.8	10.6	13.3	13.9	19.1	17.2	17.3	18.9	18.1	17.4	9.1	6.3	5.9	7.7	8.4	10.9	12.1	13.1	**11.5**	**19.1**	**5.9**
27	13.8	13.8	13.4	13.7	14.1	14.8	17.3	20.6	18.1	18.2	19.7	19.6	16.7	14.1	13.3	11.9	11.9	9.7	12.0	16.6	16.2	14.6	9.2	11.2	**14.7**	**20.6**	**9.2**
28	12.4	11.7	12.5	12.7	14.1	16.1	18.2	13.5	13.9	16.3	22.1	14.7	---	---	---	---	---	14.7	18.1	24.4	19.8	11.4	12.8	15.5	**15.5**	**24.4**	**11.4**
29	10.2	12.0	9.7	10.1	11.6	12.0	13.1	15.2	15.0	13.2	12.9	14.1	17.0	17.5	15.9	16.4	15.0	11.5	9.3	7.8	5.6	6.9	7.5	6.8	**11.9**	**17.5**	**5.6**
30	7.1	5.9	6.5	7.9	7.5	7.1	7.3	7.5	5.4	5.4	7.2	9.0	8.5	9.1	7.4	7.5	7.2	6.7	6.1	6.4	4.3	3.4	4.3	4.9	**6.6**	**9.1**	**3.4**
31	6.1	5.9	5.7	5.9	5.8	6.2	19.9	6.5	5.6	6.0	5.6	6.9	5.9	5.3	5.7	4.6	4.6	5.3	5.8	5.4	3.9	3.8	5.5	5.1	**6.1**	**19.9**	**3.8**
MEAN	**9.2**	**9.0**	**8.8**	**8.9**	**9.0**	**9.9**	**10.9**	**11.6**	**11.8**	**11.5**	**11.8**	**11.6**	**11.5**	**11.5**	**11.0**	**10.4**	**9.4**	**9.2**	**8.9**	**9.2**	**9.0**	**8.6**	**8.7**	**9.0**	**10.0**		
MAX	**20.8**	**19.6**	**19.5**	**19.9**	**17.8**	**20.0**	**20.2**	**24.7**	**28.5**	**24.2**	**32.8**	**32.0**	**31.8**	**32.1**	**29.3**	**32.3**	**26.3**	**21.5**	**21.3**	**24.4**	**19.8**	**17.7**	**21.3**	**19.7**		**32.8**	
MIN	**1.7**	**2.7**	**3.1**	**2.3**	**2.6**	**2.9**	**3.4**	**3.9**	**4.6**	**4.9**	**4.2**	**3.5**	**2.8**	**2.1**	**2.1**	**3.0**	**2.5**	**2.3**	**2.5**	**3.0**	**3.6**	**2.7**	**2.3**	**1.3**			**1.3**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 730 DATA RECOVERY RATE = 98.1% DATA CAPTURE RATE = 100.0%

MONTHLY MEAN = 10.0 µg/m3

MAXIMUM PM2.5 = 32.8 µg/m3 DATE OF OCCURRENCE = 8/14 at 1100 MAXIMUM DAILY MEAN = 20.4 µg/m3 DATE OF OCCURRENCE = 8/14

SECOND MAXIMUM PM2.5 = 32.3 µg/m3 DATE OF OCCURRENCE = 8/14 at 1600 SECOND MAXIMUM DAILY MEAN = 17.7 µg/m3 DATE OF OCCURRENCE = 8/15

MINIMUM PM2.5 = 1.3 µg/m3 DATE OF OCCURRENCE = 8/7 at 2400 MINUMUM DAILY MEAN = 4.5 µg/m3 DATE OF OCCURRENCE = 8/7

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

CSX AQ1 Modulair

HOURLY AVERAGES of PM2.5 in µg/m3 for SEPTEMBER, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	4.1	4.1	5.2	5.6	5.5	5.4	5.6	5.7	5.1	5.9	4.4	5.7	6.7	6.6	7.4	6.4	6.2	5.9	5.4	5.5	5.0	4.5	6.0	8.4	**5.6**	**8.4**	**4.1**
2	8.0	8.1	11.0	15.3	19.5	19.5	18.9	18.3	15.2	13.5	10.7	8.3	7.7	8.0	8.2	6.2	7.0	7.6	8.6	5.9	5.3	5.5	4.8	4.7	**10.2**	**19.5**	**4.7**
3	3.3	4.5	3.4	4.1	4.1	3.9	4.4	3.5	3.6	4.9	5.3	4.4	4.3	3.9	4.3	3.5	3.6	3.6	3.8	3.6	5.2	7.7	4.4	4.1	**4.2**	**7.7**	**3.3**
4	4.7	4.4	4.7	6.8	6.8	7.8	8.5	8.4	5.3	4.4	4.4	4.2	4.2	5.3	4.5	4.5	4.1	4.3	4.2	3.7	3.8	4.4	3.3	3.9	**5.0**	**8.5**	**3.3**
5	4.3	4.2	7.2	8.9	6.3	6.7	8.3	7.5	5.1	4.1	3.8	3.6	4.1	4.2	4.2	4.3	4.2	4.5	4.2	4.5	5.1	5.0	5.0	5.9	**5.2**	**8.9**	**3.6**
6	6.1	5.5	5.9	6.5	6.6	7.8	7.9	8.0	7.6	6.0	5.2	4.6	4.3	4.7	5.0	4.6	4.8	4.3	11.9	6.2	7.4	7.4	7.6	5.6	**6.3**	**11.9**	**4.3**
7	6.0	5.6	5.2	4.9	5.8	12.0	8.6	6.9	5.3	5.8	6.4	9.7	4.9	3.0	2.7	3.1	5.0	3.2	4.3	5.8	5.4	5.4	4.5	2.7	**5.5**	**12.0**	**2.7**
8	2.4	2.0	2.0	1.7	1.5	1.5	1.7	1.7	2.9	4.8	4.0	3.0	2.9	2.6	2.5	4.9	1.9	1.7	3.8	7.2	4.4	2.2	3.8	3.6	**2.9**	**7.2**	**1.5**
9	3.6	3.5	3.4	3.4	8.7	4.4	5.7	9.5	3.6	2.0	2.0	1.7	2.3	3.1	2.1	2.4	1.7	1.6	3.7	3.5	5.5	5.4	5.7	4.1	**3.8**	**9.5**	**1.6**
10	4.4	6.0	6.4	7.0	9.3	7.9	2.7	2.3	3.7	5.0	6.4	7.7	11.3	9.4	9.8	9.3	6.4	10.6	10.4	10.7	11.4	10.9	10.6	11.5	**7.9**	**11.5**	**2.3**
11	13.9	15.3	15.7	15.9	14.9	15.5	14.8	14.2	12.5	12.6	14.0	11.4	11.5	10.9	9.2	10.4	10.4	10.8	12.6	13.1	10.5	8.2	10.1	10.8	**12.4**	**15.9**	**8.2**
12	14.4	13.1	11.0	13.4	13.2	14.2	14.5	16.8	12.2	10.7	9.3	7.6	7.9	8.0	8.4	7.6	7.2	8.3	12.4	6.3	6.0	6.6	6.2	5.3	**10.0**	**16.8**	**5.3**
13	5.3	6.2	6.7	7.8	8.2	8.5	9.4	9.4	10.9	10.1	8.6	6.9	8.2	8.5	7.4	7.0	6.3	6.2	7.5	11.2	11.6	9.1	8.8	10.3	**8.3**	**11.6**	**5.3**
14	11.7	12.8	11.2	12.0	10.7	10.5	10.9	9.4	9.3	9.8	10.9	10.3	11.7	11.6	11.1	10.2	9.6	9.1	9.6	8.2	9.3	10.5	8.6	9.3	**10.3**	**12.8**	**8.2**
15	9.6	10.5	10.8	11.6	12.6	12.4	13.7	13.7	13.4	12.2	10.4	9.4	9.5	8.9	8.0	9.0	9.9	10.7	10.1	9.4	6.7	6.0	6.2	6.4	**10.0**	**13.7**	**6.0**
16	6.7	6.5	7.3	6.9	7.1	7.2	7.8	9.0	7.6	6.1	6.1	5.5	5.7	5.6	6.0	7.4	6.5	6.3	7.2	9.2	7.4	7.5	7.3	7.0	**6.9**	**9.2**	**5.5**
17	7.4	8.1	8.2	8.6	8.7	9.0	8.8	8.6	9.2	9.4	10.2	9.2	10.2	9.4	10.1	9.3	9.2	9.0	8.8	9.0	8.3	10.0	7.6	7.3	**8.9**	**10.2**	**7.3**
18	6.9	7.9	6.9	6.4	4.9	5.5	6.0	7.5	9.6	9.8	9.2	8.9	9.0	7.3	8.5	7.9	9.0	7.8	9.0	8.8	10.0	10.3	10.5	10.4	**8.2**	**10.5**	**4.9**
19	10.7	12.9	10.0	8.7	8.8	9.5	10.6	11.1	8.7	7.7	5.7	6.5	6.8	7.8	9.8	11.5	10.9	10.2	16.8	10.7	11.7	10.7	11.4	12.9	**10.0**	**16.8**	**5.7**
20	12.3	14.1	13.2	14.3	15.6	15.2	14.3	10.3	5.4	4.5	3.9	3.9	5.6	8.1	9.8	12.4	12.7	12.8	12.3	13.3	13.5	9.4	3.5	6.7	**10.2**	**15.6**	**3.5**
21	4.1	3.4	3.6	3.7	3.5	3.1	4.1	4.2	6.7	3.9	5.3	6.0	7.9	7.5	7.8	7.4	5.8	6.1	6.5	8.0	9.0	14.8	11.5	11.3	**6.4**	**14.8**	**3.1**
22	10.3	11.7	5.2	3.5	3.6	2.4	4.0	3.9	3.8	3.8	4.1	4.5	5.2	5.4	6.3	6.8	7.4	8.7	9.5	8.9	9.0	8.1	5.1	4.3	**6.0**	**11.7**	**2.4**
23	5.1	5.5	5.2	4.8	5.4	9.2	7.0	6.7	6.0	6.0	5.7	5.3	7.6	5.8	5.7	6.1	6.8	6.3	5.8	5.1	4.9	5.9	6.0	6.2	**6.0**	**9.2**	**4.8**
24	6.5	5.8	4.6	4.5	4.5	4.8	4.7	4.4	4.5	4.7	4.9	5.0	5.2	6.3	6.8	6.8	6.6	7.7	5.4	4.8	4.4	4.1	3.6	3.6	**5.1**	**7.7**	**3.6**
25	3.2	3.1	3.0	3.7	4.1	4.1	3.1	2.4	2.4	3.1	4.5	4.3	3.8	3.3	3.2	4.3	4.5	4.3	5.2	5.1	4.3	8.1	7.2	6.9	**4.2**	**8.1**	**2.4**
26	7.0	7.0	6.8	6.2	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
27	---	---	---	---	---	---	5.5	3.2	3.0	3.1	3.0	4.7	4.4	4.5	5.5	3.8	4.0	3.9	3.9	3.8	4.7	3.5	2.4	2.2	**3.8**	**5.5**	**2.2**
28	3.3	4.3	4.2	3.8	4.8	4.4	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
29	---	---	---	---	---	---	7.3	8.0	7.0	5.4	6.8	8.3	8.3	8.7	8.0	6.7	4.4	3.8	4.6	4.2	3.7	3.5	4.1	4.9	**5.9**	**8.7**	**3.5**
30	5.6	4.6	5.2	6.4	7.6	9.0	8.5	7.4	6.1	5.6	5.4	5.5	6.2	6.3	7.2	9.1	10.4	10.4	9.6	9.3	8.6	8.2	5.0	2.7	**7.0**	**10.4**	**2.7**
MEAN	**6.8**	**7.2**	**6.9**	**7.4**	**7.9**	**8.2**	**8.1**	**7.9**	**7.0**	**6.6**	**6.5**	**6.3**	**6.7**	**6.6**	**6.8**	**6.9**	**6.7**	**6.8**	**7.8**	**7.3**	**7.2**	**7.2**	**6.5**	**6.5**	**7.1**		
MAX	**14.4**	**15.3**	**15.7**	**15.9**	**19.5**	**19.5**	**18.9**	**18.3**	**15.2**	**13.5**	**14.0**	**11.4**	**11.7**	**11.6**	**11.1**	**12.4**	**12.7**	**12.8**	**16.8**	**13.3**	**13.5**	**14.8**	**11.5**	**12.9**		**19.5**	
MIN	**2.4**	**2.0**	**2.0**	**1.7**	**1.5**	**1.5**	**1.7**	**1.7**	**2.4**	**2.0**	**2.0**	**1.7**	**2.3**	**2.6**	**2.1**	**2.4**	**1.7**	**1.6**	**3.7**	**3.5**	**3.7**	**2.2**	**2.4**	**2.2**			**1.5**

POSSIBLE NUMBER OF OBSERVATIONS = 720 ACTUAL NUMBER OF OBSERVATIONS = 670 DATA RECOVERY RATE = 93.1% DATA CAPTURE RATE = 93.3%

MONTHLY MEAN = 7.1 µg/m3

MAXIMUM PM2.5 = 19.5 µg/m3 DATE OF OCCURRENCE = 9/2 at 500 MAXIMUM DAILY MEAN = 12.4 µg/m3 DATE OF OCCURRENCE = 9/11

SECOND MAXIMUM PM2.5 = 19.5 µg/m3 DATE OF OCCURRENCE = 9/2 at 600 SECOND MAXIMUM DAILY MEAN = 10.3 µg/m3 DATE OF OCCURRENCE = 9/14

MINIMUM PM2.5 = 1.5 µg/m3 DATE OF OCCURRENCE = 9/8 at 500 MINUMUM DAILY MEAN = 2.9 µg/m3 DATE OF OCCURRENCE = 9/8

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

CSX AQ2 Modulair

HOURLY AVERAGES of PM10 in µg/m3 for JULY, 2024

Hr Beg Hr End Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	10.3	10.1	7.9	7.5	4.9	5.1	6.6	12.3	10.3	13.7	9.8	10.9	11.3	10.0	9.8	14.0	5.7	---	---	14.2	---	---	---	---	**9.7**	**14.2**	**4.9**
2	---	---	---	---	---	---	---	---	---	---	---	---	---	23.8	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
3	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	23.6	---	**---**	**---**	**---**
4	21.5	17.4	22.2	---	19.1	23.6	24.2	---	---	---	---	---	---	---	---	---	---	38.6	30.9	26.5	23.4	26.5	40.9	39.0	**---**	**---**	**---**
5	48.9	53.3	55.3	34.9	26.5	26.9	24.6	23.0	22.7	29.8	34.5	37.7	28.7	34.5	41.4	45.9	38.8	37.5	33.3	34.1	33.6	33.6	36.9	35.6	**35.5**	**55.3**	**22.7**
6	31.8	30.9	30.9	25.1	22.9	19.9	21.4	20.8	18.9	14.2	13.7	12.9	11.9	12.6	10.8	13.1	28.8	26.2	19.3	35.0	29.7	22.9	27.0	25.1	**21.9**	**35.0**	**10.8**
7	18.8	14.8	17.2	14.4	16.2	27.7	15.7	17.5	15.2	14.8	19.2	21.1	14.7	23.1	23.6	---	21.0	24.6	20.9	22.9	19.6	25.5	42.3	28.6	**20.8**	**42.3**	**14.4**
8	31.3	38.0	24.6	60.8	46.3	34.5	61.0	---	27.7	46.8	46.3	51.3	36.3	34.4	34.6	38.8	36.7	45.6	31.7	26.3	20.5	21.0	23.0	22.3	**36.5**	**61.0**	**20.5**
9	20.5	18.2	18.5	17.9	20.3	20.2	23.8	24.8	27.0	28.6	41.2	39.6	39.9	55.4	61.1	29.7	16.9	20.9	24.2	25.7	23.4	22.4	21.6	19.6	**27.6**	**61.1**	**16.9**
10	18.8	20.8	19.6	21.4	18.9	18.4	18.2	19.3	21.4	23.0	21.5	21.8	21.3	22.4	20.0	20.5	25.8	21.4	20.3	18.6	22.0	22.5	18.0	12.6	**20.4**	**25.8**	**12.6**
11	13.9	18.7	15.4	14.8	10.4	9.4	10.8	8.9	6.3	4.8	5.6	4.3	6.2	7.2	7.1	7.0	9.7	21.1	10.3	11.6	8.9	14.8	16.6	23.9	**11.2**	**23.9**	**4.3**
12	30.6	16.0	22.4	18.6	17.2	14.8	22.3	20.7	17.8	18.2	16.0	16.3	12.9	19.2	14.0	15.1	12.2	16.2	10.7	13.1	7.2	7.4	6.8	6.7	**15.5**	**30.6**	**6.7**
13	6.5	6.8	7.5	5.8	8.8	7.5	9.1	8.9	9.1	16.9	13.1	14.4	17.3	17.9	22.6	21.8	16.3	22.9	10.3	9.5	9.1	10.0	8.6	7.2	**12.0**	**22.9**	**5.8**
14	7.0	7.2	8.3	8.0	8.1	9.3	11.9	10.6	12.9	12.4	17.2	21.3	23.0	32.0	32.7	23.3	22.6	22.7	22.2	22.7	21.2	21.5	19.8	18.5	**17.4**	**32.7**	**7.0**
15	20.3	21.7	22.2	22.5	21.5	22.8	31.0	27.8	26.9	24.1	21.9	22.7	22.2	18.9	19.5	19.6	---	30.2	32.4	23.7	24.8	25.1	24.3	22.7	**23.9**	**32.4**	**18.9**
16	22.0	21.2	25.4	23.7	26.1	33.8	36.2	35.7	39.0	44.1	34.2	32.4	---	---	---	38.3	---	---	---	28.3	28.0	34.9	26.0	26.4	**30.9**	**44.1**	**21.2**
17	21.9	23.0	29.1	23.5	25.3	23.4	23.4	27.9	25.0	18.8	16.3	18.3	15.0	14.0	32.3	44.9	28.7	25.1	25.3	18.9	19.2	22.1	23.6	18.7	**23.5**	**44.9**	**14.0**
18	21.2	19.9	20.7	17.9	17.4	16.8	13.3	14.6	13.7	16.5	18.1	19.1	16.9	15.9	18.3	20.5	20.5	20.8	20.5	21.1	28.0	25.8	27.3	24.0	**19.5**	**28.0**	**13.3**
19	28.0	29.3	29.1	23.2	21.7	21.9	19.2	19.9	21.8	22.6	18.9	19.5	17.3	17.7	25.3	24.6	20.9	23.4	28.1	20.2	18.7	25.3	27.8	29.9	**23.1**	**29.9**	**17.3**
20	21.9	20.0	19.4	21.4	22.0	22.8	32.5	29.7	25.5	22.7	22.6	20.8	21.4	21.5	20.0	22.5	22.5	17.8	18.1	17.3	17.6	19.1	20.7	18.2	**21.6**	**32.5**	**17.3**
21	16.9	17.4	18.6	20.2	18.8	22.3	20.8	18.4	19.6	20.5	32.9	27.1	28.2	25.2	28.0	26.5	25.0	21.8	21.4	20.1	21.9	19.6	17.5	18.7	**22.0**	**32.9**	**16.9**
22	16.1	17.0	17.0	17.7	17.8	19.0	21.2	24.9	28.5	22.9	24.6	28.6	30.0	23.3	22.2	19.6	10.8	16.5	17.8	18.7	10.6	15.0	12.6	14.6	**19.5**	**30.0**	**10.6**
23	13.4	15.8	14.6	12.8	13.5	14.3	12.5	15.3	13.8	12.8	14.0	16.0	18.7	19.9	17.7	17.1	21.6	29.1	22.2	20.9	20.9	18.8	14.6	10.5	**16.7**	**29.1**	**10.5**
24	9.8	9.5	9.6	10.3	10.1	10.2	11.7	12.3	11.9	12.9	13.7	17.8	31.3	26.1	30.4	30.8	34.9	36.3	23.5	14.1	11.2	13.0	12.6	13.8	**17.4**	**36.3**	**9.5**
25	13.6	15.4	16.5	15.0	15.3	17.6	20.7	21.2	17.7	22.9	25.6	25.9	23.4	28.2	27.0	37.9	28.1	41.4	29.8	26.1	25.9	24.5	25.9	27.9	**23.9**	**41.4**	**13.6**
26	25.5	28.2	25.2	20.4	19.9	22.5	25.1	22.7	22.6	15.8	23.2	20.5	24.8	25.4	25.9	29.7	28.4	39.0	17.1	14.9	16.8	15.3	16.3	14.4	**22.5**	**39.0**	**14.4**
27	15.8	17.8	17.7	15.9	17.6	16.7	25.7	17.1	14.7	15.2	15.9	15.2	16.1	20.0	16.8	14.7	16.5	16.6	18.5	26.7	14.9	16.2	17.2	17.2	**17.4**	**26.7**	**14.7**
28	17.4	17.6	15.6	17.6	15.5	25.1	41.1	28.2	18.7	18.7	20.4	30.6	41.1	24.1	23.7	27.2	33.3	28.3	20.0	19.5	19.2	20.4	18.8	18.6	**23.4**	**41.1**	**15.5**
29	19.0	20.0	20.5	25.4	38.0	34.8	36.5	28.7	27.7	30.9	40.0	39.0	43.2	49.8	44.5	40.1	38.4	34.0	33.3	21.1	24.7	20.5	20.8	18.6	**31.2**	**49.8**	**18.6**
30	18.3	16.9	17.4	17.3	17.9	16.9	18.5	19.5	18.8	20.3	22.5	24.5	25.8	27.1	25.9	25.1	24.4	25.4	25.5	26.8	22.0	17.6	14.4	12.5	**20.9**	**27.1**	**12.5**
31	11.5	11.3	11.0	14.2	22.8	22.2	17.3	13.0	16.8	16.7	19.0	33.1	21.1	15.4	16.7	23.6	29.1	18.0	17.8	20.2	21.4	24.0	21.9	25.3	**19.3**	**33.1**	**11.0**
MEAN	**19.7**	**19.8**	**20.0**	**19.6**	**19.3**	**20.0**	**22.6**	**20.1**	**19.7**	**20.8**	**22.2**	**23.7**	**23.0**	**23.8**	**24.9**	**25.6**	**23.8**	**26.7**	**22.4**	**21.3**	**20.2**	**20.9**	**21.6**	**20.4**	**21.7**		
MAX	**48.9**	**53.3**	**55.3**	**60.8**	**46.3**	**34.8**	**61.0**	**35.7**	**39.0**	**46.8**	**46.3**	**51.3**	**43.2**	**55.4**	**61.1**	**45.9**	**38.8**	**45.6**	**33.3**	**35.0**	**33.6**	**34.9**	**42.3**	**39.0**		**61.1**	
MIN	**6.5**	**6.8**	**7.5**	**5.8**	**4.9**	**5.1**	**6.6**	**8.9**	**6.3**	**4.8**	**5.6**	**4.3**	**6.2**	**7.2**	**7.1**	**7.0**	**5.7**	**16.2**	**10.3**	**9.5**	**7.2**	**7.4**	**6.8**	**6.7**			**4.3**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 672 DATA RECOVERY RATE = 90.3% DATA CAPTURE RATE = 90.3%

MONTHLY MEAN = 21.7 µg/m3

MAXIMUM PM10 = 61.1 µg/m3 DATE OF OCCURRENCE = 7/9 at 1500 MAXIMUM DAILY MEAN = 36.5 µg/m3 DATE OF OCCURRENCE = 7/8

SECOND MAXIMUM PM10 = 61.0 µg/m3 DATE OF OCCURRENCE = 7/8 at 700 SECOND MAXIMUM DAILY MEAN = 35.5 µg/m3 DATE OF OCCURRENCE = 7/5

MINIMUM PM10 = 4.3 µg/m3 DATE OF OCCURRENCE = 7/11 at 1200 MINUMUM DAILY MEAN = 9.7 µg/m3 DATE OF OCCURRENCE = 7/1

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

CSX AQ2 Modulair

HOURLY AVERAGES of PM10 in µg/m3 for AUGUST, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	24.7	25.5	22.4	25.0	26.2	32.3	30.7	33.7	39.8	---	---	---	46.1	46.5	46.6	---	---	34.9	32.5	29.0	28.5	29.6	28.0	29.1	**32.2**	**46.6**	**22.4**
2	32.5	30.6	30.0	34.1	40.0	43.4	35.1	28.8	30.7	30.1	---	---	---	---	---	---	---	---	26.8	40.8	59.8	29.8	9.1	13.9	**---**	**---**	**---**
3	19.5	21.7	22.3	21.6	20.4	19.9	19.6	18.1	20.0	21.2	23.3	18.7	---	---	28.6	---	15.1	25.6	26.4	14.7	13.7	16.4	18.3	17.1	**20.1**	**28.6**	**13.7**
4	19.6	22.2	21.9	23.2	22.6	21.9	23.6	14.6	14.5	13.8	13.0	12.5	16.6	14.8	9.4	10.6	11.4	6.3	9.5	12.5	13.9	12.4	13.0	20.1	**15.6**	**23.6**	**6.3**
5	18.4	19.4	25.5	22.1	26.5	29.6	20.4	19.8	28.2	41.9	46.3	42.4	47.2	38.8	42.4	26.0	20.1	21.3	19.3	33.7	23.5	22.4	23.2	20.4	**28.3**	**47.2**	**18.4**
6	21.2	16.8	18.3	20.3	16.1	18.7	21.2	21.8	29.2	35.6	34.9	---	---	39.8	33.2	32.6	27.6	27.5	10.9	16.0	40.0	10.5	9.8	17.7	**23.6**	**40.0**	**9.8**
7	13.3	9.7	10.1	14.5	19.5	20.5	16.9	21.3	18.0	17.5	16.8	17.2	18.8	31.5	10.9	21.7	14.2	8.9	13.4	14.1	14.5	20.8	15.6	13.0	**16.4**	**31.5**	**8.9**
8	10.5	9.3	11.8	10.1	20.2	13.0	11.5	12.1	14.5	21.3	19.4	16.1	19.5	21.0	30.3	36.5	43.6	44.9	32.8	58.2	68.1	62.5	55.5	50.2	**28.9**	**68.1**	**9.3**
9	76.9	53.8	43.1	45.6	45.0	37.4	30.8	36.9	43.1	32.9	12.7	9.2	10.5	9.8	6.3	9.3	8.7	10.7	12.8	15.6	14.7	16.6	14.7	17.0	**25.6**	**76.9**	**6.3**
10	21.3	22.2	21.8	26.0	30.0	24.2	24.1	24.5	22.3	34.3	23.4	18.2	18.9	17.1	17.7	18.0	19.6	17.8	21.7	38.2	23.9	24.9	17.8	17.2	**22.7**	**38.2**	**17.1**
11	16.7	15.5	20.3	28.9	17.4	24.5	17.1	15.1	15.6	11.6	9.3	8.6	9.7	10.6	9.2	10.7	9.3	12.2	9.3	17.4	23.6	17.7	22.3	18.4	**15.5**	**28.9**	**8.6**
12	16.4	13.6	21.6	29.2	23.8	15.4	18.4	19.7	15.0	17.2	13.6	13.0	10.0	8.1	10.8	8.0	10.0	8.8	9.8	14.2	14.0	11.5	12.5	12.6	**14.5**	**29.2**	**8.0**
13	13.1	11.9	12.8	13.4	12.4	17.2	25.5	31.9	22.8	20.1	23.7	30.4	26.0	27.6	17.5	11.7	13.1	15.2	15.2	16.0	16.9	24.7	21.8	44.8	**20.2**	**44.8**	**11.7**
14	17.9	43.1	17.0	31.4	22.3	33.4	34.5	36.0	23.6	32.7	38.3	48.4	36.9	39.2	44.6	34.3	31.1	34.3	33.8	25.7	26.9	24.2	28.5	25.1	**31.8**	**48.4**	**17.0**
15	27.8	26.0	21.6	22.1	26.2	22.4	34.9	36.9	34.3	27.2	33.8	27.1	27.0	33.0	35.1	32.9	38.2	31.8	29.8	30.8	27.0	25.7	37.8	29.9	**30.0**	**38.2**	**21.6**
16	35.4	27.4	26.0	22.9	29.4	110.4	94.4	86.7	83.2	45.8	40.9	39.4	39.0	37.3	32.2	37.2	31.3	26.4	26.1	26.8	24.0	29.8	28.2	27.6	**42.0**	**110.4**	**22.9**
17	25.7	25.4	25.4	21.0	20.1	22.0	30.6	21.4	25.8	28.3	29.2	31.7	29.1	29.7	32.2	32.2	36.2	30.3	23.3	12.8	14.0	19.3	16.3	24.7	**25.3**	**36.2**	**12.8**
18	29.5	31.6	26.4	21.2	21.3	18.1	14.4	13.1	17.7	18.6	21.0	23.9	22.3	25.6	26.7	28.4	24.6	24.9	23.1	16.7	25.8	40.4	42.3	19.3	**24.0**	**42.3**	**13.1**
19	15.2	16.8	24.1	32.3	26.6	19.2	16.5	17.1	12.3	9.2	7.7	5.6	5.2	4.9	7.8	5.4	5.2	5.0	6.9	5.7	4.5	7.2	7.7	7.2	**11.5**	**32.3**	**4.5**
20	7.7	7.2	6.0	5.9	9.2	14.6	12.5	18.0	19.0	17.0	35.9	33.8	19.8	21.0	16.0	14.6	11.8	9.2	8.6	8.7	7.7	10.9	8.4	6.4	**13.7**	**35.9**	**5.9**
21	6.4	8.3	8.4	6.9	11.4	9.2	8.0	11.8	9.2	10.0	10.3	14.2	5.1	4.5	7.3	7.7	4.9	6.9	7.7	11.1	12.6	11.4	9.7	10.4	**8.9**	**14.2**	**4.5**
22	11.2	11.7	13.4	12.0	10.9	14.7	18.8	28.9	31.1	25.7	24.4	14.6	21.9	20.6	23.8	16.0	8.0	9.8	10.2	14.3	15.8	16.9	15.5	15.6	**16.9**	**31.1**	**8.0**
23	15.2	64.8	24.0	24.6	24.7	42.8	44.2	40.9	18.5	11.4	14.2	30.6	34.0	27.8	20.1	18.5	21.9	15.0	14.0	16.3	22.1	19.0	17.1	23.0	**25.2**	**64.8**	**11.4**
24	23.0	14.3	15.5	13.0	16.9	23.5	24.7	17.1	18.6	18.5	17.3	18.2	20.6	28.4	26.0	40.0	28.2	16.6	15.7	20.2	20.1	18.9	15.9	16.9	**20.3**	**40.0**	**13.0**
25	17.6	15.9	14.8	13.1	13.8	17.8	16.1	19.6	19.3	18.6	16.8	34.8	38.5	23.2	19.7	20.8	22.5	19.7	17.8	17.6	20.3	16.4	15.9	14.0	**19.4**	**38.5**	**13.1**
26	13.8	15.6	14.8	13.0	17.7	21.4	53.5	33.6	28.7	33.1	66.7	64.9	51.4	51.3	43.7	51.9	16.9	12.5	11.9	16.8	19.2	24.8	28.6	32.5	**30.8**	**66.7**	**11.9**
27	38.2	45.2	39.5	26.3	26.4	35.7	31.2	35.4	36.3	40.8	61.2	48.2	45.7	34.4	33.0	26.0	27.8	21.4	25.9	28.2	28.8	27.3	25.1	24.7	**33.9**	**61.2**	**21.4**
28	22.8	26.9	23.6	28.5	21.8	31.2	38.4	33.6	32.5	28.7	25.3	---	---	---	---	---	---	24.9	27.4	38.7	33.3	24.9	25.3	38.2	**29.2**	**38.7**	**21.8**
29	21.0	15.9	16.6	20.1	19.5	23.1	33.1	29.8	30.4	33.4	27.5	28.6	36.1	35.6	34.3	44.1	43.2	39.4	38.1	30.3	22.9	31.9	48.8	52.7	**31.5**	**52.7**	**15.9**
30	68.9	43.5	42.2	58.7	48.4	47.3	37.1	46.9	50.5	49.1	42.6	54.9	55.4	46.1	35.1	39.0	45.0	33.8	30.9	33.5	18.4	14.9	26.2	37.5	**41.9**	**68.9**	**14.9**
31	46.4	46.6	57.3	54.6	48.6	43.9	36.5	34.2	24.9	19.6	19.2	22.7	16.7	13.1	15.9	14.1	14.5	11.4	11.5	11.8	14.4	13.9	11.7	10.4	**25.6**	**57.3**	**10.4**
MEAN	**24.1**	**24.5**	**22.5**	**23.9**	**23.7**	**28.0**	**28.2**	**27.7**	**26.8**	**25.5**	**26.5**	**27.0**	**27.0**	**26.5**	**24.7**	**24.0**	**21.6**	**20.2**	**19.5**	**22.1**	**23.0**	**21.9**	**21.6**	**22.8**	**24.3**		
MAX	**76.9**	**64.8**	**57.3**	**58.7**	**48.6**	**110.4**	**94.4**	**86.7**	**83.2**	**49.1**	**66.7**	**64.9**	**55.4**	**51.3**	**46.6**	**51.9**	**45.0**	**44.9**	**38.1**	**58.2**	**68.1**	**62.5**	**55.5**	**52.7**		**110.4**	
MIN	**6.4**	**7.2**	**6.0**	**5.9**	**9.2**	**9.2**	**8.0**	**11.8**	**9.2**	**9.2**	**7.7**	**5.6**	**5.1**	**4.5**	**6.3**	**5.4**	**4.9**	**5.0**	**6.9**	**5.7**	**4.5**	**7.2**	**7.7**	**6.4**			**4.5**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 720 DATA RECOVERY RATE = 96.8% DATA CAPTURE RATE = 96.8%

MONTHLY MEAN = 24.3 µg/m3

MAXIMUM PM10 = 110.4 µg/m3 DATE OF OCCURRENCE = 8/16 at 600 MAXIMUM DAILY MEAN = 42.0 µg/m3 DATE OF OCCURRENCE = 8/16

SECOND MAXIMUM PM10 = 94.4 µg/m3 DATE OF OCCURRENCE = 8/16 at 700 SECOND MAXIMUM DAILY MEAN = 41.9 µg/m3 DATE OF OCCURRENCE = 8/30

MINIMUM PM10 = 4.5 µg/m3 DATE OF OCCURRENCE = 8/19 at 2100 MINUMUM DAILY MEAN = 8.9 µg/m3 DATE OF OCCURRENCE = 8/21

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

CSX AQ2 Modulair

HOURLY AVERAGES of PM10 in µg/m3 for SEPTEMBER, 2024

Hr Beg Hr End Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	10.5	11.1	11.7	13.2	12.1	11.3	11.5	12.1	11.8	10.4	9.8	11.0	11.8	12.8	11.6	10.8	11.3	12.3	15.0	18.6	13.0	12.5	12.5	11.8	**12.1**	**18.6**	**9.8**
2	11.7	11.0	14.2	18.9	20.8	19.4	21.8	21.0	19.3	17.3	13.1	13.6	11.0	11.9	10.1	10.5	10.4	10.8	11.8	8.3	10.2	10.0	15.7	19.0	**14.2**	**21.8**	**8.3**
3	17.0	14.1	17.5	13.3	13.2	11.8	21.7	23.4	30.5	22.5	32.1	18.4	21.6	16.0	14.4	22.6	21.5	17.8	17.2	36.6	18.8	61.8	20.9	18.6	**21.8**	**61.8**	**11.8**
4	20.3	18.6	20.6	28.5	13.8	18.3	39.3	50.6	27.5	22.7	14.0	17.8	19.4	38.9	21.1	19.7	15.5	21.6	14.6	12.0	14.7	27.1	20.2	18.8	**22.3**	**50.6**	**12.0**
5	20.9	20.3	24.0	23.4	22.3	34.9	123.9	30.2	22.2	19.3	17.5	16.8	33.9	23.0	18.0	18.1	22.3	21.0	27.0	29.3	25.8	31.4	37.1	46.2	**29.5**	**123.9**	**16.8**
6	50.4	55.3	58.1	55.9	61.6	106.9	81.5	50.4	37.1	30.2	34.7	21.2	16.1	20.4	29.7	18.0	20.7	30.4	25.2	23.0	26.6	23.6	27.1	20.3	**38.5**	**106.9**	**16.1**
7	20.8	20.7	22.4	24.8	34.4	29.9	22.3	19.7	19.8	17.7	17.4	26.9	12.7	7.5	6.3	7.2	10.0	10.9	10.0	12.6	10.9	11.8	9.1	5.9	**16.3**	**34.4**	**5.9**
8	5.8	6.1	5.5	4.7	4.3	5.2	4.9	5.4	5.6	5.1	4.4	5.6	6.0	5.4	4.7	5.4	4.6	6.7	7.3	13.1	8.0	7.5	8.4	7.0	**6.1**	**13.1**	**4.3**
9	8.6	8.5	14.0	15.3	18.7	38.3	34.6	25.2	15.3	9.5	6.1	6.6	7.1	6.8	6.9	8.7	8.0	9.1	15.6	22.3	18.1	12.6	21.8	19.9	**14.9**	**38.3**	**6.1**
10	11.1	12.6	22.8	22.6	43.1	49.7	14.7	15.1	11.2	18.9	23.7	21.6	24.8	19.4	17.2	15.4	16.1	33.8	34.6	24.5	26.7	25.1	19.7	32.2	**23.2**	**49.7**	**11.1**
11	53.0	36.1	27.5	37.0	45.5	32.4	75.9	35.8	33.3	32.6	38.1	29.2	41.3	38.1	29.0	35.5	34.0	35.7	37.5	37.2	25.5	21.9	27.4	22.3	**35.9**	**75.9**	**21.9**
12	75.0	31.0	23.0	28.3	29.3	62.7	52.8	50.8	30.2	28.6	31.2	25.4	26.2	26.7	23.2	19.4	17.1	19.9	33.0	32.5	25.1	25.6	19.1	21.5	**31.6**	**75.0**	**17.1**
13	24.3	26.8	32.5	39.1	31.4	30.3	26.0	35.2	31.2	40.9	33.7	28.3	28.1	28.8	21.6	20.3	15.3	22.8	31.4	59.0	35.1	37.1	28.6	39.0	**31.1**	**59.0**	**15.3**
14	27.9	27.0	25.6	28.2	29.1	27.5	27.3	28.0	20.4	21.9	23.6	23.9	36.0	25.0	26.4	23.9	28.4	23.3	34.0	25.9	27.3	27.0	21.8	34.2	**26.8**	**36.0**	**20.4**
15	27.5	33.0	21.0	30.1	22.0	21.7	24.8	28.9	26.1	23.8	22.0	22.1	19.0	21.8	21.2	29.0	29.4	29.9	31.3	35.6	29.3	26.8	28.4	41.1	**26.9**	**41.1**	**19.0**
16	53.3	37.1	39.5	35.3	35.9	32.1	35.5	41.8	36.6	48.1	54.1	28.5	30.9	32.1	32.6	36.4	44.9	46.6	45.9	52.5	49.1	48.7	42.8	41.4	**40.9**	**54.1**	**28.5**
17	45.8	56.3	58.6	66.6	66.8	72.2	72.4	75.4	68.2	67.2	74.5	51.9	50.4	55.2	47.8	39.3	38.2	59.1	48.9	48.8	40.2	41.0	45.7	42.8	**55.6**	**75.4**	**38.2**
18	36.7	28.0	31.3	16.4	13.6	15.0	19.8	24.5	28.5	39.5	24.1	32.4	34.5	37.5	30.4	42.4	38.8	28.8	21.8	22.2	28.2	30.9	28.3	31.9	**28.6**	**42.4**	**13.6**
19	31.9	27.4	28.5	31.1	27.9	27.6	28.4	25.4	27.0	23.9	16.9	17.0	12.4	16.9	15.2	20.7	31.4	20.2	34.2	28.4	34.4	22.5	23.9	27.2	**25.0**	**34.4**	**12.4**
20	21.9	35.8	24.1	21.4	67.1	37.1	41.1	31.9	19.8	11.6	10.3	15.3	15.4	26.8	25.0	24.6	24.8	42.4	57.5	52.5	28.2	26.5	12.9	16.5	**28.8**	**67.1**	**10.3**
21	11.5	11.0	13.5	11.4	13.3	18.5	26.0	17.8	16.7	13.6	16.4	18.1	28.8	27.8	26.5	27.1	16.8	13.9	14.5	18.3	21.0	35.6	35.8	34.1	**20.3**	**35.8**	**11.0**
22	34.2	92.2	24.2	20.1	21.0	13.0	26.7	29.5	21.0	17.0	15.9	13.6	16.3	16.8	16.9	15.6	12.5	19.1	22.6	21.3	19.8	19.4	21.0	26.6	**23.2**	**92.2**	**12.5**
23	30.4	37.4	38.4	38.9	41.1	43.5	47.6	52.8	52.3	47.4	44.4	34.9	32.7	33.3	29.7	31.2	34.2	48.8	45.6	37.9	42.1	52.8	44.7	52.8	**41.5**	**52.8**	**29.7**
24	44.3	39.9	37.8	36.7	41.3	46.5	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
25	---	---	---	---	---	---	26.0	18.0	19.3	21.8	35.8	33.4	32.8	22.3	19.8	23.9	33.2	19.9	30.0	46.6	40.8	45.9	60.1	---	**---**	**---**	**---**
26	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
27	---	---	---	---	---	---	---	7.7	6.2	10.9	10.5	18.9	18.1	20.5	20.7	17.6	16.3	21.5	20.9	20.2	24.3	15.8	13.1	15.1	**---**	**---**	**---**
28	17.3	17.4	24.0	18.9	23.3	24.4	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
29	---	---	---	---	---	---	25.4	23.4	22.3	15.4	17.5	17.9	19.3	17.3	16.9	15.4	11.6	10.6	17.8	20.2	18.6	13.3	15.5	15.5	**17.4**	**25.4**	**10.6**
30	17.1	14.4	14.5	17.7	26.9	37.4	34.5	26.0	22.2	19.3	18.2	14.7	16.5	17.3	16.5	21.8	23.0	21.9	20.5	20.9	25.2	21.5	19.3	18.6	**21.1**	**37.4**	**14.4**
MEAN	**28.0**	**28.0**	**26.0**	**26.8**	**30.0**	**33.4**	**37.2**	**29.9**	**25.2**	**24.3**	**24.4**	**21.7**	**23.1**	**23.2**	**20.7**	**21.5**	**21.9**	**24.4**	**26.9**	**28.9**	**25.4**	**27.2**	**25.2**	**26.2**	**26.2**		
MAX	**75.0**	**92.2**	**58.6**	**66.6**	**67.1**	**106.9**	**123.9**	**75.4**	**68.2**	**67.2**	**74.5**	**51.9**	**50.4**	**55.2**	**47.8**	**42.4**	**44.9**	**59.1**	**57.5**	**59.0**	**49.1**	**61.8**	**60.1**	**52.8**		**123.9**	
MIN	**5.8**	**6.1**	**5.5**	**4.7**	**4.3**	**5.2**	**4.9**	**5.4**	**5.6**	**5.1**	**4.4**	**5.6**	**6.0**	**5.4**	**4.7**	**5.4**	**4.6**	**6.7**	**7.3**	**8.3**	**8.0**	**7.5**	**8.4**	**5.9**			**4.3**

POSSIBLE NUMBER OF OBSERVATIONS = 720 ACTUAL NUMBER OF OBSERVATIONS = 640 DATA RECOVERY RATE = 88.9% DATA CAPTURE RATE = 83.3%

MONTHLY MEAN = 26.2 µg/m3

MAXIMUM PM10 = 123.9 µg/m3 DATE OF OCCURRENCE = 9/5 at 700 MAXIMUM DAILY MEAN = 55.6 µg/m3 DATE OF OCCURRENCE = 9/17

SECOND MAXIMUM PM10 = 106.9 µg/m3 DATE OF OCCURRENCE = 9/6 at 600 SECOND MAXIMUM DAILY MEAN = 41.5 µg/m3 DATE OF OCCURRENCE = 9/23

MINIMUM PM10 = 4.3 µg/m3 DATE OF OCCURRENCE = 9/8 at 500 MINUMUM DAILY MEAN = 6.1 µg/m3 DATE OF OCCURRENCE = 9/8

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

CSX AQ2 Modulair

HOURLY AVERAGES of PM2.5 in µg/m3 for JULY, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	3.1	3.2	2.6	2.2	1.7	1.8	2.2	2.2	2.0	1.6	1.1	1.6	1.9	2.3	1.7	2.8	2.2	3.3	---	5.2	---	---	---	---	**2.3**	**5.2**	**1.1**
2	---	---	---	---	---	---	---	---	---	---	---	---	---	9.2	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
3	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	11.9	---	**---**	**---**	**---**
4	6.9	6.4	6.1	---	6.7	7.0	7.8	---	---	---	---	---	---	---	---	---	---	31.1	26.8	23.8	21.7	23.5	38.1	36.5	**---**	**---**	**---**
5	45.0	50.8	51.0	30.3	22.8	19.5	18.2	17.5	17.9	23.9	26.1	26.4	23.8	23.2	28.8	32.1	31.7	27.8	27.9	29.1	28.1	26.6	29.3	25.3	**28.4**	**51.0**	**17.5**
6	23.2	24.0	24.1	21.1	19.0	16.6	16.3	16.7	15.3	11.1	10.8	10.9	10.8	10.4	9.8	10.5	20.3	20.6	16.4	20.3	19.7	19.0	20.7	21.7	**17.0**	**24.1**	**9.8**
7	13.2	10.3	11.9	10.7	9.7	10.1	9.5	9.1	9.0	10.0	9.9	11.3	10.8	14.1	14.8	---	15.1	15.1	15.6	14.2	13.7	13.9	14.6	13.9	**12.1**	**15.6**	**9.0**
8	15.1	17.0	14.3	14.6	15.0	14.4	17.2	14.8	15.8	26.4	40.0	38.0	25.3	17.9	16.5	20.6	25.2	28.6	24.6	19.9	16.8	17.6	19.1	18.0	**20.5**	**40.0**	**14.3**
9	16.9	15.1	14.3	14.1	13.9	13.1	13.6	16.3	20.5	19.0	24.9	27.1	25.7	28.0	26.7	8.3	9.5	12.3	15.5	19.5	18.3	15.7	12.9	11.1	**17.1**	**28.0**	**8.3**
10	10.2	9.3	9.6	10.0	10.1	10.3	10.8	11.8	14.0	16.0	16.9	15.9	14.6	12.5	11.5	11.6	11.0	9.9	8.9	8.3	7.8	7.4	6.9	6.2	**10.8**	**16.9**	**6.2**
11	5.6	3.5	3.5	3.7	4.1	5.0	5.1	4.7	3.6	2.2	2.1	2.3	3.2	3.4	3.8	4.7	4.8	7.3	5.3	4.9	5.5	6.0	6.2	7.3	**4.4**	**7.3**	**2.1**
12	8.6	8.2	8.5	7.5	8.0	8.5	10.6	8.7	9.2	9.2	9.9	10.5	8.2	12.4	10.4	10.4	9.2	8.5	6.9	7.0	5.6	4.7	3.3	2.8	**8.2**	**12.4**	**2.8**
13	2.1	1.8	2.1	2.2	2.4	2.3	2.7	2.9	4.9	10.1	8.4	9.9	11.1	11.8	13.9	13.7	9.1	8.2	5.8	4.6	4.6	5.0	5.2	4.2	**6.2**	**13.9**	**1.8**
14	4.4	4.3	4.6	4.9	5.6	5.8	6.2	8.2	9.7	10.3	13.4	18.2	20.0	18.1	18.7	18.0	19.5	17.6	18.3	18.6	16.3	14.9	14.2	13.2	**12.6**	**20.0**	**4.3**
15	14.7	16.7	17.9	18.2	17.6	17.4	19.3	20.7	20.2	17.2	15.9	15.4	14.7	15.0	15.1	15.4	---	22.5	22.8	17.4	16.8	17.8	16.8	15.6	**17.4**	**22.8**	**14.7**
16	15.9	17.0	18.3	18.4	18.6	18.9	19.6	22.7	24.6	28.1	25.5	25.0	---	---	---	30.7	---	---	---	22.1	22.7	17.6	6.9	8.4	**20.0**	**30.7**	**6.9**
17	9.0	9.3	11.1	10.5	10.9	12.2	12.3	14.1	15.5	12.1	11.0	12.1	10.1	9.5	17.6	26.7	20.3	15.3	14.3	12.2	12.0	12.0	12.8	11.5	**13.1**	**26.7**	**9.0**
18	11.5	10.5	10.2	9.9	8.6	8.1	7.6	7.7	8.2	9.5	9.9	12.1	12.5	12.6	13.5	14.4	15.3	15.6	15.2	15.7	17.8	17.1	17.2	16.1	**12.3**	**17.8**	**7.6**
19	17.8	19.1	18.1	16.1	13.2	10.5	9.8	9.3	8.6	8.4	9.3	9.9	9.5	9.6	9.9	11.9	13.0	15.4	17.3	14.9	15.0	14.9	15.1	16.1	**13.0**	**19.1**	**8.4**
20	13.7	11.3	10.3	10.2	9.6	9.5	10.2	11.2	10.8	11.4	12.4	13.7	14.4	15.6	15.2	14.6	13.6	13.1	13.2	12.7	11.9	13.1	15.1	13.0	**12.4**	**15.6**	**9.5**
21	12.3	12.4	12.3	12.6	12.4	12.7	12.8	13.4	15.3	16.3	22.8	20.5	22.7	20.7	23.9	20.7	20.4	19.3	18.7	17.9	17.9	15.8	14.4	13.9	**16.7**	**23.9**	**12.3**
22	13.0	13.1	13.1	12.6	12.2	11.9	12.0	13.1	13.3	12.6	9.8	10.9	9.1	9.9	7.9	8.0	5.2	8.9	9.7	6.3	5.3	6.6	6.1	5.3	**9.8**	**13.3**	**5.2**
23	4.3	3.8	3.9	3.2	2.7	2.9	5.3	8.2	9.9	9.8	11.5	13.1	15.5	16.8	15.0	14.1	17.7	22.3	17.2	17.0	16.5	12.9	9.6	6.3	**10.8**	**22.3**	**2.7**
24	5.9	5.5	5.8	5.3	4.7	4.9	5.9	6.8	7.3	9.1	10.3	13.2	22.0	17.0	19.8	22.5	23.5	16.9	9.7	9.7	7.1	6.6	7.3	7.9	**10.6**	**23.5**	**4.7**
25	8.3	8.5	9.1	8.9	9.0	9.0	9.4	10.3	12.8	17.5	19.6	21.8	20.3	21.8	21.9	27.5	24.7	28.4	24.4	21.4	19.0	16.8	17.0	17.9	**16.8**	**28.4**	**8.3**
26	19.6	20.9	15.7	12.5	10.4	8.9	9.2	8.0	7.3	6.9	8.0	9.0	10.8	10.2	10.4	12.0	14.6	12.6	9.3	8.9	9.9	9.8	10.7	9.5	**11.0**	**20.9**	**6.9**
27	10.1	10.8	11.8	10.4	10.2	9.2	8.6	7.7	7.8	9.7	9.5	8.5	9.6	9.2	9.7	9.5	9.0	8.8	9.5	9.2	8.2	9.1	10.3	11.2	**9.4**	**11.8**	**7.7**
28	12.1	11.6	11.6	11.8	11.0	10.8	12.7	14.7	14.1	14.2	13.8	15.8	18.7	16.7	17.9	19.4	20.0	19.5	14.5	14.0	13.9	14.6	14.3	14.3	**14.6**	**20.0**	**10.8**
29	14.0	14.1	14.1	14.6	15.2	15.3	16.2	17.6	19.1	22.0	26.3	27.5	28.5	29.2	29.6	28.6	29.9	27.8	16.6	10.9	11.9	10.8	10.8	10.2	**19.2**	**29.9**	**10.2**
30	9.9	9.1	9.4	9.9	10.2	11.0	11.9	12.5	13.3	12.8	12.8	14.0	15.5	19.5	18.9	20.1	19.3	19.9	20.0	18.8	14.2	11.4	7.9	6.0	**13.6**	**20.1**	**6.0**
31	5.4	5.2	5.3	6.1	7.4	7.5	6.9	7.8	9.6	10.9	12.6	18.5	12.3	10.9	12.3	14.6	15.7	13.3	13.7	15.2	15.9	15.7	15.3	15.5	**11.3**	**18.5**	**5.2**
MEAN	**12.1**	**12.2**	**12.1**	**11.2**	**10.4**	**10.2**	**10.7**	**11.4**	**12.1**	**13.2**	**14.4**	**15.5**	**14.9**	**14.6**	**15.4**	**16.4**	**16.1**	**16.8**	**15.5**	**14.5**	**14.1**	**13.5**	**13.4**	**12.8**	**13.4**		
MAX	**45.0**	**50.8**	**51.0**	**30.3**	**22.8**	**19.5**	**19.6**	**22.7**	**24.6**	**28.1**	**40.0**	**38.0**	**28.5**	**29.2**	**29.6**	**32.1**	**31.7**	**31.1**	**27.9**	**29.1**	**28.1**	**26.6**	**38.1**	**36.5**		**51.0**	
MIN	**2.1**	**1.8**	**2.1**	**2.2**	**1.7**	**1.8**	**2.2**	**2.2**	**2.0**	**1.6**	**1.1**	**1.6**	**1.9**	**2.3**	**1.7**	**2.8**	**2.2**	**3.3**	**5.3**	**4.6**	**4.6**	**4.7**	**3.3**	**2.8**			**1.1**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 674 DATA RECOVERY RATE = 90.6% DATA CAPTURE RATE = 90.3%

MONTHLY MEAN = 13.4 µg/m3

MAXIMUM PM2.5 = 51.0 µg/m3 DATE OF OCCURRENCE = 7/5 at 300 MAXIMUM DAILY MEAN = 28.4 µg/m3 DATE OF OCCURRENCE = 7/5

SECOND MAXIMUM PM2.5 = 50.8 µg/m3 DATE OF OCCURRENCE = 7/5 at 200 SECOND MAXIMUM DAILY MEAN = 20.5 µg/m3 DATE OF OCCURRENCE = 7/8

MINIMUM PM2.5 = 1.1 µg/m3 DATE OF OCCURRENCE = 7/1 at 1100 MINUMUM DAILY MEAN = 2.3 µg/m3 DATE OF OCCURRENCE = 7/1

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

CSX AQ2 Modulair

HOURLY AVERAGES of PM2.5 in µg/m3 for AUGUST, 2024

Hr Beg Hr End Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	15.3	14.4	14.2	14.5	14.4	14.6	16.3	20.0	23.8	---	---	---	32.4	33.3	34.5	---	---	26.3	26.7	24.0	23.7	23.9	23.7	23.3	**22.0**	**34.5**	**14.2**
2	23.7	23.0	22.1	21.2	21.9	20.6	22.6	22.6	23.0	19.7	---	---	---	---	---	---	---	---	8.8	8.3	5.5	4.7	2.8	3.5	**---**	**---**	**---**
3	4.5	5.2	4.5	4.7	5.8	6.3	7.3	9.1	11.3	11.8	13.7	12.6	---	---	17.5	---	8.4	9.8	5.5	4.0	3.4	4.3	4.1	4.2	**7.5**	**17.5**	**3.4**
4	4.5	5.3	5.4	5.7	5.7	5.9	6.1	6.3	7.0	7.6	8.5	8.7	9.4	8.6	6.6	7.7	6.2	3.8	6.4	8.4	7.6	7.3	7.4	7.9	**6.8**	**9.4**	**3.8**
5	8.2	8.2	8.2	8.1	8.2	8.9	9.1	12.1	17.5	23.8	27.3	28.7	26.0	26.2	25.8	18.6	16.9	16.5	16.1	27.0	17.9	16.0	16.1	14.6	**16.9**	**28.7**	**8.1**
6	13.8	12.7	12.1	11.7	11.2	11.3	13.0	16.8	19.8	24.1	26.8	---	---	27.5	18.9	11.4	6.1	5.9	5.3	6.1	7.5	4.2	2.9	3.8	**12.4**	**27.5**	**2.9**
7	4.4	4.6	3.3	4.4	5.3	5.6	5.8	5.8	5.6	7.4	7.2	8.8	9.1	13.1	6.6	7.1	3.4	3.7	3.8	5.2	8.2	8.2	3.3	1.9	**5.9**	**13.1**	**1.9**
8	2.4	3.5	4.1	3.3	3.0	3.7	4.8	4.9	5.8	7.7	8.3	7.8	6.9	7.6	10.1	12.0	11.3	10.9	9.8	12.2	12.6	12.4	12.4	12.9	**7.9**	**12.9**	**2.4**
9	15.2	12.7	12.8	13.9	14.1	13.0	13.5	15.1	15.3	11.0	6.0	5.1	4.2	3.2	3.1	4.2	4.6	5.4	5.3	5.4	5.4	5.7	5.6	5.6	**8.5**	**15.3**	**3.1**
10	6.2	6.9	8.9	11.3	11.7	11.7	12.5	14.1	14.4	17.8	16.4	13.3	13.2	13.1	13.1	13.6	13.4	13.4	15.1	17.6	15.6	14.5	9.3	9.1	**12.7**	**17.8**	**6.2**
11	8.6	9.5	9.8	8.1	8.2	9.2	8.1	7.0	6.6	6.4	5.7	5.7	6.2	5.9	6.0	5.8	6.0	5.9	6.3	7.9	14.5	8.6	10.3	10.6	**7.7**	**14.5**	**5.7**
12	8.6	8.4	9.3	9.7	9.0	7.3	8.0	7.7	7.2	6.9	5.5	6.1	5.9	4.9	5.0	4.7	5.2	5.5	5.6	7.9	9.1	8.1	7.3	7.9	**7.1**	**9.7**	**4.7**
13	8.3	7.3	7.5	6.8	7.1	8.2	8.9	9.6	8.1	7.5	9.4	10.2	10.3	11.0	9.2	8.5	8.7	9.9	10.3	11.0	12.7	13.7	13.9	14.2	**9.6**	**14.2**	**6.8**
14	12.2	12.9	11.4	11.7	11.3	12.4	12.3	13.7	14.3	21.3	29.3	33.2	29.9	28.1	28.7	29.0	24.5	22.1	20.7	20.9	22.5	20.3	22.7	20.7	**20.2**	**33.2**	**11.3**
15	20.5	19.3	17.9	16.8	16.4	15.7	17.6	19.8	19.9	19.8	23.7	20.3	18.6	20.2	25.3	25.7	26.4	21.2	18.8	18.4	18.1	18.4	19.3	18.1	**19.8**	**26.4**	**15.7**
16	18.0	18.2	17.0	15.7	15.1	17.3	19.8	27.6	36.8	30.6	32.2	33.8	24.4	24.8	23.0	23.1	25.3	23.4	23.0	21.1	18.7	20.3	21.6	22.0	**23.0**	**36.8**	**15.1**
17	20.4	17.6	15.6	15.3	14.6	13.8	16.9	15.2	21.6	22.4	24.2	26.1	24.2	25.8	26.5	26.0	26.2	24.7	18.1	7.4	7.1	7.5	7.2	8.0	**18.0**	**26.5**	**7.1**
18	8.7	8.6	8.0	7.5	7.5	7.8	7.7	8.0	10.5	13.3	15.7	16.9	18.2	20.9	23.2	23.6	21.1	20.3	15.7	4.3	5.4	4.7	3.4	2.3	**11.8**	**23.6**	**2.3**
19	2.8	3.1	3.4	4.0	4.3	4.8	5.6	7.6	7.3	5.7	5.4	3.9	2.9	2.9	2.3	2.4	2.1	1.9	2.9	1.8	1.6	1.6	1.4	1.4	**3.4**	**7.6**	**1.4**
20	1.3	1.2	1.2	1.3	1.2	1.6	3.6	2.9	4.5	3.5	6.6	7.9	6.0	6.0	4.9	4.3	4.2	3.3	3.2	3.8	5.2	5.5	4.2	3.3	**3.7**	**7.9**	**1.2**
21	3.2	3.1	2.8	2.8	3.0	3.1	3.2	3.1	2.6	2.9	2.7	3.1	2.7	2.3	2.5	2.7	3.2	3.6	4.1	7.7	7.6	5.9	5.7	5.7	**3.7**	**7.7**	**2.3**
22	6.1	5.8	5.5	4.7	5.0	5.4	6.5	7.7	7.2	7.6	6.3	6.2	5.7	5.8	9.0	6.0	5.6	6.6	7.6	8.7	9.6	9.5	9.6	10.1	**6.9**	**10.1**	**4.7**
23	9.8	12.0	9.2	8.3	7.8	8.6	11.8	16.9	10.2	8.6	9.3	13.0	14.4	13.9	11.4	11.4	10.3	9.6	8.8	9.3	9.9	11.3	12.1	13.8	**10.9**	**16.9**	**7.8**
24	13.6	10.4	9.4	9.1	9.3	9.3	11.9	12.4	12.4	12.8	13.1	12.8	14.6	19.5	16.8	17.8	15.2	12.2	12.0	12.3	12.9	12.2	12.3	13.0	**12.8**	**19.5**	**9.1**
25	12.4	11.4	10.3	9.4	9.6	9.6	11.3	14.0	13.8	12.7	12.3	19.9	19.6	15.2	15.3	16.0	15.8	14.8	13.9	13.5	12.8	12.4	12.8	11.7	**13.3**	**19.9**	**9.4**
26	10.8	10.0	9.6	9.4	8.9	8.9	11.6	13.5	15.9	18.4	26.8	28.9	31.9	29.5	26.9	19.4	12.3	7.1	7.2	8.5	10.0	11.1	12.2	13.1	**15.0**	**31.9**	**7.1**
27	14.0	15.2	13.9	13.1	13.6	14.0	16.0	22.1	25.4	26.9	29.9	28.0	26.2	21.1	19.2	17.9	17.6	17.2	17.7	18.5	17.7	17.9	17.0	17.1	**19.0**	**29.9**	**13.1**
28	17.1	17.4	17.1	17.3	16.6	17.4	20.2	22.8	23.9	21.4	20.7	---	---	---	---	---	---	19.2	21.3	24.3	24.3	12.5	15.2	17.0	**19.2**	**24.3**	**12.5**
29	14.3	12.9	12.4	12.6	11.3	13.2	14.7	17.3	18.9	17.8	17.1	19.3	24.3	26.7	25.0	25.3	23.8	19.5	13.9	11.9	9.0	10.2	9.8	9.0	**16.2**	**26.7**	**9.0**
30	8.1	7.2	8.0	9.0	8.8	7.2	8.4	9.2	6.3	6.5	7.5	7.8	9.0	9.6	9.0	8.6	8.0	8.3	8.8	8.0	6.2	4.5	6.6	6.1	**7.7**	**9.6**	**4.5**
31	6.8	6.9	7.1	7.0	6.9	7.3	6.9	6.8	6.0	8.0	7.8	10.5	8.6	8.5	8.3	7.5	7.8	7.7	7.8	8.2	5.5	5.6	6.3	6.1	**7.3**	**10.5**	**5.5**
MEAN	**10.4**	**10.2**	**9.7**	**9.6**	**9.6**	**9.8**	**11.0**	**12.6**	**13.6**	**13.7**	**14.7**	**14.8**	**15.0**	**15.5**	**15.0**	**13.3**	**12.1**	**12.0**	**11.3**	**11.4**	**11.2**	**10.4**	**10.3**	**10.3**	**11.9**		
MAX	**23.7**	**23.0**	**22.1**	**21.2**	**21.9**	**20.6**	**22.6**	**27.6**	**36.8**	**30.6**	**32.2**	**33.8**	**32.4**	**33.3**	**34.5**	**29.0**	**26.4**	**26.3**	**26.7**	**27.0**	**24.3**	**23.9**	**23.7**	**23.3**		**36.8**	
MIN	**1.3**	**1.2**	**1.2**	**1.3**	**1.2**	**1.6**	**3.2**	**2.9**	**2.6**	**2.9**	**2.7**	**3.1**	**2.7**	**2.3**	**2.3**	**2.4**	**2.1**	**1.9**	**2.9**	**1.8**	**1.6**	**1.6**	**1.4**	**1.4**			**1.2**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 720 DATA RECOVERY RATE = 96.8% DATA CAPTURE RATE = 96.8%

MONTHLY MEAN = 11.9 µg/m3

MAXIMUM PM2.5 = 36.8 µg/m3 DATE OF OCCURRENCE = 8/16 at 900 MAXIMUM DAILY MEAN = 23.0 µg/m3 DATE OF OCCURRENCE = 8/16

SECOND MAXIMUM PM2.5 = 34.5 µg/m3 DATE OF OCCURRENCE = 8/1 at 1500 SECOND MAXIMUM DAILY MEAN = 22.0 µg/m3 DATE OF OCCURRENCE = 8/1

MINIMUM PM2.5 = 1.2 µg/m3 DATE OF OCCURRENCE = 8/20 at 200 MINUMUM DAILY MEAN = 3.4 µg/m3 DATE OF OCCURRENCE = 8/19

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

CSX AQ2 Modulair

HOURLY AVERAGES of PM2.5 in µg/m3 for SEPTEMBER, 2024

Hr Beg Hr End Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	5.7	5.8	5.8	6.0	5.9	5.5	6.2	7.7	7.4	7.1	7.3	9.1	10.0	11.3	9.6	8.9	9.1	9.8	9.9	10.1	9.8	9.1	9.0	8.7	**8.1**	**11.3**	**5.5**
2	8.9	8.2	8.1	9.7	11.9	13.5	14.8	12.8	10.8	9.5	7.5	7.3	6.2	4.9	4.1	4.2	3.7	3.8	3.9	3.9	4.7	5.5	4.8	4.0	**7.3**	**14.8**	**3.7**
3	5.2	3.0	3.0	3.0	2.3	2.4	4.2	6.2	6.7	6.6	6.7	5.7	5.1	4.9	5.1	6.7	5.3	5.2	4.4	5.6	4.8	7.5	5.5	4.5	**4.9**	**7.5**	**2.3**
4	4.2	4.4	4.6	5.3	4.8	5.0	7.0	8.6	7.4	6.9	6.2	8.5	7.3	9.4	7.4	6.1	5.4	6.3	5.1	4.3	4.4	4.6	4.5	4.3	**5.9**	**9.4**	**4.2**
5	4.4	4.1	4.9	5.6	4.3	5.4	12.9	8.5	7.0	5.7	5.8	4.9	7.5	6.3	5.4	5.3	6.1	5.8	5.4	5.5	5.9	5.8	5.5	6.5	**6.0**	**12.9**	**4.1**
6	6.5	6.6	6.9	7.2	8.4	11.3	8.3	8.8	9.7	8.5	8.0	6.7	6.1	6.6	7.2	6.7	6.8	7.1	7.3	6.6	8.1	8.9	9.5	7.4	**7.7**	**11.3**	**6.1**
7	7.9	7.5	6.3	6.3	7.1	7.7	7.8	8.3	8.7	9.8	10.6	6.0	2.3	2.5	2.8	3.3	4.7	4.7	4.7	6.1	6.3	5.7	5.3	2.9	**6.0**	**10.6**	**2.3**
8	2.5	2.2	2.1	2.0	2.0	1.8	2.4	2.8	2.9	2.9	2.9	2.9	3.3	2.7	2.4	2.3	2.4	2.7	4.6	8.3	5.8	3.6	4.0	4.0	**3.1**	**8.3**	**1.8**
9	3.9	3.8	3.6	3.6	3.6	4.7	4.8	5.3	3.2	3.1	2.2	2.1	2.2	2.0	2.1	2.2	2.2	2.6	3.6	4.9	6.5	5.5	5.9	5.6	**3.7**	**6.5**	**2.0**
10	5.7	6.3	6.5	6.3	6.6	6.7	3.7	3.7	3.7	5.3	7.4	8.4	8.9	9.2	9.1	8.4	8.9	12.4	12.8	12.1	12.4	12.0	11.2	11.7	**8.3**	**12.8**	**3.7**
11	13.7	14.3	13.9	13.2	13.0	13.3	17.3	17.2	16.7	18.9	19.9	16.1	18.1	16.4	15.3	15.7	16.0	15.1	15.3	14.2	12.4	11.5	12.6	11.5	**15.0**	**19.9**	**11.5**
12	14.0	12.3	10.6	12.3	12.5	14.4	14.4	19.3	16.9	15.3	13.5	12.2	11.8	11.4	11.0	10.0	10.8	11.4	13.6	11.5	7.9	8.2	7.6	6.8	**12.0**	**19.3**	**6.8**
13	7.2	7.3	6.8	7.8	8.0	8.1	8.6	9.2	11.3	11.5	10.6	10.1	11.3	10.9	9.6	8.8	8.1	8.3	8.9	13.1	13.0	10.9	9.6	10.6	**9.5**	**13.1**	**6.8**
14	11.2	11.7	9.8	9.4	8.9	8.9	10.0	12.1	10.5	12.3	13.7	13.6	15.4	16.1	15.8	15.4	13.9	11.6	12.6	11.7	12.7	14.6	11.0	10.5	**12.2**	**16.1**	**8.9**
15	9.7	9.5	10.6	11.8	12.2	12.6	14.2	15.8	16.2	15.6	14.1	13.2	12.6	12.5	11.9	13.2	14.1	16.3	16.9	14.3	10.9	9.1	8.8	8.6	**12.6**	**16.9**	**8.6**
16	7.6	6.3	6.3	6.9	6.4	6.4	7.6	8.1	7.2	7.3	7.7	6.8	7.7	7.7	7.8	8.5	9.5	9.6	8.4	9.9	9.2	9.6	8.9	9.0	**7.9**	**9.9**	**6.3**
17	9.6	9.9	9.9	10.3	10.5	11.2	10.8	11.0	11.2	12.4	13.4	11.9	12.8	12.4	12.3	11.6	11.1	13.0	11.2	11.3	10.5	9.8	9.9	10.1	**11.1**	**13.4**	**9.6**
18	8.8	9.1	7.6	6.7	5.7	5.8	6.3	7.1	8.7	10.4	9.8	10.5	12.0	13.7	10.9	10.8	10.6	9.4	8.1	8.1	7.9	8.2	8.8	8.7	**8.9**	**13.7**	**5.7**
19	8.8	9.3	9.2	8.8	8.6	8.5	9.0	9.0	9.0	8.5	6.4	5.6	6.5	7.6	7.3	12.9	13.2	9.9	12.4	10.7	11.4	11.2	11.1	11.9	**9.4**	**13.2**	**5.6**
20	11.2	12.9	12.5	13.3	15.1	14.7	14.4	13.1	5.7	4.5	4.9	5.9	6.7	11.1	13.1	15.9	15.5	16.0	15.4	16.5	16.7	12.0	4.0	5.5	**11.5**	**16.7**	**4.0**
21	4.7	4.4	4.6	4.7	4.2	4.2	4.6	4.8	5.5	5.3	7.0	8.9	11.5	9.8	9.9	9.9	8.0	7.7	7.9	8.9	11.6	14.9	13.7	12.9	**7.9**	**14.9**	**4.2**
22	12.5	14.1	6.0	4.3	4.1	3.8	5.8	5.7	6.0	5.5	5.8	5.5	7.3	7.7	8.3	8.3	8.9	10.9	11.0	10.4	10.5	8.8	6.3	5.5	**7.6**	**14.1**	**3.8**
23	5.7	6.4	6.4	6.1	6.3	6.5	6.6	7.3	7.5	7.0	7.0	6.4	7.2	7.0	7.0	8.2	8.6	9.4	7.9	7.4	6.8	7.3	6.9	7.3	**7.0**	**9.4**	**5.7**
24	7.8	6.7	5.9	5.9	7.9	6.1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
25	---	---	---	---	---	---	3.6	4.3	3.4	4.4	6.4	5.9	5.7	4.8	4.9	4.7	6.0	5.1	6.8	7.7	6.0	7.2	8.4	---	**---**	**---**	**---**
26	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
27	---	---	---	---	---	---	5.6	3.5	3.3	3.7	3.8	5.6	5.2	5.3	7.2	5.3	5.6	5.3	5.0	5.3	6.2	4.1	3.0	2.6	**4.7**	**7.2**	**2.6**
28	3.5	4.9	4.8	4.3	5.2	5.2	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
29	---	---	---	---	---	---	7.9	8.6	8.7	6.9	8.2	9.2	10.0	10.9	8.9	7.9	5.6	4.3	4.8	5.7	4.8	4.2	4.8	5.6	**7.0**	**10.9**	**4.2**
30	6.3	5.8	5.8	6.5	7.6	9.5	9.4	8.7	6.7	5.9	7.6	6.3	7.4	8.2	8.2	10.8	11.4	10.7	9.7	9.9	9.9	9.5	5.5	3.9	**7.9**	**11.4**	**3.9**
MEAN	**7.6**	**7.6**	**7.0**	**7.2**	**7.4**	**7.8**	**8.5**	**8.8**	**8.2**	**8.2**	**8.3**	**8.0**	**8.4**	**8.6**	**8.3**	**8.6**	**8.6**	**8.7**	**8.8**	**9.0**	**8.8**	**8.5**	**7.6**	**7.3**	**8.2**		
MAX	**14.0**	**14.3**	**13.9**	**13.3**	**15.1**	**14.7**	**17.3**	**19.3**	**16.9**	**18.9**	**19.9**	**16.1**	**18.1**	**16.4**	**15.8**	**15.9**	**16.0**	**16.3**	**16.9**	**16.5**	**16.7**	**14.9**	**13.7**	**12.9**		**19.9**	
MIN	**2.5**	**2.2**	**2.1**	**2.0**	**2.0**	**1.8**	**2.4**	**2.8**	**2.9**	**2.9**	**2.2**	**2.1**	**2.2**	**2.0**	**2.1**	**2.2**	**2.2**	**2.6**	**3.6**	**3.9**	**4.4**	**3.6**	**3.0**	**2.6**			**1.8**

POSSIBLE NUMBER OF OBSERVATIONS = 720 ACTUAL NUMBER OF OBSERVATIONS = 641 DATA RECOVERY RATE = 89.0% DATA CAPTURE RATE = 86.7%

MONTHLY MEAN = 8.2 µg/m3

MAXIMUM PM2.5 = 19.9 µg/m3 DATE OF OCCURRENCE = 9/11 at 1100 MAXIMUM DAILY MEAN = 15.0 µg/m3 DATE OF OCCURRENCE = 9/11

SECOND MAXIMUM PM2.5 = 19.3 µg/m3 DATE OF OCCURRENCE = 9/12 at 800 SECOND MAXIMUM DAILY MEAN = 12.6 µg/m3 DATE OF OCCURRENCE = 9/15

MINIMUM PM2.5 = 1.8 µg/m3 DATE OF OCCURRENCE = 9/8 at 600 MINUMUM DAILY MEAN = 3.1 µg/m3 DATE OF OCCURRENCE = 9/8

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

CSX AQ3 Modulair

HOURLY AVERAGES of PM10 in µg/m3 for JULY, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	13.9	11.7	10.1	7.1	6.1	6.8	9.3	10.7	18.0	15.0	13.2	10.3	9.3	12.1	10.7	6.4	6.2	9.6	13.4	10.7	8.9	9.7	11.2	9.9	**10.4**	**18.0**	**6.1**
2	8.6	6.9	9.2	11.0	11.7	12.3	14.9	19.1	19.7	13.8	15.2	23.2	16.9	13.2	---	---	13.0	---	---	19.9	28.3	15.7	14.8	11.6	**15.0**	**28.3**	**6.9**
3	10.4	9.4	12.7	15.2	15.6	20.5	17.4	18.9	17.6	17.1	24.6	23.1	23.0	43.6	47.6	---	---	---	---	35.6	19.5	21.7	22.3	24.1	**22.0**	**47.6**	**9.4**
4	22.6	22.1	21.2	23.8	21.4	28.0	28.1	19.5	20.5	34.0	36.0	39.8	35.3	36.1	35.4	33.8	34.4	36.2	31.3	26.8	24.9	31.7	56.2	40.6	**30.8**	**56.2**	**19.5**
5	49.0	54.6	61.2	37.9	30.1	26.4	25.7	22.8	21.8	29.2	28.8	28.6	24.4	24.3	31.8	39.5	36.0	37.7	37.1	34.4	34.4	33.8	37.8	35.2	**34.3**	**61.2**	**21.8**
6	32.2	31.5	29.9	23.7	23.2	20.9	23.6	25.7	19.9	17.6	17.0	14.9	---	---	---	---	---	36.2	24.0	28.0	26.9	38.2	26.6	24.7	**25.5**	**38.2**	**14.9**
7	20.2	15.4	16.8	15.3	15.6	15.7	16.1	15.8	15.6	14.0	14.4	15.6	13.4	18.1	21.3	23.8	21.6	22.8	21.9	19.7	35.7	30.9	47.3	72.1	**22.5**	**72.1**	**13.4**
8	27.3	24.5	19.9	18.8	18.4	25.0	33.5	24.4	23.8	44.7	37.8	33.3	25.9	24.9	24.5	33.4	31.2	39.0	36.2	30.2	21.3	22.5	21.8	21.7	**27.7**	**44.7**	**18.4**
9	21.3	18.6	18.2	18.0	19.2	18.4	20.4	27.0	19.7	24.7	40.2	35.0	35.8	37.1	55.1	57.9	19.8	26.7	25.3	25.4	22.7	23.0	23.4	22.5	**27.3**	**57.9**	**18.0**
10	20.7	23.7	23.6	23.8	20.1	19.2	20.4	20.4	21.0	21.6	27.5	30.2	38.2	35.5	40.5	39.5	34.8	43.7	24.2	21.9	26.4	28.1	19.9	14.2	**26.6**	**43.7**	**14.2**
11	20.3	27.5	19.3	13.1	11.5	10.4	11.8	9.8	7.4	7.2	6.7	8.6	9.7	9.4	12.2	11.8	10.9	13.6	15.3	16.0	9.4	11.0	9.8	9.2	**12.2**	**27.5**	**6.7**
12	14.4	13.1	15.4	15.7	15.3	14.5	16.5	13.6	17.3	18.4	17.4	14.5	22.2	16.1	14.3	14.6	10.0	11.2	10.2	9.4	8.7	8.0	7.7	6.8	**13.6**	**22.2**	**6.8**
13	5.8	5.7	7.4	6.8	8.9	8.2	8.3	10.6	8.9	15.1	14.2	13.1	12.0	15.5	14.1	12.3	12.0	21.7	19.7	16.6	9.0	8.0	8.7	6.9	**11.2**	**21.7**	**5.7**
14	7.9	8.0	7.6	7.4	9.6	15.6	14.8	11.7	13.8	14.7	18.0	21.3	24.1	41.6	81.6	32.1	21.8	21.7	23.3	24.2	21.5	22.0	20.0	18.8	**21.0**	**81.6**	**7.4**
15	19.9	20.3	23.1	22.5	25.2	25.2	24.5	28.8	31.1	31.8	26.3	25.2	---	---	---	---	---	48.0	29.9	23.4	24.4	26.0	22.8	20.9	**26.3**	**48.0**	**19.9**
16	21.6	22.7	24.4	26.4	24.3	27.2	27.4	34.2	39.4	49.9	36.8	---	---	---	---	38.0	28.9	29.7	29.0	26.9	28.2	43.8	31.9	30.0	**31.0**	**49.9**	**21.6**
17	26.0	29.7	32.2	27.9	28.8	24.7	26.4	24.9	25.6	22.3	24.3	21.5	18.7	18.3	35.8	47.0	32.9	28.5	33.3	27.5	27.4	28.3	25.6	23.2	**27.5**	**47.0**	**18.3**
18	25.9	23.6	25.8	22.4	24.5	20.2	20.0	16.4	17.1	19.5	20.7	20.7	19.5	19.8	18.8	22.7	20.9	22.8	20.0	21.3	21.3	22.0	21.8	22.8	**21.3**	**25.9**	**16.4**
19	28.2	28.6	30.5	23.4	22.3	18.4	18.1	19.6	14.8	12.6	13.9	18.2	21.6	23.4	35.0	24.7	18.7	23.7	37.1	27.6	25.7	21.4	22.5	22.7	**23.0**	**37.1**	**12.6**
20	19.1	19.2	21.3	20.9	21.7	22.7	24.7	29.8	28.0	25.3	24.7	22.9	19.7	21.1	18.4	21.5	25.3	20.6	19.1	30.3	20.4	23.6	21.1	19.8	**22.6**	**30.3**	**18.4**
21	23.8	19.4	18.9	19.2	22.6	23.1	19.3	18.9	18.7	19.7	26.9	24.8	44.0	75.0	45.3	41.2	22.6	22.2	22.8	22.7	21.4	19.9	17.4	17.6	**26.1**	**75.0**	**17.4**
22	17.4	17.3	16.8	18.2	18.8	19.8	19.5	25.5	26.0	20.5	24.9	22.8	47.4	27.4	54.4	20.8	13.8	17.5	19.1	19.6	19.5	19.3	29.1	23.5	**23.3**	**54.4**	**13.8**
23	22.1	22.1	23.9	16.1	18.0	17.9	16.9	18.0	18.2	16.2	16.8	19.3	20.5	25.2	22.6	22.8	29.0	29.3	29.7	27.1	27.2	19.0	15.6	13.2	**21.1**	**29.7**	**13.2**
24	11.5	13.2	12.9	13.7	13.4	13.1	12.6	13.4	11.2	13.4	14.5	22.5	27.5	18.9	20.5	23.5	26.3	43.3	25.1	14.7	15.5	13.1	14.2	14.8	**17.6**	**43.3**	**11.2**
25	14.8	14.0	15.9	15.9	18.8	18.8	20.8	23.1	21.1	27.7	29.5	29.1	28.7	35.5	35.6	30.4	30.9	38.2	41.6	27.5	27.9	25.3	26.2	27.5	**26.0**	**41.6**	**14.0**
26	33.0	30.8	25.9	23.6	21.9	19.7	16.9	17.3	19.5	15.6	19.7	15.4	16.9	20.2	16.0	16.6	17.0	18.9	22.8	16.6	17.3	15.4	14.9	12.9	**19.4**	**33.0**	**12.9**
27	16.1	20.9	17.5	15.6	22.1	17.9	19.2	17.4	13.2	12.9	12.5	13.3	14.7	17.7	14.4	15.8	17.8	14.2	17.0	25.3	19.4	14.5	42.4	56.8	**19.5**	**56.8**	**12.5**
28	16.6	15.9	18.1	15.2	16.5	15.5	32.9	25.4	27.4	18.1	15.1	12.7	18.0	22.2	26.5	23.9	24.4	24.0	29.8	27.0	17.4	18.9	17.1	17.5	**20.7**	**32.9**	**12.7**
29	17.3	17.5	20.8	20.4	27.7	30.0	39.7	27.4	25.6	29.7	39.6	36.3	37.0	43.7	39.9	39.6	40.2	40.6	51.7	35.6	23.8	21.5	22.4	19.7	**31.2**	**51.7**	**17.3**
30	18.3	18.2	18.7	19.2	19.6	18.5	18.0	17.6	17.2	17.8	19.8	19.3	21.4	23.4	24.7	30.1	25.2	27.4	30.6	36.2	28.2	20.4	16.6	13.4	**21.7**	**36.2**	**13.4**
31	11.3	13.1	12.0	13.3	21.8	21.6	15.3	18.9	17.9	18.2	18.3	27.4	31.4	20.5	21.2	24.1	40.1	18.3	17.7	19.5	21.8	20.8	22.4	24.0	**20.5**	**40.1**	**11.3**
MEAN	**19.9**	**20.0**	**20.4**	**18.4**	**19.2**	**19.2**	**20.4**	**20.2**	**19.9**	**21.2**	**22.4**	**22.1**	**24.2**	**26.4**	**30.3**	**27.7**	**23.8**	**27.1**	**26.1**	**24.1**	**22.1**	**21.9**	**23.0**	**22.5**	**22.5**		
MAX	**49.0**	**54.6**	**61.2**	**37.9**	**30.1**	**30.0**	**39.7**	**34.2**	**39.4**	**49.9**	**40.2**	**39.8**	**47.4**	**75.0**	**81.6**	**57.9**	**40.2**	**48.0**	**51.7**	**36.2**	**35.7**	**43.8**	**56.2**	**72.1**		**81.6**	
MIN	**5.8**	**5.7**	**7.4**	**6.8**	**6.1**	**6.8**	**8.3**	**9.8**	**7.4**	**7.2**	**6.7**	**8.6**	**9.3**	**9.4**	**10.7**	**6.4**	**6.2**	**9.6**	**10.2**	**9.4**	**8.7**	**8.0**	**7.7**	**6.8**			**5.7**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 722 DATA RECOVERY RATE = 97.0% DATA CAPTURE RATE = 100.0%

MONTHLY MEAN = 22.5 µg/m3

MAXIMUM PM10 = 81.6 µg/m3 DATE OF OCCURRENCE = 7/14 at 1500 MAXIMUM DAILY MEAN = 34.3 µg/m3 DATE OF OCCURRENCE = 7/5

SECOND MAXIMUM PM10 = 75.0 µg/m3 DATE OF OCCURRENCE = 7/21 at 1400 SECOND MAXIMUM DAILY MEAN = 31.2 µg/m3 DATE OF OCCURRENCE = 7/29

MINIMUM PM10 = 5.7 µg/m3 DATE OF OCCURRENCE = 7/13 at 200 MINUMUM DAILY MEAN = 10.4 µg/m3 DATE OF OCCURRENCE = 7/1

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

CSX AQ3 Modulair

HOURLY AVERAGES of PM10 in µg/m3 for AUGUST, 2024

Hr Beg Hr End Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	25.5	23.5	22.9	23.0	23.0	23.6	28.8	39.1	---	---	---	---	45.0	30.9	36.2	43.5	43.2	29.9	34.2	29.9	27.7	28.2	29.4	27.8	**30.8**	**45.0**	**22.9**
2	33.1	29.7	29.2	28.5	35.2	35.9	34.9	28.0	29.7	---	---	---	---	---	---	---	---	---	32.1	65.5	90.3	48.3	22.0	23.9	**---**	**---**	**---**
3	25.3	29.4	28.1	33.3	28.4	25.8	20.6	22.2	20.0	20.1	24.8	21.0	---	---	30.2	39.2	24.0	44.8	38.5	27.1	20.6	23.4	26.2	23.3	**27.1**	**44.8**	**20.0**
4	21.0	27.5	26.6	24.8	30.6	31.1	25.2	18.2	15.3	15.3	13.4	13.0	13.7	13.5	9.2	9.9	17.5	7.1	10.4	14.5	12.5	13.4	13.8	20.6	**17.4**	**31.1**	**7.1**
5	21.8	17.7	22.3	24.7	27.6	26.3	24.1	19.0	26.9	36.1	35.6	46.0	37.8	26.8	56.0	29.9	25.0	21.8	20.6	26.7	22.3	20.4	22.8	20.6	**27.5**	**56.0**	**17.7**
6	20.3	20.1	19.6	18.8	18.1	21.2	21.9	24.6	28.2	29.4	---	---	---	39.1	31.4	32.3	30.9	17.5	11.2	16.4	19.2	8.6	7.8	10.7	**21.3**	**39.1**	**7.8**
7	11.5	7.4	9.1	12.0	12.8	15.3	21.4	17.0	13.0	10.6	15.2	13.6	18.9	26.9	9.8	16.1	12.9	14.0	20.6	8.5	14.3	19.6	10.3	10.8	**14.2**	**26.9**	**7.4**
8	12.0	10.4	13.6	16.3	27.4	19.3	13.4	13.2	16.8	20.7	18.7	13.4	19.0	20.1	32.7	47.4	58.7	54.4	45.1	73.9	87.5	86.9	74.5	71.8	**36.1**	**87.5**	**10.4**
9	66.2	81.7	64.5	71.8	64.2	54.6	37.2	51.8	53.4	39.5	13.9	12.5	9.7	15.0	6.7	9.5	10.9	12.1	13.6	13.5	13.2	16.6	19.9	20.9	**32.2**	**81.7**	**6.7**
10	18.3	27.8	27.9	38.3	35.6	34.8	28.4	27.2	27.4	21.9	25.8	22.7	21.5	22.4	21.9	23.7	23.2	19.6	22.1	21.1	21.8	21.8	21.6	17.6	**24.8**	**38.3**	**17.6**
11	15.6	15.3	15.4	11.9	11.1	17.5	18.0	17.0	12.1	11.8	11.2	11.7	11.5	11.7	10.2	12.3	12.6	12.7	17.4	20.2	19.1	18.4	25.7	22.1	**15.1**	**25.7**	**10.2**
12	22.1	17.4	18.9	17.0	18.9	15.7	19.6	21.3	16.7	15.1	17.9	13.4	13.6	13.4	13.7	16.4	13.7	22.0	15.9	13.9	14.7	13.0	12.6	16.5	**16.4**	**22.1**	**12.6**
13	16.7	14.9	11.8	12.3	14.2	19.2	29.1	31.0	19.5	20.8	25.1	20.4	25.9	20.6	17.8	15.3	13.9	22.6	16.2	26.7	20.0	26.8	23.9	21.6	**20.3**	**31.0**	**11.8**
14	18.9	16.8	16.6	18.3	16.9	26.5	38.0	34.6	29.2	39.2	41.7	42.4	35.9	32.8	38.9	34.6	30.9	29.9	29.5	25.9	30.9	27.6	27.1	26.1	**29.6**	**42.4**	**16.6**
15	24.2	23.0	23.7	19.6	19.7	19.9	32.2	29.7	28.3	27.9	28.1	24.6	---	---	33.8	33.7	36.0	41.7	32.1	25.3	25.7	33.6	23.8	24.6	**27.8**	**41.7**	**19.6**
16	48.3	28.4	24.5	23.9	26.2	56.4	98.8	72.1	95.3	45.8	41.4	37.0	37.6	42.7	42.2	31.5	32.6	29.1	26.0	27.4	23.2	23.1	23.6	25.1	**40.1**	**98.8**	**23.1**
17	24.6	35.4	52.0	25.2	37.7	36.4	42.2	26.1	23.5	29.8	32.5	28.7	27.6	29.5	29.8	37.3	35.7	37.9	30.7	14.8	18.4	22.0	24.7	27.7	**30.4**	**52.0**	**14.8**
18	34.4	30.1	33.0	27.2	25.7	26.0	15.6	15.2	17.8	21.1	20.9	21.8	22.4	25.9	28.0	26.2	26.9	24.4	22.9	38.0	70.8	68.6	61.4	45.0	**31.2**	**70.8**	**15.2**
19	33.5	33.3	33.7	38.4	39.6	38.2	30.3	18.3	13.6	10.8	8.4	8.1	7.0	7.5	14.0	7.8	8.1	7.7	8.1	8.8	8.9	9.2	11.5	8.3	**17.2**	**39.6**	**7.0**
20	8.7	6.2	7.7	6.8	7.8	11.4	12.4	13.8	12.1	12.5	13.1	14.8	23.2	23.5	19.5	21.8	16.0	11.6	9.0	10.4	18.8	21.2	13.9	7.7	**13.5**	**23.5**	**6.2**
21	9.6	10.6	9.3	10.2	10.3	12.2	9.0	18.2	14.1	16.6	11.9	11.3	12.7	9.8	10.6	10.4	8.0	8.3	11.8	10.2	11.5	24.3	14.2	14.3	**12.1**	**24.3**	**8.0**
22	11.9	15.0	16.7	11.3	12.8	13.4	14.9	20.4	15.5	11.9	12.1	12.5	15.2	12.4	20.0	9.4	13.2	17.7	27.0	14.8	16.3	39.2	75.0	---	**18.6**	**75.0**	**9.4**
23	---	14.4	19.5	16.4	40.2	21.3	27.2	22.6	16.3	15.9	16.7	23.4	23.9	24.0	20.9	26.1	29.2	31.6	18.0	16.6	15.8	19.2	18.6	45.5	**22.8**	**45.5**	**14.4**
24	17.5	16.4	16.9	14.8	14.4	14.4	18.4	16.2	15.9	17.7	18.2	18.6	22.8	24.0	21.1	21.9	28.7	22.6	15.3	20.8	23.0	16.8	17.2	21.0	**18.9**	**28.7**	**14.4**
25	18.6	17.5	17.8	14.0	65.8	16.1	20.0	23.2	17.6	17.2	18.3	18.7	23.6	20.8	22.2	34.0	33.3	23.2	17.6	16.4	19.9	18.6	16.2	15.8	**21.9**	**65.8**	**14.0**
26	14.2	14.4	14.0	15.6	15.8	33.6	30.8	43.1	26.2	32.1	51.8	61.3	37.7	44.8	40.5	56.3	17.1	11.9	13.0	15.9	20.0	24.4	31.4	35.9	**29.2**	**61.3**	**11.9**
27	30.9	33.3	35.0	29.8	25.6	26.8	31.3	40.4	32.6	35.3	43.8	46.5	34.4	30.4	29.2	41.4	37.5	25.9	25.8	22.2	23.6	23.8	24.3	22.6	**31.4**	**46.5**	**22.2**
28	25.1	23.8	22.8	25.9	21.6	25.9	32.7	35.5	34.9	31.5	---	---	---	---	---	---	---	29.0	31.3	---	35.3	30.8	31.2	31.5	**---**	**---**	**---**
29	23.6	17.5	18.7	16.3	26.0	24.0	26.7	28.8	25.0	28.3	25.9	31.6	43.3	44.9	34.5	44.3	57.1	58.0	50.4	35.3	34.6	37.3	65.0	80.6	**36.6**	**80.6**	**16.3**
30	94.6	56.1	52.6	76.1	69.7	63.0	48.4	54.8	65.9	50.7	49.9	66.2	66.0	49.0	36.2	44.0	44.9	38.9	36.5	39.3	20.8	17.3	25.4	37.5	**50.2**	**94.6**	**17.3**
31	52.6	59.1	63.6	59.6	53.0	50.3	46.4	38.8	24.7	21.0	16.1	21.4	20.6	19.2	19.4	18.5	14.6	14.6	13.0	12.9	14.4	14.4	12.8	12.0	**28.9**	**63.6**	**12.0**
MEAN	**26.7**	**25.0**	**25.4**	**25.2**	**28.3**	**27.6**	**29.0**	**28.4**	**26.3**	**24.4**	**24.2**	**25.1**	**25.8**	**25.2**	**25.4**	**27.4**	**26.1**	**24.8**	**23.1**	**23.8**	**26.3**	**26.3**	**26.7**	**26.3**	**26.0**		
MAX	**94.6**	**81.7**	**64.5**	**76.1**	**69.7**	**63.0**	**98.8**	**72.1**	**95.3**	**50.7**	**51.8**	**66.2**	**66.0**	**49.0**	**56.0**	**56.3**	**58.7**	**58.0**	**50.4**	**73.9**	**90.3**	**86.9**	**75.0**	**80.6**		**98.8**	
MIN	**8.7**	**6.2**	**7.7**	**6.8**	**7.8**	**11.4**	**9.0**	**13.2**	**12.1**	**10.6**	**8.4**	**8.1**	**7.0**	**7.5**	**6.7**	**7.8**	**8.0**	**7.1**	**8.1**	**8.5**	**8.9**	**8.6**	**7.8**	**7.7**			**6.2**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 714 DATA RECOVERY RATE = 96.0% DATA CAPTURE RATE = 93.5%

MONTHLY MEAN = 26.0 µg/m3

MAXIMUM PM10 = 98.8 µg/m3 DATE OF OCCURRENCE = 8/16 at 700 MAXIMUM DAILY MEAN = 50.2 µg/m3 DATE OF OCCURRENCE = 8/30

SECOND MAXIMUM PM10 = 95.3 µg/m3 DATE OF OCCURRENCE = 8/16 at 900 SECOND MAXIMUM DAILY MEAN = 40.1 µg/m3 DATE OF OCCURRENCE = 8/16

MINIMUM PM10 = 6.2 µg/m3 DATE OF OCCURRENCE = 8/20 at 200 MINUMUM DAILY MEAN = 12.1 µg/m3 DATE OF OCCURRENCE = 8/21

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

CSX AQ3 Modulair

HOURLY AVERAGES of PM10 in µg/m3 for SEPTEMBER, 2024

Hr Beg Hr End Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	12.3	12.5	13.3	13.6	15.0	16.7	13.5	14.1	12.9	12.3	10.6	12.1	13.5	14.3	13.2	12.6	13.9	17.1	15.0	17.3	14.3	13.4	12.7	12.6	**13.7**	**17.3**	**10.6**
2	12.5	12.3	14.4	18.6	20.4	20.8	22.3	20.1	16.6	14.2	12.7	13.2	13.3	9.1	11.1	9.2	8.8	9.4	8.5	8.5	10.2	10.4	8.4	8.6	**13.1**	**22.3**	**8.4**
3	11.3	8.8	8.2	6.7	6.4	10.5	21.5	14.1	16.4	13.4	15.5	17.9	17.5	12.4	13.2	25.5	27.7	17.1	17.1	27.5	17.2	18.9	26.2	19.4	**16.3**	**27.7**	**6.4**
4	19.0	19.0	17.4	18.7	14.7	17.4	37.0	38.0	19.6	19.4	26.2	16.0	19.0	28.8	30.4	64.0	62.0	37.8	22.9	23.7	36.3	44.6	23.6	30.9	**28.6**	**64.0**	**14.7**
5	27.7	22.5	25.4	24.9	31.4	35.4	83.2	61.5	---	45.5	71.8	---	64.7	43.6	33.9	48.2	48.2	35.4	30.1	30.6	29.6	32.5	41.2	50.2	**41.7**	**83.2**	**22.5**
6	66.0	65.0	64.5	67.5	82.1	87.6	68.6	46.2	56.7	47.0	46.4	37.3	22.1	29.1	29.7	29.3	17.7	28.6	27.0	21.7	39.8	22.2	24.8	25.5	**43.9**	**87.6**	**17.7**
7	26.6	25.1	22.3	26.0	44.6	39.2	26.2	21.0	18.9	18.4	21.3	40.7	17.8	9.1	9.1	9.8	12.7	12.3	11.0	14.3	12.0	12.0	10.2	6.8	**19.5**	**44.6**	**6.8**
8	4.3	5.4	5.3	7.9	5.5	4.9	5.8	6.0	5.5	5.2	6.7	13.5	5.6	6.3	7.8	7.0	7.6	11.8	8.6	13.2	13.4	12.4	29.8	18.7	**9.1**	**29.8**	**4.3**
9	24.1	7.9	8.7	11.3	12.9	32.3	16.7	17.8	13.1	9.6	8.8	7.8	12.6	12.5	17.7	26.2	10.3	10.7	15.7	15.2	14.9	15.9	18.1	18.0	**15.0**	**32.3**	**7.8**
10	11.4	11.2	15.1	22.6	11.2	9.7	10.7	17.5	18.2	24.9	27.4	25.0	24.1	26.4	25.6	19.6	19.9	36.0	39.8	43.6	26.7	66.1	52.2	55.7	**26.7**	**66.1**	**9.7**
11	29.2	35.5	27.8	38.7	33.3	50.9	50.0	33.5	30.9	30.0	29.8	30.4	27.7	22.9	24.7	23.0	34.2	46.0	44.7	76.5	58.2	24.6	27.0	22.8	**35.5**	**76.5**	**22.8**
12	22.7	28.6	22.2	29.3	30.0	39.1	57.2	44.4	26.4	25.8	24.7	25.8	21.8	17.0	22.2	21.2	17.6	25.4	33.5	40.5	27.3	25.3	22.4	32.2	**28.4**	**57.2**	**17.0**
13	28.9	30.9	36.3	38.5	35.3	42.5	30.3	43.1	38.0	42.3	43.2	23.0	31.9	29.2	24.7	29.2	18.8	18.8	18.4	88.1	54.3	32.4	40.9	29.7	**35.4**	**88.1**	**18.4**
14	26.7	31.2	28.4	33.7	37.2	29.6	31.2	23.1	16.2	17.7	22.2	28.5	26.7	32.9	24.2	39.7	43.9	34.1	27.3	32.5	34.6	29.5	16.3	23.4	**28.8**	**43.9**	**16.2**
15	23.0	22.2	18.7	25.4	21.3	23.4	26.7	26.0	21.3	22.1	23.5	21.6	21.9	34.9	62.2	68.0	62.4	38.3	56.6	56.4	40.9	39.6	30.5	37.3	**34.3**	**68.0**	**18.7**
16	41.0	39.1	34.5	35.3	41.6	40.9	41.0	47.5	42.1	49.2	55.1	31.4	36.6	36.2	28.8	41.5	49.1	40.5	48.1	68.2	51.3	53.7	47.5	49.9	**43.8**	**68.2**	**28.8**
17	50.0	55.4	62.4	70.2	72.7	69.8	81.5	76.0	78.2	58.1	51.1	51.2	54.0	50.0	56.1	41.1	39.5	49.0	45.6	47.0	39.1	41.6	38.7	37.8	**54.8**	**81.5**	**37.8**
18	36.3	38.9	42.9	26.7	14.8	23.6	21.8	29.5	34.2	38.6	21.5	26.5	27.0	24.4	26.2	28.5	32.9	23.1	29.1	27.3	33.4	34.8	33.8	30.3	**29.4**	**42.9**	**14.8**
19	28.0	29.0	28.0	32.3	30.1	29.7	31.8	30.9	31.8	24.8	16.8	21.1	18.8	15.2	14.5	24.0	25.4	20.6	169.1	26.5	24.8	23.4	23.7	22.2	**30.9**	**169.1**	**14.5**
20	23.0	23.9	20.3	20.5	31.6	37.3	32.7	24.1	20.5	30.7	22.0	16.6	15.9	24.4	24.0	27.8	31.4	29.1	26.5	30.8	30.8	25.3	22.6	33.5	**26.1**	**37.3**	**15.9**
21	21.4	15.8	13.2	14.4	13.0	18.0	22.8	17.1	17.8	16.5	20.7	20.6	18.5	19.5	19.2	23.3	22.4	22.5	26.1	29.0	27.6	50.8	54.2	46.8	**23.8**	**54.2**	**13.0**
22	49.1	128.4	27.6	27.3	24.7	11.3	26.5	29.8	20.3	12.4	12.3	13.7	13.7	13.3	17.4	17.1	15.4	14.0	15.3	20.8	19.3	28.7	29.6	33.5	**25.9**	**128.4**	**11.3**
23	40.8	49.0	49.2	46.6	44.7	48.6	53.2	65.9	56.1	52.4	48.1	41.3	40.0	33.3	34.0	29.9	28.5	42.6	44.2	40.7	40.9	54.6	51.2	56.8	**45.5**	**65.9**	**28.5**
24	50.4	41.2	46.9	41.8	44.8	52.2	56.4	44.7	50.9	48.4	53.0	50.3	43.6	47.2	57.2	61.8	58.3	51.9	47.8	42.3	39.4	39.8	41.2	47.4	**48.3**	**61.8**	**39.4**
25	41.0	40.3	43.3	53.3	54.2	46.8	27.3	19.7	27.2	31.2	39.8	43.0	41.2	25.7	19.3	33.9	39.3	---	---	---	---	---	---	---	**---**	**---**	**---**
26	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	25.2	29.6	47.6	25.4	26.2	29.7	**---**	**---**	**---**
27	29.9	28.8	41.7	38.3	53.9	---	119.7	8.4	8.7	13.0	13.3	27.6	26.9	29.5	30.0	27.4	---	---	---	---	---	---	---	---	**---**	**---**	**---**
28	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
29	---	---	---	---	---	---	33.0	27.3	26.0	18.4	17.0	18.4	18.5	19.6	18.7	15.0	11.1	9.8	19.9	20.2	20.6	19.2	20.1	16.3	**19.4**	**33.0**	**9.8**
30	19.1	13.0	17.1	22.7	32.3	47.0	37.7	29.9	27.0	23.2	19.4	19.9	19.3	18.1	16.1	18.2	23.8	27.7	25.0	24.5	21.7	22.7	26.3	21.9	**23.9**	**47.0**	**13.0**
MEAN	**28.7**	**31.1**	**28.0**	**30.1**	**31.8**	**34.0**	**38.8**	**31.3**	**27.8**	**27.3**	**27.9**	**25.7**	**25.5**	**24.5**	**25.4**	**29.4**	**29.0**	**27.3**	**33.3**	**33.9**	**30.6**	**30.4**	**29.6**	**30.3**	**29.6**		
MAX	**66.0**	**128.4**	**64.5**	**70.2**	**82.1**	**87.6**	**119.7**	**76.0**	**78.2**	**58.1**	**71.8**	**51.2**	**64.7**	**50.0**	**62.2**	**68.0**	**62.4**	**51.9**	**169.1**	**88.1**	**58.2**	**66.1**	**54.2**	**56.8**		**169.1**	
MIN	**4.3**	**5.4**	**5.3**	**6.7**	**5.5**	**4.9**	**5.8**	**6.0**	**5.5**	**5.2**	**6.7**	**7.8**	**5.6**	**6.3**	**7.8**	**7.0**	**7.6**	**9.4**	**8.5**	**8.5**	**10.2**	**10.4**	**8.4**	**6.8**			**4.3**

POSSIBLE NUMBER OF OBSERVATIONS = 720 ACTUAL NUMBER OF OBSERVATIONS = 654 DATA RECOVERY RATE = 90.8% DATA CAPTURE RATE = 86.7%

MONTHLY MEAN = 29.6 µg/m3

MAXIMUM PM10 = 169.1 µg/m3 DATE OF OCCURRENCE = 9/19 at 1900 MAXIMUM DAILY MEAN = 54.8 µg/m3 DATE OF OCCURRENCE = 9/17

SECOND MAXIMUM PM10 = 128.4 µg/m3 DATE OF OCCURRENCE = 9/22 at 200 SECOND MAXIMUM DAILY MEAN = 48.3 µg/m3 DATE OF OCCURRENCE = 9/24

MINIMUM PM10 = 4.3 µg/m3 DATE OF OCCURRENCE = 9/8 at 100 MINUMUM DAILY MEAN = 9.1 µg/m3 DATE OF OCCURRENCE = 9/8

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

CSX AQ3 Modulair

HOURLY AVERAGES of PM2.5 in µg/m3 for JULY, 2024

Hr Beg Hr End Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	4.1	3.9	3.1	2.3	2.0	2.3	2.5	2.4	2.4	1.9	1.5	1.6	1.5	1.7	1.7	2.0	2.4	3.2	3.9	4.1	4.2	4.4	4.9	4.9	**2.8**	**4.9**	**1.5**
2	4.4	4.0	4.3	4.5	5.1	5.5	5.9	6.7	6.3	6.0	6.0	7.7	6.5	5.4	---	---	4.6	---	---	9.1	9.8	8.1	7.3	4.7	**6.0**	**9.8**	**4.0**
3	5.0	4.8	5.3	5.4	5.7	5.9	5.9	6.1	6.0	4.8	6.6	5.7	7.5	10.7	12.8	---	14.4	---	---	8.7	6.4	6.3	10.6	6.9	**7.2**	**14.4**	**4.8**
4	6.5	6.1	6.0	6.4	6.7	7.1	7.8	9.6	13.2	17.2	21.2	24.9	24.2	25.1	26.6	26.5	27.3	28.1	24.6	23.8	21.5	29.2	51.6	37.5	**19.9**	**51.6**	**6.0**
5	45.2	50.5	54.9	33.0	25.1	20.3	18.5	17.0	17.0	20.3	21.8	20.6	19.9	18.3	20.3	22.7	23.3	25.2	25.6	26.5	25.0	24.4	26.3	23.4	**26.0**	**54.9**	**17.0**
6	21.7	22.6	22.8	20.5	18.4	16.3	16.3	17.2	15.4	13.0	13.3	12.2	---	---	---	---	---	18.9	15.7	18.6	18.5	19.4	19.3	20.6	**17.9**	**22.8**	**12.2**
7	14.7	10.9	12.1	10.9	10.5	10.0	9.6	9.3	9.0	8.9	8.3	9.0	8.9	10.3	11.0	11.6	12.6	11.9	13.2	12.6	16.0	15.3	16.2	17.8	**11.6**	**17.8**	**8.3**
8	14.7	15.4	12.6	11.9	12.2	12.7	14.5	12.3	13.4	20.1	30.2	25.8	17.6	13.7	12.7	16.4	19.0	23.0	22.3	18.5	15.8	16.0	17.1	16.8	**16.8**	**30.2**	**11.9**
9	15.8	14.1	13.6	13.7	13.7	13.5	14.0	16.2	16.0	16.7	20.8	20.1	20.9	19.2	19.3	9.6	9.1	12.1	13.9	16.9	15.8	14.0	11.9	10.3	**15.0**	**20.9**	**9.1**
10	10.0	9.4	9.7	10.0	10.2	10.2	10.7	11.0	12.2	14.2	15.9	15.4	14.1	13.0	12.7	12.1	10.3	11.0	8.3	7.6	7.7	7.5	7.4	6.8	**10.7**	**15.9**	**6.8**
11	6.2	3.7	3.3	3.4	4.1	4.7	4.9	4.8	3.9	3.3	2.4	2.7	3.3	3.9	4.5	5.0	4.9	5.1	5.1	5.2	5.1	5.4	5.3	5.7	**4.4**	**6.2**	**2.4**
12	6.8	8.3	7.4	7.6	7.4	8.0	8.8	7.8	8.3	8.5	9.8	8.7	9.6	9.6	8.9	9.5	7.7	7.1	6.5	6.0	5.7	4.5	3.2	2.7	**7.4**	**9.8**	**2.7**
13	2.0	1.7	2.2	2.2	2.4	2.5	2.8	3.1	4.5	9.2	7.6	7.3	8.4	8.6	8.4	8.0	7.3	7.7	5.6	5.7	4.8	5.2	5.0	4.1	**5.2**	**9.2**	**1.7**
14	4.3	4.3	4.7	5.1	5.8	6.3	6.9	8.3	9.5	10.5	13.8	17.9	19.0	18.7	21.6	16.2	17.2	15.3	16.2	16.4	14.4	13.6	13.3	12.8	**12.1**	**21.6**	**4.3**
15	14.5	16.4	18.2	18.3	18.2	17.7	18.9	21.4	21.0	18.7	17.5	16.9	---	---	---	---	---	23.3	20.1	16.4	16.2	17.1	15.9	14.7	**17.9**	**23.3**	**14.5**
16	15.0	16.5	17.8	17.9	17.7	17.7	18.6	22.0	22.8	25.6	23.1	---	---	---	---	26.4	20.2	19.5	20.1	20.5	21.4	22.9	7.3	9.0	**19.1**	**26.4**	**7.3**
17	9.1	11.3	11.6	10.3	11.5	12.4	12.6	13.1	14.6	13.0	13.2	13.0	10.8	10.5	16.5	21.1	16.9	14.2	14.8	13.0	12.0	11.7	12.8	11.1	**12.9**	**21.1**	**9.1**
18	11.1	11.0	10.9	10.1	8.5	7.6	7.7	8.0	9.6	10.4	11.1	12.2	12.9	13.1	13.4	14.4	15.1	15.6	15.0	15.5	15.9	16.2	15.6	16.3	**12.3**	**16.3**	**7.6**
19	17.8	17.9	17.0	15.4	12.4	10.1	9.4	9.0	7.3	6.6	7.2	8.5	8.0	7.6	8.4	8.0	9.4	11.5	15.5	14.1	14.6	13.7	13.8	14.0	**11.5**	**17.9**	**6.6**
20	12.3	10.9	10.0	9.8	9.2	9.2	9.9	10.6	10.1	10.3	11.2	11.9	12.5	13.6	13.3	13.0	12.4	12.3	12.2	13.1	11.9	16.9	13.1	12.9	**11.7**	**16.9**	**9.2**
21	12.8	12.1	11.8	12.3	12.3	12.6	12.7	13.0	14.3	13.1	17.6	16.9	18.4	20.2	18.2	19.0	17.4	16.8	16.7	16.7	16.3	14.5	13.3	13.2	**15.0**	**20.2**	**11.8**
22	12.7	12.7	12.7	12.8	12.5	12.1	11.9	12.2	12.1	11.0	8.3	8.9	9.3	9.4	7.8	7.4	5.1	8.7	9.1	6.7	6.9	7.2	10.4	5.6	**9.7**	**12.8**	**5.1**
23	4.8	4.0	4.3	3.1	2.8	3.1	5.8	9.1	11.0	10.6	12.3	13.8	15.6	17.8	16.9	15.4	16.4	19.8	17.2	17.0	16.4	12.4	9.4	6.5	**11.0**	**19.8**	**2.8**
24	6.1	5.7	5.7	5.4	4.9	5.1	5.9	6.4	6.7	8.4	9.5	15.3	17.0	11.7	12.3	13.8	13.8	14.9	9.5	9.1	7.1	6.7	7.4	8.2	**9.0**	**17.0**	**4.9**
25	8.4	8.5	9.4	9.0	9.3	9.4	9.5	10.6	13.5	19.2	20.7	22.1	22.8	25.6	25.4	24.3	25.1	25.7	25.0	21.1	18.3	17.0	18.1	18.3	**17.3**	**25.7**	**8.4**
26	20.7	20.6	14.6	12.4	10.5	8.5	7.5	6.9	6.6	6.7	7.0	6.7	7.2	7.6	7.4	8.5	9.5	9.2	9.1	8.3	8.9	9.5	9.3	8.4	**9.6**	**20.7**	**6.6**
27	10.2	10.1	10.2	10.0	9.6	9.1	8.0	7.4	7.3	7.7	7.1	6.7	7.3	7.1	7.3	7.3	7.9	7.3	8.1	8.6	8.3	8.6	12.5	14.2	**8.6**	**14.2**	**6.7**
28	11.7	10.8	11.0	10.5	10.1	10.1	11.5	13.5	12.5	11.6	10.6	9.6	11.2	13.7	13.7	14.2	13.9	15.3	15.0	13.7	12.9	13.4	13.4	13.0	**12.3**	**15.3**	**9.6**
29	12.9	13.2	13.1	13.2	13.6	13.9	14.9	16.3	17.5	19.6	22.4	22.3	23.6	23.8	22.7	23.9	26.5	25.3	17.5	11.3	11.9	11.2	11.1	10.6	**17.1**	**26.5**	**10.6**
30	9.9	8.8	9.4	9.9	10.3	10.7	11.3	11.2	11.1	11.1	11.0	11.8	13.4	16.1	16.3	17.2	17.0	18.1	19.0	17.6	13.7	11.6	7.9	5.8	**12.5**	**19.0**	**5.8**
31	5.1	5.1	5.2	6.0	7.2	7.4	6.7	8.3	8.9	10.8	11.7	13.9	13.1	12.0	12.5	13.5	12.9	12.4	12.9	14.6	15.2	15.2	15.3	15.5	**10.8**	**15.5**	**5.1**
MEAN	**11.5**	**11.5**	**11.4**	**10.4**	**10.0**	**9.7**	**10.1**	**10.7**	**11.1**	**11.9**	**12.9**	**13.0**	**13.0**	**13.1**	**13.8**	**14.3**	**13.8**	**15.1**	**14.4**	**13.5**	**12.9**	**12.9**	**13.1**	**12.0**	**12.3**		
MAX	**45.2**	**50.5**	**54.9**	**33.0**	**25.1**	**20.3**	**18.9**	**22.0**	**22.8**	**25.6**	**30.2**	**25.8**	**24.2**	**25.6**	**26.6**	**26.5**	**27.3**	**28.1**	**25.6**	**26.5**	**25.0**	**29.2**	**51.6**	**37.5**		**54.9**	
MIN	**2.0**	**1.7**	**2.2**	**2.2**	**2.0**	**2.3**	**2.5**	**2.4**	**2.4**	**1.9**	**1.5**	**1.6**	**1.5**	**1.7**	**1.7**	**2.0**	**2.4**	**3.2**	**3.9**	**4.1**	**4.2**	**4.4**	**3.2**	**2.7**			**1.5**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 723 DATA RECOVERY RATE = 97.2% DATA CAPTURE RATE = 100.0%

MONTHLY MEAN = 12.3 µg/m3

MAXIMUM PM2.5 = 54.9 µg/m3 DATE OF OCCURRENCE = 7/5 at 300 MAXIMUM DAILY MEAN = 26.0 µg/m3 DATE OF OCCURRENCE = 7/5

SECOND MAXIMUM PM2.5 = 51.6 µg/m3 DATE OF OCCURRENCE = 7/4 at 2300 SECOND MAXIMUM DAILY MEAN = 19.9 µg/m3 DATE OF OCCURRENCE = 7/4

MINIMUM PM2.5 = 1.5 µg/m3 DATE OF OCCURRENCE = 7/1 at 1100 MINUMUM DAILY MEAN = 2.8 µg/m3 DATE OF OCCURRENCE = 7/1

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

CSX AQ3 Modulair

HOURLY AVERAGES of PM2.5 in µg/m3 for AUGUST, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	15.3	14.2	14.0	14.2	13.5	13.0	16.2	19.3	---	---	---	---	24.7	22.3	23.8	25.7	25.5	23.6	23.9	22.2	22.3	22.5	22.1	22.2	**20.0**	**25.7**	**13.0**
2	22.5	22.3	21.8	20.6	20.0	19.8	22.9	21.3	20.0	---	---	---	---	---	---	---	---	---	8.1	8.6	6.1	5.5	2.9	3.4	**---**	**---**	**---**
3	5.3	5.6	5.3	5.0	6.2	6.6	8.0	9.5	10.8	11.5	12.7	12.2	---	---	16.0	17.5	9.6	10.7	6.3	4.7	3.7	4.1	4.3	4.5	**8.1**	**17.5**	**3.7**
4	4.9	5.6	5.9	5.9	5.9	6.3	6.3	6.5	7.1	7.6	8.3	8.5	8.2	7.9	6.4	7.0	5.8	3.6	6.0	7.9	7.3	7.2	7.2	8.1	**6.7**	**8.5**	**3.6**
5	8.2	8.2	8.4	8.4	8.5	9.3	9.7	11.8	16.3	18.0	20.3	20.4	19.8	17.8	20.4	16.8	15.7	14.6	14.5	22.1	15.9	15.3	15.0	14.7	**14.5**	**22.1**	**8.2**
6	14.0	13.3	12.7	12.2	12.0	12.1	13.6	16.1	18.5	21.4	---	---	---	24.5	16.8	10.0	6.5	5.2	4.8	4.5	5.4	3.2	2.4	3.2	**11.0**	**24.5**	**2.4**
7	3.7	3.3	3.1	4.2	4.2	4.9	6.1	5.7	4.9	5.2	6.2	7.1	7.2	10.4	5.4	4.5	3.8	4.3	3.6	3.7	5.9	6.0	2.8	1.5	**4.9**	**10.4**	**1.5**
8	2.2	3.0	3.8	3.1	2.6	3.0	3.8	4.4	5.1	6.5	6.8	6.1	4.9	5.7	8.6	10.5	11.0	11.3	10.5	12.0	12.5	13.5	13.1	14.3	**7.4**	**14.3**	**2.2**
9	14.3	15.9	15.0	16.4	15.9	14.6	14.3	15.4	15.5	11.6	5.5	4.6	3.8	3.1	2.7	4.0	4.3	5.0	5.0	5.1	5.2	5.3	5.7	5.8	**8.9**	**16.4**	**2.7**
10	6.4	7.2	8.8	11.6	12.1	12.2	13.1	14.0	14.0	13.6	14.7	13.8	14.5	14.7	14.6	15.1	15.0	14.6	14.2	14.9	13.9	13.6	10.0	8.9	**12.7**	**15.1**	**6.4**
11	7.9	9.0	9.1	7.2	7.1	9.2	8.3	7.5	6.6	6.1	6.1	6.6	6.7	6.4	6.6	6.6	6.9	6.8	6.6	10.4	10.9	8.2	10.5	9.7	**7.7**	**10.9**	**6.1**
12	9.2	8.5	8.6	8.5	8.6	8.1	7.9	7.6	6.8	6.5	6.2	6.1	6.1	5.3	5.7	6.0	6.7	6.2	6.0	7.6	7.5	6.9	8.0	8.7	**7.2**	**9.2**	**5.3**
13	8.6	8.1	7.4	7.3	7.3	8.2	8.6	8.7	7.0	6.8	8.5	7.1	8.6	8.5	8.9	8.9	8.8	9.3	10.5	21.0	13.3	14.7	13.9	12.8	**9.7**	**21.0**	**6.8**
14	11.6	11.7	10.8	10.7	10.6	11.1	11.7	13.8	15.0	24.8	32.7	32.6	30.6	28.6	28.7	29.1	24.7	21.3	20.8	21.4	22.1	21.7	21.0	20.0	**20.2**	**32.7**	**10.6**
15	18.6	17.7	16.9	15.3	14.6	14.6	17.0	19.3	19.2	19.7	19.5	18.8	---	---	20.0	20.5	20.9	21.3	18.2	17.5	18.6	18.6	18.0	17.8	**18.3**	**21.3**	**14.6**
16	18.3	16.3	15.8	15.2	14.6	15.9	25.0	26.3	32.2	23.2	23.5	23.3	22.1	22.2	21.9	20.9	22.4	21.4	21.0	18.9	17.0	17.9	19.0	19.6	**20.5**	**32.2**	**14.6**
17	18.5	17.7	15.1	14.3	13.5	13.6	17.7	15.1	17.3	21.1	22.9	23.0	21.9	23.4	23.3	24.1	24.6	24.2	18.1	7.7	7.0	7.6	8.3	8.6	**17.0**	**24.6**	**7.0**
18	9.9	9.1	8.4	8.3	7.8	9.8	7.5	8.1	9.6	13.0	14.8	15.6	16.6	18.4	20.1	20.3	19.0	19.1	15.2	4.6	6.3	4.7	3.9	2.9	**11.3**	**20.3**	**2.9**
19	3.4	3.4	3.7	4.1	4.7	5.0	6.0	8.0	7.8	6.5	5.1	4.6	3.1	3.1	2.9	2.5	2.9	2.1	3.0	2.2	1.9	1.9	1.5	1.6	**3.7**	**8.0**	**1.5**
20	1.6	1.4	1.5	1.5	1.4	1.5	2.6	2.6	3.1	3.8	5.0	5.9	6.1	5.9	5.5	4.7	3.9	3.4	3.3	4.0	5.4	6.6	5.3	4.1	**3.7**	**6.6**	**1.4**
21	4.0	4.0	3.6	3.5	4.3	4.9	4.9	3.8	3.8	3.2	3.4	2.9	3.1	2.9	3.0	3.2	3.4	4.1	5.3	5.7	6.1	6.9	6.5	6.8	**4.3**	**6.9**	**2.9**
22	6.5	6.6	6.0	5.6	5.8	5.9	6.7	6.5	5.4	5.0	5.0	5.5	5.7	5.7	8.0	6.2	6.6	7.1	8.3	8.6	13.5	11.1	13.2	29.7	**8.0**	**29.7**	**5.0**
23	22.5	9.7	9.7	9.0	9.4	8.8	10.8	12.6	9.2	8.3	8.5	10.3	10.1	10.4	9.2	10.0	11.4	10.5	8.8	9.2	10.3	11.7	12.4	15.2	**10.7**	**22.5**	**8.3**
24	12.4	10.3	10.0	10.5	10.7	9.9	10.4	11.5	11.3	11.8	12.3	12.0	12.7	14.0	11.6	11.9	12.5	11.1	11.0	12.2	12.7	12.1	12.1	12.8	**11.6**	**14.0**	**9.9**
25	12.3	11.5	10.2	10.4	13.3	10.1	11.6	12.8	12.4	11.0	11.4	11.6	11.8	12.9	12.8	14.5	15.0	13.7	12.7	12.5	12.1	12.0	12.2	11.4	**12.1**	**15.0**	**10.1**
26	10.8	9.8	9.3	9.1	9.0	10.3	10.4	14.8	15.1	17.1	22.8	21.9	19.6	22.8	21.5	19.9	12.6	7.4	7.6	9.2	10.6	11.9	13.2	14.1	**13.7**	**22.8**	**7.4**
27	14.5	14.8	14.2	13.9	13.6	13.3	15.2	20.7	19.2	20.1	22.3	22.9	19.2	17.1	16.2	17.1	18.0	16.2	17.0	17.2	16.7	16.1	16.3	16.4	**17.0**	**22.9**	**13.3**
28	16.4	16.4	16.3	16.7	15.9	16.8	18.6	22.0	24.3	23.1	---	---	---	---	---	---	---	20.0	21.2	64.0	23.6	13.9	13.7	15.2	**---**	**---**	**---**
29	14.4	12.8	11.4	11.1	11.1	11.9	12.9	15.1	16.8	13.1	13.7	15.5	19.6	21.6	19.6	20.1	23.2	16.7	13.0	10.1	7.5	8.5	9.1	9.2	**14.0**	**23.2**	**7.5**
30	7.7	6.8	7.0	8.1	8.4	7.9	7.8	7.4	6.6	6.3	6.4	7.5	7.6	7.0	6.5	6.7	7.0	7.2	7.4	6.7	5.1	3.9	4.6	4.9	**6.7**	**8.4**	**3.9**
31	5.8	5.8	6.1	7.2	6.4	7.0	8.0	7.1	6.3	7.5	6.3	7.9	7.9	6.8	7.9	7.4	7.5	7.8	7.7	7.8	5.5	6.1	6.8	6.0	**6.9**	**8.0**	**5.5**
MEAN	**10.7**	**10.0**	**9.7**	**9.6**	**9.6**	**9.9**	**11.1**	**12.1**	**12.2**	**12.2**	**12.3**	**12.4**	**12.4**	**12.9**	**12.9**	**12.8**	**12.2**	**11.7**	**11.0**	**12.4**	**10.7**	**10.3**	**10.2**	**10.8**	**11.3**		
MAX	**22.5**	**22.3**	**21.8**	**20.6**	**20.0**	**19.8**	**25.0**	**26.3**	**32.2**	**24.8**	**32.7**	**32.6**	**30.6**	**28.6**	**28.7**	**29.1**	**25.5**	**24.2**	**23.9**	**64.0**	**23.6**	**22.5**	**22.1**	**29.7**		**64.0**	
MIN	**1.6**	**1.4**	**1.5**	**1.5**	**1.4**	**1.5**	**2.6**	**2.6**	**3.1**	**3.2**	**3.4**	**2.9**	**3.1**	**2.9**	**2.7**	**2.5**	**2.9**	**2.1**	**3.0**	**2.2**	**1.9**	**1.9**	**1.5**	**1.5**			**1.4**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 717 DATA RECOVERY RATE = 96.4% DATA CAPTURE RATE = 93.5%

MONTHLY MEAN = 11.3 µg/m3

MAXIMUM PM2.5 = 64.0 µg/m3 DATE OF OCCURRENCE = 8/28 at 2000 MAXIMUM DAILY MEAN = 20.5 µg/m3 DATE OF OCCURRENCE = 8/16

SECOND MAXIMUM PM2.5 = 32.7 µg/m3 DATE OF OCCURRENCE = 8/14 at 1100 SECOND MAXIMUM DAILY MEAN = 20.2 µg/m3 DATE OF OCCURRENCE = 8/14

MINIMUM PM2.5 = 1.4 µg/m3 DATE OF OCCURRENCE = 8/20 at 200 MINUMUM DAILY MEAN = 3.7 µg/m3 DATE OF OCCURRENCE = 8/19

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

CSX AQ3 Modulair

HOURLY AVERAGES of PM2.5 in µg/m3 for SEPTEMBER, 2024

Hr Beg Hr End Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	5.8	6.0	6.1	6.3	6.3	6.3	6.3	7.7	7.3	7.2	7.1	8.8	10.0	10.8	9.8	9.3	9.8	9.9	10.0	10.5	9.9	9.1	9.0	8.7	**8.2**	**10.8**	**5.8**
2	8.9	8.5	8.3	9.1	11.2	12.8	13.9	12.5	10.3	9.0	7.5	7.1	6.7	4.8	4.4	4.0	3.8	4.1	3.8	3.9	4.6	4.7	3.9	3.5	**7.1**	**13.9**	**3.5**
3	2.9	2.5	2.6	2.3	2.3	2.7	5.0	4.2	3.9	3.8	3.6	4.1	3.9	3.5	3.8	4.8	5.1	4.6	3.9	4.7	5.3	6.8	5.5	4.6	**4.0**	**6.8**	**2.3**
4	5.0	4.9	5.2	5.5	5.4	5.6	7.1	7.4	5.6	5.4	5.7	4.8	5.5	7.0	7.1	15.0	10.8	6.0	5.3	5.6	5.7	6.5	4.7	5.2	**6.3**	**15.0**	**4.7**
5	5.0	4.7	5.6	5.5	5.3	6.2	11.5	10.9	19.9	9.6	12.4	37.0	11.7	10.4	6.7	9.1	16.5	6.1	5.6	5.2	5.6	5.6	5.7	6.6	**9.5**	**37.0**	**4.7**
6	7.5	6.5	7.1	7.4	11.2	9.5	8.1	7.8	10.7	8.6	8.2	9.6	6.2	6.4	6.9	6.8	5.5	6.2	6.6	6.6	8.5	8.4	8.9	7.5	**7.7**	**11.2**	**5.5**
7	8.0	7.4	6.1	6.5	7.6	8.1	8.1	8.1	8.3	9.2	10.4	6.7	2.8	2.8	3.0	3.4	4.0	4.4	4.9	8.8	7.4	7.0	5.4	3.6	**6.3**	**10.4**	**2.8**
8	2.5	2.6	2.5	2.5	2.4	2.4	2.6	2.8	3.0	2.8	2.9	5.1	3.3	2.8	2.8	2.5	2.7	3.3	4.0	7.3	6.4	4.6	7.9	4.8	**3.6**	**7.9**	**2.4**
9	5.8	4.2	3.9	4.2	4.2	5.6	4.5	4.9	3.2	2.8	2.4	2.4	2.2	2.3	2.4	2.9	2.4	2.6	3.5	4.9	5.4	5.6	5.9	5.7	**3.9**	**5.9**	**2.2**
10	5.7	6.2	6.0	6.6	4.9	4.5	4.0	4.0	3.8	5.1	6.6	7.8	8.7	9.2	9.2	8.7	8.8	13.4	13.5	12.5	11.6	14.3	14.3	14.4	**8.4**	**14.4**	**3.8**
11	13.7	15.5	14.1	14.1	13.4	18.5	15.8	16.5	13.3	13.6	14.1	12.3	11.3	10.4	10.1	10.3	14.0	15.1	14.5	18.1	15.4	11.1	12.7	11.0	**13.7**	**18.5**	**10.1**
12	12.3	12.6	11.6	13.5	12.8	13.3	14.3	17.3	13.7	11.5	10.3	8.9	8.6	8.3	8.3	8.6	8.5	9.5	10.5	10.4	8.5	7.5	7.1	6.5	**10.6**	**17.3**	**6.5**
13	5.9	6.5	7.3	8.0	8.0	9.0	8.8	9.4	10.9	10.3	9.7	7.8	9.4	9.2	9.0	10.3	7.0	7.2	7.7	16.9	20.6	9.3	10.0	10.6	**9.5**	**20.6**	**5.9**
14	10.6	11.1	10.1	10.3	10.2	10.3	11.2	9.6	8.2	9.9	9.9	10.7	12.0	12.5	11.7	14.3	15.1	13.1	13.0	12.9	13.5	11.6	9.1	9.4	**11.2**	**15.1**	**8.2**
15	9.0	9.0	10.2	11.8	11.6	12.3	14.0	14.4	13.6	12.8	11.8	11.0	11.1	11.7	14.8	17.3	17.1	15.5	15.4	12.6	10.8	8.5	6.7	6.0	**12.0**	**17.3**	**6.0**
16	6.5	6.9	6.3	6.4	6.6	6.8	7.1	7.4	6.5	6.2	7.0	6.1	7.0	7.0	6.4	7.0	10.2	7.2	7.9	9.4	7.8	8.6	8.2	8.4	**7.2**	**10.2**	**6.1**
17	8.0	8.7	9.4	9.6	10.0	9.9	10.3	10.0	11.4	10.7	10.4	10.7	11.8	10.8	10.9	10.4	10.9	9.9	9.4	9.0	8.2	8.6	8.0	8.6	**9.8**	**11.8**	**8.0**
18	7.9	9.5	8.8	8.0	5.6	7.0	7.1	7.8	8.0	8.7	8.1	9.2	9.1	8.0	8.5	7.8	8.7	7.7	8.7	7.9	7.8	7.9	8.1	8.1	**8.0**	**9.5**	**5.6**
19	8.0	8.8	8.6	8.4	8.2	8.1	8.4	8.7	8.7	7.8	6.2	5.6	6.0	6.6	7.5	10.6	11.5	9.8	52.4	11.1	11.0	11.2	10.7	10.7	**10.6**	**52.4**	**5.6**
20	11.7	12.6	12.5	12.5	14.0	14.2	13.5	10.3	5.0	5.0	5.0	4.9	6.2	9.3	11.6	14.2	14.2	15.3	13.7	14.8	16.6	11.9	4.9	5.8	**10.8**	**16.6**	**4.9**
21	5.4	5.0	4.8	4.6	4.3	4.3	4.6	4.7	5.5	5.4	6.1	6.5	6.7	6.3	6.8	7.8	8.6	8.6	8.2	9.9	11.8	17.5	15.6	14.6	**7.6**	**17.5**	**4.3**
22	12.0	15.5	5.7	5.1	4.4	2.7	4.6	4.1	3.4	3.5	3.6	4.5	5.5	6.8	7.0	7.5	8.7	9.1	9.7	9.7	10.4	10.0	7.3	6.5	**6.9**	**15.5**	**2.7**
23	6.9	7.5	7.3	6.8	7.1	7.1	7.2	8.2	7.8	7.3	6.8	6.1	7.0	6.8	7.1	8.4	8.7	8.7	7.9	7.1	6.6	7.0	7.1	7.0	**7.3**	**8.7**	**6.1**
24	7.1	6.8	6.2	5.7	5.9	6.3	6.4	5.7	5.8	5.9	6.4	6.5	6.9	7.2	8.6	9.2	8.7	8.5	7.1	6.3	6.1	5.4	4.9	5.0	**6.6**	**9.2**	**4.9**
25	4.4	6.0	4.0	5.0	6.0	6.4	4.5	3.6	3.4	4.4	5.2	5.4	5.1	4.2	4.2	5.2	5.1	---	---	---	---	---	---	---	**---**	**---**	**---**
26	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	4.0	4.6	5.9	4.6	4.4	5.0	**---**	**---**	**---**
27	5.1	5.3	6.6	6.5	7.3	---	6.1	4.0	3.9	4.1	3.7	5.4	5.7	5.6	7.4	5.0	---	---	---	---	---	---	---	---	**---**	**---**	**---**
28	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
29	---	---	---	---	---	---	8.8	8.9	8.4	6.7	8.0	8.8	9.0	9.4	8.9	7.0	4.5	4.3	4.6	4.7	4.0	3.8	4.7	5.5	**6.6**	**9.4**	**3.8**
30	6.1	5.0	6.1	6.9	8.3	10.3	9.1	8.3	7.2	6.2	6.2	6.3	6.5	7.7	7.2	8.9	10.3	10.4	9.5	8.9	8.5	8.4	4.7	3.4	**7.5**	**10.4**	**3.4**
MEAN	**7.3**	**7.6**	**7.1**	**7.4**	**7.6**	**8.1**	**8.3**	**8.2**	**7.9**	**7.3**	**7.3**	**8.2**	**7.4**	**7.4**	**7.6**	**8.4**	**8.9**	**8.5**	**9.8**	**9.0**	**9.0**	**8.4**	**7.6**	**7.3**	**8.0**		
MAX	**13.7**	**15.5**	**14.1**	**14.1**	**14.0**	**18.5**	**15.8**	**17.3**	**19.9**	**13.6**	**14.1**	**37.0**	**12.0**	**12.5**	**14.8**	**17.3**	**17.1**	**15.5**	**52.4**	**18.1**	**20.6**	**17.5**	**15.6**	**14.6**		**52.4**	
MIN	**2.5**	**2.5**	**2.5**	**2.3**	**2.3**	**2.4**	**2.6**	**2.8**	**3.0**	**2.8**	**2.4**	**2.4**	**2.2**	**2.3**	**2.4**	**2.5**	**2.4**	**2.6**	**3.5**	**3.9**	**4.0**	**3.8**	**3.9**	**3.4**			**2.2**

POSSIBLE NUMBER OF OBSERVATIONS = 720 ACTUAL NUMBER OF OBSERVATIONS = 656 DATA RECOVERY RATE = 91.1% DATA CAPTURE RATE = 86.7%

MONTHLY MEAN = 8.0 µg/m3

MAXIMUM PM2.5 = 52.4 µg/m3 DATE OF OCCURRENCE = 9/19 at 1900 MAXIMUM DAILY MEAN = 13.7 µg/m3 DATE OF OCCURRENCE = 9/11

SECOND MAXIMUM PM2.5 = 37.0 µg/m3 DATE OF OCCURRENCE = 9/5 at 1200 SECOND MAXIMUM DAILY MEAN = 12.0 µg/m3 DATE OF OCCURRENCE = 9/15

MINIMUM PM2.5 = 2.2 µg/m3 DATE OF OCCURRENCE = 9/9 at 1300 MINUMUM DAILY MEAN = 3.6 µg/m3 DATE OF OCCURRENCE = 9/8

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

CSX AQ4 Modulair

HOURLY AVERAGES of PM10 in µg/m3 for JULY, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	11.2	10.4	7.3	6.4	4.5	4.5	5.4	5.2	7.3	12.2	8.4	12.2	5.2	7.9	8.0	5.9	4.4	7.4	7.9	6.7	7.3	8.2	8.5	8.6	**7.5**	**12.2**	**4.4**
2	5.6	5.2	7.4	8.3	14.1	14.0	12.9	18.4	30.2	14.7	14.6	14.8	14.1	---	---	---	---	---	---	12.8	17.4	17.3	14.4	13.8	**13.9**	**30.2**	**5.2**
3	12.1	10.9	11.8	12.7	16.5	16.7	20.6	24.6	29.5	16.1	19.9	---	---	---	---	---	25.0	30.4	35.6	38.6	16.8	18.7	21.1	20.7	**21.0**	**38.6**	**10.9**
4	19.0	18.2	23.0	20.0	20.7	23.6	22.5	19.2	24.2	24.9	31.8	34.4	34.7	36.6	38.9	35.9	37.7	40.0	37.2	32.0	30.4	39.0	67.0	42.5	**31.4**	**67.0**	**18.2**
5	49.8	54.4	61.8	39.3	30.8	25.0	28.8	29.4	27.5	37.1	30.3	28.3	25.7	26.1	32.2	31.9	34.2	35.0	33.0	33.0	35.3	34.6	36.5	35.2	**34.8**	**61.8**	**25.0**
6	33.1	33.8	31.5	25.9	26.6	21.3	25.4	25.2	20.0	28.7	19.6	15.7	16.6	15.9	13.2	14.9	20.0	23.7	22.3	26.1	26.4	34.7	25.9	27.4	**23.9**	**34.7**	**13.2**
7	19.1	15.3	15.7	9.6	11.4	11.9	10.0	10.1	10.5	13.1	9.8	12.6	11.4	18.0	17.0	15.1	17.7	18.9	23.9	20.3	21.5	25.3	21.7	33.1	**16.4**	**33.1**	**9.6**
8	31.3	26.0	21.1	25.7	24.2	33.5	28.9	29.9	24.6	44.5	40.0	32.8	23.7	21.9	23.3	28.0	28.5	31.5	34.8	36.4	24.5	23.8	23.8	22.6	**28.6**	**44.5**	**21.1**
9	21.9	18.5	18.5	17.5	18.1	20.3	25.8	27.8	38.9	28.4	33.3	28.6	37.9	28.5	43.5	65.9	36.8	30.2	35.4	28.1	24.1	25.6	23.8	23.4	**29.2**	**65.9**	**17.5**
10	24.3	26.7	27.4	27.1	23.6	24.1	22.8	21.0	20.8	22.2	25.7	30.0	30.6	37.3	32.8	29.9	27.6	33.7	18.6	19.7	22.4	22.8	20.3	14.6	**25.3**	**37.3**	**14.6**
11	23.1	19.3	15.1	12.8	13.2	13.8	12.6	22.9	30.0	24.8	13.1	17.6	12.8	18.6	10.5	16.8	9.9	13.5	21.2	13.3	7.7	4.5	9.0	9.7	**15.2**	**30.0**	**4.5**
12	14.4	14.9	12.6	17.6	17.8	16.0	18.3	19.8	20.3	28.5	18.8	16.5	12.6	16.5	16.2	13.1	11.6	11.9	10.9	9.7	11.5	9.1	7.9	7.1	**14.7**	**28.5**	**7.1**
13	5.7	6.2	7.0	7.3	7.9	8.9	9.9	13.1	9.7	17.3	15.6	11.8	12.9	15.5	19.4	11.8	11.3	12.6	8.8	7.7	8.3	9.9	8.8	11.0	**10.8**	**19.4**	**5.7**
14	7.7	9.3	9.2	10.7	11.0	12.4	12.7	14.5	26.4	21.7	23.3	26.4	30.0	---	29.1	26.2	23.2	21.2	25.1	24.4	21.3	22.1	21.3	20.3	**19.5**	**30.0**	**7.7**
15	22.3	22.9	23.8	24.2	24.3	23.7	48.5	48.8	51.9	30.3	50.2	41.0	39.4	30.5	---	---	---	34.7	36.7	27.4	26.5	28.8	23.8	22.1	**32.5**	**51.9**	**22.1**
16	29.2	23.4	27.0	25.4	27.6	26.8	37.7	42.1	39.7	42.6	36.1	50.4	---	---	---	---	---	---	---	38.5	35.1	45.5	32.2	32.4	**---**	**---**	**---**
17	24.0	36.7	29.9	22.9	29.2	27.4	22.9	28.7	45.6	60.3	35.8	31.7	24.0	21.1	28.3	37.9	30.2	28.6	28.1	31.4	32.2	24.1	27.6	21.6	**30.4**	**60.3**	**21.1**
18	21.8	21.5	25.8	20.9	18.2	16.6	13.0	22.9	28.7	18.3	20.5	19.1	23.3	19.4	18.1	21.1	20.4	23.8	18.5	23.3	24.3	25.3	25.6	30.8	**21.7**	**30.8**	**13.0**
19	32.4	30.4	31.9	24.3	25.5	23.0	21.9	24.1	20.4	17.8	13.6	15.7	16.9	15.2	18.9	15.4	15.1	18.1	33.9	27.6	27.3	26.0	24.5	27.5	**22.8**	**33.9**	**13.6**
20	22.4	22.3	23.5	24.0	27.6	25.3	32.2	31.2	38.9	26.5	25.0	23.2	28.4	25.1	19.8	24.3	21.9	18.6	18.2	24.1	21.5	22.4	20.7	19.5	**24.4**	**38.9**	**18.2**
21	19.5	18.2	18.6	19.2	19.3	19.2	25.4	23.0	19.5	22.4	30.0	28.7	23.7	25.7	26.3	25.0	22.2	22.6	21.9	23.0	22.0	20.1	18.1	17.7	**22.1**	**30.0**	**17.7**
22	16.6	17.6	17.9	18.2	19.2	17.4	18.4	21.2	25.4	23.8	21.9	25.9	29.5	30.0	32.6	19.9	12.6	14.5	12.2	11.8	12.8	12.2	27.1	22.5	**20.1**	**32.6**	**11.8**
23	22.5	27.2	29.8	23.8	21.6	19.8	19.2	18.5	24.4	19.9	20.6	24.5	26.8	28.0	25.6	20.1	21.6	25.8	25.0	27.3	26.3	21.3	20.3	16.0	**23.2**	**29.8**	**16.0**
24	13.7	12.2	10.5	13.4	11.5	12.1	19.6	11.6	15.4	13.2	16.0	22.1	27.1	18.0	19.4	21.0	25.6	32.0	19.3	13.9	15.0	17.2	18.3	25.9	**17.7**	**32.0**	**10.5**
25	22.6	19.2	20.4	21.6	33.3	22.9	26.3	39.2	35.7	41.2	40.7	35.3	42.8	38.8	36.3	29.3	30.4	42.0	37.0	33.2	29.5	31.2	31.2	30.8	**32.1**	**42.8**	**19.2**
26	33.4	31.1	26.9	25.4	23.5	24.2	26.1	28.5	29.4	22.1	27.7	17.5	19.8	16.4	13.2	14.9	16.1	17.0	28.6	19.4	20.2	21.8	18.5	17.2	**22.5**	**33.4**	**13.2**
27	21.5	22.5	21.0	20.0	20.4	23.6	20.7	18.3	16.0	18.9	14.4	11.9	13.5	14.3	15.1	15.9	17.5	13.7	13.8	25.0	31.8	21.4	22.6	38.2	**19.7**	**38.2**	**11.9**
28	22.6	22.1	19.9	19.3	19.4	18.2	25.9	24.6	22.0	19.6	16.6	15.1	24.8	27.4	23.5	19.9	22.6	22.3	26.6	35.9	19.6	22.0	20.0	19.1	**22.0**	**35.9**	**15.1**
29	20.5	21.1	22.7	23.5	37.6	34.4	36.1	45.5	40.0	33.7	41.6	38.2	40.1	37.5	33.9	36.4	36.7	36.8	59.9	37.7	27.1	22.2	26.5	24.0	**33.9**	**59.9**	**20.5**
30	21.7	22.3	21.3	20.6	18.4	17.4	19.0	17.4	19.6	17.5	17.9	18.3	22.3	26.1	24.5	26.2	24.0	26.2	30.7	29.4	25.7	21.0	19.6	13.8	**21.7**	**30.7**	**13.8**
31	13.4	17.3	15.3	17.4	24.2	25.5	28.3	26.9	28.5	19.3	21.4	22.6	21.3	19.3	23.7	30.9	33.0	23.7	24.8	25.8	26.2	27.5	22.8	23.7	**23.5**	**33.0**	**13.4**
MEAN	**21.2**	**21.2**	**21.1**	**19.5**	**20.7**	**20.1**	**22.5**	**24.3**	**26.5**	**25.2**	**24.3**	**24.1**	**23.9**	**23.5**	**23.8**	**24.2**	**22.8**	**24.5**	**25.9**	**24.6**	**22.5**	**22.8**	**22.9**	**22.3**	**23.1**		
MAX	**49.8**	**54.4**	**61.8**	**39.3**	**37.6**	**34.4**	**48.5**	**48.8**	**51.9**	**60.3**	**50.2**	**50.4**	**42.8**	**38.8**	**43.5**	**65.9**	**37.7**	**42.0**	**59.9**	**38.6**	**35.3**	**45.5**	**67.0**	**42.5**		**67.0**	
MIN	**5.6**	**5.2**	**7.0**	**6.4**	**4.5**	**4.5**	**5.4**	**5.2**	**7.3**	**12.2**	**8.4**	**11.8**	**5.2**	**7.9**	**8.0**	**5.9**	**4.4**	**7.4**	**7.9**	**6.7**	**7.3**	**4.5**	**7.9**	**7.1**			**4.4**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 722 DATA RECOVERY RATE = 97.0% DATA CAPTURE RATE = 96.8%

MONTHLY MEAN = 23.1 µg/m3

MAXIMUM PM10 = 67.0 µg/m3 DATE OF OCCURRENCE = 7/4 at 2300 MAXIMUM DAILY MEAN = 34.8 µg/m3 DATE OF OCCURRENCE = 7/5

SECOND MAXIMUM PM10 = 65.9 µg/m3 DATE OF OCCURRENCE = 7/9 at 1600 SECOND MAXIMUM DAILY MEAN = 33.9 µg/m3 DATE OF OCCURRENCE = 7/29

MINIMUM PM10 = 4.4 µg/m3 DATE OF OCCURRENCE = 7/1 at 1700 MINUMUM DAILY MEAN = 7.5 µg/m3 DATE OF OCCURRENCE = 7/1

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

CSX AQ4 Modulair

HOURLY AVERAGES of PM10 in µg/m3 for AUGUST, 2024

Hr Beg Hr End Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	25.6	26.1	22.8	23.4	23.5	23.7	33.6	44.7	49.1	38.9	---	---	35.5	33.5	38.5	---	---	33.2	41.2	29.6	37.5	34.6	27.7	28.0	**32.5**	**49.1**	**22.8**
2	32.7	28.3	31.7	27.9	31.0	35.8	34.0	36.1	32.8	25.2	---	---	---	---	---	---	---	---	28.2	51.6	---	30.3	31.7	24.9	**---**	**---**	**---**
3	26.5	28.9	33.6	24.9	27.9	25.1	17.0	18.8	21.7	19.3	21.1	22.5	---	---	---	---	27.0	38.7	65.8	29.0	22.1	22.4	28.5	22.2	**27.2**	**65.8**	**17.0**
4	32.6	25.3	29.5	29.4	29.6	27.6	22.1	16.6	16.5	13.9	13.2	14.3	11.0	12.9	14.3	12.0	12.8	12.0	14.2	14.8	14.7	23.3	25.9	27.2	**19.4**	**32.6**	**11.0**
5	27.3	30.2	26.1	29.9	30.7	29.0	29.3	25.0	39.0	33.9	32.0	30.2	30.1	31.6	25.9	26.1	30.1	23.4	22.3	28.5	23.1	23.8	24.1	22.6	**28.1**	**39.0**	**22.3**
6	21.1	21.7	20.0	21.5	22.4	20.2	24.7	30.2	30.0	35.2	33.7	---	---	36.8	29.8	28.9	26.8	15.2	13.3	17.1	12.1	7.5	6.4	9.2	**22.0**	**36.8**	**6.4**
7	10.2	5.9	11.3	13.5	16.0	15.9	28.9	17.0	11.4	15.6	16.0	13.2	14.9	24.4	11.8	9.0	10.2	8.7	11.8	8.3	11.4	13.6	8.9	7.1	**13.1**	**28.9**	**5.9**
8	8.8	9.6	12.2	10.6	15.2	14.8	12.8	11.9	14.6	19.7	16.0	14.0	12.5	17.8	30.4	38.0	46.0	37.9	39.9	61.9	73.3	62.4	51.2	58.5	**28.8**	**73.3**	**8.8**
9	57.2	58.4	53.8	54.2	53.2	36.0	26.4	35.9	41.2	34.4	17.2	11.6	11.6	19.0	15.6	13.8	13.6	18.2	18.7	24.8	24.4	23.7	25.7	27.1	**29.8**	**58.4**	**11.6**
10	27.0	31.2	26.9	34.5	40.5	34.0	32.8	22.7	25.9	23.1	26.0	29.3	23.7	---	21.6	22.9	21.8	23.1	25.3	27.5	22.4	23.4	18.6	20.4	**26.3**	**40.5**	**18.6**
11	17.1	15.4	17.2	13.6	19.0	20.0	22.7	20.4	20.5	10.0	14.6	16.1	14.5	12.1	11.2	12.0	15.1	14.2	14.8	19.8	25.9	34.1	23.3	29.3	**18.0**	**34.1**	**10.0**
12	25.9	26.9	21.5	18.7	23.5	26.4	35.7	30.3	22.7	19.5	30.1	23.7	24.3	24.0	27.1	19.3	16.7	15.5	15.0	19.5	22.4	20.4	20.0	25.8	**23.1**	**35.7**	**15.0**
13	20.6	27.4	19.9	23.9	28.6	21.9	19.2	32.6	20.9	20.7	18.8	17.9	16.3	15.2	14.9	12.8	16.5	21.3	28.9	20.0	27.6	---	24.3	23.2	**21.5**	**32.6**	**12.8**
14	28.1	23.0	20.7	32.3	23.9	38.2	23.4	27.4	21.1	28.7	40.7	44.8	30.7	32.0	33.1	29.6	26.4	29.3	37.5	29.3	32.6	29.1	28.4	26.2	**29.9**	**44.8**	**20.7**
15	27.4	26.2	31.3	26.2	23.0	22.7	39.4	28.5	28.6	27.0	29.8	25.7	26.3	23.8	27.4	26.1	29.4	34.0	32.4	29.3	27.7	35.7	31.7	31.1	**28.8**	**39.4**	**22.7**
16	31.1	31.8	26.0	26.6	25.2	34.4	54.9	103.4	97.0	62.4	42.9	38.2	45.0	36.7	47.6	42.2	34.9	28.8	29.5	26.2	23.6	26.3	28.0	25.4	**40.3**	**103.4**	**23.6**
17	25.6	38.8	41.8	26.2	30.1	36.0	42.0	29.6	26.7	31.4	32.9	32.3	29.0	29.0	31.2	36.8	41.0	41.4	32.4	17.9	19.2	30.6	23.3	28.5	**31.4**	**42.0**	**17.9**
18	33.4	32.0	27.5	31.5	25.9	22.3	19.8	14.5	20.8	21.1	21.6	23.2	24.3	25.3	26.9	31.6	24.2	25.7	27.5	20.4	44.6	---	69.0	52.8	**29.0**	**69.0**	**14.5**
19	49.8	37.5	39.2	42.1	40.2	37.1	32.8	27.0	22.0	28.1	11.6	15.8	9.9	9.7	14.7	8.5	7.8	12.7	6.8	11.9	10.0	5.5	7.2	9.0	**20.7**	**49.8**	**5.5**
20	6.7	8.6	6.7	8.2	10.1	8.2	13.7	9.8	11.1	8.7	16.1	12.8	18.2	19.2	21.4	12.0	13.3	9.4	8.4	10.2	15.0	18.9	14.5	8.2	**12.1**	**21.4**	**6.7**
21	13.9	10.8	12.5	12.3	15.5	26.2	31.5	76.8	---	24.5	35.0	25.8	28.3	21.2	22.3	12.2	9.5	13.5	7.0	17.4	15.2	14.5	13.1	25.0	**21.0**	**76.8**	**7.0**
22	19.3	16.0	14.2	16.2	16.9	40.2	35.7	26.3	18.5	15.6	15.0	14.8	13.9	18.7	12.0	17.6	16.8	17.0	18.7	14.8	23.7	---	---	25.8	**19.4**	**40.2**	**12.0**
23	---	34.4	31.8	20.9	14.2	24.1	30.8	34.9	37.3	23.3	23.1	28.2	20.4	19.6	15.4	19.2	16.0	23.3	18.3	17.3	29.8	31.9	29.5	47.6	**25.7**	**47.6**	**14.2**
24	17.3	15.8	17.7	16.4	15.5	27.8	26.3	21.5	22.4	31.7	20.6	20.5	22.2	25.2	20.0	21.4	22.0	20.3	15.4	21.7	22.9	19.3	34.4	33.8	**22.2**	**34.4**	**15.4**
25	16.5	16.1	19.6	17.1	35.9	23.4	41.4	50.6	24.4	27.4	21.7	27.9	25.8	24.1	21.8	29.8	34.0	22.3	19.5	17.3	18.8	16.8	17.3	17.7	**24.5**	**50.6**	**16.1**
26	23.0	18.4	19.9	19.9	16.5	35.9	23.9	43.7	33.8	33.9	46.0	75.1	39.9	46.9	34.9	44.3	18.7	15.5	15.4	24.5	24.7	---	25.7	26.2	**30.7**	**75.1**	**15.4**
27	30.2	30.9	27.3	24.6	26.3	22.6	34.5	39.6	31.9	32.4	43.0	49.5	40.2	36.8	30.2	37.2	31.2	26.2	25.4	35.9	24.4	26.6	24.6	25.7	**31.6**	**49.5**	**22.6**
28	24.6	26.4	23.2	23.8	23.1	34.2	32.6	40.9	44.6	41.4	46.0	33.6	---	---	---	---	---	35.2	37.2	40.3	40.8	48.8	26.6	27.5	**34.3**	**48.8**	**23.1**
29	23.6	24.1	22.7	19.4	29.1	28.2	34.8	31.2	30.1	22.7	25.2	25.4	34.2	31.5	33.9	36.2	35.7	44.5	32.5	27.1	24.4	31.3	45.6	59.8	**31.4**	**59.8**	**19.4**
30	66.3	41.4	43.3	54.5	46.0	58.4	36.5	48.7	62.2	47.8	45.0	58.2	60.2	44.1	33.7	38.6	40.9	35.8	33.9	34.4	19.2	18.7	22.6	31.2	**42.6**	**66.3**	**18.7**
31	48.7	48.8	56.6	55.9	48.0	47.2	41.9	39.9	21.2	19.0	14.9	18.7	16.0	12.3	17.9	16.0	11.9	12.1	13.9	13.2	15.7	15.6	13.0	17.2	**26.5**	**56.6**	**11.9**
MEAN	**27.3**	**26.3**	**26.1**	**25.8**	**26.7**	**29.0**	**30.2**	**33.4**	**30.0**	**27.0**	**26.5**	**27.3**	**25.1**	**25.3**	**24.5**	**24.2**	**23.2**	**23.6**	**24.2**	**24.6**	**25.0**	**25.5**	**25.7**	**27.2**	**26.5**		
MAX	**66.3**	**58.4**	**56.6**	**55.9**	**53.2**	**58.4**	**54.9**	**103.4**	**97.0**	**62.4**	**46.0**	**75.1**	**60.2**	**46.9**	**47.6**	**44.3**	**46.0**	**44.5**	**65.8**	**61.9**	**73.3**	**62.4**	**69.0**	**59.8**		**103.4**	
MIN	**6.7**	**5.9**	**6.7**	**8.2**	**10.1**	**8.2**	**12.8**	**9.8**	**11.1**	**8.7**	**11.6**	**11.6**	**9.9**	**9.7**	**11.2**	**8.5**	**7.8**	**8.7**	**6.8**	**8.3**	**10.0**	**5.5**	**6.4**	**7.1**			**5.5**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 712 DATA RECOVERY RATE = 95.7% DATA CAPTURE RATE = 96.8%

MONTHLY MEAN = 26.5 µg/m3

MAXIMUM PM10 = 103.4 µg/m3 DATE OF OCCURRENCE = 8/16 at 800 MAXIMUM DAILY MEAN = 42.6 µg/m3 DATE OF OCCURRENCE = 8/30

SECOND MAXIMUM PM10 = 97.0 µg/m3 DATE OF OCCURRENCE = 8/16 at 900 SECOND MAXIMUM DAILY MEAN = 40.3 µg/m3 DATE OF OCCURRENCE = 8/16

MINIMUM PM10 = 5.5 µg/m3 DATE OF OCCURRENCE = 8/19 at 2200 MINUMUM DAILY MEAN = 12.1 µg/m3 DATE OF OCCURRENCE = 8/20

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

CSX AQ4 Modulair

HOURLY AVERAGES of PM10 in µg/m3 for SEPTEMBER, 2024

Hr Beg Hr End Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	13.5	13.4	12.2	13.3	13.0	13.4	18.8	12.9	13.8	12.2	14.3	14.1	15.9	18.6	14.8	16.6	16.6	18.2	18.0	17.0	16.6	16.7	14.7	15.8	**15.2**	**18.8**	**12.2**
2	15.7	14.5	13.1	16.4	15.6	17.8	18.1	17.5	16.5	12.0	13.7	11.1	11.9	9.9	12.5	8.3	7.8	7.8	7.8	6.8	9.4	9.6	8.8	12.2	**12.3**	**18.1**	**6.8**
3	9.7	9.1	12.6	5.2	6.0	8.0	18.3	23.7	19.7	15.0	13.8	16.8	21.9	11.8	11.5	18.8	21.1	18.0	18.1	16.0	17.7	16.7	21.3	15.9	**15.3**	**23.7**	**5.2**
4	13.7	15.5	15.0	16.7	13.4	13.1	32.0	32.0	17.8	18.8	17.6	17.8	15.8	27.7	12.8	26.9	57.3	25.0	21.0	29.4	44.9	43.4	22.2	31.0	**24.2**	**57.3**	**12.8**
5	19.4	19.1	16.2	19.5	29.9	27.2	---	45.2	31.3	25.7	21.9	19.8	33.7	26.7	26.2	27.5	31.4	30.5	31.3	27.9	23.6	25.7	41.5	40.4	**27.9**	**45.2**	**16.2**
6	57.5	48.7	52.6	53.6	57.1	76.8	---	50.0	44.6	38.2	33.4	33.2	25.3	19.0	29.1	33.0	17.9	18.3	30.5	20.6	41.6	24.7	23.2	23.2	**37.0**	**76.8**	**17.9**
7	25.0	20.0	18.7	21.6	34.5	29.5	21.5	19.5	22.8	21.6	33.5	---	40.0	9.8	16.1	12.0	11.1	12.0	9.9	14.0	13.4	13.1	12.6	8.6	**19.2**	**40.0**	**8.6**
8	8.0	6.9	6.3	14.7	5.9	19.5	5.8	15.6	12.6	8.8	14.5	15.6	17.0	13.9	33.0	31.8	13.8	7.5	21.1	50.6	15.2	24.4	61.9	13.5	**18.2**	**61.9**	**5.8**
9	12.4	36.1	10.1	10.4	14.6	64.8	42.5	23.7	36.9	23.9	16.4	27.8	46.8	20.6	29.1	23.2	9.3	16.9	15.0	18.1	18.4	30.3	20.6	25.8	**24.7**	**64.8**	**9.3**
10	14.1	14.0	14.7	20.7	14.7	24.1	19.6	35.6	---	32.6	31.4	27.5	26.0	37.0	25.5	20.5	19.4	28.1	32.7	37.0	48.7	32.6	29.1	28.8	**26.7**	**48.7**	**14.0**
11	31.5	30.0	25.3	36.6	29.5	51.0	43.9	33.7	40.9	28.3	32.3	34.4	29.8	27.0	21.8	24.5	27.3	20.4	40.3	67.4	43.7	27.2	24.3	31.6	**33.4**	**67.4**	**20.4**
12	34.5	24.4	23.4	26.4	35.3	34.6	59.1	43.1	27.9	22.3	22.8	24.1	17.3	18.7	19.1	18.5	16.9	19.7	27.6	30.3	23.7	21.2	24.6	24.0	**26.6**	**59.1**	**16.9**
13	19.6	24.1	42.5	37.9	33.9	39.8	42.0	44.8	40.7	50.3	37.8	22.0	26.1	27.8	24.7	20.5	15.5	18.7	18.4	65.3	106.5	30.9	36.2	30.7	**35.7**	**106.5**	**15.5**
14	26.2	22.9	23.7	25.6	22.0	21.1	24.2	26.5	16.7	21.4	20.2	24.4	24.2	24.0	24.5	24.6	22.0	26.0	24.4	20.7	24.1	24.4	16.7	23.7	**23.1**	**26.5**	**16.7**
15	28.8	18.9	17.7	19.9	25.2	21.1	42.3	33.4	23.6	26.9	23.3	18.4	17.5	21.2	22.3	27.5	31.5	28.5	33.0	34.1	28.5	26.4	25.6	36.4	**26.3**	**42.3**	**17.5**
16	45.0	36.6	39.3	53.2	50.3	46.2	49.4	66.6	59.7	49.0	44.6	42.1	38.9	35.7	28.3	40.1	40.4	44.1	45.7	50.1	45.5	44.4	39.1	41.0	**44.8**	**66.6**	**28.3**
17	37.7	46.1	52.0	53.2	58.2	55.6	66.6	65.6	67.1	64.1	46.9	45.0	45.0	51.3	45.4	34.1	33.8	40.9	37.9	39.8	31.6	34.3	32.4	33.5	**46.6**	**67.1**	**31.6**
18	29.0	24.8	31.8	15.9	11.4	15.5	18.6	27.5	27.4	32.9	20.9	25.3	25.3	21.8	22.6	25.3	27.7	22.0	20.7	21.2	26.6	25.6	24.7	23.7	**23.7**	**32.9**	**11.4**
19	23.4	25.5	23.5	28.2	28.5	27.6	27.9	29.2	32.2	26.6	27.8	18.2	16.3	18.9	15.7	18.8	28.8	27.5	44.4	26.3	24.1	25.9	23.3	20.9	**25.4**	**44.4**	**15.7**
20	22.8	21.0	20.1	23.6	31.1	49.2	36.9	30.8	23.9	32.2	22.8	15.2	20.4	24.3	33.3	31.4	28.2	29.3	28.5	31.3	30.1	25.4	16.4	14.4	**26.8**	**49.2**	**14.4**
21	22.9	12.1	11.0	11.7	15.1	15.9	20.2	17.1	17.9	15.6	22.0	21.3	13.3	13.9	13.4	19.6	17.9	22.5	19.0	29.2	24.0	29.0	30.2	34.1	**19.5**	**34.1**	**11.0**
22	37.4	76.7	19.0	18.5	19.7	9.2	22.5	22.8	16.0	11.5	12.0	10.9	13.0	12.0	16.7	15.6	19.4	23.7	17.9	19.7	19.2	25.4	28.2	27.5	**21.4**	**76.7**	**9.2**
23	35.8	39.3	42.1	33.3	35.5	40.3	39.3	49.3	40.9	38.4	35.0	29.3	32.2	26.9	26.7	22.4	23.8	33.5	33.8	30.5	33.0	40.1	39.8	44.0	**35.2**	**49.3**	**22.4**
24	39.8	30.0	35.2	32.2	34.8	36.9	39.1	34.5	38.5	38.5	40.7	37.3	30.0	35.0	42.4	45.3	43.0	40.7	37.8	34.8	32.0	29.8	32.7	40.3	**36.7**	**45.3**	**29.8**
25	36.2	30.2	35.1	39.8	39.9	31.5	23.0	17.9	21.0	23.3	34.9	32.1	30.4	19.7	17.2	26.5	28.8	18.1	31.1	37.4	34.4	43.2	55.7	58.7	**31.9**	**58.7**	**17.2**
26	61.4	55.8	57.7	58.1	65.5	65.1	51.1	47.3	45.5	46.8	37.7	32.6	21.6	23.0	14.9	13.2	16.3	20.5	23.5	19.5	36.1	22.7	22.7	33.3	**37.2**	**65.5**	**13.2**
27	26.1	24.1	32.3	25.3	35.4	74.8	---	---	---	---	---	---	---	---	---	---	---	---	21.3	17.5	24.8	18.0	11.8	13.1	**---**	**---**	**---**
28	14.2	21.3	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
29	---	---	---	---	---	---	22.5	21.0	21.9	15.3	14.1	16.4	16.2	15.8	14.0	14.0	9.6	9.0	16.3	19.5	19.1	14.3	15.9	15.3	**16.1**	**22.5**	**9.0**
30	15.9	13.6	15.0	17.9	29.3	40.3	36.5	25.0	23.5	19.1	19.4	18.6	16.9	15.9	17.8	19.4	25.6	---	21.8	24.5	25.6	23.0	21.2	20.6	**22.0**	**40.3**	**13.6**
MEAN	**26.8**	**26.7**	**25.7**	**26.8**	**28.8**	**34.6**	**32.4**	**32.6**	**29.7**	**27.5**	**25.9**	**24.1**	**24.6**	**22.4**	**22.6**	**23.6**	**23.7**	**23.2**	**25.8**	**29.5**	**30.4**	**26.5**	**26.8**	**27.0**	**27.0**		
MAX	**61.4**	**76.7**	**57.7**	**58.1**	**65.5**	**76.8**	**66.6**	**66.6**	**67.1**	**64.1**	**46.9**	**45.0**	**46.8**	**51.3**	**45.4**	**45.3**	**57.3**	**44.1**	**45.7**	**67.4**	**106.5**	**44.4**	**61.9**	**58.7**		**106.5**	
MIN	**8.0**	**6.9**	**6.3**	**5.2**	**5.9**	**8.0**	**5.8**	**12.9**	**12.6**	**8.8**	**12.0**	**10.9**	**11.9**	**9.8**	**11.5**	**8.3**	**7.8**	**7.5**	**7.8**	**6.8**	**9.4**	**9.6**	**8.8**	**8.6**			**5.2**

POSSIBLE NUMBER OF OBSERVATIONS = 720 ACTUAL NUMBER OF OBSERVATIONS = 675 DATA RECOVERY RATE = 93.8% DATA CAPTURE RATE = 93.3%

MONTHLY MEAN = 27.0 µg/m3

MAXIMUM PM10 = 106.5 µg/m3 DATE OF OCCURRENCE = 9/13 at 2100 MAXIMUM DAILY MEAN = 46.6 µg/m3 DATE OF OCCURRENCE = 9/17

SECOND MAXIMUM PM10 = 76.8 µg/m3 DATE OF OCCURRENCE = 9/6 at 600 SECOND MAXIMUM DAILY MEAN = 44.8 µg/m3 DATE OF OCCURRENCE = 9/16

MINIMUM PM10 = 5.2 µg/m3 DATE OF OCCURRENCE = 9/3 at 400 MINUMUM DAILY MEAN = 12.3 µg/m3 DATE OF OCCURRENCE = 9/2

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

CSX AQ4 Modulair

HOURLY AVERAGES of PM2.5 in µg/m3 for JULY, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	4.6	4.0	3.3	2.2	1.7	2.2	2.2	2.3	3.2	5.1	4.1	3.5	1.6	1.7	2.5	1.5	2.0	3.3	3.9	3.2	3.3	3.1	3.3	3.2	**2.9**	**5.1**	**1.5**
2	2.5	2.3	2.7	3.1	5.9	6.1	5.1	6.0	8.2	7.2	7.1	7.9	8.5	---	---	---	---	---	---	8.8	10.1	10.3	8.9	6.1	**6.4**	**10.3**	**2.3**
3	5.9	5.9	6.1	6.2	6.8	6.8	7.0	8.1	8.1	6.2	7.8	---	---	---	---	---	10.4	10.5	11.8	11.3	7.6	7.3	12.1	8.1	**8.1**	**12.1**	**5.9**
4	7.6	7.2	7.4	7.3	7.5	8.2	8.6	11.1	15.6	18.4	25.0	28.6	29.3	31.4	33.2	31.1	31.1	33.3	29.8	28.6	27.6	35.4	62.7	40.0	**23.5**	**62.7**	**7.2**
5	47.6	51.7	57.7	35.5	26.8	21.6	19.8	18.5	19.3	22.4	24.2	24.3	22.6	20.8	22.9	27.2	27.3	27.6	27.3	28.6	28.3	27.5	28.9	26.2	**28.5**	**57.7**	**18.5**
6	23.8	24.9	24.6	22.1	19.5	17.5	17.9	19.5	14.9	12.7	12.6	11.3	11.0	10.2	10.6	11.9	16.9	19.2	16.9	20.1	21.1	20.1	21.6	23.4	**17.6**	**24.9**	**10.2**
7	13.8	11.1	11.2	6.7	7.8	6.3	5.9	6.3	6.2	6.2	6.4	8.7	8.9	12.0	12.9	11.9	13.7	14.0	17.0	14.3	14.7	15.7	16.1	18.1	**11.0**	**18.1**	**5.9**
8	18.8	18.6	14.9	14.8	15.4	16.4	15.1	14.0	15.8	25.1	32.0	26.3	19.7	16.0	15.7	22.0	23.7	27.0	25.5	21.9	17.7	18.9	19.7	19.0	**19.7**	**32.0**	**14.0**
9	17.7	15.9	15.1	14.7	14.2	14.2	14.9	18.3	20.1	19.8	23.8	22.9	26.4	19.7	20.5	10.8	11.3	13.2	16.3	19.2	17.8	15.9	13.2	11.5	**16.9**	**26.4**	**10.8**
10	10.8	10.0	9.9	10.3	10.8	10.7	11.2	11.9	13.5	15.6	17.1	16.1	14.7	14.1	13.2	12.1	11.1	11.0	8.4	7.9	7.9	7.5	7.9	7.4	**11.2**	**17.1**	**7.4**
11	7.2	4.4	3.8	4.0	5.0	5.6	5.7	6.7	6.0	5.2	3.3	3.1	3.5	5.1	4.7	5.4	4.6	5.1	6.5	4.1	4.2	2.7	3.1	4.7	**4.7**	**7.2**	**2.7**
12	8.1	9.9	5.9	7.1	8.4	8.0	9.9	8.9	10.3	11.2	10.4	10.1	11.4	10.9	10.7	10.0	9.3	9.0	7.5	6.4	6.4	5.9	4.1	3.1	**8.4**	**11.4**	**3.1**
13	2.4	1.9	2.3	2.5	2.5	2.8	3.1	3.5	5.0	10.2	8.5	7.4	8.2	9.9	10.5	9.4	8.6	7.4	4.6	4.4	5.3	5.8	5.8	5.1	**5.7**	**10.5**	**1.9**
14	4.9	4.9	6.0	6.2	6.9	7.7	8.2	10.1	11.9	13.1	15.6	19.6	21.3	---	18.1	17.7	19.9	17.1	17.8	18.1	16.4	15.7	15.0	14.7	**13.3**	**21.3**	**4.9**
15	16.1	17.5	19.8	20.2	20.0	19.5	21.5	24.5	23.5	16.1	18.2	15.0	17.9	18.0	20.0	---	---	23.2	22.8	18.8	18.6	19.0	17.9	16.5	**19.3**	**24.5**	**15.0**
16	16.8	18.5	19.7	20.0	19.6	19.4	20.4	25.4	25.7	28.2	25.1	27.9	---	---	---	---	---	---	---	23.5	24.6	27.9	7.6	9.0	**---**	**---**	**---**
17	9.9	17.2	13.2	11.2	11.2	12.4	13.0	14.3	18.0	19.6	16.5	15.7	12.9	12.1	16.1	21.8	19.0	15.7	16.5	14.3	13.6	12.7	14.6	12.2	**14.7**	**21.8**	**9.9**
18	12.1	12.0	11.9	10.9	9.1	8.3	7.9	9.7	15.2	10.4	11.2	11.3	14.4	12.8	12.6	14.8	14.7	15.9	14.9	17.5	19.0	18.7	18.1	19.8	**13.4**	**19.8**	**7.9**
19	20.4	20.4	19.5	15.3	13.5	10.9	9.9	9.7	8.9	8.8	8.4	9.3	8.5	8.2	8.7	10.0	11.1	12.3	14.4	15.6	16.6	15.4	15.3	15.7	**12.7**	**20.4**	**8.2**
20	14.1	12.1	11.5	11.0	11.1	10.8	11.6	11.6	15.1	11.9	12.2	13.3	14.2	14.9	15.1	14.8	13.7	13.4	13.7	14.2	14.2	17.6	14.8	14.2	**13.3**	**17.6**	**10.8**
21	14.1	13.5	13.4	13.5	13.4	13.3	13.6	14.4	16.2	15.7	20.7	19.3	18.3	18.5	20.4	20.8	19.3	19.0	18.5	18.8	19.2	16.4	15.0	14.5	**16.6**	**20.8**	**13.3**
22	13.7	13.5	13.7	13.5	13.3	12.7	12.7	12.7	13.3	12.9	8.8	10.4	10.0	9.6	8.0	7.5	6.0	7.9	7.8	5.8	7.0	6.4	13.2	6.2	**10.2**	**13.7**	**5.8**
23	5.8	4.8	5.5	4.0	3.4	3.4	6.6	10.3	12.8	12.1	13.8	16.0	18.6	21.1	20.3	17.0	17.8	20.0	17.9	19.1	18.2	14.1	11.3	8.0	**12.5**	**21.1**	**3.4**
24	7.1	6.2	6.1	5.9	5.4	5.6	6.9	7.0	7.7	9.4	10.9	15.7	19.4	14.4	14.8	16.8	16.3	14.8	9.7	10.0	8.1	7.6	9.2	10.4	**10.2**	**19.4**	**5.4**
25	10.2	10.3	10.6	11.0	11.5	10.8	11.4	13.2	17.3	22.1	24.1	25.2	27.1	27.5	26.0	23.3	24.2	27.8	26.9	24.0	20.4	20.0	22.5	20.2	**19.4**	**27.8**	**10.2**
26	22.3	21.4	14.1	12.7	10.4	9.3	9.1	8.4	7.4	9.4	8.0	7.8	8.3	8.7	8.6	9.4	10.7	10.3	10.7	9.8	11.0	11.6	10.7	10.2	**10.8**	**22.3**	**7.4**
27	11.5	11.5	11.9	11.5	11.0	10.7	9.2	8.5	8.4	10.0	8.4	7.9	8.7	8.5	9.0	9.2	8.7	8.5	8.5	9.3	12.0	13.1	14.8	17.3	**10.3**	**17.3**	**7.9**
28	16.3	14.1	13.1	12.5	11.9	11.6	14.0	15.9	15.2	13.8	12.7	11.8	13.6	15.4	16.8	16.6	15.8	17.9	15.9	16.8	15.0	15.7	15.5	15.1	**14.7**	**17.9**	**11.6**
29	15.1	15.2	15.1	15.5	16.2	16.0	17.0	20.0	21.6	23.2	25.8	26.0	26.8	27.3	28.6	28.5	29.0	26.7	19.6	12.3	12.3	11.0	11.0	10.6	**19.6**	**29.0**	**10.6**
30	9.9	9.0	9.3	9.9	10.2	10.9	11.6	11.7	12.0	11.8	11.6	12.7	14.5	17.8	17.9	18.7	18.2	19.1	21.7	18.7	14.8	12.2	8.9	6.2	**13.3**	**21.7**	**6.2**
31	5.5	5.7	5.7	6.5	7.6	7.9	10.3	9.8	11.5	12.4	14.1	14.1	13.2	14.6	16.3	15.7	14.1	13.9	14.3	16.1	17.2	17.4	17.2	16.7	**12.4**	**17.4**	**5.5**
MEAN	**12.8**	**12.8**	**12.4**	**11.2**	**10.9**	**10.6**	**11.0**	**12.0**	**13.2**	**13.7**	**14.5**	**15.0**	**14.9**	**14.9**	**15.5**	**15.4**	**15.3**	**16.0**	**15.4**	**14.9**	**14.5**	**14.5**	**14.8**	**13.3**	**13.7**		
MAX	**47.6**	**51.7**	**57.7**	**35.5**	**26.8**	**21.6**	**21.5**	**25.4**	**25.7**	**28.2**	**32.0**	**28.6**	**29.3**	**31.4**	**33.2**	**31.1**	**31.1**	**33.3**	**29.8**	**28.6**	**28.3**	**35.4**	**62.7**	**40.0**		**62.7**	
MIN	**2.4**	**1.9**	**2.3**	**2.2**	**1.7**	**2.2**	**2.2**	**2.3**	**3.2**	**5.1**	**3.3**	**3.1**	**1.6**	**1.7**	**2.5**	**1.5**	**2.0**	**3.3**	**3.9**	**3.2**	**3.3**	**2.7**	**3.1**	**3.1**			**1.5**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 723 DATA RECOVERY RATE = 97.2% DATA CAPTURE RATE = 96.8%

MONTHLY MEAN = 13.7 µg/m3

MAXIMUM PM2.5 = 62.7 µg/m3 DATE OF OCCURRENCE = 7/4 at 2300 MAXIMUM DAILY MEAN = 28.5 µg/m3 DATE OF OCCURRENCE = 7/5

SECOND MAXIMUM PM2.5 = 57.7 µg/m3 DATE OF OCCURRENCE = 7/5 at 300 SECOND MAXIMUM DAILY MEAN = 23.5 µg/m3 DATE OF OCCURRENCE = 7/4

MINIMUM PM2.5 = 1.5 µg/m3 DATE OF OCCURRENCE = 7/1 at 1600 MINUMUM DAILY MEAN = 2.9 µg/m3 DATE OF OCCURRENCE = 7/1

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

CSX AQ4 Modulair

HOURLY AVERAGES of PM2.5 in µg/m3 for AUGUST, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	15.9	15.6	15.6	16.3	14.7	14.1	17.1	21.8	24.2	25.1	---	---	27.4	28.2	28.7	---	---	27.2	28.1	24.7	28.5	24.8	23.8	23.2	**22.2**	**28.7**	**14.1**
2	23.4	22.8	22.5	21.9	21.5	21.3	24.6	25.0	23.9	20.2	---	---	---	---	---	---	---	---	9.6	8.3	6.8	4.9	3.2	4.0	**---**	**---**	**---**
3	5.6	6.2	6.6	5.3	6.1	6.3	7.5	9.7	11.4	12.2	13.4	13.2	---	---	---	---	9.8	10.8	6.9	4.9	3.8	4.5	4.4	4.5	**7.6**	**13.4**	**3.8**
4	5.1	5.7	5.9	5.9	5.9	6.0	6.4	6.7	7.2	8.3	8.6	9.5	8.7	8.8	7.5	8.2	7.0	4.3	6.5	8.6	8.2	8.4	8.7	9.4	**7.3**	**9.5**	**4.3**
5	9.8	9.2	9.2	9.1	9.4	9.3	11.0	13.5	19.9	20.5	23.9	25.5	22.2	22.7	21.3	17.9	18.3	16.5	16.0	21.4	17.1	16.4	16.1	15.3	**16.3**	**25.5**	**9.1**
6	14.3	13.5	13.0	12.6	12.3	12.6	14.4	18.8	21.6	24.3	26.3	---	---	26.7	18.2	11.1	6.7	5.4	5.4	4.9	5.2	3.5	2.5	3.3	**12.5**	**26.7**	**2.5**
7	3.2	3.5	3.4	4.9	5.3	5.9	7.0	6.4	5.0	6.2	8.1	8.3	9.0	10.7	6.8	4.9	3.3	3.5	3.6	3.9	6.4	6.2	2.7	1.6	**5.4**	**10.7**	**1.6**
8	2.2	3.2	4.0	3.1	2.6	3.4	4.3	4.8	5.8	6.9	8.0	6.6	5.6	5.9	8.5	9.9	10.4	10.7	9.7	11.3	10.7	12.7	12.3	13.6	**7.3**	**13.6**	**2.2**
9	13.1	13.0	14.1	14.7	14.3	12.9	13.7	14.3	14.2	11.4	6.2	5.5	5.4	3.7	3.6	4.8	5.3	6.1	6.0	6.3	5.9	6.5	6.4	6.6	**8.9**	**14.7**	**3.6**
10	6.8	7.8	9.9	12.8	14.0	13.4	14.8	14.2	15.0	15.8	16.4	16.6	16.6	---	15.8	15.6	16.8	16.2	16.4	16.1	15.8	13.9	9.8	9.4	**13.9**	**16.8**	**6.8**
11	8.1	9.7	10.4	8.1	8.4	10.9	9.7	9.0	9.2	6.8	7.2	7.7	7.8	7.3	7.5	7.2	8.0	7.4	7.5	10.5	14.6	12.3	13.2	12.6	**9.2**	**14.6**	**6.8**
12	11.1	10.6	10.5	10.6	10.2	10.9	11.1	9.8	8.1	7.2	9.2	8.7	10.8	9.4	10.7	8.6	8.6	10.0	11.1	13.3	12.7	11.4	13.4	15.7	**10.5**	**15.7**	**7.2**
13	13.5	13.2	12.1	11.2	10.2	9.6	10.0	10.9	8.4	7.7	7.9	8.8	9.8	9.5	10.4	10.1	9.6	11.3	15.3	12.9	20.4	40.0	16.9	16.0	**12.7**	**40.0**	**7.7**
14	14.4	13.6	12.9	13.3	12.7	13.6	13.2	13.7	14.2	21.1	28.7	30.3	27.1	25.2	25.8	24.8	23.1	21.1	22.1	23.4	24.9	23.8	22.9	22.3	**20.3**	**30.3**	**12.7**
15	21.4	20.6	19.7	17.8	16.9	16.4	19.9	20.4	18.1	19.4	20.8	19.4	18.7	19.0	20.8	20.9	21.9	24.8	19.4	19.7	19.5	21.4	20.2	20.6	**19.9**	**24.8**	**16.4**
16	20.3	19.4	19.2	17.6	17.5	22.6	21.2	38.8	35.9	28.9	28.4	29.1	25.8	24.4	22.9	23.5	24.6	22.6	21.7	20.4	18.7	19.9	20.5	21.2	**23.5**	**38.8**	**17.5**
17	20.6	19.4	17.0	16.1	15.2	16.0	18.7	17.2	19.3	23.0	24.3	24.6	23.7	25.7	25.2	26.1	26.6	26.6	20.9	9.0	8.1	8.8	9.4	9.8	**18.8**	**26.6**	**8.1**
18	11.5	10.5	9.4	9.3	8.8	11.2	8.3	8.9	10.7	14.3	16.5	16.6	18.2	20.7	22.8	22.4	21.0	20.7	16.6	4.6	6.4	5.8	4.4	3.4	**12.6**	**22.8**	**3.4**
19	4.0	4.0	4.7	5.2	5.5	6.0	6.5	10.5	9.2	12.0	5.6	6.1	3.9	3.9	3.3	3.2	2.7	4.1	3.5	2.3	2.4	1.7	1.5	1.4	**4.7**	**12.0**	**1.4**
20	2.5	1.3	1.4	1.3	1.1	2.2	3.4	3.6	3.3	4.4	5.1	6.5	6.2	6.4	6.6	4.7	4.5	3.8	3.9	4.4	5.8	9.6	6.2	4.3	**4.2**	**9.6**	**1.1**
21	4.5	4.3	3.9	3.4	3.5	5.2	5.4	10.1	9.3	7.1	4.8	6.3	5.7	4.4	3.9	3.6	3.6	5.0	5.4	8.2	8.0	13.8	7.4	10.6	**6.1**	**13.8**	**3.4**
22	7.2	8.8	6.4	6.1	6.7	9.2	9.5	9.1	7.2	5.6	5.5	6.2	6.6	6.7	7.0	7.6	7.6	8.4	9.2	10.9	14.2	18.1	25.5	12.1	**9.2**	**25.5**	**5.5**
23	22.4	12.7	10.4	9.6	9.5	9.2	12.6	16.6	15.9	11.4	9.9	12.7	11.9	12.2	10.9	11.1	10.3	11.1	10.5	10.5	15.9	16.7	19.4	19.9	**13.0**	**22.4**	**9.2**
24	12.9	10.9	11.9	12.3	11.6	11.1	12.3	13.7	14.9	14.7	14.8	14.8	16.0	17.3	14.9	15.5	13.8	12.2	12.1	13.5	13.5	14.3	14.1	15.2	**13.6**	**17.3**	**10.9**
25	13.2	12.7	11.8	12.5	13.4	12.2	17.0	18.1	15.0	14.3	14.9	14.3	15.3	16.0	15.3	15.8	16.8	15.4	14.2	13.9	13.1	12.8	13.6	12.6	**14.3**	**18.1**	**11.8**
26	12.2	11.0	10.7	10.1	9.9	13.5	11.8	20.2	17.9	20.2	25.1	26.5	26.2	26.9	23.5	21.7	14.9	9.1	9.3	11.3	18.7	---	14.3	14.9	**16.5**	**26.9**	**9.1**
27	15.3	15.4	14.6	14.3	14.4	14.2	16.6	22.3	23.2	22.6	26.0	26.7	23.5	20.5	19.9	16.8	17.2	18.1	18.5	26.3	18.7	18.0	17.5	17.6	**19.0**	**26.7**	**14.2**
28	17.4	17.4	17.3	17.6	17.5	18.5	19.7	25.3	28.2	27.9	24.7	20.8	---	---	---	---	---	22.7	27.2	30.2	37.5	16.8	15.6	16.6	**22.0**	**37.5**	**15.6**
29	15.2	14.4	12.4	12.0	12.7	13.9	15.2	17.2	17.4	15.3	15.1	18.6	20.9	23.3	22.6	21.1	21.3	15.6	12.8	10.4	8.1	8.8	8.5	8.5	**15.0**	**23.3**	**8.1**
30	7.5	6.5	6.7	7.6	7.8	8.0	7.5	7.4	6.8	6.6	7.0	8.2	8.6	7.5	7.3	7.4	7.8	8.2	8.4	7.9	5.8	4.3	5.0	5.4	**7.1**	**8.6**	**4.3**
31	6.8	6.2	6.5	7.1	7.2	7.4	8.3	7.5	7.2	8.7	7.1	8.5	8.0	7.4	8.5	8.4	7.9	8.2	8.1	8.3	6.5	7.1	7.2	6.6	**7.5**	**8.7**	**6.2**
MEAN	**11.7**	**11.1**	**10.8**	**10.6**	**10.5**	**11.2**	**12.2**	**14.4**	**14.4**	**14.5**	**14.5**	**14.5**	**14.4**	**14.8**	**14.3**	**13.1**	**12.5**	**12.9**	**12.4**	**12.3**	**13.0**	**12.9**	**11.8**	**11.6**	**12.7**		
MAX	**23.4**	**22.8**	**22.5**	**21.9**	**21.5**	**22.6**	**24.6**	**38.8**	**35.9**	**28.9**	**28.7**	**30.3**	**27.4**	**28.2**	**28.7**	**26.1**	**26.6**	**27.2**	**28.1**	**30.2**	**37.5**	**40.0**	**25.5**	**23.2**		**40.0**	
MIN	**2.2**	**1.3**	**1.4**	**1.3**	**1.1**	**2.2**	**3.4**	**3.6**	**3.3**	**4.4**	**4.8**	**5.5**	**3.9**	**3.7**	**3.3**	**3.2**	**2.7**	**3.5**	**3.5**	**2.3**	**2.4**	**1.7**	**1.5**	**1.4**			**1.1**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 719 DATA RECOVERY RATE = 96.6% DATA CAPTURE RATE = 96.8%

MONTHLY MEAN = 12.7 µg/m3

MAXIMUM PM2.5 = 40.0 µg/m3 DATE OF OCCURRENCE = 8/13 at 2200 MAXIMUM DAILY MEAN = 23.5 µg/m3 DATE OF OCCURRENCE = 8/16

SECOND MAXIMUM PM2.5 = 38.8 µg/m3 DATE OF OCCURRENCE = 8/16 at 800 SECOND MAXIMUM DAILY MEAN = 22.2 µg/m3 DATE OF OCCURRENCE = 8/1

MINIMUM PM2.5 = 1.1 µg/m3 DATE OF OCCURRENCE = 8/20 at 500 MINUMUM DAILY MEAN = 4.2 µg/m3 DATE OF OCCURRENCE = 8/20

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

CSX AQ4 Modulair

HOURLY AVERAGES of PM2.5 in µg/m3 for SEPTEMBER, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	6.5	6.5	6.5	7.0	6.5	6.8	7.0	8.0	7.9	8.0	8.3	10.2	11.4	13.2	11.1	10.7	11.0	12.2	13.2	11.2	10.7	10.5	10.0	9.7	**9.3**	**13.2**	**6.5**
2	10.2	10.0	8.1	8.0	10.1	11.2	12.4	11.6	9.6	7.9	7.4	6.9	6.5	4.7	4.3	3.8	3.7	3.5	3.7	3.8	4.6	4.4	3.5	3.7	**6.8**	**12.4**	**3.5**
3	2.7	2.8	3.1	1.8	2.0	2.2	4.1	4.8	5.6	4.1	4.0	5.1	4.4	4.1	3.7	4.9	5.3	5.0	4.9	5.3	6.1	7.8	5.7	4.5	**4.3**	**7.8**	**1.8**
4	5.5	5.3	5.7	6.6	5.3	5.5	7.6	8.0	6.2	6.1	7.2	5.9	7.4	6.4	5.1	7.1	10.3	7.5	6.8	6.6	7.6	7.7	5.9	6.7	**6.6**	**10.3**	**5.1**
5	5.1	5.7	5.5	4.1	6.3	6.9	18.6	12.3	9.7	6.3	6.0	5.6	7.0	9.1	6.8	6.1	11.0	5.9	5.2	5.7	5.7	5.6	6.3	7.0	**7.2**	**18.6**	**4.1**
6	7.0	6.6	7.6	7.8	7.8	8.3	12.4	9.4	13.2	13.0	8.6	10.5	7.2	6.6	6.8	8.3	6.2	6.3	7.4	7.5	9.7	8.8	9.7	8.1	**8.5**	**13.2**	**6.2**
7	8.5	7.8	6.3	6.4	7.6	8.1	8.0	8.6	9.7	12.3	14.3	16.8	3.7	3.4	3.5	4.0	4.7	4.8	5.0	8.7	9.1	6.8	5.3	3.7	**7.3**	**16.8**	**3.4**
8	3.2	2.8	2.5	2.7	2.3	2.7	2.5	4.0	3.9	3.4	3.8	5.3	4.4	3.5	4.8	3.9	3.6	3.9	6.2	8.2	7.5	12.2	17.1	4.9	**4.9**	**17.1**	**2.3**
9	4.6	5.7	4.2	4.0	4.2	7.6	7.9	6.7	6.0	4.4	3.2	4.4	6.2	3.5	4.9	3.7	3.3	3.4	5.8	7.4	8.1	18.7	9.7	14.2	**6.3**	**18.7**	**3.2**
10	6.5	6.9	6.8	7.9	5.9	6.5	5.9	7.2	13.4	6.7	8.1	9.3	8.4	10.9	10.5	10.2	9.9	13.1	13.9	13.3	14.7	20.2	14.7	14.9	**10.2**	**20.2**	**5.9**
11	15.7	16.2	15.3	15.5	14.6	22.7	18.7	18.2	16.9	15.8	17.3	14.2	14.6	13.6	13.2	14.5	13.5	13.3	13.8	17.5	15.4	13.7	14.2	13.8	**15.5**	**22.7**	**13.2**
12	15.6	14.9	13.5	14.7	16.2	14.3	16.1	19.7	16.0	13.6	11.6	10.6	10.4	10.4	9.7	10.6	9.7	10.8	11.6	9.0	7.6	7.5	7.3	8.5	**12.0**	**19.7**	**7.3**
13	6.9	8.4	10.3	9.3	10.0	11.1	10.3	10.1	12.7	14.1	11.9	9.8	10.6	10.6	9.8	8.9	8.0	8.3	9.1	17.0	25.9	10.9	13.4	12.8	**11.2**	**25.9**	**6.9**
14	13.0	12.6	11.2	11.7	10.9	11.3	12.5	11.4	9.2	11.1	12.3	12.8	14.1	14.2	14.4	13.9	12.3	13.7	15.1	11.0	12.3	13.3	10.3	11.0	**12.3**	**15.1**	**9.2**
15	10.8	10.4	12.3	13.5	13.1	13.6	17.2	19.2	16.6	15.5	13.2	11.8	11.0	12.0	11.8	13.3	15.2	14.6	14.8	12.4	10.2	8.6	7.6	7.0	**12.7**	**19.2**	**7.0**
16	7.5	6.4	6.6	8.4	8.5	7.4	7.9	14.6	8.8	7.0	6.4	8.6	7.8	7.3	6.9	7.7	8.2	9.8	8.9	8.9	8.8	9.7	8.8	8.7	**8.3**	**14.6**	**6.4**
17	8.8	9.3	10.1	9.8	10.8	9.7	11.8	11.7	12.2	14.4	11.1	11.6	12.1	11.8	12.2	10.9	11.5	10.7	10.2	9.7	8.8	8.5	8.5	8.6	**10.6**	**14.4**	**8.5**
18	8.7	9.1	8.0	6.9	6.0	7.6	7.8	10.2	9.2	11.1	9.4	10.9	10.6	9.2	9.3	8.8	9.1	8.9	8.6	7.5	9.1	8.4	8.1	7.9	**8.7**	**11.1**	**6.0**
19	8.3	9.7	8.5	8.9	8.8	8.2	8.9	8.6	10.2	8.4	7.0	5.8	6.9	6.1	6.8	9.6	14.3	13.8	14.3	13.1	13.2	13.5	12.8	11.9	**9.9**	**14.3**	**5.8**
20	12.8	13.5	13.2	14.1	16.1	18.0	17.1	13.3	7.6	6.9	5.7	5.4	8.3	12.5	13.8	16.5	16.4	15.9	16.4	16.5	18.0	13.2	5.1	4.7	**12.5**	**18.0**	**4.7**
21	5.8	5.5	5.0	5.1	5.3	4.7	4.9	5.1	6.2	6.2	7.0	7.8	7.8	7.2	7.8	9.6	8.9	9.2	8.8	10.4	12.2	15.9	14.4	14.9	**8.1**	**15.9**	**4.7**
22	12.8	11.5	5.5	4.8	4.2	3.1	4.9	4.4	3.9	3.8	4.2	5.3	6.4	7.4	8.2	8.5	10.2	11.5	11.8	11.2	11.1	11.4	8.8	7.8	**7.6**	**12.8**	**3.1**
23	8.3	8.2	8.4	7.1	7.6	7.7	7.6	9.3	10.7	8.9	7.0	6.4	7.1	7.2	7.6	8.0	8.5	8.4	7.5	7.0	6.6	6.8	6.7	6.7	**7.7**	**10.7**	**6.4**
24	6.8	6.5	6.5	5.6	5.9	6.1	6.0	5.8	5.9	6.1	6.5	6.7	7.2	7.4	9.2	9.3	8.2	7.8	7.9	6.5	6.2	5.6	5.0	5.4	**6.6**	**9.3**	**5.0**
25	5.1	4.3	4.0	4.9	5.1	5.4	4.3	3.6	3.4	6.1	6.4	5.6	4.8	4.4	4.2	5.3	4.9	4.3	5.5	5.3	5.3	6.8	7.7	9.3	**5.2**	**9.3**	**3.4**
26	8.3	7.8	8.0	7.7	8.3	8.5	8.7	8.9	9.9	10.4	10.0	10.3	7.7	6.8	4.3	3.4	3.3	4.0	4.9	4.8	5.7	5.0	4.8	6.4	**6.9**	**10.4**	**3.3**
27	6.1	5.6	6.9	6.7	7.2	9.3	---	---	---	---	---	---	---	---	---	---	---	---	4.7	4.6	6.0	4.3	2.9	2.7	**---**	**---**	**---**
28	3.6	5.1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
29	---	---	---	---	---	---	8.2	8.9	8.5	7.1	8.3	9.6	10.1	10.0	9.1	8.4	5.4	4.4	5.2	5.3	4.8	4.3	5.2	5.9	**7.1**	**10.1**	**4.3**
30	6.8	5.7	7.3	7.4	9.3	11.3	11.6	9.9	8.9	7.1	7.8	8.1	8.0	7.8	9.1	12.1	14.5	---	10.4	12.4	10.4	10.9	5.7	3.7	**8.9**	**14.5**	**3.7**
MEAN	**8.0**	**8.0**	**7.7**	**7.8**	**8.1**	**8.8**	**9.7**	**9.8**	**9.4**	**8.8**	**8.4**	**8.6**	**8.3**	**8.3**	**8.2**	**8.6**	**9.0**	**8.7**	**9.0**	**9.2**	**9.7**	**9.7**	**8.5**	**8.1**	**8.7**		
MAX	**15.7**	**16.2**	**15.3**	**15.5**	**16.2**	**22.7**	**18.7**	**19.7**	**16.9**	**15.8**	**17.3**	**16.8**	**14.6**	**14.2**	**14.4**	**16.5**	**16.4**	**15.9**	**16.4**	**17.5**	**25.9**	**20.2**	**17.1**	**14.9**		**25.9**	
MIN	**2.7**	**2.8**	**2.5**	**1.8**	**2.0**	**2.2**	**2.5**	**3.6**	**3.4**	**3.4**	**3.2**	**4.4**	**3.7**	**3.4**	**3.5**	**3.4**	**3.3**	**3.4**	**3.7**	**3.8**	**4.6**	**4.3**	**2.9**	**2.7**			**1.8**

POSSIBLE NUMBER OF OBSERVATIONS = 720 ACTUAL NUMBER OF OBSERVATIONS = 679 DATA RECOVERY RATE = 94.3% DATA CAPTURE RATE = 93.3%

MONTHLY MEAN = 8.7 µg/m3

MAXIMUM PM2.5 = 25.9 µg/m3 DATE OF OCCURRENCE = 9/13 at 2100 MAXIMUM DAILY MEAN = 15.5 µg/m3 DATE OF OCCURRENCE = 9/11

SECOND MAXIMUM PM2.5 = 22.7 µg/m3 DATE OF OCCURRENCE = 9/11 at 600 SECOND MAXIMUM DAILY MEAN = 12.7 µg/m3 DATE OF OCCURRENCE = 9/15

MINIMUM PM2.5 = 1.8 µg/m3 DATE OF OCCURRENCE = 9/3 at 400 MINUMUM DAILY MEAN = 4.3 µg/m3 DATE OF OCCURRENCE = 9/3

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

CSX AQ5A Modulair

HOURLY AVERAGES of PM10 in µg/m3 for JULY, 2024

Hr Beg Hr End Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	12.5	10.9	8.5	6.5	4.6	6.4	6.8	8.1	7.9	8.1	6.9	6.4	6.5	7.2	6.7	8.5	7.3	9.5	7.0	9.7	10.6	10.7	10.5	9.1	**8.2**	**12.5**	**4.6**
2	11.1	7.5	8.6	12.1	11.1	15.9	14.1	17.5	---	11.1	12.3	11.0	---	---	---	---	---	---	---	13.0	14.2	---	---	---	**---**	**---**	**---**
3	13.8	9.8	18.7	---	---	24.6	16.2	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	31.5	28.8	**---**	**---**	**---**
4	24.3	28.7	25.3	24.3	29.7	30.6	26.8	24.3	22.6	24.9	29.9	30.4	28.9	29.4	31.9	37.1	38.4	37.4	36.5	31.0	28.5	29.3	51.0	46.1	**31.1**	**51.0**	**22.6**
5	61.7	64.1	60.6	41.9	32.5	31.4	27.2	25.2	25.4	25.9	25.9	22.6	21.5	21.2	24.4	27.4	26.8	29.6	32.5	33.5	34.6	33.6	37.2	40.7	**33.6**	**64.1**	**21.2**
6	36.4	37.6	36.5	27.5	26.7	21.6	20.0	19.9	18.3	15.4	13.7	12.4	12.6	11.9	12.5	13.3	19.8	19.6	22.1	26.4	26.1	24.5	25.4	30.7	**22.1**	**37.6**	**11.9**
7	17.6	15.3	18.7	14.2	15.3	15.3	14.9	14.5	14.7	14.0	13.3	13.1	12.9	14.3	15.9	14.3	15.5	15.6	16.7	17.7	18.7	21.4	22.1	52.6	**17.4**	**52.6**	**12.9**
8	35.2	31.6	18.9	18.2	20.0	28.8	32.1	27.4	21.9	37.6	36.6	30.3	23.8	16.4	16.8	19.5	23.2	25.0	26.0	25.4	19.9	23.9	30.0	28.2	**25.7**	**37.6**	**16.4**
9	23.1	23.5	22.1	22.9	24.4	25.4	23.7	31.0	26.2	26.4	27.3	23.8	23.3	20.2	72.0	25.1	15.6	21.7	24.6	25.5	25.2	24.3	23.1	21.6	**25.9**	**72.0**	**15.6**
10	24.7	29.6	27.4	27.0	25.5	28.5	22.0	21.1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
11	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
12	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
13	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
14	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
15	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
16	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
17	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
18	---	---	---	---	---	---	---	---	---	---	20.1	20.0	20.4	20.7	21.1	22.1	20.9	21.8	21.5	22.5	22.8	23.1	26.5	29.9	**---**	**---**	**---**
19	30.1	31.4	33.7	26.2	23.6	21.1	20.5	19.6	14.9	12.9	12.9	13.4	15.8	12.5	17.7	11.9	12.7	14.5	15.2	22.6	27.7	35.6	34.3	38.6	**21.6**	**38.6**	**11.9**
20	32.6	28.0	25.6	27.8	29.6	29.5	31.5	37.2	31.9	27.2	23.6	23.3	22.2	21.6	21.6	27.2	25.7	19.8	21.6	24.9	20.8	25.3	21.7	21.5	**25.9**	**37.2**	**19.8**
21	20.9	20.5	23.8	23.9	22.6	23.1	24.7	26.8	21.0	18.8	28.5	22.7	21.4	18.8	20.6	20.9	21.0	20.2	20.8	21.1	23.7	21.6	21.5	21.7	**22.1**	**28.5**	**18.8**
22	24.7	24.5	24.0	23.7	22.7	26.2	27.9	44.0	27.6	24.0	19.8	26.8	39.2	45.6	43.7	29.2	17.4	12.8	12.7	8.1	10.3	13.6	35.2	19.6	**25.1**	**45.6**	**8.1**
23	15.8	18.4	14.9	15.2	14.4	15.4	13.8	16.1	13.8	11.8	15.0	15.3	18.3	19.5	20.0	15.5	18.4	22.4	22.9	36.3	27.8	25.2	17.1	12.0	**18.1**	**36.3**	**11.8**
24	12.1	12.5	11.2	12.3	12.2	10.9	12.2	16.6	12.0	14.1	14.2	28.0	22.4	15.9	17.4	19.5	24.8	30.8	21.6	19.3	15.6	16.3	15.0	17.4	**16.8**	**30.8**	**10.9**
25	16.5	16.5	20.0	16.7	18.5	20.2	20.2	23.7	19.3	26.9	25.3	30.1	24.9	26.2	26.3	31.6	31.0	37.9	30.4	31.0	31.6	28.7	31.7	35.2	**25.9**	**37.9**	**16.5**
26	33.0	32.4	27.9	23.9	20.0	19.7	15.7	17.0	19.2	18.4	16.9	13.9	15.4	18.1	13.3	15.3	15.2	15.3	16.4	25.9	21.6	19.8	17.8	15.0	**19.5**	**33.0**	**13.3**
27	17.7	18.3	18.6	17.9	20.2	27.8	18.7	18.2	14.9	13.1	12.2	11.9	11.5	12.3	13.2	13.4	15.5	13.1	13.3	15.9	31.5	19.5	25.8	31.5	**17.8**	**31.5**	**11.5**
28	27.2	20.2	22.7	19.9	20.0	17.8	26.8	20.0	18.1	15.6	14.7	12.2	15.0	15.3	16.7	16.2	16.2	15.3	21.4	35.3	22.4	21.8	25.1	26.0	**20.1**	**35.3**	**12.2**
29	34.5	33.8	27.8	25.8	37.7	41.9	41.6	32.9	31.8	32.6	34.4	28.5	28.6	29.3	28.3	29.3	31.3	34.9	35.9	26.6	28.9	24.8	27.1	25.6	**31.4**	**41.9**	**24.8**
30	22.1	21.8	22.8	21.1	24.0	21.6	24.1	20.6	19.1	19.1	20.0	20.5	22.0	22.2	24.1	27.2	22.6	24.9	26.8	29.8	26.2	21.0	17.2	13.5	**22.3**	**29.8**	**13.5**
31	13.1	11.4	13.1	14.2	23.3	23.6	14.7	10.8	14.8	17.4	18.8	20.5	20.0	18.5	18.8	35.2	27.5	20.0	19.1	24.6	22.3	24.6	26.0	30.8	**20.1**	**35.2**	**10.8**
MEAN	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**22.3**		
MAX	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---		**72.0**	
MIN	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---			**4.6**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 522 DATA RECOVERY RATE = 70.2% DATA CAPTURE RATE = 64.5%

MONTHLY MEAN = 22.3 µg/m3

MAXIMUM PM10 = 72.0 µg/m3 DATE OF OCCURRENCE = 7/9 at 1500 MAXIMUM DAILY MEAN = 33.6 µg/m3 DATE OF OCCURRENCE = 7/5

SECOND MAXIMUM PM10 = 64.1 µg/m3 DATE OF OCCURRENCE = 7/5 at 200 SECOND MAXIMUM DAILY MEAN = 31.4 µg/m3 DATE OF OCCURRENCE = 7/29

MINIMUM PM10 = 4.6 µg/m3 DATE OF OCCURRENCE = 7/1 at 500 MINUMUM DAILY MEAN = 8.2 µg/m3 DATE OF OCCURRENCE = 7/1

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

CSX AQ5A Modulair

HOURLY AVERAGES of PM10 in µg/m3 for AUGUST, 2024

Hr Beg Hr End Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	34.8	27.8	27.4	27.8	25.3	27.7	34.6	44.3	43.9	---	---	37.3	32.9	27.1	33.4	30.6	34.2	31.8	31.0	32.0	38.2	34.2	33.7	35.5	**33.0**	**44.3**	**25.3**
2	40.3	33.3	34.7	35.0	37.7	42.0	34.8	36.4	29.2	23.3	28.5	---	---	---	---	---	---	---	28.9	43.1	53.8	23.3	11.9	13.6	**---**	**---**	**---**
3	19.6	19.3	19.0	16.8	20.9	22.1	19.7	23.4	27.0	20.6	20.7	21.8	---	---	37.4	45.4	24.4	33.0	24.2	13.1	15.8	13.9	17.2	17.5	**22.4**	**45.4**	**13.1**
4	17.2	19.9	20.1	22.0	22.8	23.2	21.9	14.1	14.8	14.5	13.8	15.0	15.8	12.8	7.4	10.6	13.7	7.2	9.8	14.9	15.2	13.5	17.8	19.8	**15.7**	**23.2**	**7.2**
5	19.8	16.1	22.0	20.8	23.5	27.9	19.3	20.8	33.6	36.2	29.9	24.4	23.6	22.3	23.0	21.7	25.5	23.9	27.7	48.8	26.0	27.3	29.9	28.8	**26.0**	**48.8**	**16.1**
6	29.3	27.4	26.0	24.2	26.8	22.2	26.0	21.3	28.0	30.1	34.1	31.2	34.3	34.4	27.0	17.8	12.7	10.9	12.2	13.0	14.0	6.5	5.6	9.9	**21.9**	**34.4**	**5.6**
7	7.0	6.9	10.8	12.8	14.4	12.4	19.0	14.2	12.5	9.9	12.0	10.5	11.1	23.5	9.3	10.2	11.1	8.9	11.5	8.3	13.0	14.9	9.7	10.9	**11.9**	**23.5**	**6.9**
8	12.5	12.3	13.2	12.5	25.0	21.3	13.8	13.0	15.6	16.6	20.6	13.2	13.8	16.5	33.1	45.3	49.7	46.8	38.0	70.1	69.6	66.2	64.8	65.3	**32.0**	**70.1**	**12.3**
9	65.2	53.6	63.7	66.5	70.3	51.3	43.4	47.2	55.8	35.0	14.6	11.4	12.0	11.0	7.7	9.1	10.2	12.9	15.3	15.2	14.3	17.2	19.0	19.6	**30.9**	**70.3**	**7.7**
10	19.0	24.2	22.0	31.6	35.3	34.7	34.8	28.8	23.8	25.6	28.6	18.8	18.8	18.3	19.0	17.8	18.8	21.8	23.8	23.0	21.1	21.7	19.1	16.5	**23.6**	**35.3**	**16.5**
11	12.3	15.0	16.2	12.8	16.6	20.4	21.7	20.1	12.1	10.2	10.6	9.8	11.4	11.0	9.6	11.1	9.6	12.0	11.6	21.2	18.7	30.6	28.9	26.3	**15.8**	**30.6**	**9.6**
12	20.9	20.5	18.5	21.2	20.4	30.6	18.9	17.5	20.7	17.6	14.8	14.5	13.2	15.0	16.2	17.3	13.3	11.6	8.3	12.4	13.9	13.3	16.9	19.3	**17.0**	**30.6**	**8.3**
13	22.6	14.4	18.2	12.2	18.0	26.7	29.6	24.0	17.7	12.4	17.4	20.1	16.1	18.2	18.2	11.6	13.9	16.2	17.2	17.9	30.9	---	30.1	25.6	**19.5**	**30.9**	**11.6**
14	23.1	31.4	21.6	18.9	27.6	31.8	29.5	23.5	27.0	33.3	44.8	42.5	36.4	35.4	38.1	34.4	30.6	27.7	30.1	30.5	30.4	27.1	33.7	33.3	**30.9**	**44.8**	**18.9**
15	36.0	28.6	29.0	28.0	28.6	47.0	47.0	35.6	30.6	32.1	29.8	24.4	24.7	27.7	26.4	29.3	26.6	30.4	35.5	34.0	43.1	30.9	31.2	38.2	**32.3**	**47.0**	**24.4**
16	35.5	34.5	34.4	35.9	42.6	136.0	64.9	63.4	70.8	30.5	26.9	29.5	29.7	31.1	44.7	38.5	31.1	30.9	27.8	27.2	30.9	32.5	35.4	34.1	**41.6**	**136.0**	**26.9**
17	27.7	25.9	28.4	26.0	23.8	35.8	32.6	25.7	26.7	38.0	32.4	32.3	29.7	31.5	38.5	42.4	45.3	42.8	41.2	14.0	16.6	17.3	22.9	24.2	**30.1**	**45.3**	**14.0**
18	32.0	28.7	22.4	29.2	22.0	21.0	14.8	15.4	18.9	19.2	23.3	23.4	26.3	28.4	27.2	28.0	25.6	27.6	25.2	15.7	27.4	46.7	34.1	22.4	**25.2**	**46.7**	**14.8**
19	14.7	16.0	17.8	19.0	24.9	18.2	18.9	18.6	14.7	12.6	10.2	9.3	5.5	4.7	9.9	6.9	7.0	7.0	7.9	9.7	11.7	7.0	8.2	7.2	**12.0**	**24.9**	**4.7**
20	8.0	8.5	9.0	6.6	7.4	7.1	9.2	9.9	9.1	10.1	11.3	13.8	12.9	14.7	10.9	11.9	11.9	7.4	10.7	7.4	10.2	16.5	16.6	8.0	**10.4**	**16.6**	**6.6**
21	7.5	5.8	7.5	5.2	9.1	12.0	17.1	30.6	18.5	11.4	9.8	12.3	7.9	9.9	8.3	9.5	5.7	7.5	10.0	14.3	19.1	15.8	12.3	15.0	**11.8**	**30.6**	**5.2**
22	22.4	20.6	23.5	16.3	18.2	35.4	28.0	28.9	14.7	11.1	12.2	9.1	12.4	12.2	10.1	12.7	12.3	9.7	15.5	32.9	36.2	46.6	100.6	108.4	**27.1**	**108.4**	**9.1**
23	---	42.2	21.5	18.8	47.5	34.6	29.8	28.7	25.6	12.8	16.5	18.2	19.0	15.4	12.8	12.0	12.3	14.5	18.0	32.0	21.0	18.6	20.7	23.1	**22.4**	**47.5**	**12.0**
24	24.9	15.8	22.4	18.1	19.4	22.6	25.9	17.8	18.9	18.7	21.5	21.9	19.2	20.0	16.6	16.0	20.9	15.4	16.4	19.0	20.4	20.3	31.3	29.3	**20.5**	**31.3**	**15.4**
25	25.3	17.7	18.0	19.4	26.4	18.4	23.2	21.2	18.6	18.4	15.9	14.9	15.5	17.9	19.2	23.3	24.9	20.6	24.5	29.0	18.2	18.5	22.2	17.6	**20.4**	**29.0**	**14.9**
26	17.4	14.4	16.1	17.9	17.6	22.0	26.6	36.5	24.5	29.7	50.9	37.4	27.4	31.3	34.7	44.6	18.5	14.3	13.1	15.1	16.8	20.7	31.7	27.5	**25.3**	**50.9**	**13.1**
27	31.2	30.3	30.7	24.6	25.2	29.1	39.9	41.5	31.6	34.2	43.1	44.9	30.6	28.0	27.5	27.9	27.0	24.7	26.9	39.7	35.2	30.7	26.2	29.1	**31.7**	**44.9**	**24.6**
28	33.7	29.4	28.8	33.1	24.6	28.5	41.4	38.3	31.5	23.7	26.9	24.9	---	---	---	---	---	24.6	31.9	39.9	59.8	27.0	25.5	36.1	**32.1**	**59.8**	**23.7**
29	24.6	21.0	22.5	19.8	21.3	21.2	23.7	28.0	25.2	20.2	23.2	26.8	28.8	34.8	29.3	32.8	39.8	45.5	45.7	33.6	30.5	40.7	56.6	72.9	**32.0**	**72.9**	**19.8**
30	85.8	50.8	52.1	63.7	57.4	57.8	42.0	55.6	58.0	44.9	43.4	60.4	55.0	41.7	34.7	39.2	40.3	36.0	35.9	32.7	18.7	17.1	25.3	32.8	**45.1**	**85.8**	**17.1**
31	49.4	52.0	52.3	51.3	47.7	43.9	64.0	38.4	21.6	19.8	15.1	21.6	16.9	12.7	18.7	13.9	11.4	13.3	20.4	15.1	19.0	15.1	12.5	12.1	**27.4**	**64.0**	**11.4**
MEAN	**27.3**	**24.7**	**24.8**	**24.8**	**27.4**	**31.8**	**29.5**	**28.5**	**26.5**	**22.4**	**23.4**	**23.2**	**21.5**	**21.7**	**22.4**	**23.2**	**21.7**	**21.2**	**22.5**	**25.0**	**26.1**	**24.4**	**27.5**	**28.4**	**25.0**		
MAX	**85.8**	**53.6**	**63.7**	**66.5**	**70.3**	**136.0**	**64.9**	**63.4**	**70.8**	**44.9**	**50.9**	**60.4**	**55.0**	**41.7**	**44.7**	**45.4**	**49.7**	**46.8**	**45.7**	**70.1**	**69.6**	**66.2**	**100.6**	**108.4**		**136.0**	
MIN	**7.0**	**5.8**	**7.5**	**5.2**	**7.4**	**7.1**	**9.2**	**9.9**	**9.1**	**9.9**	**9.8**	**9.1**	**5.5**	**4.7**	**7.4**	**6.9**	**5.7**	**7.0**	**7.9**	**7.4**	**10.2**	**6.5**	**5.6**	**7.2**			**4.7**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 726 DATA RECOVERY RATE = 97.6% DATA CAPTURE RATE = 96.8%

MONTHLY MEAN = 25.0 µg/m3

MAXIMUM PM10 = 136.0 µg/m3 DATE OF OCCURRENCE = 8/16 at 600 MAXIMUM DAILY MEAN = 45.1 µg/m3 DATE OF OCCURRENCE = 8/30

SECOND MAXIMUM PM10 = 108.4 µg/m3 DATE OF OCCURRENCE = 8/22 at 2400 SECOND MAXIMUM DAILY MEAN = 41.6 µg/m3 DATE OF OCCURRENCE = 8/16

MINIMUM PM10 = 4.7 µg/m3 DATE OF OCCURRENCE = 8/19 at 1400 MINUMUM DAILY MEAN = 10.4 µg/m3 DATE OF OCCURRENCE = 8/20

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

CSX AQ5A Modulair

HOURLY AVERAGES of PM10 in µg/m3 for SEPTEMBER, 2024

Hr Beg Hr End Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	13.7	13.9	14.2	15.6	17.0	15.0	16.3	16.5	13.8	11.9	10.1	13.8	12.0	15.9	10.4	10.9	12.0	12.2	16.0	20.5	16.0	14.6	14.5	14.1	**14.2**	**20.5**	**10.1**
2	12.4	12.8	14.5	20.0	21.4	22.5	21.4	20.8	17.1	16.7	13.3	12.7	13.0	10.4	11.3	9.7	9.3	9.4	10.8	8.1	9.9	8.9	9.2	8.6	**13.5**	**22.5**	**8.1**
3	8.5	8.3	8.9	9.6	10.1	11.6	18.8	11.7	11.8	11.1	10.8	12.1	13.3	10.9	12.0	17.2	17.8	13.3	13.3	13.4	18.2	39.1	34.8	37.9	**15.6**	**39.1**	**8.3**
4	23.1	35.8	22.7	25.3	25.0	31.0	47.9	35.6	15.2	12.3	9.5	10.4	9.7	10.8	11.0	14.1	12.7	12.0	16.7	22.1	29.9	19.8	29.5	29.6	**21.3**	**47.9**	**9.5**
5	31.5	33.4	25.6	25.0	22.0	39.1	38.2	23.6	16.3	13.2	12.1	10.3	12.8	12.5	15.3	16.4	17.7	16.5	18.9	36.3	30.7	37.7	49.8	52.4	**25.3**	**52.4**	**10.3**
6	50.2	47.5	52.0	54.5	59.7	60.2	56.4	45.7	32.1	25.2	24.5	17.9	13.9	14.5	19.4	13.9	15.2	14.7	21.4	22.2	26.4	24.7	35.9	32.6	**32.5**	**60.2**	**13.9**
7	23.9	20.3	22.1	27.1	37.8	45.2	29.0	27.0	23.0	19.7	21.3	47.5	19.8	5.8	8.3	8.2	9.8	13.0	11.4	15.4	13.7	15.0	10.1	7.3	**20.1**	**47.5**	**5.8**
8	6.6	6.3	5.7	14.1	6.0	9.9	7.2	6.2	7.4	6.5	7.1	7.2	8.9	9.4	8.4	10.4	8.6	7.9	13.6	13.4	19.0	21.0	70.2	10.3	**12.1**	**70.2**	**5.7**
9	13.7	10.7	11.8	15.2	14.9	22.3	35.2	27.9	15.4	9.5	9.5	7.4	14.5	11.6	9.6	13.6	13.7	12.8	13.5	33.4	24.5	16.5	18.3	18.8	**16.4**	**35.2**	**7.4**
10	13.3	13.6	16.7	18.8	14.7	31.8	15.1	14.9	16.4	22.2	21.5	20.0	20.1	21.0	17.8	16.7	17.5	24.8	32.7	30.2	32.9	67.1	53.6	38.6	**24.7**	**67.1**	**13.3**
11	39.1	34.3	35.0	37.2	49.3	47.1	43.4	27.0	26.6	24.1	26.6	26.6	20.7	20.9	18.6	18.9	18.9	17.5	35.5	65.3	29.8	34.5	32.3	41.0	**32.1**	**65.3**	**17.5**
12	32.7	50.8	37.7	42.7	35.8	38.8	46.8	44.2	26.4	21.4	20.2	18.4	14.9	14.9	15.7	13.7	14.9	20.5	26.1	23.6	22.0	21.1	17.2	18.8	**26.6**	**50.8**	**13.7**
13	22.6	23.0	27.1	29.4	30.7	34.7	26.1	29.6	33.7	36.3	29.1	18.3	24.8	25.9	20.0	19.9	16.4	15.3	19.2	21.5	22.0	32.3	38.5	41.4	**26.6**	**41.4**	**15.3**
14	25.5	25.9	32.7	29.4	35.5	37.3	35.7	17.2	14.5	14.4	16.1	18.2	19.9	20.4	20.1	19.6	21.2	18.7	17.2	19.3	15.5	18.5	15.4	18.2	**21.9**	**37.3**	**14.4**
15	18.6	21.1	18.3	18.5	21.4	23.0	23.7	24.0	23.1	19.0	17.9	19.1	16.5	15.8	15.4	17.6	20.7	21.2	22.3	27.4	25.7	26.9	25.3	28.4	**21.3**	**28.4**	**15.4**
16	33.7	32.5	34.2	33.5	36.9	33.6	35.9	40.9	29.7	27.3	32.1	22.1	22.3	22.9	21.3	24.6	29.4	28.9	33.4	41.8	40.0	40.2	39.1	36.7	**32.2**	**41.8**	**21.3**
17	36.6	44.7	50.3	56.2	57.1	61.9	63.6	58.7	57.4	41.8	39.5	36.0	40.1	37.3	37.0	34.8	37.9	41.8	41.3	38.8	34.4	35.4	32.1	32.6	**43.6**	**63.6**	**32.1**
18	32.5	31.7	34.9	18.2	13.4	15.9	20.5	23.9	26.6	29.9	22.2	24.8	23.2	20.3	23.1	24.7	27.0	22.5	22.7	24.8	32.3	32.0	29.9	27.4	**25.2**	**34.9**	**13.4**
19	27.7	28.5	30.2	31.6	31.4	29.4	34.8	32.1	29.4	24.7	18.3	12.9	13.3	13.8	15.7	19.9	22.7	20.2	31.3	34.3	26.9	34.6	27.7	28.0	**25.8**	**34.8**	**12.9**
20	28.8	25.7	26.2	31.4	29.1	30.5	28.6	20.1	11.1	7.6	6.6	7.5	13.1	23.6	19.9	21.3	21.3	25.5	30.9	43.3	40.3	32.9	20.9	12.1	**23.3**	**43.3**	**6.6**
21	18.2	15.2	16.2	19.4	21.2	22.7	24.4	19.6	13.6	14.4	12.4	13.5	13.5	14.2	14.5	16.3	17.9	16.3	19.0	17.6	25.7	27.0	29.8	46.3	**19.5**	**46.3**	**12.4**
22	55.4	---	22.6	22.2	24.8	11.6	25.4	22.6	16.2	10.0	12.1	10.7	11.4	11.0	16.3	16.0	14.3	15.0	16.4	18.4	22.7	26.6	30.7	38.3	**20.5**	**55.4**	**10.0**
23	38.3	49.5	48.5	41.2	45.7	50.2	47.4	48.4	44.4	43.9	50.2	38.6	37.7	30.3	36.4	27.5	27.1	39.5	44.5	32.8	39.5	46.9	43.7	49.0	**41.7**	**50.2**	**27.1**
24	44.8	35.6	36.6	32.6	37.6	43.2	45.0	39.7	40.4	40.8	44.1	39.9	35.8	40.6	46.7	49.6	59.6	47.9	40.8	37.3	34.9	32.2	40.0	40.4	**41.1**	**59.6**	**32.2**
25	35.5	32.1	34.9	42.3	47.5	37.6	25.1	17.8	23.1	24.3	37.0	36.6	31.7	21.5	16.8	30.0	33.0	16.8	33.7	44.7	33.1	48.8	61.3	67.5	**34.7**	**67.5**	**16.8**
26	65.5	62.4	54.8	57.6	69.7	67.4	63.0	49.3	49.3	46.5	40.0	26.3	19.5	17.2	16.0	12.4	13.3	15.8	19.3	23.7	41.7	19.1	22.7	27.5	**37.5**	**69.7**	**12.4**
27	27.8	26.4	33.7	26.1	43.3	55.9	93.5	8.6	7.7	11.5	11.6	23.7	20.5	21.2	26.0	20.8	21.2	24.4	22.3	21.2	30.4	19.4	14.0	16.9	**26.2**	**93.5**	**7.7**
28	19.2	23.0	28.5	22.9	25.0	25.7	24.8	22.9	33.7	34.1	46.6	27.3	21.1	24.1	26.4	31.3	21.8	19.2	16.3	16.0	12.7	14.7	16.7	18.1	**23.8**	**46.6**	**12.7**
29	22.6	26.3	24.3	18.6	15.7	18.0	24.3	24.1	24.8	14.6	16.3	18.4	17.9	18.9	16.2	14.2	9.7	10.3	16.5	17.5	17.6	16.7	14.9	15.7	**18.1**	**26.3**	**9.7**
30	17.7	13.3	15.1	19.6	27.0	35.5	32.3	25.5	23.1	18.1	15.3	14.5	15.0	14.1	15.7	18.2	21.1	20.3	21.4	20.1	20.1	21.1	19.3	16.8	**20.0**	**35.5**	**13.3**
MEAN	**28.0**	**27.7**	**27.9**	**28.5**	**30.9**	**33.6**	**35.0**	**27.5**	**24.1**	**21.8**	**21.8**	**20.4**	**19.0**	**18.4**	**18.7**	**19.4**	**20.1**	**19.8**	**23.3**	**26.8**	**26.3**	**28.2**	**29.9**	**29.0**	**25.3**		
MAX	**65.5**	**62.4**	**54.8**	**57.6**	**69.7**	**67.4**	**93.5**	**58.7**	**57.4**	**46.5**	**50.2**	**47.5**	**40.1**	**40.6**	**46.7**	**49.6**	**59.6**	**47.9**	**44.5**	**65.3**	**41.7**	**67.1**	**70.2**	**67.5**		**93.5**	
MIN	**6.6**	**6.3**	**5.7**	**9.6**	**6.0**	**9.9**	**7.2**	**6.2**	**7.4**	**6.5**	**6.6**	**7.2**	**8.9**	**5.8**	**8.3**	**8.2**	**8.6**	**7.9**	**10.8**	**8.1**	**9.9**	**8.9**	**9.2**	**7.3**			**5.7**

POSSIBLE NUMBER OF OBSERVATIONS = 720 ACTUAL NUMBER OF OBSERVATIONS = 719 DATA RECOVERY RATE = 99.9% DATA CAPTURE RATE = 100.0%

MONTHLY MEAN = 25.3 µg/m3

MAXIMUM PM10 = 93.5 µg/m3 DATE OF OCCURRENCE = 9/27 at 700 MAXIMUM DAILY MEAN = 43.6 µg/m3 DATE OF OCCURRENCE = 9/17

SECOND MAXIMUM PM10 = 70.2 µg/m3 DATE OF OCCURRENCE = 9/8 at 2300 SECOND MAXIMUM DAILY MEAN = 41.7 µg/m3 DATE OF OCCURRENCE = 9/23

MINIMUM PM10 = 5.7 µg/m3 DATE OF OCCURRENCE = 9/8 at 300 MINUMUM DAILY MEAN = 12.1 µg/m3 DATE OF OCCURRENCE = 9/8

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

CSX AQ5A Modulair

HOURLY AVERAGES of PM2.5 in µg/m3 for JULY, 2024

Hr Beg Hr End Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	3.7	3.9	2.9	2.0	1.8	2.0	2.3	2.2	2.0	1.6	1.2	1.2	1.4	1.5	1.5	2.1	2.3	3.5	4.0	3.9	4.5	4.4	4.6	5.3	**2.7**	**5.3**	**1.2**
2	6.4	4.0	4.0	4.9	5.8	6.1	6.4	6.8	---	6.2	6.2	6.8	---	---	---	---	---	---	---	7.3	8.7	---	---	---	**---**	**---**	**---**
3	6.5	5.4	8.0	---	---	7.7	7.1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	13.7	9.6	**---**	**---**	**---**
4	8.2	10.9	9.3	8.2	9.4	9.7	11.3	12.0	14.5	18.7	22.6	24.8	24.0	24.3	26.2	30.6	31.1	30.9	28.4	26.3	24.5	26.3	48.0	41.2	**21.7**	**48.0**	**8.2**
5	56.1	59.2	56.7	36.4	27.5	23.7	21.7	20.3	19.9	21.2	21.5	19.8	18.4	17.5	20.1	21.3	22.1	25.2	26.6	28.4	27.7	26.8	27.9	29.6	**28.1**	**59.2**	**17.5**
6	25.3	27.5	27.4	23.4	20.7	15.7	14.2	14.2	13.4	11.2	10.7	10.2	10.3	9.7	9.8	11.2	16.8	16.3	16.6	20.6	21.3	20.5	22.0	25.9	**17.2**	**27.5**	**9.7**
7	12.8	9.7	12.3	10.1	10.0	10.0	9.6	8.9	9.5	9.4	9.4	9.8	10.7	10.8	11.5	11.1	12.1	12.1	12.8	13.5	14.2	15.0	17.2	18.7	**11.7**	**18.7**	**8.9**
8	18.7	18.9	14.1	13.7	14.2	14.9	17.3	14.8	14.6	21.5	32.7	27.1	19.8	13.5	12.8	16.0	18.8	20.0	20.6	18.9	16.7	17.9	21.4	20.3	**18.2**	**32.7**	**12.8**
9	18.7	17.4	16.4	16.5	16.8	15.8	16.6	20.2	17.7	19.7	20.6	18.6	18.5	16.4	19.9	9.4	9.8	13.6	16.7	19.8	18.5	16.9	14.3	12.6	**16.7**	**20.6**	**9.4**
10	13.0	13.1	13.0	12.9	14.6	14.1	12.9	13.0	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
11	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
12	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
13	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
14	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
15	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
16	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
17	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
18	---	---	---	---	---	---	---	---	---	---	10.6	12.9	13.4	13.2	13.7	15.8	15.9	16.8	16.6	17.4	18.2	18.2	18.0	20.7	**---**	**---**	**---**
19	20.1	19.4	17.9	16.5	13.7	11.5	10.7	10.1	8.5	7.8	8.1	8.0	7.8	6.7	7.1	7.4	9.1	10.5	10.5	14.8	16.6	17.7	17.3	18.8	**12.3**	**20.1**	**6.7**
20	16.4	13.8	12.0	12.3	11.6	11.7	12.3	13.5	12.7	12.1	12.0	13.2	13.1	14.3	14.9	15.6	15.1	13.6	14.5	15.1	13.7	18.2	15.3	14.9	**13.8**	**18.2**	**11.6**
21	13.4	14.1	15.1	15.7	13.9	13.9	13.3	14.6	16.0	14.7	20.4	18.0	15.8	14.1	15.6	16.8	18.4	18.0	17.9	18.2	19.1	17.3	16.8	16.4	**16.1**	**20.4**	**13.3**
22	16.2	16.3	16.2	15.8	15.3	15.3	15.2	16.7	14.3	14.5	8.1	10.1	10.6	11.9	8.5	9.1	6.3	7.2	6.9	4.8	5.2	6.3	15.5	6.9	**11.3**	**16.7**	**4.8**
23	5.3	5.1	4.6	3.9	3.0	3.4	4.2	6.6	8.3	7.7	10.1	12.1	13.4	15.4	16.3	12.9	14.1	16.8	16.3	19.3	18.1	15.3	11.1	7.3	**10.4**	**19.3**	**3.0**
24	7.0	6.6	6.8	6.7	6.5	5.8	7.2	8.6	7.9	10.0	10.8	20.8	16.5	11.8	12.4	12.5	12.7	13.0	10.3	10.9	7.8	8.1	9.0	9.5	**9.9**	**20.8**	**5.8**
25	9.8	10.4	11.2	10.7	10.2	10.6	10.1	9.0	9.9	14.0	16.9	23.3	18.5	19.5	19.3	26.0	27.1	26.9	24.7	23.3	21.4	20.2	23.1	22.3	**17.4**	**27.1**	**9.0**
26	23.2	22.2	16.8	14.1	11.5	9.7	8.5	7.8	7.1	7.2	7.3	7.3	7.9	7.9	7.8	8.6	9.9	9.0	9.6	10.4	10.8	10.7	11.4	8.1	**10.6**	**23.2**	**7.1**
27	9.9	10.6	12.0	10.2	11.8	10.3	8.6	8.3	8.4	8.6	8.0	7.7	7.7	7.7	7.6	7.4	7.5	7.3	7.5	8.6	10.4	10.6	12.2	16.3	**9.3**	**16.3**	**7.3**
28	15.9	13.7	13.3	12.8	12.1	12.2	12.8	14.9	13.2	12.4	11.3	9.5	11.1	11.8	12.2	12.3	13.1	12.5	14.2	15.4	15.5	15.7	16.3	16.7	**13.3**	**16.7**	**9.5**
29	18.5	19.1	16.4	16.8	18.0	17.7	19.0	19.7	22.3	22.2	24.1	22.0	21.5	20.8	20.8	21.4	23.6	25.2	17.0	12.6	15.0	14.4	13.8	14.8	**19.0**	**25.2**	**12.6**
30	12.3	11.2	11.7	12.1	13.1	12.7	13.7	13.5	13.1	13.4	13.2	13.3	15.3	17.5	17.4	17.3	17.3	18.1	19.4	18.7	15.9	14.6	10.1	7.4	**14.2**	**19.4**	**7.4**
31	6.5	6.4	6.6	7.2	9.0	9.2	6.6	6.1	9.0	10.0	12.4	13.2	12.1	11.8	10.4	15.5	14.8	14.4	14.9	17.1	16.9	18.2	18.8	19.5	**11.9**	**19.5**	**6.1**
MEAN	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**14.1**		
MAX	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---		**59.2**	
MIN	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---			**1.2**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 522 DATA RECOVERY RATE = 70.2% DATA CAPTURE RATE = 64.5%

MONTHLY MEAN = 14.1 µg/m3

MAXIMUM PM2.5 = 59.2 µg/m3 DATE OF OCCURRENCE = 7/5 at 200 MAXIMUM DAILY MEAN = 28.1 µg/m3 DATE OF OCCURRENCE = 7/5

SECOND MAXIMUM PM2.5 = 56.7 µg/m3 DATE OF OCCURRENCE = 7/5 at 300 SECOND MAXIMUM DAILY MEAN = 21.7 µg/m3 DATE OF OCCURRENCE = 7/4

MINIMUM PM2.5 = 1.2 µg/m3 DATE OF OCCURRENCE = 7/1 at 1100 MINUMUM DAILY MEAN = 2.7 µg/m3 DATE OF OCCURRENCE = 7/1

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

CSX AQ5A Modulair

HOURLY AVERAGES of PM2.5 in µg/m3 for AUGUST, 2024

Hr Beg Hr End Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	19.6	17.3	17.3	17.7	16.7	16.0	18.2	22.4	25.0	---	---	27.2	22.4	21.7	23.6	25.1	25.8	25.3	26.7	25.4	26.4	27.2	26.1	27.2	**22.7**	**27.2**	**16.0**
2	27.1	26.2	26.5	25.2	24.0	24.4	25.4	27.3	22.4	18.3	18.1	---	---	---	---	---	---	---	8.6	9.3	9.0	5.3	3.1	4.1	**---**	**---**	**---**
3	6.2	6.5	6.3	5.7	7.6	8.0	8.9	10.2	11.9	12.2	12.8	12.7	---	---	18.0	18.6	10.0	12.4	6.0	4.4	3.8	5.0	5.2	5.4	**8.9**	**18.6**	**3.8**
4	6.0	6.1	6.8	7.5	7.2	7.3	7.0	5.7	6.4	7.2	8.2	11.0	9.5	7.9	5.6	7.4	6.4	4.4	6.6	9.5	8.9	8.7	10.3	8.7	**7.5**	**11.0**	**4.4**
5	8.9	9.3	9.9	9.9	15.1	10.9	10.8	13.0	18.4	20.2	21.4	20.2	18.9	17.8	16.3	16.5	16.0	16.5	16.7	30.2	20.3	18.7	18.3	17.8	**16.3**	**30.2**	**8.9**
6	16.9	15.0	14.7	13.8	14.0	13.4	17.1	15.4	20.0	23.2	26.0	25.6	25.4	26.5	16.7	9.8	5.3	5.1	5.3	4.7	5.1	3.5	2.5	3.3	**13.6**	**26.5**	**2.5**
7	2.8	3.6	3.6	5.1	4.8	5.3	6.9	5.9	5.0	6.0	6.6	6.8	6.8	10.7	6.2	3.9	3.2	3.0	2.7	3.4	6.2	6.8	3.0	1.8	**5.0**	**10.7**	**1.8**
8	2.3	3.2	4.0	3.2	3.2	3.2	3.9	4.6	5.5	6.6	7.2	6.2	4.7	5.3	7.8	9.5	10.2	10.2	10.0	10.8	11.6	11.9	11.6	12.2	**7.0**	**12.2**	**2.3**
9	13.1	13.0	14.1	15.4	16.0	14.3	13.7	14.9	14.9	12.2	6.1	5.2	4.7	3.8	3.2	4.4	5.0	6.1	6.9	6.7	6.9	6.9	7.1	6.0	**9.1**	**16.0**	**3.2**
10	7.9	8.2	10.5	13.5	14.3	12.7	13.6	16.4	15.1	15.6	18.1	11.9	12.0	11.6	11.5	12.3	11.6	13.6	15.6	16.4	15.3	14.6	9.2	9.3	**12.9**	**18.1**	**7.9**
11	8.3	9.5	10.1	8.4	8.8	10.5	9.0	7.6	6.4	6.3	4.7	4.6	5.4	5.3	5.5	5.1	5.2	5.0	4.9	10.5	11.7	12.1	12.4	11.8	**7.8**	**12.4**	**4.6**
12	10.5	9.0	10.0	10.6	10.6	10.0	8.0	8.0	7.2	6.8	5.1	5.3	5.3	5.0	5.1	5.6	5.6	4.3	4.2	7.7	8.4	7.3	9.7	10.0	**7.4**	**10.6**	**4.2**
13	9.9	8.0	7.2	6.3	9.4	9.2	9.5	9.3	7.8	6.0	7.2	7.1	8.1	9.2	9.8	8.0	9.4	10.1	10.0	12.4	18.4	89.6	16.2	16.3	**13.1**	**89.6**	**6.0**
14	14.2	15.2	14.1	12.4	12.7	13.8	12.2	11.6	15.8	23.7	34.5	36.9	32.0	29.6	30.5	30.8	26.2	22.4	21.7	19.7	23.0	18.7	21.1	25.2	**21.5**	**36.9**	**11.6**
15	25.1	21.9	20.6	20.5	19.3	19.5	19.0	20.1	20.3	22.0	22.5	20.4	20.2	21.3	20.8	20.2	19.8	21.7	20.2	20.9	21.8	21.4	21.5	23.2	**21.0**	**25.1**	**19.0**
16	22.3	22.0	21.5	24.7	23.8	33.9	25.1	28.6	30.8	23.7	22.7	21.6	21.9	22.5	21.0	20.8	23.5	22.8	21.8	19.9	19.3	22.6	21.5	22.4	**23.3**	**33.9**	**19.3**
17	20.0	17.5	16.9	17.1	14.9	16.6	18.3	19.5	21.8	25.8	25.5	25.5	24.4	25.2	26.4	27.4	28.9	28.5	22.8	9.1	8.6	8.9	10.1	10.9	**19.6**	**28.9**	**8.6**
18	12.4	11.6	10.3	10.0	10.1	12.9	9.6	9.7	11.7	14.8	16.6	17.3	18.8	20.2	22.0	22.0	20.9	20.9	16.9	4.5	6.2	6.1	3.5	2.8	**12.9**	**22.0**	**2.8**
19	2.9	3.9	4.1	4.5	5.4	5.8	5.9	6.9	6.0	5.6	4.1	3.7	2.6	2.7	2.5	2.3	2.2	1.8	3.0	2.5	2.7	1.7	1.4	1.6	**3.5**	**6.9**	**1.4**
20	1.2	1.2	1.2	1.3	1.3	1.4	2.3	2.5	2.9	3.5	4.9	5.4	5.7	5.9	5.4	4.4	3.6	3.2	2.9	3.2	4.4	5.6	4.2	2.9	**3.3**	**5.9**	**1.2**
21	2.9	3.0	2.4	2.3	2.9	3.2	3.8	3.7	3.3	2.6	2.6	2.9	2.9	2.8	2.8	3.8	2.7	2.6	4.0	6.5	6.5	5.9	6.0	6.5	**3.6**	**6.5**	**2.3**
22	6.6	6.4	7.7	5.9	5.8	7.1	5.6	7.2	5.5	5.5	4.7	5.5	5.2	5.2	6.3	5.3	5.1	5.1	5.7	11.1	11.3	13.9	19.4	26.9	**8.0**	**26.9**	**4.7**
23	20.4	14.4	12.1	9.7	13.6	12.3	13.3	16.7	16.2	8.1	8.8	10.6	10.2	9.7	8.0	7.9	8.4	9.0	9.4	12.6	12.4	13.0	14.6	16.0	**11.9**	**20.4**	**7.9**
24	15.9	12.3	12.3	12.8	13.9	13.3	13.8	9.4	12.8	12.8	14.3	14.1	13.6	13.3	11.3	11.0	11.4	11.7	12.6	13.1	13.5	14.4	18.6	17.0	**13.3**	**18.6**	**9.4**
25	16.3	14.5	13.4	13.6	14.0	13.5	15.0	15.2	14.1	12.9	12.4	11.7	11.0	13.3	13.6	14.5	15.4	14.7	14.4	15.2	13.8	13.8	14.1	12.7	**13.8**	**16.3**	**11.0**
26	12.2	11.2	11.2	11.1	11.1	11.5	12.4	13.5	13.4	18.4	23.4	20.7	19.7	22.0	21.4	21.3	14.9	10.4	9.4	10.8	12.5	14.4	22.3	15.8	**15.2**	**23.4**	**9.4**
27	17.9	18.2	16.2	16.3	16.6	17.7	21.9	24.1	21.3	22.0	25.2	24.0	20.2	17.1	16.0	13.8	15.6	17.2	19.7	23.1	21.5	20.8	19.3	19.7	**19.3**	**25.2**	**13.8**
28	21.1	20.2	20.6	21.3	19.4	20.8	23.4	24.5	19.2	16.9	16.8	16.0	---	---	---	---	---	16.4	24.1	28.5	30.8	12.8	15.1	18.6	**20.3**	**30.8**	**12.8**
29	14.0	14.9	13.4	12.5	13.2	14.3	15.5	18.3	16.5	14.0	14.6	16.9	20.0	21.3	20.3	20.3	18.1	13.8	11.1	9.1	7.4	8.3	9.3	9.8	**14.4**	**21.3**	**7.4**
30	8.4	7.3	7.6	8.9	9.0	9.0	8.5	7.9	6.9	6.8	6.9	8.2	8.4	7.6	7.2	7.4	7.8	8.1	7.9	7.7	5.2	4.3	5.2	5.6	**7.4**	**9.0**	**4.3**
31	6.6	6.5	6.6	7.3	7.4	7.6	10.4	8.3	6.5	7.9	6.9	8.1	7.3	6.7	8.9	8.0	8.0	8.6	10.5	9.4	7.2	6.0	6.1	6.9	**7.6**	**10.5**	**6.0**
MEAN	**12.3**	**11.5**	**11.4**	**11.4**	**11.8**	**12.2**	**12.5**	**13.2**	**13.3**	**12.9**	**13.6**	**13.8**	**13.1**	**13.3**	**12.9**	**12.7**	**11.9**	**11.8**	**11.7**	**12.2**	**12.3**	**13.9**	**11.9**	**12.2**	**12.5**		
MAX	**27.1**	**26.2**	**26.5**	**25.2**	**24.0**	**33.9**	**25.4**	**28.6**	**30.8**	**25.8**	**34.5**	**36.9**	**32.0**	**29.6**	**30.5**	**30.8**	**28.9**	**28.5**	**26.7**	**30.2**	**30.8**	**89.6**	**26.1**	**27.2**		**89.6**	
MIN	**1.2**	**1.2**	**1.2**	**1.3**	**1.3**	**1.4**	**2.3**	**2.5**	**2.9**	**2.6**	**2.6**	**2.9**	**2.6**	**2.7**	**2.5**	**2.3**	**2.2**	**1.8**	**2.7**	**2.5**	**2.7**	**1.7**	**1.4**	**1.6**			**1.2**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 728 DATA RECOVERY RATE = 97.8% DATA CAPTURE RATE = 96.8%

MONTHLY MEAN = 12.5 µg/m3

MAXIMUM PM2.5 = 89.6 µg/m3 DATE OF OCCURRENCE = 8/13 at 2200 MAXIMUM DAILY MEAN = 23.3 µg/m3 DATE OF OCCURRENCE = 8/16

SECOND MAXIMUM PM2.5 = 36.9 µg/m3 DATE OF OCCURRENCE = 8/14 at 1200 SECOND MAXIMUM DAILY MEAN = 22.7 µg/m3 DATE OF OCCURRENCE = 8/1

MINIMUM PM2.5 = 1.2 µg/m3 DATE OF OCCURRENCE = 8/20 at 100 MINUMUM DAILY MEAN = 3.3 µg/m3 DATE OF OCCURRENCE = 8/20

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

CSX AQ5A Modulair

HOURLY AVERAGES of PM2.5 in µg/m3 for SEPTEMBER, 2024

Hr Beg Hr End Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	7.1	7.6	7.9	7.9	7.8	7.3	7.6	9.5	7.6	5.8	6.5	8.8	8.6	9.2	8.0	7.0	7.2	9.0	11.0	12.2	11.5	10.7	10.7	10.2	**8.6**	**12.2**	**5.8**
2	9.1	8.8	8.6	9.8	11.7	13.7	15.0	12.9	11.0	9.8	7.6	6.8	6.2	4.9	4.4	3.8	3.8	3.8	3.7	4.0	4.6	4.6	4.2	3.6	**7.3**	**15.0**	**3.6**
3	2.9	2.7	2.7	2.7	2.7	3.0	3.6	4.1	3.9	3.9	4.0	4.0	4.3	4.2	4.0	4.1	4.4	4.0	4.1	4.4	5.3	8.7	6.8	6.8	**4.2**	**8.7**	**2.7**
4	6.5	6.8	7.5	7.2	7.2	7.8	10.3	7.9	6.2	5.2	4.9	4.8	4.9	4.8	4.6	4.7	4.6	4.8	6.4	5.0	5.5	4.6	7.1	7.1	**6.0**	**10.3**	**4.6**
5	9.0	8.7	7.6	8.6	5.5	7.2	7.6	8.0	6.3	4.7	4.5	4.1	4.9	5.0	5.0	5.1	5.1	4.8	4.8	7.6	7.4	7.6	12.1	10.6	**6.7**	**12.1**	**4.1**
6	6.8	7.0	7.8	7.9	7.9	8.4	8.5	8.8	9.6	7.7	6.6	5.6	5.4	5.9	5.9	5.7	5.9	5.7	8.7	8.2	9.6	10.8	15.4	10.8	**7.9**	**15.4**	**5.4**
7	9.0	8.7	7.7	7.9	8.9	10.2	9.8	9.8	9.5	10.2	9.3	8.8	3.2	2.4	2.1	3.0	4.9	6.7	5.7	8.8	9.5	7.6	5.4	2.8	**7.1**	**10.2**	**2.1**
8	2.8	3.2	2.9	3.4	3.0	2.7	2.6	1.9	2.5	2.7	2.8	3.0	3.4	2.7	2.8	2.4	2.3	2.8	4.4	7.7	8.1	6.0	21.2	5.0	**4.2**	**21.2**	**1.9**
9	5.7	4.8	4.8	5.8	5.9	5.4	5.9	6.4	3.0	2.4	2.4	2.8	2.5	2.3	2.0	2.2	2.2	2.6	3.9	7.7	9.1	7.1	7.0	6.1	**4.5**	**9.1**	**2.0**
10	6.8	7.2	7.6	8.1	6.2	7.2	4.9	3.9	3.5	5.2	7.2	7.9	8.5	7.9	8.3	8.7	8.2	11.4	13.3	12.7	15.4	18.0	20.5	17.7	**9.4**	**20.5**	**3.5**
11	19.5	19.6	17.9	18.8	17.9	20.1	18.2	17.1	14.7	14.9	16.4	13.8	12.5	11.7	11.2	11.3	11.2	11.3	13.9	17.9	11.4	14.3	15.0	15.4	**15.2**	**20.1**	**11.2**
12	17.1	19.1	17.1	18.8	16.2	15.5	17.0	20.2	16.2	12.6	10.4	9.1	8.9	9.1	9.1	9.0	8.9	10.3	12.4	6.9	6.1	7.0	6.2	6.7	**12.0**	**20.2**	**6.1**
13	7.1	7.5	7.6	8.8	9.1	9.9	9.9	10.7	13.1	11.9	10.7	8.3	9.9	10.4	9.5	8.8	8.1	7.8	9.3	12.9	12.5	11.1	11.4	13.9	**10.0**	**13.9**	**7.1**
14	13.4	13.7	12.0	12.4	12.5	13.5	14.4	11.0	9.2	10.4	10.4	10.9	13.1	13.2	13.2	12.1	11.4	11.2	11.0	9.6	10.3	11.2	10.0	10.8	**11.7**	**14.4**	**9.2**
15	10.3	10.9	12.5	13.6	14.3	14.7	16.7	17.1	17.1	14.2	12.3	11.8	10.7	9.8	9.4	10.2	11.3	12.2	11.6	9.6	7.4	7.2	6.8	6.6	**11.5**	**17.1**	**6.6**
16	7.4	7.3	7.2	7.4	7.6	7.7	8.0	8.3	6.5	6.1	5.6	6.3	6.5	6.6	6.7	6.9	7.4	7.4	7.7	7.9	8.8	9.3	9.0	8.9	**7.4**	**9.3**	**5.6**
17	9.5	10.2	10.9	11.3	11.6	11.7	11.9	11.7	11.6	11.4	11.4	11.4	11.9	11.9	11.8	11.1	12.5	11.7	11.1	10.2	9.1	9.3	9.4	9.4	**11.0**	**12.5**	**9.1**
18	9.5	10.5	9.2	8.0	6.4	7.0	7.8	8.8	9.5	10.4	10.2	11.4	10.2	8.9	9.6	9.4	9.6	9.0	9.0	9.9	9.3	9.6	9.4	9.6	**9.2**	**11.4**	**6.4**
19	9.8	10.2	10.4	9.8	9.7	9.2	10.5	10.3	9.2	8.2	6.0	5.2	6.6	7.1	7.5	11.8	12.2	9.3	12.1	13.6	13.1	15.5	13.0	14.5	**10.2**	**15.5**	**5.2**
20	15.2	16.1	16.0	16.1	17.1	17.4	16.3	12.3	4.9	3.8	3.8	4.5	6.3	8.6	11.7	14.1	14.6	15.5	16.8	20.5	19.9	16.9	5.3	4.4	**12.4**	**20.5**	**3.8**
21	6.6	5.7	5.8	6.1	6.1	5.5	5.8	5.7	5.8	6.0	6.0	6.4	6.2	6.3	6.7	7.7	8.4	8.7	9.1	9.5	11.6	14.0	11.9	12.8	**7.6**	**14.0**	**5.5**
22	12.5	22.4	6.3	5.0	4.8	3.3	5.6	4.4	3.9	3.6	4.1	5.0	5.5	6.0	7.4	7.9	9.7	10.5	11.6	11.1	12.6	10.3	7.4	7.5	**7.8**	**22.4**	**3.3**
23	7.2	7.9	8.1	7.6	7.9	8.1	7.5	7.4	6.7	6.5	7.5	7.0	7.7	7.4	8.4	8.0	7.6	7.5	7.2	6.1	6.1	7.3	7.7	7.7	**7.4**	**8.4**	**6.1**
24	7.2	7.3	6.7	6.2	6.4	6.7	6.6	6.0	6.1	6.2	6.5	6.6	6.9	7.2	8.5	8.6	8.2	7.6	7.2	6.2	5.7	5.2	4.9	5.1	**6.6**	**8.6**	**4.9**
25	4.7	4.1	4.2	5.3	6.2	6.0	4.5	3.5	3.2	4.3	5.0	5.1	4.9	3.9	4.0	4.6	5.2	4.4	5.2	5.3	5.4	6.3	7.9	9.2	**5.1**	**9.2**	**3.2**
26	8.6	8.0	8.7	8.4	9.6	9.6	10.7	10.5	11.5	11.1	11.3	10.1	7.4	5.7	4.4	3.2	3.1	3.7	4.5	5.0	6.4	4.9	4.9	6.1	**7.3**	**11.5**	**3.1**
27	6.5	6.3	7.0	6.3	8.1	10.3	6.9	4.5	4.3	4.6	3.9	6.0	5.7	5.6	8.5	5.3	5.6	5.9	6.0	5.9	7.3	5.2	3.7	3.3	**5.9**	**10.3**	**3.3**
28	4.5	6.1	5.8	4.9	5.9	5.9	4.9	4.6	8.7	9.6	11.8	12.6	12.5	15.2	14.3	14.9	13.2	10.6	8.0	7.9	8.2	9.1	9.1	10.2	**9.1**	**15.2**	**4.5**
29	10.1	10.5	9.1	6.6	6.1	7.5	10.1	10.3	9.8	7.7	9.4	10.8	11.1	10.8	10.3	8.4	5.7	5.0	5.6	5.7	4.8	4.8	5.6	6.7	**8.0**	**11.1**	**4.8**
30	7.4	6.2	7.4	8.2	9.7	11.6	11.1	10.0	8.1	7.0	6.9	7.2	7.6	7.5	8.5	11.4	12.5	12.1	11.2	10.5	10.0	10.2	5.4	3.6	**8.8**	**12.5**	**3.6**
MEAN	**8.7**	**9.2**	**8.5**	**8.6**	**8.7**	**9.1**	**9.3**	**8.9**	**8.1**	**7.6**	**7.5**	**7.5**	**7.5**	**7.4**	**7.6**	**7.7**	**7.8**	**7.9**	**8.6**	**9.0**	**9.1**	**9.1**	**9.1**	**8.4**	**8.4**		
MAX	**19.5**	**22.4**	**17.9**	**18.8**	**17.9**	**20.1**	**18.2**	**20.2**	**17.1**	**14.9**	**16.4**	**13.8**	**13.1**	**15.2**	**14.3**	**14.9**	**14.6**	**15.5**	**16.8**	**20.5**	**19.9**	**18.0**	**21.2**	**17.7**		**22.4**	
MIN	**2.8**	**2.7**	**2.7**	**2.7**	**2.7**	**2.7**	**2.6**	**1.9**	**2.5**	**2.4**	**2.4**	**2.8**	**2.5**	**2.3**	**2.0**	**2.2**	**2.2**	**2.6**	**3.7**	**4.0**	**4.6**	**4.6**	**3.7**	**2.8**			**1.9**

POSSIBLE NUMBER OF OBSERVATIONS = 720 ACTUAL NUMBER OF OBSERVATIONS = 720 DATA RECOVERY RATE = 100.0% DATA CAPTURE RATE = 100.0%

MONTHLY MEAN = 8.4 µg/m3

MAXIMUM PM2.5 = 22.4 µg/m3 DATE OF OCCURRENCE = 9/22 at 200 MAXIMUM DAILY MEAN = 15.2 µg/m3 DATE OF OCCURRENCE = 9/11

SECOND MAXIMUM PM2.5 = 21.2 µg/m3 DATE OF OCCURRENCE = 9/8 at 2300 SECOND MAXIMUM DAILY MEAN = 12.4 µg/m3 DATE OF OCCURRENCE = 9/20

MINIMUM PM2.5 = 1.9 µg/m3 DATE OF OCCURRENCE = 9/8 at 800 MINUMUM DAILY MEAN = 4.2 µg/m3 DATE OF OCCURRENCE = 9/3

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

CSX AQ5B Modulair

HOURLY AVERAGES of PM10 in µg/m3 for JULY, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	13.1	11.5	9.0	7.7	5.9	6.3	7.0	10.0	7.1	8.0	9.4	6.8	7.2	10.8	9.4	10.6	5.4	9.4	10.4	10.1	12.5	10.5	10.4	12.0	**9.2**	**13.1**	**5.4**
2	11.3	8.7	9.1	11.7	12.6	14.4	15.1	19.1	13.6	13.4	10.9	14.2	11.6	8.1	7.7	5.3	9.9	10.8	12.4	12.9	14.2	24.6	14.2	15.9	**12.6**	**24.6**	**5.3**
3	17.5	11.0	20.2	17.0	19.8	31.3	20.4	20.8	22.0	20.8	16.9	21.7	14.4	16.5	24.9	17.6	19.7	18.8	20.6	22.4	22.7	21.9	34.0	30.4	**21.0**	**34.0**	**11.0**
4	28.7	30.4	30.9	27.5	36.4	32.9	29.1	24.1	23.7	25.4	29.4	30.4	27.6	30.1	32.0	36.1	36.2	38.8	35.3	28.8	26.3	27.5	45.0	41.5	**31.4**	**45.0**	**23.7**
5	52.4	53.9	50.4	34.4	28.4	27.0	24.5	24.2	23.4	25.5	23.5	21.9	19.6	20.6	23.2	26.8	25.9	28.7	30.0	31.9	31.8	32.6	35.2	37.5	**30.6**	**53.9**	**19.6**
6	33.9	36.5	34.9	24.9	25.5	21.6	20.8	20.0	17.0	14.4	13.5	12.1	12.3	11.0	13.4	13.3	18.4	18.3	20.1	22.9	23.9	23.3	24.0	29.2	**21.1**	**36.5**	**11.0**
7	17.0	15.3	17.7	14.0	15.4	15.5	15.9	15.6	14.4	14.1	13.9	11.0	13.7	14.3	16.1	13.2	15.2	16.2	15.5	16.4	17.3	20.1	23.5	57.4	**17.4**	**57.4**	**11.0**
8	34.9	32.6	17.8	18.1	18.8	30.0	35.5	28.6	23.7	37.3	35.7	29.2	21.9	15.5	14.7	19.7	21.7	23.9	25.7	26.2	19.8	23.1	28.8	27.0	**25.4**	**37.3**	**14.7**
9	22.8	23.7	21.1	20.4	22.0	22.2	23.1	31.4	26.6	24.9	27.0	22.5	20.6	18.2	61.9	26.2	16.8	24.6	23.4	26.2	23.9	23.9	23.5	21.6	**24.9**	**61.9**	**16.8**
10	26.4	32.7	28.2	27.1	28.7	25.9	21.6	22.0	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
11	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
12	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
13	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
14	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
15	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
16	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
17	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
18	---	---	---	---	---	---	---	---	---	---	17.2	19.0	17.8	20.3	18.5	20.0	20.4	20.2	19.6	21.6	21.4	22.5	24.4	26.5	**---**	**---**	**---**
19	28.2	28.0	28.6	22.0	21.6	19.6	18.1	18.4	14.7	11.8	11.9	11.1	15.7	12.3	16.2	11.3	12.6	14.4	15.1	21.5	26.2	35.5	32.1	33.9	**20.0**	**35.5**	**11.1**
20	30.0	23.9	23.7	25.5	25.7	26.2	28.3	37.8	28.7	25.6	23.6	21.0	19.6	20.0	20.3	24.4	24.2	18.6	19.7	22.7	19.8	22.3	19.3	19.2	**23.8**	**37.8**	**18.6**
21	18.7	20.3	20.8	21.6	19.7	22.7	24.6	25.1	18.8	17.5	25.7	21.4	18.5	16.9	18.5	18.1	19.5	19.2	18.9	19.7	22.2	20.4	21.1	20.5	**20.4**	**25.7**	**16.9**
22	22.4	22.6	19.9	19.2	19.8	22.3	26.0	38.7	23.7	24.2	18.9	20.9	38.2	42.0	38.1	25.0	15.9	12.0	12.5	8.5	8.8	10.9	30.4	16.5	**22.4**	**42.0**	**8.5**
23	11.0	15.3	12.5	11.5	10.4	12.6	12.3	13.1	14.3	11.6	14.5	16.1	16.7	17.4	18.6	15.1	16.4	20.4	19.6	32.4	25.6	25.0	16.4	10.4	**16.2**	**32.4**	**10.4**
24	10.4	10.0	10.3	11.0	10.1	8.8	9.6	13.4	10.0	10.2	10.5	21.0	15.9	11.5	11.8	13.8	18.9	24.3	19.1	15.6	11.5	14.2	11.6	11.7	**13.1**	**24.3**	**8.8**
25	12.1	12.8	14.1	12.4	12.5	14.8	18.1	17.9	16.0	18.8	19.2	21.0	17.2	19.2	20.4	22.5	22.0	25.5	21.7	23.1	23.0	20.8	20.6	24.7	**18.8**	**25.5**	**12.1**
26	23.1	23.0	19.6	19.1	16.6	15.7	12.4	12.6	14.1	14.1	13.6	11.3	13.0	13.4	9.6	11.1	11.5	12.7	12.9	22.4	16.7	15.3	12.7	11.0	**14.9**	**23.1**	**9.6**
27	12.0	12.3	13.8	13.1	14.0	23.3	16.5	15.1	10.5	10.3	9.0	9.2	10.1	9.3	11.3	10.4	10.4	9.0	9.3	12.8	29.0	16.7	19.8	26.8	**13.9**	**29.0**	**9.0**
28	20.7	15.9	17.3	15.6	14.2	14.4	20.4	16.2	13.3	11.6	10.6	9.5	9.5	11.8	11.9	11.5	12.4	12.8	16.6	28.5	17.1	16.8	20.2	20.8	**15.4**	**28.5**	**9.5**
29	27.0	28.0	20.0	20.3	30.8	34.4	31.1	28.5	23.1	21.6	25.2	20.4	20.1	22.0	21.1	23.2	23.0	25.1	27.3	20.9	20.7	19.7	20.5	17.2	**23.8**	**34.4**	**17.2**
30	17.5	17.6	17.0	16.7	18.9	15.8	17.7	16.5	14.7	16.1	16.8	16.4	16.4	16.9	17.6	18.2	15.9	17.3	19.8	25.9	19.1	17.3	12.3	10.4	**17.0**	**25.9**	**10.4**
31	10.1	8.4	10.3	11.7	21.8	19.9	10.8	10.4	12.6	13.4	14.5	15.7	15.2	---	13.7	29.3	21.2	14.2	13.5	16.3	16.2	17.2	17.6	23.6	**15.5**	**29.3**	**8.4**
MEAN	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**19.6**		
MAX	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---		**61.9**	
MIN	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---			**5.3**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 549 DATA RECOVERY RATE = 73.8% DATA CAPTURE RATE = 71.0%

MONTHLY MEAN = 19.6 µg/m3

MAXIMUM PM10 = 61.9 µg/m3 DATE OF OCCURRENCE = 7/9 at 1500 MAXIMUM DAILY MEAN = 31.4 µg/m3 DATE OF OCCURRENCE = 7/4

SECOND MAXIMUM PM10 = 57.4 µg/m3 DATE OF OCCURRENCE = 7/7 at 2400 SECOND MAXIMUM DAILY MEAN = 30.6 µg/m3 DATE OF OCCURRENCE = 7/5

MINIMUM PM10 = 5.3 µg/m3 DATE OF OCCURRENCE = 7/2 at 1600 MINUMUM DAILY MEAN = 9.2 µg/m3 DATE OF OCCURRENCE = 7/1

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

CSX AQ5B Modulair

HOURLY AVERAGES of PM10 in µg/m3 for AUGUST, 2024

Hr Beg Hr End Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	26.5	19.2	19.0	18.8	17.7	20.4	27.7	38.1	37.2	---	---	---	25.3	20.4	26.5	21.9	25.0	23.6	25.0	23.1	25.1	26.5	24.0	26.8	**24.7**	**38.1**	**17.7**
2	26.6	22.0	25.2	27.8	26.6	29.1	24.0	27.1	24.5	18.5	20.0	---	---	---	---	---	---	---	22.6	47.5	44.1	19.4	7.3	10.6	**---**	**---**	**---**
3	18.5	21.2	16.2	13.3	19.0	19.2	15.8	17.2	18.8	14.2	16.2	16.3	---	---	25.9	34.6	27.9	32.1	14.6	11.6	7.9	13.6	13.5	13.7	**18.2**	**34.6**	**7.9**
4	19.0	18.3	19.2	22.3	22.3	17.5	16.2	14.8	11.3	10.3	9.3	11.0	13.4	10.0	7.0	7.0	7.6	6.0	9.5	9.7	12.1	11.5	13.4	14.0	**13.0**	**22.3**	**6.0**
5	13.7	14.6	14.3	18.0	17.8	20.7	17.6	17.0	23.3	26.3	22.3	17.6	15.5	17.3	15.6	16.8	15.7	22.0	22.9	36.9	21.0	20.5	19.1	21.6	**19.5**	**36.9**	**13.7**
6	22.7	23.1	20.3	17.8	20.2	14.7	16.0	21.6	19.1	26.4	22.4	20.4	26.6	24.5	17.7	17.1	13.7	10.1	12.6	9.3	11.5	5.0	6.6	4.2	**16.8**	**26.6**	**4.2**
7	7.5	6.3	7.2	15.2	10.8	9.2	17.5	13.3	7.4	13.5	9.5	7.6	10.3	19.2	6.7	6.9	10.2	9.8	7.5	7.9	10.7	11.9	6.5	11.4	**10.2**	**19.2**	**6.3**
8	14.8	14.2	13.6	8.8	23.0	22.2	12.9	10.3	13.3	15.5	16.0	10.2	12.0	16.2	30.3	42.4	44.0	41.1	38.9	59.9	70.8	60.3	71.6	65.9	**30.3**	**71.6**	**8.8**
9	59.0	48.3	52.0	62.6	56.8	45.0	30.2	36.8	52.3	28.4	9.7	11.3	8.3	11.2	4.9	6.4	6.7	10.7	11.1	10.5	10.9	16.0	13.8	13.5	**25.7**	**62.6**	**4.9**
10	13.2	17.8	19.7	26.0	26.5	26.9	24.2	18.8	16.8	16.5	21.2	12.4	13.4	13.4	14.3	13.9	13.9	12.8	16.8	17.1	16.8	15.2	12.9	12.7	**17.2**	**26.9**	**12.4**
11	11.9	12.4	12.2	13.4	14.3	19.7	14.5	15.7	12.4	10.9	7.3	8.7	12.1	9.8	7.2	7.8	8.5	8.7	8.1	22.1	15.9	34.8	24.6	18.5	**13.8**	**34.8**	**7.2**
12	20.6	15.9	15.9	17.6	21.1	21.0	21.0	20.8	18.6	13.3	11.0	12.2	10.6	12.7	14.3	13.6	13.0	10.7	8.1	10.1	12.0	9.7	14.4	14.8	**14.7**	**21.1**	**8.1**
13	16.1	12.5	13.0	11.3	15.5	23.4	23.8	18.9	12.3	9.8	15.6	12.6	12.5	13.9	14.9	9.3	10.7	10.8	13.2	17.0	30.4	---	22.0	20.1	**15.6**	**30.4**	**9.3**
14	16.3	20.5	16.3	14.7	19.0	29.8	19.5	21.8	18.0	22.3	30.4	30.6	24.4	23.7	26.5	23.9	23.7	18.7	19.7	24.4	24.8	23.2	26.9	22.7	**22.6**	**30.6**	**14.7**
15	22.0	22.1	18.3	27.2	19.9	40.5	34.6	26.2	24.6	25.2	19.4	18.4	21.3	16.5	22.4	18.2	22.8	22.3	28.5	27.1	34.6	27.5	23.0	30.3	**24.7**	**40.5**	**16.5**
16	25.9	27.0	21.3	25.4	32.4	---	69.1	48.8	61.7	25.5	19.5	18.5	19.7	21.0	37.5	27.9	26.5	23.0	19.4	20.8	27.4	27.6	27.5	24.3	**29.5**	**69.1**	**18.5**
17	19.5	21.4	21.9	22.0	19.3	28.8	27.5	20.0	20.5	24.4	23.0	21.3	21.1	20.4	29.3	31.1	36.9	32.3	28.4	17.0	12.8	14.6	18.1	20.8	**23.0**	**36.9**	**12.8**
18	29.2	25.1	16.6	20.3	17.5	16.4	17.0	14.4	16.4	15.4	16.2	16.7	18.6	18.9	19.0	18.1	17.2	18.8	16.9	14.6	29.0	32.1	34.6	15.8	**19.8**	**34.6**	**14.4**
19	14.7	16.0	17.2	14.6	22.3	17.5	18.6	17.9	12.9	11.2	7.7	6.6	3.3	3.3	10.0	5.7	10.3	6.3	5.0	9.1	12.8	6.9	7.2	5.7	**11.0**	**22.3**	**3.3**
20	5.1	9.5	6.5	5.7	8.1	4.8	7.8	10.4	8.2	5.9	12.2	10.4	11.4	9.1	13.4	10.3	8.2	6.9	6.3	5.4	8.7	12.5	9.8	7.6	**8.5**	**13.4**	**4.8**
21	7.6	7.1	8.0	3.6	7.7	10.2	23.5	28.2	20.3	7.6	6.9	13.1	7.1	8.6	10.1	10.0	4.5	4.8	7.5	11.2	19.9	9.4	8.3	17.9	**11.0**	**28.2**	**3.6**
22	17.9	16.5	17.3	13.3	23.1	45.9	22.5	30.5	14.7	11.6	12.4	6.8	11.2	10.0	7.1	8.4	8.9	6.4	16.8	40.1	27.9	45.1	---	103.3	**22.5**	**103.3**	**6.4**
23	---	46.5	21.1	14.8	31.4	26.3	25.6	21.8	21.1	9.9	11.7	17.4	15.7	10.2	10.3	10.0	10.1	11.5	20.0	26.4	16.6	16.7	16.2	17.1	**18.6**	**46.5**	**9.9**
24	19.9	11.1	16.1	11.9	14.6	15.4	20.2	13.0	13.9	14.3	15.1	17.4	13.1	14.0	13.0	13.8	19.1	12.4	13.3	14.5	16.6	17.3	28.5	24.4	**16.0**	**28.5**	**11.1**
25	18.6	14.2	13.7	14.1	23.0	15.4	19.5	15.7	14.0	13.1	11.1	11.8	11.0	10.4	13.2	18.0	19.2	14.5	19.1	26.4	13.9	13.7	18.6	12.2	**15.6**	**26.4**	**10.4**
26	12.8	13.6	13.0	10.7	18.2	16.9	22.8	35.6	18.3	21.3	36.7	29.2	19.7	26.1	23.4	32.0	13.8	11.7	10.8	10.0	13.3	16.0	23.9	21.3	**19.6**	**36.7**	**10.0**
27	20.0	26.2	22.3	19.3	17.6	21.8	31.0	34.6	26.0	26.0	32.9	31.8	23.0	20.8	19.9	23.0	15.9	16.1	24.4	34.0	27.8	22.6	20.3	23.4	**24.2**	**34.6**	**15.9**
28	30.6	25.7	23.0	28.2	16.7	20.7	29.2	29.6	23.1	20.9	22.9	16.4	---	---	---	---	---	19.6	21.9	31.5	39.7	27.2	18.3	31.8	**25.1**	**39.7**	**16.4**
29	17.9	14.5	16.3	13.6	16.8	17.8	22.8	24.3	17.6	14.3	18.6	16.4	18.5	24.0	21.9	28.1	30.6	38.9	39.3	22.9	21.7	33.0	53.1	79.5	**25.9**	**79.5**	**13.6**
30	72.3	41.2	45.2	63.2	47.6	54.3	41.4	46.2	53.7	44.5	41.6	53.6	53.3	38.9	33.0	34.2	35.3	35.2	34.2	30.8	17.0	15.7	21.8	32.0	**41.1**	**72.3**	**15.7**
31	44.5	50.9	52.0	52.9	49.3	41.5	59.2	35.9	20.2	17.4	14.3	20.1	12.7	9.9	14.2	9.2	8.9	10.4	17.7	11.5	14.3	11.2	10.0	9.4	**24.9**	**59.2**	**8.9**
MEAN	**22.2**	**21.1**	**19.8**	**20.9**	**22.5**	**23.8**	**24.9**	**24.0**	**21.7**	**17.8**	**17.8**	**17.1**	**16.6**	**16.2**	**17.6**	**17.9**	**17.5**	**16.9**	**18.1**	**21.3**	**21.5**	**20.6**	**20.5**	**24.1**	**20.2**		
MAX	**72.3**	**50.9**	**52.0**	**63.2**	**56.8**	**54.3**	**69.1**	**48.8**	**61.7**	**44.5**	**41.6**	**53.6**	**53.3**	**38.9**	**37.5**	**42.4**	**44.0**	**41.1**	**39.3**	**59.9**	**70.8**	**60.3**	**71.6**	**103.3**		**103.3**	
MIN	**5.1**	**6.3**	**6.5**	**3.6**	**7.7**	**4.8**	**7.8**	**10.3**	**7.4**	**5.9**	**6.9**	**6.6**	**3.3**	**3.3**	**4.9**	**5.7**	**4.5**	**4.8**	**5.0**	**5.4**	**7.9**	**5.0**	**6.5**	**4.2**			**3.3**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 723 DATA RECOVERY RATE = 97.2% DATA CAPTURE RATE = 96.8%

MONTHLY MEAN = 20.2 µg/m3

MAXIMUM PM10 = 103.3 µg/m3 DATE OF OCCURRENCE = 8/22 at 2400 MAXIMUM DAILY MEAN = 41.1 µg/m3 DATE OF OCCURRENCE = 8/30

SECOND MAXIMUM PM10 = 79.5 µg/m3 DATE OF OCCURRENCE = 8/29 at 2400 SECOND MAXIMUM DAILY MEAN = 30.3 µg/m3 DATE OF OCCURRENCE = 8/8

MINIMUM PM10 = 3.3 µg/m3 DATE OF OCCURRENCE = 8/19 at 1300 MINUMUM DAILY MEAN = 8.5 µg/m3 DATE OF OCCURRENCE = 8/20

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

CSX AQ5B Modulair

HOURLY AVERAGES of PM10 in µg/m3 for SEPTEMBER, 2024

Hr Beg Hr End Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	9.9	10.2	11.5	12.0	13.8	11.7	11.2	12.0	9.6	9.0	9.3	11.3	9.5	11.9	7.7	8.4	8.8	8.8	13.0	15.7	11.8	11.1	10.2	10.3	**10.8**	**15.7**	**7.7**
2	8.9	9.6	11.6	14.9	15.3	16.2	16.2	16.4	12.5	11.9	10.2	9.3	10.6	8.7	8.7	8.5	7.3	8.4	9.0	8.0	6.8	6.6	6.3	6.8	**10.4**	**16.4**	**6.3**
3	7.6	5.6	6.7	6.2	9.4	8.6	15.8	10.1	9.5	8.4	9.2	10.6	11.4	9.2	9.0	15.5	16.5	10.5	11.4	11.1	15.9	27.8	31.7	35.6	**13.1**	**35.6**	**5.6**
4	18.0	31.8	23.9	21.0	19.8	26.5	49.4	38.3	13.1	10.7	8.9	8.0	7.6	8.8	10.0	11.9	11.1	11.8	16.6	19.9	28.8	19.5	31.9	30.5	**19.9**	**49.4**	**7.6**
5	35.2	36.0	23.1	21.5	21.2	36.4	37.4	24.1	14.0	12.2	10.8	9.6	13.5	13.1	13.8	15.0	16.7	16.6	17.9	37.1	31.1	39.0	49.6	57.1	**25.1**	**57.1**	**9.6**
6	55.1	55.7	61.3	59.5	57.1	60.8	57.3	42.4	33.3	21.8	23.8	18.7	11.4	14.9	20.6	13.2	16.3	15.5	19.9	20.2	26.2	23.3	32.1	28.7	**32.9**	**61.3**	**11.4**
7	21.7	21.0	20.8	25.5	40.7	48.4	28.1	22.5	21.1	17.8	18.6	43.0	17.8	6.6	7.7	7.9	9.0	11.7	11.5	11.4	10.3	12.1	9.4	7.8	**18.9**	**48.4**	**6.6**
8	7.8	6.6	6.3	15.0	5.6	8.7	6.5	6.3	6.8	4.9	7.4	7.8	8.4	8.7	8.3	10.6	7.9	9.1	12.8	12.5	15.0	18.0	78.2	9.5	**12.0**	**78.2**	**4.9**
9	13.7	10.2	11.1	15.1	13.0	26.5	36.2	26.9	13.0	11.1	7.3	8.0	13.9	12.2	9.0	13.0	13.5	12.9	14.9	33.2	23.2	15.6	18.3	19.3	**16.3**	**36.2**	**7.3**
10	11.0	11.6	14.5	18.2	16.3	29.0	18.6	13.1	18.3	23.5	18.3	17.8	18.2	19.4	15.4	14.9	14.0	23.8	32.7	24.4	32.3	73.7	47.4	29.8	**23.2**	**73.7**	**11.0**
11	37.3	31.3	29.0	33.5	46.7	47.9	37.9	24.3	23.4	19.4	21.6	22.7	17.1	16.3	15.3	14.7	15.3	14.6	33.9	67.5	25.8	29.3	28.9	40.5	**28.9**	**67.5**	**14.6**
12	29.3	48.0	34.0	36.5	31.2	37.4	45.8	38.3	20.1	15.7	17.3	15.2	13.7	12.3	12.1	12.3	12.1	19.9	21.8	23.4	19.7	18.6	15.3	18.6	**23.7**	**48.0**	**12.1**
13	22.0	23.2	23.4	27.1	30.6	31.0	23.9	27.5	29.0	36.2	28.3	18.8	22.0	23.7	17.1	15.5	14.1	12.8	15.8	19.2	19.1	28.9	36.0	41.6	**24.5**	**41.6**	**12.8**
14	21.8	22.8	27.7	26.5	31.2	33.6	32.5	14.7	11.6	11.4	12.5	13.8	15.8	15.9	15.6	14.0	16.6	14.4	12.4	16.4	12.3	16.6	13.3	14.4	**18.2**	**33.6**	**11.4**
15	15.4	17.5	15.4	15.1	17.6	18.0	17.6	17.9	18.4	15.6	13.2	14.9	12.8	12.9	13.2	14.8	15.9	18.3	21.5	25.5	25.5	26.3	26.5	33.0	**18.5**	**33.0**	**12.8**
16	40.3	32.0	33.5	32.4	33.0	32.0	36.4	37.7	28.9	27.4	31.1	22.1	25.1	23.5	22.0	30.5	26.9	29.7	36.4	42.6	42.9	45.6	41.3	38.4	**33.0**	**45.6**	**22.0**
17	35.8	49.3	57.2	60.0	60.6	64.7	63.9	63.6	55.6	41.3	38.6	36.1	41.1	37.3	38.3	31.7	34.4	44.7	41.8	39.5	32.3	34.7	31.6	31.5	**44.4**	**64.7**	**31.5**
18	31.3	26.2	31.8	15.8	10.7	13.8	17.5	22.6	26.3	29.4	18.1	31.8	30.7	19.7	32.7	36.0	42.7	31.4	17.0	24.2	12.7	10.7	12.2	17.0	**23.4**	**42.7**	**10.7**
19	13.8	19.2	14.2	18.9	12.9	21.1	16.5	17.5	27.8	18.8	16.4	15.7	12.5	10.8	10.5	14.9	8.4	12.8	10.9	9.6	7.8	11.0	16.6	14.8	**14.7**	**27.8**	**7.8**
20	10.0	10.7	10.2	11.3	13.1	11.0	14.8	16.2	4.8	4.8	2.8	4.8	4.0	7.4	9.0	11.6	11.2	10.1	10.0	12.3	14.1	16.4	8.5	10.9	**10.0**	**16.4**	**2.8**
21	11.1	7.0	4.2	3.4	3.7	2.7	2.8	3.2	8.0	6.4	6.5	12.0	12.7	10.1	14.2	10.7	8.8	8.1	7.1	7.0	14.1	24.7	17.8	33.0	**10.0**	**33.0**	**2.7**
22	24.6	---	14.9	15.6	10.4	13.5	28.2	18.3	14.6	6.6	10.4	8.1	5.0	4.8	8.2	5.7	5.8	6.5	7.2	7.4	7.6	20.5	19.1	21.0	**12.3**	**28.2**	**4.8**
23	22.6	23.2	23.7	13.3	16.9	20.8	19.9	42.0	34.7	32.8	24.2	24.4	20.7	13.7	22.6	16.1	20.6	44.2	36.5	27.6	29.8	29.3	43.1	49.5	**27.2**	**49.5**	**13.3**
24	48.1	48.1	35.5	31.1	40.2	45.3	50.7	38.7	---	42.4	43.3	49.8	26.3	31.4	42.3	58.3	48.4	43.5	44.5	40.5	39.3	32.7	43.0	47.6	**42.2**	**58.3**	**26.3**
25	40.5	33.8	28.5	28.5	24.1	19.7	10.7	12.8	18.3	17.5	23.5	15.4	22.3	15.2	8.6	19.2	24.0	9.4	16.5	20.2	22.2	26.3	29.0	27.5	**21.4**	**40.5**	**8.6**
26	16.6	24.7	17.0	26.9	27.1	26.9	17.8	17.6	4.5	4.9	5.1	8.3	10.8	13.4	5.2	2.7	1.4	1.4	3.1	9.4	9.6	3.4	1.6	2.0	**10.9**	**27.1**	**1.4**
27	2.3	2.2	2.7	2.6	6.3	11.4	8.2	3.9	3.5	3.8	6.8	10.6	7.3	9.0	24.3	27.8	16.7	23.3	25.2	18.6	24.9	18.6	14.9	19.1	**12.3**	**27.8**	**2.2**
28	16.9	25.1	16.1	29.6	25.0	28.9	16.3	16.2	19.8	18.4	13.7	14.4	11.9	8.1	9.4	10.7	13.2	10.9	16.6	15.7	10.2	11.8	13.1	20.1	**16.3**	**29.6**	**8.1**
29	15.0	18.2	12.6	13.4	10.1	16.6	18.7	15.0	20.2	9.2	16.8	18.9	15.3	12.4	10.6	9.3	9.7	8.7	17.4	14.9	18.0	19.4	12.1	12.4	**14.4**	**20.2**	**8.7**
30	17.5	13.2	11.4	15.1	19.2	20.2	17.3	25.7	22.6	16.1	13.5	13.3	9.4	12.5	11.7	15.6	15.7	16.5	10.5	10.2	12.1	14.0	21.2	24.5	**15.8**	**25.7**	**9.4**
MEAN	**22.0**	**23.2**	**21.1**	**22.2**	**22.8**	**26.3**	**25.8**	**22.9**	**18.7**	**17.0**	**16.3**	**17.2**	**15.3**	**14.1**	**15.1**	**16.4**	**16.1**	**17.0**	**18.9**	**21.5**	**20.0**	**22.9**	**25.3**	**25.1**	**20.1**		
MAX	**55.1**	**55.7**	**61.3**	**60.0**	**60.6**	**64.7**	**63.9**	**63.6**	**55.6**	**42.4**	**43.3**	**49.8**	**41.1**	**37.3**	**42.3**	**58.3**	**48.4**	**44.7**	**44.5**	**67.5**	**42.9**	**73.7**	**78.2**	**57.1**		**78.2**	
MIN	**2.3**	**2.2**	**2.7**	**2.6**	**3.7**	**2.7**	**2.8**	**3.2**	**3.5**	**3.8**	**2.8**	**4.8**	**4.0**	**4.8**	**5.2**	**2.7**	**1.4**	**1.4**	**3.1**	**7.0**	**6.8**	**3.4**	**1.6**	**2.0**			**1.4**

POSSIBLE NUMBER OF OBSERVATIONS = 720 ACTUAL NUMBER OF OBSERVATIONS = 718 DATA RECOVERY RATE = 99.7% DATA CAPTURE RATE = 100.0%

MONTHLY MEAN = 20.1 µg/m3

MAXIMUM PM10 = 78.2 µg/m3 DATE OF OCCURRENCE = 9/8 at 2300 MAXIMUM DAILY MEAN = 44.4 µg/m3 DATE OF OCCURRENCE = 9/17

SECOND MAXIMUM PM10 = 73.7 µg/m3 DATE OF OCCURRENCE = 9/10 at 2200 SECOND MAXIMUM DAILY MEAN = 42.2 µg/m3 DATE OF OCCURRENCE = 9/24

MINIMUM PM10 = 1.4 µg/m3 DATE OF OCCURRENCE = 9/26 at 1700 MINUMUM DAILY MEAN = 10.0 µg/m3 DATE OF OCCURRENCE = 9/21

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

CSX AQ5B Modulair

HOURLY AVERAGES of PM2.5 in µg/m3 for JULY, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	3.4	3.4	2.5	1.8	1.7	1.9	2.3	2.2	1.8	1.4	1.1	1.2	1.4	1.5	1.6	2.0	2.3	3.5	4.1	4.0	4.6	4.4	4.8	5.3	**2.6**	**5.3**	**1.1**
2	6.2	4.2	4.3	5.0	5.6	5.8	6.0	6.7	6.5	6.0	6.1	6.7	6.2	5.1	4.7	3.1	4.7	6.3	6.8	7.2	8.4	9.4	8.0	6.3	**6.0**	**9.4**	**3.1**
3	6.2	5.3	7.6	7.0	7.0	7.4	6.7	6.7	7.5	6.1	5.9	6.3	6.9	7.6	8.4	8.5	7.5	7.7	9.0	8.2	7.3	8.0	12.7	9.0	**7.5**	**12.7**	**5.3**
4	7.9	10.7	8.7	7.8	9.0	9.1	10.5	11.1	14.1	17.9	21.2	23.3	22.4	23.2	24.7	27.8	28.3	28.6	26.2	23.9	21.9	23.1	40.9	35.2	**19.8**	**40.9**	**7.8**
5	47.4	48.6	45.2	29.0	22.0	19.6	18.1	17.2	17.5	19.2	19.7	18.2	16.8	16.1	18.3	19.8	20.5	23.1	24.1	26.1	24.9	24.2	24.8	25.7	**24.4**	**48.6**	**16.1**
6	22.1	24.1	24.1	20.7	18.3	14.2	12.9	13.6	12.9	9.9	10.1	9.7	9.9	9.0	9.5	10.5	15.1	14.8	15.0	18.6	19.6	18.8	19.9	23.5	**15.7**	**24.1**	**9.0**
7	11.5	10.2	12.2	10.1	9.7	9.7	9.3	8.9	9.2	9.0	8.8	9.2	10.1	10.3	10.6	10.2	11.3	11.3	11.7	12.4	13.3	14.2	15.9	17.5	**11.1**	**17.5**	**8.8**
8	17.4	17.8	13.1	12.6	13.2	14.1	16.2	14.4	14.1	20.4	30.2	25.2	18.2	12.1	11.6	14.7	16.9	19.2	18.5	17.0	15.5	16.5	19.4	18.5	**16.9**	**30.2**	**11.6**
9	16.8	15.3	14.5	14.4	14.0	13.1	14.0	18.0	16.4	18.1	18.9	17.2	16.7	14.6	18.5	8.0	8.9	12.8	14.9	18.1	16.9	15.2	12.7	11.2	**14.9**	**18.9**	**8.0**
10	11.5	11.8	11.6	11.4	12.7	12.2	11.1	11.7	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
11	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
12	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
13	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
14	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
15	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
16	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
17	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
18	---	---	---	---	---	---	---	---	---	---	9.5	11.9	12.3	12.6	13.1	14.9	15.0	15.6	15.7	16.3	16.8	16.7	16.4	18.5	**---**	**---**	**---**
19	18.3	18.1	16.4	15.6	12.4	10.4	9.6	9.1	7.9	7.3	7.5	7.3	7.1	6.3	6.7	6.9	8.5	9.7	9.5	13.3	15.0	16.2	15.6	16.9	**11.3**	**18.3**	**6.3**
20	14.4	12.2	10.6	10.6	10.1	10.2	10.5	11.6	11.2	10.7	10.7	12.0	12.3	13.1	13.8	14.4	13.1	12.1	13.1	13.6	12.2	15.9	13.0	13.2	**12.2**	**15.9**	**10.1**
21	12.2	12.4	13.0	13.2	11.7	12.0	11.4	12.7	14.4	13.6	18.4	16.4	14.5	12.7	14.5	15.3	16.9	16.4	16.2	16.9	17.4	15.7	14.8	14.4	**14.4**	**18.4**	**11.4**
22	13.9	13.9	13.7	13.1	12.4	12.4	12.8	14.2	12.4	12.8	7.2	9.1	9.2	10.2	6.8	7.6	5.3	6.1	5.9	4.1	4.3	5.0	11.9	5.4	**9.5**	**14.2**	**4.1**
23	4.0	4.0	3.4	3.1	2.4	2.8	3.9	6.4	7.9	7.7	9.7	11.8	13.1	14.3	15.7	12.6	13.6	14.7	13.6	17.2	16.4	13.7	9.6	6.1	**9.4**	**17.2**	**2.4**
24	5.7	5.4	5.6	5.5	5.1	3.6	4.5	5.6	5.2	6.6	7.3	13.9	11.2	8.1	8.3	8.4	8.5	8.2	6.7	6.9	5.1	5.2	5.6	5.9	**6.7**	**13.9**	**3.6**
25	6.1	6.4	7.0	6.6	6.1	6.4	6.2	6.0	7.6	9.8	12.0	15.7	12.6	13.9	13.5	17.3	18.1	17.0	15.8	15.0	13.5	12.5	13.9	13.4	**11.3**	**18.1**	**6.0**
26	14.6	14.6	11.0	9.4	7.7	6.5	5.8	5.3	5.0	5.0	5.0	4.9	5.4	5.4	5.3	5.9	6.8	6.0	6.4	7.1	7.3	7.2	7.5	5.4	**7.1**	**14.6**	**4.9**
27	6.9	7.3	8.1	7.3	7.8	7.3	5.8	5.7	5.7	5.9	5.3	5.1	5.3	5.2	5.2	5.1	5.2	5.0	5.2	5.8	7.3	7.0	8.4	11.1	**6.4**	**11.1**	**5.0**
28	10.5	9.3	9.0	8.5	8.1	8.0	8.7	9.8	8.9	8.3	7.8	6.4	7.7	8.0	8.3	8.4	8.9	8.7	9.4	10.5	10.3	10.6	11.1	11.2	**9.0**	**11.2**	**6.4**
29	12.3	12.5	10.7	10.8	11.7	11.6	12.3	13.1	14.9	14.8	16.3	14.8	14.2	14.1	14.2	14.7	15.6	16.2	11.2	7.9	9.1	8.7	8.2	9.0	**12.4**	**16.3**	**7.9**
30	7.6	7.0	7.2	7.6	8.2	8.0	8.7	8.7	8.5	8.8	8.7	8.9	10.0	11.2	11.3	10.9	11.2	11.6	12.5	12.1	9.9	9.0	6.3	4.8	**9.1**	**12.5**	**4.8**
31	4.2	4.0	4.2	4.7	5.9	5.7	4.3	4.3	6.1	6.8	8.3	9.0	8.3	---	7.1	10.8	9.8	9.5	9.9	11.3	11.1	11.8	12.0	12.4	**7.8**	**12.4**	**4.0**
MEAN	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**11.3**		
MAX	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**		**48.6**	
MIN	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**			**1.1**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 549 DATA RECOVERY RATE = 73.8% DATA CAPTURE RATE = 71.0%

MONTHLY MEAN = 11.3 µg/m3

MAXIMUM PM2.5 = 48.6 µg/m3 DATE OF OCCURRENCE = 7/5 at 200 MAXIMUM DAILY MEAN = 24.4 µg/m3 DATE OF OCCURRENCE = 7/5

SECOND MAXIMUM PM2.5 = 47.4 µg/m3 DATE OF OCCURRENCE = 7/5 at 100 SECOND MAXIMUM DAILY MEAN = 19.8 µg/m3 DATE OF OCCURRENCE = 7/4

MINIMUM PM2.5 = 1.1 µg/m3 DATE OF OCCURRENCE = 7/1 at 1100 MINUMUM DAILY MEAN = 2.6 µg/m3 DATE OF OCCURRENCE = 7/1

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

CSX AQ5B Modulair

HOURLY AVERAGES of PM2.5 in µg/m3 for AUGUST, 2024

Hr Beg Hr End Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	12.7	10.9	10.9	11.0	10.3	10.1	12.1	15.2	16.7	---	---	---	15.5	14.7	15.5	16.1	16.7	16.7	17.5	16.7	17.3	18.1	16.7	17.6	**14.7**	**18.1**	**10.1**
2	17.1	16.7	16.8	15.3	14.9	14.9	16.4	18.1	14.7	11.8	11.7	---	---	---	---	---	---	---	6.0	6.7	6.2	3.3	1.7	2.4	**---**	**---**	**---**
3	3.4	3.6	3.4	3.3	5.0	4.8	5.8	7.0	8.2	8.5	9.2	9.4	---	---	12.8	13.8	7.8	8.6	4.0	2.9	2.5	3.2	3.2	3.6	**6.0**	**13.8**	**2.5**
4	3.9	4.3	4.7	4.9	4.7	4.8	4.7	4.3	4.4	5.1	5.8	7.7	6.5	5.3	3.7	5.1	4.4	2.9	4.6	6.2	5.9	5.5	6.6	5.6	**5.0**	**7.7**	**2.9**
5	5.7	5.9	5.9	5.8	8.7	6.6	7.1	8.5	12.5	13.7	14.5	13.7	13.0	12.1	11.2	11.0	10.5	11.2	11.4	20.9	13.6	12.2	11.8	10.9	**10.7**	**20.9**	**5.7**
6	10.5	9.2	8.8	8.4	8.3	8.0	11.3	10.4	13.0	14.6	16.7	16.8	16.5	17.3	11.1	6.9	3.9	3.7	3.7	3.4	3.5	2.2	1.6	2.2	**8.8**	**17.3**	**1.6**
7	1.8	2.3	2.4	3.2	2.9	3.5	4.7	4.3	3.6	4.1	4.7	4.8	4.7	7.3	4.1	2.9	2.2	2.0	1.8	2.3	4.2	4.7	1.9	1.2	**3.4**	**7.3**	**1.2**
8	1.5	2.1	2.5	1.9	1.9	2.0	2.5	3.0	3.4	4.3	4.6	4.1	3.5	3.9	5.7	7.3	8.0	7.8	7.2	8.5	9.2	9.7	9.7	10.2	**5.1**	**10.2**	**1.5**
9	10.9	10.5	11.5	12.4	12.4	10.9	10.0	11.0	11.2	9.1	4.4	3.5	3.0	2.3	2.0	2.9	3.2	4.0	4.4	4.4	4.5	4.4	4.2	3.7	**6.7**	**12.4**	**2.0**
10	4.9	5.0	6.6	8.7	9.0	8.4	9.4	11.6	10.4	10.4	11.9	8.2	8.3	8.3	8.4	8.9	8.5	9.4	10.8	11.0	10.2	10.2	6.5	6.6	**8.8**	**11.9**	**4.9**
11	5.7	6.5	6.9	5.7	6.1	7.2	6.3	5.7	4.4	4.4	3.6	3.7	3.8	3.9	3.8	3.8	3.8	3.9	3.4	7.2	7.9	8.2	8.5	7.9	**5.5**	**8.5**	**3.4**
12	7.1	6.4	6.8	7.0	7.0	6.7	5.7	5.7	5.2	4.9	3.8	3.8	3.9	3.6	3.8	4.0	3.9	3.3	3.2	5.1	5.7	4.9	6.7	6.9	**5.2**	**7.1**	**3.2**
13	7.4	6.1	5.2	4.8	6.7	6.2	6.3	6.5	5.4	4.1	5.0	5.0	5.5	6.3	6.7	5.6	6.4	6.9	7.1	8.6	13.0	75.5	10.8	11.0	**9.6**	**75.5**	**4.1**
14	9.6	10.0	9.3	8.2	8.6	9.3	8.4	8.2	10.4	15.2	22.3	24.6	21.7	19.8	20.0	20.9	17.7	15.1	14.9	13.8	15.8	13.7	14.9	17.1	**14.5**	**24.6**	**8.2**
15	16.6	14.4	13.7	13.4	12.5	12.9	13.4	13.7	14.0	14.8	15.0	13.4	13.8	14.5	14.0	13.5	13.5	14.7	13.4	14.0	14.4	14.1	14.0	15.2	**14.0**	**16.6**	**12.5**
16	14.6	14.2	13.6	15.7	15.1	23.9	17.5	19.1	20.9	16.0	15.3	14.4	14.6	14.9	13.7	13.3	15.4	14.9	14.6	13.2	13.0	14.4	14.6	14.8	**15.4**	**23.9**	**13.0**
17	13.3	11.6	10.4	10.4	8.9	10.2	11.2	12.1	13.8	16.4	16.6	16.8	15.7	15.8	16.8	17.3	18.3	18.0	14.3	5.5	5.4	5.5	6.6	7.0	**12.4**	**18.3**	**5.4**
18	7.8	7.2	6.1	6.0	6.4	8.1	6.0	6.2	7.4	9.7	10.8	11.2	12.4	13.1	14.2	14.2	13.6	13.8	11.4	3.1	4.2	4.7	2.6	1.8	**8.4**	**14.2**	**1.8**
19	1.9	2.4	2.5	2.7	3.1	3.4	4.3	5.1	4.4	3.9	2.9	2.7	1.8	1.9	1.7	1.4	1.5	1.3	2.0	1.8	2.1	1.2	1.0	1.2	**2.4**	**5.1**	**1.0**
20	0.8	0.8	0.9	0.9	0.9	1.0	1.5	1.7	2.1	2.4	3.1	3.6	3.8	3.8	3.5	2.9	2.5	2.2	2.1	2.2	3.1	4.0	3.2	2.4	**2.3**	**4.0**	**0.8**
21	2.4	2.4	2.1	1.7	2.0	2.3	2.9	2.6	2.2	1.9	1.9	2.0	2.0	2.0	2.0	3.6	2.0	2.1	3.0	4.4	4.6	4.3	4.3	4.9	**2.7**	**4.9**	**1.7**
22	4.8	4.7	5.1	4.0	4.0	5.3	4.6	5.4	3.9	3.8	3.4	3.9	3.7	3.8	4.3	3.9	3.8	3.8	4.4	8.1	7.9	9.8	14.1	20.6	**5.8**	**20.6**	**3.4**
23	15.2	9.5	8.0	6.7	9.1	7.9	8.8	11.2	11.1	5.5	6.1	7.2	7.0	6.8	5.7	5.5	5.6	5.9	6.5	9.0	8.5	8.9	9.7	10.5	**8.1**	**15.2**	**5.5**
24	10.7	8.2	8.0	8.2	8.7	8.3	9.0	6.4	8.7	8.7	9.6	9.4	9.2	9.1	7.8	7.8	7.8	8.0	8.4	8.8	9.1	9.6	12.5	11.3	**8.8**	**12.5**	**6.4**
25	10.7	9.4	8.5	8.7	9.1	8.5	9.6	9.9	9.3	8.5	8.4	7.7	7.4	8.9	9.1	9.6	10.0	9.9	9.8	10.3	9.4	9.0	9.5	8.4	**9.1**	**10.7**	**7.4**
26	8.0	7.5	7.1	7.1	7.0	7.2	7.9	9.1	9.5	12.3	16.0	14.2	13.2	14.8	14.5	14.5	9.3	6.7	5.9	6.6	7.5	8.7	12.6	8.7	**9.8**	**16.0**	**5.9**
27	10.2	10.2	9.3	10.1	10.4	10.9	14.1	16.0	14.3	14.7	17.1	16.2	13.7	11.7	10.9	9.9	10.7	11.5	13.4	15.7	14.5	13.9	12.8	13.4	**12.7**	**17.1**	**9.3**
28	14.3	13.3	13.5	14.0	12.4	13.0	15.1	15.8	13.7	12.4	11.8	11.5	---	---	---	---	---	11.2	16.0	19.1	21.0	8.5	9.8	12.1	**13.6**	**21.0**	**8.5**
29	9.1	9.7	8.9	8.2	8.7	9.3	10.1	11.9	11.0	9.3	9.5	11.0	13.4	14.3	13.7	13.7	12.5	9.6	7.5	6.1	5.1	5.7	6.6	6.9	**9.6**	**14.3**	**5.1**
30	6.1	5.2	5.7	6.8	6.6	5.9	5.9	6.0	5.2	5.2	5.1	6.1	6.3	5.6	5.4	5.6	5.7	5.8	5.6	5.4	3.6	3.0	3.7	4.1	**5.3**	**6.8**	**3.0**
31	4.7	4.6	4.9	5.4	5.4	5.5	7.8	6.1	4.7	5.7	5.0	5.7	5.2	4.6	6.0	5.4	5.4	5.8	7.2	6.2	4.7	3.8	4.0	4.3	**5.3**	**7.8**	**3.8**
MEAN	**8.2**	**7.6**	**7.4**	**7.4**	**7.6**	**8.0**	**8.4**	**9.0**	**9.0**	**8.7**	**9.2**	**9.0**	**8.9**	**8.9**	**8.7**	**8.7**	**8.1**	**8.0**	**7.9**	**8.3**	**8.3**	**9.8**	**7.9**	**8.2**	**8.4**		
MAX	**17.1**	**16.7**	**16.8**	**15.7**	**15.1**	**23.9**	**17.5**	**19.1**	**20.9**	**16.4**	**22.3**	**24.6**	**21.7**	**19.8**	**20.0**	**20.9**	**18.3**	**18.0**	**17.5**	**20.9**	**21.0**	**75.5**	**16.7**	**20.6**		**75.5**	
MIN	**0.8**	**0.8**	**0.9**	**0.9**	**0.9**	**1.0**	**1.5**	**1.7**	**2.1**	**1.9**	**1.9**	**2.0**	**1.8**	**1.9**	**1.7**	**1.4**	**1.5**	**1.3**	**1.8**	**1.8**	**2.1**	**1.2**	**1.0**	**1.2**			**0.8**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 727 DATA RECOVERY RATE = 97.7% DATA CAPTURE RATE = 96.8%

MONTHLY MEAN = 8.4 µg/m3

MAXIMUM PM2.5 = 75.5 µg/m3 DATE OF OCCURRENCE = 8/13 at 2200 MAXIMUM DAILY MEAN = 15.4 µg/m3 DATE OF OCCURRENCE = 8/16

SECOND MAXIMUM PM2.5 = 24.6 µg/m3 DATE OF OCCURRENCE = 8/14 at 1200 SECOND MAXIMUM DAILY MEAN = 14.7 µg/m3 DATE OF OCCURRENCE = 8/1

MINIMUM PM2.5 = 0.8 µg/m3 DATE OF OCCURRENCE = 8/20 at 100 MINUMUM DAILY MEAN = 2.3 µg/m3 DATE OF OCCURRENCE = 8/20

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

CSX AQ5B Modulair

HOURLY AVERAGES of PM2.5 in µg/m3 for SEPTEMBER, 2024

Hr Beg Hr End Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	4.4	4.7	4.8	4.8	4.8	4.4	4.7	6.1	5.0	4.1	4.4	5.9	6.1	6.5	5.8	5.1	5.1	6.0	7.4	7.9	7.3	6.7	6.7	6.5	**5.6**	**7.9**	**4.1**
2	5.8	5.8	5.8	6.6	8.0	9.1	10.0	8.8	7.2	6.4	5.1	4.5	4.2	3.3	3.0	2.5	2.5	2.6	2.5	2.8	3.2	3.1	2.8	2.4	**4.9**	**10.0**	**2.4**
3	1.9	1.8	1.8	1.8	1.8	1.9	2.5	2.7	2.5	2.6	2.7	2.7	2.8	2.7	2.7	2.8	2.9	2.6	2.8	2.9	3.5	5.9	4.5	4.5	**2.8**	**5.9**	**1.8**
4	4.3	4.5	4.7	4.6	4.4	4.7	6.5	5.4	4.1	3.5	3.3	3.2	3.3	3.2	3.1	3.2	3.2	3.2	4.4	3.4	3.8	3.2	4.9	4.7	**4.0**	**6.5**	**3.1**
5	5.9	5.7	4.8	5.2	3.4	4.5	4.9	5.2	4.3	3.3	3.2	3.0	3.4	3.6	3.5	3.6	3.7	3.5	3.4	5.4	5.2	5.3	8.2	7.3	**4.5**	**8.2**	**3.0**
6	5.0	5.1	5.6	5.5	5.5	5.8	6.0	6.2	6.8	5.5	4.8	4.2	3.9	4.3	4.5	4.3	4.2	4.1	6.0	5.6	6.6	7.2	9.8	7.0	**5.5**	**9.8**	**3.9**
7	5.7	5.7	5.0	5.0	5.9	6.8	6.3	6.5	6.6	6.8	6.5	5.9	2.1	1.6	1.7	2.1	3.1	4.5	3.8	5.4	5.9	4.9	3.5	2.2	**4.7**	**6.8**	**1.6**
8	2.0	2.0	1.8	2.2	1.8	1.7	1.7	1.5	1.8	2.0	2.2	2.1	2.5	2.0	2.0	1.8	1.7	2.1	2.9	5.3	5.4	4.1	17.0	3.3	**3.0**	**17.0**	**1.5**
9	3.6	3.0	3.1	3.7	3.6	3.6	4.0	4.5	2.2	1.9	1.7	2.1	1.9	1.7	1.5	1.6	1.7	2.0	2.6	5.6	6.3	4.8	4.9	4.4	**3.1**	**6.3**	**1.5**
10	4.8	4.9	5.0	5.2	4.1	4.8	3.6	3.0	2.8	3.9	5.0	5.6	6.0	5.8	5.9	6.2	6.0	7.7	9.0	8.6	10.4	12.7	13.5	11.3	**6.4**	**13.5**	**2.8**
11	12.1	12.2	11.2	11.7	11.3	12.5	11.5	11.1	9.5	9.7	10.6	9.2	8.3	7.8	7.4	7.5	7.4	7.6	9.2	12.3	7.2	9.5	9.5	9.9	**9.8**	**12.5**	**7.2**
12	10.6	12.0	10.4	11.3	9.6	9.2	10.2	12.6	10.2	8.1	6.7	6.0	6.0	6.0	6.0	6.0	5.8	6.8	8.3	4.7	3.9	4.5	4.0	4.3	**7.6**	**12.6**	**3.9**
13	4.4	4.5	4.6	5.3	5.7	6.1	6.2	6.7	8.2	7.7	6.8	5.6	6.6	7.1	6.4	5.9	5.5	5.3	6.1	8.2	7.7	7.2	7.5	9.0	**6.4**	**9.0**	**4.4**
14	8.2	8.1	7.2	7.3	7.2	7.9	8.5	7.0	6.1	7.0	7.0	7.4	8.9	8.9	8.6	7.7	7.4	7.0	6.9	6.2	6.8	7.5	6.5	6.8	**7.4**	**8.9**	**6.1**
15	6.5	6.7	7.7	8.4	8.8	9.0	10.4	10.7	11.0	9.2	8.0	7.6	6.9	6.6	6.3	6.5	7.4	7.8	7.8	6.7	5.2	5.1	4.8	4.7	**7.4**	**11.0**	**4.7**
16	5.2	5.1	4.9	4.9	5.0	5.1	5.4	5.7	4.7	4.6	4.5	4.9	5.2	5.1	5.1	5.4	5.6	5.7	5.9	6.2	6.6	6.7	6.6	6.5	**5.4**	**6.7**	**4.5**
17	6.8	7.6	8.0	8.2	8.3	8.4	8.5	8.4	8.5	8.4	8.4	8.5	8.5	8.5	8.4	7.9	8.4	7.9	7.6	7.1	6.5	6.6	6.6	6.8	**7.8**	**8.5**	**6.5**
18	6.6	6.9	6.0	5.0	3.8	4.2	4.9	5.5	6.1	6.9	6.7	9.3	8.5	7.4	8.1	8.3	7.9	7.2	7.4	7.7	6.8	6.1	6.3	6.7	**6.6**	**9.3**	**3.8**
19	6.7	7.4	6.9	6.3	6.9	6.4	7.2	7.4	7.6	6.9	5.7	4.7	5.2	5.4	5.6	8.3	7.8	6.9	6.8	8.1	7.7	8.9	8.8	9.2	**7.0**	**9.2**	**4.7**
20	8.8	9.5	9.3	9.8	10.3	10.5	10.0	8.2	3.4	2.7	2.4	2.7	3.8	5.1	7.4	9.3	9.4	9.3	10.0	12.1	12.2	9.7	3.4	3.0	**7.5**	**12.2**	**2.4**
21	4.2	3.7	3.2	3.4	3.2	2.7	2.8	3.2	3.6	4.0	4.3	4.8	4.6	4.4	4.9	5.2	5.5	5.3	5.4	5.6	7.2	8.6	7.7	8.5	**4.8**	**8.6**	**2.7**
22	7.8	20.2	5.2	3.6	3.2	2.7	4.3	3.3	3.2	2.5	3.4	3.4	3.7	4.1	4.8	4.9	5.8	6.3	7.0	6.5	6.9	6.6	5.5	5.6	**5.4**	**20.2**	**2.5**
23	6.2	6.8	6.4	4.1	5.2	6.3	5.7	7.4	6.4	6.3	6.2	5.8	5.8	4.6	6.5	6.5	6.7	7.3	7.5	6.7	7.1	7.7	8.6	8.8	**6.5**	**8.8**	**4.1**
24	8.5	8.8	7.9	7.4	7.8	9.0	8.5	7.7	8.4	7.0	7.4	8.2	7.1	7.4	9.0	8.9	9.2	8.5	8.0	7.7	6.5	6.2	5.6	6.8	**7.8**	**9.2**	**5.6**
25	5.9	4.8	4.7	5.4	5.9	5.2	4.2	2.7	3.3	4.2	5.4	4.6	4.7	4.0	3.8	3.6	4.1	3.3	4.8	4.9	5.4	6.0	6.8	6.0	**4.7**	**6.8**	**2.7**
26	5.6	6.9	5.3	7.7	7.4	6.3	6.6	5.6	3.1	3.4	3.8	4.8	5.2	4.2	2.7	1.5	1.4	1.4	1.8	3.6	4.3	1.9	1.6	2.0	**4.0**	**7.7**	**1.4**
27	2.3	2.2	2.7	2.2	3.8	5.6	3.9	2.4	2.3	2.5	2.1	3.4	3.2	3.4	5.4	3.7	4.3	4.3	4.4	4.2	5.6	4.0	2.9	2.3	**3.4**	**5.6**	**2.1**
28	3.5	5.7	4.6	5.0	5.4	4.5	3.1	3.6	6.0	5.8	6.5	8.7	7.7	7.8	8.3	9.0	8.1	6.7	5.2	5.2	5.1	5.6	5.8	6.7	**5.9**	**9.0**	**3.1**
29	6.5	6.8	5.2	4.3	4.1	5.1	6.7	7.0	6.4	5.0	6.7	7.6	7.3	6.8	6.6	5.5	3.9	3.4	3.8	3.8	3.4	3.4	3.5	4.6	**5.3**	**7.6**	**3.4**
30	5.1	4.3	4.8	5.0	6.2	7.3	7.5	6.8	5.8	4.8	4.8	5.0	5.1	5.1	5.4	7.4	7.9	7.2	6.8	6.5	6.1	6.7	4.6	3.6	**5.8**	**7.9**	**3.6**
MEAN	**5.8**	**6.4**	**5.6**	**5.7**	**5.7**	**6.0**	**6.2**	**6.1**	**5.6**	**5.2**	**5.2**	**5.4**	**5.3**	**5.1**	**5.3**	**5.4**	**5.5**	**5.5**	**5.9**	**6.2**	**6.2**	**6.2**	**6.4**	**5.8**	**5.7**		
MAX	**12.1**	**20.2**	**11.2**	**11.7**	**11.3**	**12.5**	**11.5**	**12.6**	**11.0**	**9.7**	**10.6**	**9.3**	**8.9**	**8.9**	**9.0**	**9.3**	**9.4**	**9.3**	**10.0**	**12.3**	**12.2**	**12.7**	**17.0**	**11.3**		**20.2**	
MIN	**1.9**	**1.8**	**1.8**	**1.8**	**1.8**	**1.7**	**1.7**	**1.5**	**1.8**	**1.9**	**1.7**	**2.1**	**1.9**	**1.6**	**1.5**	**1.5**	**1.4**	**1.4**	**1.8**	**2.8**	**3.2**	**1.9**	**1.6**	**2.0**			**1.4**

POSSIBLE NUMBER OF OBSERVATIONS = 720 ACTUAL NUMBER OF OBSERVATIONS = 720 DATA RECOVERY RATE = 100.0% DATA CAPTURE RATE = 100.0%

MONTHLY MEAN = 5.7 µg/m3

MAXIMUM PM2.5 = 20.2 µg/m3 DATE OF OCCURRENCE = 9/22 at 200 MAXIMUM DAILY MEAN = 9.8 µg/m3 DATE OF OCCURRENCE = 9/11

SECOND MAXIMUM PM2.5 = 17.0 µg/m3 DATE OF OCCURRENCE = 9/8 at 2300 SECOND MAXIMUM DAILY MEAN = 7.8 µg/m3 DATE OF OCCURRENCE = 9/17

MINIMUM PM2.5 = 1.4 µg/m3 DATE OF OCCURRENCE = 9/26 at 1700 MINUMUM DAILY MEAN = 2.8 µg/m3 DATE OF OCCURRENCE = 9/3

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

CSX AQ5C Modulair

HOURLY AVERAGES of PM10 in µg/m3 for JULY, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
2	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
3	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
4	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
5	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
6	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
7	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
8	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
9	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
10	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
11	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
12	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
13	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
14	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
15	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
16	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
17	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
18	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	12.8	15.2	14.6	15.3	16.1	17.7	19.1	19.7	**---**	**---**	**---**
19	19.7	19.1	19.4	15.4	14.1	14.7	11.9	13.6	11.7	10.5	10.1	9.0	11.0	8.7	10.5	9.0	10.2	11.0	10.0	16.6	18.6	25.7	24.2	26.2	**14.6**	**26.2**	**8.7**
20	23.1	18.7	18.6	18.7	19.6	21.8	23.3	27.5	20.6	18.9	16.6	15.8	14.4	14.9	15.8	18.4	17.3	13.7	14.8	17.5	14.8	18.2	15.5	14.2	**18.0**	**27.5**	**13.7**
21	11.2	12.8	15.4	16.6	14.6	15.6	15.5	17.1	14.4	13.3	19.2	17.0	15.1	13.6	14.2	14.8	14.9	14.5	14.0	15.6	16.6	15.0	15.6	16.0	**15.1**	**19.2**	**11.2**
22	17.1	17.1	15.7	15.8	16.5	19.1	21.6	30.3	19.2	18.7	14.5	16.4	27.8	25.0	26.4	18.1	11.1	8.1	8.5	5.6	7.6	9.5	22.1	12.5	**16.8**	**30.3**	**5.6**
23	9.5	12.0	12.2	12.4	10.6	10.0	10.5	11.3	12.8	10.5	10.3	10.4	12.6	15.2	14.5	10.7	12.1	14.9	15.4	25.1	19.9	19.5	12.2	9.2	**13.1**	**25.1**	**9.2**
24	8.3	8.2	8.1	10.2	7.6	7.5	8.0	11.2	9.6	9.9	10.7	21.1	15.5	11.4	12.0	13.3	17.0	18.7	15.1	14.0	10.2	11.6	10.8	11.1	**11.7**	**21.1**	**7.5**
25	11.6	11.2	12.8	11.4	12.1	12.7	16.0	14.6	12.1	20.1	16.8	21.4	21.7	20.8	21.8	21.8	22.0	25.5	21.1	21.2	21.5	18.9	21.9	21.9	**18.0**	**25.5**	**11.2**
26	19.5	19.3	18.2	16.2	13.6	13.2	12.2	11.3	11.8	12.5	12.3	10.4	11.0	12.9	8.9	11.8	11.8	11.5	11.2	19.6	16.6	14.4	13.3	10.2	**13.5**	**19.6**	**8.9**
27	10.4	10.2	12.0	9.7	11.1	17.8	14.3	13.3	10.7	9.9	8.5	7.7	9.2	9.6	9.7	8.6	11.4	8.7	8.9	11.1	21.3	14.3	22.5	24.5	**12.3**	**24.5**	**7.7**
28	19.4	13.9	15.5	14.2	12.9	12.9	20.6	14.1	13.3	12.1	10.4	8.3	9.6	10.1	11.0	11.1	12.2	10.7	14.8	24.5	17.5	16.3	18.3	19.5	**14.3**	**24.5**	**8.3**
29	24.6	25.0	18.6	19.2	27.6	31.5	30.0	25.4	23.5	24.0	25.7	21.8	21.7	22.7	20.9	21.9	23.2	25.5	27.8	17.6	21.0	18.6	20.4	18.1	**23.2**	**31.5**	**17.6**
30	17.2	15.6	17.1	15.7	17.0	14.6	16.2	15.0	13.5	15.2	14.2	15.2	17.0	15.3	16.8	17.9	15.8	17.4	19.7	21.6	18.7	15.8	12.7	10.0	**16.1**	**21.6**	**10.0**
31	9.7	7.5	8.6	10.8	18.1	17.5	9.4	7.3	10.2	11.2	13.4	13.8	14.6	---	14.4	25.9	19.5	14.7	14.2	18.8	16.4	17.7	18.2	22.6	**14.5**	**25.9**	**7.3**
MEAN	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**15.5**		
MAX	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---		**31.5**	
MIN	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---			**5.6**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 319 DATA RECOVERY RATE = 42.9% DATA CAPTURE RATE = 41.9%

MONTHLY MEAN = 15.5 µg/m3

MAXIMUM PM10 = 31.5 µg/m3 DATE OF OCCURRENCE = 7/29 at 600 MAXIMUM DAILY MEAN = 23.2 µg/m3 DATE OF OCCURRENCE = 7/29

SECOND MAXIMUM PM10 = 30.3 µg/m3 DATE OF OCCURRENCE = 7/22 at 800 SECOND MAXIMUM DAILY MEAN = 18.0 µg/m3 DATE OF OCCURRENCE = 7/25

MINIMUM PM10 = 5.6 µg/m3 DATE OF OCCURRENCE = 7/22 at 2000 MINUMUM DAILY MEAN = 11.7 µg/m3 DATE OF OCCURRENCE = 7/24

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

CSX AQ5C Modulair

HOURLY AVERAGES of PM10 in µg/m3 for AUGUST, 2024

Hr Beg Hr End Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	25.8	19.8	20.2	18.8	17.9	19.9	24.7	32.2	28.0	29.7	---	---	19.7	19.3	24.6	21.8	---	21.0	22.3	23.8	27.1	25.9	25.2	27.5	**23.6**	**32.2**	**17.9**
2	29.4	23.0	25.7	26.6	28.8	34.7	26.9	33.7	23.4	16.4	17.4	---	---	---	---	---	---	---	16.2	30.2	23.7	18.6	13.6	8.8	**---**	**---**	**---**
3	14.2	12.8	12.0	12.4	16.2	14.0	15.5	12.8	15.0	11.8	15.2	11.8	---	---	27.6	---	16.0	21.8	16.3	11.7	4.9	9.5	10.2	11.7	**14.0**	**27.6**	**4.9**
4	11.7	14.1	17.8	15.3	17.0	12.8	14.7	11.8	6.8	10.0	8.7	9.4	9.3	11.3	4.7	7.2	6.7	7.5	5.4	11.2	9.1	9.8	11.7	12.3	**10.7**	**17.8**	**4.7**
5	12.7	9.7	13.9	15.0	20.3	22.4	17.6	13.7	22.9	26.9	20.5	17.5	16.4	19.2	13.5	15.3	14.6	16.4	18.9	31.4	22.6	23.7	17.9	21.8	**18.5**	**31.4**	**9.7**
6	18.7	20.0	19.0	15.5	16.8	16.4	15.9	18.8	20.5	19.9	22.5	21.7	25.1	24.8	18.6	16.8	11.4	9.8	7.5	6.9	8.2	4.2	4.7	6.7	**15.4**	**25.1**	**4.2**
7	4.4	4.4	5.5	11.4	7.6	7.8	13.6	8.0	6.1	8.3	6.0	8.9	5.9	17.0	6.2	6.2	7.5	3.8	4.4	4.4	8.0	9.3	5.2	7.0	**7.4**	**17.0**	**3.8**
8	6.6	5.7	7.1	7.8	12.9	13.6	6.4	8.6	---	7.7	---	10.9	8.7	---	18.3	22.9	31.8	28.6	29.5	36.4	42.0	41.1	39.3	35.8	**20.1**	**42.0**	**5.7**
9	32.1	36.7	36.4	46.2	44.2	29.6	21.4	23.0	25.6	26.8	10.1	5.4	9.7	9.7	3.4	5.4	5.3	9.3	13.1	11.8	12.6	10.8	13.7	13.8	**19.0**	**46.2**	**3.4**
10	18.7	18.2	15.0	21.1	28.8	18.2	17.5	20.3	16.0	16.1	16.4	16.2	14.2	13.7	14.8	14.5	13.0	14.0	16.8	15.3	13.9	15.9	10.1	12.2	**16.3**	**28.8**	**10.1**
11	13.6	11.6	13.8	11.2	11.4	13.8	14.2	12.9	9.2	6.8	8.4	5.3	5.2	6.7	9.3	6.0	6.0	8.5	8.9	17.2	16.0	22.5	17.4	18.8	**11.4**	**22.5**	**5.2**
12	12.2	9.6	13.5	14.2	18.6	19.3	13.5	13.0	14.7	11.6	8.8	6.9	6.9	11.1	10.1	9.0	6.4	7.1	3.8	8.6	12.6	12.8	9.2	11.8	**11.1**	**19.3**	**3.8**
13	13.9	6.9	10.7	6.0	9.2	16.9	15.3	15.9	13.1	7.2	13.4	10.0	11.6	14.1	14.6	7.4	9.3	11.6	11.7	11.3	35.6	---	18.5	16.2	**13.1**	**35.6**	**6.0**
14	15.0	20.8	14.5	14.8	18.9	19.3	18.9	18.5	21.8	20.2	27.7	28.3	25.8	24.8	25.8	24.3	18.8	16.9	17.2	15.8	19.2	14.4	18.2	18.7	**19.9**	**28.3**	**14.4**
15	20.9	19.2	15.6	18.7	19.1	35.1	27.9	23.1	21.0	21.9	19.6	17.9	15.7	17.7	18.0	19.1	19.2	22.0	28.0	25.9	33.6	26.5	20.9	27.2	**22.2**	**35.1**	**15.6**
16	23.0	26.5	21.6	25.9	26.8	---	51.9	46.9	58.2	23.5	19.9	19.7	19.9	21.4	34.5	23.8	23.8	19.1	20.1	18.7	20.5	21.8	25.4	24.9	**26.9**	**58.2**	**18.7**
17	19.2	23.2	21.1	20.3	17.7	25.8	20.3	18.5	20.0	24.2	23.5	23.5	20.9	20.1	28.3	33.1	30.7	32.0	27.6	10.0	9.4	11.8	20.2	16.9	**21.6**	**33.1**	**9.4**
18	25.0	21.7	15.9	17.8	13.2	12.8	14.4	14.0	16.2	12.8	18.5	19.5	16.6	20.3	18.1	18.0	17.1	16.9	17.3	12.0	14.5	24.8	21.3	10.9	**17.1**	**25.0**	**10.9**
19	11.4	13.3	12.0	17.0	20.6	12.9	14.9	22.3	8.7	6.9	4.8	4.9	3.6	3.0	5.1	4.8	3.3	2.9	2.4	3.5	7.3	6.1	---	6.3	**8.6**	**22.3**	**2.4**
20	---	---	---	---	---	---	3.7	3.4	5.0	4.2	6.2	6.8	7.5	10.8	8.0	7.6	5.9	8.2	6.2	2.8	3.8	11.9	9.0	4.9	**6.4**	**11.9**	**2.8**
21	5.5	6.0	10.7	4.6	4.4	6.9	10.4	8.2	8.9	4.3	5.1	5.8	4.1	3.4	4.5	7.6	4.7	4.2	7.9	10.2	16.8	11.3	8.8	8.2	**7.2**	**16.8**	**3.4**
22	10.1	12.7	18.2	6.7	12.6	---	18.2	24.0	11.1	8.6	6.0	6.4	10.5	6.3	7.6	5.8	7.3	4.8	13.2	32.7	24.5	44.6	---	77.7	**16.8**	**77.7**	**4.8**
23	---	31.3	17.9	11.7	29.3	26.5	21.4	21.6	19.2	9.2	8.9	15.0	12.3	11.3	8.0	8.2	12.1	9.0	13.1	27.6	13.4	15.0	19.2	15.4	**16.4**	**31.3**	**8.0**
24	18.4	12.9	14.0	12.5	13.3	15.1	19.7	11.4	14.2	11.4	17.1	14.1	15.0	13.1	13.0	12.0	14.9	13.6	11.2	15.2	13.9	17.9	34.2	28.3	**15.7**	**34.2**	**11.2**
25	19.9	14.4	13.4	15.8	19.3	14.6	18.7	15.2	18.2	13.1	10.7	11.4	11.0	14.5	16.0	20.5	19.5	15.9	15.4	21.9	16.6	16.4	20.4	13.0	**16.1**	**21.9**	**10.7**
26	13.8	11.6	12.7	12.2	14.4	13.6	18.2	24.7	20.6	21.7	37.7	31.3	22.3	23.4	25.2	32.3	11.6	10.1	10.3	9.5	11.4	14.2	24.8	18.5	**18.6**	**37.7**	**9.5**
27	23.1	21.1	22.7	16.8	22.8	24.0	28.7	35.7	25.5	23.8	35.2	31.0	22.5	16.5	17.3	21.3	17.4	16.4	18.7	29.3	22.5	23.8	20.2	24.1	**23.4**	**35.7**	**16.4**
28	26.6	23.5	23.6	26.4	19.4	19.5	31.2	27.4	23.9	17.5	19.9	16.6	---	---	---	---	---	---	21.5	31.4	45.5	16.4	16.8	25.6	**24.0**	**45.5**	**16.4**
29	20.5	18.8	16.2	12.9	14.5	15.3	16.7	18.3	14.8	14.1	16.2	20.0	20.0	22.1	20.9	25.2	28.6	25.5	24.9	17.2	16.0	22.3	34.1	38.1	**20.6**	**38.1**	**12.9**
30	61.1	32.6	27.0	39.4	32.6	32.6	20.6	34.7	41.3	31.7	30.0	41.6	39.8	29.9	25.6	26.1	31.3	29.0	23.1	21.4	11.5	10.2	16.7	22.0	**29.7**	**61.1**	**10.2**
31	31.1	34.8	36.5	38.3	33.7	31.9	43.5	27.9	14.2	13.6	11.5	14.7	13.0	8.6	11.1	9.3	8.2	8.5	16.6	10.8	12.0	8.9	7.5	7.6	**18.9**	**43.5**	**7.5**
MEAN	**19.3**	**17.9**	**17.5**	**17.8**	**19.4**	**19.5**	**19.9**	**20.0**	**18.8**	**15.5**	**16.1**	**15.6**	**14.8**	**15.3**	**15.6**	**15.4**	**14.4**	**14.3**	**15.1**	**17.3**	**17.7**	**17.4**	**17.7**	**19.1**	**17.2**		
MAX	**61.1**	**36.7**	**36.5**	**46.2**	**44.2**	**35.1**	**51.9**	**46.9**	**58.2**	**31.7**	**37.7**	**41.6**	**39.8**	**29.9**	**34.5**	**33.1**	**31.8**	**32.0**	**29.5**	**36.4**	**45.5**	**44.6**	**39.3**	**77.7**		**77.7**	
MIN	**4.4**	**4.4**	**5.5**	**4.6**	**4.4**	**6.9**	**3.7**	**3.4**	**5.0**	**4.2**	**4.8**	**4.9**	**3.6**	**3.0**	**3.4**	**4.8**	**3.3**	**2.9**	**2.4**	**2.8**	**3.8**	**4.2**	**4.7**	**4.9**			**2.4**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 710 DATA RECOVERY RATE = 95.4% DATA CAPTURE RATE = 96.8%

MONTHLY MEAN = 17.2 µg/m3

MAXIMUM PM10 = 77.7 µg/m3 DATE OF OCCURRENCE = 8/22 at 2400 MAXIMUM DAILY MEAN = 29.7 µg/m3 DATE OF OCCURRENCE = 8/30

SECOND MAXIMUM PM10 = 61.1 µg/m3 DATE OF OCCURRENCE = 8/30 at 100 SECOND MAXIMUM DAILY MEAN = 26.9 µg/m3 DATE OF OCCURRENCE = 8/16

MINIMUM PM10 = 2.4 µg/m3 DATE OF OCCURRENCE = 8/19 at 1900 MINUMUM DAILY MEAN = 6.4 µg/m3 DATE OF OCCURRENCE = 8/20

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

CSX AQ5C Modulair

HOURLY AVERAGES of PM10 in µg/m3 for SEPTEMBER, 2024

Hr Beg Hr End Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	9.3	11.2	11.2	12.1	11.1	10.4	10.4	11.3	9.3	9.5	7.2	11.1	7.8	10.5	7.3	8.1	9.8	8.4	12.3	15.6	11.4	10.2	10.1	9.8	**10.2**	**15.6**	**7.2**
2	7.7	7.6	11.4	13.6	13.6	14.9	15.4	13.2	12.1	10.2	9.7	10.5	11.1	7.9	8.6	6.2	6.7	5.9	5.2	6.5	6.0	5.2	5.4	6.4	**9.2**	**15.4**	**5.2**
3	5.5	5.4	5.6	6.3	8.4	7.6	14.6	7.7	8.4	6.8	7.0	7.9	8.5	8.8	7.9	10.4	11.6	9.0	9.0	9.3	12.8	34.6	23.2	29.2	**11.1**	**34.6**	**5.4**
4	15.1	25.5	22.1	16.8	16.8	24.2	42.9	28.4	11.8	9.3	6.9	5.2	7.5	6.6	7.0	9.9	8.7	9.2	13.1	15.1	22.8	15.2	24.4	22.7	**16.1**	**42.9**	**5.2**
5	28.9	25.0	17.9	19.3	17.2	34.6	30.1	19.7	13.8	9.7	9.5	7.8	10.3	10.1	11.2	10.5	11.2	10.1	13.1	29.2	26.2	30.6	41.2	42.3	**20.0**	**42.3**	**7.8**
6	39.5	40.6	43.4	41.0	44.2	49.9	43.6	35.6	25.3	17.1	17.9	13.3	8.2	10.3	14.1	11.2	12.1	10.6	15.7	16.2	21.5	19.2	24.6	23.8	**25.0**	**49.9**	**8.2**
7	17.5	15.6	16.7	19.0	27.7	35.3	22.1	19.6	15.8	15.8	16.9	26.9	7.7	5.4	6.8	5.4	8.8	10.2	7.8	10.8	8.8	8.6	5.8	4.5	**14.1**	**35.3**	**4.5**
8	4.2	5.4	3.7	10.7	3.7	5.9	4.1	4.3	5.1	5.3	4.3	4.4	6.8	7.0	4.7	6.3	7.0	7.6	11.9	10.7	14.3	15.3	69.6	6.6	**9.5**	**69.6**	**3.7**
9	10.5	8.9	9.0	10.3	11.9	19.4	29.2	21.6	9.8	5.7	6.6	6.1	9.9	8.4	7.0	10.3	11.3	9.4	11.4	26.6	20.7	15.0	13.3	14.7	**12.8**	**29.2**	**5.7**
10	11.4	10.8	11.9	16.4	13.3	28.6	13.5	11.8	15.2	18.6	16.0	14.9	14.8	15.9	14.6	11.6	13.4	19.6	25.4	21.6	27.3	59.0	42.0	28.4	**19.8**	**59.0**	**10.8**
11	34.3	27.2	24.0	29.6	43.3	58.3	34.8	22.7	20.7	18.3	20.7	19.1	17.4	15.6	14.8	14.5	15.5	13.7	29.6	56.2	22.1	27.5	24.2	34.3	**26.6**	**58.3**	**13.7**
12	25.3	42.6	27.4	33.8	25.8	30.8	38.6	36.8	18.6	15.2	16.4	13.6	12.0	11.8	12.0	9.9	10.7	15.6	19.8	16.6	16.2	16.9	13.1	14.9	**20.6**	**42.6**	**9.9**
13	17.2	17.7	20.1	20.2	24.9	25.2	20.9	23.8	25.9	30.7	23.4	15.6	19.4	20.1	15.6	13.5	11.9	11.6	14.8	17.6	18.7	25.9	30.4	32.0	**20.7**	**32.0**	**11.6**
14	22.0	21.6	19.2	21.6	24.3	27.4	28.6	15.7	11.2	11.1	12.8	14.0	15.9	14.6	15.6	13.7	15.0	11.7	11.4	13.3	12.9	14.1	12.8	13.6	**16.4**	**28.6**	**11.1**
15	13.5	15.5	14.5	14.5	15.4	16.8	17.3	19.1	17.6	15.5	12.5	14.2	12.3	11.4	11.4	13.1	14.9	15.6	17.7	22.9	19.0	20.9	18.9	25.8	**16.3**	**25.8**	**11.4**
16	27.8	26.0	25.0	26.6	28.4	24.2	30.1	32.2	27.3	25.6	22.4	17.8	17.3	18.4	16.9	21.2	23.9	23.5	26.7	29.6	32.0	35.1	32.7	28.2	**25.8**	**35.1**	**16.9**
17	31.4	37.0	42.7	44.5	48.8	48.9	49.7	46.5	44.2	31.6	29.9	31.2	30.4	30.7	29.8	26.6	28.8	33.8	33.3	33.0	26.7	28.4	25.9	26.5	**35.0**	**49.7**	**25.9**
18	24.1	20.9	24.9	12.4	9.3	11.1	12.9	18.3	21.4	25.0	15.2	18.9	18.7	15.6	18.8	18.9	19.3	17.6	15.0	19.8	20.4	22.8	24.9	22.9	**18.7**	**25.0**	**9.3**
19	22.0	24.2	23.3	23.4	23.6	23.8	23.9	25.6	22.9	18.0	12.1	8.5	9.4	9.4	9.8	13.7	16.8	14.8	26.3	31.7	20.7	27.7	20.0	19.6	**19.6**	**31.7**	**8.5**
20	22.4	19.7	18.6	23.6	20.7	22.7	22.7	15.0	6.7	5.2	4.3	5.6	9.4	16.2	15.0	17.0	15.5	19.3	21.9	33.2	31.1	24.8	14.4	8.3	**17.2**	**33.2**	**4.3**
21	12.6	10.6	12.5	13.5	15.9	16.6	19.4	13.0	9.9	11.0	8.6	9.1	9.3	9.1	10.0	12.0	12.7	11.8	13.0	13.6	16.2	18.8	17.8	32.2	**13.7**	**32.2**	**8.6**
22	38.9	108.6	13.9	13.2	16.3	7.0	18.0	19.3	12.0	6.2	7.5	7.8	7.9	7.3	13.0	10.8	10.5	11.6	12.6	12.9	16.1	19.6	22.1	26.5	**18.3**	**108.6**	**6.2**
23	27.8	31.4	35.6	32.2	35.4	33.2	36.3	35.8	29.8	29.2	35.0	32.7	28.5	22.4	28.5	18.4	17.7	21.7	25.2	20.3	24.8	30.7	30.4	36.2	**29.1**	**36.3**	**17.7**
24	27.4	22.1	25.6	26.0	29.0	31.5	34.3	27.8	30.1	29.2	37.2	31.1	25.5	30.9	34.6	35.7	41.3	30.5	26.4	24.9	21.0	18.5	26.6	29.6	**29.0**	**41.3**	**18.5**
25	28.1	22.0	28.2	31.4	32.3	21.4	12.1	9.2	12.5	14.4	19.1	20.1	20.3	14.1	11.8	19.7	20.0	7.9	15.1	25.3	21.3	28.2	39.9	46.7	**21.7**	**46.7**	**7.9**
26	45.1	36.0	36.2	37.3	49.3	47.9	36.9	29.1	30.9	31.0	26.9	18.1	13.8	12.6	10.6	8.5	8.3	10.8	14.8	17.3	29.4	13.4	15.3	17.8	**24.9**	**49.3**	**8.3**
27	17.3	18.1	24.3	19.3	29.6	66.4	64.2	5.0	4.6	8.0	8.5	15.1	15.6	16.8	18.5	14.8	13.0	16.4	15.1	12.6	16.7	12.1	8.2	12.2	**18.9**	**66.4**	**4.6**
28	13.1	14.2	18.3	15.0	16.7	16.0	18.5	14.6	21.1	22.0	32.8	19.3	14.5	16.9	19.3	20.5	16.1	13.0	9.6	9.4	9.3	10.3	10.7	12.3	**16.0**	**32.8**	**9.3**
29	14.6	17.6	16.2	12.0	9.2	12.4	16.0	15.3	16.1	11.1	10.9	12.4	12.0	12.5	11.7	9.3	6.8	7.5	11.7	11.7	11.6	11.9	10.8	11.6	**12.2**	**17.6**	**6.8**
30	12.1	9.6	11.3	12.9	20.5	25.4	24.1	17.4	16.0	13.1	12.4	11.3	10.2	10.7	10.7	14.3	14.6	15.6	14.9	14.4	14.9	14.4	14.5	13.7	**14.5**	**25.4**	**9.6**
MEAN	**20.9**	**23.3**	**20.5**	**21.0**	**22.9**	**26.6**	**26.2**	**20.5**	**17.5**	**16.0**	**15.7**	**14.8**	**13.7**	**13.6**	**13.9**	**13.9**	**14.5**	**14.1**	**16.7**	**19.9**	**19.1**	**21.2**	**22.4**	**21.8**	**18.8**		
MAX	**45.1**	**108.6**	**43.4**	**44.5**	**49.3**	**66.4**	**64.2**	**46.5**	**44.2**	**31.6**	**37.2**	**32.7**	**30.4**	**30.9**	**34.6**	**35.7**	**41.3**	**33.8**	**33.3**	**56.2**	**32.0**	**59.0**	**69.6**	**46.7**		**108.6**	
MIN	**4.2**	**5.4**	**3.7**	**6.3**	**3.7**	**5.9**	**4.1**	**4.3**	**4.6**	**5.2**	**4.3**	**4.4**	**6.8**	**5.4**	**4.7**	**5.4**	**6.7**	**5.9**	**5.2**	**6.5**	**6.0**	**5.2**	**5.4**	**4.5**			**3.7**

POSSIBLE NUMBER OF OBSERVATIONS = 720 ACTUAL NUMBER OF OBSERVATIONS = 720 DATA RECOVERY RATE = 100.0% DATA CAPTURE RATE = 100.0%

MONTHLY MEAN = 18.8 µg/m3

MAXIMUM PM10 = 108.6 µg/m3 DATE OF OCCURRENCE = 9/22 at 200 MAXIMUM DAILY MEAN = 35.0 µg/m3 DATE OF OCCURRENCE = 9/17

SECOND MAXIMUM PM10 = 69.6 µg/m3 DATE OF OCCURRENCE = 9/8 at 2300 SECOND MAXIMUM DAILY MEAN = 29.1 µg/m3 DATE OF OCCURRENCE = 9/23

MINIMUM PM10 = 3.7 µg/m3 DATE OF OCCURRENCE = 9/8 at 300 MINUMUM DAILY MEAN = 9.2 µg/m3 DATE OF OCCURRENCE = 9/2

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

CSX AQ5C Modulair

HOURLY AVERAGES of PM2.5 in µg/m3 for JULY, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
2	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
3	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
4	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
5	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
6	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
7	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
8	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
9	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
10	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
11	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
12	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
13	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
14	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
15	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
16	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
17	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
18	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	9.3	10.6	10.7	12.2	13.1	13.3	12.7	12.7	---	---	---
19	11.2	10.7	9.9	8.9	8.8	7.2	6.9	6.5	5.7	5.3	5.5	5.2	4.9	4.4	4.6	5.3	6.7	7.6	6.5	9.6	11.4	12.5	12.3	13.5	**7.9**	**13.5**	**4.4**
20	11.5	9.7	8.4	8.3	8.0	7.9	8.5	9.2	8.6	8.1	8.1	8.9	8.7	9.3	10.1	10.9	10.2	9.1	10.1	10.3	9.5	12.8	10.6	8.8	**9.4**	**12.8**	**7.9**
21	6.4	8.1	9.4	9.2	8.4	7.9	7.4	8.8	11.3	10.3	14.1	12.9	11.1	10.6	10.6	11.9	12.7	12.5	12.2	12.8	13.6	12.2	11.7	11.4	**10.7**	**14.1**	**6.4**
22	11.2	11.1	11.1	10.7	10.2	10.4	10.4	11.4	9.8	9.9	5.0	6.7	6.4	7.2	4.9	5.6	3.8	4.5	4.1	2.9	3.1	3.7	9.2	4.2	**7.3**	**11.4**	**2.9**
23	3.1	3.3	2.8	2.5	1.6	2.0	2.3	4.7	6.9	6.1	6.6	7.4	9.0	10.9	11.0	8.2	9.1	10.7	10.8	13.2	12.5	10.9	7.7	4.8	**7.0**	**13.2**	**1.6**
24	4.3	4.2	4.4	4.3	4.1	3.5	4.7	5.8	5.4	6.8	7.7	14.7	11.8	8.6	8.6	8.2	8.3	7.8	6.6	7.3	5.2	5.3	6.0	6.4	**6.6**	**14.7**	**3.5**
25	6.6	7.0	7.7	7.2	6.8	7.2	6.7	5.7	5.9	12.3	11.0	16.2	16.2	17.1	15.9	17.5	18.2	18.4	16.9	16.3	14.9	13.9	15.8	13.5	**12.2**	**18.4**	**5.7**
26	12.4	11.1	10.9	9.4	7.2	6.5	5.8	5.3	4.2	4.5	4.5	5.0	5.4	5.3	5.2	5.9	6.8	6.1	6.5	7.4	7.7	7.7	8.1	5.0	**6.8**	**12.4**	**4.2**
27	4.9	5.3	6.7	3.4	6.2	4.7	5.6	5.4	5.7	6.0	5.6	5.1	5.2	5.1	5.0	4.8	5.0	4.9	5.1	6.2	7.4	7.5	8.7	11.4	**5.8**	**11.4**	**3.4**
28	11.1	8.9	7.3	8.6	7.2	8.5	9.4	10.8	9.5	8.7	8.0	6.4	7.7	7.5	8.2	8.2	9.8	8.6	9.6	10.8	11.2	11.6	12.0	12.3	**9.2**	**12.3**	**6.4**
29	13.6	13.7	12.0	12.0	13.0	12.7	13.7	14.5	16.7	16.4	18.1	16.9	16.7	16.0	15.9	15.5	17.0	17.7	12.8	7.3	10.0	9.9	9.5	10.3	**13.8**	**18.1**	**7.3**
30	8.5	7.9	7.9	8.2	9.0	8.8	9.5	9.3	9.0	9.4	9.0	9.2	10.3	11.8	11.4	10.8	11.2	11.9	12.8	12.7	11.0	10.2	6.7	4.9	**9.6**	**12.8**	**4.9**
31	4.4	4.1	4.5	4.9	6.1	6.1	4.0	3.5	5.9	6.7	8.1	9.3	8.5	---	7.3	10.8	10.1	10.2	10.8	12.2	11.6	12.7	13.1	13.6	**8.1**	**13.6**	**3.5**
MEAN	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**8.9**		
MAX	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---		**18.4**	
MIN	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---			**1.6**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 319 DATA RECOVERY RATE = 42.9% DATA CAPTURE RATE = 41.9%

MONTHLY MEAN = 8.9 µg/m3

MAXIMUM PM2.5 = 18.4 µg/m3 DATE OF OCCURRENCE = 7/25 at 1800 MAXIMUM DAILY MEAN = 13.8 µg/m3 DATE OF OCCURRENCE = 7/29

SECOND MAXIMUM PM2.5 = 18.2 µg/m3 DATE OF OCCURRENCE = 7/25 at 1700 SECOND MAXIMUM DAILY MEAN = 12.2 µg/m3 DATE OF OCCURRENCE = 7/25

MINIMUM PM2.5 = 1.6 µg/m3 DATE OF OCCURRENCE = 7/23 at 500 MINUMUM DAILY MEAN = 5.8 µg/m3 DATE OF OCCURRENCE = 7/27

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

CSX AQ5C Modulair

HOURLY AVERAGES of PM2.5 in µg/m3 for AUGUST, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	13.9	12.5	12.0	12.1	11.7	10.2	10.2	13.6	17.3	18.6	---	---	15.7	16.6	17.4	17.0	---	17.6	19.2	18.3	19.3	19.9	18.8	19.5	**15.7**	**19.9**	**10.2**
2	19.5	18.9	18.8	17.5	17.1	17.4	18.4	21.5	16.0	12.6	11.9	---	---	---	---	---	---	---	6.2	5.6	6.3	3.8	7.9	2.4	**---**	**---**	**---**
3	3.7	4.2	4.0	3.8	5.7	5.4	6.1	7.1	7.7	8.4	8.9	8.5	---	---	12.3	---	8.7	7.6	8.5	6.2	1.9	3.2	3.2	3.6	**6.1**	**12.3**	**1.9**
4	4.1	4.0	4.6	5.1	4.7	5.0	4.7	3.6	3.7	4.2	4.7	7.4	6.6	5.3	3.6	4.8	4.0	2.6	4.4	6.4	6.0	5.7	6.7	5.5	**4.8**	**7.4**	**2.6**
5	5.7	6.1	6.4	6.4	10.4	7.3	7.5	9.0	12.8	14.2	15.7	14.9	13.7	12.9	11.6	11.6	10.6	11.6	11.7	23.0	14.3	13.5	12.7	12.2	**11.4**	**23.0**	**5.7**
6	11.8	10.3	10.1	9.5	9.6	9.1	11.7	10.9	14.2	15.9	17.9	17.7	17.5	18.2	11.1	6.0	2.9	2.6	3.4	2.9	2.7	1.9	1.0	1.4	**9.1**	**18.2**	**1.0**
7	1.2	2.1	1.5	3.2	2.8	3.4	4.5	3.9	2.9	3.6	4.5	4.5	4.5	6.8	4.3	2.3	1.2	1.1	1.0	1.6	3.9	4.5	1.5	0.7	**2.9**	**6.8**	**0.7**
8	1.0	1.7	2.2	1.8	1.4	1.6	2.3	2.9	---	4.1	---	4.0	2.7	---	4.7	5.7	6.3	6.2	6.2	6.4	6.8	7.2	6.7	7.2	**4.2**	**7.2**	**1.0**
9	7.8	7.6	8.1	8.6	8.8	8.1	7.3	8.1	8.4	7.1	3.8	3.3	3.1	2.5	1.6	2.7	3.2	4.2	4.7	4.5	4.6	4.7	4.6	4.4	**5.4**	**8.8**	**1.6**
10	9.6	8.4	7.1	7.7	8.5	6.2	6.3	9.8	10.2	11.1	12.6	8.9	10.5	10.0	8.8	8.7	8.6	8.3	9.5	11.5	10.7	9.1	5.6	5.0	**8.8**	**12.6**	**5.0**
11	5.1	6.1	5.8	5.8	5.9	7.0	4.7	3.4	2.6	3.4	2.7	3.0	3.2	3.9	3.7	3.5	4.0	3.5	2.7	7.8	8.9	8.4	6.8	8.2	**5.0**	**8.9**	**2.6**
12	5.9	3.9	6.7	7.4	7.2	4.7	4.8	4.5	4.0	3.9	4.1	4.2	4.3	3.8	3.9	5.0	5.0	3.0	2.1	5.4	7.8	4.1	5.1	5.8	**4.8**	**7.8**	**2.1**
13	5.2	3.3	2.8	2.6	4.1	4.7	5.2	5.7	5.5	4.0	4.8	4.8	5.5	6.4	6.5	4.7	6.0	6.9	5.3	7.4	11.7	59.4	10.7	9.9	**8.0**	**59.4**	**2.6**
14	8.3	8.9	8.4	7.6	7.3	8.1	6.7	6.5	8.7	14.6	22.1	25.2	22.0	18.9	20.3	20.3	15.5	14.5	12.8	10.2	14.8	8.8	10.2	12.6	**13.0**	**25.2**	**6.5**
15	15.4	12.9	11.8	13.3	11.5	12.1	11.4	10.7	11.5	14.3	15.9	13.3	13.0	14.5	14.6	14.1	13.8	15.4	14.5	15.2	15.7	15.6	13.3	16.0	**13.7**	**16.0**	**10.7**
16	15.2	14.7	15.0	16.3	16.9	23.3	18.0	20.6	22.5	17.4	17.1	16.2	15.7	15.6	13.9	13.7	15.9	15.3	15.1	14.1	13.6	15.6	15.6	15.9	**16.3**	**23.3**	**13.6**
17	14.4	13.0	11.7	11.9	10.0	11.0	12.6	13.5	15.7	18.1	17.7	18.2	16.4	17.1	17.9	18.6	19.5	19.7	15.8	6.1	5.6	5.7	6.4	7.2	**13.4**	**19.7**	**5.6**
18	8.0	7.6	6.6	6.4	6.9	8.6	6.5	6.5	7.8	10.3	11.5	12.1	13.0	14.0	15.0	15.1	14.7	14.7	12.4	2.7	3.4	3.4	1.7	1.2	**8.7**	**15.1**	**1.2**
19	1.5	2.0	2.6	2.9	3.4	3.5	3.2	3.8	5.0	3.8	2.1	2.3	1.4	1.1	1.6	1.7	1.4	0.7	1.2	1.5	2.4	0.7	---	0.5	**2.1**	**5.0**	**0.5**
20	---	---	---	---	---	---	0.8	1.0	1.5	2.7	4.3	3.9	5.3	5.2	4.4	3.7	2.3	1.8	1.3	0.8	1.7	2.5	1.4	0.9	**2.5**	**5.3**	**0.8**
21	1.0	0.9	1.0	0.7	0.9	0.8	2.0	2.9	2.4	1.3	1.3	1.8	1.9	1.5	2.1	3.0	1.3	1.2	2.8	4.2	4.0	2.4	2.6	2.1	**1.9**	**4.2**	**0.7**
22	2.8	3.0	3.9	1.6	2.1	2.8	2.5	3.1	3.0	3.1	2.5	3.0	3.1	2.8	3.4	3.4	3.8	2.2	3.2	7.4	7.7	9.7	13.5	17.9	**4.6**	**17.9**	**1.6**
23	14.3	8.3	6.3	3.8	7.8	6.9	9.0	12.2	11.7	5.0	5.8	7.5	6.9	6.5	5.1	5.0	5.3	5.8	6.6	9.1	9.1	9.6	10.6	11.3	**7.8**	**14.3**	**3.8**
24	11.0	8.5	8.1	7.9	8.3	8.1	9.0	6.0	10.4	9.0	10.1	10.1	9.9	10.1	8.2	7.8	7.7	8.3	8.9	9.5	9.9	10.6	14.4	12.3	**9.3**	**14.4**	**6.0**
25	11.5	9.9	8.9	9.0	9.1	8.9	10.6	11.1	9.9	9.2	9.0	9.2	8.4	9.7	9.5	9.9	10.1	10.3	10.3	11.1	10.0	9.9	10.3	9.2	**9.7**	**11.5**	**8.4**
26	8.6	8.0	7.7	7.6	7.6	7.7	8.5	9.3	8.8	13.3	16.9	15.4	15.0	17.2	15.4	15.3	9.9	7.2	7.3	7.4	8.6	10.0	15.9	10.1	**10.7**	**17.2**	**7.2**
27	12.4	12.8	11.1	9.1	9.9	10.7	13.9	17.2	15.6	15.9	17.9	17.1	14.9	12.3	12.2	9.4	10.8	12.1	14.3	17.2	15.7	15.3	14.2	14.7	**13.6**	**17.9**	**9.1**
28	15.5	15.5	15.1	15.3	13.6	14.6	16.9	17.2	14.3	11.2	15.6	11.3	---	---	---	---	---	---	16.6	18.0	23.3	11.4	10.1	12.3	**14.8**	**23.3**	**10.1**
29	9.3	9.2	8.2	8.3	8.8	9.9	10.8	12.6	11.9	10.1	10.5	12.2	14.6	15.5	14.5	14.6	11.7	8.5	6.6	5.5	4.8	4.9	5.8	5.7	**9.7**	**15.5**	**4.8**
30	5.1	4.5	4.9	5.3	5.6	5.0	4.9	4.9	4.1	4.2	4.3	5.3	5.4	4.8	4.7	4.8	5.2	6.1	5.5	5.0	3.2	2.2	3.1	3.4	**4.6**	**6.1**	**2.2**
31	4.0	3.8	4.1	4.4	4.5	4.6	6.5	5.5	3.9	5.2	4.6	5.1	4.9	4.5	5.9	5.3	5.3	5.7	7.2	6.4	4.9	3.8	2.7	4.5	**4.8**	**7.2**	**2.7**
MEAN	**8.4**	**7.8**	**7.5**	**7.4**	**7.7**	**7.9**	**8.0**	**8.7**	**9.1**	**9.0**	**9.7**	**9.3**	**9.3**	**9.5**	**8.9**	**8.5**	**7.7**	**7.7**	**8.0**	**8.3**	**8.5**	**9.3**	**8.1**	**7.9**	**8.4**		
MAX	**19.5**	**18.9**	**18.8**	**17.5**	**17.1**	**23.3**	**18.4**	**21.5**	**22.5**	**18.6**	**22.1**	**25.2**	**22.0**	**18.9**	**20.3**	**20.3**	**19.5**	**19.7**	**19.2**	**23.0**	**23.3**	**59.4**	**18.8**	**19.5**		**59.4**	
MIN	**1.0**	**0.9**	**1.0**	**0.7**	**0.9**	**0.8**	**0.8**	**1.0**	**1.5**	**1.3**	**1.3**	**1.8**	**1.4**	**1.1**	**1.6**	**1.7**	**1.2**	**0.7**	**1.0**	**0.8**	**1.7**	**0.7**	**1.0**	**0.5**			**0.5**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 715 DATA RECOVERY RATE = 96.1% DATA CAPTURE RATE = 96.8%

MONTHLY MEAN = 8.4 µg/m3

MAXIMUM PM2.5 = 59.4 µg/m3 DATE OF OCCURRENCE = 8/13 at 2200 MAXIMUM DAILY MEAN = 16.3 µg/m3 DATE OF OCCURRENCE = 8/16

SECOND MAXIMUM PM2.5 = 25.2 µg/m3 DATE OF OCCURRENCE = 8/14 at 1200 SECOND MAXIMUM DAILY MEAN = 15.7 µg/m3 DATE OF OCCURRENCE = 8/1

MINIMUM PM2.5 = 0.5 µg/m3 DATE OF OCCURRENCE = 8/19 at 2400 MINUMUM DAILY MEAN = 1.9 µg/m3 DATE OF OCCURRENCE = 8/21

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

CSX AQ5C Modulair

HOURLY AVERAGES of PM2.5 in µg/m3 for SEPTEMBER, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	4.7	5.1	5.2	5.2	5.1	4.7	5.1	6.3	4.8	3.5	4.0	5.9	5.9	6.4	5.3	5.0	5.0	5.8	7.6	8.6	8.1	7.3	7.3	6.4	**5.7**	**8.6**	**3.5**
2	5.4	4.6	4.6	5.7	6.8	7.9	9.1	8.3	7.2	6.1	5.7	5.3	5.2	3.0	2.7	3.0	2.4	2.6	1.8	1.5	1.6	1.8	2.0	1.5	**4.4**	**9.1**	**1.5**
3	1.0	0.9	0.8	0.7	0.6	0.8	1.4	1.9	1.8	2.0	1.9	1.9	1.9	1.7	1.7	1.8	2.1	1.8	2.1	2.4	3.0	5.2	4.2	4.4	**2.0**	**5.2**	**0.6**
4	3.2	3.7	3.9	2.2	2.9	3.5	4.8	4.6	4.2	3.3	2.9	2.7	2.7	2.5	2.3	2.4	2.3	2.5	3.9	2.8	3.2	2.4	4.4	4.6	**3.2**	**4.8**	**2.2**
5	6.2	5.0	4.5	5.4	3.1	3.7	4.1	5.2	4.2	2.8	2.3	1.9	2.6	2.9	2.6	2.7	2.7	2.4	2.6	4.9	5.1	5.2	7.9	6.9	**4.0**	**7.9**	**1.9**
6	4.3	4.7	5.0	4.8	4.8	4.8	4.6	5.1	6.6	5.1	4.1	3.1	2.9	3.4	3.5	3.6	3.7	3.5	6.0	5.7	6.6	7.5	10.2	7.0	**5.0**	**10.2**	**2.9**
7	5.9	5.8	5.0	5.0	5.7	6.6	6.3	6.4	6.5	7.0	6.8	8.3	3.1	1.8	0.9	0.9	3.1	4.5	3.7	5.6	5.0	3.5	2.4	0.7	**4.6**	**8.3**	**0.7**
8	0.8	1.1	0.9	1.4	1.1	0.5	0.5	0.6	1.5	1.6	1.4	1.5	2.0	1.3	1.5	1.2	0.9	1.2	2.6	5.3	5.0	1.6	12.1	2.0	**2.0**	**12.1**	**0.5**
9	3.1	2.4	2.2	3.3	3.2	2.7	2.7	4.3	1.4	1.0	0.9	1.4	1.0	0.9	0.8	0.9	0.8	0.9	1.9	5.5	6.5	5.0	4.6	4.3	**2.5**	**6.5**	**0.8**
10	4.8	4.4	4.8	5.2	3.7	4.5	2.1	1.5	1.5	3.0	4.1	5.1	5.6	6.0	5.5	5.1	4.5	7.8	9.4	9.1	11.3	12.9	14.4	11.6	**6.1**	**14.4**	**1.5**
11	12.3	12.6	8.6	11.9	14.0	34.1	12.4	12.5	10.5	10.4	11.5	10.0	8.9	7.9	8.2	7.7	7.7	7.9	9.6	12.5	7.2	10.1	10.7	10.5	**11.2**	**34.1**	**7.2**
12	10.9	12.7	11.0	11.6	10.0	9.5	10.5	14.2	11.4	8.6	7.0	6.0	6.0	6.3	6.4	6.4	6.2	7.1	8.8	4.3	3.5	4.6	3.9	4.4	**7.9**	**14.2**	**3.5**
13	4.5	4.8	4.8	5.7	5.9	6.2	6.2	6.7	8.4	7.9	7.1	5.6	6.8	7.2	6.4	6.0	5.5	5.3	6.5	9.1	8.6	7.6	7.6	9.4	**6.6**	**9.4**	**4.5**
14	9.4	9.4	7.2	7.4	7.3	7.4	8.8	7.7	6.4	7.4	7.6	8.0	9.7	9.6	9.7	8.3	7.7	7.0	7.0	6.1	7.2	8.1	7.1	7.2	**7.8**	**9.7**	**6.1**
15	6.9	7.1	8.4	9.1	9.4	9.5	11.0	12.2	12.0	10.4	8.6	7.8	7.2	6.4	5.8	6.3	7.1	8.0	7.9	7.6	4.8	4.9	4.7	4.3	**7.8**	**12.2**	**4.3**
16	4.8	4.3	4.2	4.3	4.3	4.4	4.7	5.1	4.2	3.9	3.4	4.1	4.5	4.4	4.4	4.8	5.0	5.2	5.4	5.4	6.3	6.6	5.9	5.8	**4.8**	**6.6**	**3.4**
17	6.1	6.6	7.1	7.2	7.5	7.6	7.8	7.7	7.9	7.8	7.8	7.8	8.1	8.1	8.1	7.6	8.0	7.6	7.2	6.8	6.1	6.1	6.1	6.1	**7.2**	**8.1**	**6.1**
18	6.0	6.2	5.6	4.7	3.7	4.1	4.6	5.4	6.0	6.6	6.4	7.4	6.9	6.1	6.5	6.2	6.3	5.9	4.1	5.2	4.6	5.5	5.9	5.8	**5.6**	**7.4**	**3.7**
19	6.0	6.4	6.5	6.1	5.8	5.1	6.2	5.7	5.6	4.7	3.1	2.9	4.1	4.1	4.5	7.0	8.1	4.6	7.0	9.3	8.6	10.0	6.6	7.6	**6.0**	**10.0**	**2.9**
20	9.6	10.3	9.4	9.2	11.1	11.8	11.0	8.4	2.9	1.9	1.7	2.4	4.1	5.7	7.9	9.6	9.9	10.7	11.7	14.6	14.1	11.2	3.0	2.3	**8.1**	**14.6**	**1.7**
21	4.1	3.5	3.8	4.0	4.1	3.6	3.7	3.6	3.6	3.7	4.0	4.5	4.5	4.4	4.9	5.2	5.4	5.7	6.1	6.2	7.4	8.8	7.1	7.6	**4.9**	**8.8**	**3.5**
22	7.7	13.3	3.7	2.7	2.6	1.6	3.4	2.5	2.1	1.7	2.1	3.0	3.6	3.8	4.8	5.3	6.6	7.3	8.0	7.7	8.6	6.6	4.6	4.7	**4.9**	**13.3**	**1.6**
23	4.3	4.9	4.9	4.8	4.9	5.0	4.5	4.2	3.6	3.5	4.8	4.3	4.9	4.8	5.4	5.0	4.6	4.1	3.8	3.2	3.1	4.1	4.1	4.1	**4.3**	**5.4**	**3.1**
24	3.9	4.0	3.5	3.3	3.4	3.7	3.6	3.2	3.3	3.4	3.7	3.6	3.8	4.0	5.1	5.2	4.7	4.0	3.7	3.2	2.9	2.6	2.5	2.6	**3.6**	**5.2**	**2.5**
25	2.3	2.0	2.1	2.7	3.1	3.1	2.1	1.5	1.5	2.1	2.6	2.6	2.5	2.6	1.9	2.5	3.1	2.1	2.6	2.6	2.9	4.1	5.6	5.8	**2.7**	**5.8**	**1.5**
26	5.5	5.4	5.4	5.2	6.1	5.9	6.3	6.1	7.0	6.9	7.0	6.4	4.7	3.1	2.1	1.4	1.3	1.6	2.4	2.7	3.9	2.8	2.8	3.6	**4.3**	**7.0**	**1.3**
27	4.1	3.9	4.3	3.9	5.1	6.4	4.2	2.7	2.6	2.8	2.2	3.7	3.4	3.3	5.4	3.2	3.6	3.6	3.6	3.5	4.5	3.1	1.9	1.6	**3.6**	**6.4**	**1.6**
28	2.5	3.6	2.9	2.7	3.4	3.5	2.8	2.6	5.4	5.9	7.5	7.8	7.7	9.7	9.6	9.9	9.0	7.0	5.1	5.1	5.2	5.9	5.9	6.4	**5.7**	**9.9**	**2.5**
29	6.2	6.4	5.4	3.8	3.6	4.4	6.1	6.1	6.0	4.9	6.0	7.0	7.1	6.8	6.5	5.3	3.6	3.0	3.4	3.5	2.9	2.8	3.2	3.9	**4.9**	**7.1**	**2.8**
30	4.3	3.6	4.3	4.5	5.7	6.9	6.6	6.0	4.9	4.3	4.3	4.6	5.0	4.9	5.6	7.9	8.3	8.1	7.4	6.8	6.7	6.8	3.4	1.7	**5.5**	**8.3**	**1.7**
MEAN	**5.4**	**5.6**	**5.0**	**5.1**	**5.3**	**6.1**	**5.6**	**5.6**	**5.2**	**4.8**	**4.8**	**4.9**	**4.9**	**4.8**	**4.9**	**4.9**	**5.0**	**5.0**	**5.4**	**5.9**	**5.8**	**5.8**	**5.7**	**5.2**	**5.3**		
MAX	**12.3**	**13.3**	**11.0**	**11.9**	**14.0**	**34.1**	**12.4**	**14.2**	**12.0**	**10.4**	**11.5**	**10.0**	**9.7**	**9.7**	**9.7**	**9.9**	**9.9**	**10.7**	**11.7**	**14.6**	**14.1**	**12.9**	**14.4**	**11.6**		**34.1**	
MIN	**0.8**	**0.9**	**0.8**	**0.7**	**0.6**	**0.5**	**0.5**	**0.6**	**1.4**	**1.0**	**0.9**	**1.4**	**1.0**	**0.9**	**0.8**	**0.9**	**0.8**	**0.9**	**1.8**	**1.5**	**1.6**	**1.6**	**1.9**	**0.7**			**0.5**

POSSIBLE NUMBER OF OBSERVATIONS = 720 ACTUAL NUMBER OF OBSERVATIONS = 720 DATA RECOVERY RATE = 100.0% DATA CAPTURE RATE = 100.0%

MONTHLY MEAN = 5.3 µg/m3

MAXIMUM PM2.5 = 34.1 µg/m3 DATE OF OCCURRENCE = 9/11 at 600 MAXIMUM DAILY MEAN = 11.2 µg/m3 DATE OF OCCURRENCE = 9/11

SECOND MAXIMUM PM2.5 = 14.6 µg/m3 DATE OF OCCURRENCE = 9/20 at 2000 SECOND MAXIMUM DAILY MEAN = 8.1 µg/m3 DATE OF OCCURRENCE = 9/20

MINIMUM PM2.5 = 0.5 µg/m3 DATE OF OCCURRENCE = 9/8 at 600 MINUMUM DAILY MEAN = 2.0 µg/m3 DATE OF OCCURRENCE = 9/3

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

CSX AQ6 Modulair

HOURLY AVERAGES of PM10 in µg/m3 for JULY, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
2	---	---	---	---	---	---	---	---	---	8.3	7.3	10.3	8.2	6.1	5.0	5.6	9.9	---	8.7	9.6	9.7	14.4	7.9	6.5	**---**	**---**	**---**
3	---	---	---	---	---	---	---	---	---	13.3	12.8	21.8	10.8	11.4	20.3	16.2	17.2	17.7	16.1	17.0	16.8	13.9	18.7	18.4	**---**	**---**	**---**
4	17.2	19.0	19.1	16.7	21.7	19.0	16.9	16.6	---	---	18.8	18.2	18.1	20.2	21.9	21.5	23.0	27.4	29.8	23.7	20.8	22.5	39.1	42.7	**22.5**	**42.7**	**16.6**
5	47.7	44.3	40.0	29.7	24.4	22.7	18.8	17.7	18.9	17.3	14.0	14.0	15.4	14.5	18.0	20.2	20.1	21.0	20.9	19.5	20.4	20.6	23.5	26.2	**22.9**	**47.7**	**14.0**
6	24.7	22.5	22.8	27.1	23.9	21.6	20.3	20.7	18.4	19.8	17.5	16.0	15.1	14.9	15.9	15.0	12.9	13.9	14.9	19.9	17.9	16.3	19.6	21.1	**18.9**	**27.1**	**12.9**
7	23.1	16.5	17.9	14.8	17.4	16.2	15.7	15.6	16.3	14.7	11.3	9.4	10.0	9.4	9.3	8.4	9.9	10.8	9.6	9.5	11.6	17.2	20.8	30.1	**14.4**	**30.1**	**8.4**
8	29.1	24.2	16.6	16.3	17.1	21.7	29.5	---	15.8	27.9	25.3	20.5	16.9	11.1	12.5	13.8	16.2	19.7	20.5	19.4	13.4	14.7	14.2	14.9	**18.8**	**29.5**	**11.1**
9	13.1	11.5	12.4	11.8	13.5	19.8	22.3	25.3	21.9	17.8	19.2	16.6	17.1	15.9	78.1	21.8	13.4	18.3	20.2	18.0	18.9	18.0	18.7	15.5	**20.0**	**78.1**	**11.5**
10	16.6	18.0	18.0	16.6	15.6	15.3	15.3	14.8	18.3	17.8	16.3	21.3	20.2	22.0	24.8	22.3	24.9	22.5	18.9	16.0	20.0	21.2	16.4	12.6	**18.6**	**24.9**	**12.6**
11	11.0	10.2	13.1	10.1	8.6	8.1	9.1	8.3	7.1	6.6	5.9	6.6	6.9	6.9	8.6	9.0	7.7	12.6	15.3	11.2	7.3	8.3	8.2	8.9	**9.0**	**15.3**	**5.9**
12	10.8	9.8	13.1	9.6	11.1	11.9	10.7	9.7	11.7	11.7	11.1	9.2	9.5	9.6	10.7	9.1	7.0	5.9	5.4	8.0	9.0	7.0	6.5	7.4	**9.4**	**13.1**	**5.4**
13	5.2	4.7	7.0	13.2	7.0	7.1	6.3	10.7	7.4	12.3	13.8	11.5	7.8	8.2	10.0	6.5	6.0	7.3	4.9	5.1	7.5	7.5	7.4	8.6	**8.0**	**13.8**	**4.7**
14	7.3	6.5	8.6	7.9	9.7	21.1	11.9	11.5	13.7	15.5	20.4	24.0	18.0	15.6	19.0	19.6	15.6	13.1	15.3	17.7	15.5	16.4	18.4	24.8	**15.3**	**24.8**	**6.5**
15	19.1	21.6	25.5	27.8	29.6	24.8	27.2	27.1	29.5	27.0	26.4	25.7	23.2	21.8	25.2	25.4	22.9	26.1	26.7	21.7	28.9	36.8	36.4	22.9	**26.2**	**36.8**	**19.1**
16	30.4	32.7	30.6	35.2	31.5	34.0	35.1	31.1	38.8	35.5	25.2	29.8	39.7	35.1	36.3	30.5	29.3	31.6	25.6	26.8	39.1	47.8	13.3	20.4	**31.9**	**47.8**	**13.3**
17	17.7	17.6	21.9	17.1	16.9	21.3	21.8	25.8	22.1	18.3	18.7	21.5	16.9	17.4	24.7	48.5	22.6	19.9	25.3	18.8	16.0	17.8	19.7	15.7	**21.0**	**48.5**	**15.7**
18	16.7	16.2	17.7	14.0	12.1	11.2	10.7	12.3	13.0	14.7	15.7	15.2	15.3	15.2	24.9	16.6	17.2	16.4	16.1	16.6	17.5	19.6	18.3	21.5	**16.0**	**24.9**	**10.7**
19	26.2	25.3	24.2	19.2	14.4	12.3	12.1	11.4	10.3	9.2	7.8	9.3	10.1	9.5	15.3	8.1	9.5	9.5	15.4	17.7	18.9	23.4	25.1	20.4	**15.2**	**26.2**	**7.8**
20	16.8	22.1	23.0	16.2	18.9	18.9	26.8	31.5	24.5	18.5	17.3	15.6	14.5	15.9	12.8	14.9	13.0	14.0	17.2	17.3	16.6	20.2	19.1	18.1	**18.5**	**31.5**	**12.8**
21	17.7	17.6	16.7	17.5	17.1	19.0	18.4	16.8	15.8	15.0	16.4	13.5	16.1	14.4	14.0	14.9	11.7	11.6	12.0	12.8	15.0	14.4	12.1	12.1	**15.1**	**19.0**	**11.6**
22	11.8	14.3	12.6	16.7	19.6	21.0	25.5	33.8	18.6	18.8	13.9	14.9	20.3	20.4	25.4	18.1	14.9	10.5	12.6	8.8	9.0	9.6	24.3	11.1	**16.9**	**33.8**	**8.8**
23	11.9	13.8	11.6	12.9	8.5	10.0	12.2	14.3	14.8	13.7	16.0	16.9	19.0	20.6	18.4	18.0	16.1	14.9	14.2	22.0	19.0	13.1	15.8	14.2	**15.1**	**22.0**	**8.5**
24	8.9	7.1	7.0	7.7	8.4	7.2	11.7	15.0	10.8	11.1	12.3	18.5	12.2	11.0	13.5	14.0	15.4	20.5	14.6	12.7	10.2	13.8	13.1	13.6	**12.1**	**20.5**	**7.0**
25	13.8	13.7	15.9	14.6	16.1	19.1	20.4	21.8	18.9	27.0	25.4	24.4	28.0	31.0	31.8	25.1	24.9	22.4	16.8	21.6	24.2	28.1	25.6	25.1	**22.3**	**31.8**	**13.7**
26	28.5	28.1	16.8	15.1	12.0	11.0	9.6	9.8	11.6	11.4	10.9	8.1	12.2	11.6	9.0	10.9	9.5	8.6	12.4	20.7	23.7	16.5	14.3	12.9	**14.0**	**28.5**	**8.1**
27	13.1	13.5	14.9	14.0	13.4	17.1	12.2	13.0	11.2	9.5	8.6	9.1	9.3	8.4	10.1	8.7	10.9	7.6	8.1	16.5	14.6	14.9	23.0	20.5	**12.6**	**23.0**	**7.6**
28	21.3	17.5	19.7	14.9	16.0	15.8	19.7	14.4	9.5	8.4	9.3	7.6	9.7	11.5	12.5	12.0	10.8	11.1	21.2	25.1	15.4	14.8	13.3	13.7	**14.4**	**25.1**	**7.6**
29	13.8	14.9	16.1	17.2	23.3	28.1	24.6	31.8	21.9	23.2	20.2	19.7	20.2	24.3	25.0	24.9	23.1	25.1	23.2	19.7	15.8	13.5	14.4	14.3	**20.8**	**31.8**	**13.5**
30	11.3	10.3	10.7	10.3	11.1	12.6	19.8	11.6	11.7	11.7	11.6	14.5	15.1	14.2	16.9	18.9	13.6	14.9	18.0	17.8	17.2	15.9	10.0	9.0	**13.7**	**19.8**	**9.0**
31	7.4	7.8	7.9	11.7	18.4	17.3	15.1	11.5	---	14.9	14.3	13.3	16.7	---	17.0	24.1	22.4	14.3	15.2	20.8	20.8	18.9	22.6	23.0	**16.2**	**24.1**	**7.4**
MEAN	**17.6**	**17.2**	**17.2**	**16.3**	**16.3**	**17.3**	**17.8**	**17.9**	**16.6**	**16.2**	**15.5**	**15.9**	**15.8**	**15.5**	**19.6**	**17.4**	**15.7**	**16.2**	**16.5**	**17.1**	**17.0**	**17.9**	**18.0**	**17.5**	**16.9**		
MAX	**47.7**	**44.3**	**40.0**	**35.2**	**31.5**	**34.0**	**35.1**	**33.8**	**38.8**	**35.5**	**26.4**	**29.8**	**39.7**	**35.1**	**78.1**	**48.5**	**29.3**	**31.6**	**29.8**	**26.8**	**39.1**	**47.8**	**39.1**	**42.7**		**78.1**	
MIN	**5.2**	**4.7**	**7.0**	**7.7**	**7.0**	**7.1**	**6.3**	**8.3**	**7.1**	**6.6**	**5.9**	**6.6**	**6.9**	**6.1**	**5.0**	**5.6**	**6.0**	**5.9**	**4.9**	**5.1**	**7.3**	**7.0**	**6.5**	**6.5**			**4.7**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 696 DATA RECOVERY RATE = 93.5% DATA CAPTURE RATE = 90.3%

MONTHLY MEAN = 16.9 µg/m3

MAXIMUM PM10 = 78.1 µg/m3 DATE OF OCCURRENCE = 7/9 at 1500 MAXIMUM DAILY MEAN = 31.9 µg/m3 DATE OF OCCURRENCE = 7/16

SECOND MAXIMUM PM10 = 48.5 µg/m3 DATE OF OCCURRENCE = 7/17 at 1600 SECOND MAXIMUM DAILY MEAN = 26.2 µg/m3 DATE OF OCCURRENCE = 7/15

MINIMUM PM10 = 4.7 µg/m3 DATE OF OCCURRENCE = 7/13 at 200 MINUMUM DAILY MEAN = 8.0 µg/m3 DATE OF OCCURRENCE = 7/13

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

CSX AQ6 Modulair

HOURLY AVERAGES of PM10 in µg/m3 for AUGUST, 2024

Hr Beg Hr End Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	18.8	18.5	31.4	21.6	18.7	18.9	25.4	35.4	32.6	29.3	---	21.5	22.6	20.3	23.3	20.1	---	20.9	20.8	19.6	21.5	21.2	22.4	25.2	**23.2**	**35.4**	**18.5**
2	19.3	19.7	23.5	31.4	26.7	38.1	24.9	29.5	16.4	13.3	---	---	---	---	---	---	---	15.2	16.2	23.2	22.5	13.7	6.2	7.4	**---**	**---**	**---**
3	9.4	9.5	11.8	9.4	9.6	12.1	15.2	13.7	17.7	14.4	17.1	15.3	15.8	17.0	25.8	32.3	22.8	26.1	12.3	7.2	8.0	8.2	9.4	7.3	**14.5**	**32.3**	**7.2**
4	12.0	13.6	12.3	10.8	13.1	13.6	12.5	12.6	13.3	9.4	11.6	11.9	15.1	8.5	7.9	10.0	8.9	6.4	6.9	9.5	11.8	12.2	10.3	16.6	**11.3**	**16.6**	**6.4**
5	12.4	13.6	12.8	11.8	15.1	19.9	17.1	16.1	20.3	18.9	17.0	22.1	19.4	14.3	15.8	16.4	15.5	16.1	15.8	39.4	18.7	16.4	15.3	19.2	**17.5**	**39.4**	**11.8**
6	19.2	22.1	19.1	21.4	23.3	17.8	21.8	24.7	23.9	22.9	19.3	19.3	23.5	23.4	21.0	18.6	11.2	10.0	5.7	11.3	8.8	4.4	4.5	5.3	**16.8**	**24.7**	**4.4**
7	4.7	3.9	5.6	7.6	9.0	10.4	17.3	12.8	9.4	7.6	9.5	7.3	8.6	15.6	6.9	5.8	5.4	9.6	6.8	7.4	8.2	12.4	8.4	9.0	**8.7**	**17.3**	**3.9**
8	6.8	5.8	7.4	7.1	34.6	17.5	9.0	8.4	12.1	10.6	12.6	11.0	9.8	7.3	8.8	14.8	29.3	21.5	34.4	25.3	28.5	18.0	17.3	15.7	**15.6**	**34.6**	**5.8**
9	20.6	23.8	29.4	39.4	38.8	34.8	24.7	33.6	28.4	20.8	9.3	8.5	8.4	5.9	4.5	5.3	---	8.4	6.9	9.0	9.2	10.2	12.8	13.9	**17.7**	**39.4**	**4.5**
10	15.3	14.6	16.9	18.3	26.2	21.6	23.0	20.8	18.0	12.9	20.6	18.5	20.6	21.2	21.2	22.4	20.2	20.8	18.0	19.3	18.8	17.0	15.0	13.8	**19.0**	**26.2**	**12.9**
11	9.1	9.9	11.3	---	---	12.8	14.6	---	12.2	7.6	---	10.0	13.3	13.0	13.1	12.4	12.9	10.8	14.3	12.4	12.6	20.4	20.7	18.2	**13.1**	**20.7**	**7.6**
12	12.4	---	12.0	16.1	---	---	---	15.1	17.3	12.7	---	13.0	14.9	13.2	14.3	14.5	11.6	11.4	9.8	11.2	8.5	9.5	13.1	14.7	**12.9**	**17.3**	**8.5**
13	---	---	11.7	10.6	17.1	13.0	17.4	14.8	13.3	8.4	14.1	14.8	8.6	11.6	11.2	11.9	12.3	13.0	14.5	20.4	19.0	30.8	24.5	17.4	**15.0**	**30.8**	**8.4**
14	17.8	17.8	17.9	16.5	15.6	19.4	16.8	14.9	19.4	28.7	32.2	31.1	30.2	32.0	27.0	27.1	24.4	21.0	23.9	28.8	26.8	25.7	26.8	24.4	**23.6**	**32.2**	**14.9**
15	25.1	22.2	22.2	20.1	20.1	23.0	31.2	24.2	20.7	25.4	20.5	19.8	21.6	20.9	15.3	19.9	21.1	19.0	28.0	37.4	40.6	41.8	28.5	30.0	**24.9**	**41.8**	**15.3**
16	28.3	26.8	25.9	20.7	31.6	47.6	52.1	48.2	49.9	22.6	19.6	19.4	16.1	21.3	29.2	24.0	21.8	18.4	17.3	17.1	23.7	21.4	26.1	21.0	**27.1**	**52.1**	**16.1**
17	19.5	27.5	15.1	13.5	13.0	24.4	21.6	17.8	21.8	23.4	18.0	20.2	19.8	19.1	21.6	31.2	29.1	26.3	29.4	8.4	10.3	13.9	14.9	17.3	**19.9**	**31.2**	**8.4**
18	19.9	17.7	12.1	17.1	11.8	15.4	12.6	18.2	16.4	22.0	16.6	16.3	15.5	17.2	16.1	15.2	15.9	17.2	15.5	7.6	12.3	18.2	13.5	9.9	**15.4**	**22.0**	**7.6**
19	9.0	8.9	6.9	8.6	10.7	9.3	13.1	14.9	11.8	10.4	6.8	7.9	4.0	6.1	7.4	6.1	4.2	7.1	4.3	7.1	17.6	4.1	---	---	**8.5**	**17.6**	**4.0**
20	---	4.2	3.4	5.1	4.4	3.0	4.9	5.9	5.6	8.7	8.5	9.6	12.6	9.6	12.7	9.6	8.2	5.8	6.0	6.0	7.7	14.8	10.1	5.6	**7.5**	**14.8**	**3.0**
21	6.0	6.5	5.5	6.2	5.3	8.0	7.3	14.2	12.7	8.4	4.8	9.8	7.0	7.8	9.1	6.2	5.3	6.3	7.8	9.7	13.1	13.6	9.5	10.2	**8.3**	**14.2**	**4.8**
22	10.1	12.1	10.0	8.9	9.8	15.4	14.5	14.9	13.0	7.2	9.0	9.4	8.2	9.8	8.3	11.7	12.7	11.5	18.6	30.2	22.5	19.7	47.3	90.3	**17.7**	**90.3**	**7.2**
23	41.2	32.7	20.5	16.7	20.9	24.5	27.2	20.6	18.1	13.6	11.7	13.9	12.8	16.9	6.7	7.7	11.3	21.2	13.0	16.6	18.3	36.4	23.1	22.9	**19.5**	**41.2**	**6.7**
24	14.5	14.5	15.9	16.9	15.2	23.0	14.1	16.3	17.0	17.4	15.3	15.1	13.1	14.7	11.4	10.5	16.1	12.0	12.1	15.0	15.4	14.7	18.5	20.2	**15.4**	**23.0**	**10.5**
25	15.2	23.9	17.6	17.9	18.3	17.8	19.5	14.6	15.5	13.2	13.5	12.1	11.4	13.9	13.6	20.9	21.7	15.3	14.6	21.1	15.2	16.6	14.4	12.1	**16.2**	**23.9**	**11.4**
26	12.6	11.5	11.8	16.5	20.9	17.8	30.4	29.1	24.0	20.8	32.9	24.2	22.9	24.2	23.1	32.4	13.4	13.7	11.6	24.6	17.5	24.0	24.5	19.6	**21.0**	**32.9**	**11.5**
27	21.8	38.3	29.1	17.8	19.4	21.8	27.2	30.2	19.3	21.1	24.9	31.2	22.8	16.7	15.8	17.4	15.4	20.3	20.5	29.6	40.6	32.4	29.7	27.7	**24.6**	**40.6**	**15.4**
28	22.0	20.8	18.2	15.5	20.5	23.0	34.3	31.3	31.5	29.8	33.3	24.7	---	---	---	---	---	25.7	27.8	34.5	42.5	39.4	18.5	28.7	**27.5**	**42.5**	**15.5**
29	22.2	16.3	19.3	25.4	17.2	19.0	17.5	19.2	14.9	14.4	16.3	17.4	21.8	20.9	20.9	24.9	30.4	28.6	29.6	18.9	12.2	16.5	29.6	37.0	**21.3**	**37.0**	**12.2**
30	42.4	25.1	24.2	32.7	28.3	33.0	19.4	28.8	29.8	24.5	23.2	32.0	30.7	25.0	19.5	21.0	24.6	19.4	18.0	18.3	8.8	8.1	13.9	17.6	**23.7**	**42.4**	**8.1**
31	26.1	27.2	28.5	27.0	28.2	21.9	37.9	22.1	15.4	14.3	11.6	13.7	11.5	8.2	13.0	9.4	9.3	9.0	10.5	9.3	13.3	12.8	10.4	11.6	**16.8**	**37.9**	**8.2**
MEAN	**17.7**	**17.6**	**16.4**	**17.0**	**18.7**	**19.9**	**20.8**	**20.8**	**19.1**	**16.6**	**16.7**	**16.7**	**16.0**	**15.7**	**15.3**	**16.5**	**16.1**	**15.7**	**15.8**	**17.9**	**17.9**	**18.3**	**18.0**	**19.7**	**17.6**		
MAX	**42.4**	**38.3**	**31.4**	**39.4**	**38.8**	**47.6**	**52.1**	**48.2**	**49.9**	**29.8**	**33.3**	**32.0**	**30.7**	**32.0**	**29.2**	**32.4**	**30.4**	**28.6**	**34.4**	**39.4**	**42.5**	**41.8**	**47.3**	**90.3**		**90.3**	
MIN	**4.7**	**3.9**	**3.4**	**5.1**	**4.4**	**3.0**	**4.9**	**5.9**	**5.6**	**7.2**	**4.8**	**7.3**	**4.0**	**5.9**	**4.5**	**5.3**	**4.2**	**5.8**	**4.3**	**6.0**	**7.7**	**4.1**	**4.5**	**5.3**			**3.0**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 715 DATA RECOVERY RATE = 96.1% DATA CAPTURE RATE = 96.8%

MONTHLY MEAN = 17.6 µg/m3

MAXIMUM PM10 = 90.3 µg/m3 DATE OF OCCURRENCE = 8/22 at 2400 MAXIMUM DAILY MEAN = 27.5 µg/m3 DATE OF OCCURRENCE = 8/28

SECOND MAXIMUM PM10 = 52.1 µg/m3 DATE OF OCCURRENCE = 8/16 at 700 SECOND MAXIMUM DAILY MEAN = 27.1 µg/m3 DATE OF OCCURRENCE = 8/16

MINIMUM PM10 = 3.0 µg/m3 DATE OF OCCURRENCE = 8/20 at 600 MINUMUM DAILY MEAN = 7.5 µg/m3 DATE OF OCCURRENCE = 8/20

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

CSX AQ6 Modulair

HOURLY AVERAGES of PM10 in µg/m3 for SEPTEMBER, 2024

Hr Beg Hr End Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	10.5	12.1	11.1	11.4	10.1	12.1	11.1	12.3	11.5	12.3	9.9	11.2	12.2	13.7	12.5	13.1	13.1	14.0	15.6	14.9	17.3	17.4	22.7	17.4	**13.3**	**22.7**	**9.9**
2	11.5	10.5	11.1	12.1	13.1	15.2	15.5	15.3	13.2	11.0	11.1	11.5	13.8	8.2	8.1	8.9	7.8	7.4	6.3	6.4	7.0	6.1	5.3	5.1	**10.1**	**15.5**	**5.1**
3	4.3	5.1	3.9	4.5	6.0	5.4	7.5	6.7	6.5	6.2	6.7	7.5	9.9	8.2	10.3	13.8	16.0	10.2	8.9	8.9	12.2	18.3	19.2	15.6	**9.2**	**19.2**	**3.9**
4	12.6	17.9	12.0	12.9	13.0	12.6	25.9	22.0	9.9	9.8	6.7	6.8	6.8	6.4	10.6	9.8	9.5	9.2	16.7	17.3	31.0	13.1	20.4	20.1	**13.9**	**31.0**	**6.4**
5	20.7	22.3	14.2	14.1	11.6	19.2	18.1	13.4	10.2	10.7	11.7	8.6	11.3	10.3	12.9	14.1	15.5	10.9	12.2	22.5	16.1	19.3	26.3	26.3	**15.5**	**26.3**	**8.6**
6	28.3	31.7	34.1	30.3	28.2	28.6	26.0	23.0	19.1	17.3	16.8	14.5	11.0	8.9	15.3	11.1	12.5	11.3	16.0	15.1	13.0	15.2	16.8	15.0	**19.1**	**34.1**	**8.9**
7	13.1	11.6	11.3	14.1	18.6	29.2	21.6	18.2	15.5	14.7	18.6	43.1	10.6	4.9	4.9	6.1	7.0	7.5	8.3	10.7	9.9	10.3	8.1	5.6	**13.5**	**43.1**	**4.9**
8	7.0	5.1	4.3	4.9	4.4	5.3	6.1	4.2	4.5	5.3	4.9	8.7	8.8	10.8	21.8	14.4	11.7	10.5	7.7	17.7	10.6	7.3	12.1	8.5	**8.6**	**21.8**	**4.2**
9	7.7	8.2	6.8	7.1	10.8	13.5	10.3	16.6	12.5	9.3	7.2	7.8	13.9	16.7	12.7	11.9	12.1	11.0	11.7	30.9	26.2	20.1	20.2	23.0	**13.7**	**30.9**	**6.8**
10	25.3	11.6	13.5	15.8	31.8	26.6	8.0	7.9	10.3	16.5	15.6	14.6	16.3	20.7	17.9	17.4	16.1	16.8	24.0	19.5	20.6	41.1	34.3	29.3	**19.6**	**41.1**	**7.9**
11	27.6	25.8	23.7	27.9	27.8	27.7	20.4	43.4	20.4	15.0	20.4	20.9	15.7	14.4	13.2	11.4	12.0	10.6	27.3	37.8	20.2	20.0	18.3	21.5	**21.8**	**43.4**	**10.6**
12	19.9	26.6	23.5	32.6	24.4	27.0	29.1	24.4	16.0	13.5	13.7	13.4	13.0	11.0	11.1	9.6	9.0	16.7	22.7	19.5	11.7	10.6	10.5	13.4	**17.6**	**32.6**	**9.0**
13	14.5	14.8	13.4	15.8	17.4	16.3	13.9	14.5	19.9	23.5	18.8	10.9	17.6	19.8	14.2	14.5	10.9	10.2	15.4	18.9	19.0	23.6	21.9	21.1	**16.7**	**23.6**	**10.2**
14	18.1	18.3	19.3	20.3	23.7	20.0	19.9	12.4	10.2	10.0	12.8	12.9	14.4	14.0	13.7	11.8	12.7	15.3	17.0	14.8	19.2	12.0	11.8	11.9	**15.3**	**23.7**	**10.0**
15	12.4	13.4	14.3	14.7	14.8	12.9	14.8	15.2	14.3	12.8	10.2	12.0	9.8	13.0	17.4	20.0	18.3	16.7	17.7	16.2	12.4	12.6	12.5	16.3	**14.4**	**20.0**	**9.8**
16	18.9	15.4	14.7	14.1	14.0	14.5	15.5	16.7	14.9	16.8	18.3	17.6	21.6	20.7	18.7	22.0	21.4	23.5	27.5	20.7	29.9	25.1	22.3	20.5	**19.4**	**29.9**	**14.0**
17	24.2	27.9	29.1	28.4	32.1	34.2	38.1	34.4	31.1	28.5	31.5	32.1	30.5	33.5	30.1	23.5	23.1	27.4	24.4	22.9	18.9	21.3	19.7	19.6	**27.8**	**38.1**	**18.9**
18	18.8	17.1	18.1	9.1	7.5	9.4	11.1	13.0	16.9	18.9	12.9	14.8	17.3	15.0	17.4	20.0	19.3	15.6	13.6	13.8	15.7	17.4	16.8	16.1	**15.2**	**20.0**	**7.5**
19	16.3	15.7	16.9	17.1	17.5	16.1	17.1	18.0	18.0	15.9	11.5	8.7	9.8	9.3	11.8	14.1	16.8	15.7	55.1	25.5	19.7	21.3	20.1	18.4	**17.8**	**55.1**	**8.7**
20	21.1	19.2	20.3	19.5	19.3	20.2	18.6	14.0	6.5	4.4	3.4	5.0	9.8	15.8	11.4	12.4	13.1	12.0	23.8	21.5	31.6	17.6	14.3	7.0	**15.1**	**31.6**	**3.4**
21	11.7	11.5	9.7	15.7	16.5	15.3	14.3	10.0	9.1	9.0	9.5	10.1	9.1	8.4	10.4	10.3	12.6	12.0	15.0	13.5	17.1	18.7	19.7	24.3	**13.1**	**24.3**	**8.4**
22	29.4	120.4	17.7	11.9	14.7	5.2	14.0	14.7	8.9	6.5	7.5	6.9	6.6	6.7	9.8	9.5	10.1	10.4	11.6	12.4	14.4	20.2	20.6	19.9	**17.1**	**120.4**	**5.2**
23	22.8	25.9	24.7	21.1	24.3	24.7	24.4	26.3	24.0	23.5	25.3	20.5	20.0	16.5	19.8	13.3	15.7	18.0	19.0	14.8	15.6	19.6	25.3	26.2	**21.3**	**26.3**	**13.3**
24	22.4	18.4	17.9	18.3	18.9	21.3	24.1	18.2	20.4	18.0	23.4	19.9	15.9	20.8	19.9	22.5	28.4	18.6	12.7	9.7	10.4	11.4	12.8	19.4	**18.5**	**28.4**	**9.7**
25	13.2	15.5	19.9	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
26	---	---	---	---	---	---	60.4	31.8	30.1	33.5	27.9	16.4	15.5	12.7	11.4	8.8	8.2	10.8	17.7	19.4	29.0	14.0	15.3	18.9	**21.2**	**60.4**	**8.2**
27	20.0	19.6	22.6	21.0	33.2	34.0	90.5	4.9	4.7	8.9	6.6	20.9	13.5	13.5	14.8	10.1	10.9	---	---	---	---	---	---	---	**---**	**---**	**---**
28	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
29	---	---	---	---	---	---	16.1	16.2	15.7	10.1	10.4	11.3	11.5	11.1	11.0	8.9	6.2	6.3	9.1	9.7	9.1	8.5	8.7	8.4	**10.5**	**16.2**	**6.2**
30	9.1	6.8	8.2	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
MEAN	**17.1**	**20.3**	**16.2**	**16.6**	**18.1**	**18.7**	**21.9**	**17.3**	**14.6**	**14.1**	**13.8**	**14.4**	**13.6**	**13.5**	**14.2**	**13.5**	**13.7**	**13.4**	**17.6**	**17.5**	**17.6**	**17.0**	**17.5**	**17.3**	**16.2**		
MAX	**29.4**	**120.4**	**34.1**	**32.6**	**33.2**	**34.2**	**90.5**	**43.4**	**31.1**	**33.5**	**31.5**	**43.1**	**30.5**	**33.5**	**30.1**	**23.5**	**28.4**	**27.4**	**55.1**	**37.8**	**31.6**	**41.1**	**34.3**	**29.3**		**120.4**	
MIN	**4.3**	**5.1**	**3.9**	**4.5**	**4.4**	**5.2**	**6.1**	**4.2**	**4.5**	**4.4**	**3.4**	**5.0**	**6.6**	**4.9**	**4.9**	**6.1**	**6.2**	**6.3**	**6.3**	**6.4**	**7.0**	**6.1**	**5.3**	**5.1**			**3.4**

POSSIBLE NUMBER OF OBSERVATIONS = 720 ACTUAL NUMBER OF OBSERVATIONS = 635 DATA RECOVERY RATE = 88.2% DATA CAPTURE RATE = 86.7%

MONTHLY MEAN = 16.2 µg/m3

MAXIMUM PM10 = 120.4 µg/m3 DATE OF OCCURRENCE = 9/22 at 200 MAXIMUM DAILY MEAN = 27.8 µg/m3 DATE OF OCCURRENCE = 9/17

SECOND MAXIMUM PM10 = 90.5 µg/m3 DATE OF OCCURRENCE = 9/27 at 700 SECOND MAXIMUM DAILY MEAN = 21.8 µg/m3 DATE OF OCCURRENCE = 9/11

MINIMUM PM10 = 3.4 µg/m3 DATE OF OCCURRENCE = 9/20 at 1100 MINUMUM DAILY MEAN = 8.6 µg/m3 DATE OF OCCURRENCE = 9/8

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

CSX AQ6 Modulair

HOURLY AVERAGES of PM2.5 in µg/m3 for JULY, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
2	---	---	---	---	---	---	---	---	---	3.2	3.0	3.4	3.4	2.9	2.5	1.7	2.6	---	4.6	3.6	3.8	5.4	4.3	2.9	**---**	**---**	**---**
3	---	---	---	---	---	---	---	---	---	3.5	3.8	4.0	3.6	4.4	5.7	4.9	5.4	5.5	5.4	5.0	4.2	4.3	6.8	5.0	**---**	**---**	**---**
4	4.5	4.4	4.6	4.6	6.0	6.0	6.2	7.4	---	---	12.4	11.8	13.5	14.1	15.1	14.9	16.4	17.2	18.1	20.6	18.1	19.9	36.2	35.3	**13.9**	**36.2**	**4.4**
5	41.8	40.8	36.2	25.3	20.9	16.5	14.7	13.1	14.3	11.6	11.6	12.0	13.4	10.7	12.1	13.5	14.8	11.5	14.4	15.4	15.0	13.8	15.6	16.9	**17.7**	**41.8**	**10.7**
6	16.2	16.5	16.6	20.6	17.9	16.7	16.1	16.9	16.1	15.3	15.1	13.3	12.3	12.4	11.6	12.0	10.0	9.6	8.7	13.7	13.6	13.2	15.8	15.9	**14.4**	**20.6**	**8.7**
7	16.6	12.4	14.2	12.3	11.9	10.8	11.1	11.2	11.1	10.3	8.4	6.5	6.3	5.2	5.9	6.5	5.8	5.6	5.7	5.6	6.6	12.4	14.7	14.0	**9.6**	**16.6**	**5.2**
8	16.1	16.0	11.7	11.3	11.9	12.1	15.4	---	8.8	12.0	21.3	17.6	13.8	8.5	8.3	10.1	12.2	14.2	12.4	10.5	10.3	10.2	11.2	11.8	**12.5**	**21.3**	**8.3**
9	10.1	9.1	8.3	8.8	9.6	12.1	13.7	14.6	15.2	12.1	12.1	13.1	13.8	12.9	19.0	10.8	9.3	11.8	13.2	12.4	10.5	9.5	8.6	7.0	**11.5**	**19.0**	**7.0**
10	7.3	6.5	7.0	7.1	7.4	7.0	7.2	7.4	8.0	8.9	8.7	8.9	8.4	8.1	8.1	7.6	7.7	7.1	5.8	5.2	4.9	5.0	7.5	7.0	**7.2**	**8.9**	**4.9**
11	6.5	4.0	3.7	3.8	4.3	5.0	5.7	4.9	3.9	3.6	2.8	3.0	3.7	4.2	4.9	5.1	4.8	3.3	4.7	5.4	5.1	4.6	4.9	5.2	**4.4**	**6.5**	**2.8**
12	6.1	7.0	6.9	6.4	6.6	6.9	7.0	6.7	7.4	6.9	8.3	5.8	7.7	6.6	6.4	4.9	5.3	4.5	3.6	3.9	4.9	3.9	2.5	2.0	**5.7**	**8.3**	**2.0**
13	1.6	1.8	2.5	3.8	2.4	2.6	2.8	3.5	4.0	8.6	8.9	7.6	4.6	4.7	4.7	4.0	4.1	3.6	2.6	2.3	3.2	4.5	3.9	4.1	**4.0**	**8.9**	**1.6**
14	3.5	4.4	5.3	5.4	6.6	7.5	7.9	8.2	9.3	10.8	14.5	18.8	14.9	11.7	12.3	10.2	10.7	8.9	9.2	9.9	9.2	9.3	11.0	14.3	**9.7**	**18.8**	**3.5**
15	12.9	16.0	19.0	19.6	19.7	18.8	20.4	21.7	21.1	20.6	19.8	18.3	18.1	16.0	17.2	18.0	15.1	13.0	13.9	14.7	18.3	20.5	19.1	14.9	**17.7**	**21.7**	**12.9**
16	17.7	18.7	19.0	19.0	18.1	16.6	18.6	21.3	21.7	16.2	13.0	18.6	21.6	17.8	18.2	18.6	16.8	16.2	17.1	17.6	20.7	25.6	5.9	8.9	**17.6**	**25.6**	**5.9**
17	10.1	10.6	12.5	11.1	10.1	12.8	13.8	15.7	15.7	13.2	13.2	13.9	11.4	11.2	11.5	15.5	14.3	12.4	14.4	13.8	11.6	11.8	13.1	11.3	**12.7**	**15.7**	**10.1**
18	11.3	11.1	11.4	10.1	7.9	7.4	8.0	8.8	9.2	10.6	11.7	11.2	12.3	12.2	13.4	13.1	13.8	13.6	13.7	13.5	14.3	14.3	14.6	16.7	**11.8**	**16.7**	**7.4**
19	18.9	19.2	18.0	15.0	10.1	8.3	8.0	7.3	6.0	5.7	5.0	3.5	3.8	3.8	4.0	5.4	5.9	6.8	9.4	8.7	9.8	11.6	12.2	12.2	**9.1**	**19.2**	**3.5**
20	9.8	11.7	11.4	9.1	9.8	9.6	10.2	11.6	10.8	7.6	7.9	8.2	7.8	8.5	8.3	8.6	7.7	9.2	10.5	8.8	10.4	14.7	13.7	13.8	**9.9**	**14.7**	**7.6**
21	13.6	13.4	12.9	13.3	12.8	13.3	13.6	13.5	12.8	11.7	11.4	9.5	12.3	13.5	12.5	12.1	9.8	9.3	9.4	10.8	12.1	11.0	8.8	8.7	**11.7**	**13.6**	**8.7**
22	8.6	9.7	8.8	12.0	12.9	12.6	12.1	12.9	8.7	9.0	5.8	6.5	8.1	7.2	4.3	5.4	4.2	4.4	4.7	3.0	2.9	3.5	9.1	4.4	**7.5**	**12.9**	**2.9**
23	5.0	4.6	4.7	4.2	3.3	3.5	6.2	10.0	11.7	11.4	13.1	14.0	15.8	17.0	15.8	15.8	13.1	11.0	8.2	12.4	11.7	9.3	9.6	7.5	**9.9**	**17.0**	**3.3**
24	6.0	4.5	4.4	4.9	5.4	4.9	6.4	8.8	6.7	8.5	9.4	11.4	7.6	7.2	8.6	11.0	9.5	8.6	5.8	6.7	5.3	6.7	7.9	8.4	**7.2**	**11.4**	**4.4**
25	8.7	8.9	9.5	9.5	9.6	10.5	10.1	11.1	14.0	20.8	20.5	20.6	24.6	26.8	26.9	21.6	22.1	14.0	11.2	15.6	16.2	17.9	17.3	19.0	**16.1**	**26.9**	**8.7**
26	22.5	23.1	12.3	10.5	8.5	7.0	6.2	5.9	5.9	5.8	5.8	3.8	4.5	4.1	3.6	4.0	5.4	3.9	4.8	7.5	10.3	10.0	9.6	9.0	**8.0**	**23.1**	**3.6**
27	9.1	10.1	10.7	10.9	9.8	9.8	6.9	6.8	6.7	5.7	4.7	4.6	4.1	3.9	4.3	4.1	3.8	3.3	3.8	5.2	7.9	9.9	10.8	13.6	**7.1**	**13.6**	**3.3**
28	12.2	11.8	11.9	11.0	11.0	10.9	10.8	10.2	6.8	5.0	5.0	4.7	6.9	9.3	10.4	9.9	8.2	9.2	7.4	10.0	10.1	11.3	9.7	9.1	**9.2**	**12.2**	**4.7**
29	9.8	10.5	11.0	11.7	12.2	11.9	12.4	16.2	15.8	14.1	12.7	14.1	17.6	21.6	22.3	20.2	15.7	16.1	14.3	11.7	9.9	8.7	9.6	9.0	**13.7**	**22.3**	**8.7**
30	7.3	7.0	6.3	6.6	7.4	7.6	8.8	7.8	8.0	8.3	7.5	8.2	8.4	9.4	10.1	10.4	9.6	10.1	11.4	11.2	10.6	10.4	5.8	4.4	**8.4**	**11.4**	**4.4**
31	4.3	4.1	4.6	5.7	7.2	7.3	7.3	7.5	---	10.0	10.0	8.5	10.3	---	12.5	11.3	9.5	10.7	11.8	14.3	15.5	14.9	16.3	15.2	**9.9**	**16.3**	**4.1**
MEAN	**11.4**	**11.4**	**10.9**	**10.5**	**10.0**	**9.9**	**10.3**	**10.8**	**10.8**	**10.0**	**10.2**	**10.2**	**10.5**	**10.2**	**10.7**	**10.4**	**9.8**	**9.5**	**9.3**	**10.0**	**10.2**	**10.9**	**11.2**	**10.9**	**10.4**		
MAX	**41.8**	**40.8**	**36.2**	**25.3**	**20.9**	**18.8**	**20.4**	**21.7**	**21.7**	**20.8**	**21.3**	**20.6**	**24.6**	**26.8**	**26.9**	**21.6**	**22.1**	**17.2**	**18.1**	**20.6**	**20.7**	**25.6**	**36.2**	**35.3**		**41.8**	
MIN	**1.6**	**1.8**	**2.5**	**3.8**	**2.4**	**2.6**	**2.8**	**3.5**	**3.9**	**3.2**	**2.8**	**3.0**	**3.4**	**2.9**	**2.5**	**1.7**	**2.6**	**3.3**	**2.6**	**2.3**	**2.9**	**3.5**	**2.5**	**2.0**			**1.6**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 696 DATA RECOVERY RATE = 93.5% DATA CAPTURE RATE = 90.3%

MONTHLY MEAN = 10.4 µg/m3

MAXIMUM PM2.5 = 41.8 µg/m3 DATE OF OCCURRENCE = 7/5 at 100 MAXIMUM DAILY MEAN = 17.7 µg/m3 DATE OF OCCURRENCE = 7/5

SECOND MAXIMUM PM2.5 = 40.8 µg/m3 DATE OF OCCURRENCE = 7/5 at 200 SECOND MAXIMUM DAILY MEAN = 17.7 µg/m3 DATE OF OCCURRENCE = 7/15

MINIMUM PM2.5 = 1.6 µg/m3 DATE OF OCCURRENCE = 7/13 at 100 MINUMUM DAILY MEAN = 4.0 µg/m3 DATE OF OCCURRENCE = 7/13

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

CSX AQ6 Modulair

HOURLY AVERAGES of PM2.5 in µg/m3 for AUGUST, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	13.6	14.3	17.5	16.1	14.2	14.2	17.4	20.0	20.0	17.7	---	14.5	18.3	15.9	16.2	14.6	---	13.8	16.3	14.5	16.8	17.9	16.9	17.7	**16.2**	**20.0**	**13.6**
2	14.1	14.2	18.3	19.4	16.9	19.2	16.7	18.7	11.6	9.6	---	---	---	---	---	---	---	11.4	7.8	7.1	5.8	4.5	2.6	3.6	**---**	**---**	**---**
3	4.5	4.2	4.5	3.8	5.2	6.3	7.6	8.7	8.4	9.4	7.2	8.3	9.3	9.3	11.7	13.6	11.4	9.5	5.6	4.3	3.3	3.1	3.0	2.8	**6.8**	**13.6**	**2.8**
4	4.7	5.9	5.3	4.4	5.6	5.6	6.0	6.3	6.8	7.3	7.8	8.0	6.7	6.2	6.3	6.0	3.5	3.2	4.0	5.5	6.6	7.0	7.1	8.0	**5.9**	**8.0**	**3.2**
5	8.1	10.1	7.6	7.3	8.6	8.0	9.4	11.4	14.8	9.6	11.7	10.6	10.3	11.3	12.4	9.6	9.5	9.9	10.0	17.2	11.3	11.1	10.4	13.1	**10.5**	**17.2**	**7.3**
6	12.9	14.4	12.5	12.2	12.7	11.9	13.5	16.0	14.9	12.1	13.3	13.2	13.3	14.2	9.7	6.7	3.7	3.2	3.1	3.3	4.0	2.3	1.7	2.5	**9.4**	**16.0**	**1.7**
7	1.8	2.6	3.1	3.9	3.6	4.1	6.1	4.3	3.9	4.2	3.8	3.8	3.9	7.5	4.1	3.5	2.3	2.3	2.3	3.0	4.9	5.1	2.4	1.6	**3.6**	**7.5**	**1.6**
8	1.8	2.3	2.7	2.2	3.0	2.4	2.9	3.3	4.1	4.9	5.1	4.8	3.7	4.4	6.6	7.9	8.9	7.2	7.1	7.7	7.6	8.2	8.7	9.3	**5.2**	**9.3**	**1.8**
9	10.1	10.1	11.2	11.4	11.5	9.7	10.3	11.0	10.4	8.2	4.6	4.1	4.2	2.9	2.9	3.7	---	4.4	4.5	4.9	4.5	5.0	5.5	6.5	**7.0**	**11.5**	**2.9**
10	6.4	7.6	9.5	12.1	12.8	13.3	13.8	13.4	12.4	8.7	12.3	14.4	15.5	16.1	15.6	15.5	15.6	14.7	14.3	14.2	12.9	12.6	10.2	8.5	**12.6**	**16.1**	**6.4**
11	6.9	7.9	8.8	---	---	8.7	8.2	---	6.8	5.9	---	6.9	7.1	7.1	6.9	7.2	7.5	7.0	6.2	7.1	8.9	8.7	10.9	9.4	**7.7**	**10.9**	**5.9**
12	8.5	---	7.7	8.5	---	---	---	7.3	7.0	6.6	---	7.0	7.1	6.3	6.2	6.6	7.2	6.1	5.8	6.6	6.3	6.6	7.7	7.9	**6.9**	**8.5**	**5.8**
13	---	---	7.5	7.3	7.5	7.9	8.0	7.8	6.3	2.9	3.8	4.1	4.4	6.0	6.2	8.6	7.7	6.0	10.3	14.5	12.4	13.9	13.4	13.1	**8.1**	**14.5**	**2.9**
14	12.0	12.1	11.4	10.9	11.2	11.6	11.1	10.7	14.3	23.1	28.3	27.8	27.6	26.7	24.3	25.7	23.0	19.3	19.9	21.1	21.3	21.7	21.7	20.4	**19.0**	**28.3**	**10.7**
15	19.2	18.4	17.9	16.4	15.6	16.0	18.4	18.0	18.0	18.5	15.7	16.8	17.7	17.1	11.2	11.1	8.7	9.4	13.7	15.5	17.3	19.1	18.9	18.8	**16.1**	**19.2**	**8.7**
16	19.8	18.1	18.1	16.9	18.4	21.8	21.2	23.1	23.5	14.8	13.3	14.1	12.9	12.1	11.9	11.0	13.4	12.7	12.7	12.0	11.7	11.4	12.2	13.1	**15.4**	**23.5**	**11.0**
17	12.4	16.0	9.6	9.5	8.5	9.8	10.8	15.0	19.2	18.6	14.4	15.8	12.6	13.9	14.7	15.2	16.7	16.4	14.4	5.6	6.5	6.8	6.9	9.2	**12.4**	**19.2**	**5.6**
18	9.6	9.1	7.7	6.5	7.2	8.1	8.0	8.2	9.5	11.5	11.2	11.1	11.1	11.6	11.6	11.6	11.5	12.8	11.3	3.6	5.3	4.3	2.2	2.3	**8.6**	**12.8**	**2.2**
19	2.9	3.0	3.1	3.6	4.4	4.7	6.5	8.2	8.5	7.0	5.5	4.8	3.3	3.2	3.6	2.7	2.8	2.3	2.6	2.9	5.2	1.8	---	---	**4.2**	**8.5**	**1.8**
20	---	1.4	1.4	1.5	1.3	1.4	2.2	2.5	3.0	3.8	5.2	6.2	7.0	6.4	5.9	5.0	4.1	3.4	3.4	3.5	4.4	5.8	4.7	3.8	**3.7**	**7.0**	**1.3**
21	3.8	3.8	3.4	3.0	2.8	3.6	4.1	4.3	3.3	3.0	2.9	3.3	3.4	3.1	3.5	3.3	3.5	3.9	4.7	6.2	7.1	6.3	6.4	6.6	**4.1**	**7.1**	**2.8**
22	6.7	6.4	5.7	5.5	5.5	6.6	6.9	7.0	5.2	4.8	5.0	5.3	5.6	5.9	6.1	6.4	7.3	6.8	7.8	9.1	9.6	9.6	13.2	16.6	**7.2**	**16.6**	**4.8**
23	12.5	12.4	10.1	9.7	9.8	10.5	12.3	13.2	11.7	8.4	7.1	6.2	5.4	5.9	5.8	5.9	5.7	6.3	6.6	7.6	10.6	13.5	12.7	14.0	**9.3**	**14.0**	**5.4**
24	10.1	10.7	10.1	10.9	11.3	10.9	11.1	11.7	11.3	11.6	11.7	9.5	8.2	9.9	9.4	9.0	8.0	7.4	8.1	10.6	11.2	11.0	12.6	13.4	**10.4**	**13.4**	**7.4**
25	11.7	13.0	11.5	11.1	12.0	11.6	11.8	10.8	7.7	9.4	7.9	7.3	8.2	8.5	8.2	8.7	9.5	9.3	8.2	9.4	9.1	9.8	10.7	10.1	**9.8**	**13.0**	**7.3**
26	10.2	9.3	8.7	9.7	9.9	9.9	11.3	13.2	15.3	14.6	13.8	11.3	12.4	14.4	10.5	16.3	11.3	10.4	8.4	10.7	11.4	13.0	13.8	14.5	**11.8**	**16.3**	**8.4**
27	14.9	16.5	15.0	14.2	14.8	15.0	18.0	19.2	11.6	10.5	10.2	12.7	11.4	8.7	10.1	8.8	9.6	10.5	13.1	17.7	18.9	17.2	17.4	14.6	**13.7**	**19.2**	**8.7**
28	11.1	13.6	12.5	11.4	15.8	16.6	18.9	21.3	24.7	24.0	23.3	19.3	---	---	---	---	---	19.7	21.0	23.0	22.4	16.0	10.5	14.9	**17.8**	**24.7**	**10.5**
29	14.8	12.3	11.6	12.2	10.8	10.8	12.0	13.9	11.1	9.2	9.6	10.7	13.0	13.5	11.5	12.3	11.0	9.6	8.9	7.4	5.8	6.0	5.7	5.3	**10.3**	**14.8**	**5.3**
30	4.9	4.3	4.4	5.3	5.6	5.8	5.1	4.7	4.2	4.2	4.5	5.4	5.3	4.7	4.5	4.8	5.2	5.0	4.6	5.0	3.4	2.7	3.1	3.4	**4.5**	**5.8**	**2.7**
31	4.3	3.9	3.9	4.3	4.7	4.1	7.1	5.2	4.7	4.8	4.2	4.2	4.0	3.8	4.7	4.8	5.5	5.9	6.0	5.9	5.9	6.4	6.7	6.5	**5.0**	**7.1**	**3.8**
MEAN	**9.5**	**9.6**	**9.1**	**9.0**	**9.4**	**9.7**	**10.6**	**11.3**	**10.8**	**10.0**	**9.8**	**9.7**	**9.4**	**9.5**	**9.0**	**9.2**	**8.7**	**8.7**	**8.8**	**9.2**	**9.4**	**9.3**	**9.3**	**9.7**	**9.5**		
MAX	**19.8**	**18.4**	**18.3**	**19.4**	**18.4**	**21.8**	**21.2**	**23.1**	**24.7**	**24.0**	**28.3**	**27.8**	**27.6**	**26.7**	**24.3**	**25.7**	**23.0**	**19.7**	**21.0**	**23.0**	**22.4**	**21.7**	**21.7**	**20.4**		**28.3**	
MIN	**1.8**	**1.4**	**1.4**	**1.5**	**1.3**	**1.4**	**2.2**	**2.5**	**3.0**	**2.9**	**2.9**	**3.3**	**3.3**	**2.9**	**2.9**	**2.7**	**2.3**	**2.3**	**2.3**	**2.9**	**3.3**	**1.8**	**1.7**	**1.6**			**1.3**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 715 DATA RECOVERY RATE = 96.1% DATA CAPTURE RATE = 96.8%

MONTHLY MEAN = 9.5 µg/m3

MAXIMUM PM2.5 = 28.3 µg/m3 DATE OF OCCURRENCE = 8/14 at 1100 MAXIMUM DAILY MEAN = 19.0 µg/m3 DATE OF OCCURRENCE = 8/14

SECOND MAXIMUM PM2.5 = 27.8 µg/m3 DATE OF OCCURRENCE = 8/14 at 1200 SECOND MAXIMUM DAILY MEAN = 17.8 µg/m3 DATE OF OCCURRENCE = 8/28

MINIMUM PM2.5 = 1.3 µg/m3 DATE OF OCCURRENCE = 8/20 at 500 MINUMUM DAILY MEAN = 3.6 µg/m3 DATE OF OCCURRENCE = 8/7

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

CSX AQ6 Modulair

HOURLY AVERAGES of PM2.5 in µg/m3 for SEPTEMBER, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	6.2	6.5	6.2	6.2	6.3	6.3	7.5	7.5	7.8	7.7	7.2	8.2	9.6	10.4	10.2	9.5	9.6	10.2	9.9	9.4	9.7	9.9	10.0	9.9	**8.4**	**10.4**	**6.2**
2	8.9	8.8	8.3	7.9	9.8	12.0	12.4	11.4	9.1	7.9	7.8	7.5	7.5	5.0	4.3	4.7	4.3	4.3	3.9	4.1	4.4	4.2	3.4	2.7	**6.8**	**12.4**	**2.7**
3	2.3	2.1	2.1	2.0	2.1	2.2	2.8	2.9	2.5	2.6	2.8	2.8	3.2	3.1	3.2	2.5	2.7	2.2	2.7	3.3	4.2	6.1	4.6	5.5	**3.0**	**6.1**	**2.0**
4	5.1	5.9	4.9	5.7	5.7	5.5	7.3	6.4	4.8	3.4	3.1	2.8	2.7	2.5	2.4	2.7	2.6	2.7	3.9	3.5	4.2	3.1	4.4	5.1	**4.1**	**7.3**	**2.4**
5	5.5	6.0	7.1	7.2	4.7	5.6	6.1	5.9	4.4	3.1	2.9	2.6	3.0	2.9	3.4	3.8	3.8	2.8	3.1	5.1	4.7	5.1	6.1	6.4	**4.6**	**7.2**	**2.6**
6	3.7	4.3	5.4	5.5	5.5	6.1	6.5	7.0	7.3	4.5	3.6	3.2	3.1	3.1	3.2	3.3	4.4	4.1	5.7	6.3	6.3	7.8	7.5	5.5	**5.1**	**7.8**	**3.1**
7	5.5	5.0	4.4	5.1	4.7	5.8	5.9	6.4	5.6	7.5	10.6	9.3	3.6	3.1	3.1	3.3	4.0	3.2	4.9	7.0	7.5	6.8	5.1	3.4	**5.4**	**10.6**	**3.1**
8	3.7	2.9	2.5	2.3	2.2	2.4	4.3	2.9	3.3	3.5	3.5	3.7	4.4	3.7	5.6	4.0	3.5	3.3	5.0	10.0	6.3	4.1	4.6	4.1	**3.9**	**10.0**	**2.2**
9	4.3	4.4	3.9	3.5	5.0	4.5	4.4	5.5	3.7	3.6	3.0	3.1	3.4	4.1	3.3	3.5	3.7	3.2	5.1	7.6	7.6	8.5	7.6	7.7	**4.7**	**8.5**	**3.0**
10	9.2	6.8	6.3	6.5	6.8	6.0	4.0	3.8	4.1	5.4	6.5	7.8	8.6	10.5	9.6	9.1	9.8	6.4	7.7	9.9	11.3	17.2	13.6	14.1	**8.3**	**17.2**	**3.8**
11	15.3	15.7	15.2	14.7	14.0	14.6	12.2	21.6	9.0	8.0	12.0	9.7	7.3	7.4	6.6	5.0	5.5	4.7	7.7	10.9	7.0	8.0	9.1	11.6	**10.5**	**21.6**	**4.7**
12	13.4	13.6	13.3	14.8	12.9	12.8	13.8	15.2	8.9	6.0	4.8	4.7	4.0	6.1	6.1	5.7	3.9	5.6	9.1	5.1	4.0	3.3	3.2	4.6	**8.1**	**15.2**	**3.2**
13	5.3	5.6	5.7	6.9	6.9	6.9	7.0	7.3	9.4	9.0	6.8	4.1	6.6	7.7	6.2	6.2	4.6	4.5	7.5	10.9	9.2	7.6	8.3	10.0	**7.0**	**10.9**	**4.1**
14	11.1	11.3	9.9	10.0	9.4	10.4	11.4	8.2	6.5	6.3	6.5	7.3	9.0	7.9	7.8	5.6	5.8	7.0	6.9	5.5	7.5	7.6	7.0	8.3	**8.0**	**11.4**	**5.5**
15	8.0	8.6	10.4	12.1	12.1	10.3	11.6	12.2	11.6	9.3	6.2	5.4	6.2	6.5	6.9	8.1	8.0	6.9	11.2	9.0	5.7	5.0	4.6	4.2	**8.3**	**12.2**	**4.2**
16	4.9	4.8	4.6	4.7	4.8	5.0	5.2	5.9	4.4	3.9	3.9	4.5	4.5	5.3	4.9	4.9	5.2	5.2	5.4	5.8	5.9	6.1	5.8	5.7	**5.0**	**6.1**	**3.9**
17	6.2	6.5	7.0	7.2	7.4	7.5	7.5	7.3	7.5	7.8	8.0	8.8	8.5	8.5	9.2	7.9	8.7	8.1	7.6	6.6	5.9	5.9	6.0	6.0	**7.4**	**9.2**	**5.9**
18	6.2	6.9	6.0	5.1	4.3	4.7	5.1	5.7	6.4	7.2	7.1	7.3	7.1	6.0	6.5	6.3	6.8	6.3	7.9	7.6	7.7	7.5	7.5	7.5	**6.5**	**7.9**	**4.3**
19	7.8	8.2	8.1	8.0	7.8	7.6	8.2	9.2	7.6	7.1	5.8	5.1	5.5	5.7	7.2	9.7	9.0	9.5	19.4	11.0	10.7	11.7	11.8	11.3	**8.8**	**19.4**	**5.1**
20	13.1	12.6	13.0	13.1	13.1	14.4	13.1	9.6	2.8	2.1	1.9	2.3	3.6	4.7	4.4	6.5	6.6	6.2	12.6	12.7	14.1	9.4	2.9	1.9	**8.1**	**14.4**	**1.9**
21	3.6	3.9	3.5	4.3	4.3	4.1	4.5	4.0	3.5	3.5	3.6	4.1	4.8	4.2	5.0	5.6	4.9	4.5	5.9	5.0	7.0	8.0	9.3	9.4	**5.0**	**9.4**	**3.5**
22	8.4	15.8	4.2	3.1	2.8	2.1	3.6	2.7	2.4	2.1	2.7	3.0	3.4	3.4	3.6	4.3	7.0	7.7	8.9	7.8	9.2	6.9	5.1	4.4	**5.1**	**15.8**	**2.1**
23	4.0	4.8	5.0	4.6	4.7	4.7	4.4	4.6	5.1	4.2	4.3	3.9	4.5	4.3	4.5	4.2	4.9	5.4	5.0	4.6	4.3	4.4	4.6	4.5	**4.5**	**5.4**	**3.9**
24	4.4	4.3	3.8	3.6	3.7	4.0	3.8	3.5	3.7	3.7	3.8	4.0	4.2	4.0	5.4	5.2	4.8	4.4	4.7	4.0	3.9	3.6	3.2	3.1	**4.0**	**5.4**	**3.1**
25	2.7	2.4	2.5	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
26	---	---	---	---	---	---	6.6	6.3	8.3	8.1	8.2	6.1	4.4	3.2	2.8	2.3	2.1	2.8	3.6	3.7	3.8	3.6	3.9	4.3	**4.6**	**8.3**	**2.1**
27	5.1	5.1	5.3	4.7	6.3	7.8	4.5	2.6	2.3	2.2	2.1	3.9	3.4	3.0	5.1	3.6	4.0	---	---	---	---	---	---	---	**---**	**---**	**---**
28	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
29	---	---	---	---	---	---	7.0	7.1	6.9	5.4	6.7	7.4	7.9	7.7	7.3	6.0	4.0	3.4	4.0	3.8	3.4	3.2	3.9	4.7	**5.5**	**7.9**	**3.2**
30	5.1	4.3	5.1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
MEAN	**6.6**	**6.9**	**6.4**	**6.8**	**6.7**	**6.9**	**7.1**	**7.1**	**5.9**	**5.4**	**5.4**	**5.3**	**5.3**	**5.3**	**5.5**	**5.3**	**5.3**	**5.2**	**6.9**	**6.9**	**6.8**	**6.7**	**6.3**	**6.4**	**6.2**		
MAX	**15.3**	**15.8**	**15.2**	**14.8**	**14.0**	**14.6**	**13.8**	**21.6**	**11.6**	**9.3**	**12.0**	**9.7**	**9.6**	**10.5**	**10.2**	**9.7**	**9.8**	**10.2**	**19.4**	**12.7**	**14.1**	**17.2**	**13.6**	**14.1**		**21.6**	
MIN	**2.3**	**2.1**	**2.1**	**2.0**	**2.1**	**2.1**	**2.8**	**2.6**	**2.3**	**2.1**	**1.9**	**2.3**	**2.7**	**2.5**	**2.4**	**2.3**	**2.1**	**2.2**	**2.7**	**3.3**	**3.4**	**3.1**	**2.9**	**1.9**			**1.9**

POSSIBLE NUMBER OF OBSERVATIONS = 720 ACTUAL NUMBER OF OBSERVATIONS = 635 DATA RECOVERY RATE = 88.2% DATA CAPTURE RATE = 86.7%

MONTHLY MEAN = 6.2 µg/m3

MAXIMUM PM2.5 = 21.6 µg/m3 DATE OF OCCURRENCE = 9/11 at 800 MAXIMUM DAILY MEAN = 10.5 µg/m3 DATE OF OCCURRENCE = 9/11

SECOND MAXIMUM PM2.5 = 19.4 µg/m3 DATE OF OCCURRENCE = 9/19 at 1900 SECOND MAXIMUM DAILY MEAN = 8.8 µg/m3 DATE OF OCCURRENCE = 9/19

MINIMUM PM2.5 = 1.9 µg/m3 DATE OF OCCURRENCE = 9/20 at 1100 MINUMUM DAILY MEAN = 3.0 µg/m3 DATE OF OCCURRENCE = 9/3

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

CSX AQ7 Modulair

HOURLY AVERAGES of PM10 in µg/m3 for JULY, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	---	12.3	6.5	---	---	---	2.4	4.5	3.0	2.6	2.7	8.5	2.9	2.7	12.0	---	4.7	9.6	---	---	4.0	4.1	5.2	---	**---**	**---**	**---**
2	5.5	4.7	3.9	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
3	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	8.6	6.8	**---**	**---**	**---**
4	6.2	6.0	5.9	---	---	---	---	---	---	---	---	---	---	---	---	---	---	19.5	17.9	15.8	14.6	19.8	24.1	23.7	**---**	**---**	**---**
5	37.2	45.7	36.9	20.8	16.8	15.8	14.6	13.2	16.4	18.1	20.7	17.6	15.5	16.0	19.3	22.2	21.7	23.8	24.0	23.0	20.4	18.8	18.8	20.3	**21.6**	**45.7**	**13.2**
6	18.4	18.8	18.1	15.3	14.6	11.9	11.9	15.0	19.3	17.2	18.5	16.3	12.3	14.4	15.3	11.9	16.4	16.8	15.5	18.3	17.2	16.3	17.5	19.1	**16.1**	**19.3**	**11.9**
7	15.6	12.3	14.7	12.0	13.3	11.3	11.8	14.4	14.7	13.0	10.0	9.1	9.4	9.9	10.1	---	---	---	---	---	12.8	14.6	17.9	18.5	**12.9**	**18.5**	**9.1**
8	17.4	22.3	13.6	---	---	---	19.6	---	---	22.3	30.2	26.2	21.6	---	10.6	14.7	16.6	22.3	18.5	15.4	13.0	13.8	14.7	12.1	**18.1**	**30.2**	**10.6**
9	11.7	10.8	10.4	10.7	10.1	8.2	9.4	12.0	14.3	16.4	18.4	16.0	14.5	15.1	27.7	28.8	8.4	12.9	14.7	15.5	13.1	11.1	9.7	8.6	**13.7**	**28.8**	**8.2**
10	8.4	8.1	8.7	8.8	8.2	8.5	8.4	8.4	10.4	11.2	12.5	13.0	11.6	---	10.6	9.5	9.2	8.5	7.4	7.5	7.5	7.2	19.1	13.0	**9.8**	**19.1**	**7.2**
11	6.6	21.6	11.8	9.8	23.2	14.3	12.3	32.1	31.5	44.3	43.2	4.9	17.6	19.4	15.5	7.4	7.2	7.0	10.4	11.3	13.4	10.2	4.6	4.8	**16.0**	**44.3**	**4.6**
12	---	8.0	9.1	8.3	8.2	9.3	9.0	9.6	9.2	11.7	12.0	8.7	8.1	8.5	8.3	8.4	7.5	7.0	6.3	6.7	5.5	4.0	3.8	2.3	**7.8**	**12.0**	**2.3**
13	1.5	1.3	1.9	2.8	2.2	4.5	4.0	3.1	4.5	---	10.9	12.4	9.4	8.7	7.7	---	---	---	3.8	7.1	5.4	4.1	5.0	3.4	**5.2**	**12.4**	**1.3**
14	3.6	4.1	4.6	5.0	5.9	6.0	6.9	6.9	8.6	8.0	9.3	15.7	15.6	17.3	15.7	13.2	13.6	11.9	13.3	13.7	11.4	11.0	12.5	17.4	**10.5**	**17.4**	**3.6**
15	13.8	22.5	16.2	21.1	21.7	22.3	22.0	19.3	33.6	36.2	36.1	42.6	17.8	28.3	39.2	18.4	23.4	21.1	17.5	13.0	24.3	14.2	18.3	12.2	**23.1**	**42.6**	**12.2**
16	16.0	16.4	18.3	14.4	24.0	20.5	18.1	18.4	24.8	26.3	21.0	21.3	21.2	22.7	26.5	24.1	19.0	18.7	17.9	19.1	16.3	26.3	10.1	11.2	**19.7**	**26.5**	**10.1**
17	11.4	14.2	11.4	9.9	11.4	9.5	11.9	12.7	11.6	8.6	9.5	11.4	10.0	10.7	16.3	21.9	19.0	13.9	20.9	11.0	11.9	11.3	13.9	13.2	**12.8**	**21.9**	**8.6**
18	11.0	19.8	15.8	12.2	14.5	12.6	20.8	16.1	16.7	22.5	30.1	14.5	16.3	18.4	16.9	14.0	13.1	14.7	13.7	16.1	16.4	16.3	16.4	17.5	**16.5**	**30.1**	**11.0**
19	16.2	14.8	16.4	17.6	13.8	11.2	11.5	9.1	8.7	7.5	7.3	7.9	8.2	7.2	8.2	8.6	8.6	9.9	13.3	14.0	16.2	13.5	13.4	11.6	**11.4**	**17.6**	**7.2**
20	9.6	9.1	9.5	10.4	9.9	12.3	13.4	12.5	13.2	11.0	10.3	9.8	9.5	10.5	10.1	12.2	11.8	12.4	13.5	15.9	11.4	11.3	12.1	11.2	**11.4**	**15.9**	**9.1**
21	8.7	11.4	14.1	15.6	12.2	12.8	11.2	9.8	13.7	14.8	18.7	14.1	16.0	15.0	16.9	15.2	14.2	12.9	12.9	14.5	15.7	13.8	12.2	10.2	**13.6**	**18.7**	**8.7**
22	10.7	11.2	10.5	11.0	11.6	11.8	12.0	15.5	10.9	10.4	11.4	11.4	11.5	15.1	10.6	10.1	8.2	8.3	7.3	5.2	5.7	6.8	18.7	7.2	**10.5**	**18.7**	**5.2**
23	4.2	3.4	4.0	3.3	2.9	3.8	7.8	13.4	17.6	20.1	16.9	9.9	19.7	18.4	16.5	18.6	18.0	18.2	17.6	22.1	19.0	11.0	7.7	4.7	**12.5**	**22.1**	**2.9**
24	5.2	5.4	5.1	4.7	4.4	7.5	7.4	8.3	8.6	10.2	11.2	17.8	16.3	10.8	12.2	12.7	13.8	12.0	10.7	7.0	5.7	5.7	9.2	11.5	**9.3**	**17.8**	**4.4**
25	16.9	11.4	8.1	12.1	9.3	8.6	8.8	15.7	13.5	25.4	26.8	19.8	34.5	39.0	30.0	25.6	24.5	21.9	21.5	18.5	15.3	15.6	16.1	20.5	**19.1**	**39.0**	**8.1**
26	23.9	28.4	16.8	12.2	10.5	8.4	7.9	7.9	7.7	7.4	7.3	7.6	9.3	8.5	7.8	9.4	9.7	9.1	9.0	8.2	8.2	9.1	8.8	7.4	**10.4**	**28.4**	**7.3**
27	10.6	11.3	13.5	13.8	12.1	24.3	9.1	6.6	6.7	9.2	8.1	7.0	8.6	7.6	7.6	7.2	8.1	7.1	8.0	12.2	8.3	7.9	9.4	12.0	**9.8**	**24.3**	**6.6**
28	13.1	14.7	15.5	13.3	11.9	8.6	12.4	12.9	11.8	11.2	10.6	8.9	10.2	10.4	12.3	13.8	13.0	14.0	15.2	21.1	12.2	12.8	12.6	11.3	**12.7**	**21.1**	**8.6**
29	11.0	11.2	12.7	13.0	14.2	16.1	16.4	17.8	18.1	20.1	21.1	23.1	29.2	37.6	28.7	26.8	22.1	22.4	17.9	11.3	11.5	9.4	9.7	9.9	**18.0**	**37.6**	**9.4**
30	8.3	7.2	8.1	8.4	8.7	9.5	10.1	9.3	9.7	9.0	8.9	9.7	11.1	13.2	13.6	13.8	14.5	15.3	17.0	16.0	11.6	9.0	6.3	4.6	**10.5**	**17.0**	**4.6**
31	4.4	4.2	4.3	4.6	7.5	6.8	8.9	7.2	9.9	10.1	11.3	13.9	16.8	---	9.9	14.1	14.0	11.4	11.5	10.6	13.0	14.2	13.6	13.5	**10.2**	**16.8**	**4.2**
MEAN	**11.7**	**13.1**	**11.5**	**11.2**	**11.7**	**11.4**	**11.4**	**12.3**	**13.7**	**15.7**	**16.3**	**14.3**	**14.5**	**15.4**	**15.6**	**15.3**	**13.9**	**14.2**	**14.0**	**13.7**	**12.4**	**11.8**	**12.3**	**11.7**	**13.3**		
MAX	**37.2**	**45.7**	**36.9**	**21.1**	**24.0**	**24.3**	**22.0**	**32.1**	**33.6**	**44.3**	**43.2**	**42.6**	**34.5**	**39.0**	**39.2**	**28.8**	**24.5**	**23.8**	**24.0**	**23.0**	**24.3**	**26.3**	**24.1**	**23.7**		**45.7**	
MIN	**1.5**	**1.3**	**1.9**	**2.8**	**2.2**	**3.8**	**2.4**	**3.1**	**3.0**	**2.6**	**2.7**	**4.9**	**2.9**	**2.7**	**7.6**	**7.2**	**4.7**	**7.0**	**3.8**	**5.2**	**4.0**	**4.0**	**3.8**	**2.3**			**1.3**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 661 DATA RECOVERY RATE = 88.8% DATA CAPTURE RATE = 87.1%

MONTHLY MEAN = 13.3 µg/m3

MAXIMUM PM10 = 45.7 µg/m3 DATE OF OCCURRENCE = 7/5 at 200 MAXIMUM DAILY MEAN = 23.1 µg/m3 DATE OF OCCURRENCE = 7/15

SECOND MAXIMUM PM10 = 44.3 µg/m3 DATE OF OCCURRENCE = 7/11 at 1000 SECOND MAXIMUM DAILY MEAN = 21.6 µg/m3 DATE OF OCCURRENCE = 7/5

MINIMUM PM10 = 1.3 µg/m3 DATE OF OCCURRENCE = 7/13 at 200 MINUMUM DAILY MEAN = 5.2 µg/m3 DATE OF OCCURRENCE = 7/13

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

CSX AQ7 Modulair

HOURLY AVERAGES of PM10 in µg/m3 for AUGUST, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	13.0	12.1	11.2	14.0	14.7	18.2	18.0	23.5	22.6	25.4	26.5	33.4	29.8	29.4	29.5	21.1	19.9	20.5	19.8	18.4	18.6	18.7	19.2	19.1	**20.7**	**33.4**	**11.2**
2	19.8	20.1	18.9	19.3	19.3	20.9	19.7	18.8	19.2	13.8	12.6	12.9	13.5	14.8	12.8	9.5	9.1	16.5	20.5	17.9	51.4	19.4	3.1	5.4	**17.1**	**51.4**	**3.1**
3	4.7	5.9	4.1	5.5	5.8	6.5	7.9	7.6	9.2	9.5	10.3	10.2	11.6	11.1	15.5	13.7	12.3	13.2	9.2	5.6	5.5	3.6	4.6	3.9	**8.2**	**15.5**	**3.6**
4	4.1	5.0	7.2	6.1	5.8	6.0	5.5	8.2	7.0	7.6	8.2	8.2	9.0	9.7	7.9	8.3	5.1	3.3	5.2	7.1	6.1	6.2	6.8	10.2	**6.8**	**10.2**	**3.3**
5	8.3	8.2	10.0	8.1	7.2	7.5	8.3	11.5	19.0	20.9	18.4	19.2	18.1	18.4	18.0	14.6	13.3	13.1	13.3	13.3	14.3	15.3	14.7	14.5	**13.6**	**20.9**	**7.2**
6	11.8	13.0	11.1	9.4	8.4	11.9	12.4	15.9	17.4	18.9	21.1	19.9	20.9	21.9	16.7	8.4	8.6	4.6	3.9	6.9	12.4	3.0	2.8	7.1	**12.0**	**21.9**	**2.8**
7	2.9	3.5	4.3	4.6	4.9	5.6	6.4	4.2	4.0	5.9	6.9	7.8	6.7	11.3	6.6	12.5	3.5	3.1	4.1	6.9	6.3	7.5	---	3.0	**5.8**	**12.5**	**2.9**
8	2.8	3.4	4.2	3.7	6.8	3.4	3.5	4.6	5.6	5.2	7.0	5.4	3.4	4.8	6.8	8.2	10.9	7.7	6.7	10.6	9.9	10.6	9.3	7.8	**6.3**	**10.9**	**2.8**
9	8.7	12.0	17.5	15.2	15.9	11.5	11.8	11.8	12.3	9.4	4.5	4.5	4.0	4.2	2.4	---	---	4.5	3.6	4.0	4.2	4.3	4.8	4.7	**8.0**	**17.5**	**2.4**
10	5.7	8.7	11.0	14.4	15.5	15.3	15.0	31.5	16.5	14.6	17.0	11.5	31.5	29.2	15.1	21.7	23.6	28.7	19.4	21.8	19.4	20.7	12.2	13.1	**18.0**	**31.5**	**5.7**
11	7.7	8.6	9.6	7.1	7.0	11.0	8.9	8.3	8.5	8.3	6.4	5.6	5.9	6.7	6.8	7.4	7.0	7.7	4.9	7.8	8.0	8.5	14.2	10.3	**8.0**	**14.2**	**4.9**
12	9.2	7.6	9.0	10.8	9.2	8.7	10.6	8.3	7.9	7.2	11.2	7.9	9.1	9.7	8.0	14.1	10.8	6.6	5.6	16.1	5.6	5.3	7.0	8.2	**8.9**	**16.1**	**5.3**
13	7.2	7.4	9.4	7.7	8.5	9.4	10.5	10.8	7.9	5.7	8.2	8.4	10.5	9.0	10.0	10.9	8.8	9.3	11.2	12.6	13.5	15.8	16.1	17.8	**10.3**	**17.8**	**5.7**
14	14.2	14.4	11.8	12.3	13.0	12.7	17.8	19.9	16.6	23.7	32.4	33.6	34.5	28.4	27.5	29.5	25.8	22.7	20.0	20.2	18.0	20.4	22.1	23.4	**21.5**	**34.5**	**11.8**
15	19.3	18.7	17.4	16.2	21.4	20.8	28.5	22.5	22.4	21.9	21.4	20.9	21.4	21.6	23.0	28.0	23.4	20.9	17.8	17.6	17.7	19.7	20.9	18.7	**20.9**	**28.5**	**16.2**
16	18.5	18.7	15.4	17.5	28.2	24.7	45.8	30.7	30.7	20.8	19.2	19.5	20.0	20.4	20.9	18.3	19.6	20.4	17.8	16.1	14.7	14.1	15.4	15.0	**20.9**	**45.8**	**14.1**
17	13.4	14.9	13.5	13.4	12.8	15.2	19.7	14.7	16.6	22.8	19.9	19.2	17.3	17.7	19.9	19.0	20.6	21.6	18.2	5.6	6.6	7.7	8.1	9.9	**15.3**	**22.8**	**5.6**
18	9.7	9.3	8.6	11.5	7.9	10.9	7.2	7.3	8.5	10.9	12.8	13.3	13.9	15.0	16.6	15.6	15.2	16.3	16.0	5.3	4.3	14.2	6.6	3.6	**10.9**	**16.6**	**3.6**
19	3.1	4.0	3.5	4.2	5.4	6.8	7.5	6.4	5.6	6.2	4.0	3.9	3.9	5.7	7.5	2.8	3.1	2.0	2.4	2.9	5.0	2.8	3.0	4.0	**4.4**	**7.5**	**2.0**
20	2.9	4.4	2.8	2.7	5.2	4.4	5.2	8.7	7.6	10.0	6.7	5.7	8.2	8.2	8.5	7.1	6.6	6.1	4.8	5.0	4.5	7.5	5.4	3.6	**5.9**	**10.0**	**2.7**
21	3.8	3.9	3.1	4.4	5.6	3.9	4.0	6.1	5.2	4.5	4.1	3.9	4.3	5.1	5.6	4.4	3.5	3.6	3.3	5.5	6.3	6.4	5.8	5.0	**4.6**	**6.4**	**3.1**
22	6.6	7.2	6.7	7.5	8.7	5.8	7.0	8.8	8.2	5.8	6.1	5.3	6.5	6.3	6.5	7.5	6.0	5.9	4.8	10.7	10.9	13.1	11.6	12.5	**7.8**	**13.1**	**4.8**
23	12.1	11.2	11.1	13.8	17.8	17.4	20.2	20.0	17.1	9.5	9.7	11.8	11.1	12.5	10.1	9.7	6.8	8.9	12.5	12.0	12.2	13.2	13.3	14.9	**12.9**	**20.2**	**6.8**
24	15.7	11.1	9.4	11.5	15.9	15.3	13.1	13.3	12.0	12.1	12.9	11.1	13.0	17.0	14.2	14.4	13.1	10.0	10.2	11.9	11.7	13.2	13.1	14.3	**12.9**	**17.0**	**9.4**
25	12.8	11.1	10.7	10.8	11.2	12.4	10.9	12.6	11.3	10.6	10.0	12.7	11.3	11.7	10.7	12.6	11.7	13.2	10.3	10.2	10.3	11.1	12.1	10.7	**11.4**	**13.2**	**10.0**
26	9.8	9.4	9.8	10.4	11.8	14.9	22.8	16.2	13.5	16.9	22.7	23.1	25.3	22.3	23.4	24.9	10.1	8.5	5.8	8.3	9.0	11.8	13.7	14.6	**15.0**	**25.3**	**5.8**
27	15.5	14.6	14.3	12.8	13.5	15.6	19.4	21.8	21.0	22.3	26.2	23.5	21.5	18.7	17.7	15.9	14.6	13.8	15.7	16.9	19.1	17.2	15.1	15.2	**17.6**	**26.2**	**12.8**
28	14.7	15.2	15.3	15.3	15.0	18.9	22.5	22.1	16.2	14.0	18.9	14.1	---	---	---	13.1	13.5	11.4	15.5	23.8	22.7	19.6	14.8	19.8	**17.0**	**23.8**	**11.4**
29	10.9	12.1	12.9	12.0	12.7	13.7	12.9	17.1	15.4	13.4	14.2	16.6	18.2	17.7	17.0	17.9	17.6	14.4	12.3	9.3	7.3	7.7	9.7	9.8	**13.5**	**18.2**	**7.3**
30	10.1	7.3	7.7	8.4	7.5	8.5	6.4	7.6	7.0	6.2	7.5	8.2	8.5	7.5	6.8	7.2	7.9	7.9	7.5	6.9	4.8	3.6	5.4	6.4	**7.2**	**10.1**	**3.6**
31	6.9	7.2	8.9	8.1	8.2	8.0	9.6	7.9	5.6	7.5	6.1	8.2	6.4	6.3	6.9	5.7	6.3	6.8	7.1	6.7	5.2	4.9	4.9	6.2	**6.9**	**9.6**	**4.9**
MEAN	**9.9**	**10.0**	**10.0**	**10.3**	**11.3**	**11.8**	**13.5**	**13.8**	**12.8**	**12.6**	**13.3**	**13.2**	**14.0**	**14.1**	**13.3**	**13.5**	**11.9**	**11.4**	**10.6**	**11.1**	**11.8**	**11.2**	**10.5**	**10.7**	**11.9**		
MAX	**19.8**	**20.1**	**18.9**	**19.3**	**28.2**	**24.7**	**45.8**	**31.5**	**30.7**	**25.4**	**32.4**	**33.6**	**34.5**	**29.4**	**29.5**	**29.5**	**25.8**	**28.7**	**20.5**	**23.8**	**51.4**	**20.7**	**22.1**	**23.4**		**51.4**	
MIN	**2.8**	**3.4**	**2.8**	**2.7**	**4.9**	**3.4**	**3.5**	**4.2**	**4.0**	**4.5**	**4.0**	**3.9**	**3.4**	**4.2**	**2.4**	**2.8**	**3.1**	**2.0**	**2.4**	**2.9**	**4.2**	**2.8**	**2.8**	**3.0**			**2.0**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 738 DATA RECOVERY RATE = 99.2% DATA CAPTURE RATE = 100.0%

MONTHLY MEAN = 11.9 µg/m3

MAXIMUM PM10 = 51.4 µg/m3 DATE OF OCCURRENCE = 8/2 at 2100 MAXIMUM DAILY MEAN = 21.5 µg/m3 DATE OF OCCURRENCE = 8/14

SECOND MAXIMUM PM10 = 45.8 µg/m3 DATE OF OCCURRENCE = 8/16 at 700 SECOND MAXIMUM DAILY MEAN = 20.9 µg/m3 DATE OF OCCURRENCE = 8/16

MINIMUM PM10 = 2.0 µg/m3 DATE OF OCCURRENCE = 8/19 at 1800 MINUMUM DAILY MEAN = 4.4 µg/m3 DATE OF OCCURRENCE = 8/19

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

CSX AQ7 Modulair

HOURLY AVERAGES of PM10 in µg/m3 for SEPTEMBER, 2024

Hr Beg Hr End Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	5.5	5.3	5.8	6.1	6.1	5.4	6.0	6.9	6.1	4.8	4.9	7.0	8.3	8.5	8.1	7.0	6.5	7.2	9.1	9.3	8.2	7.3	7.4	7.4	**6.8**	**9.3**	**4.8**
2	7.4	7.4	7.5	8.8	10.6	16.2	31.7	37.0	27.7	15.2	13.6	32.2	13.0	11.9	10.3	8.3	7.5	8.0	4.5	4.3	4.3	4.5	5.5	4.6	**12.6**	**37.0**	**4.3**
3	4.3	6.5	3.3	2.7	3.2	2.6	5.1	4.1	5.0	4.9	5.3	4.7	5.0	5.5	4.6	6.2	5.6	4.6	4.9	5.0	11.5	22.8	12.1	5.8	**6.1**	**22.8**	**2.6**
4	9.5	15.1	12.8	17.2	11.4	12.8	21.9	16.2	7.1	5.3	9.2	5.8	6.6	6.2	5.4	5.8	5.0	5.4	9.5	10.8	17.9	8.1	11.0	9.2	**10.2**	**21.9**	**5.0**
5	9.7	8.7	7.8	7.5	8.8	8.4	7.6	10.1	6.9	5.7	5.0	4.7	5.6	5.8	6.0	6.9	6.5	5.5	4.8	14.0	8.4	9.4	10.8	13.0	**7.8**	**14.0**	**4.7**
6	8.4	9.0	9.9	9.2	9.7	10.8	10.8	11.9	9.2	7.8	6.7	5.7	4.7	5.4	6.5	5.7	6.2	5.2	5.8	8.8	9.7	10.7	15.5	10.8	**8.5**	**15.5**	**4.7**
7	8.0	7.4	6.8	7.0	8.5	8.3	9.7	10.2	7.8	8.6	9.2	28.7	11.0	3.5	2.7	3.4	4.5	5.7	4.2	5.5	7.1	5.3	4.5	3.1	**7.5**	**28.7**	**2.7**
8	3.2	2.5	2.8	2.6	1.8	2.0	2.2	2.2	4.5	2.7	3.4	3.0	3.1	3.5	4.2	2.9	2.7	2.4	2.9	4.5	4.7	3.7	5.2	4.0	**3.2**	**5.2**	**1.8**
9	5.0	5.0	4.1	4.7	4.9	19.3	15.9	13.6	13.4	18.2	22.0	5.7	18.9	22.8	9.3	28.0	32.5	28.2	11.7	22.5	19.9	9.5	10.9	8.7	**14.8**	**32.5**	**4.1**
10	7.1	6.0	8.0	8.3	12.0	15.4	15.9	6.0	7.9	6.9	8.5	9.2	10.2	20.2	15.9	19.2	24.4	17.7	15.5	13.5	14.7	14.8	13.8	14.3	**12.7**	**24.4**	**6.0**
11	20.9	22.6	25.4	23.7	17.8	25.9	18.1	16.6	14.8	14.3	16.3	14.6	12.4	11.2	11.2	11.1	11.8	12.6	16.2	19.4	15.0	13.1	14.2	15.7	**16.5**	**25.9**	**11.1**
12	24.1	26.0	21.9	17.8	15.4	18.7	19.0	19.6	13.7	11.9	11.3	10.0	9.5	8.3	8.5	8.5	8.7	10.9	14.7	10.0	7.4	7.4	7.9	7.0	**13.3**	**26.0**	**7.0**
13	6.7	8.0	10.3	11.2	10.4	8.7	7.4	9.3	11.5	12.5	10.6	8.1	10.1	11.2	11.2	9.7	7.8	7.6	8.9	11.8	11.7	12.0	10.1	11.6	**9.9**	**12.5**	**6.7**
14	12.1	14.1	13.0	11.9	11.6	13.7	14.2	8.7	8.7	9.6	10.7	12.4	13.8	13.5	13.4	11.3	12.6	13.7	11.1	10.2	11.6	10.5	9.4	10.8	**11.8**	**14.2**	**8.7**
15	10.5	10.9	11.6	11.2	12.7	13.5	14.6	14.4	14.8	13.5	11.0	11.3	10.0	10.5	10.3	11.1	12.1	12.1	15.2	12.6	8.4	7.5	6.8	6.6	**11.4**	**15.2**	**6.6**
16	7.5	7.8	7.1	7.9	7.9	7.7	8.1	9.2	6.9	6.5	7.0	7.5	7.4	7.3	7.9	8.3	7.3	7.2	8.2	7.6	8.6	8.9	8.9	8.2	**7.8**	**9.2**	**6.5**
17	8.8	9.7	10.5	10.7	11.2	11.3	12.0	11.4	12.2	10.6	11.4	11.7	12.2	12.0	13.3	9.5	9.5	10.7	10.3	9.6	8.8	9.2	10.2	10.1	**10.7**	**13.3**	**8.8**
18	8.8	7.1	7.7	5.3	4.9	5.1	5.5	7.0	7.8	9.0	9.3	10.0	9.8	8.7	9.7	8.8	9.2	7.4	6.3	6.2	7.8	8.5	9.0	8.4	**7.8**	**10.0**	**4.9**
19	8.5	9.6	9.5	10.6	10.0	10.0	11.1	13.0	10.3	11.0	12.3	7.6	7.7	9.0	17.9	13.1	11.7	20.0	20.6	14.3	16.7	14.5	15.2	18.7	**12.6**	**20.6**	**7.6**
20	17.5	24.8	17.6	20.7	15.5	15.2	15.4	10.4	4.4	3.7	4.1	4.7	6.7	11.5	11.1	14.5	15.0	15.5	13.8	15.2	15.8	18.6	7.8	4.5	**12.7**	**24.8**	**3.7**
21	8.1	6.5	5.0	4.9	4.6	5.3	6.6	5.0	5.4	5.6	10.5	9.8	23.5	8.9	19.1	11.0	7.6	7.5	9.6	9.3	12.5	16.0	17.6	18.3	**9.9**	**23.5**	**4.6**
22	16.6	41.2	6.7	6.2	5.7	3.5	5.1	4.5	3.6	3.4	3.8	4.5	5.2	6.2	7.9	7.4	8.5	8.7	9.5	9.3	11.3	14.1	10.9	10.8	**8.9**	**41.2**	**3.4**
23	10.6	11.3	10.7	9.5	9.0	9.3	10.3	9.8	8.1	8.2	11.6	9.2	9.0	8.7	10.2	8.1	7.8	7.2	7.2	5.8	6.0	6.5	6.0	5.7	**8.6**	**11.6**	**5.7**
24	5.8	6.5	5.5	5.2	5.8	5.4	6.0	5.5	6.5	6.4	6.5	6.4	6.4	6.8	8.9	8.2	7.5	6.9	6.1	5.3	4.8	4.6	4.3	4.9	**6.1**	**8.9**	**4.3**
25	3.5	3.9	4.4	5.7	6.2	5.0	3.1	2.8	2.6	3.4	4.6	4.7	4.6	3.5	3.9	5.8	4.8	3.3	4.6	4.5	4.4	6.0	8.3	11.0	**4.8**	**11.0**	**2.6**
26	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
27	---	---	---	---	---	---	---	3.2	3.0	3.6	3.7	7.4	5.8	5.9	8.1	5.5	4.6	5.1	5.0	5.0	5.6	4.0	3.2	---	**---**	**---**	**---**
28	---	---	---	---	---	---	---	---	---	---	13.3	10.2	10.3	12.2	12.2	11.8	11.3	9.1	8.1	7.9	7.6	9.5	10.9	9.5	**---**	**---**	**---**
29	8.1	7.7	6.1	5.1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
30	---	---	---	---	---	---	---	8.5	6.9	5.8	5.6	6.0	6.4	6.7	8.0	10.1	10.8	---	---	---	---	---	---	---	**---**	**---**	**---**
MEAN	**9.5**	**11.2**	**9.3**	**9.3**	**9.0**	**10.4**	**11.3**	**10.3**	**8.8**	**8.1**	**9.0**	**9.4**	**9.2**	**9.1**	**9.5**	**9.5**	**9.6**	**9.5**	**9.2**	**9.7**	**10.0**	**9.9**	**9.5**	**9.3**	**9.6**		
MAX	**24.1**	**41.2**	**25.4**	**23.7**	**17.8**	**25.9**	**31.7**	**37.0**	**27.7**	**18.2**	**22.0**	**32.2**	**23.5**	**22.8**	**19.1**	**28.0**	**32.5**	**28.2**	**20.6**	**22.5**	**19.9**	**22.8**	**17.6**	**18.7**		**41.2**	
MIN	**3.2**	**2.5**	**2.8**	**2.6**	**1.8**	**2.0**	**2.2**	**2.2**	**2.6**	**2.7**	**3.4**	**3.0**	**3.1**	**3.5**	**2.7**	**2.9**	**2.7**	**2.4**	**2.9**	**4.3**	**4.3**	**3.7**	**3.2**	**3.1**			**1.8**

POSSIBLE NUMBER OF OBSERVATIONS = 720 ACTUAL NUMBER OF OBSERVATIONS = 644 DATA RECOVERY RATE = 89.4% DATA CAPTURE RATE = 83.3%

MONTHLY MEAN = 9.6 µg/m3

MAXIMUM PM10 = 41.2 µg/m3 DATE OF OCCURRENCE = 9/22 at 200 MAXIMUM DAILY MEAN = 16.5 µg/m3 DATE OF OCCURRENCE = 9/11

SECOND MAXIMUM PM10 = 37.0 µg/m3 DATE OF OCCURRENCE = 9/2 at 800 SECOND MAXIMUM DAILY MEAN = 14.8 µg/m3 DATE OF OCCURRENCE = 9/9

MINIMUM PM10 = 1.8 µg/m3 DATE OF OCCURRENCE = 9/8 at 500 MINUMUM DAILY MEAN = 3.2 µg/m3 DATE OF OCCURRENCE = 9/8

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

CSX AQ7 Modulair

HOURLY AVERAGES of PM2.5 in µg/m3 for JULY, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	---	6.5	3.9	---	---	---	2.1	2.8	2.1	1.7	1.6	3.5	1.7	1.5	4.8	---	2.4	6.9	---	---	3.0	3.0	3.2	---	**---**	**---**	**---**
2	4.5	3.1	3.1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
3	---	---	---	---	---	---	---	---	5.9	---	---	---	---	---	---	---	---	---	---	---	---	---	6.6	5.0	**---**	**---**	**---**
4	4.1	4.1	3.9	---	---	---	---	---	---	---	---	---	---	---	---	---	---	18.4	16.6	15.2	13.9	19.5	23.7	23.1	**---**	**---**	**---**
5	36.3	45.2	36.1	19.8	16.2	15.1	13.4	12.5	15.4	17.2	20.4	17.2	14.7	15.0	17.9	19.9	20.3	22.0	21.5	21.3	19.4	17.4	17.3	18.7	**20.4**	**45.2**	**12.5**
6	16.8	17.3	17.1	14.1	13.2	10.3	9.8	13.4	14.4	12.2	12.9	12.2	9.9	11.4	11.6	9.8	15.4	15.2	13.1	16.8	16.1	15.4	16.7	17.6	**13.8**	**17.6**	**9.8**
7	12.5	10.5	12.8	10.7	10.5	9.8	9.4	10.4	11.2	10.3	8.7	8.1	9.1	9.5	9.7	---	---	---	---	---	11.5	12.4	14.9	13.5	**10.8**	**14.9**	**8.1**
8	14.2	16.6	12.0	---	---	---	14.7	---	---	19.3	29.6	25.7	20.4	---	10.0	13.4	15.6	19.5	16.2	13.3	12.6	13.3	14.0	11.4	**16.2**	**29.6**	**10.0**
9	11.1	9.8	9.8	9.6	8.7	6.9	7.6	10.0	12.6	15.4	17.1	15.2	14.0	13.4	19.9	10.5	6.5	11.5	12.8	14.5	12.2	10.0	8.2	7.1	**11.4**	**19.9**	**6.5**
10	6.8	6.5	6.6	7.1	6.9	7.0	7.2	7.4	8.8	10.2	11.1	10.3	9.5	---	7.4	7.4	7.3	6.8	5.7	5.2	4.9	4.7	7.6	6.5	**7.3**	**11.1**	**4.7**
11	3.7	6.2	3.7	3.7	7.0	4.7	5.0	9.0	8.9	13.3	14.1	3.0	7.0	7.6	8.7	5.1	5.4	5.4	7.1	7.4	11.1	7.0	3.4	4.2	**6.7**	**14.1**	**3.0**
12	---	6.4	7.0	6.6	7.0	7.4	8.3	7.7	7.4	8.3	9.1	7.8	7.0	7.8	7.8	7.8	7.3	6.8	5.8	5.4	5.1	3.5	2.4	1.8	**6.5**	**9.1**	**1.8**
13	1.1	1.0	1.3	1.7	1.6	2.2	2.6	2.2	3.6	---	10.4	11.7	8.8	7.7	7.3	---	---	---	3.3	3.5	4.1	3.6	3.7	2.9	**4.2**	**11.7**	**1.0**
14	3.3	3.5	3.9	3.9	4.9	5.3	6.1	6.4	7.5	7.5	8.6	14.1	14.8	13.7	13.3	11.5	12.9	11.0	12.2	12.1	10.4	10.0	11.1	11.8	**9.1**	**14.8**	**3.3**
15	11.6	13.2	14.2	17.1	19.0	17.6	17.9	14.4	18.2	19.2	18.1	21.3	13.7	17.0	19.2	15.0	19.3	17.4	15.9	11.4	11.7	10.7	11.1	10.8	**15.6**	**21.3**	**10.7**
16	12.0	10.8	12.1	12.6	15.1	15.7	13.7	15.2	20.8	22.5	18.7	18.4	18.3	19.6	22.7	21.8	17.1	15.5	16.0	16.2	14.8	21.9	5.9	7.1	**16.0**	**22.7**	**5.9**
17	9.1	11.0	8.3	8.2	10.1	8.3	9.4	9.8	9.0	7.1	7.9	9.2	8.0	8.8	14.2	18.4	17.2	12.4	16.3	9.6	10.7	9.7	11.3	10.4	**10.6**	**18.4**	**7.1**
18	9.4	11.9	10.4	9.0	10.0	7.5	10.6	10.2	11.1	14.3	16.2	11.3	14.9	14.9	14.2	12.5	12.4	13.5	12.4	14.8	15.8	15.5	15.2	15.2	**12.6**	**16.2**	**7.5**
19	12.7	12.6	13.8	15.0	12.3	9.6	9.7	8.0	6.9	6.6	6.8	6.8	6.7	6.1	6.3	6.9	7.9	9.0	11.5	12.0	13.0	11.6	11.8	10.5	**9.7**	**15.0**	**6.1**
20	8.6	7.6	7.2	8.0	7.0	8.1	9.2	9.5	10.2	8.6	8.6	8.6	8.6	9.7	9.5	10.2	10.2	10.2	11.4	12.7	9.5	9.5	10.9	9.8	**9.3**	**12.7**	**7.0**
21	7.4	9.3	11.8	12.9	10.7	10.6	9.3	8.9	13.1	13.4	17.4	13.3	15.2	14.4	16.4	14.5	13.7	12.5	12.5	14.1	15.0	12.9	11.4	9.8	**12.5**	**17.4**	**7.4**
22	10.0	10.4	9.9	10.1	10.4	10.6	10.3	11.9	9.9	9.4	7.5	8.2	7.6	8.6	5.9	6.7	5.1	7.1	6.6	4.2	4.6	5.6	15.8	4.6	**8.3**	**15.8**	**4.2**
23	2.7	2.3	2.5	2.0	1.7	2.0	3.6	7.0	9.4	10.3	11.0	8.8	12.4	13.6	13.5	13.7	15.8	17.5	15.8	16.7	15.3	10.2	6.8	3.9	**9.1**	**17.5**	**1.7**
24	4.8	4.8	4.5	4.1	3.7	4.9	5.6	7.7	7.4	8.8	9.6	16.6	15.2	9.9	11.6	10.9	13.0	9.8	7.4	6.5	4.9	4.7	6.4	7.3	**7.9**	**16.6**	**3.7**
25	8.5	8.2	6.7	8.1	7.3	6.4	6.7	7.5	9.8	16.8	18.3	18.1	23.3	24.9	21.6	24.8	23.8	19.9	20.5	17.5	14.6	14.0	14.4	16.5	**14.9**	**24.9**	**6.4**
26	17.4	21.3	14.4	11.0	9.2	7.5	6.8	6.1	6.3	6.2	6.4	6.5	7.2	7.1	7.1	8.1	8.6	8.3	7.6	7.1	6.7	6.5	7.6	5.6	**8.6**	**21.3**	**5.6**
27	8.3	9.4	10.2	11.5	10.0	17.2	6.2	5.5	6.0	8.1	7.1	6.6	7.1	6.7	6.8	6.6	6.9	6.5	6.9	8.0	6.6	6.4	7.8	10.7	**8.0**	**17.2**	**5.5**
28	11.4	10.1	12.6	11.4	10.3	7.7	10.9	12.1	11.1	10.3	9.7	8.4	9.4	9.9	11.1	13.3	12.3	13.0	11.3	12.5	11.6	12.2	11.6	10.6	**11.0**	**13.3**	**7.7**
29	10.3	10.4	11.0	11.9	12.0	12.1	12.8	14.6	15.7	18.4	19.5	19.4	20.5	23.9	23.5	22.7	19.6	19.3	14.4	9.2	9.9	8.5	8.5	8.2	**14.8**	**23.9**	**8.2**
30	7.3	6.5	7.3	7.6	8.1	8.5	8.8	8.7	8.9	8.5	8.4	8.9	10.5	12.2	11.8	12.0	13.0	14.1	15.0	14.1	10.1	8.2	5.4	3.9	**9.4**	**15.0**	**3.9**
31	3.6	3.6	3.4	3.7	5.3	4.7	6.5	5.0	8.9	8.4	10.3	11.2	11.9	---	8.8	12.8	12.7	10.3	10.9	9.7	11.9	13.5	12.7	12.1	**8.7**	**13.5**	**3.4**
MEAN	**9.6**	**10.0**	**9.4**	**9.3**	**9.2**	**8.8**	**8.7**	**9.0**	**10.0**	**11.6**	**12.3**	**11.8**	**11.7**	**11.8**	**12.2**	**12.7**	**12.4**	**12.6**	**12.1**	**11.5**	**10.7**	**10.4**	**10.2**	**9.7**	**10.7**		
MAX	**36.3**	**45.2**	**36.1**	**19.8**	**19.0**	**17.6**	**17.9**	**15.2**	**20.8**	**22.5**	**29.6**	**25.7**	**23.3**	**24.9**	**23.5**	**24.8**	**23.8**	**22.0**	**21.5**	**21.3**	**19.4**	**21.9**	**23.7**	**23.1**		**45.2**	
MIN	**1.1**	**1.0**	**1.3**	**1.7**	**1.6**	**2.0**	**2.1**	**2.2**	**2.1**	**1.7**	**1.6**	**3.0**	**1.7**	**1.5**	**4.8**	**5.1**	**2.4**	**5.4**	**3.3**	**3.5**	**3.0**	**3.0**	**2.4**	**1.8**			**1.0**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 662 DATA RECOVERY RATE = 89.0% DATA CAPTURE RATE = 87.1%

MONTHLY MEAN = 10.7 µg/m3

MAXIMUM PM2.5 = 45.2 µg/m3 DATE OF OCCURRENCE = 7/5 at 200 MAXIMUM DAILY MEAN = 20.4 µg/m3 DATE OF OCCURRENCE = 7/5

SECOND MAXIMUM PM2.5 = 36.3 µg/m3 DATE OF OCCURRENCE = 7/5 at 100 SECOND MAXIMUM DAILY MEAN = 16.2 µg/m3 DATE OF OCCURRENCE = 7/8

MINIMUM PM2.5 = 1.0 µg/m3 DATE OF OCCURRENCE = 7/13 at 200 MINUMUM DAILY MEAN = 4.2 µg/m3 DATE OF OCCURRENCE = 7/13

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

CSX AQ7 Modulair

HOURLY AVERAGES of PM2.5 in µg/m3 for AUGUST, 2024

Hr Beg Hr End Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	12.2	11.0	9.0	12.3	11.5	14.8	15.6	19.3	20.5	23.0	24.3	27.9	28.7	26.0	27.6	19.1	17.8	19.6	19.3	17.2	18.0	17.7	18.2	18.2	**18.7**	**28.7**	**9.0**
2	18.6	18.5	18.3	18.4	17.9	18.5	18.5	17.9	17.4	13.2	11.8	11.7	11.3	9.7	9.9	8.4	7.2	15.1	13.4	7.9	9.0	4.4	1.8	2.9	**12.5**	**18.6**	**1.8**
3	3.5	3.5	3.3	4.0	4.4	5.4	6.7	6.0	8.1	8.8	9.7	9.0	8.5	9.5	12.5	11.5	8.9	8.5	3.7	2.4	3.3	2.8	3.0	3.1	**6.2**	**12.5**	**2.4**
4	3.1	3.1	3.9	4.1	4.4	4.3	4.3	3.9	4.5	5.6	6.3	6.7	8.0	7.0	4.8	6.7	4.7	2.9	4.9	6.1	5.5	4.6	6.0	6.7	**5.0**	**8.0**	**2.9**
5	6.9	6.9	7.5	6.5	6.2	6.3	7.0	10.7	14.7	17.3	17.4	16.9	16.3	16.1	15.5	14.1	12.7	12.7	12.9	12.5	13.7	14.4	14.0	13.1	**12.1**	**17.4**	**6.2**
6	11.0	11.6	9.8	8.4	7.3	9.8	11.1	12.7	16.3	17.6	20.5	19.2	19.1	20.1	13.1	6.9	4.8	3.3	3.3	4.3	6.3	2.7	2.0	3.0	**10.1**	**20.5**	**2.0**
7	2.4	3.1	3.4	3.4	3.6	3.9	4.5	3.6	3.6	4.3	5.0	6.0	5.9	8.2	5.0	6.0	2.0	2.3	2.2	3.2	4.7	5.7	---	1.9	**4.0**	**8.2**	**1.9**
8	2.3	3.0	3.7	2.9	3.0	2.5	3.1	4.1	5.0	4.8	6.3	4.7	3.0	3.5	5.3	6.3	6.4	5.7	5.1	5.8	5.7	6.0	6.2	5.9	**4.5**	**6.4**	**2.3**
9	6.2	6.6	8.1	8.5	8.5	7.5	8.6	9.6	8.5	6.1	3.9	3.5	3.3	2.7	2.2	---	---	3.4	3.2	3.4	3.4	3.3	3.6	3.7	**5.3**	**9.6**	**2.2**
10	4.7	6.4	8.7	11.7	12.1	12.0	12.1	17.1	13.6	13.6	15.6	9.9	16.9	16.3	11.8	13.2	14.1	15.1	14.2	16.6	14.8	15.2	9.3	9.7	**12.6**	**17.1**	**4.7**
11	7.3	8.1	8.0	6.7	6.4	8.2	7.2	6.1	5.7	6.1	4.4	4.2	5.0	5.3	5.0	5.2	5.1	4.9	4.2	6.1	6.4	7.1	10.2	8.5	**6.3**	**10.2**	**4.2**
12	8.1	6.7	7.6	7.1	7.2	6.9	6.9	6.4	6.2	5.6	6.3	5.7	6.5	6.3	5.2	7.4	6.5	4.5	4.4	6.6	4.7	4.1	5.2	6.8	**6.2**	**8.1**	**4.1**
13	5.5	5.8	6.3	5.6	6.1	7.3	7.9	8.2	6.6	5.0	6.3	6.6	7.4	8.0	8.9	8.9	8.0	8.4	9.5	10.2	10.6	12.3	12.1	12.9	**8.1**	**12.9**	**5.0**
14	11.6	11.4	9.9	9.8	10.0	10.0	11.6	12.3	14.5	22.2	29.9	31.7	30.3	27.8	26.8	28.7	24.1	20.3	18.8	16.8	15.5	15.5	18.3	19.5	**18.6**	**31.7**	**9.8**
15	17.9	17.0	14.9	14.7	15.7	15.8	17.9	18.3	19.0	19.7	20.0	20.5	20.8	21.1	22.2	26.4	20.5	19.7	16.3	15.3	15.7	16.1	17.1	16.4	**18.2**	**26.4**	**14.7**
16	16.1	16.2	14.2	14.7	20.5	15.6	26.0	24.6	24.1	19.5	18.1	18.4	17.8	18.5	15.0	13.2	15.4	16.1	16.2	15.0	14.0	13.2	14.1	14.7	**17.1**	**26.0**	**13.2**
17	13.0	13.8	12.2	11.0	10.7	10.2	14.2	13.8	16.0	20.4	18.7	18.6	16.4	17.1	17.6	16.3	16.5	19.6	15.6	5.4	6.4	6.6	5.8	8.0	**13.4**	**20.4**	**5.4**
18	7.7	7.5	6.9	7.5	6.9	8.9	6.7	6.7	7.7	10.3	11.9	12.9	13.5	14.5	15.1	14.9	15.0	15.4	12.9	3.3	3.6	4.3	2.4	1.5	**9.0**	**15.4**	**1.5**
19	2.0	2.7	3.1	3.5	3.6	4.5	5.8	4.4	4.5	4.2	3.4	3.1	3.0	2.9	5.5	2.1	2.1	1.7	1.8	2.0	2.7	1.6	1.5	2.8	**3.1**	**5.8**	**1.5**
20	1.5	1.7	1.2	1.5	2.3	2.0	2.6	3.4	4.0	6.3	4.9	4.5	5.9	5.8	5.4	4.5	4.2	3.2	2.8	2.7	3.4	3.9	3.4	2.4	**3.4**	**6.3**	**1.2**
21	2.4	2.5	2.3	2.3	3.5	2.2	2.6	3.0	2.8	2.4	2.6	2.6	2.9	2.9	3.3	3.2	2.9	2.6	2.3	3.9	4.7	4.5	3.8	3.5	**2.9**	**4.7**	**2.2**
22	4.5	5.3	5.6	4.5	6.1	4.1	4.3	4.3	4.6	4.4	4.2	4.8	4.6	5.0	5.4	5.4	4.8	4.2	3.8	5.8	8.3	10.5	10.0	10.8	**5.6**	**10.8**	**3.8**
23	10.3	9.3	9.7	9.4	9.8	9.9	10.2	15.2	14.0	7.7	8.5	9.9	9.2	10.5	9.5	9.3	5.7	5.9	7.4	8.6	10.0	11.2	11.6	13.9	**9.8**	**15.2**	**5.7**
24	14.8	10.3	8.3	9.6	10.7	10.4	10.9	10.8	10.5	10.3	12.0	9.9	11.9	15.7	13.7	13.6	10.2	8.8	9.4	10.3	10.8	11.8	11.6	13.1	**11.2**	**15.7**	**8.3**
25	12.0	10.2	10.3	9.6	10.4	10.4	10.2	11.6	10.7	10.1	9.7	12.1	10.7	11.1	10.4	10.3	10.2	11.3	9.7	9.7	9.9	10.5	10.9	9.9	**10.4**	**12.1**	**9.6**
26	9.1	8.6	8.5	7.8	9.6	10.8	12.6	13.2	10.7	15.3	19.0	19.0	22.1	20.5	20.1	18.4	8.6	7.7	5.0	7.1	8.0	10.6	12.0	12.7	**12.3**	**22.1**	**5.0**
27	13.3	13.0	12.5	11.1	11.5	12.9	16.1	19.0	19.0	20.3	22.8	20.7	18.0	16.6	16.6	15.3	11.9	13.2	14.9	16.4	16.4	15.9	14.6	14.1	**15.6**	**22.8**	**11.1**
28	13.7	14.4	13.9	14.4	13.3	15.9	19.7	19.7	13.7	12.6	15.7	13.0	---	---	---	11.2	11.9	10.1	14.4	19.0	20.7	13.8	12.9	14.2	**14.6**	**20.7**	**10.1**
29	8.7	11.1	11.2	10.7	10.4	12.0	11.6	16.3	14.8	12.9	13.2	14.2	17.0	16.4	15.6	16.0	16.1	12.6	9.9	7.9	6.3	6.4	5.9	5.0	**11.7**	**17.0**	**5.0**
30	4.8	4.0	4.1	4.8	4.9	5.2	4.7	4.7	3.9	4.1	5.0	5.2	5.3	4.9	4.7	5.0	5.5	6.1	6.0	5.1	4.0	2.8	3.6	3.7	**4.6**	**6.1**	**2.8**
31	4.1	3.8	4.5	4.8	4.7	4.8	5.5	4.6	4.2	6.2	5.3	7.1	5.7	5.9	5.4	5.3	5.9	6.3	6.3	6.1	4.1	3.6	3.9	5.0	**5.1**	**7.1**	**3.6**
MEAN	**8.4**	**8.3**	**8.1**	**8.1**	**8.5**	**8.8**	**9.9**	**10.7**	**10.6**	**11.0**	**11.7**	**11.6**	**11.8**	**11.9**	**11.3**	**11.1**	**9.7**	**9.4**	**8.8**	**8.5**	**8.7**	**8.5**	**8.5**	**8.6**	**9.7**		
MAX	**18.6**	**18.5**	**18.3**	**18.4**	**20.5**	**18.5**	**26.0**	**24.6**	**24.1**	**23.0**	**29.9**	**31.7**	**30.3**	**27.8**	**27.6**	**28.7**	**24.1**	**20.3**	**19.3**	**19.0**	**20.7**	**17.7**	**18.3**	**19.5**		**31.7**	
MIN	**1.5**	**1.7**	**1.2**	**1.5**	**2.3**	**2.0**	**2.6**	**3.0**	**2.8**	**2.4**	**2.6**	**2.6**	**2.9**	**2.7**	**2.2**	**2.1**	**2.0**	**1.7**	**1.8**	**2.0**	**2.7**	**1.6**	**1.5**	**1.5**			**1.2**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 738 DATA RECOVERY RATE = 99.2% DATA CAPTURE RATE = 100.0%

MONTHLY MEAN = 9.7 µg/m3

MAXIMUM PM2.5 = 31.7 µg/m3 DATE OF OCCURRENCE = 8/14 at 1200 MAXIMUM DAILY MEAN = 18.7 µg/m3 DATE OF OCCURRENCE = 8/1

SECOND MAXIMUM PM2.5 = 30.3 µg/m3 DATE OF OCCURRENCE = 8/14 at 1300 SECOND MAXIMUM DAILY MEAN = 18.6 µg/m3 DATE OF OCCURRENCE = 8/14

MINIMUM PM2.5 = 1.2 µg/m3 DATE OF OCCURRENCE = 8/20 at 300 MINUMUM DAILY MEAN = 2.9 µg/m3 DATE OF OCCURRENCE = 8/21

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

CSX AQ7 Modulair

HOURLY AVERAGES of PM2.5 in µg/m3 for SEPTEMBER, 2024

Hr Beg Hr End Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	4.6	4.7	5.1	5.2	5.3	4.9	5.1	6.4	5.6	4.3	4.4	6.6	8.0	7.9	7.3	6.4	5.7	6.5	8.4	8.8	7.5	7.0	7.1	6.8	**6.2**	**8.8**	**4.3**
2	6.6	6.2	5.5	6.9	8.5	11.0	15.4	17.6	14.3	9.8	8.9	16.5	8.8	6.9	5.6	5.0	4.6	4.3	3.2	3.4	3.4	3.5	3.7	3.2	**7.6**	**17.6**	**3.2**
3	2.8	3.2	2.3	1.9	1.9	1.9	2.7	3.2	3.7	4.0	4.4	3.7	3.7	4.3	3.7	3.9	3.7	3.4	3.6	3.9	5.8	10.0	5.6	3.3	**3.7**	**10.0**	**1.9**
4	4.9	6.8	6.1	7.4	6.2	6.3	8.9	8.5	5.6	4.5	5.8	4.6	5.1	4.7	4.4	4.3	3.9	4.2	5.3	4.3	5.4	4.2	5.6	5.8	**5.5**	**8.9**	**3.9**
5	4.8	4.6	5.7	5.0	6.6	5.9	5.4	7.0	5.0	4.5	4.0	3.5	4.3	4.5	4.3	4.3	4.4	3.7	3.8	6.7	4.5	4.8	5.2	6.0	**4.9**	**7.0**	**3.5**
6	4.4	4.8	5.3	4.8	4.9	5.0	5.1	6.0	6.8	5.8	5.0	4.2	3.9	4.5	4.8	4.5	4.6	4.2	4.2	6.0	6.6	7.5	11.1	6.8	**5.4**	**11.1**	**3.9**
7	5.9	5.5	4.9	4.8	5.0	5.2	5.9	6.2	6.1	7.1	7.8	18.3	5.6	2.6	1.9	2.4	3.8	4.2	3.4	4.6	6.0	4.3	3.7	2.1	**5.3**	**18.3**	**1.9**
8	2.3	2.1	2.1	1.7	1.4	1.5	1.5	1.7	2.7	2.3	2.5	2.3	2.6	2.3	2.5	2.2	1.9	1.8	2.2	3.6	4.1	3.1	3.9	3.4	**2.4**	**4.1**	**1.4**
9	4.1	4.2	3.4	3.2	2.5	5.4	6.6	6.3	4.8	5.7	7.3	2.8	5.8	7.1	3.5	8.2	8.4	7.4	5.1	7.2	8.2	5.2	5.4	5.3	**5.5**	**8.4**	**2.5**
10	4.8	5.1	6.3	6.9	7.5	8.1	5.5	2.6	3.1	4.1	6.7	7.4	8.5	13.2	10.5	11.4	11.5	11.8	11.6	10.3	12.7	11.6	12.0	11.7	**8.5**	**13.2**	**2.6**
11	15.6	15.5	15.8	14.5	13.2	18.2	14.0	14.8	11.9	12.5	14.2	12.1	10.8	10.0	9.6	9.8	10.1	10.3	13.2	14.9	11.1	10.2	10.8	11.1	**12.6**	**18.2**	**9.6**
12	13.8	14.8	15.8	13.1	12.2	13.0	13.3	16.5	12.5	10.7	9.4	8.4	8.2	7.6	7.4	7.6	8.0	9.7	12.6	7.7	5.4	5.9	6.3	5.0	**10.2**	**16.5**	**5.0**
13	5.1	6.0	7.7	8.7	7.5	6.6	6.0	6.8	9.1	9.1	8.4	6.9	8.2	8.5	9.0	8.0	7.0	6.5	7.3	10.2	9.7	8.6	7.9	9.5	**7.8**	**10.2**	**5.1**
14	10.5	11.5	9.8	8.9	8.0	10.0	11.1	7.9	8.2	8.9	9.8	10.7	13.1	12.6	12.6	10.3	10.3	9.6	9.7	8.9	10.0	9.1	8.7	9.5	**9.9**	**13.1**	**7.9**
15	8.9	9.5	10.5	10.3	11.6	12.4	13.4	13.6	13.6	13.0	10.6	10.1	9.1	9.4	9.2	9.4	10.6	10.7	12.0	9.0	6.5	5.9	5.1	5.0	**9.9**	**13.6**	**5.0**
16	5.6	5.1	5.4	5.6	5.9	5.7	5.5	6.9	4.8	4.6	5.2	5.2	5.7	5.4	5.5	6.0	5.9	5.9	6.0	5.6	6.8	7.2	6.6	6.8	**5.7**	**7.2**	**4.6**
17	7.0	7.3	6.7	6.8	7.1	7.3	7.4	7.8	10.0	8.9	9.4	9.5	10.1	9.8	10.8	7.7	6.6	7.4	7.8	7.3	7.3	7.4	8.3	8.2	**8.0**	**10.8**	**6.6**
18	7.4	5.8	5.6	4.6	4.3	4.3	4.7	5.5	6.1	7.4	8.3	9.0	8.6	7.7	8.5	7.6	8.1	6.4	4.9	4.8	5.5	6.2	6.3	6.4	**6.4**	**9.0**	**4.3**
19	6.3	6.8	7.6	7.6	7.2	7.0	7.6	9.7	7.7	7.3	7.4	6.1	6.0	6.9	8.7	10.8	9.8	12.2	12.6	10.4	11.6	10.8	10.5	12.9	**8.8**	**12.9**	**6.0**
20	13.7	16.7	13.8	15.2	13.3	13.8	13.3	9.3	3.7	3.2	3.3	3.9	5.4	7.9	9.7	13.1	13.6	14.5	11.6	12.9	13.8	15.0	4.0	2.8	**10.3**	**16.7**	**2.8**
21	4.6	4.7	3.9	3.8	3.3	3.3	3.9	3.9	4.3	4.5	6.3	6.2	10.5	5.8	9.1	7.3	6.6	6.9	7.2	8.2	10.1	13.5	12.8	12.5	**6.8**	**13.5**	**3.3**
22	10.2	11.2	4.0	3.1	3.0	3.0	3.2	2.6	2.4	2.6	2.8	3.8	4.5	5.2	6.1	6.6	7.6	8.3	9.1	8.5	9.9	8.9	5.7	4.7	**5.7**	**11.2**	**2.4**
23	4.7	4.8	4.7	4.1	4.3	4.3	4.4	4.8	4.5	4.4	4.6	4.4	4.7	5.1	5.5	5.8	5.6	5.5	4.4	3.8	3.7	3.4	3.2	3.1	**4.4**	**5.8**	**3.1**
24	3.1	4.8	2.9	2.8	2.9	3.0	3.0	3.0	3.0	3.3	3.6	3.9	4.3	4.2	5.7	5.3	4.1	3.8	4.3	3.8	3.3	3.2	2.8	2.7	**3.6**	**5.7**	**2.7**
25	2.3	2.1	2.0	2.2	2.4	2.3	1.8	1.6	1.6	2.1	2.2	2.5	2.6	2.4	2.7	2.9	2.7	2.6	3.0	2.2	2.4	2.8	3.8	4.7	**2.4**	**4.7**	**1.6**
26	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
27	---	---	---	---	---	---	---	2.9	2.7	2.5	2.6	4.1	3.9	3.9	6.8	4.2	3.8	4.0	4.2	4.3	4.2	3.0	2.6	---	**---**	**---**	**---**
28	---	---	---	---	---	---	---	---	---	---	7.3	7.8	9.3	11.0	11.2	10.3	9.8	8.3	7.6	7.6	7.3	9.3	10.5	8.9	**---**	**---**	**---**
29	7.4	6.7	5.3	4.5	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
30	---	---	---	---	---	---	---	6.6	5.4	4.8	4.9	5.0	5.6	6.1	7.0	9.2	9.8	---	---	---	---	---	---	---	**---**	**---**	**---**
MEAN	**6.6**	**6.9**	**6.5**	**6.3**	**6.2**	**6.8**	**7.0**	**7.0**	**6.3**	**6.0**	**6.3**	**6.8**	**6.7**	**6.7**	**6.9**	**6.9**	**6.9**	**6.8**	**7.0**	**7.0**	**7.1**	**7.1**	**6.6**	**6.5**	**6.7**		
MAX	**15.6**	**16.7**	**15.8**	**15.2**	**13.3**	**18.2**	**15.4**	**17.6**	**14.3**	**13.0**	**14.2**	**18.3**	**13.1**	**13.2**	**12.6**	**13.1**	**13.6**	**14.5**	**13.2**	**14.9**	**13.8**	**15.0**	**12.8**	**12.9**		**18.3**	
MIN	**2.3**	**2.1**	**2.0**	**1.7**	**1.4**	**1.5**	**1.5**	**1.6**	**1.6**	**2.1**	**2.2**	**2.3**	**2.6**	**2.3**	**1.9**	**2.2**	**1.9**	**1.8**	**2.2**	**2.2**	**2.4**	**2.8**	**2.6**	**2.1**			**1.4**

POSSIBLE NUMBER OF OBSERVATIONS = 720 ACTUAL NUMBER OF OBSERVATIONS = 644 DATA RECOVERY RATE = 89.4% DATA CAPTURE RATE = 83.3%

MONTHLY MEAN = 6.7 µg/m3

MAXIMUM PM2.5 = 18.3 µg/m3 DATE OF OCCURRENCE = 9/7 at 1200 MAXIMUM DAILY MEAN = 12.6 µg/m3 DATE OF OCCURRENCE = 9/11

SECOND MAXIMUM PM2.5 = 18.2 µg/m3 DATE OF OCCURRENCE = 9/11 at 600 SECOND MAXIMUM DAILY MEAN = 10.3 µg/m3 DATE OF OCCURRENCE = 9/20

MINIMUM PM2.5 = 1.4 µg/m3 DATE OF OCCURRENCE = 9/8 at 500 MINUMUM DAILY MEAN = 2.4 µg/m3 DATE OF OCCURRENCE = 9/8

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

CSX AQ8A Modulair

HOURLY AVERAGES of PM10 in µg/m3 for JULY, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	10.8	12.7	8.7	7.1	5.3	6.1	6.1	7.1	7.1	8.0	6.3	10.0	12.1	10.4	7.1	8.8	9.9	10.8	17.9	17.2	12.7	16.1	19.2	10.3	**10.3**	**19.2**	**5.3**
2	12.7	11.2	15.8	10.7	12.6	13.2	13.1	17.5	15.2	18.1	19.3	30.0	23.1	28.4	20.9	16.2	27.1	20.6	20.2	15.9	18.3	18.3	18.2	11.4	**17.8**	**30.0**	**10.7**
3	10.9	13.7	14.2	13.9	17.3	23.6	18.8	17.7	17.3	17.9	24.5	18.6	17.4	21.6	37.8	43.0	46.0	41.7	42.1	33.3	22.2	24.5	20.5	19.9	**24.1**	**46.0**	**10.9**
4	23.5	18.8	23.7	21.6	19.7	26.1	21.3	19.6	26.7	26.5	37.2	38.0	32.9	37.0	38.0	32.2	35.6	36.2	28.7	24.2	23.4	26.7	39.0	37.4	**28.9**	**39.0**	**18.8**
5	46.3	52.2	54.5	33.6	24.2	24.9	22.7	20.7	26.8	30.4	34.2	46.2	28.6	40.3	40.2	36.5	37.5	44.4	34.4	33.5	32.3	33.7	36.9	34.5	**35.4**	**54.5**	**20.7**
6	31.2	31.3	30.3	24.3	22.1	18.9	20.7	19.7	23.2	27.6	15.8	16.6	13.6	13.3	12.6	15.0	25.5	23.9	20.5	27.2	25.7	25.0	28.8	26.0	**22.5**	**31.3**	**12.6**
7	22.0	16.7	19.2	17.8	22.9	29.8	16.5	24.5	16.9	15.5	18.4	20.7	16.9	44.3	52.6	48.5	26.0	24.4	20.2	26.3	21.0	24.9	64.7	54.3	**27.7**	**64.7**	**15.5**
8	43.8	32.4	21.7	29.6	34.4	51.5	43.4	28.1	38.0	41.2	51.3	57.6	48.5	61.3	66.9	50.2	67.5	55.2	29.8	23.2	21.3	21.4	23.1	25.3	**40.3**	**67.5**	**21.3**
9	21.5	18.0	18.7	17.3	18.5	21.1	22.0	29.6	23.7	28.4	39.8	55.3	50.3	97.2	74.8	19.6	12.5	21.9	33.7	24.5	20.8	20.1	19.9	18.8	**30.3**	**97.2**	**12.5**
10	18.7	19.0	18.7	18.7	18.9	16.7	16.4	16.6	17.6	20.5	19.6	44.4	55.7	39.9	39.4	58.8	49.9	67.4	18.3	17.7	20.8	20.4	14.3	11.2	**27.5**	**67.4**	**11.2**
11	11.0	11.0	9.5	9.2	8.0	8.1	8.8	7.8	5.1	6.6	5.5	5.3	7.8	7.4	7.9	10.5	10.6	22.0	13.0	16.3	10.0	13.7	11.2	22.2	**10.4**	**22.2**	**5.1**
12	19.8	14.9	19.7	15.4	14.6	16.3	18.2	19.3	20.4	22.1	19.1	17.1	14.2	19.9	17.2	13.0	14.6	14.9	10.4	13.4	6.7	6.4	6.3	5.8	**15.0**	**22.1**	**5.8**
13	4.2	5.5	6.8	4.9	6.9	6.6	13.3	9.0	9.8	19.6	14.2	15.3	19.8	20.8	20.1	14.9	22.1	33.9	18.1	10.1	8.6	7.8	8.1	9.3	**12.9**	**33.9**	**4.2**
14	7.2	7.6	7.8	7.9	9.2	14.6	16.9	12.4	12.9	13.7	16.7	20.7	23.1	36.5	29.4	19.2	20.3	17.9	21.6	23.4	20.9	20.4	24.5	26.2	**18.0**	**36.5**	**7.2**
15	21.4	21.1	21.7	26.0	30.5	27.0	26.6	40.0	30.5	27.3	29.7	27.6	25.5	20.5	22.8	21.5	40.4	29.6	26.7	26.0	23.7	25.0	23.9	31.3	**26.9**	**40.4**	**20.5**
16	18.8	21.0	25.9	22.5	25.0	34.1	35.9	34.5	39.8	44.5	32.7	33.3	30.3	31.4	42.9	37.2	30.3	31.7	27.6	26.6	24.9	---	---	---	**31.0**	**44.5**	**18.8**
17	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
18	---	---	---	---	---	---	---	---	---	19.3	19.6	20.8	19.9	20.3	21.3	25.0	23.9	23.4	21.7	21.9	21.6	23.3	21.8	22.4	**---**	**---**	**---**
19	27.9	27.2	26.0	24.5	21.0	17.7	18.3	20.4	19.4	17.8	21.9	15.9	17.3	18.5	22.1	18.8	17.9	30.0	31.8	19.8	21.2	26.8	26.5	28.4	**22.4**	**31.8**	**15.9**
20	19.4	17.8	17.9	19.4	19.9	20.6	29.6	26.2	21.5	19.7	18.6	21.1	17.5	17.2	18.5	20.2	20.0	16.4	17.4	16.8	16.4	20.9	20.6	18.7	**19.7**	**29.6**	**16.4**
21	18.7	18.0	18.4	19.9	19.9	21.0	19.4	17.1	19.4	20.3	26.5	23.5	24.6	24.2	24.8	22.9	20.6	23.9	17.9	19.7	20.9	19.3	17.6	15.7	**20.6**	**26.5**	**15.7**
22	17.6	16.9	16.3	15.3	20.4	23.0	19.7	28.7	27.9	20.9	21.3	28.1	21.8	18.4	17.4	14.7	6.9	15.6	16.1	16.5	12.4	14.7	13.6	11.2	**18.1**	**28.7**	**6.9**
23	9.5	10.5	9.9	9.3	9.4	9.8	10.3	12.0	14.0	13.4	16.3	17.3	16.8	19.4	18.0	18.5	22.1	24.7	23.8	22.6	21.7	17.7	12.3	10.0	**15.4**	**24.7**	**9.3**
24	8.6	9.4	8.7	9.2	8.3	8.5	11.3	11.0	11.6	13.7	13.8	23.8	29.6	29.5	25.5	25.2	28.0	35.3	26.3	13.4	10.7	12.2	11.8	12.6	**16.6**	**35.3**	**8.3**
25	13.6	13.9	16.9	13.6	13.9	15.9	20.1	19.7	15.7	26.0	26.9	26.1	25.8	26.6	31.2	36.0	30.8	39.6	35.1	27.4	25.6	23.2	24.7	27.5	**24.0**	**39.6**	**13.6**
26	30.6	31.9	25.8	20.7	17.9	19.1	14.7	13.4	17.3	14.3	18.0	27.0	33.2	35.9	26.3	29.6	30.2	25.7	24.6	14.1	15.9	17.8	14.9	13.4	**22.2**	**35.9**	**13.4**
27	13.9	15.6	16.0	15.9	21.3	17.0	21.6	15.5	15.4	14.2	15.5	18.0	14.9	16.2	16.4	18.5	13.8	16.8	19.3	20.6	16.1	14.3	19.5	22.2	**17.0**	**22.2**	**13.8**
28	24.7	36.6	23.1	18.0	15.4	22.5	33.4	20.4	18.1	16.6	15.2	17.7	22.1	23.9	24.1	31.5	29.8	28.6	22.7	21.4	22.6	21.1	19.1	19.6	**22.8**	**36.6**	**15.2**
29	18.5	18.7	23.8	25.4	30.7	35.9	32.6	25.6	26.2	37.9	40.5	40.1	32.4	41.7	39.1	40.1	32.6	31.7	27.9	20.0	21.6	18.3	17.6	14.7	**28.9**	**41.7**	**14.7**
30	15.4	13.9	15.4	15.6	14.9	15.1	16.1	16.6	15.3	16.9	17.4	20.3	21.0	21.1	26.3	24.7	21.2	22.5	25.4	25.3	19.6	17.4	11.9	11.3	**18.4**	**26.3**	**11.3**
31	9.8	9.1	9.4	11.2	19.2	20.0	14.0	11.7	13.9	16.1	20.7	29.2	18.3	---	20.0	22.7	24.1	16.9	17.3	16.9	19.6	20.4	19.8	22.3	**17.5**	**29.2**	**9.1**
MEAN	**19.0**	**18.8**	**18.8**	**17.2**	**18.0**	**20.2**	**20.1**	**19.4**	**19.5**	**21.2**	**22.6**	**26.2**	**24.5**	**29.1**	**28.7**	**26.5**	**26.6**	**28.3**	**23.7**	**21.2**	**19.3**	**19.7**	**21.0**	**20.5**	**22.1**		
MAX	**46.3**	**52.2**	**54.5**	**33.6**	**34.4**	**51.5**	**43.4**	**40.0**	**39.8**	**44.5**	**51.3**	**57.6**	**55.7**	**97.2**	**74.8**	**58.8**	**67.5**	**67.4**	**42.1**	**33.5**	**32.3**	**33.7**	**64.7**	**54.3**		**97.2**	
MIN	**4.2**	**5.5**	**6.8**	**4.9**	**5.3**	**6.1**	**6.1**	**7.1**	**5.1**	**6.6**	**5.5**	**5.3**	**7.8**	**7.4**	**7.1**	**8.8**	**6.9**	**10.8**	**10.4**	**10.1**	**6.7**	**6.4**	**6.3**	**5.8**			**4.2**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 707 DATA RECOVERY RATE = 95.0% DATA CAPTURE RATE = 93.5%

MONTHLY MEAN = 22.1 µg/m3

MAXIMUM PM10 = 97.2 µg/m3 DATE OF OCCURRENCE = 7/9 at 1400 MAXIMUM DAILY MEAN = 40.3 µg/m3 DATE OF OCCURRENCE = 7/8

SECOND MAXIMUM PM10 = 74.8 µg/m3 DATE OF OCCURRENCE = 7/9 at 1500 SECOND MAXIMUM DAILY MEAN = 35.4 µg/m3 DATE OF OCCURRENCE = 7/5

MINIMUM PM10 = 4.2 µg/m3 DATE OF OCCURRENCE = 7/13 at 100 MINUMUM DAILY MEAN = 10.3 µg/m3 DATE OF OCCURRENCE = 7/1

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

CSX AQ8A Modulair

HOURLY AVERAGES of PM10 in µg/m3 for AUGUST, 2024

Hr Beg Hr End Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	22.9	20.5	18.9	20.2	22.2	24.9	26.0	35.7	41.2	36.3	---	51.2	42.3	38.9	36.1	---	---	28.5	29.9	26.5	28.9	30.3	28.0	27.6	**30.3**	**51.2**	**18.9**
2	29.1	29.5	27.8	33.5	36.4	38.6	30.4	27.8	35.9	30.2	33.9	27.7	---	---	---	---	---	39.4	26.5	25.4	20.9	19.6	8.3	9.4	**27.9**	**39.4**	**8.3**
3	14.5	12.9	15.0	13.8	15.6	15.5	16.0	14.7	16.2	15.3	23.9	17.9	15.3	22.0	23.9	28.5	16.4	18.9	13.9	9.1	7.0	9.8	11.3	12.2	**15.8**	**28.5**	**7.0**
4	12.3	13.1	15.4	18.3	15.9	17.9	15.8	13.3	11.4	11.9	10.7	12.0	12.8	11.0	7.4	9.9	9.1	5.8	7.7	11.4	13.1	9.8	11.9	17.0	**12.3**	**18.3**	**5.8**
5	14.0	14.7	15.5	16.0	18.8	21.3	18.7	19.2	26.5	49.9	42.4	42.4	65.1	54.3	48.1	33.9	24.2	19.6	19.5	32.1	23.4	18.5	20.3	18.6	**28.2**	**65.1**	**14.0**
6	19.8	16.0	17.7	16.2	17.9	19.0	19.9	21.4	27.7	35.7	39.0	34.3	33.6	49.4	48.0	45.2	29.9	18.2	8.7	14.5	32.0	10.9	8.4	13.0	**24.9**	**49.4**	**8.4**
7	13.9	9.9	9.2	13.9	11.6	14.2	20.2	13.6	16.5	21.2	31.6	29.1	42.6	30.0	15.8	29.2	10.0	13.5	11.4	10.8	14.6	17.7	12.2	7.8	**17.5**	**42.6**	**7.8**
8	9.0	9.9	10.6	11.5	16.8	15.3	10.4	15.1	17.4	16.2	20.1	14.7	19.5	19.1	28.0	34.2	40.2	37.7	30.6	48.7	58.1	58.6	60.4	54.1	**27.3**	**60.4**	**9.0**
9	64.8	53.5	36.8	39.9	35.5	31.1	27.1	30.6	31.8	21.6	11.0	7.3	6.7	6.5	4.2	7.0	5.8	8.6	10.1	11.3	10.7	12.7	12.7	12.7	**20.8**	**64.8**	**4.2**
10	13.6	14.1	17.3	19.8	20.3	21.2	22.4	25.7	23.0	24.9	25.6	17.7	19.3	17.9	21.0	19.7	19.4	24.4	22.2	28.6	22.6	23.9	17.6	17.1	**20.8**	**28.6**	**13.6**
11	14.7	24.9	14.0	18.7	14.5	18.2	18.1	14.5	13.7	14.9	13.7	9.3	10.8	14.0	11.3	12.7	15.6	12.8	11.4	19.1	16.8	14.7	23.9	18.6	**15.5**	**24.9**	**9.3**
12	15.4	12.8	16.2	20.5	20.0	15.3	18.7	16.8	18.0	20.3	13.9	14.4	12.1	16.5	10.8	14.8	14.1	11.5	8.9	13.1	12.3	10.7	11.5	12.9	**14.6**	**20.5**	**8.9**
13	14.7	15.8	13.8	12.4	12.8	22.4	24.7	27.3	15.7	14.5	23.8	21.5	29.5	21.1	20.2	15.4	13.5	15.8	24.4	16.6	20.4	34.3	37.7	29.4	**20.7**	**37.7**	**12.4**
14	17.5	46.8	16.7	29.5	20.0	41.0	30.4	30.1	25.2	38.1	48.0	48.7	46.2	51.1	47.6	48.8	34.6	41.0	32.9	27.6	35.4	26.0	28.4	26.2	**34.9**	**51.1**	**16.7**
15	27.5	24.1	23.7	22.6	22.5	22.9	33.4	32.0	37.3	31.2	33.5	30.8	32.9	34.4	31.1	37.8	33.2	33.4	28.5	25.8	23.4	30.7	27.2	---	**29.6**	**37.8**	**22.5**
16	36.3	44.9	24.8	22.6	25.3	79.6	78.1	66.2	70.1	32.6	40.3	34.1	34.9	39.1	37.0	31.6	34.2	31.6	28.1	24.4	21.4	26.3	23.4	23.9	**38.0**	**79.6**	**21.4**
17	20.8	19.8	20.3	18.3	16.3	20.2	33.8	20.6	24.5	26.8	28.4	25.5	25.2	26.7	26.7	29.2	30.2	31.0	22.3	10.8	10.4	13.6	14.3	17.1	**22.2**	**33.8**	**10.4**
18	21.7	22.2	19.1	16.7	14.5	16.6	12.1	12.2	15.8	15.7	19.6	19.9	20.1	22.9	23.4	24.3	22.3	23.0	19.4	9.5	18.5	21.8	20.6	12.9	**18.5**	**24.3**	**9.5**
19	9.5	9.2	12.7	17.2	14.9	13.2	15.1	12.9	11.7	9.9	7.4	5.9	6.5	5.9	7.0	8.8	4.4	4.3	6.8	6.5	5.2	4.5	6.1	5.4	**8.8**	**17.2**	**4.3**
20	4.7	6.1	5.7	7.2	4.5	10.8	15.3	14.2	24.1	18.7	31.8	41.9	22.8	29.3	18.9	13.5	11.3	10.1	15.2	8.9	13.0	15.6	7.4	7.1	**14.9**	**41.9**	**4.5**
21	6.7	6.5	8.5	6.5	6.8	7.3	9.1	11.2	15.0	11.0	9.2	20.1	7.3	9.4	11.3	7.8	5.3	6.0	8.6	10.9	12.3	9.9	13.3	12.8	**9.7**	**20.1**	**5.3**
22	11.0	16.4	9.5	12.4	9.4	13.6	13.8	17.6	21.9	18.2	16.9	16.7	15.4	21.8	16.9	36.3	17.8	20.5	15.0	---	34.2	37.2	---	33.2	**19.4**	**37.2**	**9.4**
23	33.6	124.3	34.4	18.9	31.5	32.1	40.6	35.3	14.2	14.9	22.8	24.3	37.6	38.0	26.5	39.8	21.7	19.6	13.5	23.4	16.6	20.0	15.9	24.4	**30.2**	**124.3**	**13.5**
24	21.1	13.9	14.6	14.4	17.9	18.9	15.1	15.9	18.8	18.4	18.4	22.2	22.6	36.7	26.9	36.7	45.1	20.2	14.7	18.6	19.6	16.0	19.7	16.3	**20.9**	**45.1**	**13.9**
25	17.7	15.9	13.4	13.6	16.5	14.0	20.8	18.1	16.7	17.3	14.1	21.8	25.5	18.7	24.9	31.1	40.4	18.4	15.9	17.2	23.5	15.3	14.9	14.5	**19.2**	**40.4**	**13.4**
26	12.9	15.2	12.8	13.4	14.5	13.7	30.1	32.9	25.9	27.8	54.4	58.1	46.1	53.5	38.9	34.6	---	---	---	---	---	---	---	---	**---**	**---**	**---**
27	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
28	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
29	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
30	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
31	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
MEAN	**19.2**	**23.6**	**17.1**	**18.0**	**18.2**	**22.3**	**23.7**	**22.9**	**23.7**	**22.8**	**25.4**	**25.8**	**26.1**	**27.5**	**24.5**	**26.3**	**---**	**20.6**	**17.8**	**18.8**	**20.6**	**20.3**	**19.0**	**18.5**	**21.8**		
MAX	**64.8**	**124.3**	**36.8**	**39.9**	**36.4**	**79.6**	**78.1**	**66.2**	**70.1**	**49.9**	**54.4**	**58.1**	**65.1**	**54.3**	**48.1**	**48.8**	**---**	**41.0**	**32.9**	**48.7**	**58.1**	**58.6**	**60.4**	**54.1**		**124.3**	
MIN	**4.7**	**6.1**	**5.7**	**6.5**	**4.5**	**7.3**	**9.1**	**11.2**	**11.4**	**9.9**	**7.4**	**5.9**	**6.5**	**5.9**	**4.2**	**7.0**	**---**	**4.3**	**6.8**	**6.5**	**5.2**	**4.5**	**6.1**	**5.4**			**4.2**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 605 DATA RECOVERY RATE = 81.3% DATA CAPTURE RATE = 80.6%

MONTHLY MEAN = 21.8 µg/m3

MAXIMUM PM10 = 124.3 µg/m3 DATE OF OCCURRENCE = 8/23 at 200 MAXIMUM DAILY MEAN = 38.0 µg/m3 DATE OF OCCURRENCE = 8/16

SECOND MAXIMUM PM10 = 79.6 µg/m3 DATE OF OCCURRENCE = 8/16 at 600 SECOND MAXIMUM DAILY MEAN = 34.9 µg/m3 DATE OF OCCURRENCE = 8/14

MINIMUM PM10 = 4.2 µg/m3 DATE OF OCCURRENCE = 8/9 at 1500 MINUMUM DAILY MEAN = 8.8 µg/m3 DATE OF OCCURRENCE = 8/19

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

CSX AQ8A Modulair

HOURLY AVERAGES of PM10 in µg/m3 for SEPTEMBER, 2024

Hr Beg Hr End Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
2	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
3	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
4	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
5	---	---	---	---	---	---	---	---	---	18.6	16.7	16.9	16.6	16.3	20.0	17.2	21.5	17.1	15.8	23.7	21.1	26.6	28.4	35.0	**---**	**---**	**---**
6	39.3	40.3	43.9	51.9	46.3	69.3	73.0	52.4	32.1	22.7	22.9	17.8	15.9	18.9	21.8	14.8	19.0	17.5	17.3	19.5	21.5	18.9	23.6	16.8	**30.7**	**73.0**	**14.8**
7	17.5	19.5	18.8	21.1	29.5	26.6	18.4	17.0	16.1	15.4	15.1	49.2	19.7	7.5	7.4	9.5	8.2	9.7	9.6	11.5	9.6	13.9	10.7	7.5	**16.2**	**49.2**	**7.4**
8	6.4	5.1	4.6	5.1	4.5	4.5	7.3	7.3	7.8	7.8	6.6	15.1	5.8	9.5	7.2	5.2	9.1	9.0	7.6	10.8	8.2	6.6	19.2	7.2	**7.8**	**19.2**	**4.5**
9	10.6	7.0	12.9	12.1	13.8	22.3	35.6	22.2	14.9	13.0	8.5	9.1	11.5	11.8	13.4	7.6	13.4	17.6	14.5	13.3	13.9	11.5	17.5	17.0	**14.4**	**35.6**	**7.0**
10	9.8	10.7	16.2	19.8	16.9	28.5	14.5	15.5	16.2	18.0	22.8	25.8	34.5	28.6	23.0	16.1	17.9	38.8	45.2	37.9	23.4	33.0	38.7	---	**24.0**	**45.2**	**9.8**
11	67.8	41.6	25.3	33.6	43.0	40.7	66.0	28.4	32.9	25.8	32.3	29.8	34.1	31.7	24.5	29.0	38.1	48.5	37.5	39.5	34.0	19.1	26.5	52.5	**36.8**	**67.8**	**19.1**
12	67.9	77.1	22.1	28.4	30.0	61.0	47.0	42.1	29.5	28.3	24.9	21.7	41.9	37.1	33.6	31.9	18.0	40.8	51.6	53.6	31.9	25.5	17.4	23.0	**36.9**	**77.1**	**17.4**
13	18.2	22.1	22.6	28.8	25.5	26.6	22.7	28.2	27.6	32.9	32.3	15.4	27.8	25.8	18.5	22.5	14.5	22.3	24.4	56.1	33.4	29.6	44.6	37.9	**27.5**	**56.1**	**14.5**
14	24.8	24.2	25.1	27.4	26.4	25.0	26.1	21.9	18.7	22.5	26.9	25.8	36.7	29.6	29.5	23.2	30.5	29.0	27.3	26.0	21.8	22.8	19.8	19.2	**25.4**	**36.7**	**18.7**
15	55.0	27.8	17.2	18.6	19.2	20.6	23.2	23.3	26.7	24.6	20.7	17.6	18.1	22.4	23.9	31.0	29.4	25.5	26.5	26.8	25.7	25.7	25.7	36.1	**25.5**	**55.0**	**17.2**
16	34.3	27.5	27.5	24.6	24.8	21.5	27.4	29.8	28.5	33.0	40.2	25.5	29.5	34.3	33.2	38.1	44.2	52.4	41.7	53.1	43.5	45.9	38.5	33.8	**34.7**	**53.1**	**21.5**
17	32.6	41.7	39.5	42.9	44.0	46.9	50.5	48.4	51.6	47.2	52.1	41.6	48.2	44.4	43.8	31.1	30.1	37.7	33.8	37.6	30.6	29.5	28.1	29.4	**40.1**	**52.1**	**28.1**
18	25.3	22.0	24.5	13.7	9.7	11.4	14.0	18.2	22.0	24.1	16.5	20.3	21.7	20.0	22.9	24.9	24.6	20.8	18.6	19.4	24.3	25.9	24.8	24.4	**20.6**	**25.9**	**9.7**
19	27.6	25.1	24.7	25.9	27.9	26.1	26.9	25.2	26.3	23.4	18.4	19.0	16.4	19.0	16.0	21.7	41.0	25.6	59.4	30.0	84.3	26.1	20.8	22.7	**28.3**	**84.3**	**16.0**
20	30.8	32.6	21.6	21.8	52.0	31.5	31.9	39.4	20.9	15.5	11.6	14.1	17.5	29.4	28.2	29.6	31.9	26.4	34.5	33.7	26.1	26.6	13.6	22.4	**26.8**	**52.0**	**11.6**
21	9.5	10.4	11.2	13.2	11.3	17.6	21.0	13.5	14.2	12.1	15.8	17.8	25.4	19.3	22.5	27.4	21.0	19.1	14.1	24.0	22.5	47.5	37.6	28.8	**19.9**	**47.5**	**9.5**
22	28.3	62.8	17.3	15.5	16.6	8.1	18.8	21.1	16.0	11.4	14.2	11.1	12.0	13.4	19.1	18.1	12.7	18.9	17.9	20.2	17.9	19.3	17.3	22.1	**18.8**	**62.8**	**8.1**
23	29.6	28.9	31.5	28.7	31.7	32.6	30.8	55.0	45.3	39.1	34.0	27.4	30.5	23.9	24.6	36.3	35.1	32.0	29.5	33.9	32.3	38.9	34.4	38.8	**33.5**	**55.0**	**23.9**
24	31.0	25.3	27.9	27.5	27.4	32.9	35.4	29.8	36.7	33.9	32.8	30.9	25.5	31.1	37.9	37.0	32.9	32.7	28.9	26.8	24.6	22.0	28.4	28.2	**30.3**	**37.9**	**22.0**
25	23.2	25.5	26.9	33.9	32.8	26.8	16.9	14.8	16.7	18.3	25.7	25.1	22.4	16.1	13.9	18.8	25.7	18.2	22.6	35.9	26.3	38.1	42.0	41.4	**25.3**	**42.0**	**13.9**
26	46.2	44.0	41.3	43.0	48.9	49.9	42.5	33.9	30.6	30.5	25.1	21.4	15.4	16.9	10.1	8.6	10.5	14.6	18.2	18.2	27.9	12.7	17.1	18.4	**26.9**	**49.9**	**8.6**
27	21.1	18.1	26.9	19.8	32.4	41.2	92.1	6.3	5.9	7.5	8.5	18.0	15.7	19.0	18.0	16.1	15.0	19.8	17.9	15.5	20.9	13.2	9.3	11.7	**20.4**	**92.1**	**5.9**
28	13.9	16.0	16.2	15.3	17.6	19.6	11.5	18.3	23.7	26.7	36.5	24.0	19.6	19.3	33.2	29.7	20.3	17.9	14.1	14.2	12.3	13.8	15.0	15.4	**19.3**	**36.5**	**11.5**
29	18.2	18.9	17.4	12.7	11.0	13.6	17.8	20.9	20.2	13.2	14.4	15.8	16.2	18.0	14.7	12.3	9.7	8.3	12.9	14.3	13.5	11.2	11.5	12.3	**14.5**	**20.9**	**8.3**
30	13.4	11.5	11.6	13.2	21.1	27.9	24.2	20.0	17.1	13.2	15.0	12.0	14.9	14.1	13.3	18.4	19.2	19.7	18.6	18.7	21.2	21.8	19.7	15.8	**17.3**	**27.9**	**11.5**
MEAN	**28.1**	**27.4**	**23.0**	**23.9**	**26.6**	**29.3**	**31.8**	**26.1**	**23.9**	**22.3**	**22.7**	**21.9**	**22.8**	**22.2**	**22.1**	**22.2**	**22.8**	**24.6**	**25.4**	**27.5**	**25.9**	**24.1**	**24.2**	**24.7**	**24.8**		
MAX	**67.9**	**77.1**	**43.9**	**51.9**	**52.0**	**69.3**	**92.1**	**55.0**	**51.6**	**47.2**	**52.1**	**49.2**	**48.2**	**44.4**	**43.8**	**38.1**	**44.2**	**52.4**	**59.4**	**56.1**	**84.3**	**47.5**	**44.6**	**52.5**		**92.1**	
MIN	**6.4**	**5.1**	**4.6**	**5.1**	**4.5**	**4.5**	**7.3**	**6.3**	**5.9**	**7.5**	**6.6**	**9.1**	**5.8**	**7.5**	**7.2**	**5.2**	**8.2**	**8.3**	**7.6**	**10.8**	**8.2**	**6.6**	**9.3**	**7.2**			**4.5**

POSSIBLE NUMBER OF OBSERVATIONS = 720 ACTUAL NUMBER OF OBSERVATIONS = 614 DATA RECOVERY RATE = 85.3% DATA CAPTURE RATE = 83.3%

MONTHLY MEAN = 24.8 µg/m3

MAXIMUM PM10 = 92.1 µg/m3 DATE OF OCCURRENCE = 9/27 at 700 MAXIMUM DAILY MEAN = 40.1 µg/m3 DATE OF OCCURRENCE = 9/17

SECOND MAXIMUM PM10 = 84.3 µg/m3 DATE OF OCCURRENCE = 9/19 at 2100 SECOND MAXIMUM DAILY MEAN = 36.9 µg/m3 DATE OF OCCURRENCE = 9/12

MINIMUM PM10 = 4.5 µg/m3 DATE OF OCCURRENCE = 9/8 at 500 MINUMUM DAILY MEAN = 7.8 µg/m3 DATE OF OCCURRENCE = 9/8

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

CSX AQ8A Modulair

HOURLY AVERAGES of PM2.5 in µg/m3 for JULY, 2024

Hr Beg Hr End Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	5.6	5.7	4.1	3.7	2.5	2.9	3.1	3.1	2.9	2.4	1.8	2.2	3.1	2.3	2.3	3.0	3.6	5.2	6.4	6.2	6.1	5.8	6.4	6.0	**4.0**	**6.4**	**1.8**
2	6.9	6.1	6.2	5.8	6.2	6.3	6.5	7.6	7.1	7.1	6.9	8.0	6.9	6.8	6.1	4.9	6.9	7.0	7.2	7.9	8.5	9.1	8.0	5.2	**6.8**	**9.1**	**4.9**
3	5.4	5.6	6.0	6.1	6.5	6.7	6.5	6.7	6.2	5.2	5.9	5.3	6.5	7.8	9.2	9.4	9.6	9.9	9.7	8.2	6.6	7.2	10.4	7.4	**7.2**	**10.4**	**5.2**
4	6.8	6.5	6.7	6.7	6.9	7.5	8.2	10.1	13.8	18.8	23.5	24.9	22.3	22.8	27.0	26.6	27.0	27.4	23.1	20.1	19.2	21.9	36.1	34.4	**18.6**	**36.1**	**6.5**
5	43.4	49.3	48.6	27.4	20.9	19.2	16.9	16.0	17.4	21.1	22.0	23.2	19.0	20.5	21.4	21.9	22.5	26.9	25.0	26.1	24.8	25.1	27.5	24.2	**25.4**	**49.3**	**16.0**
6	22.2	22.8	23.3	19.5	17.0	14.6	14.9	14.0	15.7	14.6	12.1	12.2	10.2	11.1	10.3	11.4	16.0	16.7	16.1	18.8	18.8	18.1	20.7	19.5	**16.2**	**23.3**	**10.2**
7	15.3	12.0	13.8	13.8	14.3	13.6	11.8	12.1	11.8	11.9	12.0	11.0	10.9	15.1	17.6	16.4	13.6	13.3	14.1	14.5	13.9	14.5	18.0	17.8	**13.8**	**18.0**	**10.9**
8	17.4	17.8	15.0	13.5	15.6	15.9	17.6	16.5	17.1	22.0	35.1	33.3	25.7	19.7	18.8	20.3	24.0	24.4	19.9	16.8	15.7	16.0	18.2	17.6	**19.7**	**35.1**	**13.5**
9	15.5	14.4	13.5	12.9	13.1	12.6	13.7	15.7	16.6	17.4	22.0	23.7	22.0	26.0	24.6	11.7	10.3	14.2	17.5	18.5	16.4	14.3	12.4	10.4	**16.2**	**26.0**	**10.3**
10	9.9	9.5	9.3	9.6	10.2	10.0	10.2	10.6	11.6	13.2	13.4	14.1	15.9	12.0	10.7	13.1	11.0	12.5	6.9	6.6	6.7	6.7	6.8	6.3	**10.2**	**15.9**	**6.3**
11	5.7	3.4	3.3	3.3	3.8	4.5	4.9	4.0	3.0	2.8	2.7	2.5	3.5	3.7	4.6	4.9	5.5	8.0	5.8	6.5	6.3	6.7	7.1	7.5	**4.7**	**8.0**	**2.5**
12	9.2	8.8	9.3	8.3	8.9	9.4	10.4	9.8	10.6	10.2	11.5	10.2	9.4	11.2	10.4	9.9	10.3	9.1	7.0	6.6	5.4	4.6	3.3	2.7	**8.6**	**11.5**	**2.7**
13	1.9	1.8	2.4	2.1	2.5	2.4	3.2	3.1	5.3	10.9	9.0	9.9	10.9	10.3	9.9	8.7	10.3	10.6	5.5	4.5	4.6	5.1	5.1	4.5	**6.0**	**10.9**	**1.8**
14	4.4	4.3	4.9	5.1	6.0	6.6	7.2	8.2	8.7	8.7	11.7	17.9	19.0	19.0	14.4	14.0	16.2	14.9	15.5	16.4	14.2	13.9	14.1	13.7	**11.6**	**19.0**	**4.3**
15	14.7	16.4	18.0	19.4	18.6	18.4	19.3	22.2	20.4	20.0	19.2	18.7	17.5	16.8	16.5	16.4	23.1	20.7	20.0	16.0	16.3	16.6	16.5	15.1	**18.2**	**23.1**	**14.7**
16	14.7	16.4	18.3	18.0	17.8	18.9	18.1	22.0	23.5	26.6	22.5	22.3	21.9	22.3	29.5	24.8	20.6	21.0	19.8	19.6	19.4	---	---	---	**20.8**	**29.5**	**14.7**
17	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
18	---	---	---	---	---	---	---	---	---	12.0	12.2	15.1	16.0	17.0	17.3	18.0	19.3	19.5	18.8	18.1	17.8	17.7	16.1	15.9	**---**	**---**	**---**
19	18.4	19.9	17.9	18.9	14.5	11.9	11.3	11.0	9.7	9.2	9.4	8.2	7.9	7.4	8.4	8.4	9.5	11.8	12.8	12.4	15.0	15.3	15.3	16.3	**12.5**	**19.9**	**7.4**
20	13.1	11.1	9.8	10.3	9.8	9.8	10.5	11.4	10.8	10.0	10.3	11.5	11.3	11.8	13.1	13.3	13.2	11.7	13.0	12.5	11.8	15.1	14.6	13.9	**11.8**	**15.1**	**9.8**
21	13.4	13.0	13.2	13.7	13.1	13.4	13.9	13.8	15.1	14.7	18.6	16.5	14.2	14.0	16.5	16.7	17.0	16.0	15.8	16.8	17.0	15.0	13.9	12.4	**14.9**	**18.6**	**12.4**
22	12.0	13.1	12.4	11.7	12.9	12.9	12.6	13.6	13.1	11.5	8.7	11.3	10.1	9.4	7.0	7.5	4.6	8.2	8.4	6.4	5.5	6.4	6.7	5.1	**9.6**	**13.6**	**4.6**
23	4.4	3.9	4.0	3.2	2.6	3.2	4.3	7.4	10.7	10.8	13.1	13.5	13.3	15.6	15.1	15.3	16.6	17.0	16.0	17.1	16.7	12.2	9.0	6.2	**10.4**	**17.1**	**2.6**
24	6.2	5.7	5.9	5.5	4.9	5.4	6.5	7.1	7.4	9.3	10.5	14.1	17.5	12.7	11.8	14.5	16.4	14.3	9.5	9.3	6.9	6.9	7.6	8.4	**9.3**	**17.5**	**4.9**
25	8.8	9.1	9.7	9.4	9.3	9.1	9.3	8.9	11.2	20.4	20.0	21.1	21.3	22.7	24.2	27.4	27.7	26.7	23.5	21.1	19.1	17.8	18.4	19.5	**17.3**	**27.7**	**8.8**
26	23.3	24.2	18.7	14.6	12.2	10.0	8.5	7.8	8.1	7.9	8.1	9.2	11.7	11.0	8.9	9.8	11.2	10.8	9.5	8.9	9.6	9.7	10.7	9.1	**11.3**	**24.2**	**7.8**
27	9.4	11.3	11.4	11.3	11.2	10.3	8.9	8.6	8.6	8.8	8.3	7.7	7.5	7.5	7.3	7.5	7.2	7.6	8.0	8.8	8.7	9.7	12.3	12.8	**9.1**	**12.8**	**7.2**
28	13.7	13.0	12.8	12.4	11.8	11.8	12.7	14.2	13.3	12.0	10.6	9.3	10.8	12.4	12.5	14.0	14.7	14.2	13.0	13.3	14.7	15.2	14.7	13.8	**12.9**	**15.2**	**9.3**
29	13.0	13.3	14.7	15.4	15.3	15.9	16.1	16.1	16.9	21.7	24.6	22.9	20.2	21.2	21.1	22.4	22.9	22.6	14.6	12.0	12.7	10.4	9.9	9.3	**16.8**	**24.6**	**9.3**
30	9.3	8.3	9.0	9.6	10.2	10.5	10.9	11.0	11.1	11.0	10.7	11.8	13.3	14.8	15.2	15.3	15.2	15.9	17.1	16.7	13.7	11.8	7.4	6.2	**11.9**	**17.1**	**6.2**
31	5.2	5.3	5.1	6.0	7.2	7.6	6.7	7.4	8.8	9.9	12.1	13.7	11.2	---	12.2	13.5	14.4	13.2	13.4	13.7	15.9	16.3	15.9	16.5	**10.9**	**16.5**	**5.1**
MEAN	**12.0**	**12.1**	**12.0**	**10.9**	**10.5**	**10.4**	**10.5**	**11.0**	**11.6**	**12.7**	**13.6**	**14.2**	**13.7**	**14.0**	**14.1**	**14.0**	**14.7**	**15.0**	**13.8**	**13.3**	**12.9**	**12.6**	**13.2**	**12.3**	**12.7**		
MAX	**43.4**	**49.3**	**48.6**	**27.4**	**20.9**	**19.2**	**19.3**	**22.2**	**23.5**	**26.6**	**35.1**	**33.3**	**25.7**	**26.0**	**29.5**	**27.4**	**27.7**	**27.4**	**25.0**	**26.1**	**24.8**	**25.1**	**36.1**	**34.4**		**49.3**	
MIN	**1.9**	**1.8**	**2.4**	**2.1**	**2.5**	**2.4**	**3.1**	**3.1**	**2.9**	**2.4**	**1.8**	**2.2**	**3.1**	**2.3**	**2.3**	**3.0**	**3.6**	**5.2**	**5.5**	**4.5**	**4.6**	**4.6**	**3.3**	**2.7**			**1.8**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 707 DATA RECOVERY RATE = 95.0% DATA CAPTURE RATE = 93.5%

MONTHLY MEAN = 12.7 µg/m3

MAXIMUM PM2.5 = 49.3 µg/m3 DATE OF OCCURRENCE = 7/5 at 200 MAXIMUM DAILY MEAN = 25.4 µg/m3 DATE OF OCCURRENCE = 7/5

SECOND MAXIMUM PM2.5 = 48.6 µg/m3 DATE OF OCCURRENCE = 7/5 at 300 SECOND MAXIMUM DAILY MEAN = 20.8 µg/m3 DATE OF OCCURRENCE = 7/16

MINIMUM PM2.5 = 1.8 µg/m3 DATE OF OCCURRENCE = 7/1 at 1100 MINUMUM DAILY MEAN = 4.0 µg/m3 DATE OF OCCURRENCE = 7/1

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

CSX AQ8A Modulair

HOURLY AVERAGES of PM2.5 in µg/m3 for AUGUST, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	16.5	15.2	15.3	15.7	15.0	15.0	16.7	20.2	24.0	24.1	---	26.6	22.2	21.3	23.0	---	---	22.3	24.1	22.1	21.5	21.5	21.4	22.4	**20.2**	**26.6**	**15.0**
2	23.1	22.5	22.7	21.8	21.5	21.3	20.4	19.4	21.8	18.8	15.7	14.4	---	---	---	---	---	20.7	10.9	7.7	5.1	4.9	2.7	3.4	**15.7**	**23.1**	**2.7**
3	4.7	5.1	4.8	4.9	5.6	6.5	6.9	7.5	9.7	10.4	13.0	10.7	9.9	12.5	14.2	15.1	9.1	9.7	5.0	3.7	3.7	4.4	4.3	4.1	**7.7**	**15.1**	**3.7**
4	4.5	4.9	5.5	5.9	5.7	6.0	6.2	6.2	6.4	7.6	8.1	8.6	9.1	7.4	5.9	7.1	5.7	4.0	5.7	7.4	7.8	6.9	7.5	8.4	**6.6**	**9.1**	**4.0**
5	8.5	8.4	8.4	8.8	8.7	9.3	8.9	11.8	18.1	21.9	21.4	19.9	23.7	21.6	20.9	18.7	14.6	14.4	14.8	25.0	17.1	14.7	14.8	13.9	**15.3**	**25.0**	**8.4**
6	13.7	12.5	11.9	11.1	11.0	11.9	12.7	14.6	18.7	24.6	24.5	21.9	21.7	28.3	16.9	10.3	6.0	4.6	4.5	6.7	9.1	4.8	2.7	4.6	**12.8**	**28.3**	**2.7**
7	4.4	4.5	3.8	4.9	4.7	5.2	6.5	5.8	5.1	7.0	8.7	9.3	12.2	15.5	7.2	7.1	2.8	3.1	3.0	3.8	6.0	7.1	3.8	2.5	**5.9**	**15.5**	**2.5**
8	2.7	3.5	3.9	3.3	3.3	3.2	4.1	6.0	6.3	7.2	8.3	6.1	5.8	5.9	7.4	7.7	9.2	9.0	8.5	9.6	10.7	11.1	10.9	11.5	**6.8**	**11.5**	**2.7**
9	15.0	13.7	11.5	12.3	12.7	11.7	11.2	12.7	12.1	9.6	5.3	4.4	3.6	3.1	2.6	3.6	3.9	4.7	4.9	5.1	5.2	5.3	5.4	5.5	**7.7**	**15.0**	**2.6**
10	6.6	7.5	9.8	12.5	12.8	13.4	14.0	15.8	15.6	15.4	15.9	11.9	11.9	13.2	15.0	13.1	13.1	16.0	16.2	17.6	16.1	16.9	12.2	10.8	**13.4**	**17.6**	**6.6**
11	9.7	10.6	10.1	8.5	8.2	9.6	9.0	7.6	7.9	7.0	6.8	5.9	6.5	6.7	6.6	6.3	6.0	6.3	6.5	8.3	11.2	8.7	11.5	11.0	**8.1**	**11.5**	**5.9**
12	9.0	9.1	9.5	10.9	9.6	8.5	8.3	8.4	7.0	8.1	6.0	5.9	5.6	4.9	4.7	5.7	6.7	5.3	5.4	7.8	8.1	7.2	7.4	8.6	**7.4**	**10.9**	**4.7**
13	9.4	8.1	8.1	7.9	8.2	9.5	10.5	10.3	8.4	6.9	8.5	8.2	9.5	9.9	10.2	9.6	9.0	10.0	12.5	12.6	13.6	14.5	14.5	15.3	**10.2**	**15.3**	**6.9**
14	13.1	14.5	12.6	12.8	12.4	13.7	13.8	16.2	16.9	28.0	37.0	39.8	37.6	37.0	35.9	37.7	30.5	26.0	22.8	22.4	23.3	22.3	22.3	21.8	**23.7**	**39.8**	**12.4**
15	21.8	20.2	19.2	18.0	17.6	17.1	18.6	21.5	22.8	21.7	22.2	22.8	22.6	23.2	21.9	21.6	20.1	20.0	18.4	18.8	19.1	19.6	21.4	25.0	**20.6**	**25.0**	**17.1**
16	19.2	23.3	18.1	17.1	17.2	19.1	24.3	26.6	32.1	23.4	24.7	22.8	20.2	21.4	19.9	19.4	20.3	20.1	19.8	18.4	17.1	18.0	19.1	18.8	**20.8**	**32.1**	**17.1**
17	17.4	15.5	14.4	14.0	12.7	13.9	19.4	16.1	20.8	22.2	22.2	23.0	21.5	22.8	22.5	23.0	23.7	23.7	17.9	6.8	7.1	7.9	8.0	8.8	**16.8**	**23.7**	**6.8**
18	9.4	8.9	8.2	7.5	7.9	9.1	7.7	7.6	9.6	11.8	14.5	15.5	16.5	18.0	20.0	20.0	18.3	18.7	15.8	5.1	6.1	4.2	3.2	2.4	**11.0**	**20.0**	**2.4**
19	2.9	3.5	3.6	4.2	4.6	5.2	5.9	7.5	7.8	6.2	5.5	4.1	2.6	2.7	3.1	3.6	2.6	2.2	3.4	2.3	2.0	2.1	1.9	1.8	**3.8**	**7.8**	**1.8**
20	1.7	1.7	1.5	1.7	1.7	2.2	3.7	3.5	5.9	6.7	9.5	10.4	8.9	8.1	7.4	6.2	5.3	5.2	4.9	4.0	5.6	6.1	4.5	4.1	**5.0**	**10.4**	**1.5**
21	3.7	3.9	3.4	3.0	3.4	3.9	3.6	3.8	3.6	3.7	3.7	4.5	3.2	3.1	3.3	3.4	3.5	3.2	4.2	7.4	7.1	7.2	7.4	6.9	**4.3**	**7.4**	**3.0**
22	7.2	7.1	6.3	5.9	6.0	7.1	7.2	7.4	6.0	6.6	6.8	6.9	7.2	8.7	8.7	9.8	8.4	9.8	9.0	15.6	15.5	14.5	17.4	15.3	**9.1**	**17.4**	**5.9**
23	14.6	17.9	10.8	10.0	11.0	10.4	12.3	15.2	9.3	8.8	9.6	11.0	13.3	13.3	9.5	12.6	8.8	9.3	8.6	12.0	10.7	13.6	13.2	15.1	**11.7**	**17.9**	**8.6**
24	13.6	10.9	10.3	10.7	11.3	10.8	11.3	11.0	11.4	11.3	12.8	11.8	12.6	14.2	11.8	12.7	12.4	10.7	11.1	12.5	12.9	12.7	13.0	13.9	**11.9**	**14.2**	**10.3**
25	13.2	12.3	11.2	10.8	11.4	11.1	12.1	14.3	12.8	11.9	11.1	11.2	10.6	12.6	12.4	13.2	14.3	13.0	12.3	13.3	12.9	11.9	11.5	10.5	**12.1**	**14.3**	**10.5**
26	9.9	9.3	9.6	9.9	9.6	9.6	11.1	12.8	14.1	16.9	22.6	21.0	21.1	23.1	20.9	16.9	---	---	---	---	---	---	---	---	**---**	**---**	**---**
27	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
28	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
29	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
30	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
31	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
MEAN	**10.6**	**10.6**	**9.8**	**9.8**	**9.8**	**10.2**	**11.0**	**11.9**	**12.9**	**13.4**	**13.8**	**13.8**	**13.6**	**14.3**	**13.3**	**12.7**	**---**	**11.7**	**10.8**	**11.0**	**11.0**	**10.7**	**10.5**	**10.7**	**11.6**		
MAX	**23.1**	**23.3**	**22.7**	**21.8**	**21.5**	**21.3**	**24.3**	**26.6**	**32.1**	**28.0**	**37.0**	**39.8**	**37.6**	**37.0**	**35.9**	**37.7**	**---**	**26.0**	**24.1**	**25.0**	**23.3**	**22.3**	**22.3**	**25.0**		**39.8**	
MIN	**1.7**	**1.7**	**1.5**	**1.7**	**1.7**	**2.2**	**3.6**	**3.5**	**3.6**	**3.7**	**3.7**	**4.1**	**2.6**	**2.7**	**2.6**	**3.4**	**---**	**2.2**	**3.0**	**2.3**	**2.0**	**2.1**	**1.9**	**1.8**			**1.5**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 608 DATA RECOVERY RATE = 81.7% DATA CAPTURE RATE = 80.6%

MONTHLY MEAN = 11.6 µg/m3

MAXIMUM PM2.5 = 39.8 µg/m3 DATE OF OCCURRENCE = 8/14 at 1200 MAXIMUM DAILY MEAN = 23.7 µg/m3 DATE OF OCCURRENCE = 8/14

SECOND MAXIMUM PM2.5 = 37.7 µg/m3 DATE OF OCCURRENCE = 8/14 at 1600 SECOND MAXIMUM DAILY MEAN = 20.8 µg/m3 DATE OF OCCURRENCE = 8/16

MINIMUM PM2.5 = 1.5 µg/m3 DATE OF OCCURRENCE = 8/20 at 300 MINUMUM DAILY MEAN = 3.8 µg/m3 DATE OF OCCURRENCE = 8/19

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

CSX AQ8A Modulair

HOURLY AVERAGES of PM2.5 in µg/m3 for SEPTEMBER, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
2	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
3	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
4	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
5	---	---	---	---	---	---	---	---	---	5.5	5.8	4.6	5.0	5.5	5.5	5.2	5.8	5.4	4.8	5.3	5.7	5.6	5.8	6.7	**---**	**---**	**---**
6	6.3	6.1	7.3	7.4	7.7	11.1	9.1	10.0	9.6	6.9	5.9	5.2	5.3	5.8	5.9	5.5	6.3	6.0	6.8	7.0	8.4	9.1	9.6	7.1	**7.3**	**11.1**	**5.2**
7	7.8	7.5	6.1	6.0	6.8	7.2	7.1	7.4	7.5	8.0	8.5	11.0	4.3	3.4	3.2	3.6	4.4	4.4	4.8	7.8	7.2	6.9	5.8	4.1	**6.2**	**11.0**	**3.2**
8	3.0	2.8	2.5	2.3	2.2	2.1	2.4	2.7	3.4	3.6	3.6	3.6	3.2	2.8	2.3	2.2	2.7	2.5	4.8	7.5	6.1	3.9	5.4	4.7	**3.4**	**7.5**	**2.1**
9	4.9	4.2	4.2	6.4	5.0	5.3	5.9	5.3	3.4	3.0	2.9	2.8	2.4	2.3	2.8	2.4	4.2	3.4	4.1	4.8	6.5	6.1	6.0	5.8	**4.3**	**6.5**	**2.3**
10	6.4	6.9	7.3	7.2	6.3	7.2	5.1	3.9	4.2	5.3	7.8	8.7	10.6	10.5	10.2	9.0	8.7	13.8	13.3	17.5	12.5	15.4	14.1	28.3	**10.0**	**28.3**	**3.9**
11	16.6	16.1	15.0	15.2	14.8	16.6	18.4	16.2	14.9	14.5	16.8	13.7	13.7	12.2	10.9	10.7	11.6	16.2	14.4	15.2	13.2	11.3	13.0	14.7	**14.4**	**18.4**	**10.7**
12	15.9	15.9	12.1	13.2	13.7	18.8	15.4	18.5	15.5	13.1	10.7	9.0	11.7	11.8	11.5	11.3	9.7	14.6	15.7	11.1	8.0	9.6	7.9	6.6	**12.5**	**18.8**	**6.6**
13	6.6	7.0	7.2	8.4	8.7	9.2	9.6	10.8	12.7	11.4	10.8	7.2	9.9	9.9	8.7	8.9	7.9	8.6	9.7	15.7	13.1	10.4	10.0	11.3	**9.7**	**15.7**	**6.6**
14	12.1	12.7	11.0	10.6	9.9	10.0	10.8	11.1	9.6	10.9	12.6	11.7	16.2	14.7	14.7	12.9	14.0	12.8	11.5	10.5	11.1	11.6	10.3	10.5	**11.8**	**16.2**	**9.6**
15	11.5	9.9	11.8	12.4	13.9	14.5	16.0	16.4	18.1	14.7	12.4	10.8	11.2	10.3	9.4	10.7	11.5	12.0	12.3	10.2	7.6	8.2	7.1	7.2	**11.6**	**18.1**	**7.1**
16	7.2	6.9	7.1	7.1	7.6	7.5	7.7	9.0	7.1	7.6	8.3	6.8	7.4	9.6	8.4	9.2	10.1	13.2	8.9	10.1	9.5	10.9	8.7	8.6	**8.5**	**13.2**	**6.8**
17	8.9	9.8	10.1	10.7	10.7	10.7	11.2	11.5	11.9	12.4	13.6	12.0	13.3	13.6	12.8	10.7	10.8	10.6	10.5	10.1	9.0	8.5	8.6	9.7	**10.9**	**13.6**	**8.5**
18	8.8	9.6	8.2	7.4	5.7	6.2	6.9	7.6	8.7	9.5	9.9	10.8	10.2	9.3	9.7	9.3	9.3	8.9	9.9	9.3	9.0	9.2	9.7	9.6	**8.8**	**10.8**	**5.7**
19	9.7	10.4	10.1	9.7	9.3	9.6	10.7	10.0	9.8	9.1	7.6	7.2	7.2	8.5	9.2	14.7	15.4	12.6	17.6	12.6	13.8	12.1	12.3	13.1	**10.9**	**17.6**	**7.2**
20	12.9	14.7	13.8	14.6	16.6	16.6	18.8	16.8	6.6	4.9	4.7	5.0	7.3	11.1	12.4	15.7	16.4	15.4	14.8	17.9	17.0	12.0	4.3	8.3	**12.4**	**18.8**	**4.3**
21	4.7	4.8	4.9	4.7	4.6	4.1	4.8	4.6	5.0	4.9	6.6	7.7	8.4	8.6	9.7	11.4	10.2	9.8	8.0	10.1	10.6	15.6	11.8	11.5	**7.7**	**15.6**	**4.1**
22	11.9	12.8	5.8	4.4	4.4	3.4	5.1	4.5	4.6	4.2	4.8	5.0	6.0	6.7	8.4	10.2	9.4	11.1	11.5	10.6	11.1	9.6	6.2	6.5	**7.4**	**12.8**	**3.4**
23	7.6	7.4	6.5	6.1	6.9	6.1	6.7	10.2	9.3	8.6	7.9	6.2	8.2	7.6	7.3	17.5	10.8	7.5	6.1	8.7	8.5	7.2	6.3	6.0	**7.9**	**17.5**	**6.0**
24	5.8	5.8	5.2	5.1	5.1	5.4	5.6	5.1	5.6	6.3	6.2	5.9	6.2	6.4	7.4	7.5	6.8	7.9	5.7	5.1	4.6	4.1	4.6	4.4	**5.7**	**7.9**	**4.1**
25	3.4	4.5	4.2	4.7	4.9	4.9	3.9	3.7	3.4	3.7	4.5	4.7	4.0	3.4	4.1	5.0	5.5	5.3	5.8	5.5	4.9	8.8	8.6	8.4	**4.9**	**8.8**	**3.4**
26	8.3	8.2	8.5	6.8	7.5	7.7	8.2	9.6	9.0	9.1	8.7	10.5	6.9	6.5	3.5	3.1	2.6	3.7	4.6	4.6	4.9	3.9	4.1	4.6	**6.4**	**10.5**	**2.6**
27	4.7	4.9	5.9	5.6	7.4	9.4	6.3	3.8	4.0	4.1	3.9	5.6	5.5	6.0	7.3	5.2	5.1	4.9	5.1	5.2	5.8	4.2	3.2	2.8	**5.2**	**9.4**	**2.8**
28	3.9	5.0	4.7	4.3	5.1	5.6	3.8	4.8	7.0	8.7	10.7	12.2	12.7	13.0	14.7	14.8	12.6	10.1	7.3	8.0	8.7	8.9	9.2	10.4	**8.5**	**14.8**	**3.8**
29	11.1	9.8	8.6	7.8	6.3	7.6	9.4	10.6	9.8	7.7	9.3	10.9	11.3	12.4	10.7	8.7	6.2	5.0	5.8	6.7	5.1	4.8	5.3	6.9	**8.2**	**12.4**	**4.8**
30	8.3	6.8	7.0	8.2	9.2	10.9	11.1	10.9	8.1	6.8	8.5	6.9	8.5	8.6	9.0	12.3	13.3	12.4	11.5	10.2	10.8	11.1	6.3	3.9	**9.1**	**13.3**	**3.9**
MEAN	**8.3**	**8.4**	**7.8**	**7.9**	**8.0**	**8.7**	**8.8**	**9.0**	**8.4**	**7.9**	**8.2**	**7.9**	**8.3**	**8.5**	**8.5**	**9.1**	**8.9**	**9.2**	**9.1**	**9.5**	**9.0**	**8.8**	**7.9**	**8.5**	**8.5**		
MAX	**16.6**	**16.1**	**15.0**	**15.2**	**16.6**	**18.8**	**18.8**	**18.5**	**18.1**	**14.7**	**16.8**	**13.7**	**16.2**	**14.7**	**14.7**	**17.5**	**16.4**	**16.2**	**17.6**	**17.9**	**17.0**	**15.6**	**14.1**	**28.3**		**28.3**	
MIN	**3.0**	**2.8**	**2.5**	**2.3**	**2.2**	**2.1**	**2.4**	**2.7**	**3.4**	**3.0**	**2.9**	**2.8**	**2.4**	**2.3**	**2.3**	**2.2**	**2.6**	**2.5**	**4.1**	**4.6**	**4.6**	**3.9**	**3.2**	**2.8**			**2.1**

POSSIBLE NUMBER OF OBSERVATIONS = 720 ACTUAL NUMBER OF OBSERVATIONS = 615 DATA RECOVERY RATE = 85.4% DATA CAPTURE RATE = 83.3%

MONTHLY MEAN = 8.5 µg/m3

MAXIMUM PM2.5 = 28.3 µg/m3 DATE OF OCCURRENCE = 9/10 at 2400 MAXIMUM DAILY MEAN = 14.4 µg/m3 DATE OF OCCURRENCE = 9/11

SECOND MAXIMUM PM2.5 = 18.8 µg/m3 DATE OF OCCURRENCE = 9/12 at 600 SECOND MAXIMUM DAILY MEAN = 12.5 µg/m3 DATE OF OCCURRENCE = 9/12

MINIMUM PM2.5 = 2.1 µg/m3 DATE OF OCCURRENCE = 9/8 at 600 MINUMUM DAILY MEAN = 3.4 µg/m3 DATE OF OCCURRENCE = 9/8

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

APPENDIX J. INVALID DATA PERIODS AND CORRECTIVE ACTION FORMS FOR THIRD QUARTER 2024

AQS Null Code Description	
AN - Machine Malfunction	AT - Calibration
BA - Maintenance/Routine Repairs	

CSX AQ5 - Invalid Data Periods

Parameter	Start Date	Start Time	End Date	End Time	Hours Invalid	AQS NULL Code	Description
$PM_{10/CF/2.5}$	07/01/2024	00:01	07/10/2024	07:00	223	AN	Sampler malfunction
	07/10/2024	07:01	07/10/2024	11:00	4	BA	Maintenance, Flow Check
	07/10/2024	11:01	07/18/2024	09:00	190	AN	Sampler malfunction
	07/18/2024	09:01	07/18/2024	16:00	7	BA	Maintenance, Flow Check
	07/21/2024	13:01	08/01/2024	00:00	251	AN	Sampler malfunction
	08/01/2024	00:01	08/14/2024	09:00	321	AN	Sampler malfunction
	08/14/2024	09:01	08/14/2024	12:00	3	BA	Maintenance, Flow Check
	09/05/2024	07:01	09/05/2024	09:00	2	BA	Maintenance, Flow Check
	09/18/2024	10:01	09/18/2024	11:00	1	AT	Calibration
Relative Humidity	09/18/2024	11:01	09/18/2024	13:00	2	AT	Calibration
Temperature	09/18/2024	11:01	09/18/2024	13:00	2	AT	Calibration
Wind Speed, Direction, Gust	09/18/2024	11:01	09/18/2024	13:00	2	AT	Calibration

AQS Null Code Description	
AV - Power Failure	AS - Poor Quality Assurance Results
AN - Machine Malfunction	AT - Calibration
BA - Maintenance/Routine Repairs	

CSX AQ8 - Invalid Data Periods

Parameter	Start Date	Start Time	End Date	End Time	Hours Invalid	AQS NULL Code	Description
Shelter Temperature	08/30/2024	07:01	09/01/2024	00:00	41	AV	Power Outage
	09/01/2024	00:01	09/05/2024	09:00	105	AV	Power Outage
$PM_{10/CF/2.5}$	07/04/2024	13:01	07/10/2024	08:00	139	AN	Sampler Malfunction
	07/10/2024	08:01	07/10/2024	12:00	4	BA	Maintenance, Flow check
	07/10/2024	12:01	07/18/2024	08:00	188	AS	Poor Quality Assurance Results
	07/18/2024	08:01	07/18/2024	16:00	8	BA	Maintenance, Flow check
	07/18/2024	16:01	08/01/2024	00:00	320	AS	Poor Quality Assurance Results
	08/01/2024	00:01	08/14/2024	10:00	322	AS	Poor Quality Assurance Results
	08/14/2024	10:01	08/14/2024	15:00	5	BA	Maintenance, Flow check
	08/14/2024	15:01	08/16/2024	16:00	49	AS	Poor Quality Assurance Results
	08/16/2024	16:01	08/16/2024	18:00	2	BA	Maintenance, Flow check
	08/26/2024	16:01	09/01/2024	00:00	128	AV	Power Outage
	09/01/2024	00:01	09/05/2024	08:00	104	AV	Power Outage
	09/05/2024	08:01	09/05/2024	10:00	2	BA	Maintenance, Flow check
	09/18/2024	07:01	09/18/2024	08:00	1	BA	Maintenance, Flow check
	09/18/2024	08:01	09/18/2024	10:00	2	AT	Calibration

CORRECTIVE ACTION REPORT

PROJECT NAME CSX - AQ5

Identification of a Problem or Deficiency:

Created By: Data management team
Assigned To: Nick Bratton
Date: 06/21/2024

Summary: T640X bypass flow alarm started on 6/21. Bypass flow readings appear to be erroneous.

Corrective Action Taken and Results:

From: Nick Bratton / Tomy St-Laurent

Corrective Action Description:
As found flow check performed on 6/27. The unit did not pass the flow check, and the bypass flow sensor appears to be malfunctioning.
7/10 - Flow check attempted, flow out of tolerance, new bypass flow sensor installed.
7/18 - as found flow check has unstable pressure and bypass flow, unable to successfully calibrate, replaced filters, both flow meters, external pump, exhaust tubing, inlet head O-ring, optical chamber cleaning, reapplied shelter silicone beading, and as left flow check looked good
8/14 - bypass flow has been showing a negative value, replaced bypass flow meter, zip tied bypass line to ASC, installed coalescent filter, replace filters, insulated ASC downtube, increased shelter temperature to 105F, as left flow check looked good
9/05 - flow check looked good
9/18 - Tomy onsite, flow calibration performed, all checks within criteria.

Trinity Consultants

CORRECTIVE ACTION REPORT

PROJECT NAME CSX - AQ8

Identification of a Problem or Deficiency:

Created By: Data management team
Assigned To: Nick Bratton
Date: 07/04/2024

Summary: T640X Bypass flow and sample pressure alarms present.

Corrective Action Taken and Results:

From: Nick Bratton / Tomy St-Laurent

Corrective Action Description:
7/4 - Sampler is displaying Bypass flow and Pressure alarms.
7/10 - As found flow check was not within criteria. The flows were calibrated, sample flow slope warning still present.
7/18 - webswitch ports were found turned off, as found flow checks all pass except bypass flow is variable and very high, replaced filters, optical cleaning, temporarily used AQ5s bypass flow meter to diagnose and all pressure/flow issues resolved, reapplied shelter silicone beading, as left flow check shows bypass flow error and sample flow slope out of range (0.72)
8/14 - as found flow check shows all parameters out, replaced bypass pump, zip tied bypass line to ASC, installed coalescent filter, replace filters, insulated ASC downtube, increased shelter temperature to 105F, no spare bypass flow meter to install, and as left flow check parameters are still out
8/16 - replaced bypass flow meter, as left flow check all passing, but sample flow slope warning present (0.75)
9/5 - webswitch ports were found turned off and not saving settings, instruments plugged into shelter, flow check passed, but sample flow slope warning
9/18 - Tomy onsite, installed new webswitch connected to UPS, flow cal looked good, replaced sample flow sensor and flow slope warning went away (0.852)

APPENDIX K. CALIBRATION FIELD DATA SHEETS

Trinity Consultants

CONTINUOUS PARTICULATE SAMPLER
CALIBRATION

SITE NAME	CSX AQ5	**Date**	9/18/2024	**Start Time**	9:50
PROJECT	234501.0038			**Stop Time**	11:00
SITE OPERATOR	Trintiy				

Analyzer Mfg	T-API
Analyzer Model	T640X
Analyzer s/n	1690

= Enter Flow Check Data
= Cell Containing Equations

REFERENCE EQUIPMENT:

	Model	Serial Number
Temperature Standard	Streamline Pro	S040205
Pressure Standard	Streamline Pro	S040205
Flow Standard	Streamline Pro	S040205
Certification Date	7/8/2024	

ZERO TEST / LEAK CHECK

PM Channel	Indicated Conc.	
PM_{10}	0.0	µg/m3
$PM_{2.5}$	0.0	µg/m3

CRITERIA:
PM < 0.2 µg/m3

TEMPERATURE SENSOR CALIBRATION

Indicated Temp.	Ref. Std. Temp.	Difference	
23.3	22.0	-1.3	°C
23.6	23.6	0	°C

CRITERIA:
DIFFERENCE < ±2°C

PRESSURE SENSOR CALIBRATION

Indicated Pressure		Ref. Std. Pressure	Difference
kPa	mmHg	mmHg	mmHg
763.3	5725.2	5716.2	-9.0
761.2	5709.5	5708.7	-0.8

CRITERIA:

DIFFERENCE < ±10 mm Hg

Sample FLOW VERIFICATION

Target Flow L/min	Indicated Flow (I) L/min	Ref. Std. Flow (R) L/min	Difference Ref. Flow %	Difference Design Flow %
5.00	4.91	4.82	1.9%	-3.6%
5.00	5.00	5.02	-0.4%	0.4%

CRITERIA:
±4% OF REFERENCE, OR ±5% OF DESIGN FLOW (5.0 L/min)

Bypass FLOW VERIFICATION

Target Flow L/min	Indicated Flow (I) L/min	Ref. Std. Flow (R) L/min	Difference Ref. Flow %	Difference Design Flow %	
11.67	11.77	11.62	1.3%	-0.4%	as found.
11.67	11.67	11.63	0.3%	-0.3%	Calibrated

CRITERIA:
±4% OF REFERENCE, OR ±5% OF DESIGN FLOW (11.7 L/min)

PMT VERIFICATION

Peak Channel	Indicated Value	Difference	
10.9	11.1	0.2	as found.
10.9	10.9	0.0	Calibrated

CRITERIA:
10.9 ±1.5

COMMENTS

Cleaned PMT and inlet head. Changed internal and external DFU filters. Calibration performed.

Calibrated by: Tomy St-Laurent

Trinity Consultants

CONTINUOUS PARTICULATE SAMPLER
CALIBRATION

SITE NAME	CSX AQ8	**Date**	9/18/2024	**Start Time**	7:35
PROJECT	234501.0038			**Stop Time**	9:45
SITE OPERATOR	Trintiy				

Analyzer Mfg	T-API
Analyzer Model	T640X
Analyzer s/n	1689

= Enter Flow Check Data
= Cell Containing Equations

REFERENCE EQUIPMENT:

	Model	Serial Number
Temperature Standard	Streamline Pro	S040205
Pressure Standard	Streamline Pro	S040205
Flow Standard	Streamline Pro	S040205
Certification Date	7/8/2024	

ZERO TEST / LEAK CHECK

PM Channel	Indicated Conc.	
PM_{10}	0.0	µg/m3
$PM_{2.5}$	0.0	µg/m3

CRITERIA:
PM < 0.2 µg/m3

TEMPERATURE SENSOR CALIBRATION

Indicated Temp.	Ref. Std. Temp.	Difference	
21.2	21.3	0.1	°C
22.2	22.0	-0.2	°C

CRITERIA:
DIFFERENCE < ±2°C

PRESSURE SENSOR CALIBRATION

Indicated Pressure		Ref. Std. Pressure	Difference
kPa	mmHg	mmHg	mmHg
762.5	5719.2	5712.5	-6.7
761.0	5708.0	5706.5	-1.5

CRITERIA:

DIFFERENCE < ±10 mm Hg

Sample FLOW VERIFICATION

Target Flow L/min	Indicated Flow (I) L/min	Ref. Std. Flow (R) L/min	Difference Ref. Flow %	Difference Design Flow %
5.00	5.00	4.81	4.0%	-3.8%
5.00	5.02	4.90	2.4%	-2.0%

CRITERIA:
±4% OF REFERENCE, OR ±5% OF DESIGN FLOW (5.0 L/min)

Bypass FLOW VERIFICATION

Target Flow L/min	Indicated Flow (I) L/min	Ref. Std. Flow (R) L/min	Difference Ref. Flow %	Difference Design Flow %	
11.67	11.68	11.41	2.4%	-2.2%	as found.
11.67	11.65	11.66	-0.1%	-0.1%	Calibrated

CRITERIA:
±4% OF REFERENCE, OR ±5% OF DESIGN FLOW (11.7 L/min)

PMT VERIFICATION

Peak Channel	Indicated Value	Difference	
10.9	10.9	0.0	as found.
10.9	10.9	0.0	Calibrated

CRITERIA:
10.9 ±1.5

COMMENTS

Cleaned PMT and inlet head. Changed internal and external DFU filter. Replaced 0-10 LPM flow sensor. Calibration performed.

Calibrated by: Tomy St-Laurent

Trinity Consultants

BAROMETRIC PRESSURE CALIBRATION SHEET

AS FOUND

SITE NAME CSX
PROJECT 234501.0064
SITE OPERATOR Trinity

Date 09/18/2024
Start Time 11:10
Stop Time 12:30

Sensor Mfg: Campbell Sci
Sensor Model: BaroVUE10
Sensor s/n: 1808
Sensor Range: 500-1100 hpa mb

Last Calibration Date: 2/28/2024
Sensor Height: 5 feet

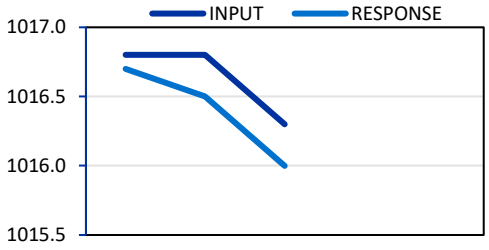
CALIBRATION EQUIPMENT

Calibration Device: Vaisala
Calibration Device Model: PTB110
Calibration Device s/n: L0310539

Certification Date: 7/29/2024

Time	CALIBRATION INPUT (mb)	SENSOR RESPONSE (mb)	DIFFERENCE (mb)
11:16	1016.8	1016.7	-0.1
11:44	1016.8	1016.5	-0.3
12:24	1016.3	1016.0	-0.3
Average	***1016.6***	***1016.4***	***-0.2***

Calibration Criteria: +/- 3 mb



COMMENTS

Side by side comparison in ambient conditions.

Calibrated By: Tomy St-Laurent

= cell containing equations

Trinity Consultants

RELATIVE HUMIDITY CALIBRATION SHEET

AS FOUND

SITE NAME CSX
PROJECT 234501.0064
SITE OPERATOR Trinity

Date 09/18/2024
Start Time 11:10
Stop Time 12:30

Sensor Mfg: Campbell Sci
Sensor Model: HygroVUE10
Sensor s/n: E4240
Sensor Range: 0-100% %

Last Calibration Date: 2/28/2024
Sensor Height: 2 meters

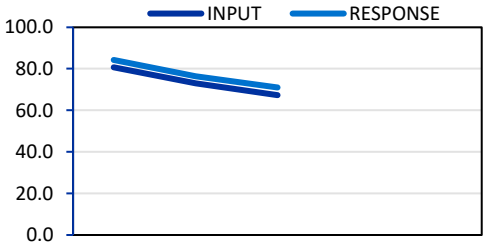
CALIBRATION EQUIPMENT

Calibration Device: Vaisala
Calibration Device Model: HMP45AC
Calibration Device s/n: F1640024

Certification Date: 1/18/2024

Time	CALIBRATION INPUT (%)	SENSOR RESPONSE (%)	DIFFERENCE (%)
11:17	80.8	84.2	3.4
11:44	72.9	76.4	3.5
12:29	67.4	71.1	3.7
Average	***73.7***	***77.2***	***3.5***

Calibration Criteria: +/- 7% RH



COMMENTS

Side by side comparison in ambient conditions.

Calibrated By: Tomy St-Laurent

= cell containing equations

Trinity Consultants

PRECIPITATION CALIBRATION SHEET

AS FOUND

SITE NAME	CSX	**Date**	09/18/2024	**Start Time**	11:10
PROJECT	234501.0064			**Stop Time**	12:30
SITE OPERATOR	Trinity				

Sensor Mfg:	Texas Electronics	**Last Calibration Date:**	2/28/2024
Sensor Model:	TR-525U	**Sensor Height:**	48 inches
Sensor s/n:	93490-1222	**Recording Resolution**	1 tip = 0.01"
Sensor Range:	Unlimited inches		
		Funnel Diameter:	20.3 cm
		Funnel Area (A):	324.3 cm²

CALIBRATION EQUIPMENT

Calibration Device:	Polylab	**Certification Date:**	N/A
Calibration Device Model:	100 ml buret		
Calibration Device s/n:	N/A		

CALIBRATION INPUT (ml.)	CALIBRATION INPUT (inches)	SENSOR RESPONSE (inches)	DIFFERENCE (%)
84.0	0.1020	0.10	-1.9%
83.5	0.101	0.10	-1.4%
84.0	0.102	0.10	-1.9%
Average	***0.1018***	***0.10***	***-1.7%***

Calibration Criteria: +/- 10% of input

1 cc = 1 ml
Funnel (r)adius = funnel (D)iameter ÷ 2
(A)rea of funnel = π*r²
INPUT = Input (ml) ÷ A ÷ cm to inches

COMMENTS

24 hr start = 0.25 then End = 0.56
Check started at 0.26 + 1tip while lowering the tower.

Calibrated By: Tomy St-Laurent

= cell containing equations

Trinity Consultants

WIND DIRECTION 10M CALIBRATION SHEET

AS FOUND

SITE NAME	CSX	**Date** 09/18/2024	**Start Time** 11:10
PROJECT	234501.0064		**Stop Time** 12:30
SITE OPERATOR	Trinity		

Sensor Mfg:	Met One	**Last Calibration Date:**	2/28/2024
Sensor Model:	020D	**Sensor Height:**	10 meters
Sensor s/n:	C21028	**Declination:**	-11.0
Sensor Range:	0-360 °	**Alignment:**	1.0
Vane to Crossarm:	0.7 / 180.7 | 0.3 / 180.5	**Difference:**	1.0
		Rotational Torque:	< 3.0 gm-cm
		Starting Threshold:	< 0.5 m/s

CALIBRATION EQUIPMENT

Calibration Device:	Met One	**Certification Date:**	1/19/2024
Calibration Device Model:	040 direction template	**Compass:**	2610508929
Calibration Device s/n:	N/A	**Torque Device:**	Met One Torque Disc

	INPUT (°)	CLOCKWISE RESPONSE (°)	CLOCKWISE DIFF (°)	CLOCKWISE TOTAL DIFF (°)	COUNTER-CLOCKWISE RESPONSE (°)	COUNTER-CLOCKWISE DIFF (°)	COUNTER-CLOCKWISE TOTAL DIFF (°)
North	0/360	0.8	0.8	1.8	0.3	0.3	1.3
	30	29.4	-0.6	0.4	29.3	-0.7	0.3
	60	59.6	-0.4	0.6	59.7	-0.3	0.7
East	90	89.6	-0.4	0.6	89.7	-0.3	0.7
	120	119.5	-0.5	0.5	119.6	-0.4	0.6
	150	149.1	-0.9	0.1	149.2	-0.8	0.2
South	180	178.9	-1.1	-0.1	179.0	-1.0	0.0
	210	208.8	-1.2	-0.2	209.0	-1.0	0.0
	240	239.7	-0.3	0.7	239.7	-0.3	0.7
West	270	270.3	0.3	1.3	270.3	0.3	1.3
	300	300.8	0.8	1.8	300.8	0.8	1.8
	330	331.3	1.3	2.3	331.4	1.4	2.4

Calibration Criteria: Orientation and Linearity: +/- 5 degrees. Starting Threshold: </=0.5 m/s.

TOTAL DIFF is the total difference when including Orientation and Linearity

COMMENTS

Calibrated By: Tomy St-Laurent

= cell containing equations

Trinity Consultants

WIND SPEED 10M CALIBRATION SHEET

AS FOUND

SITE NAME	CSX	**Date**	09/18/2024	**Start Time**	11:10
PROJECT	234501.0064			**Stop Time**	12:30
SITE OPERATOR	Trinity				
Sensor Mfg:	Met One	**Last Calibration Date:**	2/28/2024		
Sensor Model:	010C	**Sensor Height:**	10 meters		
Sensor s/n:	C21557				
Sensor Range:	0-60 m/s	**Rotational Torque:**	< 0.2 gm-cm		
		Starting Threshold:	< 0.5 m/s		

CALIBRATION EQUIPMENT

Calibration Device:	RM Young	**Certification Date:**	4/8/2024
Calibration Device Model:	18802	**Torque Device:**	Met One Torque Disc
Calibration Device s/n:	CA4569		

CALIBRATION INPUT		SENSOR RESPONSE	DIFFERENCE
RPM	(m/s)	(m/s)	(m/s)
0	0.000	0.000	0.000
200	5.600	5.626	0.026
300	8.270	8.265	-0.005
600	16.260	16.260	0.000
900	24.260	24.256	-0.004
1200	32.250	32.251	0.001
1500	40.250	40.246	-0.004
1800	48.240	48.241	0.001
Calibration Criteria: +/- 0.2 m/s. Starting Threshold < 0.5 m/s			

COMMENTS

Calibrated By: Tomy St-Laurent

= cell containing equations

Trinity Consultants

TEMPERATURE CALIBRATION SHEET

AS FOUND

SITE NAME CSX **Date** 09/18/2024 **Start Time** 11:10
PROJECT 234501.0064 **Stop Time** 12:30
SITE OPERATOR Trinity

Sensor Mfg: Campbell Sci **Last Calibration Date:** 9/26/2023
Sensor Model: Hygrovue10
Sensor Range: -40 to +70 °C

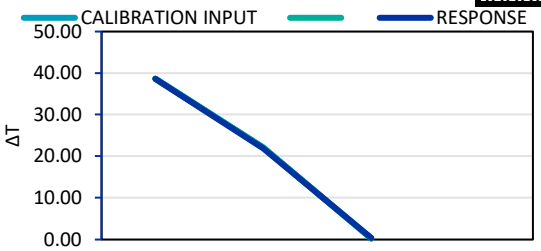
Sensor Ht 2 meters meters **Serial Number** **E4240**

CALIBRATION EQUIPMENT

Calibration Device: Reo Temp **Certification Date:** 1/17/2024
Calibration Device Model: TM99-A
Calibration Device s/n: 072409005

CALIBRATION INPUT Time	(°C)	2 METER RESPONSE (°C)	DIFF (°C)
11:55	38.70	38.60	-0.10
12:03	22.10	21.91	-0.19
12:15	0.20	0.38	0.18

Calibration Criteria: ± 0.5 °C from audit input, and ± 0.1 °C for ΔT



COMMENTS

Side by side comparison in water bath temperature mediums.

Calibrated By: Tomy St-Laurent

= cell containing equations

APPENDIX L. $PM_{10}/PM_{2.5}$ FLOW CHECKS AND FLOW CHECK EQUIPMENT CERTIFICATE AND FIELD CALIBRATION SHEETS FOR THIRD QUARTER 2024

Trinity Consultants

CONTINUOUS PARTICULATE SAMPLER

FLOW CHECK

SITE NAME	CSX AQ5	**Date**	7/10/2024	**Start Time**	8:00
PROJECT	234501.0038			**Stop Time**	11:30
SITE OPERATOR	Trinity				

Analyzer Mfg	T-API
Analyzer Model	T640X
Analyzer s/n	1690

= Enter Flow Check Data
= Cell Containing Equations

REFERENCE EQUIPMENT:

	Model	Serial Number
Temperature Standard	Delta Cal	1264
Pressure Standard	Delta Cal	1264
Flow Standard	Delta Cal	1264
Certification Date	1/24/2024	1264

ZERO TEST / LEAK CHECK

PM Channel	Indicated Conc.	
PM_{10}	0.0	µg/m3
$PM_{2.5}$	0.0	µg/m3

CRITERIA:
PM < 0.2 µg/m3

TEMPERATURE SENSOR CALIBRATION

Indicated Temp.	Ref. Std. Temp.	Difference	
28.6	28.5	-0.1	°C
28.8	28.8	0	°C

CRITERIA:
DIFFERENCE < ±2°C

PRESSURE SENSOR CALIBRATION

Indicated Pressure		Ref. Std. Pressure	Difference
kPa	mmHg	mmHg	mmHg
101.1	758.3	759.0	0.7
101.1	758.3	759.0	0.7

CRITERIA:

DIFFERENCE < ±10 mm Hg

Sample FLOW VERIFICATION

Target Flow L/min	Indicated Flow (I) L/min	Ref. Std. Flow (R) L/min	Difference Ref. Flow %	Difference Design Flow %
5.00	-2.67	1.00	-367.0%	-80.0%
5.00	-2.92	1.00	-392.0%	-80.0%

CRITERIA:
±4% OF REFERENCE, OR ±5% OF DESIGN FLOW (5.0 L/min)

Bypass FLOW VERIFICATION

Target Flow L/min	Indicated Flow (I) L/min	Ref. Std. Flow (R) L/min	Difference Ref. Flow %	Difference Design Flow %	
11.67	-3.98	14.54	-127.4%	24.6%	as found.
11.67	-3.56	14.89	-123.9%	27.6%	Calibrated

CRITERIA:
±4% OF REFERENCE, OR ±5% OF DESIGN FLOW (11.7 L/min)

PMT VERIFICATION

Ref. Peak Channel	Indicated Value	Difference	
10.9	5.0	-5.9	as found.
			Calibrated

CRITERIA:
10.9 ±1.5

COMMENTS

See OneNote for further details. Cleaned unit and inlet head. Changed bypass DFU filter.

Flow Check by: Nick Bratton

Trinity Consultants

CONTINUOUS PARTICULATE SAMPLER

FLOW CHECK

SITE NAME	CSX AQ5	**Date**	7/18/2024	**Start Time**	9:30
PROJECT	234501.0038			**Stop Time**	13:15
SITE OPERATOR	Trinity				

Analyzer Mfg	T-API
Analyzer Model	T640X
Analyzer s/n	1690

= Enter Flow Check Data
= Cell Containing Equations

REFERENCE EQUIPMENT:

	Model	Serial Number
Temperature Standard	Delta Cal	1264
Pressure Standard	Delta Cal	1264
Flow Standard	Delta Cal	1264
Certification Date	1/24/2024	1264

ZERO TEST / LEAK CHECK

PM Channel	Indicated Conc.	
PM_{10}	0.1	µg/m3
$PM_{2.5}$	0.1	µg/m3

CRITERIA:
PM < 0.2 µg/m3

TEMPERATURE SENSOR CALIBRATION

Indicated Temp. (°C)	Ref. Std. Temp.	Difference	
21.8	25.7	3.9	As found
30.7	31.00	0.3	After maint.

CRITERIA:
DIFFERENCE < ±2°C

PRESSURE SENSOR CALIBRATION

Indicated Pressure		Ref. Std. Pressure	Difference	
kPa	mmHg	mmHg	mmHg	
113.6	852.1	761.0	-91.1	As found
-	761.1	760.5	-0.6	After maint.

CRITERIA:
DIFFERENCE < ±10 mm Hg

Sample FLOW VERIFICATION

Target Flow L/min	Indicated Flow (I) L/min	Ref. Std. Flow (R) L/min	Difference Ref. Flow %	Difference Design Flow %	
5.00	11.88	7.93	49.8%	58.6%	as found.
5.00	5.00	5.01	-0.2%	0.2%	Calibrated

CRITERIA:
±4% OF REFERENCE, OR ±5% OF DESIGN FLOW (5.0 L/min)

Bypass FLOW VERIFICATION

Target Flow L/min	Indicated Flow (I) L/min	Ref. Std. Flow (R) L/min	Difference Ref. Flow %	Difference Design Flow %	
11.67	-2.07	15.42	-113.4%	32.1%	as found.
11.67	11.58	11.53	0.4%	-1.2%	Calibrated

CRITERIA:
±4% OF REFERENCE, OR ±5% OF DESIGN FLOW (11.7 L/min)

PMT VERIFICATION

Ref. Peak Channel	Indicated Value	Difference	
10.9	7.1	-3.8	as found.
10.9	10.9	0.0	Calibrated

CRITERIA:
10.9 ±1.5

COMMENTS

See OneNote for further details. Cleaned unit and inlet head. Changed bypass DFU filter. Cleaned optical chamber. Replaced bypass flow meter. Replaced external pump.

Flow Check by: Nick Bratton

Trinity Consultants

CONTINUOUS PARTICULATE SAMPLER

FLOW CHECK

SITE NAME	CSX AQ5	**Date**	8/14/2024	**Start Time**	9:00
PROJECT	234501.0038			**Stop Time**	12:15
SITE OPERATOR	Trinity				

Analyzer Mfg	T-API
Analyzer Model	T640X
Analyzer s/n	1690

= Enter Flow Check Data
= Cell Containing Equations

REFERENCE EQUIPMENT:

	Model	Serial Number
Temperature Standard	Delta Cal	210062
Pressure Standard	Delta Cal	210062
Flow Standard	Delta Cal	210062
Certification Date	7/16/2024	210062

ZERO TEST / LEAK CHECK

PM Channel	Indicated Conc.	
PM_{10}	0.2	µg/m3
$PM_{2.5}$	0.2	µg/m3

CRITERIA:
PM < 0.2 µg/m3

TEMPERATURE SENSOR CALIBRATION

Indicated Temp.	Ref. Std. Temp.	Difference	
26.0	25.2	-0.8	°C
29.0	29.2	0.2	°C

CRITERIA:
DIFFERENCE < ±2°C

PRESSURE SENSOR CALIBRATION

Indicated Pressure		Ref. Std. Pressure	Difference
kPa	mmHg	mmHg	mmHg
-	765.0	764.5	-0.5
-	764.9	764.5	-0.4

CRITERIA:
DIFFERENCE < ±10 mm Hg

Sample FLOW VERIFICATION

Target Flow L/min	Indicated Flow (I) L/min	Ref. Std. Flow (R) L/min	Difference Ref. Flow %	Difference Design Flow %
5.00	5.06	5.13	-1.4%	2.6%
5.00	5.00	4.99	0.2%	-0.2%

CRITERIA:
±4% OF REFERENCE, OR ±5% OF DESIGN FLOW (5.0 L/min)

Bypass FLOW VERIFICATION

Target Flow L/min	Indicated Flow (I) L/min	Ref. Std. Flow (R) L/min	Difference Ref. Flow %	Difference Design Flow %	
11.67	-1.44	14.58	-109.9%	24.9%	as found.
11.67	11.67	11.70	-0.3%	0.3%	Calibrated

CRITERIA:
±4% OF REFERENCE, OR ±5% OF DESIGN FLOW (11.7 L/min)

PMT VERIFICATION

Ref. Peak Channel	Indicated Value	Difference	
10.9	10.8	-0.1	as found.
10.9	10.9	0.0	Calibrated

CRITERIA:
10.9 ±1.5

COMMENTS

Cleaned unit and inlet head. Changed sample and bypass DFU filters. Installed coalescent filter and installation to ASC downtube.

Flow Check by: Nick Bratton

CONTINUOUS PARTICULATE SAMPLER
FLOW CHECK

SITE NAME	CSX AQ5	**Date**	9/5/2024	**Start Time**	8:30
PROJECT	234501.0038			**Stop Time**	9:30
SITE OPERATOR	Trinity				

Analyzer Mfg	T-API
Analyzer Model	T640X
Analyzer s/n	1690

= Enter Flow Check Data
= Cell Containing Equations

REFERENCE EQUIPMENT:

	Model	Serial Number
Temperature Standard	Delta Cal	210062
Pressure Standard	Delta Cal	210062
Flow Standard	Delta Cal	210062
Certification Date	7/16/2024	210062

ZERO TEST / LEAK CHECK

PM Channel	Indicated Conc.	
PM_{10}	0.0	µg/m3
$PM_{2.5}$	0.0	µg/m3

CRITERIA:
PM < 0.2 µg/m3

TEMPERATURE SENSOR CALIBRATION

Indicated Temp.	Ref. Std. Temp.	Difference	
21.4	19.5	-1.9	°C
21.6	21.7	0.1	°C

CRITERIA:
DIFFERENCE < ±2°C

PRESSURE SENSOR CALIBRATION

Indicated Pressure		Ref. Std. Pressure	Difference
kPa	mmHg	mmHg	mmHg
-	771.5	771.0	-0.5
-	771.5	771.0	-0.5

CRITERIA:

DIFFERENCE < ±10 mm Hg

Sample FLOW VERIFICATION

Target Flow L/min	Indicated Flow (I) L/min	Ref. Std. Flow (R) L/min	Difference Ref. Flow %	Difference Design Flow %
5.00	5.00	4.95	1.0%	-1.0%
5.00	5.03	5.03	0.0%	0.6%

CRITERIA:
±4% OF REFERENCE, OR ±5% OF DESIGN FLOW (5.0 L/min)

Bypass FLOW VERIFICATION

Target Flow L/min	Indicated Flow (I) L/min	Ref. Std. Flow (R) L/min	Difference Ref. Flow %	Difference Design Flow %	
11.67	11.88	11.80	0.7%	1.1%	as found.
11.67	11.67	11.67	0.0%	0.0%	Calibrated

CRITERIA:
±4% OF REFERENCE, OR ±5% OF DESIGN FLOW (11.7 L/min)

PMT VERIFICATION

Ref. Peak Channel	Indicated Value	Difference	
10.9	10.8	-0.1	as found.
10.9	10.9	0.0	Calibrated

CRITERIA:
10.9 ±1.5

COMMENTS

See OneNote for further details. Cleaned inlet head and downtube fittings. Only minor calibrations performed. Span dust check warning is present, everything else looks good

Flow Check by: Nick Bratton

Trinity Consultants

CONTINUOUS PARTICULATE SAMPLER

FLOW CHECK

SITE NAME	CSX AQ8	**Date**	7/10/2024	**Start Time**	11:30
PROJECT	234501.0038			**Stop Time**	13:45
SITE OPERATOR	Trinity				

Analyzer Mfg	T-API
Analyzer Model	T640X
Analyzer s/n	1689

= Enter Flow Check Data
= Cell Containing Equations

REFERENCE EQUIPMENT:

	Model	Serial Number
Temperature Standard	Delta Cal	1264
Pressure Standard	Delta Cal	1264
Flow Standard	Delta Cal	1264
Certification Date	1/24/2024	1264

ZERO TEST / LEAK CHECK

PM Channel	Indicated Conc.	
PM_{10}	0.1	µg/m3
$PM_{2.5}$	0.1	µg/m3

CRITERIA:
PM < 0.2 µg/m3

TEMPERATURE SENSOR CALIBRATION

Indicated Temp.	Ref. Std. Temp.	Difference	
30.6	32.0	1.40	°C
31.0	32.0	1.00	°C

CRITERIA:
DIFFERENCE < ±2°C

PRESSURE SENSOR CALIBRATION

Indicated Pressure		Ref. Std. Pressure	Difference
kPa	mmHg	mmHg	mmHg
101.1	758.3	758.0	-0.3
101.1	758.3	758.5	0.2

CRITERIA:

DIFFERENCE < ±10 mm Hg

Sample FLOW VERIFICATION

Target Flow L/min	Indicated Flow (I) L/min	Ref. Std. Flow (R) L/min	Difference Ref. Flow %	Difference Design Flow %
5.00	5.02	5.11	-1.8%	2.2%
5.00	5.04	5.07	-0.6%	1.4%

CRITERIA:
±4% OF REFERENCE, OR ±5% OF DESIGN FLOW (5.0 L/min)

Bypass FLOW VERIFICATION

Target Flow L/min	Indicated Flow (I) L/min	Ref. Std. Flow (R) L/min	Difference Ref. Flow %	Difference Design Flow %	
11.67	-4.06	15.46	-126.3%	32.5%	as found.
11.67	11.66	11.67	-0.1%	0.0%	Calibrated

CRITERIA:
±4% OF REFERENCE, OR ±5% OF DESIGN FLOW (11.7 L/min)

PMT VERIFICATION

Ref. Peak Channel	Indicated Value	Difference	
10.9	11.8	0.9	as found.
10.9	10.9	0.0	Calibrated

CRITERIA:
10.9 ±1.5

COMMENTS

Cleaned unit and inlet head. Changed bypass DFU filter. Performed all monthly flow checks - first row for each parameter is the as-found check, the second row is the as-left check. Leak checks passed on both. Reset sample flow slope and calibrated both the sample and bypass flow, no additional calibrations required. Sample flow slope warning is still present.

Flow Check by: Nick Bratton

Trinity Consultants

CONTINUOUS PARTICULATE SAMPLER

FLOW CHECK

SITE NAME	CSX AQ8	**Date**	7/18/2024	**Start Time**	13:30
PROJECT	234501.0038			**Stop Time**	15:45
SITE OPERATOR	Trinity				

Analyzer Mfg	T-API
Analyzer Model	T640X
Analyzer s/n	1689

= Enter Flow Check Data
= Cell Containing Equations

REFERENCE EQUIPMENT:

	Model	Serial Number
Temperature Standard	Delta Cal	1264
Pressure Standard	Delta Cal	1264
Flow Standard	Delta Cal	1264
Certification Date	1/24/2024	1264

ZERO TEST / LEAK CHECK

PM Channel	Indicated Conc.	
PM_{10}	0.0	µg/m3
$PM_{2.5}$	0.0	µg/m3

CRITERIA:
PM < 0.2 µg/m3

TEMPERATURE SENSOR CALIBRATION

Indicated Temp.	Ref. Std. Temp.	Difference	
25.4	29.8	4.4	°C
26.1	30.2	4.1	°C

CRITERIA:
DIFFERENCE < ±2°C

PRESSURE SENSOR CALIBRATION

Indicated Pressure		Ref. Std. Pressure	Difference
kPa	mmHg	mmHg	mmHg
-	829.5	760.5	-69.0
-	795.0	760.5	-34.5

CRITERIA:

DIFFERENCE < ±10 mm Hg

Sample FLOW VERIFICATION

Target Flow L/min	Indicated Flow (I) L/min	Ref. Std. Flow (R) L/min	Difference Ref. Flow %	Difference Design Flow %
5.00	5.00	5.07	-1.4%	1.4%
5.00	5.00	5.06	-1.2%	1.2%

CRITERIA:
±4% OF REFERENCE, OR ±5% OF DESIGN FLOW (5.0 L/min)

Bypass FLOW VERIFICATION

Target Flow L/min	Indicated Flow (I) L/min	Ref. Std. Flow (R) L/min	Difference Ref. Flow %	Difference Design Flow %	
11.67	19.47	4.27	356.0%	-63.4%	as found.
11.67	19.42	8.76	121.7%	-24.9%	as left.

CRITERIA:
±4% OF REFERENCE, OR ±5% OF DESIGN FLOW (11.7 L/min)

PMT VERIFICATION

Ref. Peak Channel	Indicated Value	Difference	
10.9	10.1	-0.8	as found.
10.9	10.1	-0.8	as left.

CRITERIA:
10.9 ±1.5

COMMENTS

See OneNote for further details. The unit may still have a weak external pump. Sample flow can reach target, but slope is set to ~0.72 after calibration. Bypass flow is variable and does not stay steady - bypass flow meter needs to be replaced. Exhaust lines are cracked and will need to be replaced.

Flow Check by: Nick Bratton

Trinity Consultants

CONTINUOUS PARTICULATE SAMPLER

FLOW CHECK

SITE NAME	CSX AQ8	**Date**	8/14/2024	**Start Time**	12:15
PROJECT	234501.0038			**Stop Time**	15:30
SITE OPERATOR	Trinity				

Analyzer Mfg	T-API
Analyzer Model	T640X
Analyzer s/n	1689

= Enter Flow Check Data
= Cell Containing Equations

REFERENCE EQUIPMENT:

	Model	Serial Number
Temperature Standard	Delta Cal	210062
Pressure Standard	Delta Cal	210062
Flow Standard	Delta Cal	210062
Certification Date	7/16/2024	210062

ZERO TEST / LEAK CHECK

PM Channel	Indicated Conc.	
PM_{10}	0.0	µg/m3
$PM_{2.5}$	0.0	µg/m3

CRITERIA:
PM < 0.2 µg/m3

TEMPERATURE SENSOR CALIBRATION

Indicated Temp.	Ref. Std. Temp.	Difference	
23.4	28.0	4.6	°C
24.8	29.7	4.9	°C

CRITERIA:
DIFFERENCE < ±2°C

PRESSURE SENSOR CALIBRATION

Indicated Pressure		Ref. Std. Pressure	Difference
kPa	mmHg	mmHg	mmHg
-	753.7	764.0	10.3
-	762.2	763.5	1.3

CRITERIA:

DIFFERENCE < ±10 mm Hg

Sample FLOW VERIFICATION

Target Flow L/min	Indicated Flow (I) L/min	Ref. Std. Flow (R) L/min	Difference Ref. Flow %	Difference Design Flow %
5.00	4.92	4.39	12.1%	-12.2%
5.00	4.97	4.50	10.4%	-10.0%

CRITERIA:
±4% OF REFERENCE, OR ±5% OF DESIGN FLOW (5.0 L/min)

Bypass FLOW VERIFICATION

Target Flow L/min	Indicated Flow (I) L/min	Ref. Std. Flow (R) L/min	Difference Ref. Flow %	Difference Design Flow %	
11.67	15.57	15.18	2.6%	30.1%	as found.
11.67	15.50	6.90	124.6%	-40.9%	Calibrated

CRITERIA:
±4% OF REFERENCE, OR ±5% OF DESIGN FLOW (11.7 L/min)

PMT VERIFICATION

Ref. Peak Channel	Indicated Value	Difference	
10.9	10.9	0.0	as found.
10.9	10.9	0.0	Calibrated

CRITERIA:
10.9 ±1.5

COMMENTS

Cleaned unit and inlet head. Changed sample and bypass DFU filters. Installed coalescent filter and installation to ASC downtube.

Flow Check by: Nick Bratton

Trinity Consultants

CONTINUOUS PARTICULATE SAMPLER

FLOW CHECK

SITE NAME	CSX AQ8	**Date**	8/16/2024	**Start Time**	17:30
PROJECT	234501.0038			**Stop Time**	18:30
SITE OPERATOR	Trinity				

Analyzer Mfg	T-API
Analyzer Model	T640X
Analyzer s/n	1689

= Enter Flow Check Data
= Cell Containing Equations

REFERENCE EQUIPMENT:

	Model	Serial Number
Temperature Standard	Delta Cal	210062
Pressure Standard	Delta Cal	210062
Flow Standard	Delta Cal	210062
Certification Date	7/16/2024	210062

ZERO TEST / LEAK CHECK

PM Channel	Indicated Conc.	
PM_{10}	0.1	µg/m3
$PM_{2.5}$	0.1	µg/m3

CRITERIA:
PM < 0.2 µg/m3

TEMPERATURE SENSOR CALIBRATION

Indicated Temp.	Ref. Std. Temp.	Difference	
25.1	29.5	4.4	°C
29.5	29.3	-0.2	°C

CRITERIA:
DIFFERENCE < ±2°C

PRESSURE SENSOR CALIBRATION

Indicated Pressure		Ref. Std. Pressure	Difference
kPa	mmHg	mmHg	mmHg
-	766.9	760.5	-6.4
-	761.0	761.0	0.0

CRITERIA:

DIFFERENCE < ±10 mm Hg

Sample FLOW VERIFICATION

Target Flow L/min	Indicated Flow (I) L/min	Ref. Std. Flow (R) L/min	Difference Ref. Flow %	Difference Design Flow %
5.00	5.04	4.63	8.9%	-7.4%
5.00	5.02	5.07	-1.0%	1.4%

CRITERIA:
±4% OF REFERENCE, OR ±5% OF DESIGN FLOW (5.0 L/min)

Bypass FLOW VERIFICATION

Target Flow L/min	Indicated Flow (I) L/min	Ref. Std. Flow (R) L/min	Difference Ref. Flow %	Difference Design Flow %	
11.67	15.40	8.54	80.3%	-26.8%	as found.
11.67	11.67	11.67	0.0%	0.0%	Calibrated

CRITERIA:
±4% OF REFERENCE, OR ±5% OF DESIGN FLOW (11.7 L/min)

PMT VERIFICATION

Ref. Peak Channel	Indicated Value	Difference	
10.9	10.9	0.0	as found.
10.9	10.9	0.0	Calibrated

CRITERIA:
10.9 ±1.5

COMMENTS

Changed bypass flow meter. Sample flow slope warning persists (0.7422) - assuming this needs an internal sample pump replacement.

Flow Check by: Nick Bratton

Trinity Consultants

CONTINUOUS PARTICULATE SAMPLER

FLOW CHECK

SITE NAME	CSX AQ8	**Date**	9/5/2024	**Start Time**	9:30
PROJECT	234501.0038			**Stop Time**	10:30
SITE OPERATOR	Trinity				

Analyzer Mfg	T-API
Analyzer Model	T640X
Analyzer s/n	1689

= Enter Flow Check Data
= Cell Containing Equations

REFERENCE EQUIPMENT:

	Model	Serial Number
Temperature Standard	Delta Cal	210062
Pressure Standard	Delta Cal	210062
Flow Standard	Delta Cal	210062
Certification Date	7/16/2024	210062

ZERO TEST / LEAK CHECK

PM Channel	Indicated Conc.	
PM_{10}	0.0	µg/m3
$PM_{2.5}$	0.0	µg/m3

CRITERIA:
PM < 0.2 µg/m3

TEMPERATURE SENSOR CALIBRATION

Indicated Temp.	Ref. Std. Temp.	Difference	
20.6	20.6	0	°C
21.0	21.0	0	°C

CRITERIA:
DIFFERENCE < ±2°C

PRESSURE SENSOR CALIBRATION

Indicated Pressure		Ref. Std. Pressure	Difference
kPa	mmHg	mmHg	mmHg
-	771.1	770.5	-0.6
-	770.8	770.5	-0.3

CRITERIA:

DIFFERENCE < ±10 mm Hg

Sample FLOW VERIFICATION

Target Flow L/min	Indicated Flow (I) L/min	Ref. Std. Flow (R) L/min	Difference Ref. Flow %	Difference Design Flow %
5.00	5.00	4.94	1.2%	-1.2%
5.00	5.00	5.00	0.0%	0.0%

CRITERIA:
±4% OF REFERENCE, OR ±5% OF DESIGN FLOW (5.0 L/min)

Bypass FLOW VERIFICATION

Target Flow L/min	Indicated Flow (I) L/min	Ref. Std. Flow (R) L/min	Difference Ref. Flow %	Difference Design Flow %	
11.67	11.64	11.72	-0.7%	0.4%	as found.
11.67	11.67	11.69	-0.2%	0.2%	Calibrated

CRITERIA:
±4% OF REFERENCE, OR ±5% OF DESIGN FLOW (11.7 L/min)

PMT VERIFICATION

Ref. Peak Channel	Indicated Value	Difference	
10.9	11.0	0.1	as found.
10.9	10.9	0.0	Calibrated

CRITERIA:
10.9 ±1.5

COMMENTS

See OneNote for further details. Cleaned inlet head and downtube fittings. Only minor calibrations performed. Sample flow slope warning is present, everything looks good

Flow Check by: Nick Bratton

APPENDIX M. MONITORING ENCLOSURE TEMPERATURES FOR THIRD QUARTER 2024

CSX AQ5

SHELTER TEMPERATURE in deg C for JULY, 2024

Hr Beg Hr End Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	22.8	23.5	24.0	24.1	24.2	24.1	23.4	23.3	21.9	21.7	21.9	21.7	22.0	21.8	21.7	21.7	21.9	22.2	22.3	22.6	22.9	22.9	23.1	23.2	**22.7**	**24.2**	**21.7**
2	23.5	23.3	23.6	23.5	23.5	23.3	22.7	21.9	21.2	21.1	21.0	21.1	21.3	21.4	21.0	21.2	21.1	21.6	21.9	22.1	22.3	22.5	22.7	22.7	**22.1**	**23.6**	**21.0**
3	23.1	23.2	23.0	23.0	23.1	23.0	22.5	21.6	20.9	20.7	20.4	20.4	20.4	20.6	20.6	20.6	21.0	21.2	21.6	22.0	22.2	22.3	22.3	22.4	**21.8**	**23.2**	**20.4**
4	22.5	22.6	22.6	22.6	22.7	22.6	22.3	20.9	20.2	19.8	19.9	20.2	20.0	20.1	18.0	18.1	19.1	20.4	20.6	21.3	21.6	21.7	21.8	21.9	**21.0**	**22.7**	**18.0**
5	22.0	22.0	22.1	22.1	22.0	21.9	21.8	21.4	19.8	19.2	19.4	19.1	19.4	19.1	18.7	19.2	19.0	18.3	19.7	20.4	20.7	20.7	20.6	20.8	**20.4**	**22.1**	**18.3**
6	21.0	20.8	21.3	21.4	21.5	21.4	20.5	18.2	17.4	17.9	18.4	18.5	18.8	19.1	19.5	19.3	18.5	18.9	19.2	20.4	20.7	20.6	20.7	21.2	**19.8**	**21.5**	**17.4**
7	21.5	21.5	21.5	21.6	21.8	21.8	21.7	20.3	19.9	18.2	18.1	18.2	19.5	19.3	19.3	19.2	17.8	19.6	20.0	21.0	21.5	21.6	21.7	21.9	**20.4**	**21.9**	**17.8**
8	22.1	21.9	22.0	22.1	22.3	22.1	21.5	20.5	19.7	19.1	18.9	18.9	18.4	17.6	18.3	18.1	18.6	17.7	19.6	20.1	20.6	21.0	21.0	21.4	**20.1**	**22.3**	**17.6**
9	21.6	21.7	21.8	21.9	22.0	21.9	21.2	19.9	19.1	17.9	17.4	17.5	18.9	20.9	22.8	22.0	20.6	21.0	20.4	20.7	20.9	21.0	20.8	21.3	**20.6**	**22.8**	**17.4**
10	21.1	21.3	21.5	21.4	21.4	21.4	21.1	27.9	29.2	20.5	17.8	17.8	17.1	17.2	17.3	17.3	18.2	19.8	20.1	20.3	20.6	20.6	21.0	21.6	**20.6**	**29.2**	**17.1**
11	22.2	22.3	22.2	22.2	22.5	22.5	21.9	21.0	19.8	19.3	19.3	19.4	19.1	18.4	17.7	19.4	20.1	20.3	20.7	21.1	21.5	21.8	22.0	22.0	**20.8**	**22.5**	**17.7**
12	22.1	22.1	22.1	22.2	22.2	22.1	22.0	22.0	21.9	21.7	21.7	21.4	21.2	21.8	21.6	21.2	21.4	21.6	21.6	21.6	21.7	21.7	21.8	22.0	**21.8**	**22.2**	**21.2**
13	22.2	22.3	22.4	22.4	22.4	22.3	22.0	21.2	21.0	21.0	19.9	19.1	19.5	19.0	18.9	18.3	18.7	19.4	20.1	20.5	21.2	21.1	21.4	21.4	**20.7**	**22.4**	**18.3**
14	21.7	22.0	22.0	22.1	22.1	22.0	21.2	18.7	16.9	17.1	17.5	17.9	17.8	17.3	17.5	17.5	17.5	18.4	19.6	20.1	20.6	20.9	21.0	21.1	**19.6**	**22.1**	**16.9**
15	20.9	21.4	21.6	21.7	21.8	21.7	21.1	19.0	17.4	17.4	17.7	17.9	18.1	18.4	18.7	18.4	18.2	19.0	19.2	20.4	20.7	20.8	21.1	21.3	**19.7**	**21.8**	**17.4**
16	21.3	21.5	21.5	21.8	22.1	21.9	20.6	18.6	16.9	17.5	18.2	18.5	18.8	18.3	18.6	18.9	18.8	18.3	17.2	18.6	19.7	21.9	21.9	21.8	**19.7**	**22.1**	**16.9**
17	21.8	22.0	22.0	21.9	21.7	21.9	21.3	19.6	18.5	16.7	16.9	17.4	17.8	17.6	18.5	20.3	21.1	21.4	21.7	21.6	21.6	21.6	21.8	21.9	**20.4**	**22.0**	**16.7**
18	22.0	22.1	22.1	22.3	22.3	22.3	22.0	21.1	22.2	25.2	23.6	28.5	23.0	20.7	22.0	20.9	20.9	21.1	21.6	21.8	22.0	22.2	22.4	22.5	**22.4**	**28.5**	**20.7**
19	22.6	22.7	22.6	22.7	22.9	22.9	22.6	22.1	21.7	20.9	20.8	21.0	21.3	21.2	21.0	21.1	21.1	21.2	21.5	21.7	22.0	22.2	22.4	22.4	**21.9**	**22.9**	**20.8**
20	22.5	22.6	22.6	22.5	22.6	22.5	22.2	22.1	21.4	21.4	20.4	20.1	19.9	20.8	21.5	21.8	21.9	22.1	21.8	22.1	22.3	22.3	22.3	22.5	**21.8**	**22.6**	**19.9**
21	22.5	22.7	22.8	22.7	22.7	22.7	22.2	21.1	20.4	20.0	20.0	19.9	20.9	20.0	19.8	19.8	19.6	20.1	20.8	21.2	21.3	21.5	21.6	21.7	**21.2**	**22.8**	**19.6**
22	21.7	22.1	22.1	22.1	22.2	22.1	21.8	21.8	21.3	22.0	21.8	22.5	22.1	22.5	22.1	22.1	21.9	21.8	22.0	22.3	22.2	22.1	22.3	22.3	**22.1**	**22.5**	**21.3**
23	22.3	22.4	22.5	22.5	22.7	22.7	22.2	21.9	20.8	20.4	20.3	20.5	20.5	20.5	20.0	19.7	19.9	20.7	21.2	21.2	21.4	21.7	21.9	22.2	**21.3**	**22.7**	**19.7**
24	22.4	22.2	22.1	22.3	22.4	22.2	22.3	21.8	21.9	21.3	21.0	20.4	20.3	20.3	20.3	20.5	21.1	21.6	21.8	21.7	22.1	22.1	22.1	22.3	**21.6**	**22.4**	**20.3**
25	22.3	22.2	22.3	22.4	22.2	22.2	22.2	21.8	21.4	20.9	20.5	19.6	19.3	19.5	20.1	20.9	21.2	21.4	21.6	21.8	21.9	22.2	22.4	22.4	**21.4**	**22.4**	**19.3**
26	22.5	22.5	22.5	22.7	22.7	22.8	22.8	22.5	22.1	22.1	21.3	21.6	21.2	21.3	21.4	21.2	21.4	21.6	22.0	22.2	22.5	22.6	22.8	22.8	**22.1**	**22.8**	**21.2**
27	23.0	23.2	23.2	23.4	23.4	23.3	22.3	21.2	20.6	20.3	20.0	20.7	20.4	20.7	20.7	20.6	21.0	21.2	21.6	22.0	22.3	22.6	22.6	22.8	**21.8**	**23.4**	**20.0**
28	23.0	23.1	23.2	23.3	23.3	23.3	22.4	21.2	20.8	20.4	20.2	20.2	20.3	20.5	20.4	20.5	20.5	20.9	21.1	21.6	21.9	22.1	22.2	22.3	**21.6**	**23.3**	**20.2**
29	22.4	22.5	22.7	22.7	22.6	22.6	22.5	21.4	20.6	20.0	19.7	20.1	19.8	20.0	19.8	19.7	19.9	20.7	21.6	22.3	22.2	22.1	22.3	22.3	**21.4**	**22.7**	**19.7**
30	22.2	22.3	22.4	22.5	22.5	22.4	22.2	22.2	21.9	21.9	21.6	21.5	21.2	20.6	20.2	20.5	20.6	20.9	21.2	21.4	21.7	21.8	22.2	22.4	**21.7**	**22.5**	**20.2**
31	22.3	22.2	22.3	22.4	22.2	22.4	22.1	21.0	20.0	18.8	18.9	19.6	19.4	17.9	18.9	18.8	21.4	20.8	21.4	22.0	22.2	22.3	22.2	22.3	**21.0**	**22.4**	**17.9**
MEAN	**22.2**	**22.3**	**22.3**	**22.4**	**22.5**	**22.4**	**22.0**	**21.3**	**20.6**	**20.1**	**19.8**	**20.0**	**19.9**	**19.8**	**19.9**	**20.0**	**20.1**	**20.5**	**20.9**	**21.3**	**21.6**	**21.8**	**21.9**	**22.0**	**21.1**		
MAX	**23.5**	**23.5**	**24.0**	**24.1**	**24.2**	**24.1**	**23.4**	**27.9**	**29.2**	**25.2**	**23.6**	**28.5**	**23.0**	**22.5**	**22.8**	**22.1**	**21.9**	**22.2**	**22.3**	**22.6**	**22.9**	**22.9**	**23.1**	**23.2**		**29.2**	
MIN	**20.9**	**20.8**	**21.3**	**21.4**	**21.4**	**21.4**	**20.5**	**18.2**	**16.9**	**16.7**	**16.9**	**17.4**	**17.1**	**17.2**	**17.3**	**17.3**	**17.5**	**17.7**	**17.2**	**18.6**	**19.7**	**20.6**	**20.6**	**20.8**			**16.7**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 744 DATA RECOVERY RATE = 100.0%

MONTHLY MEAN = 21.1 deg C

MAXIMUM SHELTER TEMPERATURE = 29.2 deg C DATE OF OCCURRENCE = 7/10 AT 0900 MAXIMUM DAILY MEAN = 22.7 deg C DATE OF OCCURRENCE = 7/1

MINIMUM SHELTER TEMPERATURE = 16.7 deg C DATE OF OCCURRENCE = 7/17 AT 1000 MINUMUM DAILY MEAN = 19.6 deg C DATE OF OCCURRENCE = 7/14

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

CSX AQ5

SHELTER TEMPERATURE in deg C for AUGUST, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	22.4	22.5	22.5	22.5	22.5	22.4	21.8	20.1	18.9	17.6	17.1	18.1	19.4	18.4	18.5	17.6	18.1	19.3	20.0	20.4	20.7	20.8	20.8	21.1	**20.1**	**22.5**	**17.1**
2	21.1	21.3	21.6	21.7	21.5	21.7	20.9	19.9	18.8	17.4	17.7	18.2	18.6	18.7	19.0	18.4	18.4	19.3	21.0	22.1	22.0	22.1	22.3	22.1	**20.2**	**22.3**	**17.4**
3	22.1	22.2	22.1	22.2	22.5	22.4	21.9	21.0	20.3	20.0	19.2	19.1	17.5	17.6	17.6	17.7	21.2	21.8	22.3	22.3	22.4	22.4	22.4	22.4	**20.9**	**22.5**	**17.5**
4	22.5	22.5	22.5	22.5	22.5	22.5	22.4	22.3	22.0	21.5	20.8	20.3	20.9	21.0	21.1	20.4	21.0	21.2	21.2	21.8	22.2	22.3	22.3	22.3	**21.8**	**22.5**	**20.3**
5	22.4	22.4	22.4	22.5	22.5	22.5	22.0	20.9	19.9	19.6	19.4	19.2	19.8	20.1	19.2	19.8	19.4	19.6	20.2	20.9	21.0	21.3	21.3	21.5	**20.8**	**22.5**	**19.2**
6	21.8	21.8	21.7	21.7	21.9	21.9	21.3	20.1	19.3	18.8	17.4	17.5	17.6	18.5	18.8	18.1	19.2	20.2	20.6	21.1	22.1	22.3	22.3	22.5	**20.4**	**22.5**	**17.4**
7	22.4	22.3	22.3	22.4	22.4	22.1	22.0	21.7	21.1	20.4	19.2	19.9	19.8	21.1	20.9	20.5	20.9	21.5	21.6	21.8	21.9	21.9	22.5	22.8	**21.5**	**22.8**	**19.2**
8	22.7	22.7	22.7	22.8	22.6	22.6	22.5	22.2	22.3	22.0	22.0	21.7	21.8	21.7	21.8	21.5	21.6	21.6	21.5	21.6	21.4	21.6	21.6	21.4	**22.0**	**22.8**	**21.4**
9	21.3	21.3	21.3	21.4	21.3	21.3	21.2	21.2	21.2	21.5	21.2	21.4	21.7	22.0	21.5	21.4	21.6	21.5	21.3	21.6	21.8	21.8	21.9	22.0	**21.5**	**22.0**	**21.2**
10	22.1	22.0	22.2	22.4	22.6	22.5	22.2	20.9	20.4	20.2	20.2	19.8	19.6	19.6	19.8	20.0	19.8	20.6	21.1	21.5	21.5	21.6	21.9	22.2	**21.1**	**22.6**	**19.6**
11	22.3	22.6	22.6	22.8	22.7	22.8	22.7	22.3	21.3	21.9	21.5	21.8	21.5	21.0	21.0	21.2	21.3	21.5	22.2	22.5	22.8	22.9	23.0	23.2	**22.1**	**23.2**	**21.0**
12	23.3	23.5	23.3	23.4	23.5	23.6	22.4	21.4	20.8	20.4	20.8	20.8	21.0	21.2	21.1	21.0	21.2	21.4	21.8	22.4	22.6	22.7	22.9	23.3	**22.1**	**23.6**	**20.4**
13	23.1	23.5	23.4	23.4	23.5	23.4	22.8	21.5	21.0	21.1	21.0	21.2	21.3	21.6	21.4	20.7	21.1	21.8	21.7	22.1	22.5	22.5	22.8	22.8	**22.1**	**23.5**	**20.7**
14	22.9	23.1	23.2	23.1	23.1	23.0	22.4	21.6	24.2	30.0	31.7	37.9	39.3	39.3	39.6	40.2	40.1	41.2	40.5	37.6	35.7	34.0	32.7	32.1	**31.6**	**41.2**	**21.6**
15	32.0	31.6	31.0	30.7	30.4	30.1	31.5	35.7	38.2	38.0	38.3	38.8	39.0	38.9	39.7	39.8	40.1	40.7	39.6	37.6	36.2	35.1	34.2	33.1	**35.8**	**40.7**	**30.1**
16	32.6	32.1	31.9	31.5	31.2	31.0	32.4	37.1	37.9	38.4	39.9	40.8	39.2	39.5	39.8	40.4	40.1	39.7	38.6	37.0	36.4	36.1	35.8	35.4	**36.5**	**40.8**	**31.0**
17	34.9	34.1	31.2	31.2	30.1	29.2	30.3	32.0	33.5	36.0	37.2	39.2	38.5	39.2	38.0	37.4	37.4	36.8	35.2	33.9	33.2	33.0	32.5	33.1	**34.5**	**39.2**	**29.2**
18	33.4	33.3	33.1	32.9	33.4	33.7	34.4	35.0	35.7	37.3	38.9	38.9	39.7	39.7	39.8	39.6	40.0	40.2	38.5	34.5	31.9	30.5	29.9	30.0	**35.6**	**40.2**	**29.9**
19	30.3	30.8	31.7	32.2	32.3	31.8	32.8	35.7	37.9	39.1	39.4	39.2	40.2	39.8	40.7	40.6	39.7	36.8	35.6	34.4	32.4	31.6	31.2	31.0	**35.3**	**40.7**	**30.3**
20	30.7	30.0	29.3	29.1	28.3	27.4	27.3	27.8	29.7	31.0	33.4	34.8	35.3	36.0	35.8	34.2	33.1	31.7	30.2	28.4	27.3	26.4	25.7	25.2	**30.3**	**36.0**	**25.2**
21	24.6	24.0	23.5	22.9	22.5	22.1	23.4	26.3	29.7	32.2	34.1	35.6	35.9	36.4	37.3	36.2	35.4	35.8	33.8	31.3	29.7	28.2	26.9	26.2	**29.8**	**37.3**	**22.1**
22	25.6	25.3	25.0	24.5	23.7	23.2	24.9	29.1	34.0	38.1	39.6	40.2	40.5	40.0	40.3	40.2	40.6	38.2	36.0	33.0	31.1	29.9	28.7	28.0	**32.5**	**40.6**	**23.2**
23	27.4	26.9	26.2	25.3	25.1	25.0	27.2	32.8	37.9	37.9	38.4	40.0	39.8	41.5	41.4	41.0	40.1	38.6	36.6	34.1	32.6	31.4	30.5	29.7	**33.6**	**41.5**	**25.0**
24	29.1	28.6	28.2	27.8	27.3	27.3	28.9	32.8	35.7	38.4	39.5	39.7	40.0	41.5	41.5	41.6	40.5	39.8	37.8	35.5	33.9	32.9	32.1	31.2	**34.7**	**41.6**	**27.3**
25	30.5	30.0	29.7	29.5	29.3	29.1	30.5	34.4	38.4	38.5	38.4	40.4	41.1	40.5	39.5	40.2	40.5	40.5	38.2	36.1	34.9	34.1	33.3	32.5	**35.4**	**41.1**	**29.1**
26	32.0	31.7	31.6	31.3	31.1	31.1	32.0	35.5	38.4	38.4	38.5	39.3	40.4	40.7	40.4	37.9	34.6	36.9	36.1	35.0	34.5	34.1	33.5	33.2	**35.3**	**40.7**	**31.1**
27	32.7	32.5	32.0	31.3	30.7	30.6	31.8	36.9	38.4	38.1	38.7	39.2	39.4	39.6	40.1	40.4	40.1	40.4	40.3	38.5	37.4	36.7	36.0	35.5	**36.6**	**40.4**	**30.6**
28	35.0	34.6	34.4	34.1	33.8	33.8	35.1	37.9	38.1	38.2	38.6	38.4	38.3	38.2	38.4	38.7	39.1	39.5	40.0	40.2	40.7	38.6	38.0	37.7	**37.5**	**40.7**	**33.8**
29	37.4	36.8	36.8	36.4	36.4	36.5	37.2	38.6	40.0	39.8	40.1	39.4	39.9	40.5	40.4	40.1	38.1	36.9	34.8	32.7	32.2	31.5	31.2	30.3	**36.8**	**40.5**	**30.3**
30	30.7	31.2	31.6	31.7	31.4	30.4	30.7	30.6	30.9	31.5	31.7	32.1	33.0	34.4	34.8	34.5	34.0	33.6	32.8	32.4	32.1	31.7	31.7	31.9	**32.1**	**34.8**	**30.4**
31	31.4	31.6	31.9	32.3	32.5	32.8	33.0	34.3	37.3	39.7	39.7	38.4	39.0	38.6	38.0	38.9	38.2	37.4	36.9	36.1	34.7	34.0	33.3	33.2	**35.6**	**39.7**	**31.4**
MEAN	**27.2**	**27.1**	**26.9**	**26.8**	**26.6**	**26.4**	**26.8**	**28.1**	**29.1**	**29.8**	**30.1**	**30.7**	**30.9**	**31.2**	**31.2**	**31.0**	**30.9**	**30.8**	**30.3**	**29.4**	**28.8**	**28.3**	**27.9**	**27.7**	**28.9**		
MAX	**37.4**	**36.8**	**36.8**	**36.4**	**36.4**	**36.5**	**37.2**	**38.6**	**40.0**	**39.8**	**40.1**	**40.8**	**41.1**	**41.5**	**41.5**	**41.6**	**40.6**	**41.2**	**40.5**	**40.2**	**40.7**	**38.6**	**38.0**	**37.7**		**41.6**	
MIN	**21.1**	**21.3**	**21.3**	**21.4**	**21.3**	**21.3**	**20.9**	**19.9**	**18.8**	**17.4**	**17.1**	**17.5**	**17.5**	**17.6**	**17.6**	**17.6**	**18.1**	**19.3**	**20.0**	**20.4**	**20.7**	**20.8**	**20.8**	**21.1**			**17.1**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 744 DATA RECOVERY RATE = 100.0%

MONTHLY MEAN = 28.9 deg C

MAXIMUM SHELTER TEMPERATURE = 41.6 deg C DATE OF OCCURRENCE = 8/24 AT 1600 MAXIMUM DAILY MEAN = 37.5 deg C DATE OF OCCURRENCE = 8/28

MINIMUM SHELTER TEMPERATURE = 17.1 deg C DATE OF OCCURRENCE = 8/1 AT 1100 MINUMUM DAILY MEAN = 20.1 deg C DATE OF OCCURRENCE = 8/1

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

CSX AQ5

SHELTER TEMPERATURE in deg C for SEPTEMBER, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	33.4	33.5	33.5	33.6	33.2	33.3	33.7	35.5	38.0	39.5	39.7	39.1	39.5	39.6	39.5	39.7	40.8	41.1	40.2	38.5	37.3	36.4	36.0	35.6	**37.1**	**41.1**	**33.2**
2	34.9	34.3	33.2	32.3	31.3	30.7	30.7	32.2	34.3	36.6	38.3	38.8	39.8	40.4	40.5	39.8	38.8	37.0	34.1	31.5	30.2	29.3	28.6	27.8	**34.4**	**40.5**	**27.8**
3	26.9	26.1	25.2	24.3	23.6	23.0	24.6	29.3	33.4	35.0	36.1	36.9	39.4	40.8	41.4	40.8	39.5	38.1	34.3	31.2	29.8	28.2	27.9	27.6	**31.8**	**41.4**	**23.0**
4	26.6	25.8	25.1	24.5	23.9	23.6	24.2	28.8	34.3	38.0	38.9	39.1	39.8	39.8	40.1	40.5	38.9	36.9	33.9	31.7	30.3	29.4	29.0	28.8	**32.2**	**40.5**	**23.6**
5	28.7	28.2	27.2	27.0	26.5	26.0	26.8	29.9	29.5	35.8	38.5	39.8	40.4	40.7	40.9	40.7	40.4	40.0	36.5	33.6	32.1	31.1	30.6	30.9	**33.4**	**40.9**	**26.0**
6	30.6	30.2	29.8	29.5	29.1	28.5	29.0	31.3	34.4	37.8	39.4	38.7	40.1	40.4	39.5	39.7	39.0	39.7	37.2	34.5	32.9	32.3	32.2	31.8	**34.5**	**40.4**	**28.5**
7	31.7	31.4	31.1	30.9	31.0	30.9	31.0	33.0	36.0	38.0	39.3	34.1	29.1	28.1	27.7	27.3	28.4	32.1	30.7	28.1	26.7	25.6	24.6	23.8	**30.4**	**39.3**	**23.8**
8	23.2	22.8	22.2	21.8	21.3	20.5	21.7	26.6	29.2	30.8	32.4	33.6	35.1	36.3	36.4	36.0	35.3	33.8	31.1	28.8	27.0	25.5	24.3	23.1	**28.3**	**36.4**	**20.5**
9	22.4	22.1	21.8	21.4	20.8	20.4	21.6	28.2	33.8	36.5	38.2	39.9	40.2	40.1	39.8	40.1	38.9	37.2	34.2	31.6	29.9	28.6	27.9	27.4	**31.0**	**40.2**	**20.4**
10	27.2	26.6	26.0	25.8	25.6	25.5	26.3	30.7	35.2	37.8	39.0	39.4	39.8	40.3	40.0	40.3	40.6	41.0	37.0	34.7	33.2	32.0	30.8	29.8	**33.5**	**41.0**	**25.5**
11	29.0	28.6	27.9	27.5	27.5	27.5	28.4	32.8	36.9	39.2	39.5	39.8	40.3	40.1	40.6	40.7	41.7	40.1	36.8	34.3	32.9	32.0	31.4	30.8	**34.4**	**41.7**	**27.5**
12	30.0	29.5	29.3	28.9	28.9	29.3	29.7	33.3	37.0	39.5	40.0	40.4	41.3	41.0	40.8	41.1	40.7	39.7	36.4	33.5	31.8	31.1	30.7	30.4	**34.8**	**41.3**	**28.9**
13	30.2	30.3	30.2	30.4	30.6	30.1	30.3	31.1	32.2	33.2	34.3	36.5	39.7	39.9	40.0	40.0	41.2	40.0	37.1	35.2	34.2	33.3	32.6	31.7	**34.3**	**41.2**	**30.1**
14	31.3	30.9	30.5	29.6	29.3	28.5	29.3	33.6	37.2	39.7	40.9	40.8	40.4	40.0	40.3	40.8	40.0	39.0	36.0	33.7	32.3	31.3	30.7	30.3	**34.9**	**40.9**	**28.5**
15	30.0	29.7	29.1	28.7	28.3	27.9	28.4	31.5	34.4	36.2	39.3	39.9	39.9	40.5	41.5	41.1	39.1	36.5	34.5	32.6	31.0	30.1	28.9	27.8	**33.6**	**41.5**	**27.8**
16	27.6	27.8	27.0	26.3	26.1	26.0	26.4	27.8	30.8	33.6	35.7	39.0	40.0	40.1	40.4	39.5	36.8	34.6	32.8	31.7	31.0	30.7	30.6	30.6	**32.2**	**40.4**	**26.0**
17	30.7	30.6	30.6	30.9	30.8	30.7	31.0	31.6	32.0	34.4	36.8	38.3	37.8	37.7	36.8	34.4	32.7	32.6	32.3	31.9	31.7	31.2	31.2	31.3	**32.9**	**38.3**	**30.6**
18	31.3	29.5	29.5	29.3	29.3	29.6	29.3	29.9	30.5	30.7	26.6	29.5	35.4	38.3	37.3	35.4	34.4	33.0	30.5	30.6	30.8	31.1	31.3	31.2	**31.4**	**38.3**	**26.6**
19	31.0	30.9	31.0	31.1	31.0	30.6	30.8	33.0	35.6	38.4	39.2	39.9	40.2	39.5	40.1	39.7	40.9	39.1	36.8	35.0	33.7	32.2	31.2	30.0	**35.0**	**40.9**	**30.0**
20	29.5	29.3	29.1	29.2	29.0	29.2	30.2	34.1	37.4	39.3	40.4	39.8	39.6	39.6	39.9	40.6	40.4	39.4	36.7	35.1	33.7	32.7	32.0	31.2	**34.9**	**40.6**	**29.0**
21	31.3	31.7	31.6	32.1	32.5	32.2	31.9	33.8	37.0	39.0	38.9	38.3	39.2	37.5	36.6	35.6	35.4	35.4	34.7	34.3	33.7	32.7	32.1	31.1	**34.5**	**39.2**	**31.1**
22	29.0	27.5	26.9	27.3	27.9	28.7	28.4	28.6	31.0	33.8	33.8	35.9	36.5	38.1	38.8	36.5	35.5	34.2	33.0	32.3	32.1	31.2	29.6	29.1	**31.9**	**38.8**	**26.9**
23	29.0	29.0	28.9	29.1	29.4	29.0	29.0	28.9	28.7	28.8	28.8	29.6	29.9	30.1	30.4	30.3	29.2	28.2	26.7	26.5	26.8	25.7	26.0	26.2	**28.5**	**30.4**	**25.7**
24	26.2	26.2	26.3	26.4	26.4	26.5	26.5	26.9	27.6	29.1	29.4	30.6	31.5	30.6	30.3	29.7	28.6	27.4	27.1	27.7	27.8	27.8	27.6	27.8	**28.0**	**31.5**	**26.2**
25	27.8	28.0	28.4	28.1	27.5	27.1	27.0	27.4	28.1	27.9	28.3	28.9	29.8	30.7	31.2	31.2	31.1	30.0	29.7	29.8	30.1	30.5	30.8	31.2	**29.2**	**31.2**	**27.0**
26	31.4	31.3	31.4	31.5	31.4	30.6	29.8	30.6	32.1	34.1	36.7	39.2	39.2	37.7	37.3	37.4	36.8	36.4	35.8	35.0	34.1	33.6	34.0	34.1	**34.2**	**39.2**	**29.8**
27	34.0	34.3	34.4	34.5	34.3	34.0	33.4	32.6	32.7	32.4	32.6	33.4	32.5	32.6	32.7	32.6	32.3	31.9	31.7	31.3	30.6	30.3	30.5	30.0	**32.6**	**34.5**	**30.0**
28	30.2	30.9	31.1	31.0	30.8	30.5	29.8	30.5	31.4	32.1	32.9	36.1	39.4	39.9	40.5	41.3	40.8	37.7	34.4	32.7	32.0	31.3	30.6	30.0	**33.7**	**41.3**	**29.8**
29	30.0	30.2	29.7	28.7	29.1	29.5	29.7	29.8	30.0	30.3	30.5	30.7	30.8	31.2	31.2	31.2	30.9	30.4	30.1	29.8	29.7	28.5	27.7	28.1	**29.9**	**31.2**	**27.7**
30	28.2	28.2	28.2	28.4	28.4	28.0	27.6	27.4	26.7	27.6	29.5	30.6	31.3	32.1	32.3	31.5	30.1	30.1	30.0	30.0	30.1	29.9	29.5	29.1	**29.4**	**32.3**	**26.7**
MEAN	**29.4**	**29.2**	**28.9**	**28.7**	**28.5**	**28.3**	**28.6**	**30.7**	**32.9**	**34.8**	**35.8**	**36.6**	**37.3**	**37.5**	**37.5**	**37.2**	**36.6**	**35.8**	**33.7**	**32.2**	**31.3**	**30.5**	**30.0**	**29.6**	**32.6**		
MAX	**34.9**	**34.3**	**34.4**	**34.5**	**34.3**	**34.0**	**33.7**	**35.5**	**38.0**	**39.7**	**40.9**	**40.8**	**41.3**	**41.0**	**41.5**	**41.3**	**41.7**	**41.1**	**40.2**	**38.5**	**37.3**	**36.4**	**36.0**	**35.6**		**41.7**	
MIN	**22.4**	**22.1**	**21.8**	**21.4**	**20.8**	**20.4**	**21.6**	**26.6**	**26.7**	**27.6**	**26.6**	**28.9**	**29.1**	**28.1**	**27.7**	**27.3**	**28.4**	**27.4**	**26.7**	**26.5**	**26.7**	**25.5**	**24.3**	**23.1**			**20.4**

POSSIBLE NUMBER OF OBSERVATIONS = 720 ACTUAL NUMBER OF OBSERVATIONS = 720 DATA RECOVERY RATE = 100.0%

MONTHLY MEAN = 32.6 deg C

MAXIMUM SHELTER TEMPERATURE = 41.7 deg C DATE OF OCCURRENCE = 9/11 AT 1700 MAXIMUM DAILY MEAN = 37.1 deg C DATE OF OCCURRENCE = 9/1

MINIMUM SHELTER TEMPERATURE = 20.4 deg C DATE OF OCCURRENCE = 9/9 AT 0600 MINUMUM DAILY MEAN = 28.0 deg C DATE OF OCCURRENCE = 9/24

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

CSX AQ8

SHELTER TEMPERATURE in deg C for JULY, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	28.0	29.0	28.6	28.1	27.4	27.3	28.7	28.8	27.6	27.0	26.5	26.4	26.1	25.7	25.3	25.0	25.1	25.5	25.5	26.8	27.4	27.6	27.5	28.1	**27.0**	**29.0**	**25.0**
2	28.4	28.1	28.1	27.9	28.5	27.8	27.3	26.3	25.7	25.2	25.0	24.8	24.3	24.2	23.5	23.3	23.4	24.3	24.6	25.7	26.2	26.5	26.7	26.8	**25.9**	**28.5**	**23.3**
3	27.1	27.0	26.9	27.0	27.2	27.0	26.3	26.2	25.4	24.9	24.7	24.3	24.1	23.5	23.8	23.4	23.9	24.2	24.9	25.9	26.4	26.2	26.5	26.3	**25.5**	**27.2**	**23.4**
4	26.6	26.7	26.7	26.5	26.7	26.7	26.0	25.7	24.8	24.4	23.9	24.1	23.9	23.8	22.3	21.9	23.6	24.8	25.2	25.7	26.0	26.1	26.1	26.2	**25.2**	**26.7**	**21.9**
5	26.3	26.6	26.4	26.4	26.3	26.2	26.2	25.7	24.8	24.7	23.9	23.1	23.8	22.9	22.1	23.7	23.0	21.4	23.9	25.0	25.2	25.3	25.3	25.4	**24.7**	**26.6**	**21.4**
6	25.4	25.4	25.7	25.8	25.9	25.9	25.4	24.8	24.1	23.4	22.9	22.5	21.5	21.4	21.5	21.7	23.1	23.4	23.5	24.2	25.0	25.1	25.2	25.5	**24.1**	**25.9**	**21.4**
7	25.9	25.8	25.9	26.0	26.1	26.2	26.0	25.3	25.0	24.3	23.8	22.9	23.2	22.2	22.2	21.9	21.5	20.9	23.4	25.0	25.3	25.7	26.0	26.1	**24.4**	**26.2**	**20.9**
8	26.1	26.2	26.2	26.4	26.4	26.3	25.7	25.2	24.6	24.0	23.2	22.3	22.1	21.1	21.1	21.3	21.8	21.1	23.1	24.9	25.3	25.3	25.6	25.8	**24.2**	**26.4**	**21.1**
9	26.0	26.2	26.2	26.3	26.3	26.3	25.8	25.1	24.3	23.2	22.9	21.6	22.0	25.1	27.7	26.7	24.4	25.1	24.7	25.0	25.4	25.6	25.6	25.7	**25.1**	**27.7**	**21.6**
10	25.8	25.9	26.0	26.0	26.1	26.0	25.7	25.3	25.6	27.6	23.9	23.6	23.0	22.8	22.2	22.5	23.0	24.7	25.2	25.4	25.6	25.7	25.8	26.6	**25.0**	**27.6**	**22.2**
11	26.6	26.7	26.6	26.7	26.8	26.9	26.6	26.4	25.9	25.5	25.3	25.0	24.7	24.3	24.1	24.4	24.8	25.1	25.5	25.7	26.0	26.2	26.2	26.1	**25.8**	**26.9**	**24.1**
12	26.3	26.5	26.3	26.2	26.4	26.3	26.1	26.1	26.0	25.9	26.0	25.6	25.4	25.9	25.8	25.4	25.6	26.1	25.8	26.1	26.2	26.3	26.4	26.6	**26.1**	**26.6**	**25.4**
13	26.7	26.5	26.8	26.5	26.6	26.6	26.3	25.9	25.6	25.7	25.3	24.6	24.4	23.9	23.3	22.2	23.0	23.8	24.6	25.6	25.8	25.9	26.1	26.3	**25.3**	**26.8**	**22.2**
14	26.3	26.3	26.4	26.5	26.5	26.5	26.0	25.2	24.4	23.7	23.1	22.5	21.9	22.4	21.7	22.1	21.7	23.4	24.3	25.3	25.6	25.7	25.8	25.8	**24.5**	**26.5**	**21.7**
15	25.8	25.9	26.1	26.2	26.4	26.2	25.8	25.3	24.3	23.8	23.2	22.4	22.0	21.1	21.3	21.2	23.5	24.0	24.1	25.2	25.4	25.5	25.7	25.9	**24.4**	**26.4**	**21.1**
16	26.0	26.0	26.1	26.3	26.4	26.2	25.8	24.9	23.7	22.7	21.2	21.3	21.5	21.2	21.7	22.0	22.0	21.3	21.3	23.4	24.0	26.9	26.5	26.3	**23.9**	**26.9**	**21.2**
17	26.6	26.3	26.2	26.5	26.9	26.1	25.8	25.1	24.9	24.3	23.7	23.2	22.9	22.6	23.3	24.6	25.5	26.3	26.4	26.4	25.7	26.2	26.2	26.3	**25.3**	**26.9**	**22.6**
18	27.2	26.4	27.8	28.0	28.0	28.0	26.6	25.5	26.2	25.9	25.2	24.9	25.9	28.2	26.7	25.3	25.1	25.3	25.7	26.0	26.1	26.3	26.7	26.6	**26.4**	**28.2**	**24.9**
19	26.7	26.8	27.3	26.9	27.4	27.4	27.0	26.5	26.1	25.6	25.4	25.0	24.8	24.3	24.1	24.1	24.2	24.4	25.0	25.8	26.2	26.1	26.3	26.3	**25.8**	**27.4**	**24.1**
20	26.5	26.5	26.4	26.5	26.7	26.4	26.1	25.9	25.3	25.2	24.6	24.2	23.8	24.9	25.6	25.9	26.1	26.0	25.9	26.2	26.2	26.3	26.7	26.7	**25.9**	**26.7**	**23.8**
21	26.7	26.8	27.0	26.8	26.8	26.7	26.5	26.0	25.5	25.1	24.7	24.2	24.6	24.4	23.6	23.5	23.3	23.7	24.9	25.5	25.7	25.9	26.0	26.0	**25.4**	**27.0**	**23.3**
22	26.1	26.2	26.2	26.3	26.2	26.2	26.1	25.8	25.5	25.8	25.6	26.8	26.1	26.8	26.1	25.9	25.7	25.4	26.1	26.3	26.5	26.4	26.5	26.5	**26.1**	**26.8**	**25.4**
23	26.6	26.6	26.6	27.0	26.7	26.9	26.8	26.3	26.1	25.5	25.1	25.1	24.7	24.9	24.4	24.2	24.0	24.6	25.3	25.6	25.7	25.9	26.2	26.4	**25.7**	**27.0**	**24.0**
24	26.3	26.3	26.5	26.2	26.4	26.6	26.1	25.9	25.8	25.6	25.2	24.8	24.5	24.2	24.3	24.7	25.3	25.7	25.7	26.0	26.2	26.2	26.3	26.3	**25.7**	**26.6**	**24.2**
25	26.3	26.3	26.3	26.3	26.2	26.3	26.1	26.0	25.7	25.4	25.0	24.5	24.4	24.4	24.7	24.9	25.6	25.4	25.8	26.0	26.1	26.1	26.3	26.6	**25.7**	**26.6**	**24.4**
26	26.8	26.9	26.9	27.1	26.9	27.1	26.7	26.6	26.3	26.0	25.7	25.4	24.8	24.4	24.3	24.1	24.6	25.2	25.7	26.1	26.4	26.4	26.5	26.5	**26.0**	**27.1**	**24.1**
27	27.0	27.0	27.1	27.8	27.2	27.0	26.6	25.9	25.4	24.8	24.5	24.1	23.5	23.3	23.3	23.1	23.6	24.0	24.9	25.6	26.0	26.1	26.4	26.6	**25.5**	**27.8**	**23.1**
28	26.6	26.6	27.1	27.1	27.4	26.9	26.6	25.7	25.3	24.7	24.4	23.8	23.7	23.4	23.0	23.0	23.0	23.7	24.4	25.6	25.8	25.8	26.0	26.3	**25.2**	**27.4**	**23.0**
29	26.1	26.4	26.6	26.4	26.4	26.5	26.4	25.7	25.2	24.7	23.7	23.4	23.3	23.3	23.2	22.9	23.4	24.4	25.7	26.4	26.2	26.3	26.4	26.3	**25.2**	**26.6**	**22.9**
30	26.3	26.4	26.6	26.8	26.5	26.4	26.2	26.0	25.8	25.6	25.4	25.1	25.1	24.5	23.9	23.7	24.2	24.8	25.2	25.4	25.9	26.2	26.1	26.2	**25.6**	**26.8**	**23.7**
31	26.4	26.1	26.1	26.5	26.1	26.4	25.9	25.5	25.0	24.4	23.6	23.5	23.1	21.3	23.0	22.0	24.8	23.7	24.7	25.5	25.7	25.8	25.9	25.8	**24.9**	**26.5**	**21.3**
MEAN	**26.5**	**26.5**	**26.6**	**26.7**	**26.7**	**26.6**	**26.3**	**25.8**	**25.4**	**25.0**	**24.4**	**24.0**	**23.8**	**23.8**	**23.6**	**23.6**	**23.9**	**24.2**	**24.9**	**25.6**	**25.8**	**26.1**	**26.2**	**26.3**	**25.3**		
MAX	**28.4**	**29.0**	**28.6**	**28.1**	**28.5**	**28.0**	**28.7**	**28.8**	**27.6**	**27.6**	**26.5**	**26.8**	**26.1**	**28.2**	**27.7**	**26.7**	**26.1**	**26.3**	**26.4**	**26.8**	**27.4**	**27.6**	**27.5**	**28.1**		**29.0**	
MIN	**25.4**	**25.4**	**25.7**	**25.8**	**25.9**	**25.9**	**25.4**	**24.8**	**23.7**	**22.7**	**21.2**	**21.3**	**21.5**	**21.1**	**21.1**	**21.2**	**21.5**	**20.9**	**21.3**	**23.4**	**24.0**	**25.1**	**25.2**	**25.4**			**20.9**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 744 DATA RECOVERY RATE = 100.0%

MONTHLY MEAN = 25.3 deg C

MAXIMUM SHELTER TEMPERATURE = 29.0 deg C DATE OF OCCURRENCE = 7/1 AT 0200 MAXIMUM DAILY MEAN = 27.0 deg C DATE OF OCCURRENCE = 7/1

MINIMUM SHELTER TEMPERATURE = 20.9 deg C DATE OF OCCURRENCE = 7/7 AT 1800 MINUMUM DAILY MEAN = 23.9 deg C DATE OF OCCURRENCE = 7/16

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

CSX AQ8

SHELTER TEMPERATURE in deg C for AUGUST, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	26.2	26.1	26.2	26.3	26.4	26.3	25.8	25.2	23.9	23.0	22.5	22.5	22.8	22.1	21.4	19.6	20.3	21.8	23.1	24.0	24.2	24.7	24.7	24.8	**23.9**	**26.4**	**19.6**
2	25.1	25.4	25.5	25.7	25.7	25.7	25.4	24.7	23.8	22.8	21.8	20.4	19.9	20.0	20.3	19.8	19.7	22.9	24.7	26.5	26.7	26.8	26.2	26.3	**23.8**	**26.8**	**19.7**
3	26.4	26.0	26.3	26.1	26.6	26.3	26.1	25.7	25.1	24.6	23.6	23.2	22.1	21.8	21.7	21.9	24.6	26.1	26.7	26.7	26.9	26.4	26.4	26.6	**25.2**	**26.9**	**21.7**
4	26.5	26.7	26.3	26.4	26.5	26.5	26.4	26.0	25.7	25.3	24.9	24.4	24.4	24.8	24.9	24.1	24.3	24.5	24.5	25.7	26.0	26.1	26.0	26.3	**25.6**	**26.7**	**24.1**
5	26.2	26.3	26.6	26.5	26.5	26.6	26.3	25.5	24.9	24.2	24.0	23.4	23.4	23.4	23.0	23.2	23.0	23.0	23.7	24.6	25.0	25.3	25.4	25.6	**24.8**	**26.6**	**23.0**
6	25.8	25.8	25.9	25.9	25.9	25.9	25.9	25.2	24.4	23.5	22.7	22.3	21.7	22.8	21.7	22.2	22.7	23.8	24.6	24.8	26.1	26.0	26.2	26.6	**24.5**	**26.6**	**21.7**
7	26.4	25.9	26.6	26.6	26.4	26.1	26.0	25.5	25.3	24.6	24.0	23.5	23.6	25.2	24.7	23.9	24.7	25.3	25.7	25.9	25.9	25.9	26.5	27.0	**25.5**	**27.0**	**23.5**
8	27.1	26.7	26.8	27.0	26.8	26.8	26.4	26.1	26.2	25.8	25.8	25.6	25.3	25.6	25.6	25.8	25.7	25.8	25.8	25.8	25.9	25.8	25.8	25.8	**26.1**	**27.1**	**25.3**
9	25.7	25.5	25.5	25.6	25.6	25.6	25.5	25.3	25.4	25.6	25.3	25.4	25.9	26.2	25.5	25.6	25.5	25.5	25.2	25.8	26.0	26.1	26.2	26.2	**25.7**	**26.2**	**25.2**
10	26.2	26.4	26.2	26.6	26.6	26.7	26.6	25.8	25.4	25.0	24.3	24.0	23.8	23.8	23.4	23.3	23.0	23.7	24.3	25.1	25.4	25.5	25.8	26.3	**25.1**	**26.7**	**23.0**
11	26.4	26.5	26.6	26.8	26.8	26.7	26.9	26.8	25.6	25.4	25.3	25.6	24.8	24.4	23.9	24.1	23.7	24.3	25.1	25.9	26.5	26.8	26.8	27.1	**25.8**	**27.1**	**23.7**
12	27.1	27.4	27.3	27.2	27.4	27.8	27.8	26.1	25.2	24.9	24.7	24.4	24.2	24.4	24.5	23.8	23.9	24.1	24.9	25.7	26.1	26.3	26.7	27.1	**25.8**	**27.8**	**23.8**
13	27.6	27.4	27.5	28.0	28.2	27.7	27.3	26.5	25.4	24.7	24.4	24.2	23.8	24.4	24.0	23.3	24.2	24.5	24.7	25.7	25.8	26.3	26.4	26.7	**25.8**	**28.2**	**23.3**
14	26.8	27.0	27.0	27.2	27.3	26.9	26.9	26.5	25.7	25.1	24.6	27.2	29.8	31.3	38.8	39.3	40.0	39.3	39.6	38.7	37.6	36.1	35.0	34.4	**31.6**	**40.0**	**24.6**
15	34.3	34.1	33.6	33.1	32.6	32.5	32.6	35.0	38.4	40.4	39.3	39.1	39.1	38.6	38.2	37.9	37.8	38.4	39.8	39.2	38.0	36.9	36.2	35.7	**36.7**	**40.4**	**32.5**
16	35.2	34.6	34.0	33.5	33.1	32.8	33.6	36.8	40.0	39.2	38.6	38.6	38.4	38.6	39.2	39.2	35.1	32.8	37.7	38.1	38.1	37.8	37.4	37.0	**36.6**	**40.0**	**32.8**
17	36.5	35.5	32.3	32.2	31.0	30.4	32.2	34.2	35.5	38.0	39.6	40.1	39.9	39.5	40.2	40.1	40.3	39.5	37.7	35.5	34.5	34.6	34.4	35.1	**36.2**	**40.3**	**30.4**
18	35.4	35.5	35.5	35.0	35.5	35.9	36.1	35.9	36.4	37.5	39.3	40.2	39.2	38.9	38.7	38.2	38.5	40.9	40.5	36.4	33.4	31.9	31.0	31.7	**36.6**	**40.9**	**31.0**
19	32.2	32.8	33.8	34.4	34.3	34.2	34.4	36.6	39.1	40.9	41.0	40.1	39.9	39.6	40.4	40.2	40.9	39.2	37.8	36.5	34.5	33.6	32.8	32.5	**36.7**	**41.0**	**32.2**
20	32.1	31.5	30.9	30.6	29.8	28.9	28.9	29.3	30.9	32.4	34.4	36.2	37.1	37.4	37.9	36.7	35.5	34.0	32.3	30.4	29.7	29.1	28.3	27.6	**32.2**	**37.9**	**27.6**
21	27.0	26.4	25.8	25.4	25.3	24.8	25.1	27.2	30.2	32.8	35.0	36.9	37.8	39.0	39.6	39.4	38.4	39.7	37.5	34.4	32.7	31.1	29.9	29.2	**32.1**	**39.7**	**24.8**
22	28.3	28.1	27.9	27.6	26.6	25.9	26.1	29.5	33.7	37.1	39.3	40.3	40.2	41.1	39.8	39.8	40.0	40.6	38.9	35.8	33.9	32.3	31.1	30.7	**33.9**	**41.1**	**25.9**
23	29.8	28.8	28.5	28.1	27.7	27.4	27.8	32.9	38.1	40.8	40.1	39.4	39.4	39.3	38.9	38.8	39.5	40.7	39.6	36.9	35.4	34.0	33.0	32.0	**34.9**	**40.8**	**27.4**
24	30.9	30.0	30.0	29.7	29.4	29.0	30.3	34.0	36.8	39.0	40.3	39.4	39.4	39.0	38.7	38.9	39.2	39.9	39.7	37.9	36.9	35.9	35.0	33.9	**35.6**	**40.3**	**29.0**
25	33.0	32.1	31.8	31.6	31.2	30.8	31.2	34.4	38.7	40.2	39.7	39.3	39.4	38.8	38.5	39.0	39.3	40.0	39.5	37.6	36.7	35.9	34.8	33.7	**36.1**	**40.2**	**30.8**
26	32.9	32.5	32.7	32.6	32.7	32.9	33.8	36.4	39.5	39.9	39.0	38.7	39.0	39.1	39.0	37.0	33.6	33.7	31.5	29.4	28.1	27.3	26.9	26.4	**33.9**	**39.9**	**26.4**
27	26.1	25.7	25.2	25.0	24.9	24.8	25.3	29.0	33.1	36.0	38.6	39.6	38.8	38.3	38.2	38.7	38.5	38.8	37.3	34.1	32.2	31.0	30.2	29.7	**32.5**	**39.6**	**24.8**
28	29.2	28.7	28.3	27.9	27.6	27.6	28.2	30.9	35.5	38.4	39.8	39.1	37.8	37.4	37.1	37.4	38.0	39.1	39.6	37.7	36.2	34.2	33.0	32.4	**34.2**	**39.8**	**27.6**
29	31.8	31.4	31.2	30.5	30.4	30.5	30.8	32.1	35.7	38.0	40.2	39.4	38.6	38.6	38.3	38.0	35.1	32.6	30.3	28.0	27.5	26.8	26.2	25.7	**32.8**	**40.2**	**25.7**
30	25.8	26.3	26.6	26.8	26.6	25.3	25.4	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
31	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
MEAN	**29.0**	**28.8**	**28.6**	**28.5**	**28.4**	**28.2**	**28.4**	**29.5**	**30.8**	**31.6**	**31.8**	**31.8**	**31.7**	**31.8**	**31.9**	**31.7**	**31.6**	**31.9**	**31.8**	**31.0**	**30.4**	**29.9**	**29.5**	**29.3**	**30.3**		
MAX	**36.5**	**35.5**	**35.5**	**35.0**	**35.5**	**35.9**	**36.1**	**36.8**	**40.0**	**40.9**	**41.0**	**40.3**	**40.2**	**41.1**	**40.4**	**40.2**	**40.9**	**40.9**	**40.5**	**39.2**	**38.1**	**37.8**	**37.4**	**37.0**		**41.1**	
MIN	**25.1**	**25.4**	**25.2**	**25.0**	**24.9**	**24.8**	**25.1**	**24.7**	**23.8**	**22.8**	**21.8**	**20.4**	**19.9**	**20.0**	**20.3**	**19.6**	**19.7**	**21.8**	**23.1**	**24.0**	**24.2**	**24.7**	**24.7**	**24.8**			**19.6**

POSSIBLE NUMBER OF OBSERVATIONS = 744 ACTUAL NUMBER OF OBSERVATIONS = 703 DATA RECOVERY RATE = 94.5%

MONTHLY MEAN = 30.3 deg C

MAXIMUM SHELTER TEMPERATURE = 41.1 deg C DATE OF OCCURRENCE = 8/22 AT 1400 MAXIMUM DAILY MEAN = 36.7 deg C DATE OF OCCURRENCE = 8/19

MINIMUM SHELTER TEMPERATURE = 19.6 deg C DATE OF OCCURRENCE = 8/1 AT 1600 MINUMUM DAILY MEAN = 23.8 deg C DATE OF OCCURRENCE = 8/2

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

CSX AQ8

SHELTER TEMPERATURE in deg C for SEPTEMBER, 2024

Hr Beg / Hr End / Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
2	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
3	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
4	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**---**	**---**	**---**
5	---	---	---	---	---	---	---	---	---	25.5	35.3	40.2	40.0	39.4	39.3	38.8	38.7	39.6	38.9	36.6	34.7	33.2	32.4	32.3	**---**	**---**	**---**
6	32.4	32.5	32.7	32.0	31.0	30.4	30.4	32.3	35.4	39.0	41.3	40.6	39.5	39.3	39.7	39.2	39.8	38.7	38.4	36.6	35.1	34.1	33.8	33.7	**35.7**	**41.3**	**30.4**
7	33.7	33.2	32.6	32.2	32.3	32.1	32.2	33.4	35.8	37.6	39.3	35.9	31.1	30.1	30.2	29.7	30.6	35.1	33.2	30.4	28.6	27.9	27.2	26.5	**32.1**	**39.3**	**26.5**
8	26.0	25.4	24.7	24.0	22.9	22.6	23.1	26.3	30.2	32.8	34.7	36.9	38.1	38.8	39.4	39.3	39.0	37.6	34.3	31.6	29.7	28.4	27.5	26.6	**30.8**	**39.4**	**22.6**
9	25.5	24.2	23.5	23.0	22.2	22.1	23.0	27.7	33.0	36.3	39.1	41.5	41.4	40.3	40.7	40.4	40.1	40.9	37.9	34.5	32.2	30.6	30.1	29.5	**32.5**	**41.5**	**22.1**
10	28.9	28.6	28.7	28.3	28.1	28.0	28.1	31.1	35.2	38.6	40.5	39.8	40.1	39.8	39.3	39.2	39.4	38.9	38.6	37.3	36.1	35.0	34.0	33.1	**34.8**	**40.5**	**28.0**
11	32.3	31.8	31.2	30.6	30.1	29.6	29.8	32.2	36.9	40.2	40.1	39.3	39.0	38.9	38.2	38.4	38.4	39.0	38.8	37.2	35.6	34.3	33.3	33.0	**35.3**	**40.2**	**29.6**
12	32.6	32.3	32.1	31.7	31.6	31.8	31.8	33.5	37.5	40.8	40.7	40.6	39.8	39.0	38.5	38.3	38.6	38.9	38.3	36.4	34.4	33.4	32.8	32.7	**35.8**	**40.8**	**31.6**
13	32.7	32.7	32.3	32.3	32.5	31.9	31.8	32.3	33.2	34.6	36.0	38.6	39.8	39.2	38.8	38.9	38.4	40.3	39.8	38.2	36.7	35.6	34.8	34.1	**35.6**	**40.3**	**31.8**
14	33.5	33.1	32.5	31.9	31.3	30.7	31.4	33.9	37.9	40.4	39.5	39.5	38.9	38.7	38.0	38.5	38.5	39.1	37.9	36.2	34.8	34.0	33.6	33.1	**35.7**	**40.4**	**30.7**
15	32.4	32.0	31.3	30.8	30.2	29.6	29.6	31.3	34.2	37.9	40.3	39.4	39.5	38.8	38.7	38.9	39.8	39.1	37.1	35.0	32.8	31.8	31.1	30.4	**34.7**	**40.3**	**29.6**
16	30.2	29.9	28.6	27.8	27.5	27.4	27.8	29.2	31.8	34.9	37.9	40.2	40.0	39.3	39.1	39.7	40.1	38.3	36.5	35.3	34.2	33.6	33.2	33.2	**34.0**	**40.2**	**27.4**
17	33.2	33.2	32.8	32.6	32.4	32.3	32.6	33.3	34.3	36.9	39.7	40.5	40.2	40.7	40.7	38.7	35.9	35.1	34.7	34.4	34.4	34.0	33.7	33.7	**35.4**	**40.7**	**32.3**
18	33.6	31.6	31.1	30.8	30.8	31.2	30.9	27.8	25.5	24.7	31.9	35.7	39.4	40.0	40.8	39.5	38.1	36.5	33.6	33.1	33.0	33.2	33.4	33.3	**33.3**	**40.8**	**24.7**
19	33.1	33.1	33.1	33.2	33.2	32.7	32.6	33.6	35.8	40.2	41.4	41.1	40.4	39.9	39.9	39.8	40.7	41.1	39.4	38.2	37.0	36.0	35.0	33.7	**36.8**	**41.4**	**32.6**
20	33.3	33.1	33.0	33.0	32.5	32.1	32.1	34.2	38.1	40.5	40.4	39.9	39.7	39.1	39.1	38.9	39.2	40.1	39.6	38.1	36.5	35.4	34.5	33.8	**36.5**	**40.5**	**32.1**
21	33.9	34.1	34.0	34.2	34.2	33.9	33.4	34.7	37.4	39.4	41.5	40.6	40.0	40.3	40.4	40.0	39.6	39.2	38.2	37.7	37.0	35.7	34.7	33.6	**37.0**	**41.5**	**33.4**
22	31.6	30.0	29.2	29.6	30.0	31.1	31.2	31.7	34.0	37.4	38.3	40.6	41.3	39.7	39.9	39.9	39.3	38.2	36.9	36.1	35.4	34.1	32.5	31.7	**35.0**	**41.3**	**29.2**
23	31.5	31.5	31.5	31.6	31.7	31.4	31.3	31.2	31.1	31.1	31.1	31.8	32.3	32.8	33.0	32.8	32.1	31.0	29.1	28.5	28.9	28.1	28.8	29.7	**31.0**	**33.0**	**28.1**
24	30.0	30.2	30.2	30.3	30.3	30.4	30.5	30.7	31.5	33.3	33.2	34.3	35.1	34.2	33.4	32.7	31.5	29.9	29.6	30.2	30.3	30.3	30.0	30.3	**31.4**	**35.1**	**29.6**
25	30.5	30.9	31.4	31.6	31.2	30.5	30.1	30.7	31.2	30.7	30.9	31.5	32.5	33.6	34.1	34.6	34.4	33.0	32.5	32.5	32.9	33.3	33.6	33.9	**32.2**	**34.6**	**30.1**
26	34.3	34.5	34.7	34.8	34.9	34.3	33.1	33.8	35.1	36.9	39.0	40.2	40.2	41.4	41.0	40.7	40.0	39.5	39.2	38.6	37.4	36.2	36.6	36.9	**37.2**	**41.4**	**33.1**
27	37.0	37.4	37.2	37.3	37.4	36.6	36.4	36.0	36.5	36.5	36.4	37.3	36.6	36.6	36.6	36.3	36.4	35.8	35.4	34.8	34.0	33.8	33.8	32.9	**36.0**	**37.4**	**32.9**
28	33.0	33.8	34.3	34.4	34.4	33.6	32.4	33.0	34.4	35.5	36.4	39.3	40.9	39.7	39.5	39.2	39.3	39.5	38.3	36.6	35.7	35.0	34.1	33.3	**36.1**	**40.9**	**32.4**
29	32.7	32.7	32.2	31.1	31.3	31.9	32.2	31.9	32.0	32.6	32.9	32.8	33.0	33.2	33.0	33.0	32.8	32.4	32.1	31.9	31.8	30.6	30.1	30.4	**32.1**	**33.2**	**30.1**
30	30.4	30.3	30.6	30.5	30.3	29.9	29.7	29.5	28.9	29.8	31.3	32.4	33.3	33.9	34.0	33.5	32.5	32.3	32.2	32.1	32.1	32.0	32.1	32.1	**31.5**	**34.0**	**28.9**
MEAN	**31.9**	**31.7**	**31.4**	**31.2**	**31.0**	**30.7**	**30.7**	**31.8**	**33.9**	**35.5**	**37.3**	**38.1**	**38.2**	**38.0**	**37.9**	**37.7**	**37.4**	**37.3**	**36.2**	**34.9**	**33.9**	**33.1**	**32.6**	**32.2**	**34.4**		
MAX	**37.0**	**37.4**	**37.2**	**37.3**	**37.4**	**36.6**	**36.4**	**36.0**	**38.1**	**40.8**	**41.5**	**41.5**	**41.4**	**41.4**	**41.0**	**40.7**	**40.7**	**41.1**	**39.8**	**38.6**	**37.4**	**36.2**	**36.6**	**36.9**		**41.5**	
MIN	**25.5**	**24.2**	**23.5**	**23.0**	**22.2**	**22.1**	**23.0**	**26.3**	**25.5**	**24.7**	**30.9**	**31.5**	**31.1**	**30.1**	**30.2**	**29.7**	**30.6**	**29.9**	**29.1**	**28.5**	**28.6**	**27.9**	**27.2**	**26.5**			**22.1**

POSSIBLE NUMBER OF OBSERVATIONS = 720 ACTUAL NUMBER OF OBSERVATIONS = 615 DATA RECOVERY RATE = 85.4%

MONTHLY MEAN = 34.4 deg C

MAXIMUM SHELTER TEMPERATURE = 41.5 deg C DATE OF OCCURRENCE = 9/9 AT 1200 MAXIMUM DAILY MEAN = 37.2 deg C DATE OF OCCURRENCE = 9/26

MINIMUM SHELTER TEMPERATURE = 22.1 deg C DATE OF OCCURRENCE = 9/9 AT 0600 MINUMUM DAILY MEAN = 30.8 deg C DATE OF OCCURRENCE = 9/8

MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

BEFORE THE
SURFACE TRANSPORTATION BOARD

Finance Docket No. 36886

CSX TRANSPORTATION, INC.
PETITION FOR DECLARATORY ORDER

EXHIBIT 4

Final Determination Concerning Renewal of an Air Quality State Permit to Operate for CSX Transportation, Inc. – Curtis Bay Piers

MARYLAND DEPARTMENT OF THE ENVIRONMENT
AIR AND RADIATION ADMINISTRATION

FINAL DETERMINATION CONCERNING RENEWAL OF AN AIR QUALITY STATE PERMIT TO OPERATE FOR CSX TRANSPORTATION, INC. – CURTIS BAY PIERS

I. INTRODUCTION

The Maryland Department of the Environment (the "Department") received an application from CSX Transportation, Inc. on July 18, 2023 to renew the Air Quality State Permit to Operate for their Curtis Bay Piers coal storage and transfer facility located at 1910 Benhill Avenue, Curtis Bay, MD 21226.

After reviewing the application and other pertinent information, the Department made a tentative determination to renew the Air Quality State Permit to Operate that would authorize continued operation of the coal storage and transfer facility.

A public meeting was held on October 10, 2024 to receive comment on the Department's draft renewal permit conditions. The public comment period was open through December 16, 2024.

II. COMMENTS RECEIVED AND THE DEPARTMENT'S RESPONSE

The public comment period expired on December 16, 2024 following receipt of a public request for a one-time, 60-day extension. The comments received at the public meeting, and those submitted in writing during the public comment period, expressed concerns about the impact of the facility on the surrounding community. The Department's responses to the comments are attached.

III. DEPARTMENT'S FINAL DETERMINATION

The Department has reviewed all comments and has made a final determination to renew the Air Quality State Permit to Operate for CSX Transportation, Inc. A copy of the Department's response to comments and the issued permit are available on the Department's website here:

https://mde.maryland.gov/programs/permits/AirManagementPermits/Pages/CSX-Transportation-Permit.aspx

MARYLAND DEPARTMENT OF THE ENVIRONMENT
AIR AND RADIATION ADMINISTRATION
RESPONSE TO COMMENTS
FOR
CSX TRANSPORATION, INC. – CURTIS BAY PIERS
1910 BENHILL AVENUE
BALTIMORE, MARYLAND 21226

Meeting Date: October 10, 2024
St. Athanasius Church
4708 Prudence Street
Baltimore, Maryland 21226

Purpose of the Meeting:
The purpose of the public meeting was to receive comment on the Maryland Department of the Environment's (MDE) Tentative Determination for the renewal of an Air Quality State Permit to Operate for continued operation of CSX Transportation, Inc.'s (CSX) coal, ore, limestone, and other dry material transfer and storage facility located at 1910 Benhill Avenue, Baltimore, Maryland 21226.

Attendance:
Approximately 165 members of the general public attended the meeting. The meeting was also attended by Phylicia Porter representing Baltimore City Council District 10 and a representative from State Senator William Ferguson's office, State Legislative District 46. Ms. Shannon Heafey of the Air and Radiation Administration (ARA) of the MDE presided as the moderator for the meeting. Ms. Suna Yi Sariscak presented ARA's public statement. MDE's Office of Communications provided hybrid meeting support and Spanish language translation services. CSX was represented by Brian Hammock, Aleek Young, and Maurice O'Connell. Cameron Nelms from For the Record, Inc. served as the meeting's court reporter.

Comment Period:
The comment period was open from September 4, 2024 through December 16, 2024 following a request for a one-time 60-day extension to the initial 30-day comment period. Comments were received from the public both at the meeting and in writing during the comment period. The public meeting transcript and written comments received are enclosed with this document.

Index:

1. Comments from Individuals
2. Comments from Scientists
3. Comments from CSX
4. Comments from the Community of Curtis Bay Association and Other Community Groups and Advocates

Comments and Responses:

1. Comments from Individuals - See Appendix A for Complete Comments

"…strongly urge you to deny CSX Transportation's permit to operate…for the well-being of Maryland's residents and to safeguard our clean energy future…"

"…A study conducted last year by the South Baltimore Community Land Trust, Johns Hopkins University, the University of Maryland, and the Maryland Department of the Environment confirmed the presence of airborne coal dust in South Baltimore, attributed to CSX Transportation's activities. This fine coal dust can penetrate deep into the lungs, contributing to various respiratory and cardiovascular diseases…"

"…Maryland must move away from reliance on the fossil fuel industry. To achieve 100% clean energy by 2035, we cannot support corporations that jeopardize the health of our people and environment…"

"…CSX Transportation was responsible for a "coal storm" that released smoke and coal dust near a South Baltimore playground…"

"…the Maryland Department of the Environment cannot permit CSX Transportation to continue endangering our most vulnerable, particularly in already underserved, primarily low-income communities of color…"

"…CSX Transportation should be required to collaborate with local activists, the community, and the Maryland Department of the Environment to address the harm inflicted and prevent further damage until its eventual closure…"

"the permit should be as tightly written as COMAR text, specific, with nothing left to doubt or predatory litigation…"

"…if coal dust is found to leave CSX Coal Pier property or easements, CSX should cease operation…until a Resume Work Order is issued by the Maryland Department of the Environment, who will determine the cause…and provide a remedy that will be in place before operation resumes…"

"…there is no possible way to build a barrier wall that would work…"

"…CSX is in clear violation of…COMAR 26.11.06.08…"

"…the clear presence of coal dust indicates that CSX's dust control measures, such as water sprays and covered conveyors have not been effectively implemented…"

"…strongly recommend there be enhanced measures to not only mitigate harm caused by coal dust entering Curtis Bay but minimize or eliminate the passage of coal dust into the surrounding community…

"…permit should consider existing harms and other sources of pollution in the general vicinity (defined by the census tract or a mileage radius) because the facility is located in an overburdened and underserved community…"

"…strongly recommend that any permit issued includes provisions to eliminate harm caused by coal dust and imposes penalties severe enough to ensure strict daily compliance…"

"…the draft permit…does not require the strongest possible pollution controls, leaving our community vulnerable to continued exposure to dangerous coal dust…lacks clear and enforceable pollution limits…need on-going, real time monitoring that the community has full access tied with strong enforceable limits…"

"…coal dust contains at least 17 toxic heavy metals and pollutants including lead, mercury, cadmium, chromium, arsenic and selenium, all of which can endanger human health, and at least six neurotoxins and five known or suspected carcinogens…prolonged exposure to coal dust via air or water can affect every major organ system in the human body, causing birth defects, heart and lung disease, and a variety of cancers…"

"…coal dust pollution has also caused fish kills and deformities in aquatic life…"

"…given CSX's past violations and ongoing pollution issues…I do not feel confident that the mitigation measures will be adequate to protect the community…"

"…rates of chronic respiratory diseases like asthma, chronic obstructive pulmonary disease, and emphysema are many times higher in Curtis Bay and other neighborhoods near the terminal…the same is true for rates of chronic heart diseases and cancers known to be caused by chronic pollution exposure…"

"…the draft permit currently does not specify what type of barrier must be constructed by CSX, there is no certainty as to whether barriers constructed by CSX under this permit will indeed protect the community and prevent air pollution…"

"…NO language within the permit that mentions the emissions of this wastewater into the navigable waters of Curtis Creek, Curtis Bay, Masonville Cove, and the Patapsco River and Chesapeake Bay…"

"…coal dust exposure is linked with emphysema, asthma, and COPD…Curtis Bay has one of the worst rates of death by respiratory illness in the state…"

"…MDE should decline to renew the permit under COMAR 26.11.02.06C(2) because…CSX has failed and will continue to fail to take reasonable precautions to prevent the spread of pollution under Part 2(f) of the permit…CSX created a nuisance through air pollution and the operation of its facility.."

"…if a permit is granted, it must include stringent and more timely conditions that effectively eliminate coal dust emissions…it must require fully covered coal piles and rail cars, as has occurred in other areas of the country…it must also include required monitoring and reporting from outside organizations rather than self-monitoring by CSX…it must hold CSX more significantly accountable for non-compliance and limited compliance…"

"…fugitive coal dust enters the community of Curtis Bay on a daily basis at a rate of every 90 minutes…

"…particulate matter (PM2.5 and PM10) and other toxic pollutants found in coal dust have been linked to respiratory diseases, cardiovascular issues, and premature mortality..."

"…in Curtis Bay, asthma-related hospitalizations are three times the national average…life expectancy is 17 years shorter than in Baltimore's most prosperous neighborhoods…75% of students qualify as economically disadvantaged…there is no other way to describe the conditions in Curtis Bay as anything other than environmental injustice…"

"…draft permit does not require the strongest pollution controls…does not have enforceable limits…ongoing monitoring is inadequate…"

"…the inclusion of physical barriers and enhanced water application systems is a positive step toward mitigating environmental impact...recommend that the Department consider establishing more rigorous, continuous air quality monitoring at multiple points around the perimeter of the facility to ensure real-time compliance and efficacy of the dust suppression measures…engaging with community health professionals to conduct a longitudinal health impact study could provide essential data to further refine air quality management at this site…"

"...no reasonable level of danger to human health…being near the coal terminal myself, I have experienced nasal, respiratory, eye irritation, just from standing outside nearby…"

"...they have paid their fines and they have done the same thing…this barrier will not be enough…like the water spray, it will not be effective…"

"...CSX gets to generate [an emissions certification report]...about itself and turn in on a yearly basis based on their own monitoring, not outside oversight…"

"...the CSX terminal is one of the oldest and dirtiest in the United States…emits significant amounts of pollution into the air…also located in a densely populated area, which puts the health of thousands of people at risk…"

“...this coal dust is in addition to air pollutant from the biggest medical waste incinerator and we're in a shadow of BRESCO…I don't know how MDE can keep giving permits to these facilities…”

“...for many decades…I have been breathing coal dust..I wonder what the statistic is for this particular area for cancer...”

“...by allowing a polluting coal here that's known to pollute and has a history of unsafe conditions, uncontrolled explosions, you're knowingly condemning residents to its continued exposure…”

“having a coal export pier directly next to a disproportionately poor residential neighborhood is wrong…”

“...[CSX] have the ability to add a community liaison with the community association to make this better, to make this workable for CSX…”

“...do you consider the cumulative effects of multiple industries…”

“...a bunch of oil pouring out onto CSX's property…all these other corporations are using CSX's egress, which is everywhere…and the Maryland Department of Environment…do not have the right to go into CSX property..”

Support Comments Received
“CSX's Curtis Bay terminal provides a service critical to Maryland's industrial capabilities, supplying resources essential for steel production and other manufacturing needs nationwide. Furthermore, Maryland's reliance on industrial terminals like CSX's to sustain its economy is evident. Without operations like those at Curtis Bay, economic inequities in Baltimore could worsen due to lost wages and restricted access to essential resources. While environmental protection is vital, a balanced approach that considers both economic stability and sustainable practices is key. Curtis Bay Piers is vital to our state economy and must be able to continue to operate with a renewed air quality permit.”

“…CSX provides significant economic value to the state of Maryland..generate thousands of good-paying jobs and over $20 million in state and local taxes. Beyond just job creation, they have previously donated $5 million to the B&O museum in Baltimore and provided $113 million towards the Howard Street Tunnel project, which recently launched the double-stacked rail operations to and from the Helen Delich Bentley Port of Baltimore…”

“…CSX has also taken proactive steps to invest in the facility's environmental future, such as installing advanced air monitoring systems to ensure transparency and environmental safety. Rejecting its air permit renewal would not only threaten this progress but undermine a proven partnership between industry and community...”

MDE Response:

The Department lacks the legal authority or basis to shut the facility down or to deny the permit renewal application as long as requirements applicable to the facility's operation are met. The applicable air quality regulatory requirement for emissions of particulate matter is that CSX must take reasonable precautions to prevent particulate matter from becoming airborne. Other facilities may face different standards or operational constraints, including installing best available control technologies, but those requirements are not applicable in this case.

CSX is required to operate in compliance with an MDE-approved, facility wide, Fugitive Dust Plan. The renewal State Permit to Operate includes strengthened permit conditions to improve on the current plan by requiring a windscreen to minimize the transport of coal dust from any coal storage piles on the site into the surrounding community and upgrades to the existing water spray system in the rail car unloading sheds to increase overall dust control efficiency.

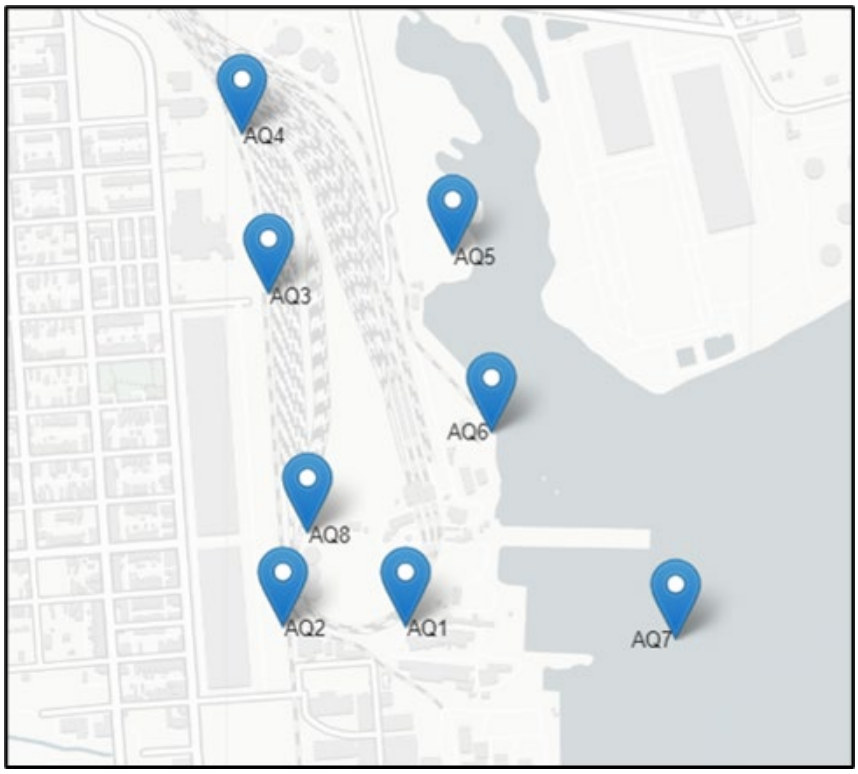
With regard to emissions of toxic air pollutants and potential health impacts, MDE's review process considers health impacts by applying established health-based standards. That is the situation for every permit application reviewed. Part of our permit review process considers whether a facility will meet federal ambient air quality standards. In this regard, impacts to public health are considered by EPA in the development of those National Ambient Air Quality Standards (NAAQS). The development is done by health experts, and the resulting standards are set to protect public health with an adequate margin for safety.

Adhering to Permit to Construct conditions, CSX configured a fenceline air quality monitoring network and began operation of this network on July 1, 2023. This network measures particulate matter (PM2.5 and PM10) at eight sites around the facility. In addition, meteorological measurements (wind speed, wind direction, relative humidity, ambient temperature) are measured at many of these sites. A combination of Federal Equivalent Method (FEM) monitors and low-cost air quality sensors comprise the network. Real time data measured is shared on this CSX webpage. A map of the eight site locations is below. Decommissioning the network cannot be done without the Department's approval.

MDE analysis of 21 months of data from the company's network found that some average concentrations of fine particulate matter (PM2.5) along the fenceline were measured at levels above the annual NAAQS of 9 micrograms per cubic meter, and were more often measured above that level when sensors were downwind of the coal storage areas. MDE cannot formally conclude that the NAAQS are being violated, because assessment of attainment against the NAAQS requires 3 years of data, and 10 of the 12 sensors in use at the fenceline network — the same type as those that were used in the community air monitoring project — tend to measure slightly higher absolute levels of PM2.5 than levels confirmed by regulatorily-prescribed air monitoring equipment. However, two of the 12 sensors are Federal Equivalent Method (FEM) regulatory air monitors, and both of those measured

average PM2.5 levels above the NAAQS when downwind of the coal storage piles and below the NAAQS when upwind of the coal storage piles.

Regardless of the NAAQS threshold, relative differences in measured pollutant levels indicate elevations due to terminal activities. Average measured PM2.5 levels were higher when the sensors were downwind of the coal storage areas at 9 out of the 12 sensor sites. Average concentrations of coarse particulate matter (PM10) were consistently below the NAAQS, but average concentrations were higher at 11 out of 12 sensor sites when those sensors were downwind of the coal storage areas. This analysis complements and confirms the findings of analysis performed by community scientists, university scientists, and MDE scientists that indicates coal dust is being transported from the facility to the community.



Sensor	Upwind Spread	PM25 Upwind Mean	PM25 Downwind Mean	PM25 p value	PM10 Upwind Mean	PM10 Downwind Mean	PM10 p value
AQ1	290-30°	**9.42**	8.39	~0	**22.33**	21.33	**0.01**
AQ2	0-90°	**9.51**	9.18	**0.05**	22.35	**28.32**	~0
AQ3	120-180°	10.01	**11.85**	~0	23.67	**29.1**	~0
AQ4	120-180°	9.88	**12.3**	~0	23.83	**28.09**	~0
AQ5A	190-230°	9.74	**12.14**	~0	22.4	**26.4**	~0
AQ5B	190-230°	7.69	**9.46**	~0	18.45	**21.47**	~0
AQ5C	190-230°	7.7	**9.81**	~0	18	**21.14**	~0
AQ5FEM	190-230°	8.78	**10.8**	~0	19.96	**25.28**	~0
AQ6	190-280°	8.25	**10.2**	~0	18.91	**22.06**	~0
AQ7	275-330°	**9.05**	8.16	~0	16.74	**16.85**	**0.8**
AQ8A	25-155°	9.25	**10.72**	~0	19.19	**24.41**	~0
AQ8FEM	25-155°	8.03	**9.81**	~0	21.21	**24.63**	~0

Upwind/downwind mean PM concentrations using Baltimore Tower meteorological data and CSX fenceline sensors. Column "Upwind Spread" shows the direction considered downwind of the coal pile for that sensor and

used to create its downwind mean concentration. Statistical significance tests were done at the 95% confidence level.

For Maryland facilities that emit toxic air pollutants (there are over a thousand such pollutants regulated at the state level), a facility must ensure that the level of emissions of any toxic air pollutant will not endanger public health. This is done by comparing the modeled concentration of a particular toxic air pollutant at the worst-case ground level point beyond the property line to a concentration set by the American Conference of Governmental Industrial Hygienists for that same pollutant. That organization sets their concentration at a level to protect workers in an industrial setting in which those workers are exposed to the pollutant in question daily over an eight-hour period. Under the Maryland permitting system, MDE takes that concentration and divides it by a factor of 100, developing screening levels for each toxic air pollutant that are more protective of public health. Facilities must demonstrate that an individual at the property line would not be exposed to concentrations above that protective screening level. For known and suspected carcinogenic toxic air pollutants, a facility must also demonstrate that the emissions are less than the annual average concentration that would increase a person's lifetime cancer risk by 1 in 100,000 if the person were continuously exposed to the concentration for 70 years.

Prior to the issuance of an air quality permit to construct to CSX in September 2022 related to rebuilding portions of the facility damaged by an explosion in December 2021, CSX submitted a premises wide air toxics compliance demonstration to MDE for review and approval. Premises wide toxic air pollutant emissions of coal dust, crystalline silica, chromium, cadmium, arsenic, mercury, nickel, copper, selenium, beryllium, cobalt, manganese, antimony and barium were evaluated and determined to be in compliance with applicable air toxics regulations designed to be protective of public health.

Should fugitive dust from CSX become airborne and unreasonably impact local communities and/or cause a nuisance, resulting in a violation of any provision of the permit or a direct regulatory requirement, MDE has adequate legal authority to compel a facility to take the necessary measures to address the violation and bring the operation back into compliance. Depending on the nature or severity of the violation(s), CSX would be subject to enforcement action to remedy the violation and potential financial penalties. The type of enforcement action taken and the level of any financial penalty would depend on the severity of the violation, whether it was willful and preventable, and a number of other applicable factors.

The Department recognizes the presence of 70 air emission sources in and neighboring the community of Curtis Bay, several of which are large, Title V operating permit sources and several of which are small general permit sources. Collectively, these 70 sources are believed to represent the highest concentration of air pollution sources anywhere in Maryland. Resultantly, increased compliance oversight has been put in place - increased site visits, increased inspection frequencies, and heightened complaint response - in an effort to keep a broader and more comprehensive eye on the performance of these facilities. Additionally,

should facilities violate permit or regulatory provisions, the Department strives to restore compliance as quickly as possible to minimize instances of excess pollution. Also, if a financial penalty is being sought as part of an enforcement action, consideration is given to the use of a Supplemental Environmental Project as a means to ensure a portion of any penalty dollars secured by the Department benefit the community directly.

2. Comments from Scientists - See Appendix B for Complete Comments

"…scientific findings…confirming coal dust is present in accumulated black dust in Curtis Bay and demonstrating a relation of downwind direction and coal terminal bulldozer activity with increased particulate matter (PM) and black carbon (BC) air pollution burden in Curtis Bay…"

"If the permit is renewed and coal terminal operations do continue, conditions added to the permit should be considered to mitigate black dust, coal dust, and air pollution burden and associated nuisance, health, and quality of life impacts in Curtis Bay. These conditions could include, but are not limited to:

- Full enclosure of the coal terminal coupled with strategies to mitigate windblown and mechanically generated dust exposure via changes in the operating practices at the coal terminal;
- Expansion of publicly accessible reporting of time-resolved information about coal terminal activity patterns;
- Expansion of publicly accessible real-time air pollution burden monitoring (onsite and off-site) to include not just PM, but also black carbon, CO, NO, NO2, VOCs, CH4, and settled dust characterization to provide timely and ongoing assurance that mitigation strategies are protective of neighboring communities."

MDE Response:

The Department agrees there is factual and adequate evidence that coal dust is being transported from the facility to the community. The Department's analysis of data from the facility's fenceline network complements that finding conveyed in these comments and published in scientific literature (see Aubourg, M.A., Livi, K.J., Sawtell, G.G., Sanchez-Gonzalez, C.C., Spada, N.J., Dickerson, R.R., Chiou, W.A., Kamanzi, C., Ramachandran, G., Rule, A.M. and Heaney, C.D., 2024. **Use of electron microscopy to determine presence of coal dust in a neighborhood bordering an open-air coal terminal in Curtis Bay, Baltimore, Maryland, USA**. *Science of The Total Environment*, 957, p.176842. https://doi.org/10.1016/j.scitotenv.2024.176842)

The question as to the amount of coal dust in terms of tons per year reaching the community or its concentration remains unanswered based on available monitoring methods. Coal dust is a constituent of particulate matter. The Department also agrees that fine particulate matter measured within the

community are at concentrations greater than the national ambient air quality standard for that pollutant at certain times and at certain locations. The toxic air pollutant constituents within coal dust, regardless of its mass or its concentration within ambient air, and the ability of fine particulate matter to cause health impacts at concentrations above the national ambient standard, form a basis on which the Department is imposing additional dust control measures in the operating permit to limit coal dust from leaving the terminal. The need for additional controls is further supported by the location of CSX in relation to the community and to other nearby major air pollution sources that individually and collectively impact local air quality.

The renewal State Permit to Operate includes strengthened permit conditions to improve on the current permit and fugitive dust management plan by requiring a windscreen to minimize the transport of coal dust from any coal storage piles on the site into the surrounding community and upgrades to the existing water spray system in the rail car unloading sheds to increase overall dust control efficiency.

3. Comments from CSX - See Appendix C for Complete Comments

"...CSX does not support draft conditions D(1)-D(5) and strongly urges MDE to remove these conditions from the final permit…"

"...CSX is the first facility in Maryland to install and operate a fenceline monitoring system for particulate matter…system monitors PM10 and PM2.5 continuously at eight locations along the perimeter of the Terminal and publishes the data in real time to a public website…fifteen months of fenceline monitoring data prove that particulate matter concentrations at the Terminal's fenceline are below 24-hour primary and secondary National Ambient Air Quality Standards ("NAAQS") set to protect sensitive individuals, including asthmatics, children, and the elderly…"

"Curtis Bay Piers is classified as a minor source of particulate matter emissions…CSX is required by state law to take reasonable precautions to prevent particulate matter from becoming airborne…[CSX] controls fugitive emissions through a sophisticated wet suppression system that uses real time weather data, covered conveyors, dumper sheds, telescoping chutes, and a southern boundary wind fence…no air permit violations in the last 25 years relating to the discharge of fugitive dust from the Terminal's coal storage areas…"

"Curtis Bay Piers has operated and continues to operate in compliance with its PTO, MDE-approved Fugitive Dust Control Plan, and the additional operating and monitoring conditions in the September 2022 Permit to Construct. A 2022 analysis of toxic air pollutant ("TAP") emissions from the Terminal done in connection with the 2022 PTC demonstrated that all TAP emissions, including coal dust and silica emissions, are at levels that are protective of public health."

"CSX objects strongly to MDE using the Collaborative Report as the basis for permitting decisions at Curtis Bay Piers. Permitting decisions based on the

Collaborative Report are arbitrary and capricious, and not in compliance with state and federal law."

"Maryland law does not provide the public an opportunity to participate in the renewal of a state PTO or require an environmental justice screening…MDE has facilitated extensive public participation in this permit renewal process…this permit renewal process and approach to the control of particulate matter emissions from Curtis Bay Piers is also inconsistent with MDE's treatment of other facilities located in environmental justice areas, including major sources of non-attainment criteria air pollutants…"

"...The Draft PTO Fact Sheet discusses the community's environmental justice concerns, including concerns about disproportionate exposure to particulate pollution, yet fails to acknowledge that the fenceline monitoring system has been operational for over a year or that near-real time data is posted on a public website (CSXCurtisBayFacts.com) to provide accurate information to the public about particulate matter concentrations at the Terminal's fenceline…"

…"MDE's refusal to act consistent with federal and state law is harming CSX's ability to conduct operations at Curtis Bay Piers, unreasonably burdening its rail carrier operations, and discriminating against it as a rail carrier. For these reasons, the draft permit conditions in Part D interfere with rail operations in violation of the Interstate Commerce Commission Termination Act ("ICCTA"), which preempts state permit requirements that unreasonably burden rail operations or discriminate against rail carriers…

"...Any requirement to enclose the coal storage piles at Curtis Bay Piers would be inconsistent with MDE's treatment of other material handling facilities…"

"...CSX committed to implementing numerous enhancements to its dust control practices through a revision to the Terminal's Fugitive Dust Control Plan, including:

(1) Lowering the dust suppression system's wind speed trigger point from 12 mph to 8 mph.
(2) Enhanced record keeping practices around street sweeping and water truck usage.
(3) Installation of an atomized water mist dust suppression at the railcar dumper buildings
(4) A commitment to install a wind fence along a portion of the western property boundary to further reduce wind action at the Terminal

"...The controls MDE now proposes would require CSX to undertake complex and costly construction projects, are technically and economically infeasible, and depart significantly from the monitoring and recordkeeping requirements typically included in a state PTO for a minor particulate matter source…"

"...Constructing large-scale storage silos in place of the current outdoor coal storage area is akin to a full-scale rebuild of the Terminal and would require a multi-year phased construction project. The cost of such a project would be hundreds of

millions of dollars—roughly equal to the cost of building an entirely new coal transloading facility…"

"...a 100-foot steel frame wall would cost up to $120 million just to design and construct…"

"...The cost of a king pile and sheet pile wall would be approximately $98.6 million…"

"...similar challenges with constructing a semi-permeable structure—which it is not clear would even satisfy the draft Part D conditions—and estimated the cost to be $83.9 million…"

"...a dome 'entails significant temporary and permanent impacts on facility operations,' would require existing infrastructure 'to be redesigned and relocated,' would take longer than 18 months to construct, and would likely cost well over $100 million…"

"...emissions from loaded railcars are considered de minimis (or zero) and coal freight shippers must mitigate for coal dust and apply 'in-transit dust suppressant' or 'effectively mitigate for coal dust under all weather conditions'. ."

"…the movement of railcars onto the CBP property at low speeds is not causing fugitive dust emissions beyond the terminal's boundary…"

"...the installation of a water spray system at the property boundary is unnecessary, would create operational challenges, additional environmental consequences, and would result in little to no decrease in fugitive dust emissions at a significant expense…"

MDE Response:

The Department acknowledges that CSX Transportation installed a fenceline network as required by the Permit to Construct issued by the Department in September 2022.

The Department's analysis of the first 21 months of data from that network indicates that particulate matter concentrations are elevated by facility operations, and in some cases may be elevated above the annual NAAQS for PM2.5 when measured downwind of the facility.

That analysis complements and confirms findings from scientific assessments of pollution levels and deposited dust in the community that indicate coal dust is being transported from the facility to the community, providing a factual and adequate basis for the Department to act.

Regarding public participation, though Maryland law does not require State Permits to Operate to undergo public participation, the Department has the

authority to determine if public participation should be undertaken on any departmental action. Given the uniquely close proximity of the terminal to the community, with fewer than 900 feet separating the edge of the storage piles and the nearest residential building, and its potential impact to residents and the number and type of major sources neighboring the community, the Department determined there was a compelling need for public input. Additionally, recent scientific findings have confirmed that additional measures should be taken to mitigate the facility's impact on the public. As such, the public should have a voice in the development of the operating permit.

The Department acknowledges that there is significant uncertainty surrounding cost estimates for a physical barrier that fully encloses the storage areas at the facility, and it may be cost prohibitive.

The Department estimated the cost of total enclosure, namely a domed structure, to be around $50 million, based on discussions with a provider of such structures and approximations of structure size and operational considerations. An estimate suggested by a citizen's group proposed the cost of such a structure to be between $10 and $17 million. Both the Department's and the citizen's estimates were based on limited information regarding specific site characteristics, such as subsurface conditions affecting foundation constraints and pollution control and safety requirements needed when enclosing an active coal storage operation. Neither of these two enclosure options considered whether an enclosure would negatively impact the terminal's coal handling capacity.

In consideration of the cost issues raised and in recognition of potential operational impacts, the final permit language requires that the facility, at a minimum, surround the storage areas or the facility as a whole with windscreens, linked to coal pile height to minimize the transport of dust from the facility to the community. From a qualitative perspective, this is a lower cost option that the Department contends will not meaningfully impact operations or terminal capacity and still provide a dust control benefit beyond levels achieved using current dust control measures.

In consideration of the comments regarding rail car watering at the property boundary, the renewal State Permit to Operate does not include that provision.

The renewal State Permit to Operate includes strengthened permit conditions to improve on the current permit and fugitive dust management plan by requiring windscreens to minimize the transport of coal dust from any coal storage piles on the site into the surrounding community and upgrades to the existing water spray system in the rail car unloading sheds to increase overall dust control efficiency.

4. Comments from the Environmental Integrity Project, Community of Curtis Bay Association and Other Community Groups and Advocates - See Appendix D for Complete Comments

"...MDE Should Deny the Application for a Renewed State Operating Permit for the Terminal…"

"...In the Alternative, MDE Must Revise the Draft Renewal Permit to Impose Stronger Permit Conditions…"

"…MDE Must Revise the Draft Permit to Require Full Enclosure of the Coal Storage Piles…"

"…Full enclosure is technically feasible…the cost of full enclosure is reasonable…"

"…In the Alternative, At Minimum MDE Must Require Engineered and Optimized Wind Screens Surrounding the Coal Piles…"

"...MDE Must Require CSX to Report VOC Emissions from Storage and Handling of Coal and to Report Dockside Marine Vessel Emissions. MDE Must Use this Information to Determine Whether CSX Must Obtain a Major Source Operating Permit for the Terminal…"

MDE Response:

The Department lacks the legal authority or basis to permanently shut down the facility or to deny the permit renewal application. To meet applicable air quality requirements, CSX must take reasonable precautions to prevent particulate matter from becoming airborne and must demonstrate that emissions of toxic air pollutants will not unreasonably endanger human health. In addition, CSX cannot create a nuisance or odor.

The Department acknowledges the comments that the facility's demonstrated impacts on the community provide sufficient basis for additional permit requirements.

As noted above, the permit requires windscreens instead of full enclosure due to the cost of full enclosure and potential impacts on the terminal's operations and capacity.

With regard to VOC emissions from storage and handling of coal, methane and ethane are specifically excluded from the federal definition of volatile organic compounds (VOC) under 40 CFR §51.100(s) and are not considered regulated VOC pollutants under the Clean Air Act.

For VOC other than methane and ethane, there is little evidence demonstrating that VOC is emitted from coal while it is stored or transferred. A review of air permits issued to coal terminals in other states, such as Ohio and Virginia, consistently show there are no VOC requirements or regulations applicable to coal storage or transfer because these operations are not considered sources of VOC emissions. In addition, a comprehensive study commissioned by the New South Wales EPA measured emissions, including VOC emissions, from a number of

industrial sources - coal seam gas operations, landfills, wastewater treatment plants, agriculture (a rice farm and cattle feedlot), coal mining and natural sources. (https://www.epa.nsw.gov.au/sites/default/files/methane-volatile-organic-compound-emissions-nsw-3063.pdf)

The study found that ambient concentrations of VOCs measured at that country's Rix Creek coal mine site were generally low in most VOCs compared to semi-rural and the higher intensity land-use sites. Some were below the limits of detection. Those hydrocarbons that were identified inferred a diesel emissions profile, which is likely to be consistent with the machinery operating at the mine.

The CSX facility uses diesel locomotives to transport coal to and from the facility and other mobile equipment to move coal on the storage piles. Additionally, while CSX accounts for particulate matter emissions during transfer of coal to marine vessels docked at the facility, the marine vessels are not owned or operated by CSX and any engine emissions from marine vessels docked at the facility are not included in the facility's potential emissions. All of these operations are mobile sources that are not directly regulated by MDE; engine standards for mobile sources are set by the Federal government.

5. Comments from the Maryland League of Conservation Voters (Maryland LCV) - See Appendix D for Complete Comments

"...The residents of Curtis Bay, where the coal export facility is located, and surrounding communities are overwhelmingly in favor of denying this permit. Their testimonials about living next to a coal export facility that handles seven million tons of coal per year include health impacts, economic impacts, and quality of life impacts…"

"...Taking an environmental justice approach would prioritize requests of the affected community…"

"...In Maryland law, 'environmental justice' means equal protection from environmental and public health hazards for all people regardless of race, income, culture, and social status. There is a disconnect between this definition and the way MDE approaches permitting, which assesses one facility (and sometimes one pollutant) at a time…"

"...Curtis Bay is the location for several regulated polluting facilities…as well as being bordered and intersected by major roadways trafficked by diesel trucks regulated under a different system than stationary pollution sources. While any one facility may be in compliance with state and federal regulations, when there are so many sources in close proximity, the cumulative impact is much greater and higher than safe exposure levels. Without considering these cumulative measures, MDE is falling short of achieving the state's definition of environmental justice…"

"...In December 2023, a…study…was released by the Community of Curtis Bay Association, the South Baltimore Community Land Trust, Johns Hopkins University, the University of Maryland, and MDE and confirmed the presence of coal dust in the air of the South Baltimore community of Curtis Bay…"

"...At least in part as a result of the concentration of pollution, and according to MDE data, Curtis Bay has the highest EJ score percentile (distribution across Maryland) in the state…"

"...Living in an area with such a high EJ Score increases residents' vulnerability to additional health and environmental stressors. Living in an overburdened and underserved community in Maryland with a high EJ score should merit additional considerations in state permitting…"

"...Maryland has the most ambitious short term climate goals in the nation… MDE should recognize the climate implications of exporting coal around the world…"

"...The health impacts of PM 2.5 are well documented and include premature mortality, heart and lung disease, and asthma attacks. Children and older adults, especially with preexisting lung conditions, are particularly vulnerable to the effects of exposure to PM. A recent study examined the connection between coal storage and handling and increased air pollution, demonstrating that a 10% increase in PM 2.5 from coal stockpiles causes a 1.1% increase in the average adult and a 3.2% increase in infant mortality rates. The study also looked at the cost of local air pollution, finding that a one ton increase in coal stockpiles results in local air pollution costs of $197. These costs are borne by nearby community members.…Any permit should include considerations of health burden and economic impacts to communities…"

"...After a 2021 explosion at the CSX facility, CSX entered into a settlement to pay the state $15,000 and the South Baltimore Community Land Trust $100,000…fees must be set at a level that deters noncompliance…"

MDE Response:

The Department recognizes that the Curtis Bay community is an area that has a high score in the MDEnviroScreen Tool, has a number of major pollution sources and that certain populations within the community are vulnerable to pollution exposure. Because of this the Department did view CSX's continuing operation through an EJ lens, which, when factoring in the Department's available authority to regulate pollution, led the Department to impose dust control measures in the permit that go beyond what was required in the prior operating permit. Specifically, the permit requires CSX to install windscreens as high as and surrounding the coal piles, with some exception on the latter requirement for vehicle and railcar access and fixed equipment placements. The screen lessens the potential for coal dust to be transported from the piles to the community. The permit also requires

enhanced water suppression to be installed in the coal dumping sheds. Additionally, the Department notes the company's commitment to incorporate a lower wind speed threshold for automatic activation of sprayers in the upcoming revisions to the facility fugitive dust plan, which will further reduce PM transport.

It is true that the permit review process takes a facility-by-facility approach. Except for situations where very large emission sources are seeking a permit, which requires emissions from other large sources to be considered in the review process, the regulatory and statutorily based authorities granted the Department, dictate the facility-by-facility approach to permitting.

Under our authority, the Department's review process considers broad health impacts rather than health impacts based on specific health conditions and is unable to consider economic impacts to the surrounding community. The impacts to public health are considered by EPA in the development of National Ambient Air Quality Standards. The development is done by health experts, and the resulting standards are set to protect public health with an adequate margin for safety. The Department's role is to ensure that Maryland meets those standards, and this is done through the state's ambient air quality network.

The coal terminal's impact on climate change as an entity supporting the continued use of coal throughout the world is beyond the scope of the Department's authority regarding this particular facility's permit. To combat the impacts of climate change, the Department has a plan to reduce statewide greenhouse gas emissions by 60% by 2031 by targeting sectors that constitute the largest share of greenhouse gas emissions in Maryland.

The plan to reduce statewide greenhouse gas emissions includes a variety of regulatory measures, incentive programs, and transportation related improvements to reduce emissions across several broad sectors.

Many of these measures, especially those that apply to businesses, will take the form of new regulations that drive emission reductions for an entire sector through, for example, the use of alternative fuels, clean power, zero-emission heating equipment, and the implementation of new greenhouse gas reduction standards for large buildings.

Other reductions will accrue through implementation of new requirements applicable to the purchase of electric vehicles, both cars and trucks, and through the offering of incentives to increase electric vehicle purchases, including school buses, and the equipment to charge them.

Programs to incentivize home electrification will provide additional reductions, along with reducing methane emissions from Maryland's landfills and natural gas infrastructure, the planting of 5 million trees and reducing vehicle miles traveled statewide.

The full state plan to reduce greenhouse gas emissions can be found here: https://mde.maryland.gov/programs/air/ClimateChange/CPRP/Pages/Overview.aspx

The Department supports the philosophy that penalties should be set to help deter violations, it is important to note however, that the Department asserted five air pollution related violations for the explosion, which carry a potential maximum civil penalty of $25,000 per violation per day, for a maximum total of $125,000.

BEFORE THE
SURFACE TRANSPORTATION BOARD

Finance Docket No. 36886

CSX TRANSPORTATION, INC.
PETITION FOR DECLARATORY ORDER

EXHIBIT 5

Press Release: Maryland Department of the Environment Issues Most Protective Permit with New Pollution Controls for CSX Coal Facility in Response to Community Concerns (July 29, 2025)

An official website of the State of Maryland.
Here's how you know

Maryland Department of the Environment Issues Most Protective Permit With New Pollution Controls for CSX Coal Facility in Response to Community Concerns

Company Required to Construct Windscreen to Limit Dust

BALTIMORE (July 29, 2025) – The Maryland Department of the Environment today issued a new operating permit for the CSX Transportation coal facility in Curtis Bay. The new permit is one of the most stringent in state history, requiring additional measures to control dust and protect the community.

“We are holding CSX to a higher standard by requiring an enclosure to control dust — a critical step to protect the health of the surrounding community,” said Maryland Department of the Environment Secretary Serena McIlwain. “This is the most protective permit ever issued for this site, reflecting our commitment to environmental justice. We will continue bringing all voices to the table to uphold public health.”

The permit replaces an Air Quality State Permit to Operate issued in 2018. Under the new permit, CSX has 120 days to submit a design to construct a wind screen to minimize dust from leaving the site.

CSX Transportation operates the coal, ore, limestone, and other dry material storage, transfer and shipment terminal in Curtis Bay. The facility is licensed to operate an interstate rail network and export facility under federal law, including permission to transport and export coal. The state does not have authority to shut the facility down, but does have the authority to require the facility to control pollution.

Additional protections in the new permit include:

- Construct a windscreen structure to minimize coal dust from reaching the community. The structure will surround the coal storage piles and be taller than the piles.
- Install improved water spraying equipment at coal railcar unloading operations.

The permit is the result of an extensive public engagement process that incorporated the findings of community-driven science demonstrating that additional measures are necessary to control coal dust leaving the facility. The department also held a 90-day public comment period for the permit that was not required by law and reviewed thousands of pages of input from hundreds of commenters.

Additional information is available on the department’s website.

# # #

Wes Moore
Governor

Aruna Miller
Lt. Governor



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BEFORE THE
SURFACE TRANSPORTATION BOARD

Finance Docket No. 36886

CSX TRANSPORTATION, INC.
PETITION FOR DECLARATORY ORDER

EXHIBIT 6

Press Release: New Scientific Study Confirms Airborne Coal Dust in Curtis Bay Community (Dec. 14, 2023)

An official website of the State of Maryland.
Here's how you know

New Scientific Study Confirms Airborne Coal Dust in Curtis Bay Community

Findings will be considered in review of operating permit for South Baltimore coal export terminal

BALTIMORE (Dec. 14, 2023) – A scientific study released today by the Community of Curtis Bay Association, the South Baltimore Community Land Trust, Johns Hopkins University, the University of Maryland, and the Maryland Department of Environment (MDE) confirms the presence of coal dust in the air of the South Baltimore community of Curtis Bay. These findings will be considered during the review of CSX Transportation's coal export terminal operating permit, which has been administratively extended since Sept. 30 to allow for additional community input.

"This study was produced in partnership with the community, universities, and our best scientists and air quality experts at the Maryland Department of the Environment," said Secretary Serena McIlwain. "We will let the science and data identified in this study lead the way as we consider a new permit for the Curtis Bay coal terminal through the lens of environmental justice."

The study, which will be presented at tonight's community association meeting, is the most advanced community-led air quality monitoring project ever undertaken in Maryland. It will serve as scientific evidence of community impacts in review of the 5-year air quality operating permit for the coal terminal. Coal particles were identified at all eight community sampling locations and all samples during three different rounds of collection, including at residences, and near businesses, a church, a park, and a school.

The scientific evidence supports observations and testimony residents have shared with MDE about the impact of coal dust on their homes and community. MDE will analyze the report and develop a draft operating permit for public review by early February. The department will accept written comments on the draft permit and hold a community meeting before making a final decision on the permit application. For more information on the permit process, visit our website.

The study was initiated following an explosion at the terminal at the end of 2021 for which the company was subject to enforcement action by MDE and the Federal Occupational Safety and Health Administration.

The monitoring network consists of a series of multi-pollutant sensors placed at various locations in the community, supplemented by field sampling of dust throughout the community performed by citizen scientists. The partners will expand the sensor network in the coming months using a grant from the U.S. Environmental Protection Agency. Scientists used sophisticated statistical analysis and electron microscopy to measure the overall air pollution burden in the community and identify coal dust from the facility.

# # #

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