

EAST SIDE COASTAL RESILIENCY

SANDRESM1 | PROJECT AREA 1

AIR QUALITY MONITORING REPORT

Q1 | 2023

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SUBCONSULTANT TO IPC RESILIENCY PARTNERS



NEW YORK CITY DEPARTMENT OF DESIGN & CONSTRUCTION IN PARTNERSHIP WITH
THE CITY OF NEW YORK

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PART 1

I. Air Quality Monitoring: Introduction

The East Side Coastal Resiliency (ESCR) project is a coastal protection initiative, jointly funded by the City of New York and the federal government, aimed at reducing flood risk due to coastal storms and sea level rise on Manhattan's East Side from East 25th Street to Montgomery Street. The ESCR project will protect 110,000 New Yorkers from the impacts of climate change by increasing resiliency for communities, properties, businesses, critical infrastructure, and public open spaces. In addition to providing flood protection, the project will strengthen and enhance waterfront spaces on Manhattan's East Side by improving accessibility, increasing ecological diversity, and delivering improved recreational amenities to a vibrant and highly diverse community.

The project is divided into three project areas: Project Area 1 (from Montgomery Street to East 15th Street, including East River Park), Project Area 2 (East 15th Street to East 25th Street, including Murphy Brothers Playground, Stuyvesant Cove Park, and Asser Levy Playground), and Parallel Conveyance (work to improve inland drainage on local streets between Montgomery Street and East 25th Street).

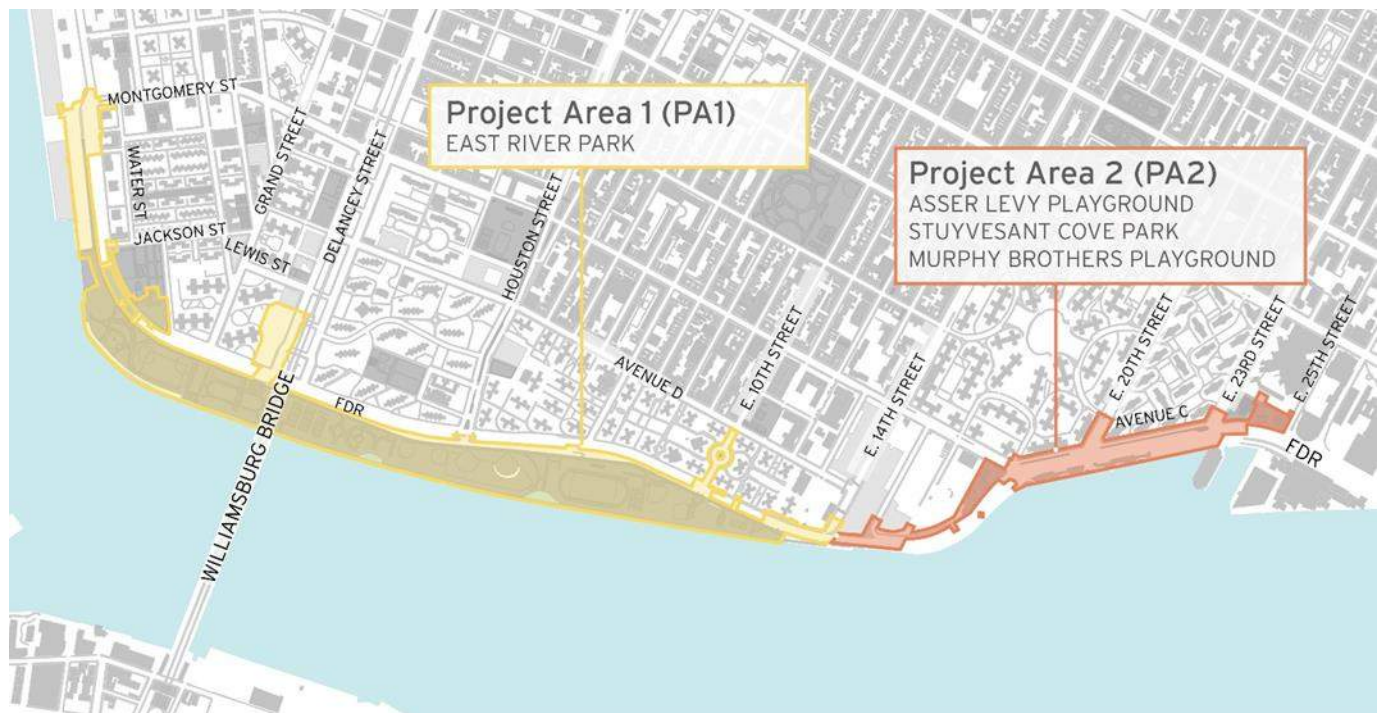


Fig.1 East Side Coastal Resiliency Project Areas

The ESCR team will be conducting air quality monitoring throughout construction in all three Project Areas to ensure the ongoing health and safety of the adjacent community. In particular, the ESCR Air Quality Monitoring program will measure levels of Particulate Matter (PM) at two sizes: PM₁₀ and PM_{2.5}.

As described by the [Environmental Protection Agency \(EPA\)](https://www.epa.gov/):

PM stands for **particulate matter** (also called particle pollution): the term for a mixture of solid particles and liquid droplets found in the air. Some particles, such as dust, dirt, soot, or smoke, are large or dark enough to be seen with the naked eye. Others are so small they can only be detected using an electron microscope. Particle pollution includes:

- PM10: inhalable particles, with diameters that are generally 10 micrometers and smaller (typically from dust)
- PM2.5: fine inhalable particles, with diameters that are generally 2.5 micrometers and smaller (typically from vehicle emissions)

The Clean Air Act requires EPA to set national air quality standards for particulate matter, as one of the six criteria pollutants considered harmful to public health and the environment. The law also requires the United States Environmental Protection Agency (EPA) to periodically review the standards to ensure that they provide adequate health and environmental protection, and to update those standards as necessary. National Ambient Air Quality Standards (NAAQS) for PM pollution specify a maximum amount of PM to be present in outdoor air.

The **Permissible Exposure Limit (PEL)** is a regulatory limit to protect public health/welfare set by the NAAQS in line with the requirements of the Clean Air Act (CAA) on the amount or concentration of a substance in the air. The EPA has set a **24-hour time weighted average (TWA)** as standard for evaluating PM levels, meaning that they average potential PM exposure over a 24-hour period. This is also referred to as the **daily value**. In the line graphs presented in the ESCR monthly data plots, readings are averaged in 15-minute intervals and do not represent the standard TWA of 24-hrs. This more conservative approach will help the ESCR project team monitor the project's effect on air quality more closely.

The **Action Level (AL)** is lower than the PEL and represents a level set by the ESCR AQM Plan which, when reached, will alert the contractor that there has been an increase in particulate matter so that they can assess construction activities and take necessary measures to remediate the condition. Automated alerts are dispatched to the general contractor and the construction management team whenever the AL is exceeded.

The table here illustrates the PEL and AL for net PM2.5 and PM10 concentrations over a 24-hour TWA. These levels are measured in micrograms per cubic meter air ($\mu\text{g}/\text{m}^3$):

	Action Level (AL) over a 24-hour TWA	Permissible Exposure Limit (PEL) over a 24-hour TWA
PM2.5	25 $\mu\text{g}/\text{m}^3$	35 $\mu\text{g}/\text{m}^3$
PM10	100 $\mu\text{g}/\text{m}^3$	150 $\mu\text{g}/\text{m}^3$

The ESCR Final Environmental Impact Statement (FEIS) analyzed the potential impact of the construction on community air quality and determined that **with consistent air quality monitoring and application of measures to reduce pollutant emissions and suppress dust, "construction of the Preferred Alternative would not result in any predicted concentrations above the National Ambient Air Quality Standards (NAAQS) for NO₂, CO, and PM10 or the de minimis thresholds for PM2.5 from nonroad and on-road sources. Therefore, no significant adverse air quality impacts are predicted from the construction of the Preferred Alternative."** (ESCR FEIS, Chapter 6.10 Construction Air-Quality, 6.10-2)

Along with air quality monitoring, the contractor is required to take extensive preventative measures to control dust and limit vehicle emissions. Potential mitigation techniques include but are not limited to:

- use of water spray for roads, trucks, excavation areas and stockpiles
- use of anchored tarps to cover stockpiles
- use of truck covers during soil transport within site limits and during off-site transport

- employment of extra care during dry and/or high-wind periods
- use of gravel or recycled concrete aggregate on egress and other roadways to provide a clean and dust-free road surface
- use of a truck wheel wash at site access/egress points to prevent fugitive dust and off-site migration of dust and other particulates

How to Read the Data Plots

The PM readings that follow by month in this report are shown in data plots, as below. The data plots illustrate **PM** levels in a **15-minute TWA**. As mentioned above, the federal limits for PM exposure are evaluated on a **24-hour TWA**. By evaluating PM readings on the 15-minute TWA, the ESCR project can ensure that Net PM never exceeds the 24-hour TWA, or daily value.

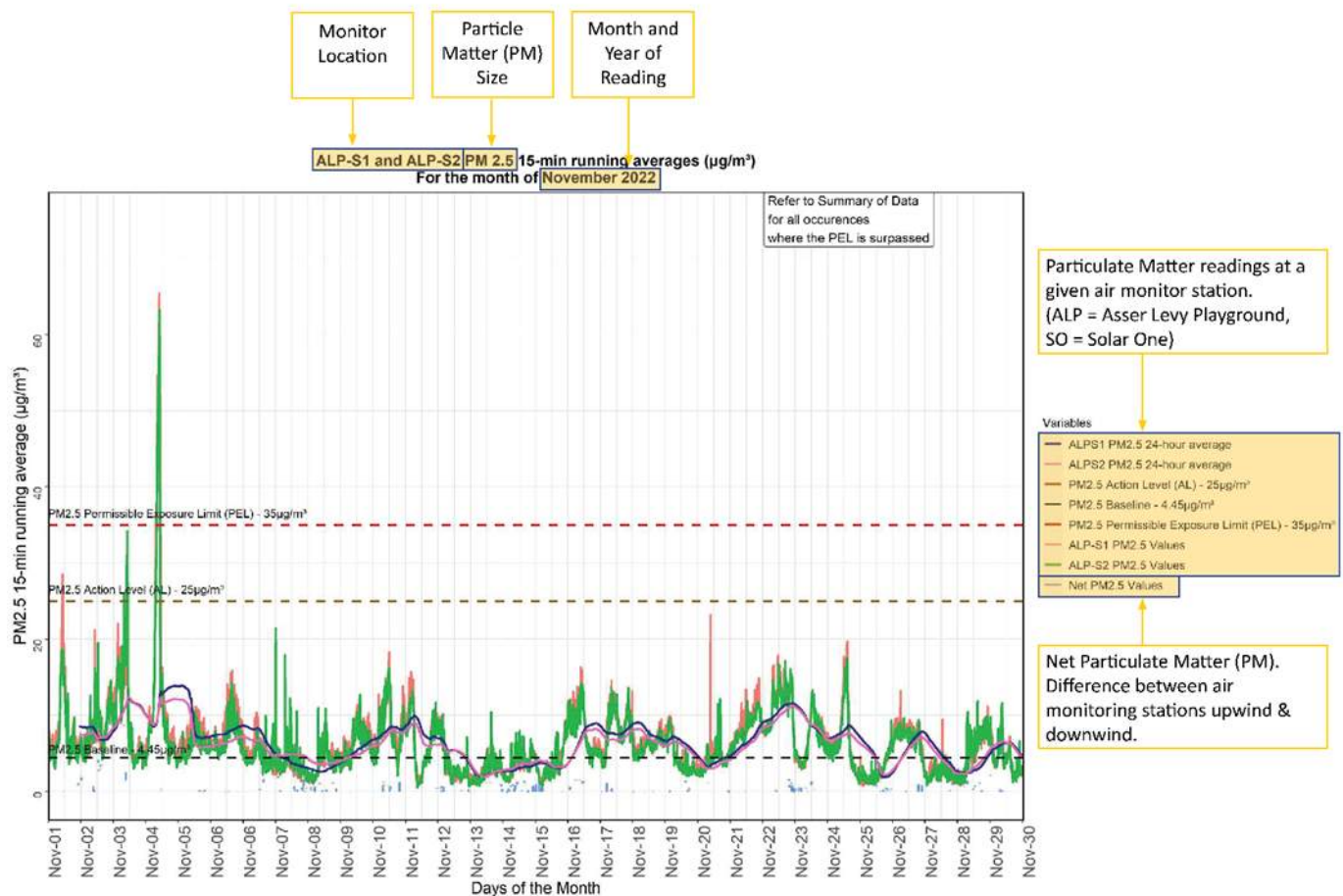


Fig.2 Sample Air Quality Data Plot

The **Net particulate matter (Net PM)** readings are determined as the difference between the upwind and downwind monitoring stations as determined on any day given the wind speed and wind direction. At each construction location at least two air quality monitors are required to determine the Net PM. The Net PM value is important because it measures the **potential increase of particulate matter due to construction activities**. If the wind-speed is less than 0.5 meters per second, the downwind station is considered undetermined, and the Net PM will be absent from the data plot. In these circumstances, high readings at one or both monitoring stations will still be noted, however the increased levels in the PM readings may be due to conditions unrelated to construction.

An **exceedance** is a daily value that is above the level of the 24-hour TWA after rounding to the nearest $10 \mu\text{g}/\text{m}^3$ (i.e., values ending in 5 or greater are to be rounded up).

An **exceptional event** is an uncontrollable event caused by natural sources of particulate matter or an event that is not expected to recur at a given location. Inclusion of such a value in the computation of exceedances or averages could result in inappropriate estimates of their respective expected annual values.

An **outlier** is a data point on a graph or in a set of results that is very much bigger or smaller than the next nearest data point. For example, outliers among monitoring data can be due to instrument malfunctions, the influence of harsh environments, and the limitation of measuring methods.

II. Executive Summary

This report summarizes the PM readings for ESCR Project Area 1 (PA1), collected by SA Engineering, environmental subconsultant to the PA1 contractor, IPC Resiliency Partners (IPC) January through March 2023. The PA1 contract requires a minimum of six (6) air quality monitoring stations throughout construction, which are relocated as necessary to reflect the phased construction activities. Currently fourteen (14) air quality monitoring stations are active throughout the construction area perimeter and reflect current construction areas. For this report, each monitor will be referred to as “AQM-#” – referring to the numbers in Figures 3A and 3B. Figure 3A details the locations of the air quality monitoring stations prior to January 13, 2023.

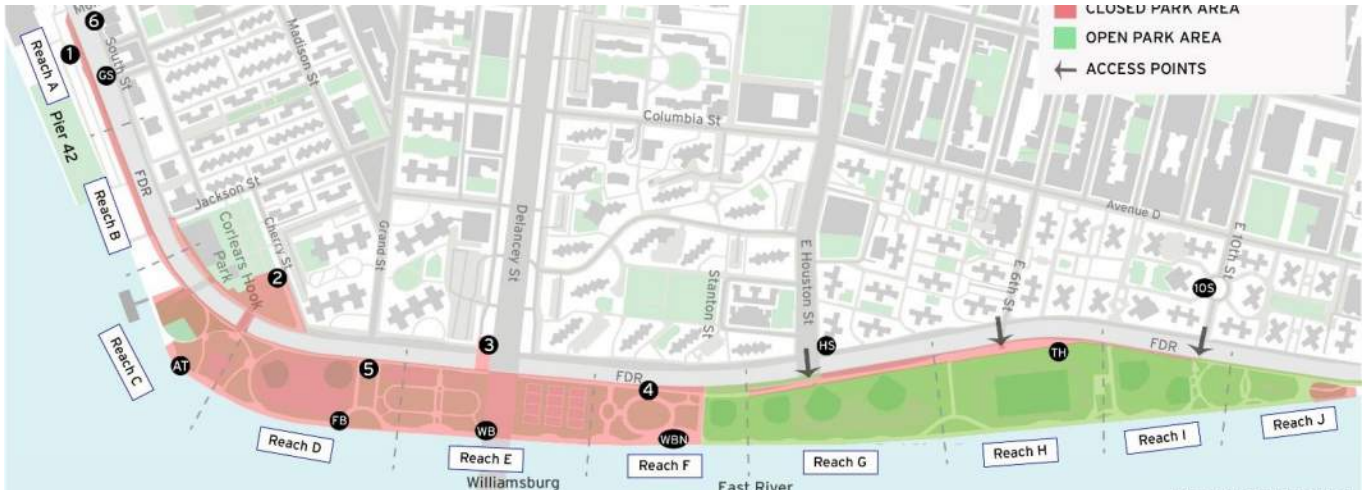


Fig.3A ESCR Project Area 1 Phase 1 Air Quality Monitoring Station Locations, as of July 15, 2022

Due to construction activities, by January 13, 2023 of this period, the AQM-HS monitor was relocated from Houston Street across the FDR from its original location to an onsite location and installed at the location shown below; the monitor began recording upon installation. Figure 3B details the updated locations of the air quality monitoring stations.



Fig.3B ESCR Project Area 1 Phase 1 Air Quality Monitoring Station Locations, as of January 13, 2023

Work Activities from January to March 2023:

Reach A*:

- Backfilling & restoration of ConEd utilities at South St.
- Site clearing & temporary access road/site entrance
- Excavation for flood gate monolith

Reach B*:

- Pile installation and cutting of steel sheeting
- Excavate and install soldier beam for carbon fiber wrapping support of excavation
- Excavation at carbon fiber trench

Reach C:

- Demolition, core drilling, and saw cutting of esplanade deck slab and sea wall
- Bulkhead demolition and timber pile extraction
- Excavation and shoring of box sewer and interceptor
- Corlears Hook Park archaeological work
- Corlears Hook Park bridge abutment work

Reach D:

- Bulkhead demolition and timber pile removal
- Excavation and ConEd utility wing back
- Splicing piles and drive sheeting for I-Cap wall
- Removal of relief slab and cutting of timber piles at south embayment
- Installing of combi-wall piles and sheeting
- Backfilling carbon fiber wing back
- Corlears Hook Park bridge abutment work

Reach E:

- Drive steel sheeting at sewer and buried floodwall
- Excavate and shoring for sewer by-pass
- Demolition at pier caps
- Prepping combi-wall piles and sheeting
- Bulkhead demolition and timber pile removal
- Installation of stone columns and wick drains

Reach F:

- Place concrete for sewer pile caps
- Formwork for sewer chamber M-30 chimneys and installing sluice gates and tide gates
- Bulkhead demolition and timber pile removal
- Installation of stone columns and wick drains
- Backfill, grading and placing drainage blanket

Reach H:

- Test Pits for ConEd utilities

Reach J:

- ConEd utility work (performed under a separate contract)

East 10th St.:

- Test pits and trenching for electrical layout
- Construct electrical duct banks
- Demolition and decking of ConEd electrical vault

*: Offsite construction activities performed by New York City Economic Development Corporation (NYCEDC) for Pier 42 project throughout the quarter impacted onsite air quality readings

Though air quality is monitored 24/7, typical day time work hours during the period of this report are 7:00 am – 3:30 pm, unless otherwise noted above.

Summary of Air Quality Monitoring Reports

For the months of January-March 2023, construction-related levels of PM at both net PM_{2.5} and PM₁₀ levels did not surpass Daily PEL as set by federal standards for the 24-hour TWA, or daily value, and did not cause air quality concerns to the public or on-site workers. The contractor, IPC, in conjunction with the contractor's environmental specialist, has successfully implemented mitigation techniques at both AL as well as PEL (15-minute TWA) to suppress construction activity effects on air quality in East River Park.

January 2023:

- PM_{2.5} levels surpassed the PEL (15-minute TWA) at AQM-1 on January 1 and January 22; AQM-2 on January 18; AQM-4 on January 13, January 14, January 16, January 17, January 21, January 22, and January 24; AQM-WB on January 27; and AQM-HS on January 28.
- PM₁₀ levels surpassed the PEL (15-minute TWA) at AQM-4 on January 13, January 14, January 16, January 17, January 21, and January 24; AQM-WBN on January 27; and AQM-HS on January 28.

February 2023:

- PM_{2.5} levels surpassed the PEL (15-minute TWA) at AQM-1 on February 6, February 10, February 16, and February 26; AQM-2 on February 21; AQM-4 on February 1, February 2, February 3, February 7, February 14, February 16, February 21, February 22, and February 27; AQM-6 on February 6; and AQM-HS on February 2 and February 7.
- PM₁₀ levels surpassed the PEL (15-minute TWA) at AQM-1 on February 7; AQM-4 on February 1, February 3, and February 7; AQM-WB on February 3; and AQM-HS on February 2 and February 7.

March 2023:

- PM_{2.5} levels surpassed the PEL (15-minute TWA) at AQM-1 on March 2, March 24, and March 27; AQM-4 on March 6, March 13, March 16, March 17, and March 24; AQM-AT on March 24; and AQM-HS on March 31. AQM
- PM₁₀ levels surpassed the PEL (15-minute TWA) at AQM-1 on March 24 and March 27; AQM-4 on March 6; and AQM-5 on March 17.

Baselines:

- PM₁₀ baseline air quality at the site were previous determined to be between 0.149 and 5.00 µg/m³
- PM_{2.5} baseline air quality at the site were previous determined to be between 0.105 and 4.09 µg/m³

PART 2

Summary of Data January 2023

PM_{2.5} levels surpassed the PEL (15-minute TWA) at the following locations:

- AQM-1 on 1/1 for 27 minutes and 1/22 for 15 minutes;
- AQM-2 on 1/18 for 47 minutes;
- AQM-4 on 1/13 for 8 minutes, 1/14 for 13 minutes, 1/16 for 51 minutes, 1/17 for 16 minutes, 1/21 for 16 minutes, 1/22 for 15 minutes, and 1/24 for 72 minutes;
- AQM-WBN on 1/27 for 26 minutes; and
- AM-HS on 1/28 for 14 and minutes

PM₁₀ levels surpassed the PEL (15-minute TWA) at the following locations:

- AQM-4 on 1/13 for 18 minutes, 1/14 for 15 minutes, 1/16 for 47 minutes, 1/17 for 15 minutes, 1/21 for 14 minutes, and 1/24 for 71 minutes;
- AQM-WBN on 1/27 for 15 minutes;
- AQM-HS on 1/28 for 15 minutes

For the month of January 2023, construction-related PM net 2.5 levels were surpassed on 1/1, 1/2, 1/13, 1/14, 1/16, 1/17, 1/18, 1/21, 1/22, 1/24, 1/27, and 1/28. Construction-related PM net 10 were exceeded on 1/13, 1/14, 1/16, 1/17, 1/21, 1/24, 1/27, and 1/28.

For the month of January 2023, construction-related PM net 2.5 or 10 levels did not surpass the Daily PEL (24-hour TWA).

PM 2.5 µg/m³

- PM 2.5 µg/m³ levels surpassed the PEL (15-minute TWA) on 12 occasions (1/1, 1/13, 1/14, 1/16, 1/17, 1/18, 1/21, 1/22, 1/24, 1/27, and 1/28) for between 8 and 72 minutes.
 - AQM-1 is located near the site access gate at Gouverneur Slip West and adjacent to another construction site and an FDR entry ramp; the elevated readings on 1/1 and 1/22 were related to third-party activity after construction hours in the vicinity of the monitor.
 - AQM-2 is located in Corlear's Hook Park adjacent to Cherry Street; the elevated readings on 1/18 were related to third-party activity after construction hours in the vicinity of the monitor.
 - AQM-4 is located adjacent to the shared use path/construction access road in Reach F.
 - Elevated readings on 1/13, 1/14, 1/17, 1/21, and 1/22 were caused by cleaning of the use path/construction access road and idling construction vehicles. A water truck was deployed to mitigate airborne dust and the idling vehicles were relocated.
 - Elevated readings on 1/16 and 1/24 were caused by construction activity in the vicinity of the monitor. A water truck was deployed to mitigate airborne dust related to these readings.
 - AQM-WBN is north of the Williamsburg Bridge in Reach F; the elevated reading on 1/27 was related to construction activity in the vicinity of the station. A water truck was deployed to mitigate airborne dust.
 - AQM-HS is located near the Houston Street ramp at the exit to the construction on the FDR; the elevated readings on 1/28 were caused by construction vehicles in the vicinity of the monitor. A water truck was deployed to mitigate airborne dust related to these readings.

PM 10 $\mu\text{g}/\text{m}^3$

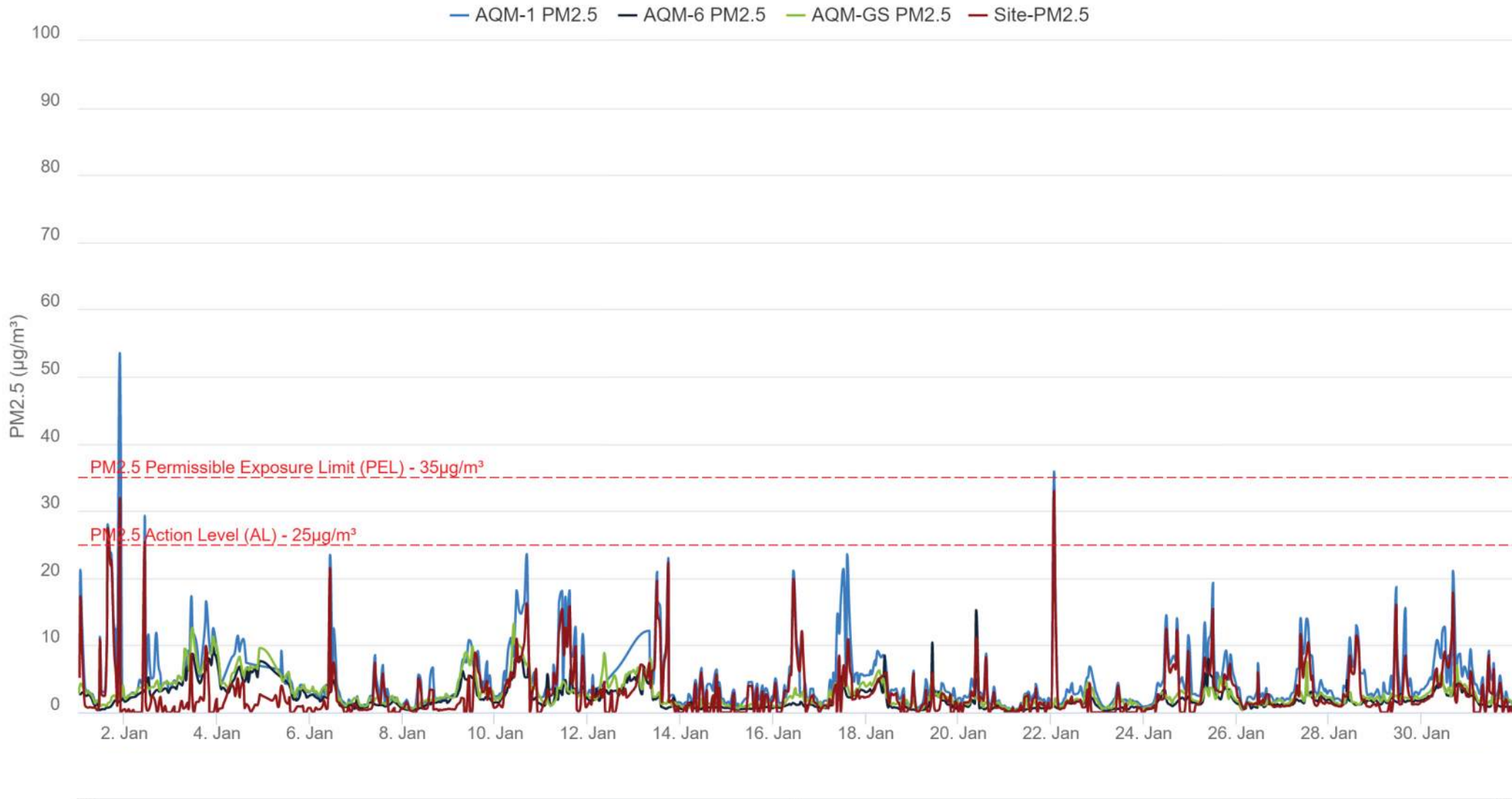
- PM 10 $\mu\text{g}/\text{m}^3$ levels surpassed the PEL (15-minute TWA) eight occasions (1/13, 1/14, 1/16, 1/17, 1/21, 1/24, 1/27, and 1/28) for between 14 and 71 minutes.
 - AQM-4 is located adjacent to the shared use path/construction access road in Reach F.
 - Elevated readings on 1/13, 1/14, 1/17, and 1/22, were caused by cleaning of the use path/construction access road and idling construction vehicles. A water truck was deployed to mitigate airborne dust and the idling vehicles were relocated.
 - Elevated readings on 1/16 and 1/24 were caused by construction activity in the vicinity of the monitor. A water truck was deployed to mitigate airborne dust related to these readings.
 - AQM-WBN is north of the Williamsburg Bridge in Reach F; the elevated reading on 1/27 was related to construction activity in the vicinity of the station. A water truck was deployed to mitigate airborne dust.
 - AQM-HS is located near the Houston Street ramp at the exit to the construction on the FDR; the elevated readings on 1/28 were caused by construction vehicles in the vicinity of the monitor. A water truck was deployed to mitigate airborne dust related to these readings.

Mitigation Measures

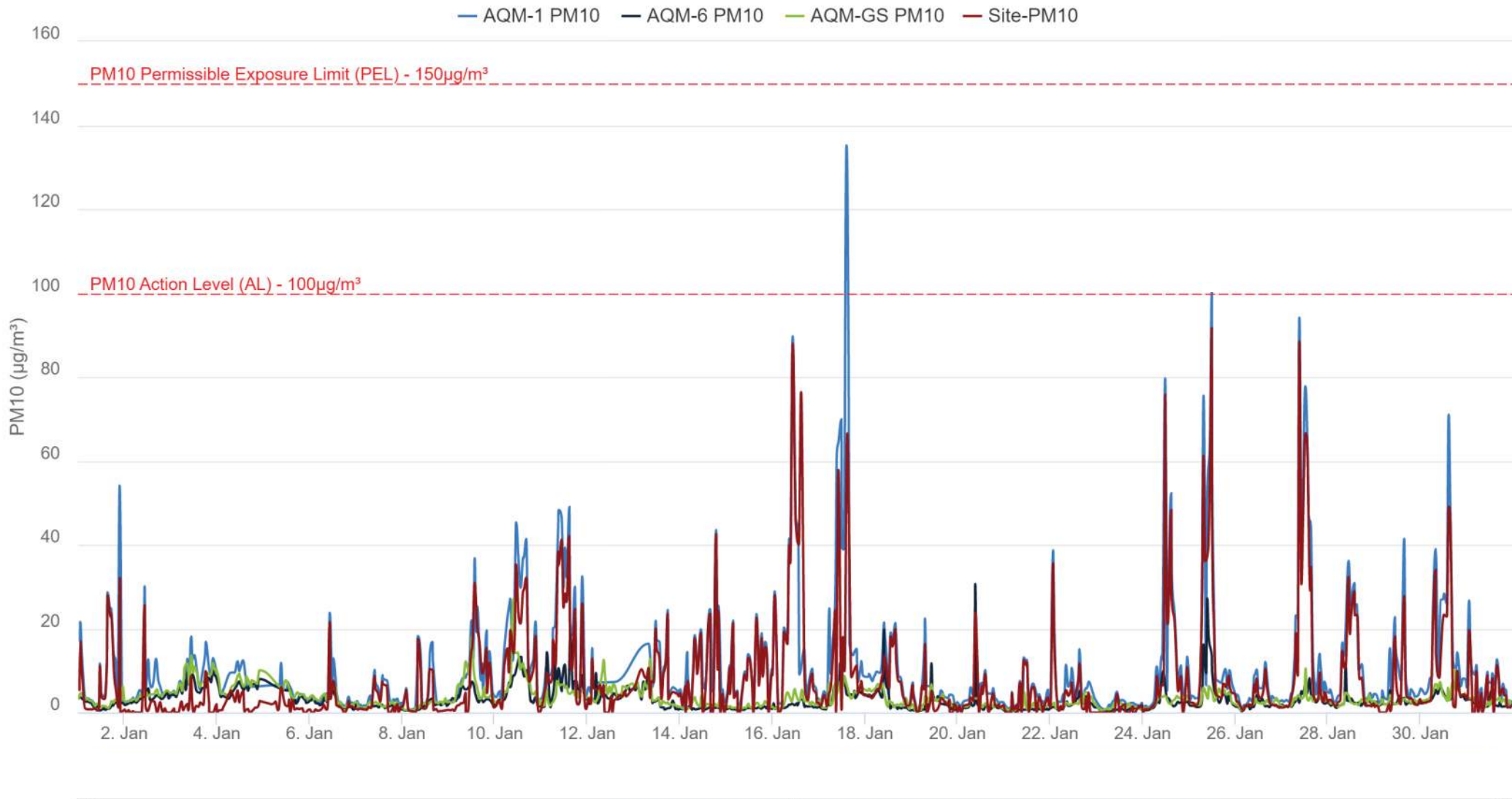
- Throughout the month, construction activity was closely monitored, and dust mitigation techniques were continuously implemented to successfully contain any airborne particulates created due to construction activity.

JANUARY 2023 DATA PLOTS

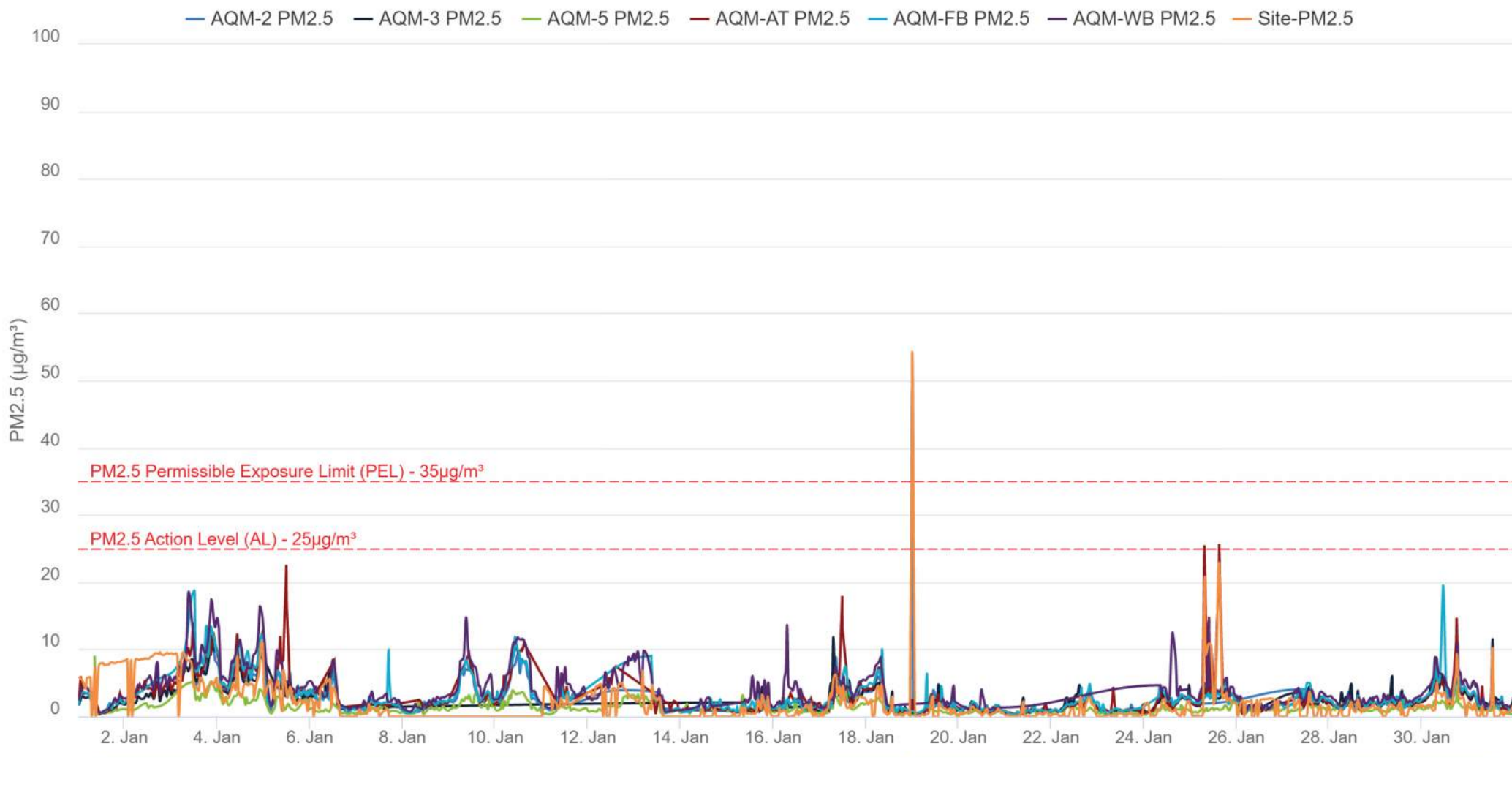
Reach A - PM2.5 - 15 min Running avg. (January 2023)



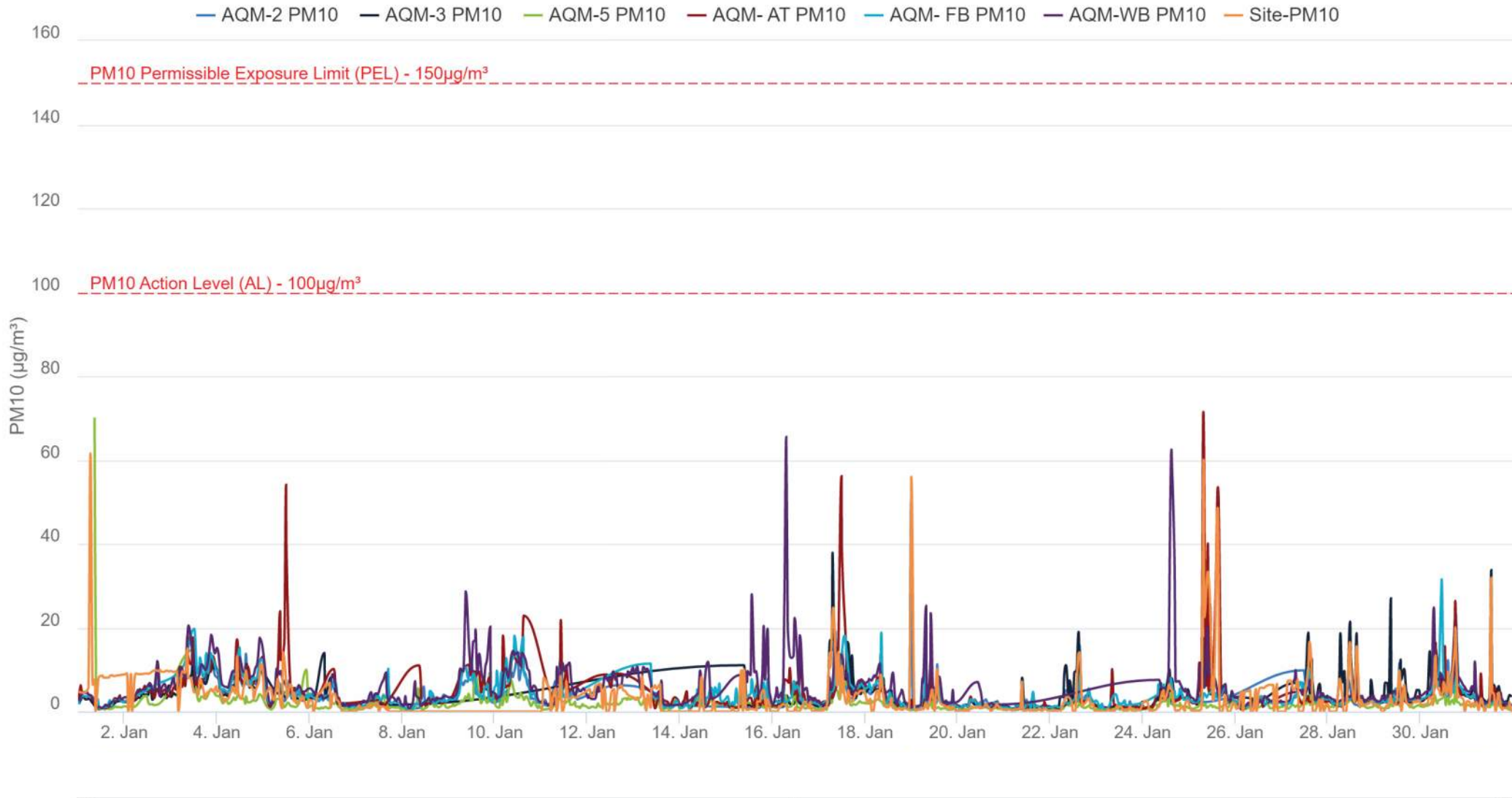
Reach A - PM10 - 15 min Running avg. (January 2023)



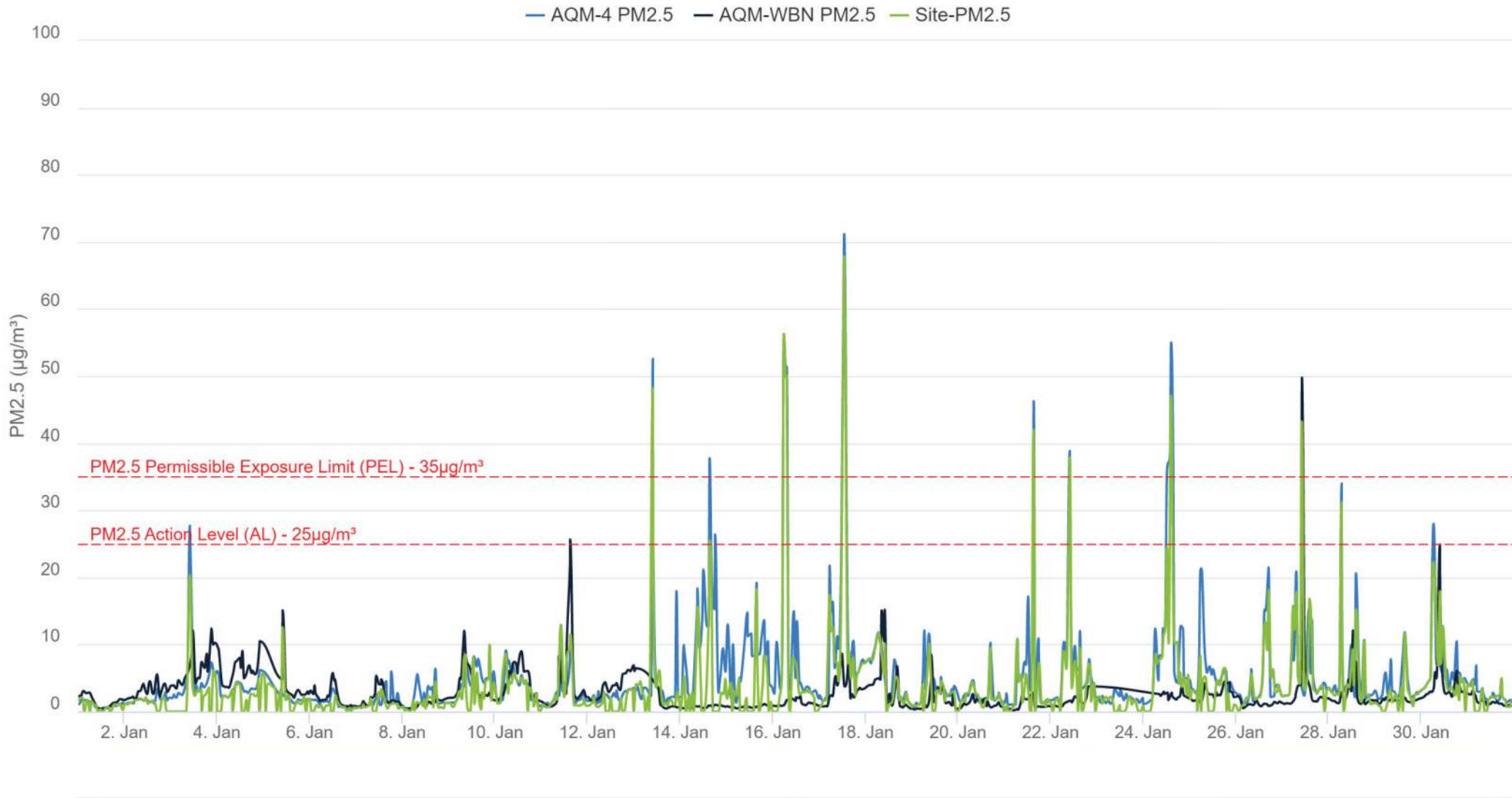
Reach C,D,& E - PM2.5 - 15 min Running avg. (January 2023)



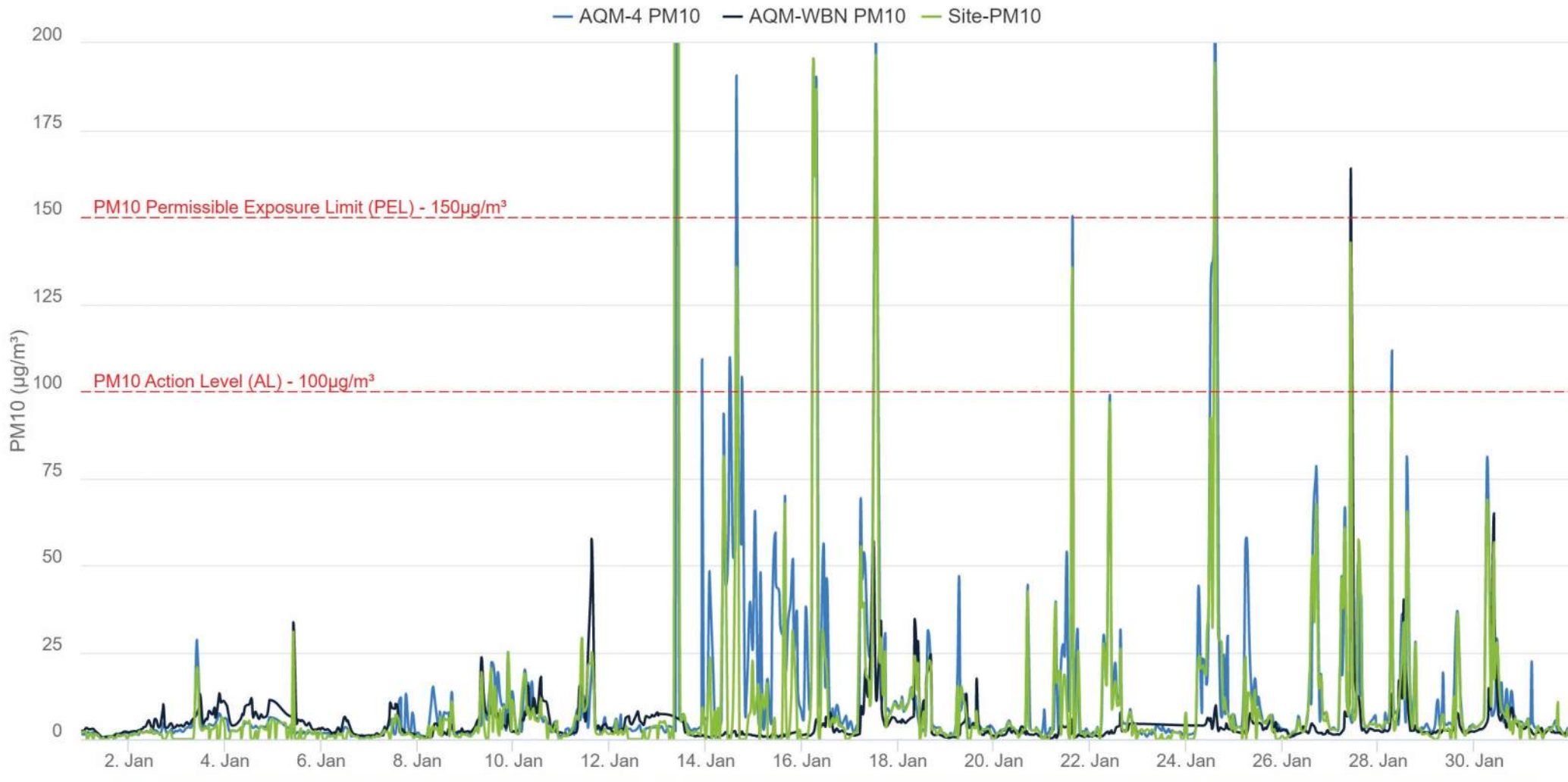
Reach C,D,& E - PM10 - 15 min Running avg. (January 2023)



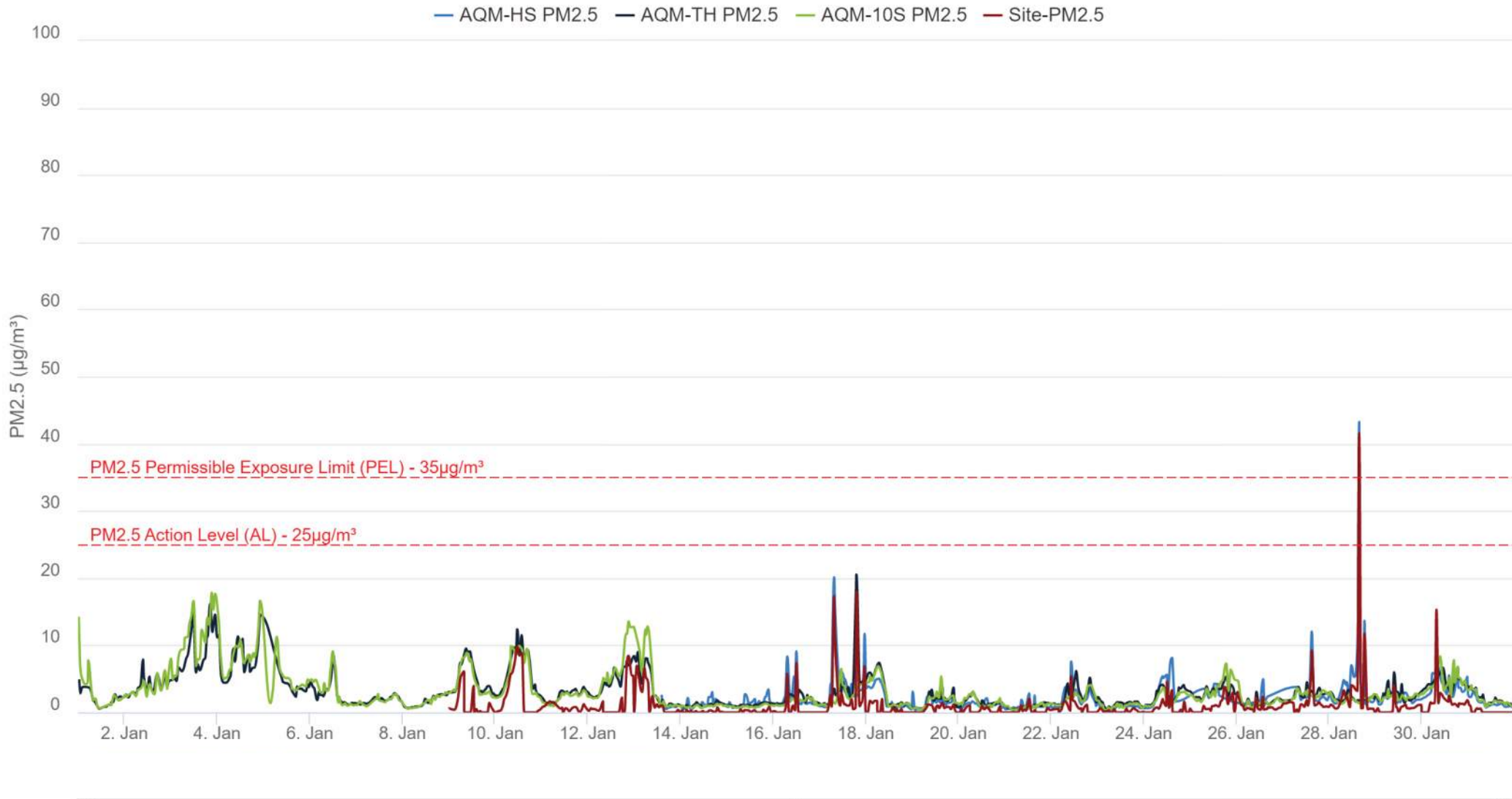
Reach F - PM2.5 - 15 min Running avg. (January 2023)



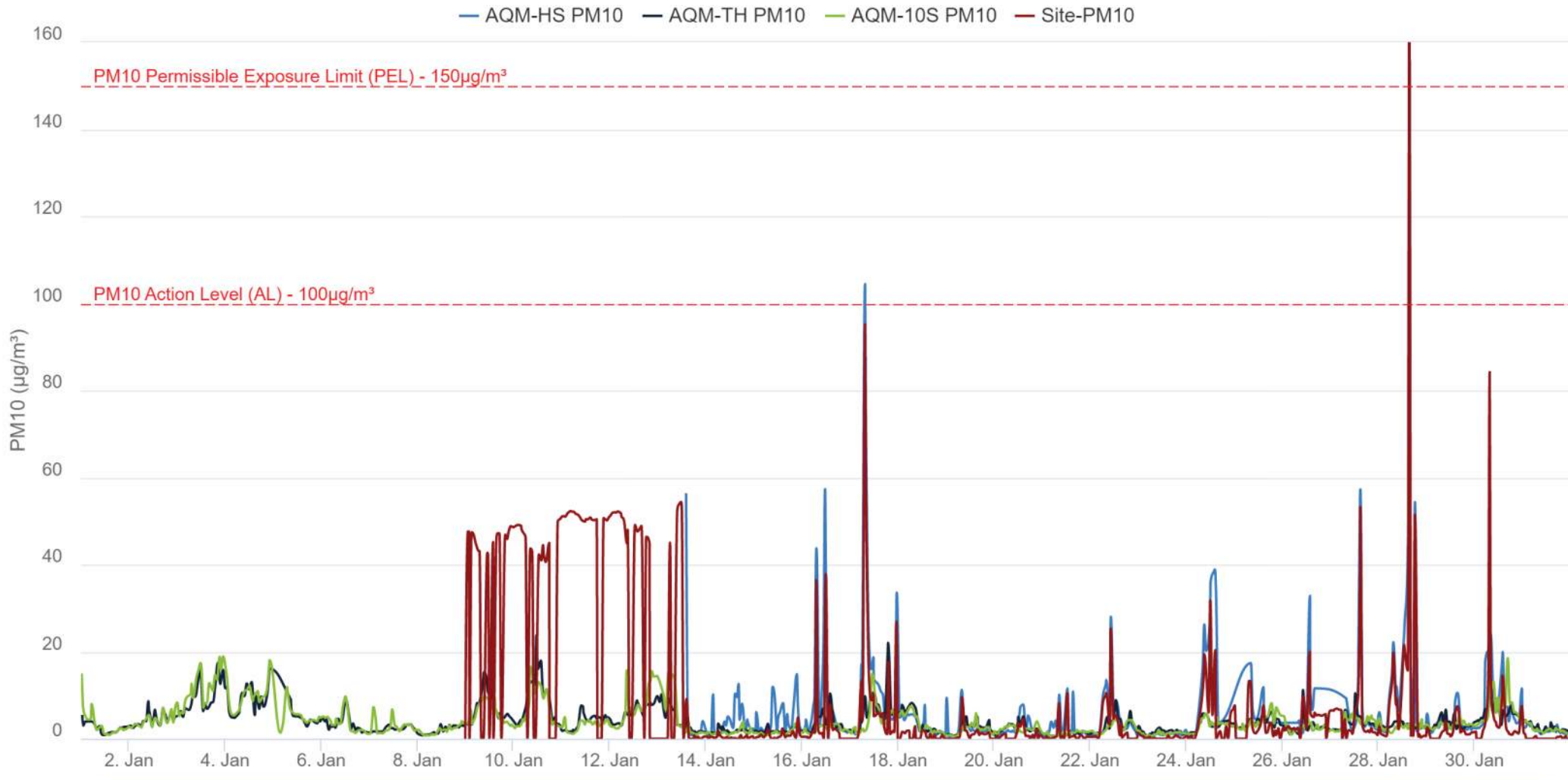
Reach F - PM10 - 15 min Running avg. (January 2023)



Reach G, H & I - PM2.5 - 15 min Running avg. (January 2023)



Reach G, H & I - PM10 - 15 min Running avg. (January 2023)



Summary of Data February 2023

PM_{2.5} levels surpassed the PEL (15-minute TWA) at the following locations:

- AQM-1 on 2/6, 2/10, 2/16, and 2/26 for between 16 and 37 minutes;
- AQM-2 on 2/21 for 15 minutes;
- AQM-4 on 2/1, 2/2, 2/3, 2/7, 2/14, 2/16, 2/21, 2/22, and 2/27 for between 15 and 32 minutes;
- AQM-6 on 2/6 for 18 minutes; and
- AQM-HS on 2/2 and 2/7 for 19 and 27 minutes

PM₁₀ levels surpassed the PEL (15-minute TWA) at the following locations:

- AQM-1 on 2/7 for 15 minutes;
- AQM-4 on 2/1, 2/3, and 2/7 for between 12 and 31 minutes;
- AQM-WB on 2/3 for 23 minutes; and
- AQM-HS on 2/2 and 2/7 for between 22 and 27 minutes

For the month of February 2023, construction-related PM net 2.5 levels were exceeded on 2/1, 2/2, 2/4, 2/6, 2/7, 2/8, 2/10, 2/14, 2/16, 2/21, 2/22, and 2/27. Construction-related PM net 10 levels were exceeded on 2/1, 2/2, 2/3, 2/4, 2/6, 2/14, 2/16, and 2/27.

For the month of February 2023, construction-related PM net 2.5 or 10 levels did not surpass the Daily PEL (24-hour TWA).

PM 2.5 µg/m³

- PM 2.5 µg/m³ levels surpassed the PEL on 17 occasions (2/1, 2/2, 2/3, 2/6, 2/7, 2/10, 2/14, 2/16, 2/21, 2/22, 2/26, and 2/27) for between 15 and 37 minutes.
 - AQM-1 is located near the site access gate at Gouverneur Slip West and adjacent to another construction site and an FDR entry ramp; the elevated readings on 2/6, 2/10, 2/16, and 2/26 were caused by construction activities and idling construction vehicles in the vicinity of the monitor. A water truck was deployed to mitigate airborne dust and the idling vehicles were relocated.
 - AQM-2 is located in Corlear's Hook Park adjacent to Cherry Street; the elevated readings on 2/21; were caused by construction activities in the vicinity of the monitor. A water truck was deployed to mitigate airborne dust.
 - AQM-4 is located near the former Tennis house along the shared use path/construction access road and the FDR; the elevated readings on 2/1, 2/2, 2/3, 2/7, 2/14, 2/16, 2/21, 2/22, and 2/27 were caused by construction activities and idling construction vehicles in the vicinity of the monitor. A water truck was deployed to mitigate airborne dust and the idling vehicles were relocated.
 - AQM-6 is located near the site at Montgomery Street and South Street; the elevated readings on 2/6 were caused by construction activities and idling construction vehicles in the vicinity of the monitor. A water truck was deployed to mitigate airborne dust and the idling vehicles were relocated.
 - AQM-HS is located is located at East Houston Street and the FDR; the elevated readings on 2/2 and 2/7 were caused by construction activities and idling construction vehicles in the vicinity of the monitor. A water truck was deployed to mitigate airborne dust and the idling vehicles were relocated.

PM 10 $\mu\text{g}/\text{m}^3$

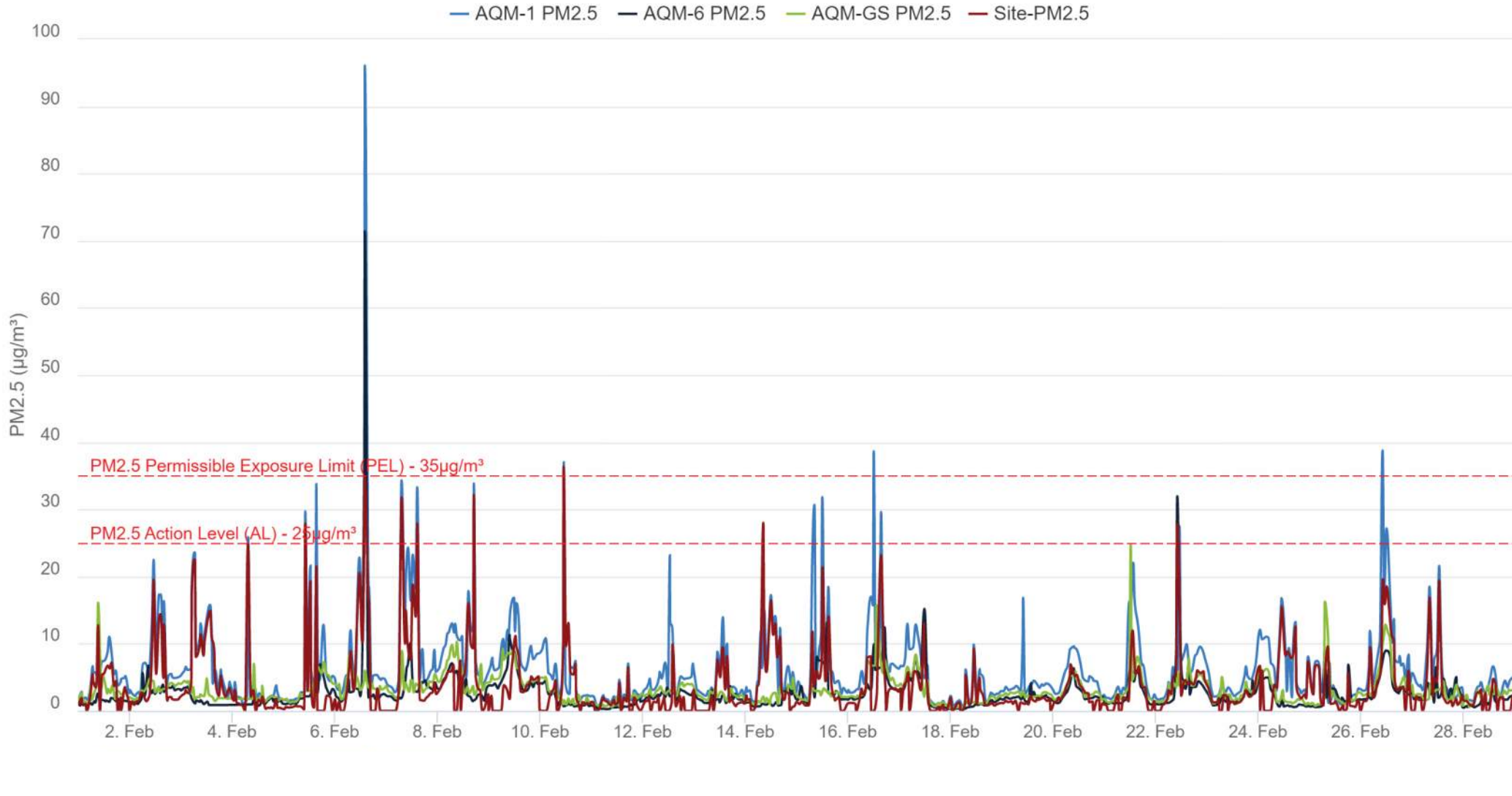
- PM 10 $\mu\text{g}/\text{m}^3$ levels surpassed the PEL on seven occasions (2/1, 2/3, 2/7) for between 12 and 27 minutes:
 - AQM-1 is located near the site access gate at Gouverneur Slip West and adjacent to another construction site and an FDR entry ramp; the elevated readings on 2/7 were caused by construction activities and idling construction vehicles in the vicinity of the monitor. A water truck was deployed to mitigate airborne dust and the idling vehicles were relocated.
 - AQM-4 is located near the former Tennis house along the shared use path/construction access road and the FDR; the elevated readings on 2/1, 2/3, and 2/7 were caused by construction activities and idling construction vehicles in the vicinity of the monitor. A water truck was deployed to mitigate airborne dust and the idling vehicles were relocated.
 - AQM-HS is located at East Houston Street and the FDR; the elevated readings on 2/2 and 2/7 were caused by construction activities and idling construction vehicles in the vicinity of the monitor. A water truck was deployed to mitigate airborne dust and the idling vehicles were relocated.
 - AQM-WB is in the vicinity of the Williamsburg Bridge along the East River; the elevated readings on 2/3 were caused by construction activities in the vicinity of the monitor. A water truck was deployed to mitigate airborne dust.

Mitigation Measures:

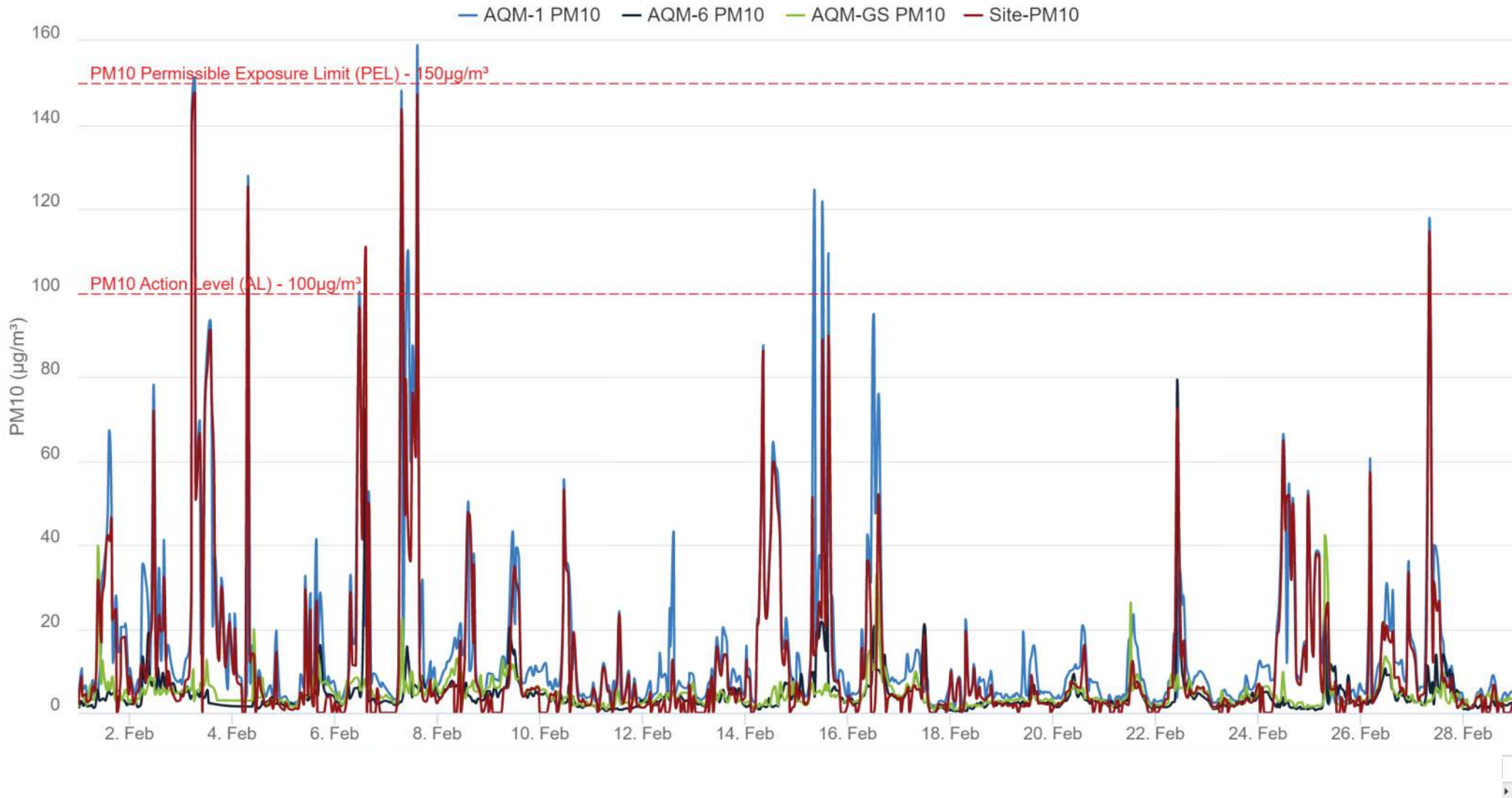
- Throughout the month, construction activity was closely monitored, and dust mitigation techniques were continuously implemented to successfully contain any airborne particulates created due to construction activity.

FEBRUARY 2023 DATA PLOTS

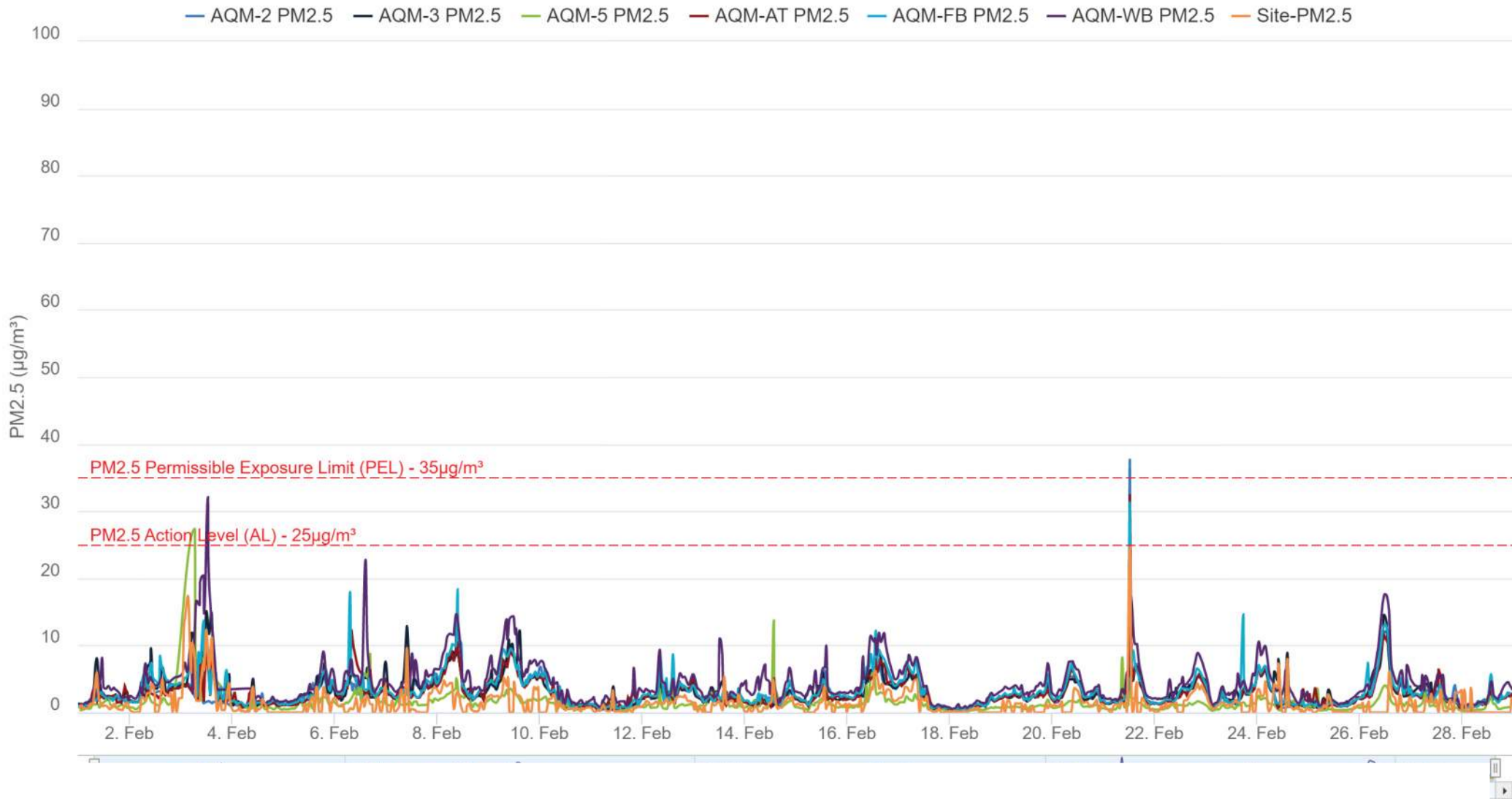
Reach A - PM2.5 - 15 min Running Avg. (February 2023)



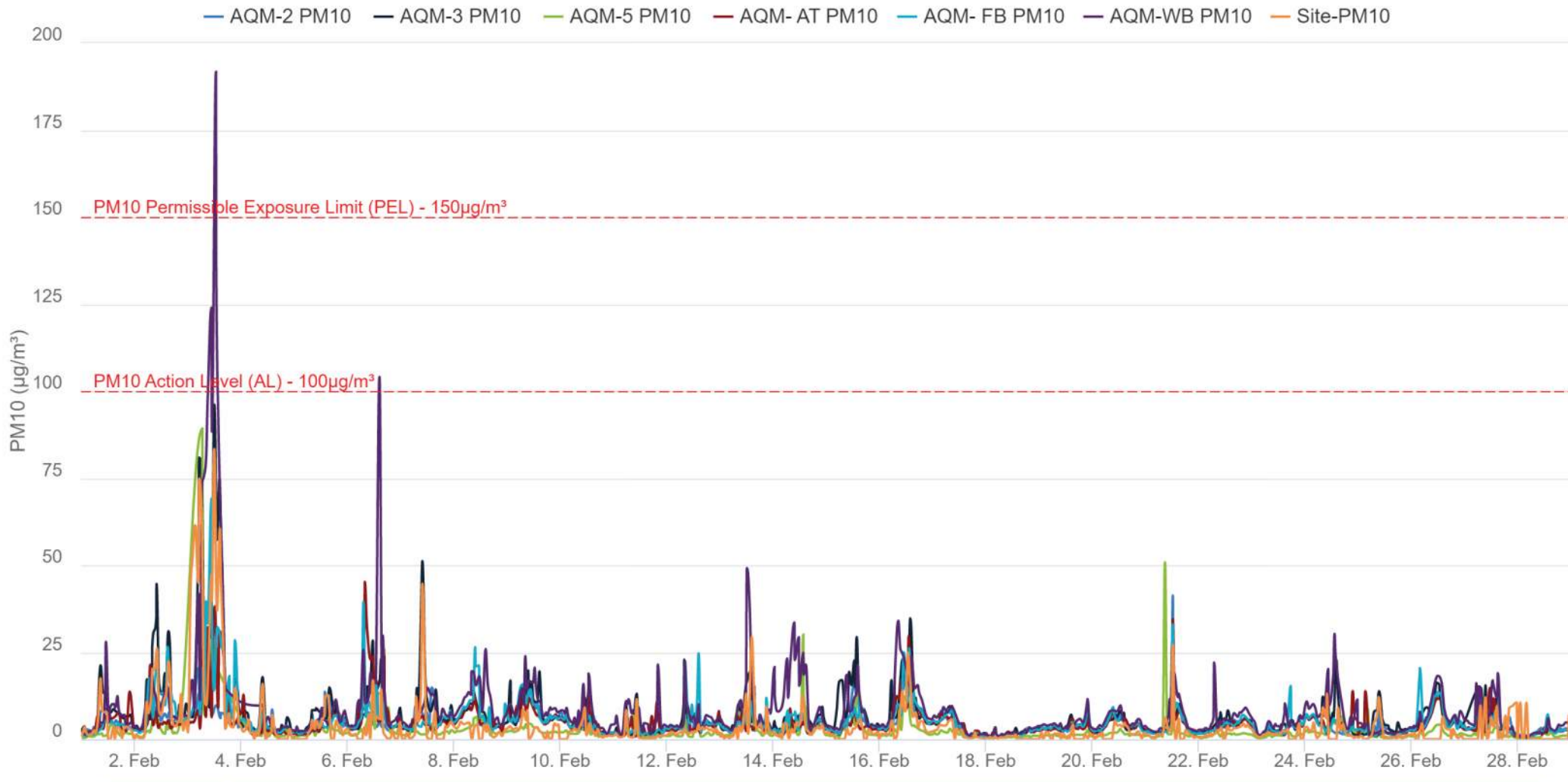
Reach A - PM10 - 15 min Running Avg. (February 2023)



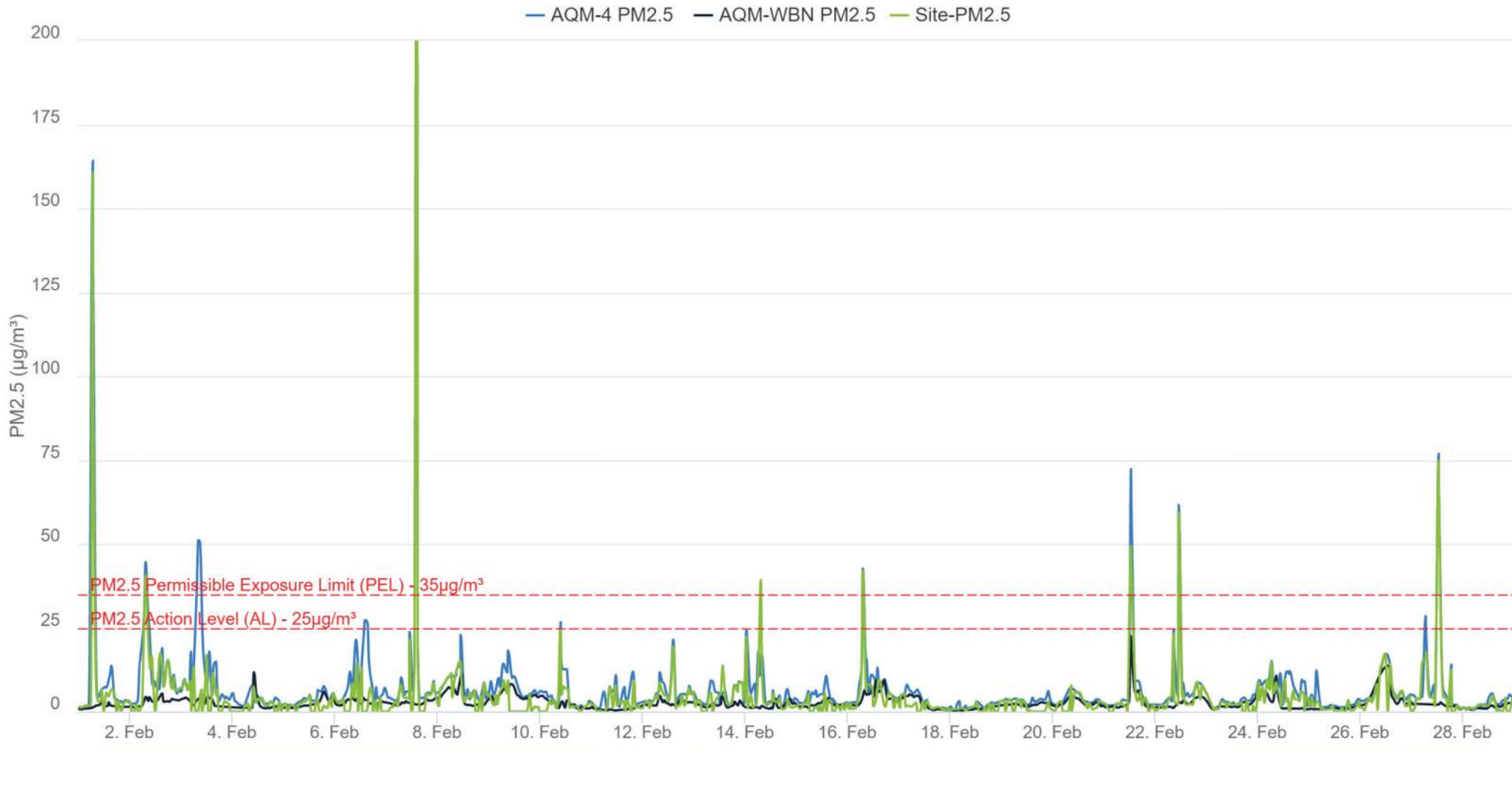
Reach C,D,& E - PM2.5 - 15 min Running Avg. (February 2023)



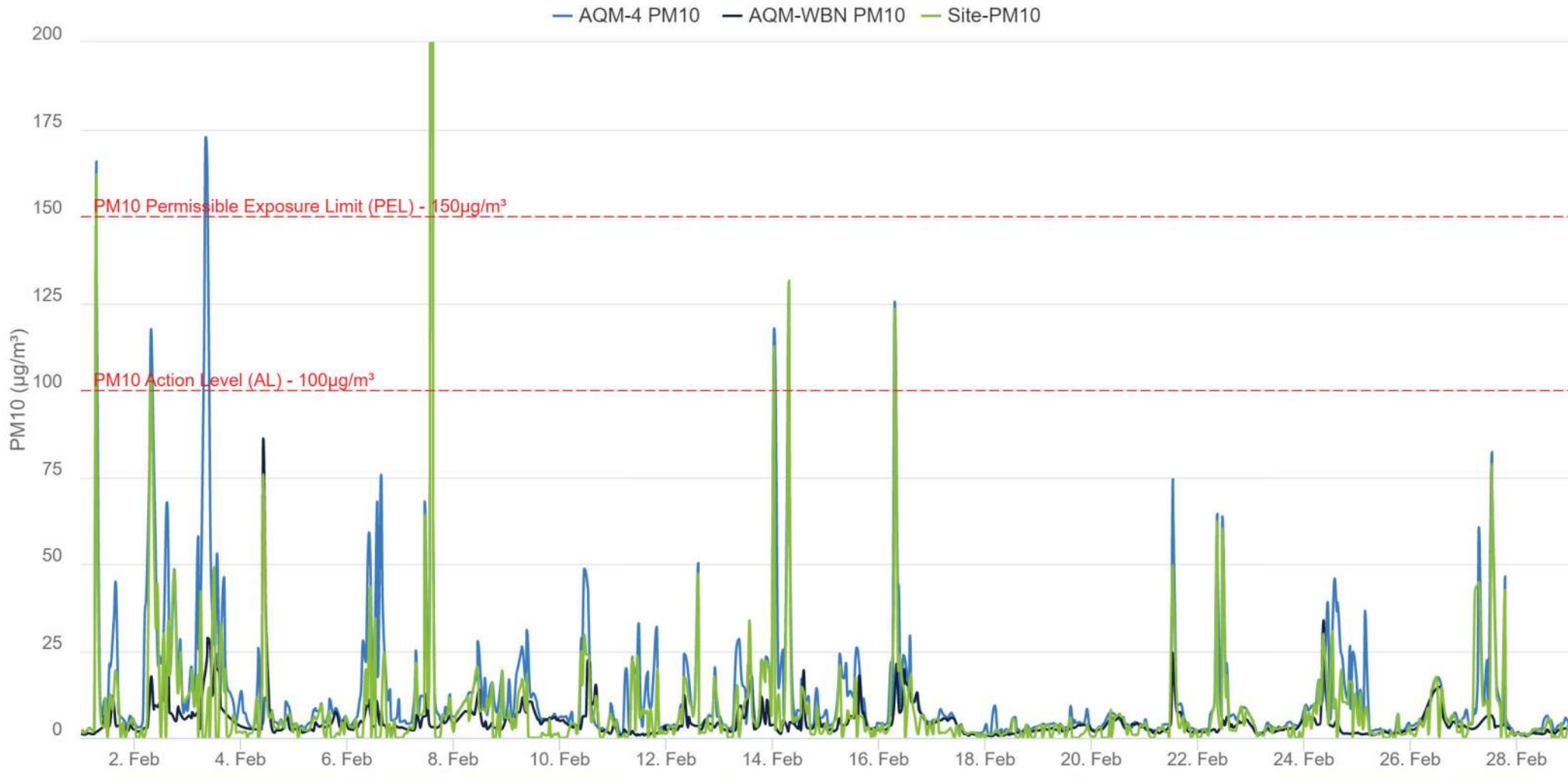
Reach C,D,& E - PM10 - 15 min Running avg. (February 2023)



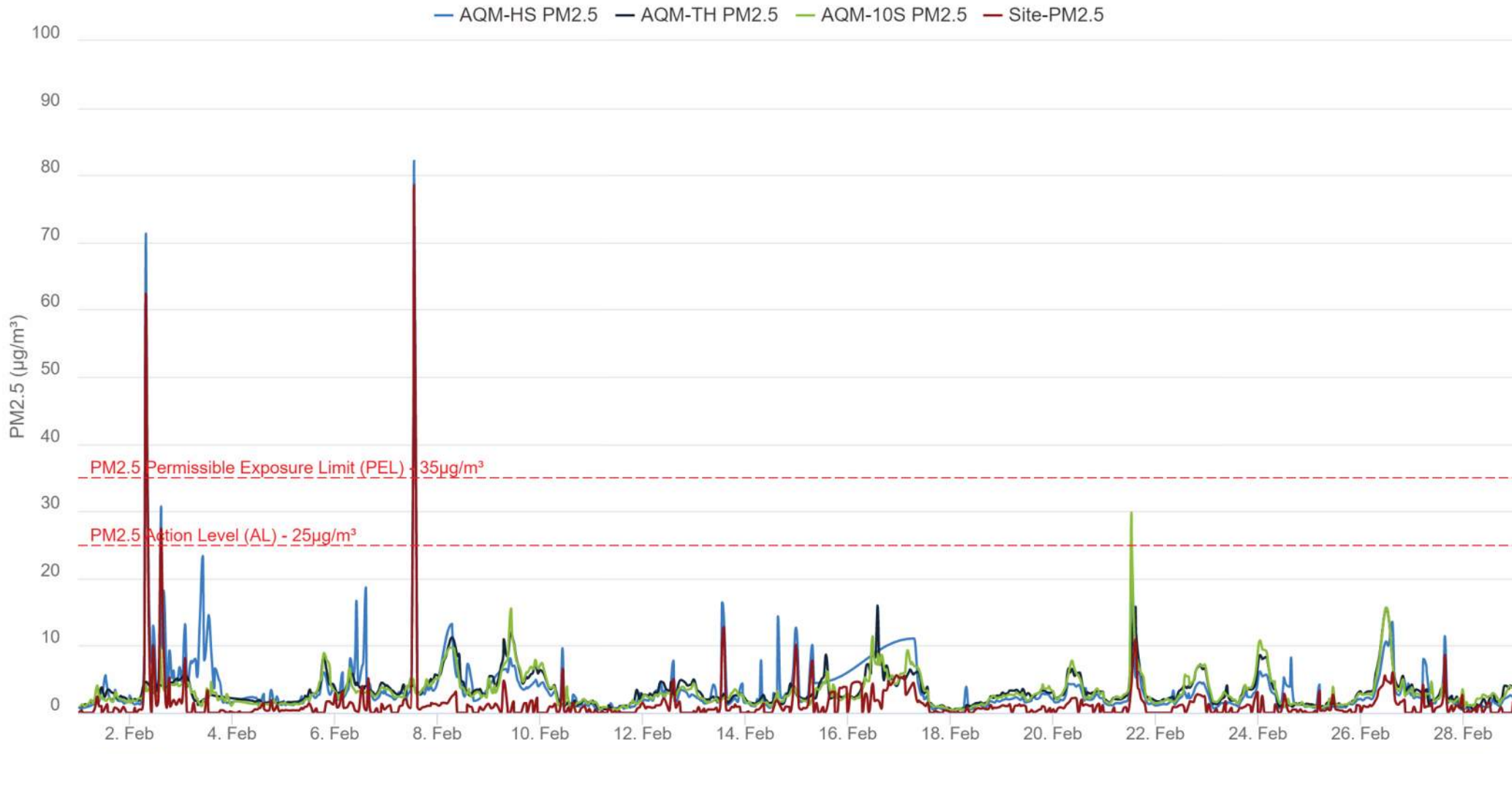
Reach F - PM2.5 - 15 min Running avg. (February 2023)



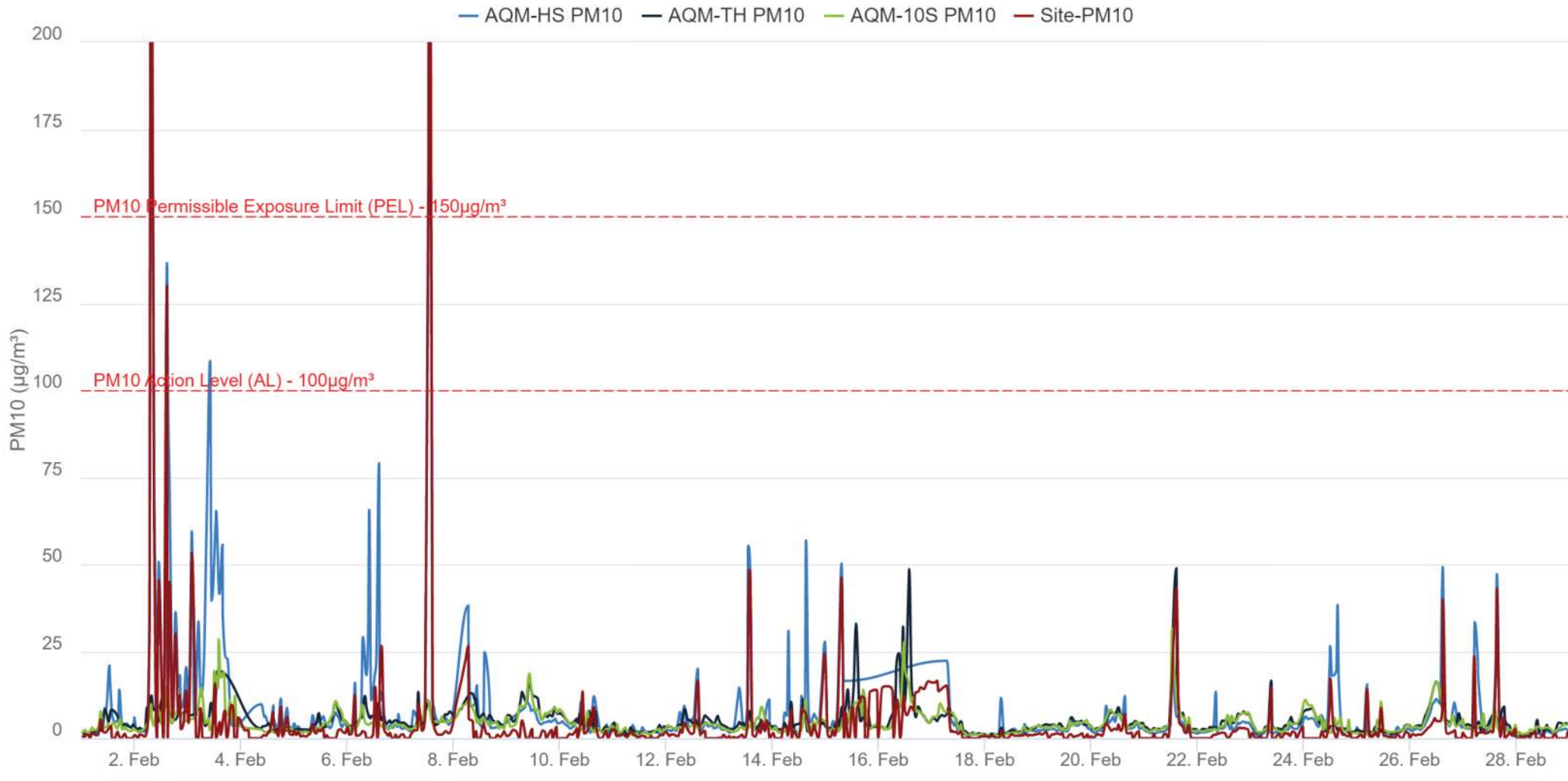
Reach F - PM10 - 15 min Running avg. (February 2023)



Reach G, H & I - PM2.5 - 15 min Running avg. (February 2023)



Reach G, H & I - PM10 - 15 min Running avg. (February 2023)



Summary of Data March 2023

PM_{2.5} levels surpassed the PEL (15-minute TWA) at the following locations:

- AQM-1 on 3/2, 3/24, and 3/27 for between 15 and 49 minutes;
- AQM-4 on 3/6, 3/13, 3/16, 3/17, and 3/24 for between 10 and 27 minutes;
- AQM-AT on 3/24 for 18 minutes; and
- AQM-HS on 3/31 for between 11 and 16 minutes

PM₁₀ levels surpassed the PEL (15-minute TWA) at the following locations:

- AQM-1 on 3/24 for 15 minutes and 3/27 for 34 minutes;
- AQM-4 on 3/6 for 27 minutes; and
- AQM-5 on 3/17 for 15 minutes

For the month of March 2023, construction-related PM net 2.5 levels were exceeded on 3/6, 3/13, 3/16, 3/17, 3/20, and 3/31. Construction-related PM net 10 levels were exceeded on 3/1, 3/6, 3/16, and 3/17 in March 2023.

For the month of March 2023, construction-related PM net 2.5 or 10 levels did not surpass the Daily PEL (24-hour TWA).

PM 2.5 µg/m³

- PM 2.5 µg/m³ levels surpassed the PEL (15-minute TWA) on 11 occasions (3/2, 3/6, 3/13, 3/16, 3/17, 3/24, 3/27, 3/31) for between 10 and 49 minutes.
 - AQM-1 is located near the site access gate at Gouverneur Slip West and adjacent to another construction site and an FDR entry ramp.
 - Elevated readings on 3/2 were caused by an unknown activity in the vicinity of the monitor. No construction activity was occurring in this area at the time of the elevated readings. A water truck was deployed to mitigate airborne dust in the vicinity of the monitor.
 - Elevated readings on 3/24 occurred outside of construction hours. 1/16 and 1/24 were caused by construction activity in the vicinity of the monitor. A water truck was deployed the next day to mitigate airborne dust in the vicinity of the monitor.
 - Elevated readings on 3/27 were caused by construction activities in the vicinity of the monitor. A water truck was deployed to mitigate airborne dust.
 - AQM-4 is located near the former Tennis house along the shared use path/construction access road and the FDR the elevated readings on 3/6, 3/13, 3/16, 3/17, and 3/24 were determined were caused by construction activities and idling construction vehicles in the vicinity of the monitor. A water truck was deployed to mitigate airborne dust and the idling vehicles were relocated.
 - AQM-AT is located near the former amphitheater and Corlear's Hook pedestrian bridge; the elevated readings on 3/24 were caused by were caused by construction activities in the vicinity of the monitor. A water truck was deployed to mitigate airborne dust.
 - AQM-HS is located near the Houston Street ramp at the exit to the construction on the FDR; the elevated readings on 3/31 were determined were caused by construction activities and idling construction vehicles in the vicinity of the monitor. A water truck was deployed to mitigate airborne dust and the idling vehicles were relocated.

PM 10 $\mu\text{g}/\text{m}^3$

- PM 10 $\mu\text{g}/\text{m}^3$ levels surpassed the PEL (15-minute TWA) on four occasions (3/6, 3/17, 3/24, and 3/27) for between 15 and 34 minutes.
 - AQM-1 is located near the site access gate at Gouverneur Slip West and adjacent to another construction site and an FDR entry ramp.
 - The elevated readings on 3/24 were determined to be outside of construction hours. A water truck was deployed to mitigate airborne dust the next day.
 - The elevated readings on 3/27 were determined to be caused by construction activities in the vicinity of the monitor. A water truck was deployed to mitigate airborne dust.
 - AQM-4 is located near the former Tennis house along the shared use path/construction access road and the FDR; the elevated readings on 3/6 were determined to be caused by construction activities and idling construction vehicles in the vicinity of the monitor. A water truck was deployed to mitigate airborne dust and the idling vehicles were relocated.
 - AQM-5 is located south of the Williamsburg Bridge near the construction trailers onsite; the elevated readings on 3/17 were determined to be caused by construction activities in the vicinity of the monitor. A water truck was deployed to mitigate airborne dust.

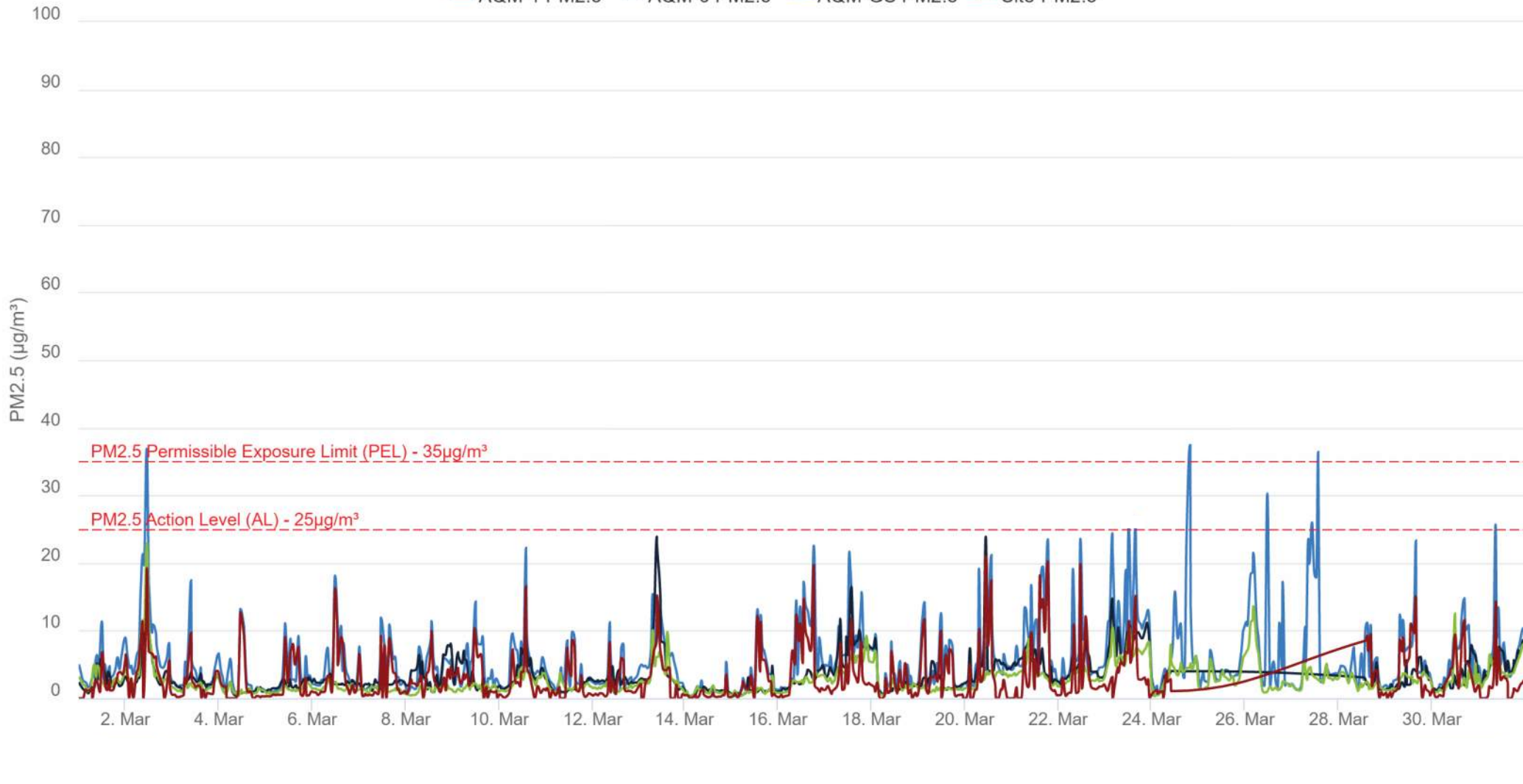
Mitigation Measures

- Throughout the month, construction activity was closely monitored, and dust mitigation techniques were continuously implemented to successfully contain any airborne particulates created due to construction activity.

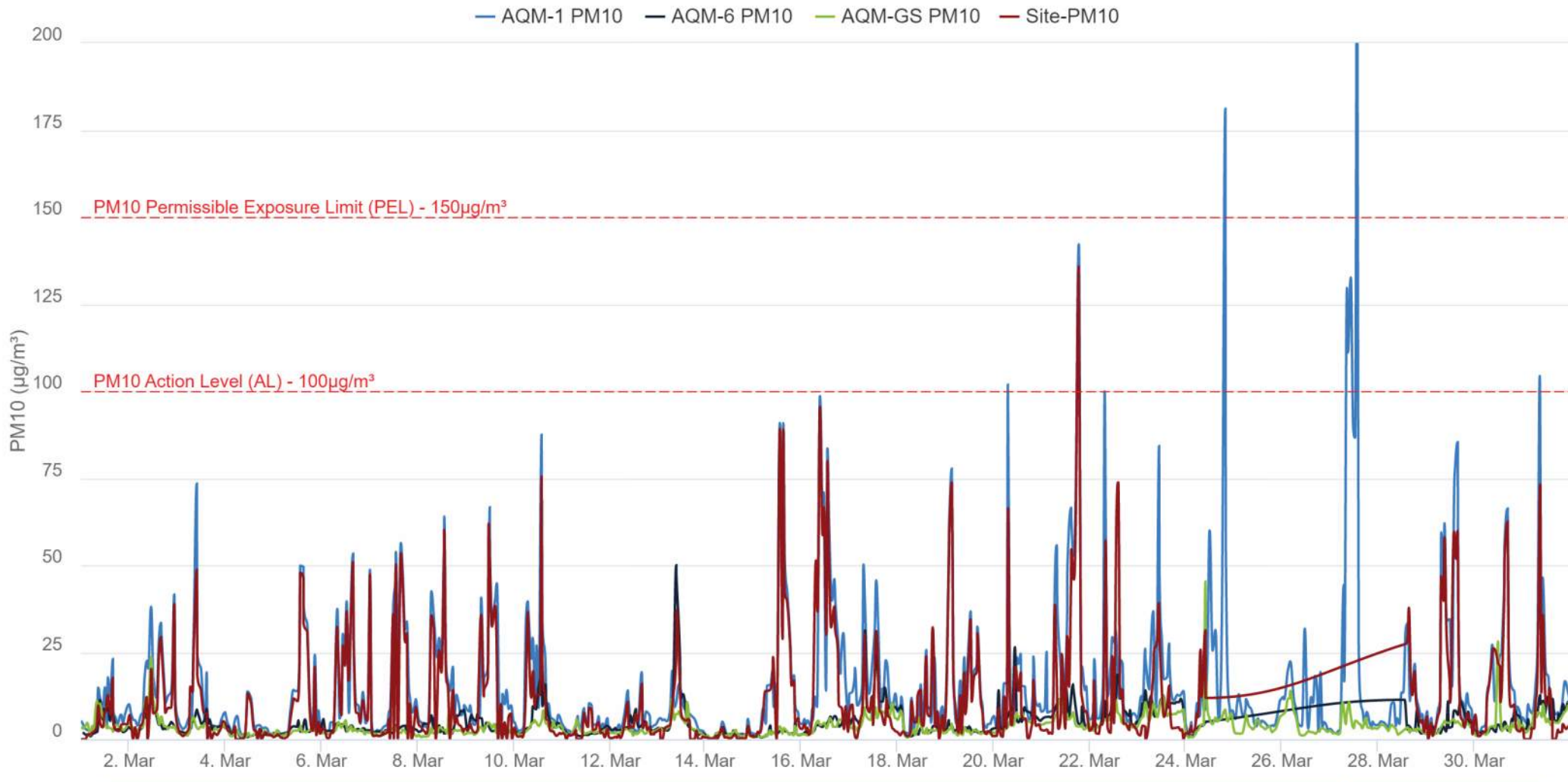
MARCH 2023 DATA PLOTS

Reach A - PM2.5 - 15 min Running avg. (March 2023)

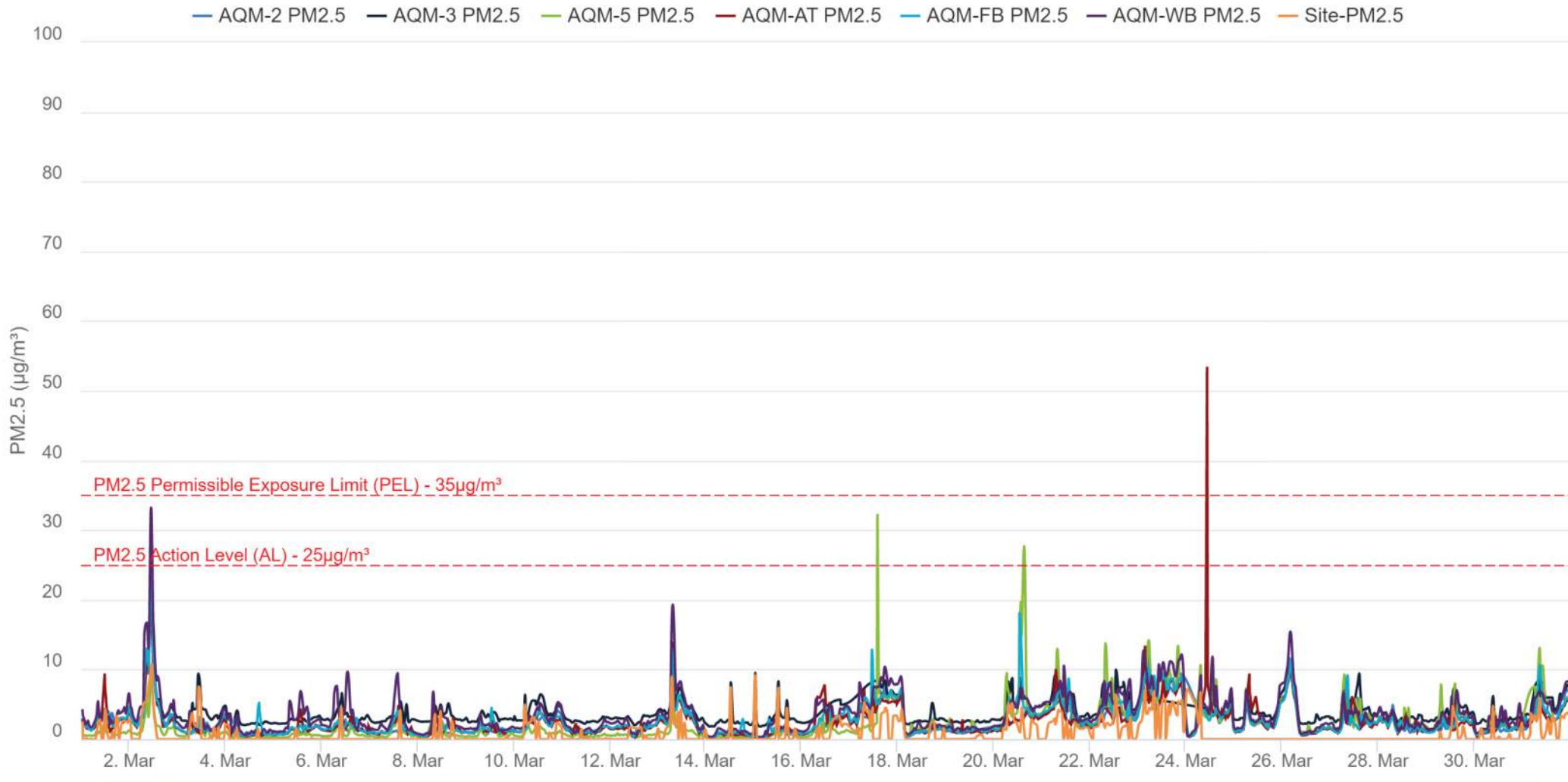
— AQM-1 PM2.5 — AQM-6 PM2.5 — AQM-GS PM2.5 — Site-PM2.5



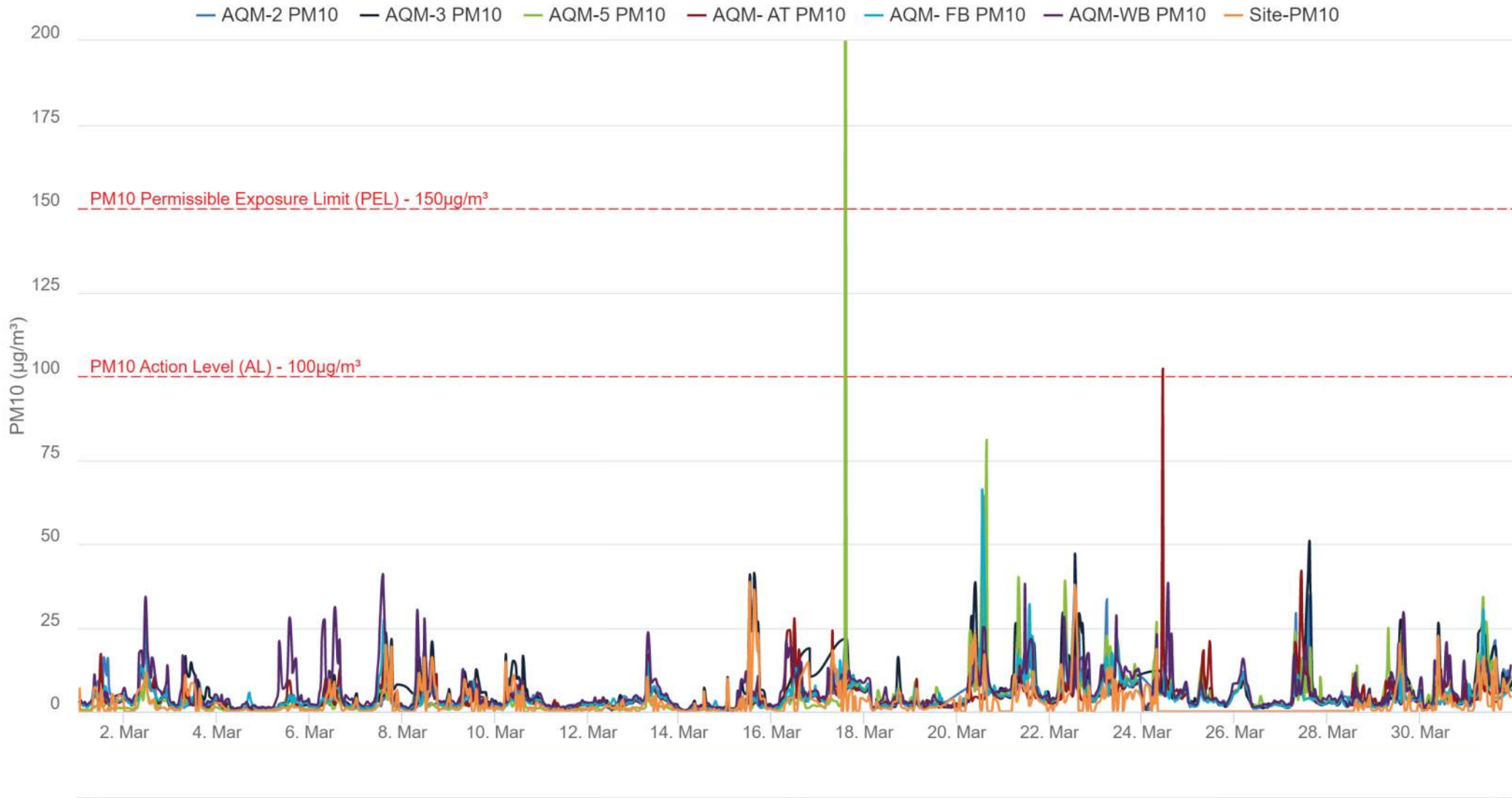
Reach A - PM10 - 15 min Running Avg. (March 2023)



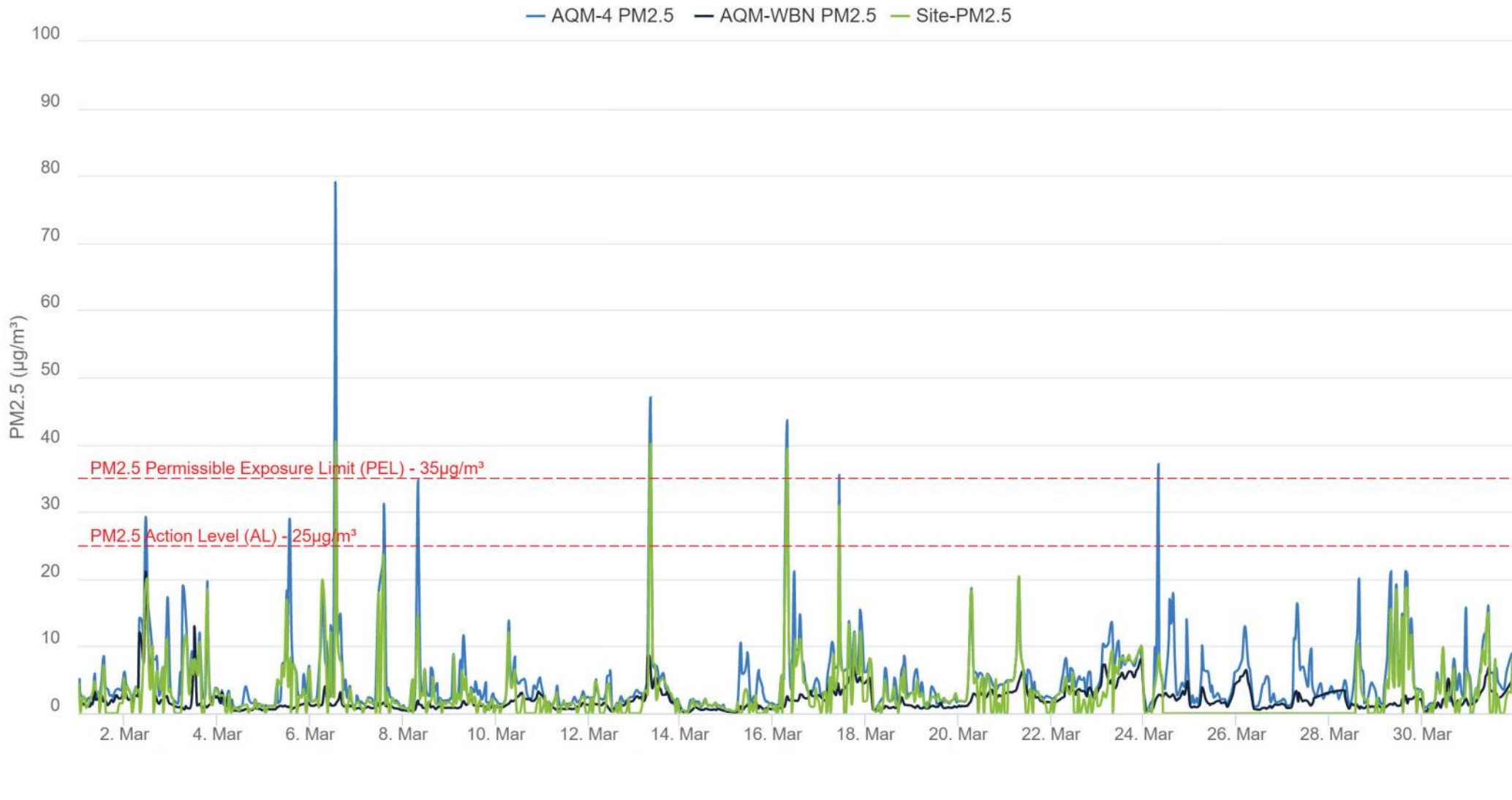
Reach C,D,& E - PM2.5 - 15 min Running Avg. (March 2023)



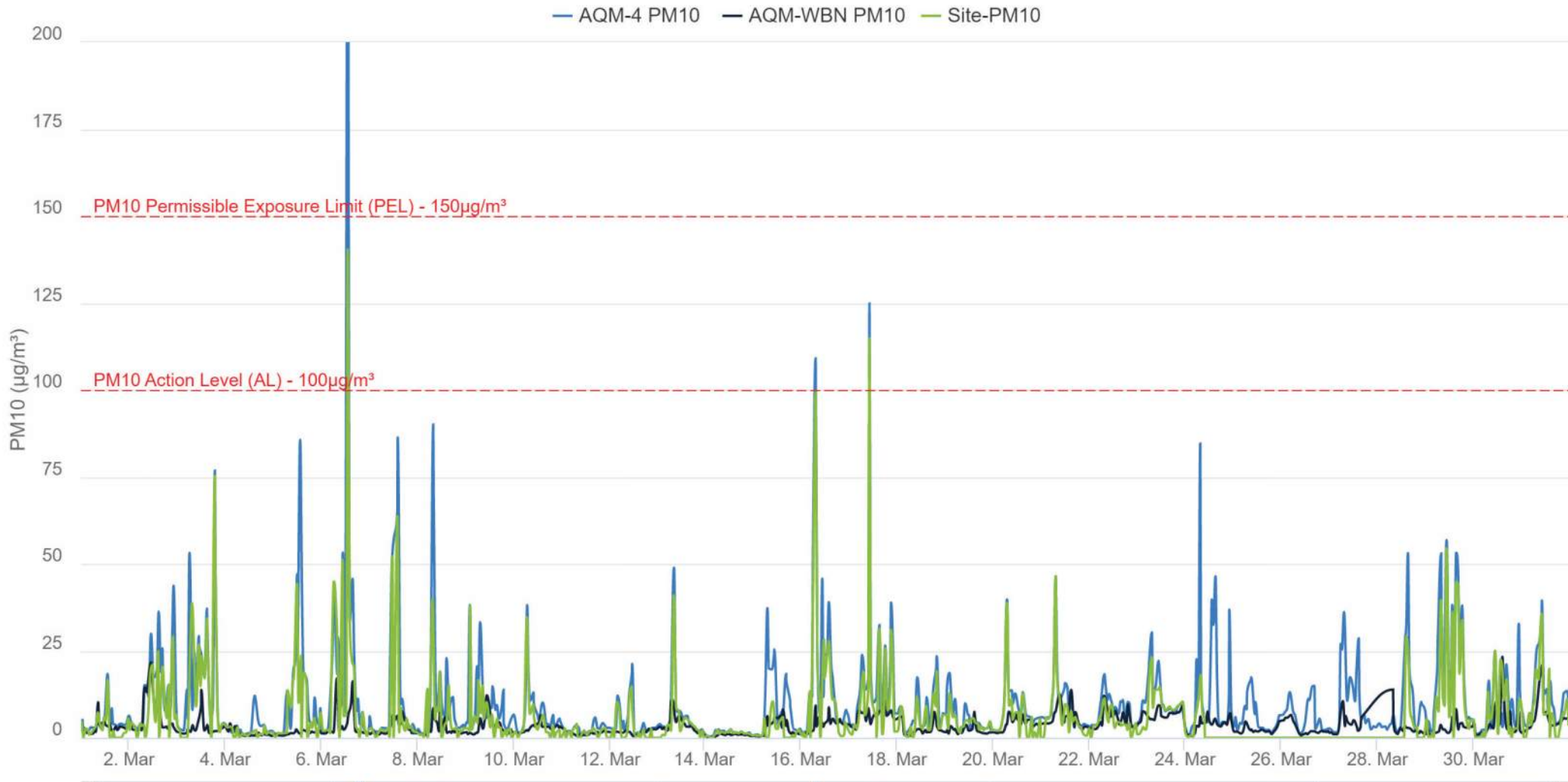
Reach C,D,& E - PM10 - 15 min Running avg. (March 2023)



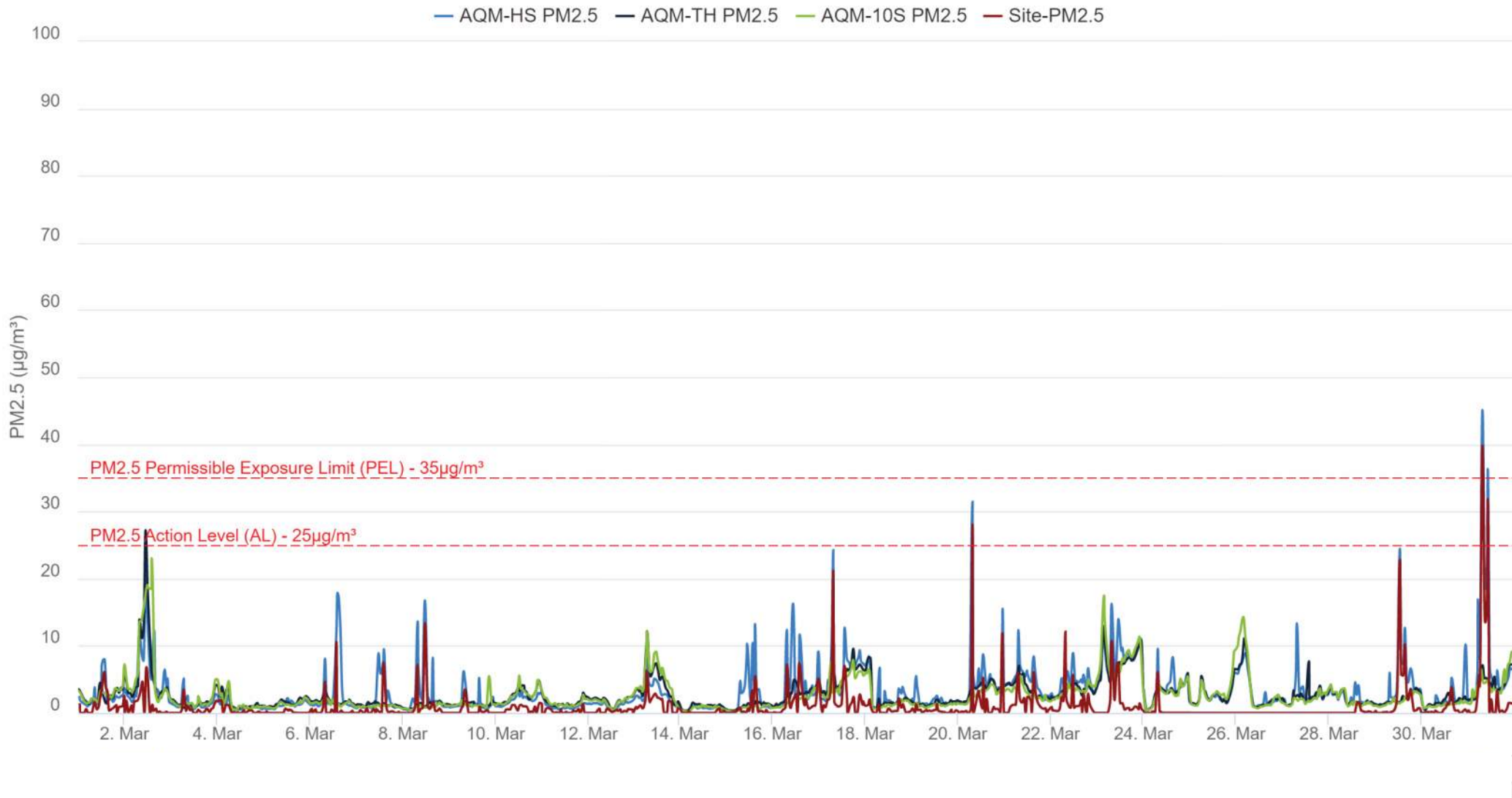
Reach F - PM2.5 - 15 min Running avg. (March 2023)



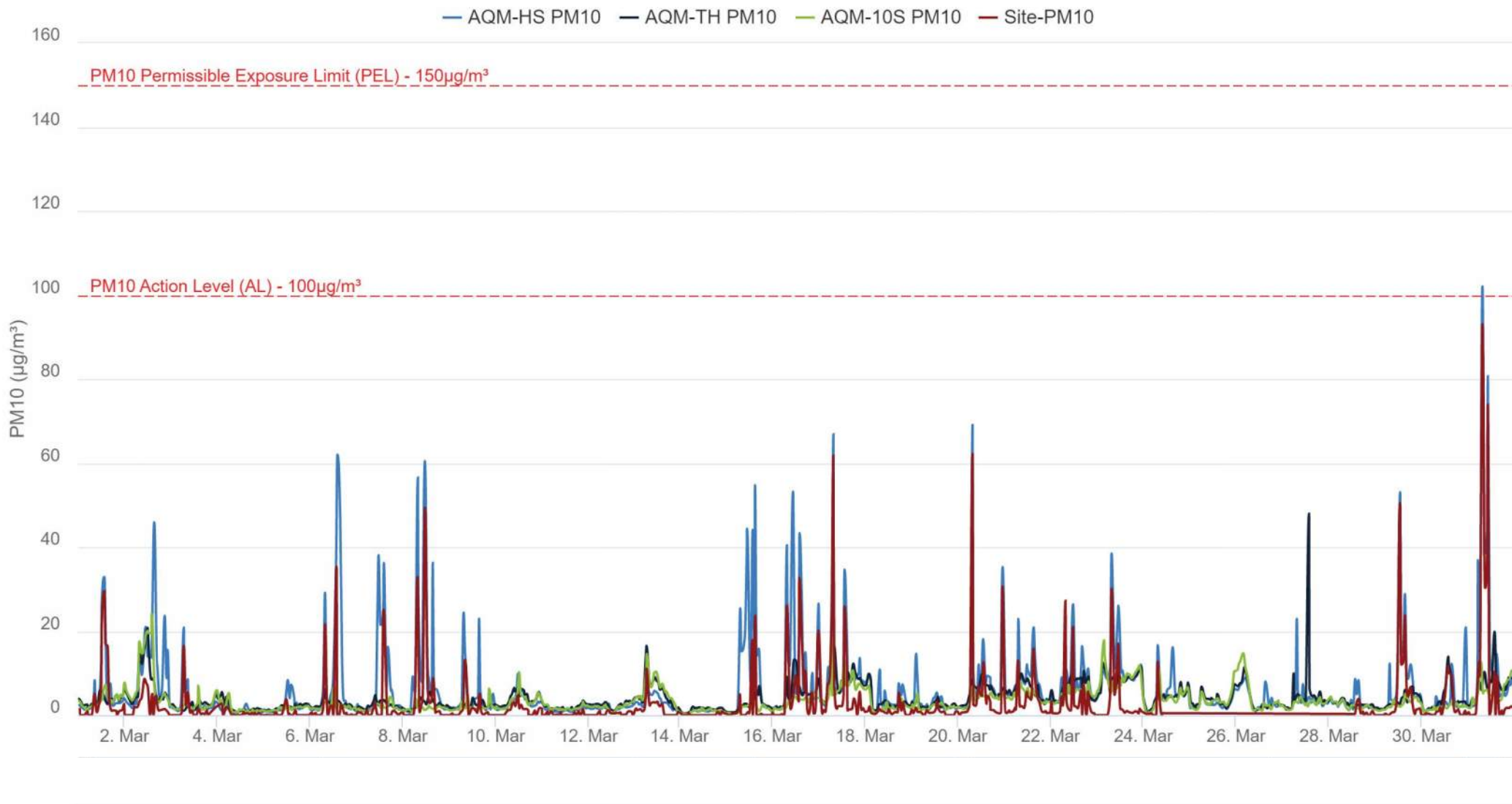
Reach F - PM10 - 15 min Running avg. (March 2023)



Reach G, H & I - PM2.5 - 15 min Running avg. (March 2023)



Reach G, H & I - PM10 - 15 min Running avg. (March 2023)



APPENDIX

I. ESCR Air Quality Management Program

Community health and safety is of utmost importance to the City of New York, the NYC Department of Design and Construction (DDC), and the East Side Coastal Resiliency Team. The ESCR Team is implementing a multi-level approach to Air Quality Management with includes:

- Step 1: Air Quality Management Plan
- Step 2: Daily Air Quality Mitigation Techniques
- Step 3: Daily Air Quality Monitoring
- Step 4: Air Quality oversight by environmental specialists

Step 1: The Air Quality Management Plan

The AQM Plan is submitted at the start of the project to outline the management of air quality for the project. It includes contractor roles and responsibilities, mitigation techniques, and action plans. This Plan is reviewed and approved by the Program Management / Construction Management (PMCM) Team HNTB-LiRo-Joint Venture, and the DDC.

Step 2: Daily Air Quality Mitigation Techniques

As mentioned in Chapter 6.6 of the EIS, Construction-Hazardous Materials Section “Dust management during soil-disturbing work would include the following: (1) use of water spray for roads, trucks, excavation areas and stockpiles; (2) use of anchored tarps to cover stockpiles; (3) use of truck covers during soil transport within site limits and during off-site transport; (4) employment of extra care during dry and/or high-wind periods; (5) use of gravel or recycled concrete aggregate on egress and other roadways to provide a clean and dust-free road surface; and (6) use of a truck wheel wash at site access/egress points to prevent fugitive dust and off-site migration of dust and other particulates. The source(s) of any dust emissions would be identified and addressed immediately and appropriately.

Step 3: Daily Air Quality Monitoring

The air quality monitoring confirms the daily mitigation techniques in place are being implemented and are effective. Action levels are set to alert the contractor when a technique is not working, and adjustments are required to maintain the levels as set by the National Ambient Air Quality Standards (NAAQS) for PM pollution as mentioned above. Step 3 is implemented daily and mitigation techniques will vary depending on work activities. The EPA Standard Time Weighted Average (TWA) for analyzing PM levels is 24 hours, the ESCR project is analyzing levels more frequently at 15-minute TWA.

Step 4: Air Quality Oversight by Environmental Specialists

The oversight for environmental monitoring for the ESCR project is multi-tiered and includes relationships between several agencies and entities. As shown in the exhibit on the following page, a series of checks and balances have been implemented to assure compliance with environmental regulations. See [Fig. 4 East Side Coastal Resiliency Air Quality Monitoring Flow Chart](#)

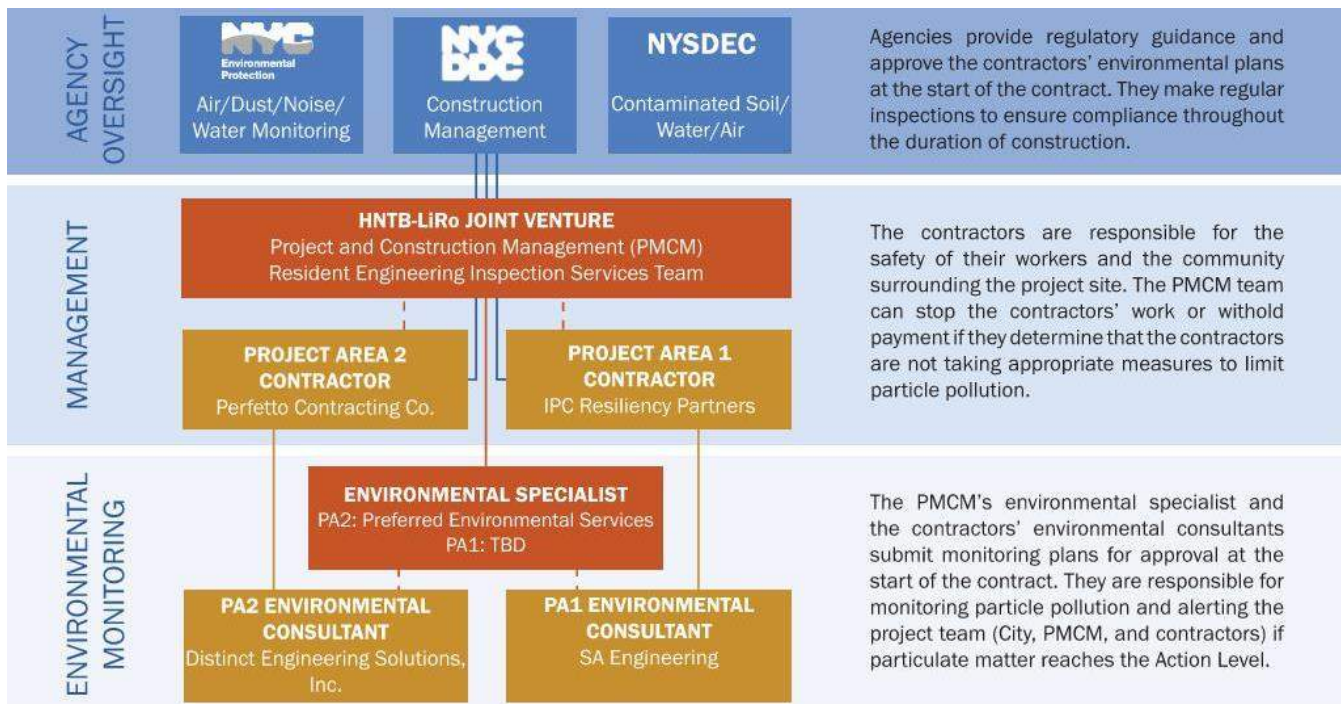


Fig.4 East Side Coastal Resiliency Air Quality Monitoring Flow Chart

II. RESOURCES

- ESCR Website: <https://www1.nyc.gov/site/escr/index.page>
- ESCR Environmental Review Process web page: <https://www1.nyc.gov/site/escr/about/environmental-review.page>
- FEIS Chapter 5.7 Hazardous Materials: <https://www1.nyc.gov/assets/escr/downloads/pdf/FEIS/ESCR-EIS-Chapter-5.7-Hazardous-Materials.pdf>
- FEIS Chapter 6.6 Construction Hazardous Materials: <https://www1.nyc.gov/assets/escr/downloads/pdf/FEIS/ESCR-EIS-Chapter-6.6-Construction-Hazardous-Materials.pdf>
- EPA Particulate Matter (PM) Pollution - Particulate Matter (PM) Basics: <https://www.epa.gov/pm-pollution/particulate-matter-pm-basics#PM>
- EPA Particulate Matter (PM) Pollution - Setting and Reviewing Standards to Control Particulate Matter (PM) Pollution: <https://www.epa.gov/pm-pollution/setting-and-reviewing-standards-control-particulate-matter-pm-pollution>
- EPA Particulate Matter (PM) Pollution - National Ambient Air Quality Standards (NAAQS) for PM: <https://www.epa.gov/pm-pollution/national-ambient-air-quality-standards-naaqs-pm>
- EPA Particulate Matter (PM) Pollution - Applying or Implementing Particulate Matter (PM) Standards: <https://www.epa.gov/pm-pollution/applying-or-implementing-particulate-matter-pm-standards>