

EAST SIDE COASTAL RESILIENCY

SANDRESM1 | PROJECT AREA 1

AIR QUALITY MONITORING REPORT

Q4 | 2022

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PREPARED BY: HNTB-LIRO JOINT VENTURE

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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).

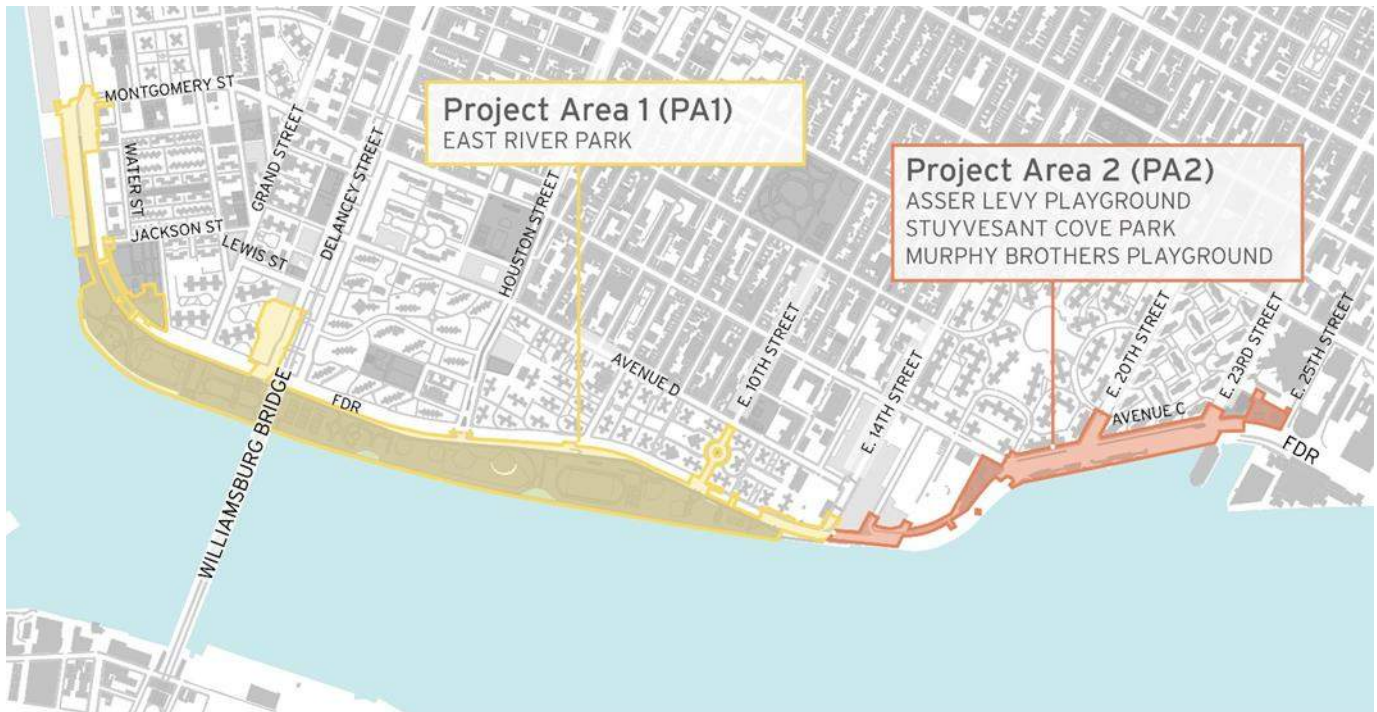


Fig.1 East Side Coastal Resiliency Project Areas

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 PM2.5.

As described by the [Environmental Protection Agency \(EPA\)](#):

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.

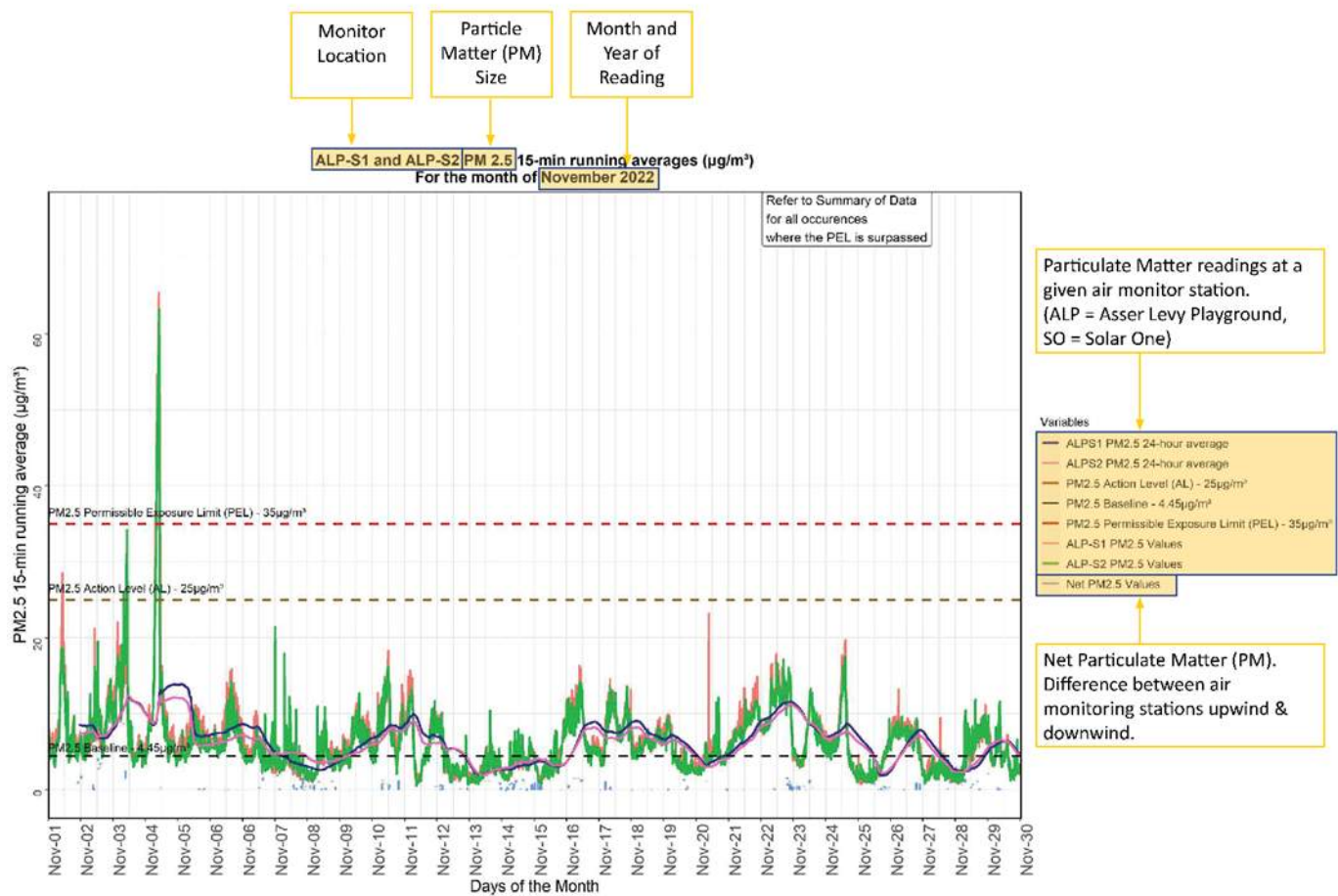


Fig.2 Sample Air Quality Data Plot

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) October through December 2022. 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 Figure 3.



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

Work Activities from October to December 2022:

Reach A:

- Consolidated Edison (ConEd) Steam Line Work & Support at Montgomery Street (includes afterhours work)

Reach B:

- Pre-Drilling & Clearing Obstructions for the I-Cap Floodwall
- Install & Cut Sheet Piles (includes afterhours work)

Reach C:

- Demolition & Excavation of Existing Bulkhead & Deadman
- Asbestos Abatement
- Amphitheater Demolition & Excavation
- Demolition & Removal of Esplanade Deck Slab
- Install Stone Columns
- Jet Grout Test Program
- Bridge Footings Concrete Formwork

Corlear's Hook Park:

- Install, Cut & Splice Piles
- Bridge Footings Concrete Formwork
- Archeological Excavation & Investigation

Reach D:

- Demolition & Excavation of Existing Bulkhead, Timber Piles, and Deadman
- Sewer Excavation & Pipe Installation
- Install Stone Columns
- Marine Support Services
- Install, Cut & Splice Sheets & Piles for I-Cap Wall & Sewers

Reach E:

- Install Stone Columns
- Sewer Excavation & Pipe Installation
- Excavation & Backfilling of ConEd Utility Lines Trench for Carbon Fiber Wrapping
- Soil Grading
- Install, Cut & Splice Sheets & Piles for I-Cap Wall & Sewers

Reach F:

- Install Stone Columns
- Sewer Excavation & Pipe Installation

Reach G:

- Excavation & Backfilling of ConEd Utility Lines Trench for Carbon Fiber Wrapping
- Install Carbon Fiber Wrapping in ConEd Utility Lines Trench

Reach H:

- Excavation & Backfilling of ConEd Utility Lines Trench for Carbon Fiber Wrapping
- Demolition & Excavation of Existing Sewer
- Sewer Excavation & Pipe Installation

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 October-December 2022, 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.

October 2022:

- PM₁₀ levels surpassed the PEL (15-minute TWA) at AQM-WB on October 12 and October 13.
- PM_{2.5} levels surpassed the PEL (15-minute TWA) at AQM-1 on October 12, October 14, October 16, and October 21; AQM-WB on October 12 and October 13; AQM-FB on October 13; AQM-AT on October 26; AQM-10S on October 17; and AQM-TH on October 26.

November 2022:

- PM₁₀ levels surpassed the PEL (15-minute TWA) at AQM-1 on November 17; AQM-4 on November 4; AQM-HS on November 28; and AQM-10S on November 4 and November 5.
- PM_{2.5} levels surpassed the PEL (15-minute TWA) at AQM-1 on November 1, November 3, November 9, and November 17; AQM-FB on November 4; AQM-WB on November 15; AQM-4 on November 8, AQM-10S on November 4 and November 5; and AQM-HS on November 28.

December 2022:

- PM₁₀ levels surpassed the PEL (15-minute TWA) at AQM-1 on December 2, December 21, and December 30; AQM-4 on December 27 and December 30; and AQM-10S on December 5.
- PM_{2.5} levels surpassed the PEL (15-minute TWA) at AQM-1 on December 21; and AQM-4 on 12/30.

Baselines:

- PM₁₀ baseline air quality at the site were previous determined to be between 0.149 and 5.00 $\mu\text{g}/\text{m}^3$
- PM_{2.5} baseline air quality at the site were previous determined to be between 0.105 and 4.09 $\mu\text{g}/\text{m}^3$

PART 2

Summary of Data October 2022

PM10 levels surpassed the PEL (15-minute TWA) at AQM-WB on the following dates:

- 10/12 for 30 minutes and 54 minutes; and
- 10/13 for 33 minutes and 12 minutes.

PM2.5 levels surpassed the PEL (15-minute TWA) at the following locations:

- AQM-1 on 10/12 for 14 minutes, 10/14 for 49 minutes, 10/16 for 14 minutes, and 10/21 for 6 minutes;
- AQM-WB on 10/12 for 33 minutes and 54 minutes and 10/13 for 45 minutes and 15 minutes;
- AQM-FB on 10/13 for 36 minutes and 10/17 for 17 minutes;
- AWM-AT on 10/26 for 36 minutes, 21 minutes, and 35 minutes;
- AQM-10S on 10/17 for 17 minutes; and
- AQM-TH on 10/26 for 19 minutes.

For the month of October 2022, construction-related PM net 10 levels were not surpassed. Construction-related PM net 2.5 were exceeded on 10/12 and 10/16.

For the month of October 2022, construction-related PM net 2.5 or 10 levels did not surpass the Daily PEL (24-hour TWA).

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 (10/12 and 10/13) for between 12 and 54 minutes.
 - AQM-WB is in the vicinity of the Williamsburg Bridge along the East River; the elevated readings on 10/12 and 10/13 were determined to be caused by demolition activity in the vicinity of the monitor. A water truck was deployed to mitigate airborne dust.

PM 2.5 $\mu\text{g}/\text{m}^3$

- PM 2.5 $\mu\text{g}/\text{m}^3$ levels surpassed the PEL (15-minute TWA) 15 occasions (10/12, 10/13, 10/14, 10/16, 10/17, 10/21, and 10/26) for between 6 and 54 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 10/14 and 10/16 were determined to be due to afterhours vehicular activity in the vicinity of the monitor. Elevated readings on 10/12 and 10/21 were determined to be due to vehicular activity in the vicinity of the monitor
 - AQM-WB is in the vicinity of the Williamsburg Bridge along the East River; the elevated readings on 10/12 and 10/13 were determined to be caused by demolition activity in the vicinity of the monitor. A water truck was deployed to mitigate airborne dust.
 - AQM-FB is in the vicinity of the Fireboat House along the East River; the elevated readings on 10/12 and 10/17 were determined to be caused by demolition activity in the vicinity of the monitor. A water truck was deployed to mitigate airborne dust.
 - AQM-AT is located near the former amphitheater and Corlears Hook pedestrian bridge; the elevated readings on 10/26 were determined to be caused by demolition activity in the vicinity of the monitor. A water truck was deployed to mitigate airborne dust.
 - AQM-10S is located at East 10th Street; the elevated readings on 10/17 occurred afterhours.
 - AQM-TH is located near the Track House in the vicinity of the shared use path and open sections of East River Park; the elevated readings on 10/26 occurred afterhours.

Mitigation Measures

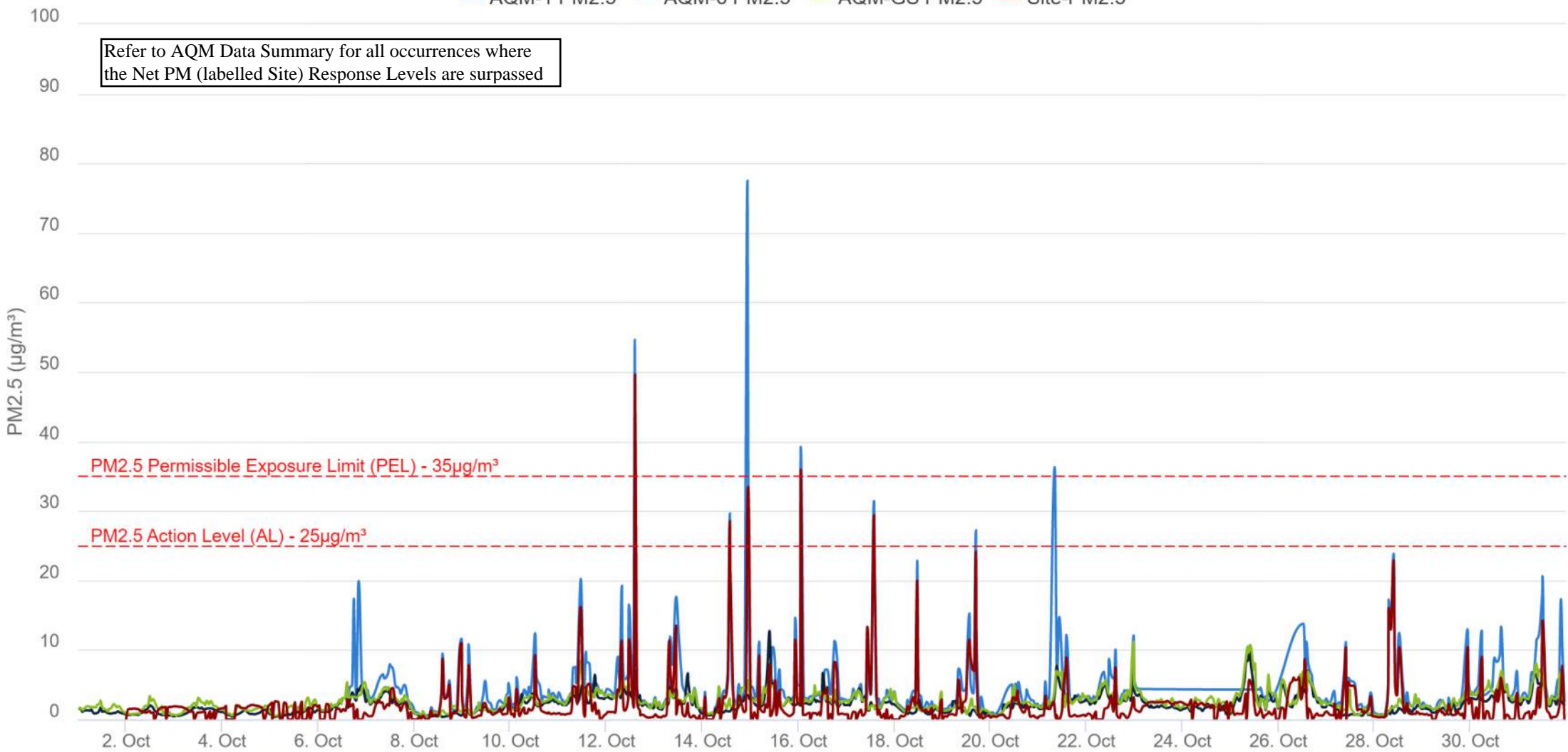
- Throughout the month, construction activity was closely monitored, and dust mitigation techniques were continuously implemented to successfully contain any airborne particulates created due to construction activity.

OCTOBER 2022 DATA PLOTS

Reach A - PM2.5 - 15 min Running avg. (October 2022)

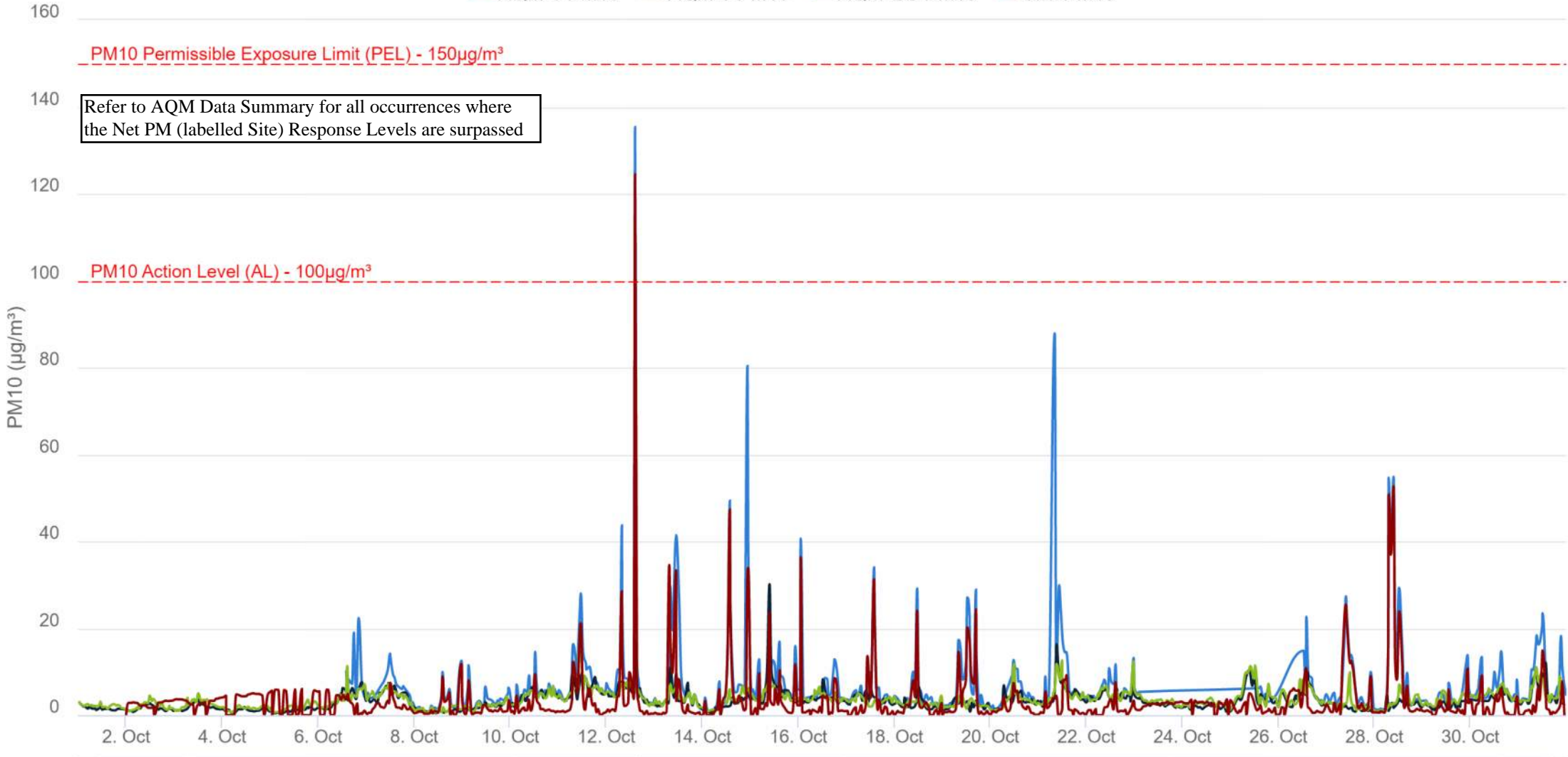
— AQM-1 PM2.5 — AQM-6 PM2.5 — AQM-GS PM2.5 — Site-PM2.5

Refer to AQM Data Summary for all occurrences where the Net PM (labelled Site) Response Levels are surpassed



Reach A - PM2.5 - 15 min Running avg. (October 2022)

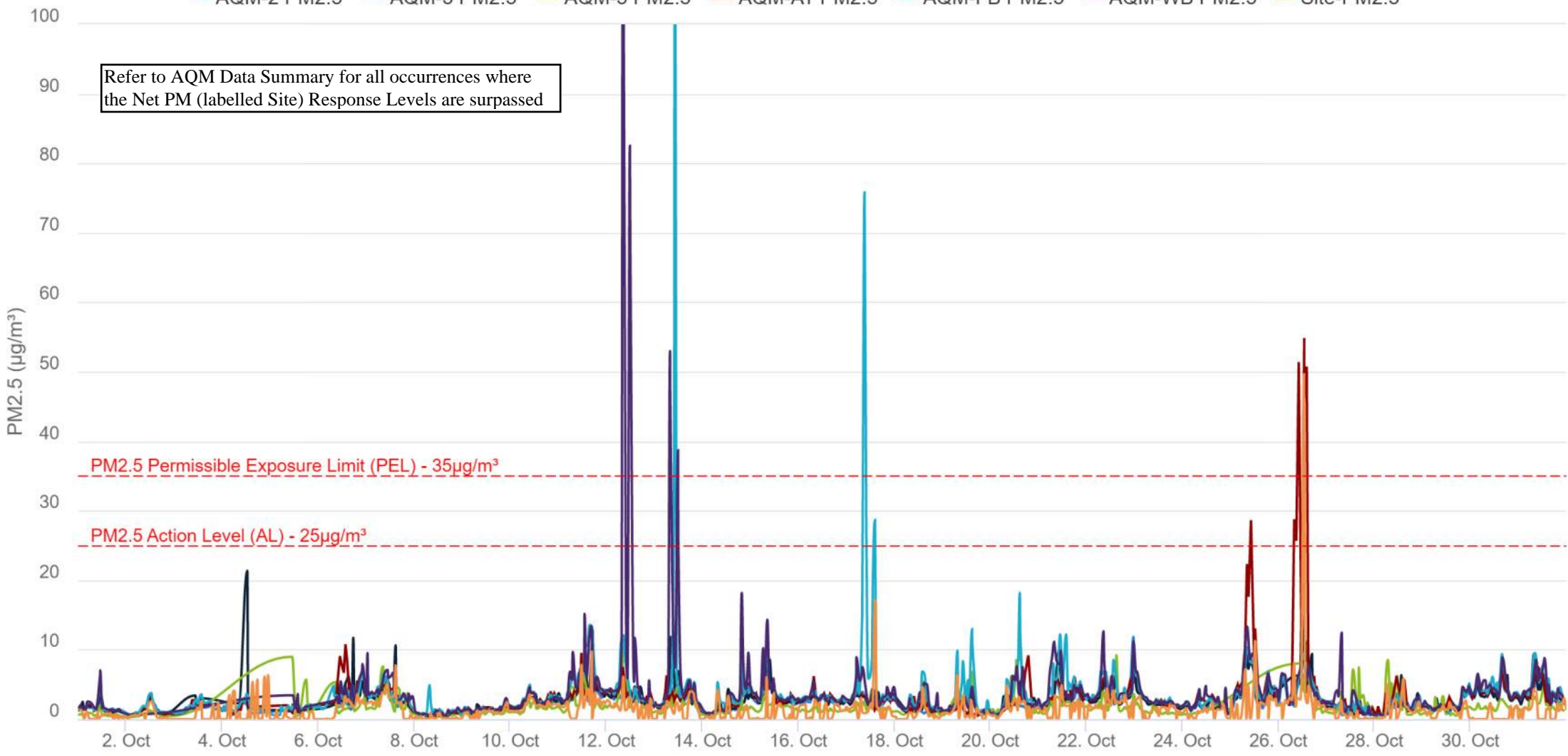
AQM-1 PM10 AQM-6 PM10 AQM-GS PM10 Site-PM10



Reach C,D,& E - PM2.5 - 15 min Running avg. (October 2022)

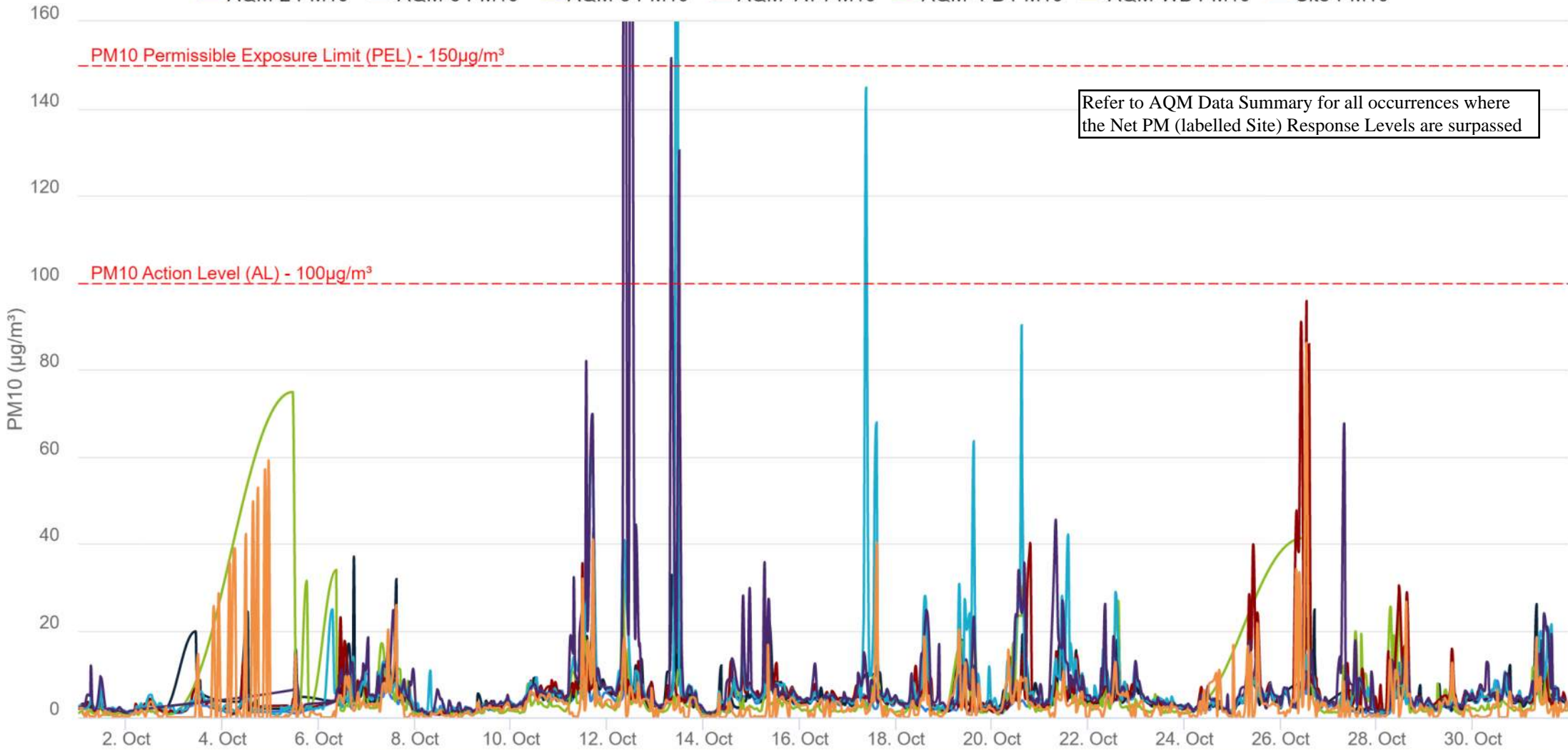
— AQM-2 PM2.5 — AQM-3 PM2.5 — AQM-5 PM2.5 — AQM-AT PM2.5 — AQM-FB PM2.5 — AQM-WB PM2.5 — Site-PM2.5

Refer to AQM Data Summary for all occurrences where the Net PM (labelled Site) Response Levels are surpassed



Reach C,D,& E - PM10 - 15 min Running avg. (October 2022)

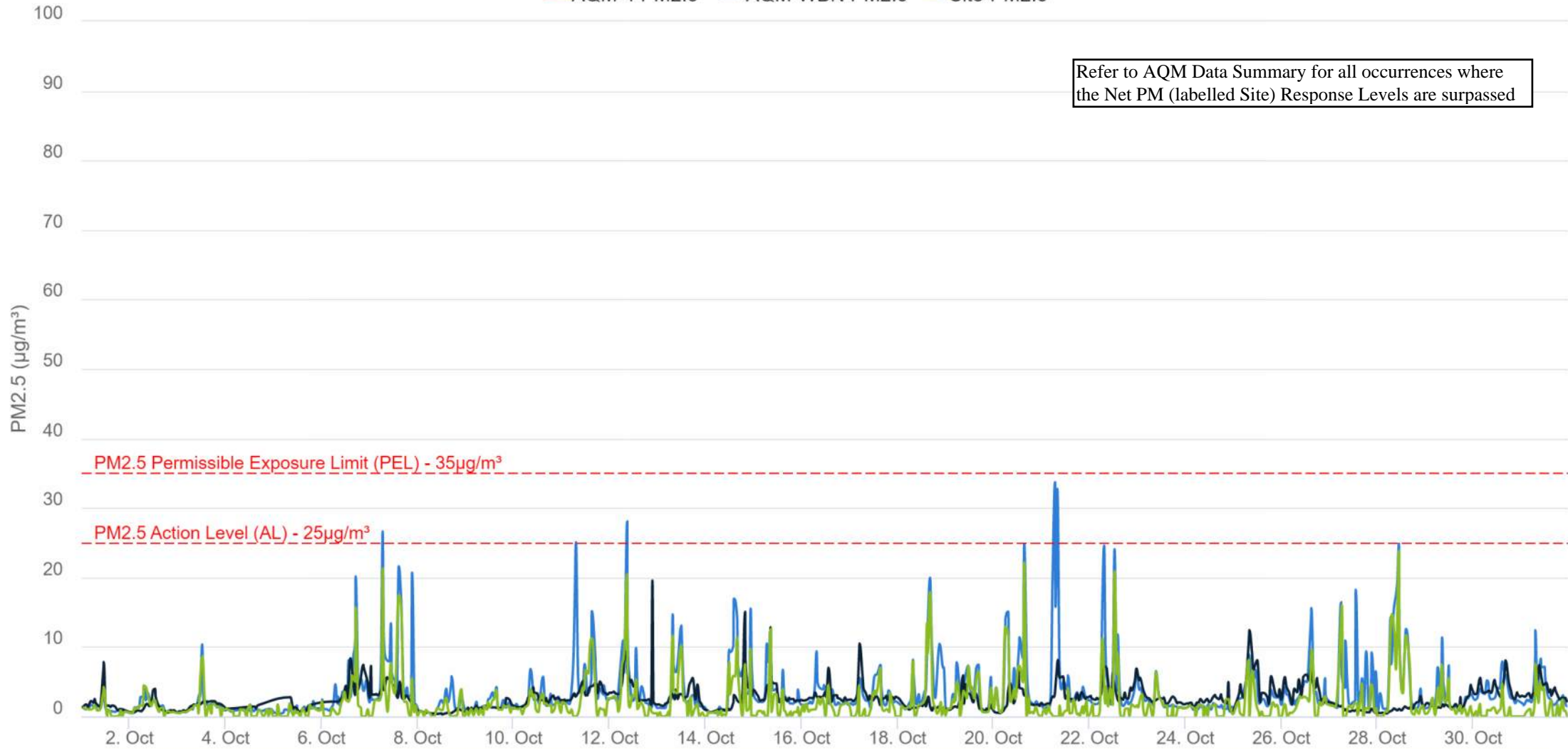
AQM-2 PM10 AQM-3 PM10 AQM-5 PM10 AQM-AT PM10 AQM- FB PM10 AQM-WB PM10 Site-PM10



Reach F - PM2.5 - 15 min Running avg. (October 2022)

— AQM-4 PM2.5 — AQM-WBN PM2.5 — Site-PM2.5

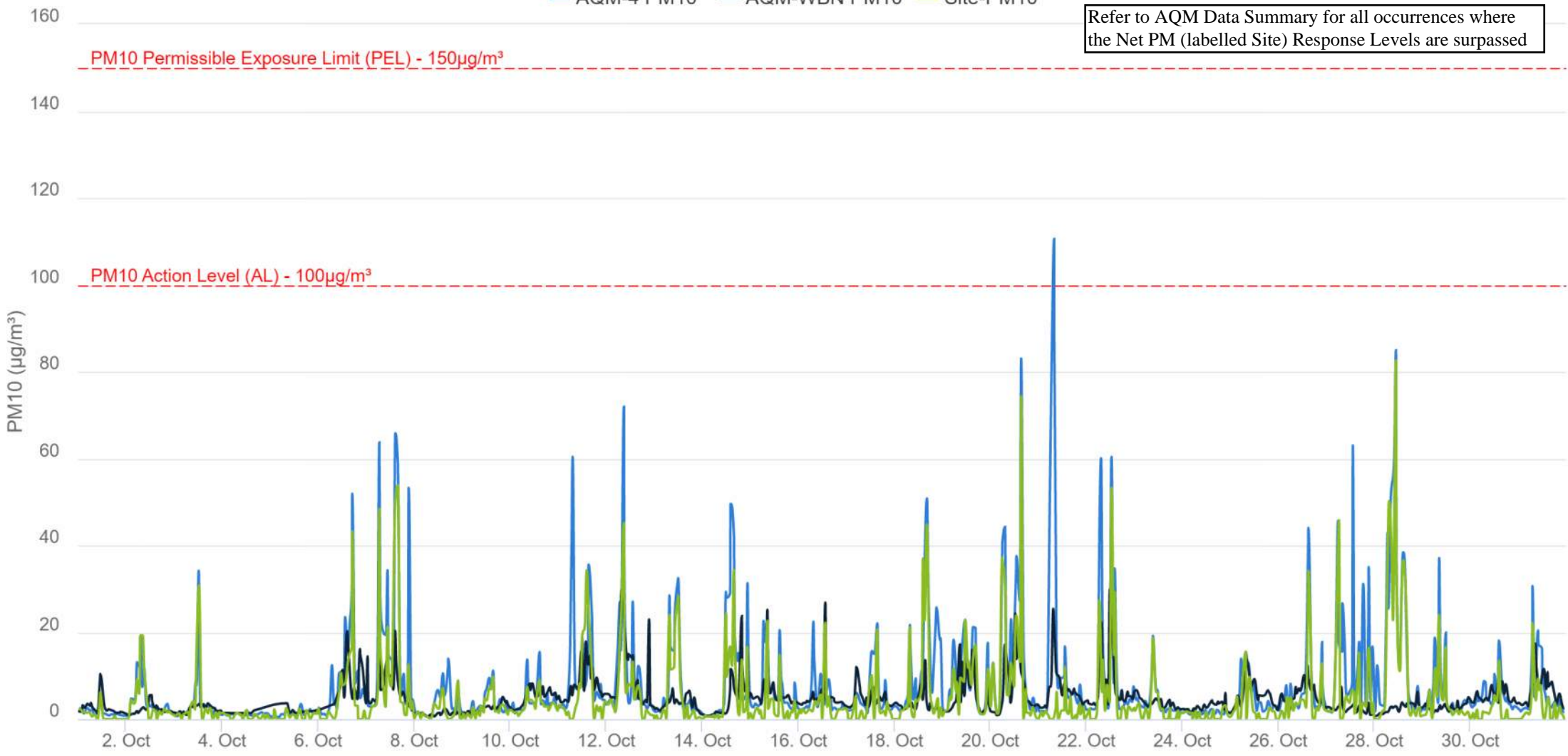
Refer to AQM Data Summary for all occurrences where the Net PM (labelled Site) Response Levels are surpassed



Reach F - PM10 - 15 min Running avg. (October 2022)

— AQM-4 PM10 — AQM-WBN PM10 — Site-PM10

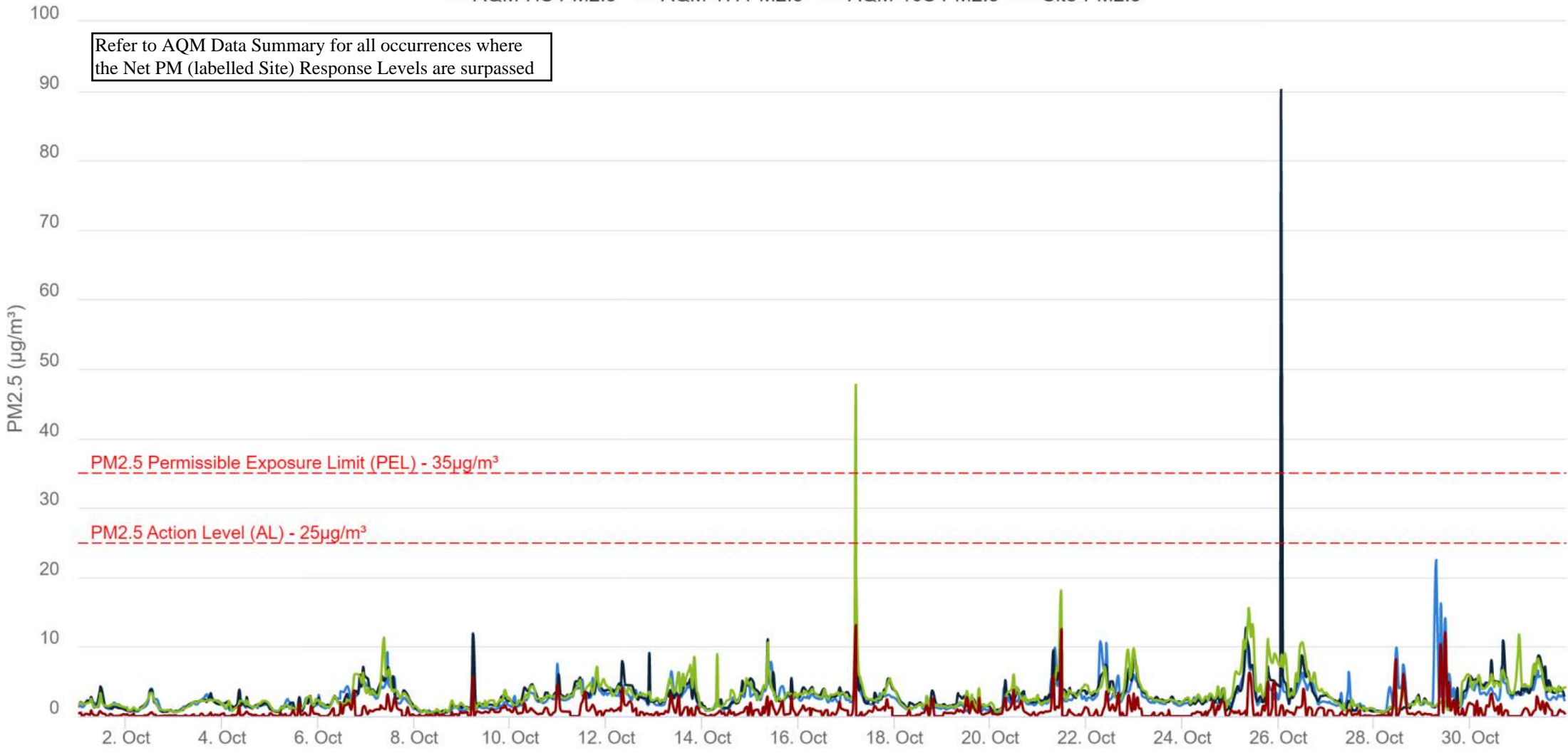
Refer to AQM Data Summary for all occurrences where the Net PM (labelled Site) Response Levels are surpassed



Reach G, H & I - PM2.5 - 15 min Running avg. (October 2022)

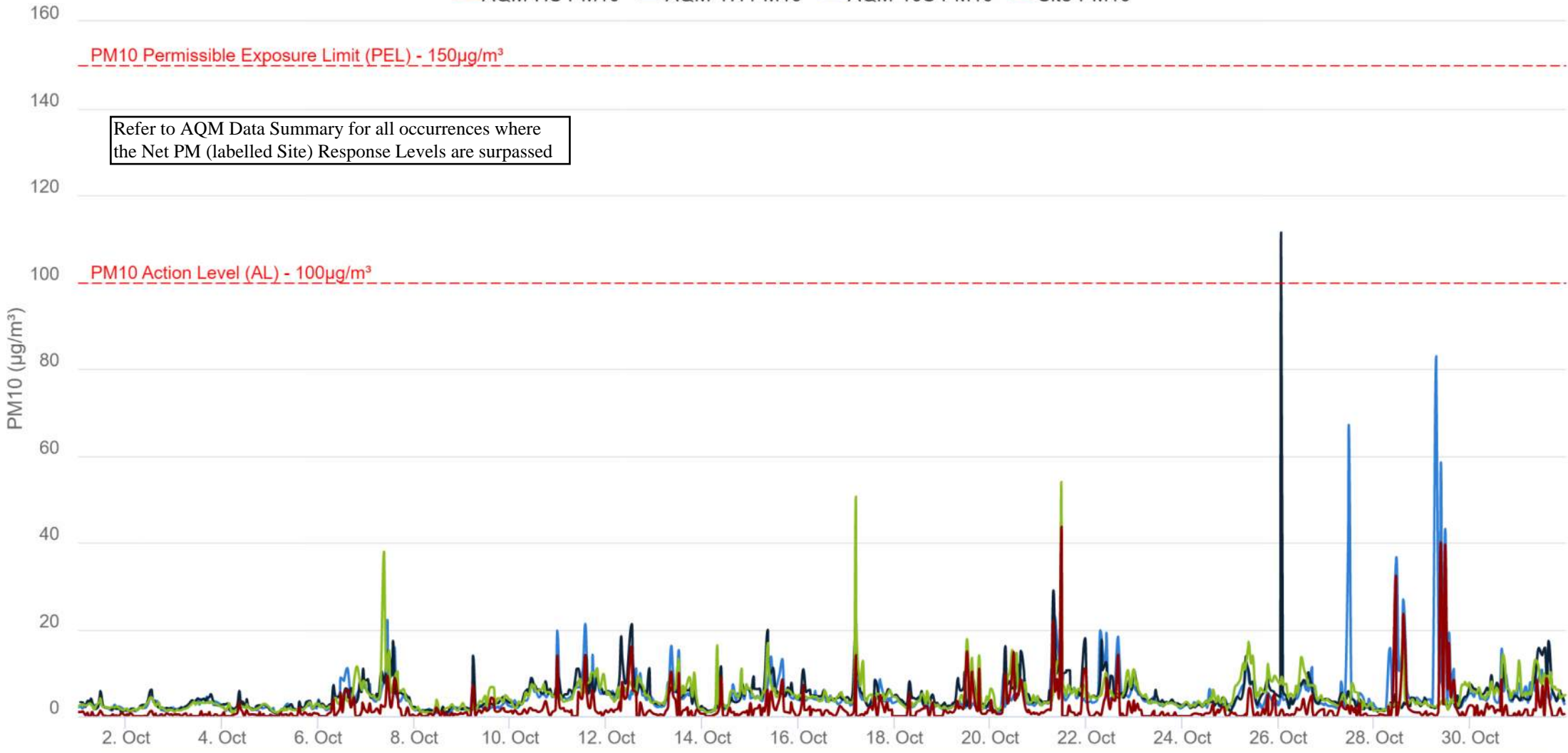
— AQM-HS PM2.5 — AQM-TH PM2.5 — AQM-10S PM2.5 — Site-PM2.5

Refer to AQM Data Summary for all occurrences where the Net PM (labelled Site) Response Levels are surpassed



Reach G, H & I - PM10 - 15 min Running avg. (October 2022)

— AQM-HS PM10 — AQM-TH PM10 — AQM-10S PM10 — Site-PM10



Summary of Data November 2022

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

- AQM-1 on 11/17 for 16 minutes;
- AQM-4 on 11/8 for 27 minutes;
- AQM-HS on 11/28 for 16 minutes; and
- AQM-10S on 11/4 for 31 minutes and 11/5 for 38 minutes.

PM2.5 levels surpassed the PEL (15-minute TWA) at the following locations:

- AQM-1 on 11/1 for 27 minutes, 11/3 for 19 minutes, 11/9 for 18 minutes, and 11/17 for 16 minutes;
- AQM-FB on 11/4 for 16 minutes;
- AQM-WB on 11/15 for 22 minutes;
- AQM-4 on 11/8 for 27 minutes;
- AQM-10S on 11/4 for 31 minutes and 11/5 for 38 minutes; and
- AQM-HS on 11/28 for 16 minutes.

For the month of November 2022, construction-related PM net 2.5 levels were exceeded on 11/3, 11/4, 11/5, 11/9, and 11/17. Construction-related PM net 10 levels were exceeded on 11/4, 11/5, and 11/17.

For the month of November 2022, construction-related PM net 2.5 or 10 levels did not surpass the Daily PEL (24-hour TWA).

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

- PM 10 $\mu\text{g}/\text{m}^3$ levels surpassed the PEL on five occasions (11/4, 11/5, 11/8, 11/17, and 11/28) for between 16 and 38 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 11/17 were determined to be an anomalous reading, most likely due to a drop of water/condensation present in the inlet of the monitor.
 - AQM-4 is located near the former Tennis house along the shared use path/construction access road and the FDR; the elevated readings on 11/8 were determined to be likely caused by a vehicle idling and/or road cleaning vehicle traveling near the monitor. A water truck was deployed to mitigate airborne dust.
 - AQM-HS is located at East Houston Street and the FDR; the elevated readings on 11/28 were determined to be an anomalous reading, most likely due to a drop of water/condensation present in the inlet of the monitor.
 - AQM-10S is located at East 10th Street; the elevated readings on 11/4 and 11/5 were determined to be due to unknown afterhours activity in the vicinity of the monitor.

PM 2.5 $\mu\text{g}/\text{m}^3$

- PM 2.5 $\mu\text{g}/\text{m}^3$ levels surpassed the PEL on 11 occasions (11/1, 11/3, 11/4, 11/5, 11/8, 11/9, 11/15, 11/17, and 11/28) for between 15 and 38 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 11/1 were determined to be due to afterhours vehicular traffic in the vicinity of the monitor.
 - The elevated readings on 11/3 and 11/9 were determined to be due to emissions emanating from a food cart in the vicinity of Pier 36.

- The elevated readings on 11/17 were determined to be due to be an anomalous reading, most likely due to a drop of water/condensation present in the inlet of the monitor.
- AQM-FB is in the vicinity of the Fireboat House along the East River; the elevated readings on 11/4 were determined to be caused by demolition activity and/or construction vehicle traffic in the vicinity of the monitor. A water truck was deployed to mitigate airborne dust.
- AQM-WB is in the vicinity of the Williamsburg Bridge along the East River; the elevated readings on 11/15 were determined to be caused by demolition activity and/or construction vehicle traffic 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; elevated readings on 11/8 were determined to be likely caused by a vehicle idling and/or road cleaning vehicle traveling near the monitor. A water truck was deployed to mitigate airborne dust.
- AQM-HS is located at East Houston Street and the FDR; the elevated readings on 11/28 were determined to be an anomalous reading, most likely due to a drop of water/condensation present in the inlet of the monitor.
- AQM-10S is located at East 10th Street; the elevated readings on 11/3, 11/4, and 11/5 were determined to be due to unknown afterhours activity in the vicinity of the monitor.

Mitigation Measures:

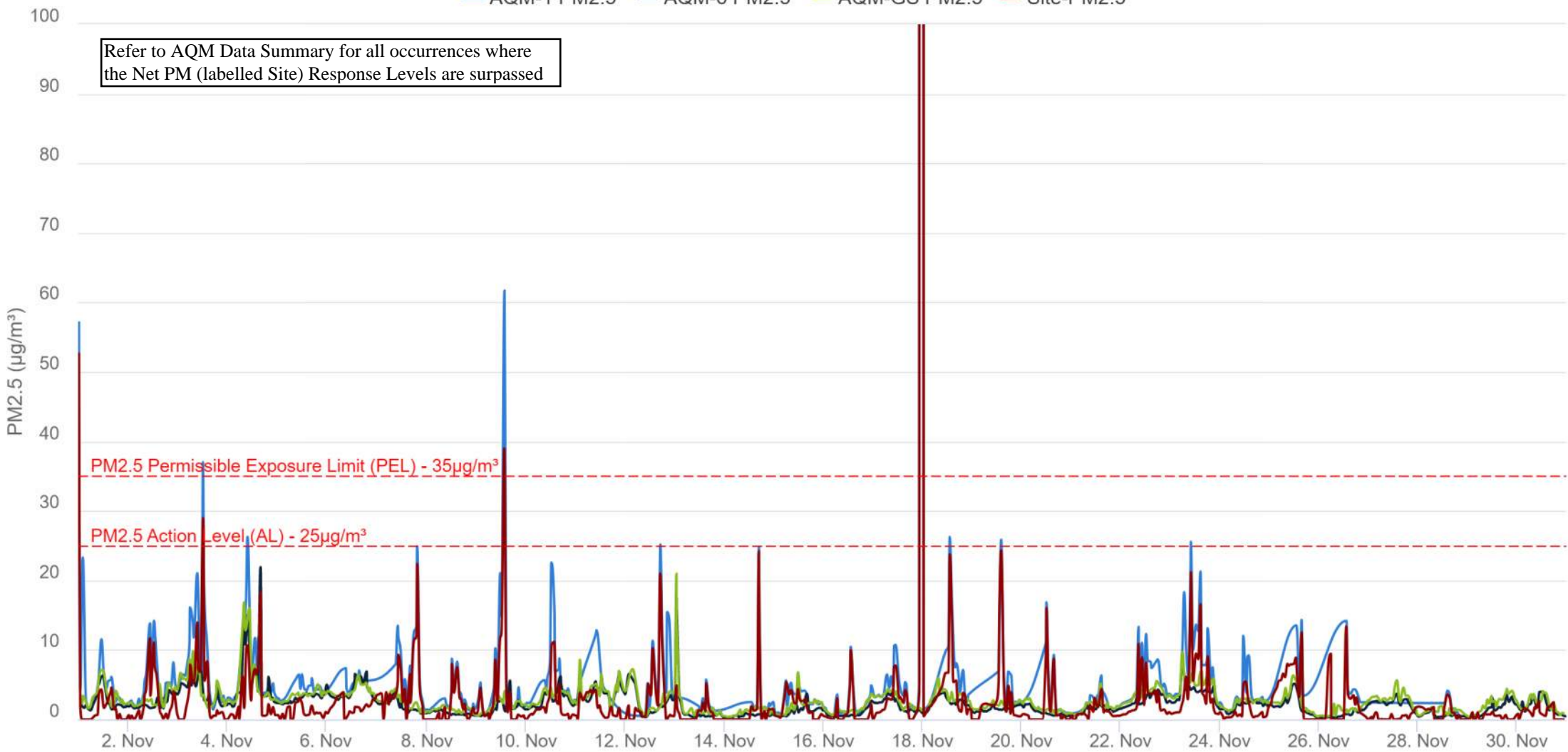
- Throughout the month, construction activity was closely monitored, and dust mitigation techniques were continuously implemented to successfully contain any airborne particulates created due to construction activity.

NOVEMBER 2022 DATA PLOTS

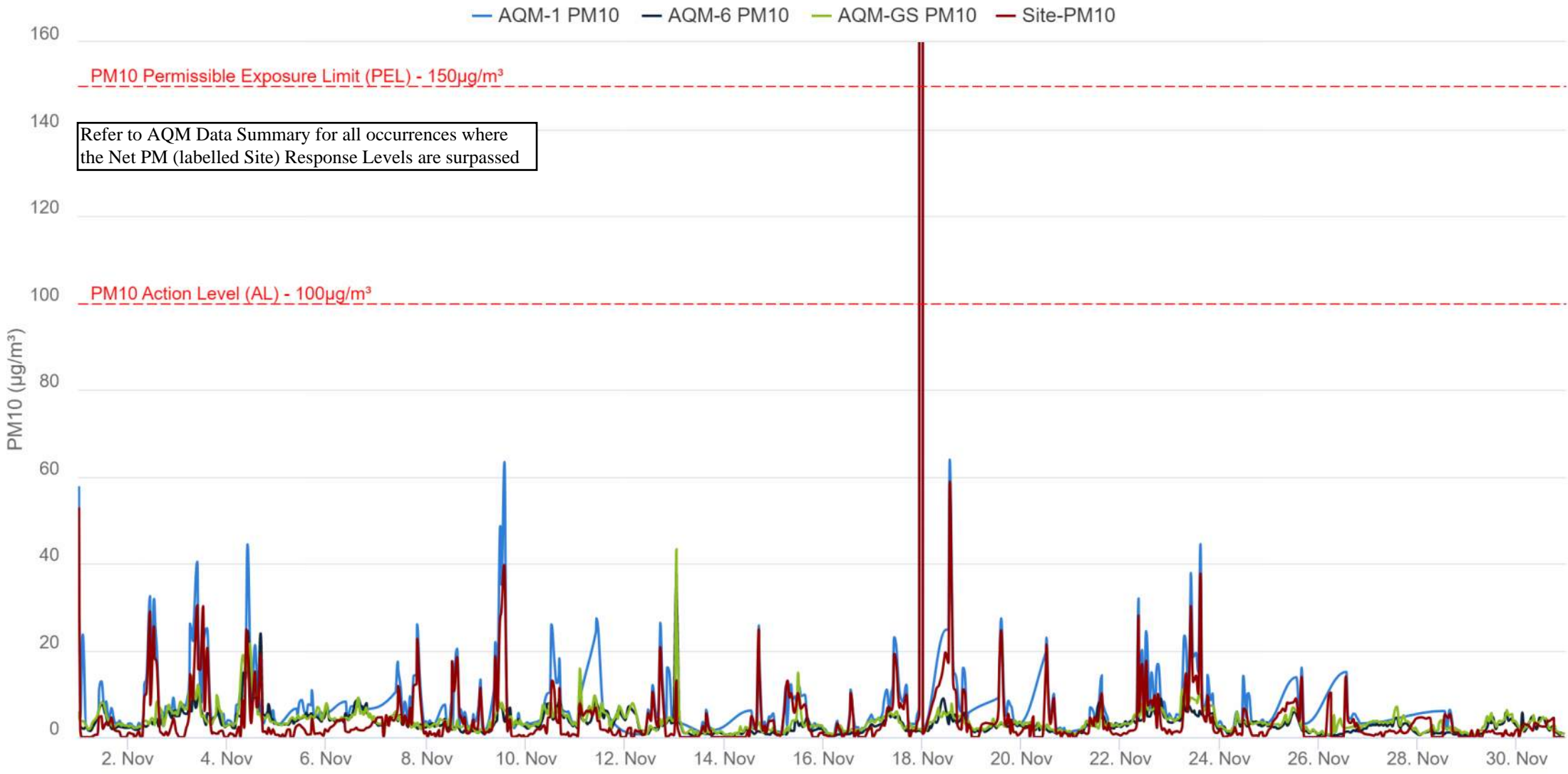
Reach A - PM2.5 - 15 min Running avg. (November 2022)

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

Refer to AQM Data Summary for all occurrences where the Net PM (labelled Site) Response Levels are surpassed



Reach A - PM10 - 15 min Running avg. (November 2022)



Reach C,D,& E - PM2.5 - 15 min Running avg. (November 2022)

— AQM-2 PM2.5 — AQM-3 PM2.5 — AQM-5 PM2.5 — AQM-AT PM2.5 — AQM-FB PM2.5 — AQM-WB PM2.5 — Site-PM2.5

Refer to AQM Data Summary for all occurrences where the Net PM (labelled Site) Response Levels are surpassed

PM2.5 ($\mu\text{g}/\text{m}^3$)

PM2.5 Permissible Exposure Limit (PEL) - $35\mu\text{g}/\text{m}^3$

PM2.5 Action Level (AL) - $25\mu\text{g}/\text{m}^3$

2. Nov 4. Nov 6. Nov 8. Nov 10. Nov 12. Nov 14. Nov 16. Nov 18. Nov 20. Nov 22. Nov 24. Nov 26. Nov 28. Nov 30. Nov

Reach C,D,& E - PM10 - 15 min Running avg. (November 2022)

— AQM-2 PM10 — AQM-3 PM10 — AQM-5 PM10 — AQM-AT PM10 — AQM- FB PM10 — AQM-WB PM10 — Site-PM10

PM10 Permissible Exposure Limit (PEL) - $150\mu\text{g}/\text{m}^3$

Refer to AQM Data Summary for all occurrences where the Net PM (labelled Site) Response Levels are surpassed

PM10 Action Level (AL) - $100\mu\text{g}/\text{m}^3$

PM10 ($\mu\text{g}/\text{m}^3$)

160

140

120

100

80

60

40

20

0

2. Nov

4. Nov

6. Nov

8. Nov

10. Nov

12. Nov

14. Nov

16. Nov

18. Nov

20. Nov

22. Nov

24. Nov

26. Nov

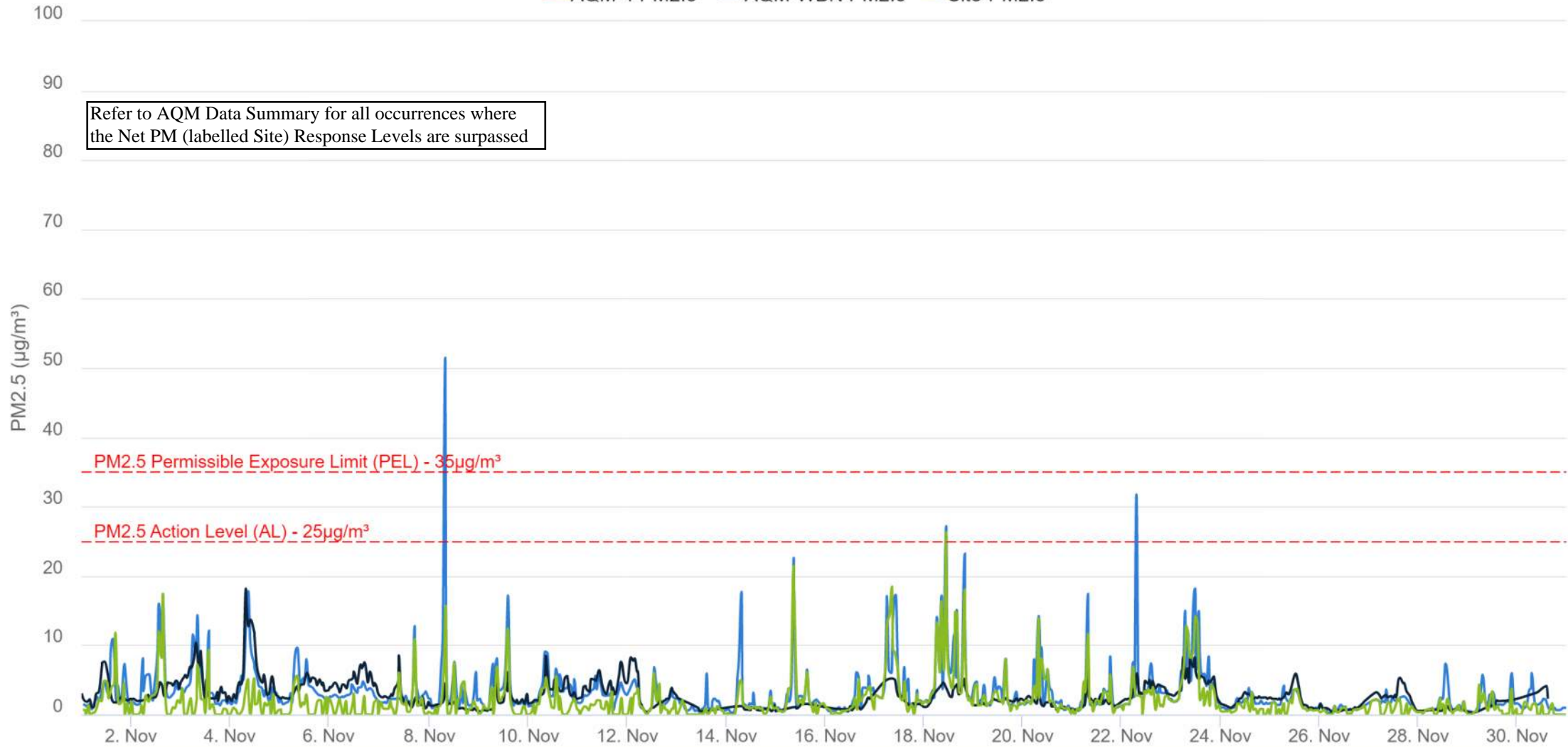
28. Nov

30. Nov

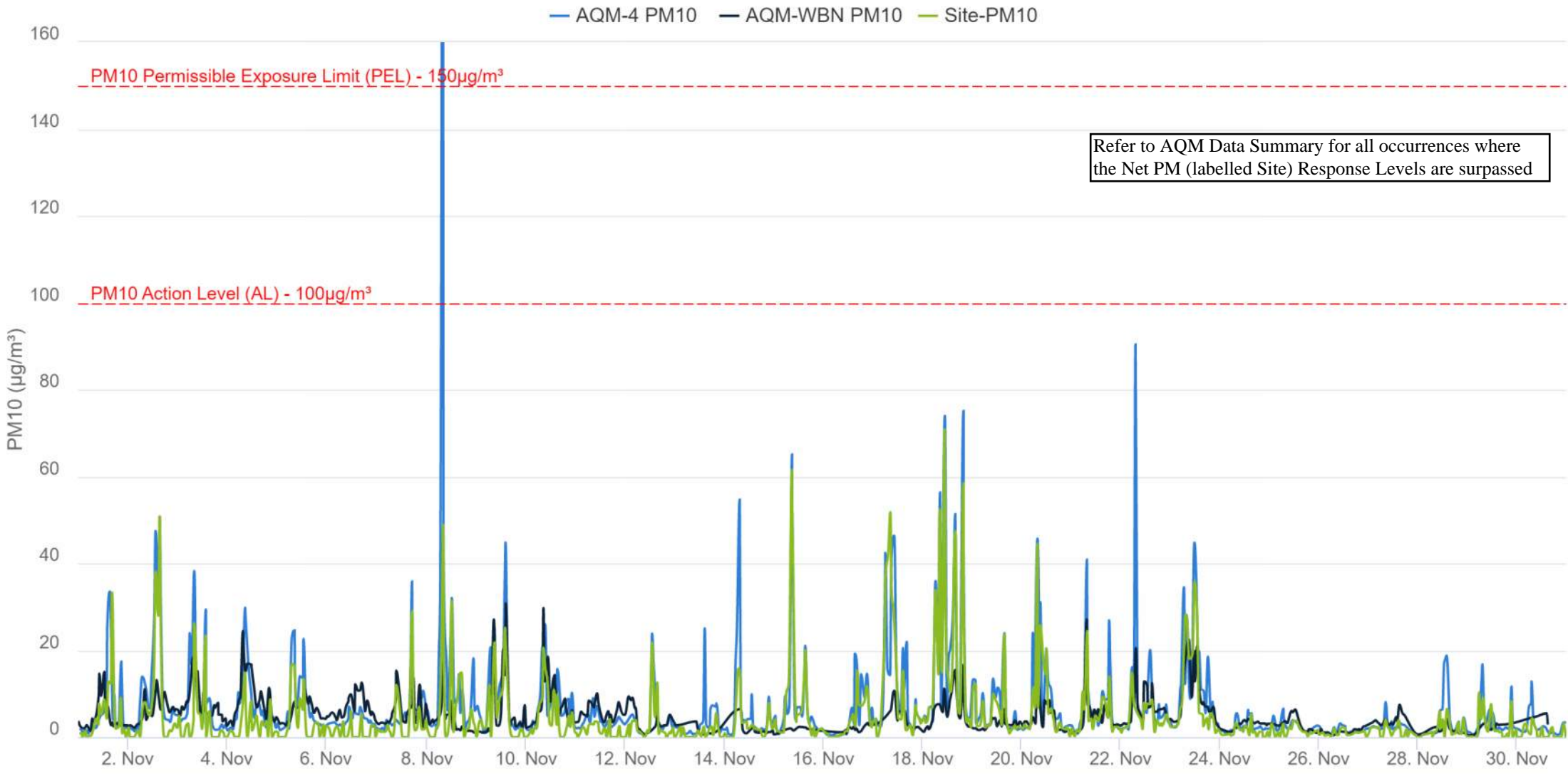
Reach F - PM2.5 - 15 min Running avg. (November 2022)

— AQM-4 PM2.5 — AQM-WBN PM2.5 — Site-PM2.5

Refer to AQM Data Summary for all occurrences where the Net PM (labelled Site) Response Levels are surpassed



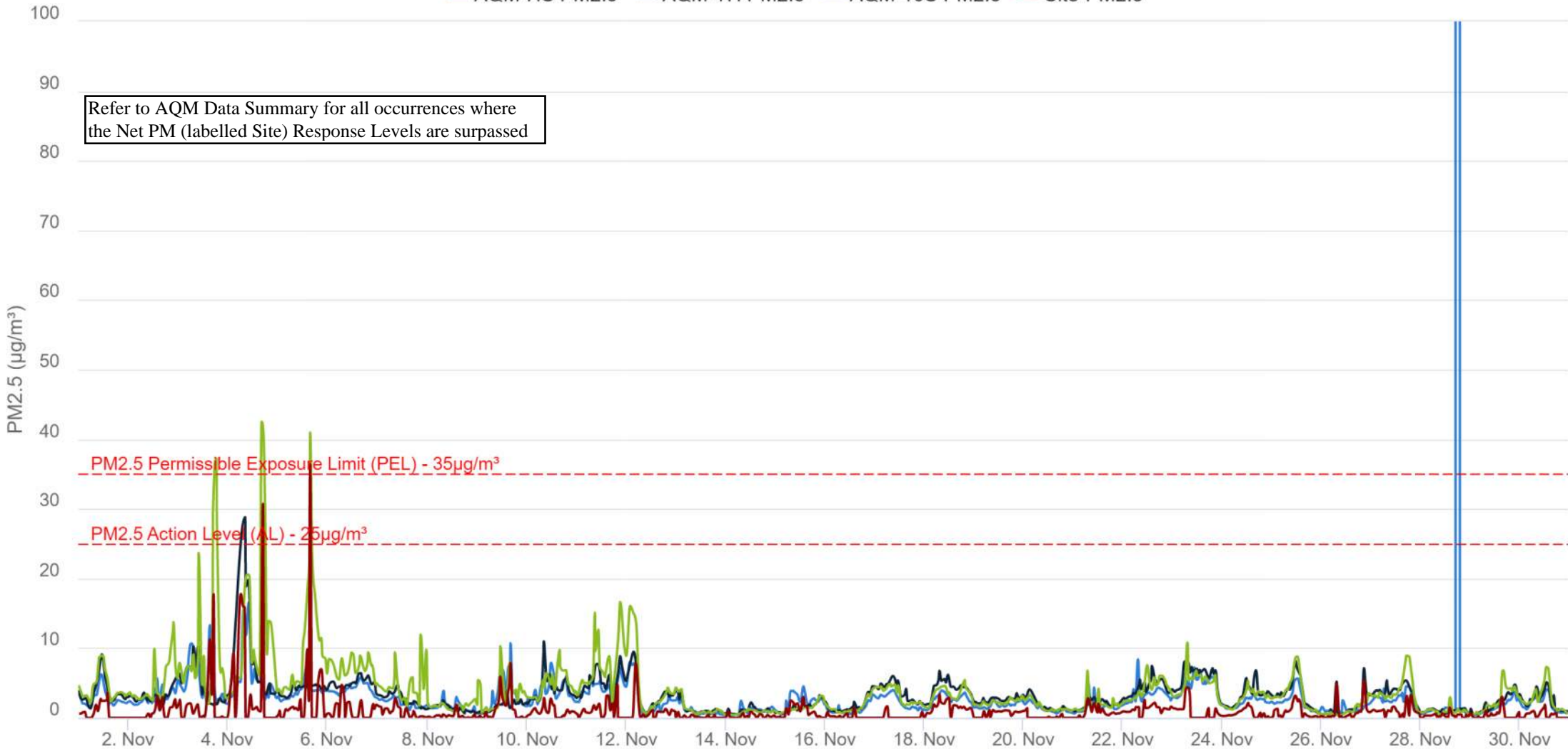
Reach F - PM10 - 15 min Running avg. (November 2022)



Refer to AQM Data Summary for all occurrences where the Net PM (labelled Site) Response Levels are surpassed

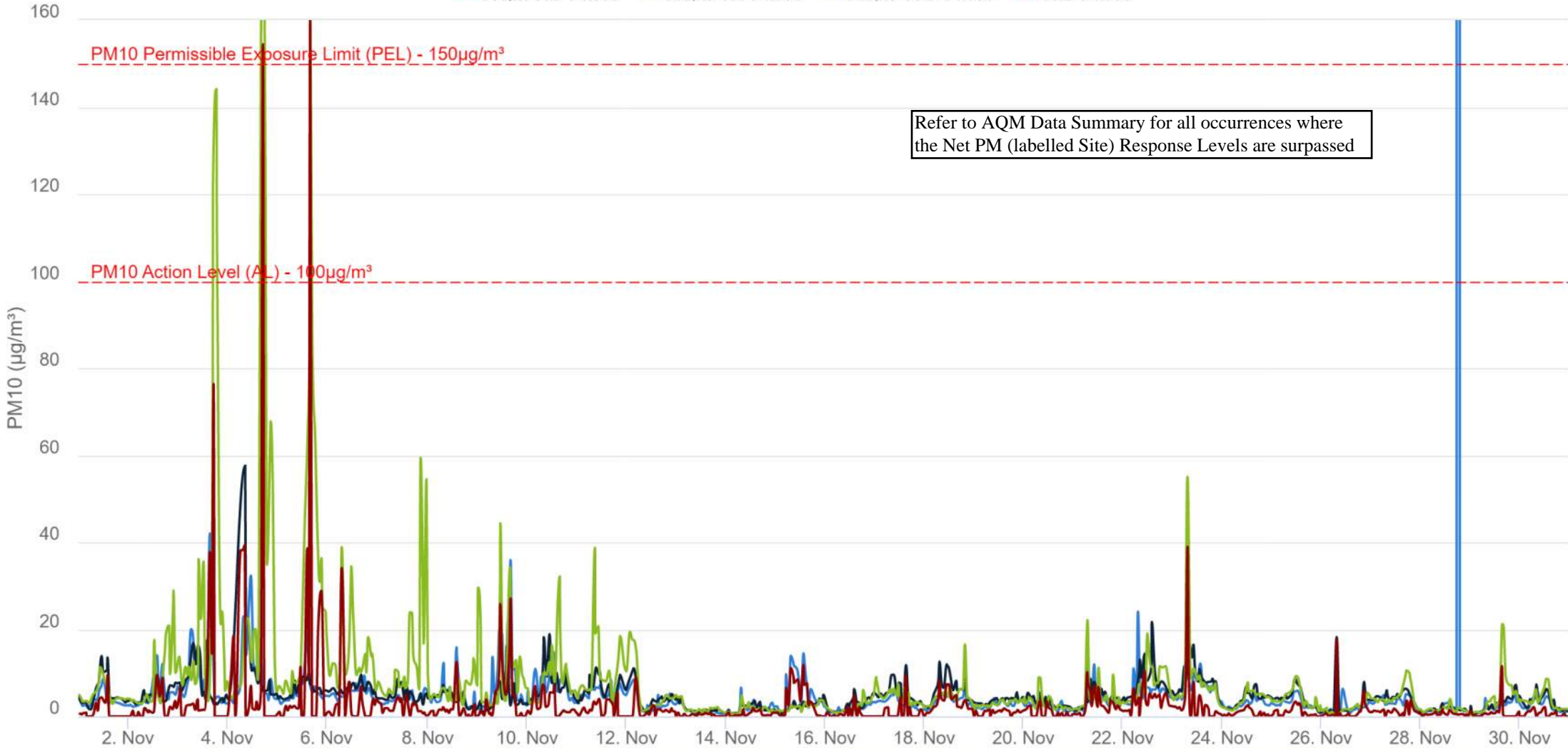
Reach G, H & I - PM2.5 - 15 min Running avg. (November 2022)

— AQM-HS PM2.5 — AQM-TH PM2.5 — AQM-10S PM2.5 — Site-PM2.5



Reach G, H & I - PM10 - 15 min Running avg. (November 2022)

— AQM-HS PM10 — AQM-TH PM10 — AQM-10S PM10 — Site-PM10



Summary of Data December 2022

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

- AQM-1 on 12/2, 12/21 for 6 minutes, and 12/30 for 23 minutes;
- AQM-4 on 12/27 for 37 minutes and 15 minutes and 12/30 for 23 minutes; and
- AQM-10S on 12/5 for 25 minutes.

PM2.5 levels surpassed the PEL (15-minute TWA) at the following locations:

- AQM-1 on 12/21 for 6 minutes; and
- AQM-4 on 12/30 for 23 minutes.

For the month of September 2022, construction-related PM net 2.5 levels were exceeded on 12/27 and 12/30. Construction-related PM net 10 levels were exceeded on 12/30.

For the month of December 2022, construction-related PM net 2.5 or 10 levels did not surpass the Daily PEL (24-hour TWA).

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

- PM 10 $\mu\text{g}/\text{m}^3$ levels surpassed the PEL (15-minute TWA) on three occasions (12/5, 12/21, and 12/30) for between 6 and 25 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 12/21 were determined to be an anomalous reading due to monitor power supply issues.
 - AQM-4 is located near the former Tennis house along the shared use path/construction access road and the FDR; the elevated readings on 12/30 were determined to be likely caused by a vehicle idling and/or road cleaning vehicle traveling near the monitor.
 - AQM-10S is located at East 10th Street; the elevated readings on 12/5 were determined to be due to unknown afterhours activity in the vicinity of the monitor. A water truck was deployed to mitigate airborne dust the following day.

PM 2.5 $\mu\text{g}/\text{m}^3$

- PM 2.5 $\mu\text{g}/\text{m}^3$ levels surpassed the PEL (15-minute TWA) on six occasions (12/2, 12/21, 12/27, and 12/30) for between 6 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 12/2 and 12/21 were determined to be an anomalous reading due to monitor power supply issues.
 - The elevated readings on 12/30 were determined to be due to afterhours vehicle traffic.
 - AQM-4 is located near the former Tennis house along the shared use path/construction access road and the FDR; the elevated readings on 12/27 and 12/30 were determined to be likely caused by a vehicle idling and/or road cleaning vehicle traveling near the monitor.

Mitigation Measures

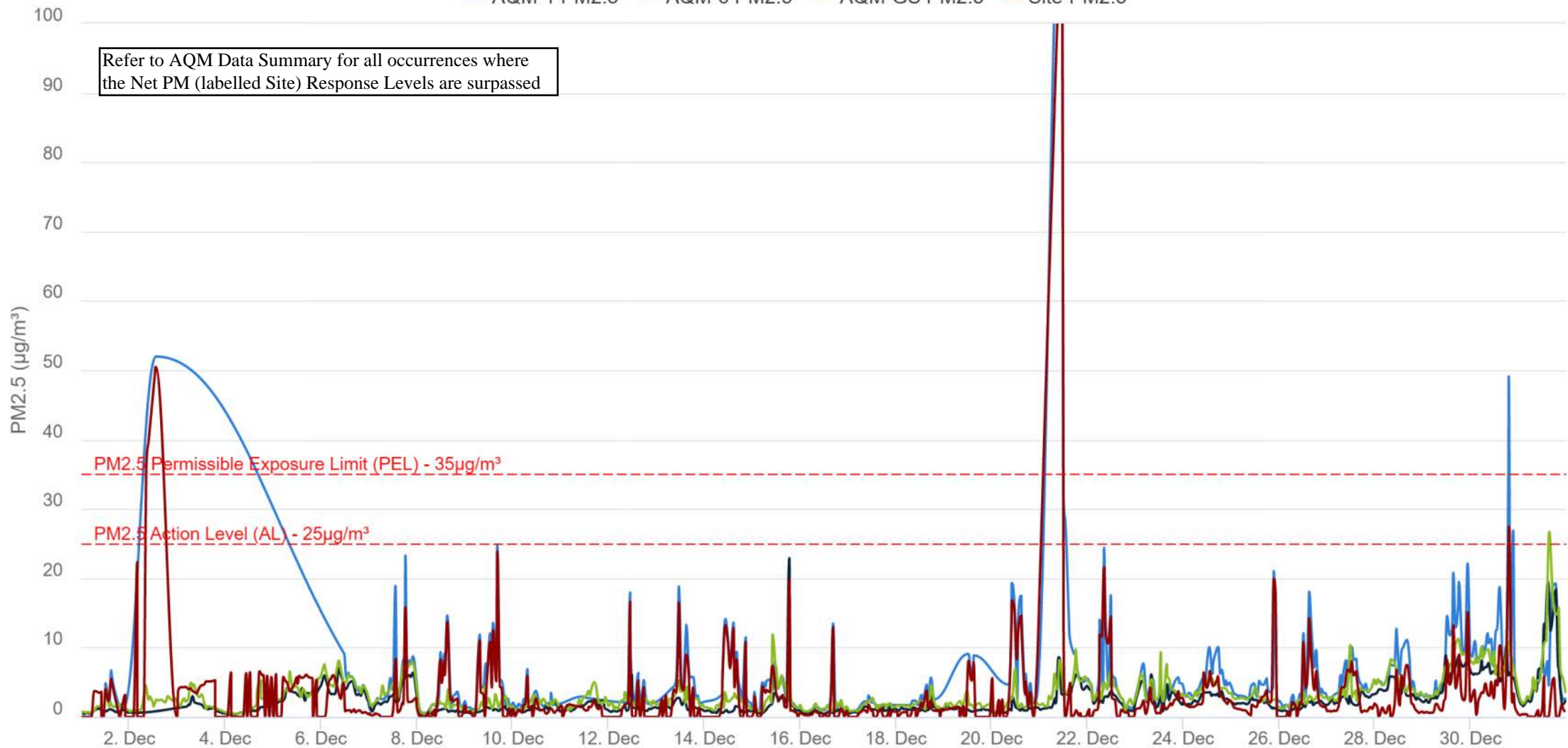
- Throughout the month, construction activity was closely monitored, and dust mitigation techniques were continuously implemented to successfully contain any airborne particulates created due to construction activity.

DECEMBER 2022 DATA PLOTS

Reach A - PM2.5 - 15 min Running avg. (December 2022)

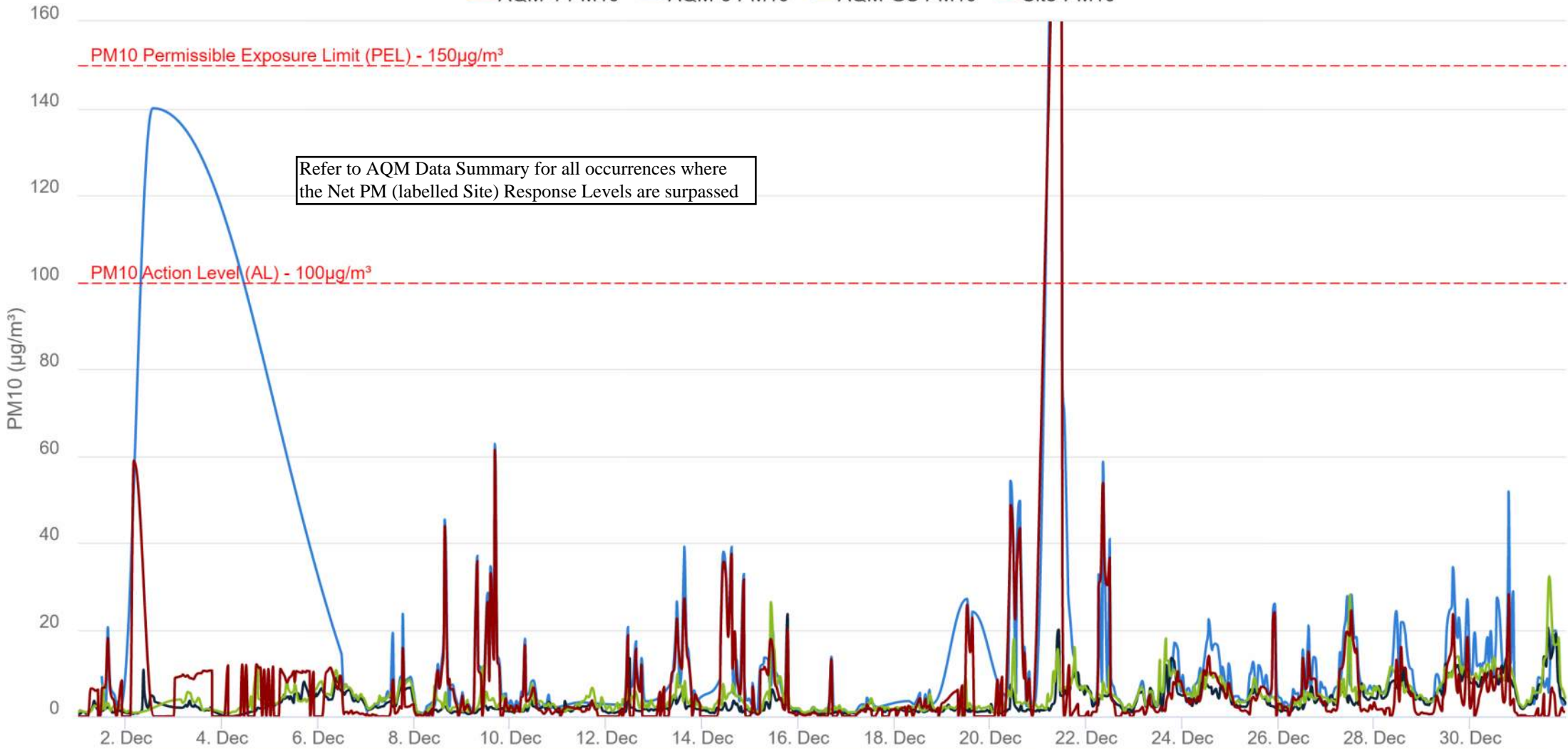
— AQM-1 PM2.5 — AQM-6 PM2.5 — AQM-GS PM2.5 — Site-PM2.5

Refer to AQM Data Summary for all occurrences where the Net PM (labelled Site) Response Levels are surpassed



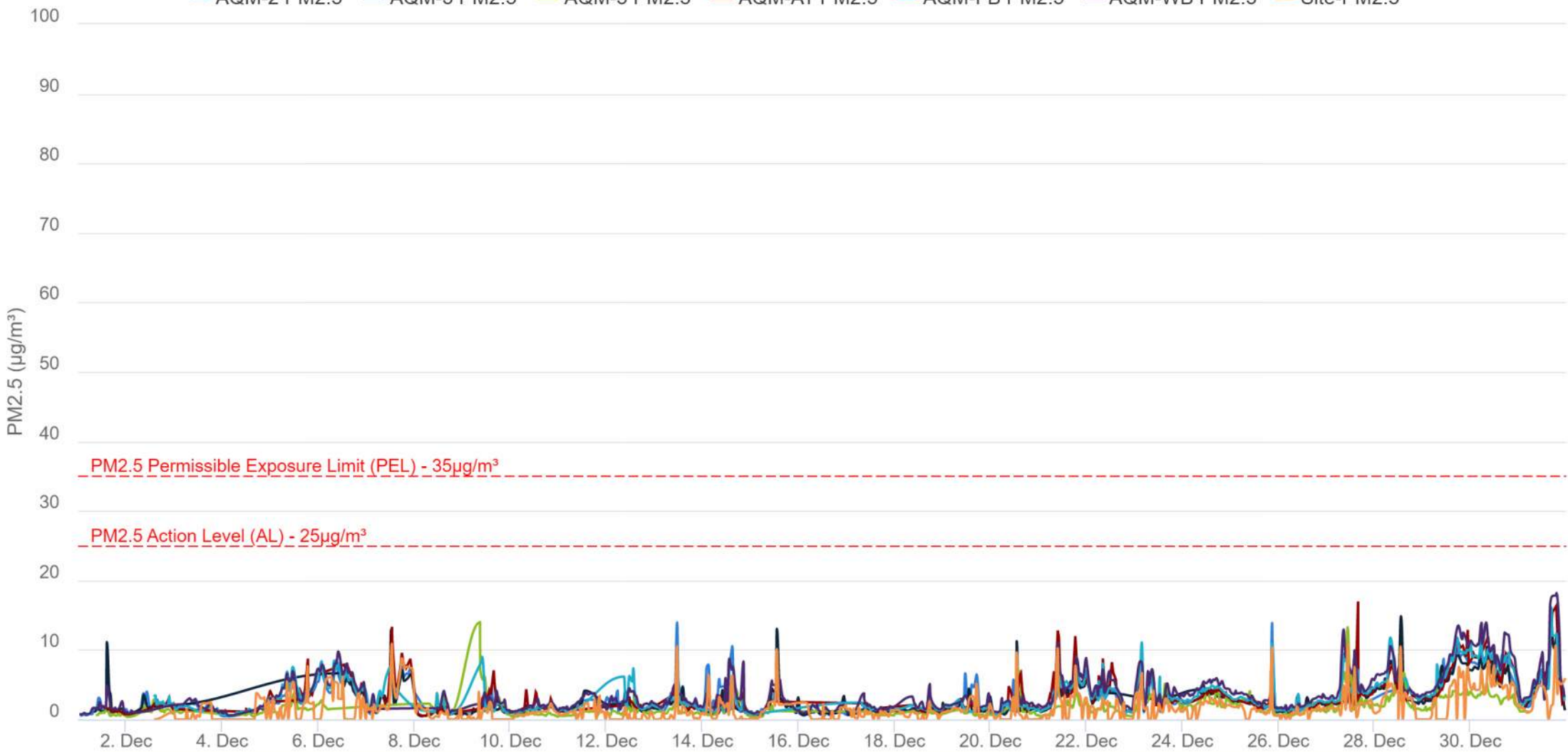
Reach A - PM10 - 15 min Running avg. (December 2022)

— AQM-1 PM10 — AQM-6 PM10 — AQM-GS PM10 — Site-PM10



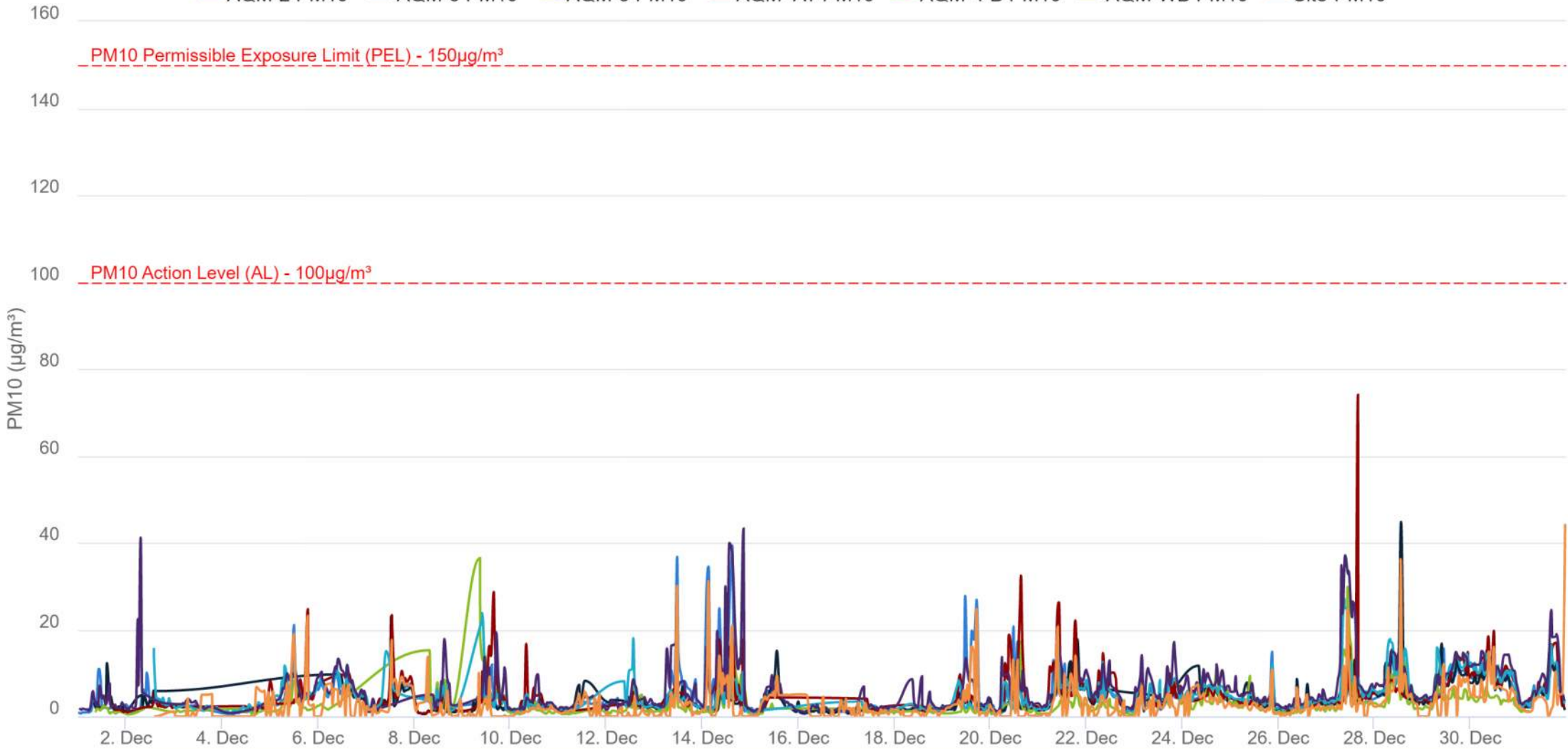
Reach C,D,& E - PM2.5 - 15 min Running avg. (December 2022)

— AQM-2 PM2.5 — AQM-3 PM2.5 — AQM-5 PM2.5 — AQM-AT PM2.5 — AQM-FB PM2.5 — AQM-WB PM2.5 — Site-PM2.5



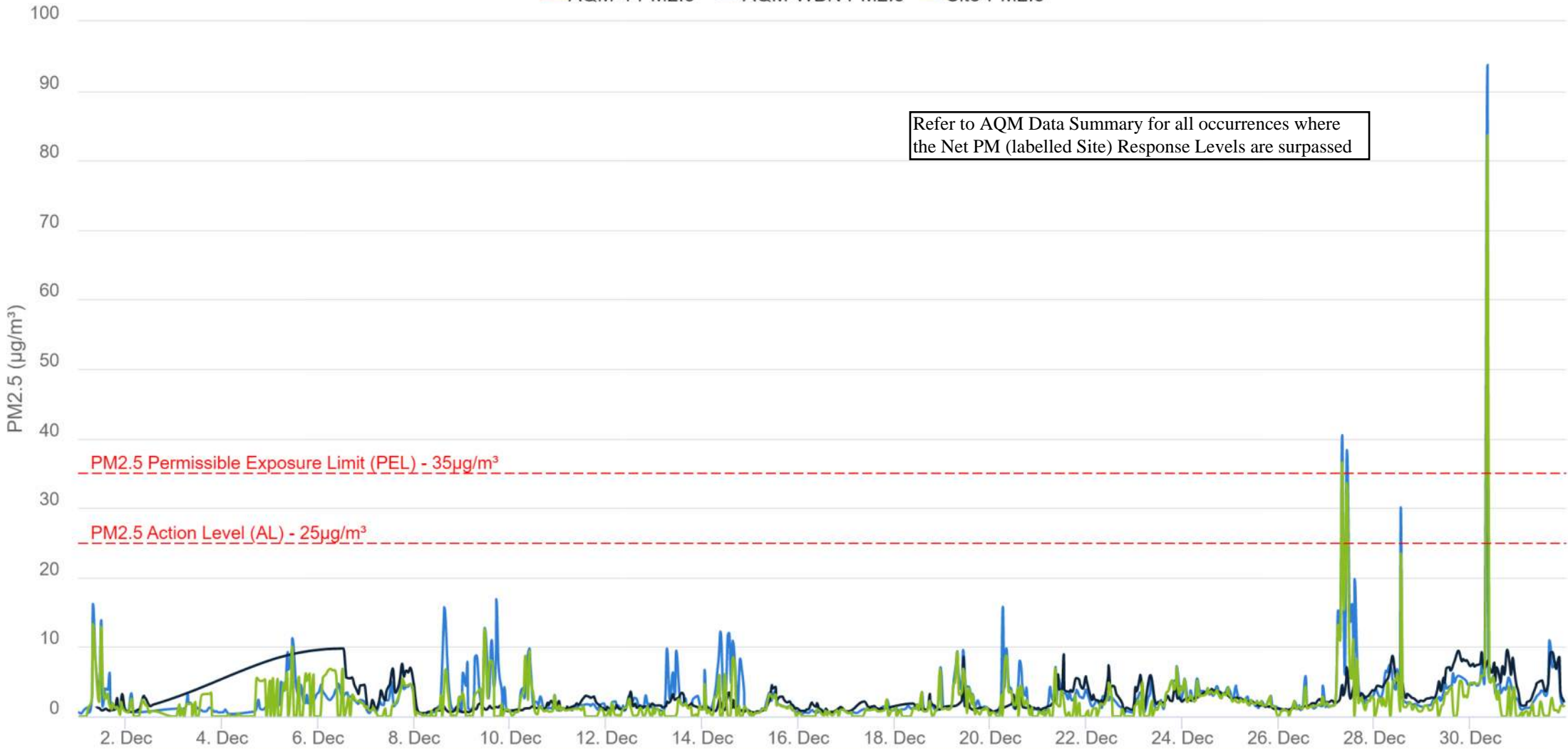
Reach C,D,& E - PM10 - 15 min Running avg. (December 2022)

— AQM-2 PM10 — AQM-3 PM10 — AQM-5 PM10 — AQM- AT PM10 — AQM- FB PM10 — AQM-WB PM10 — Site-PM10



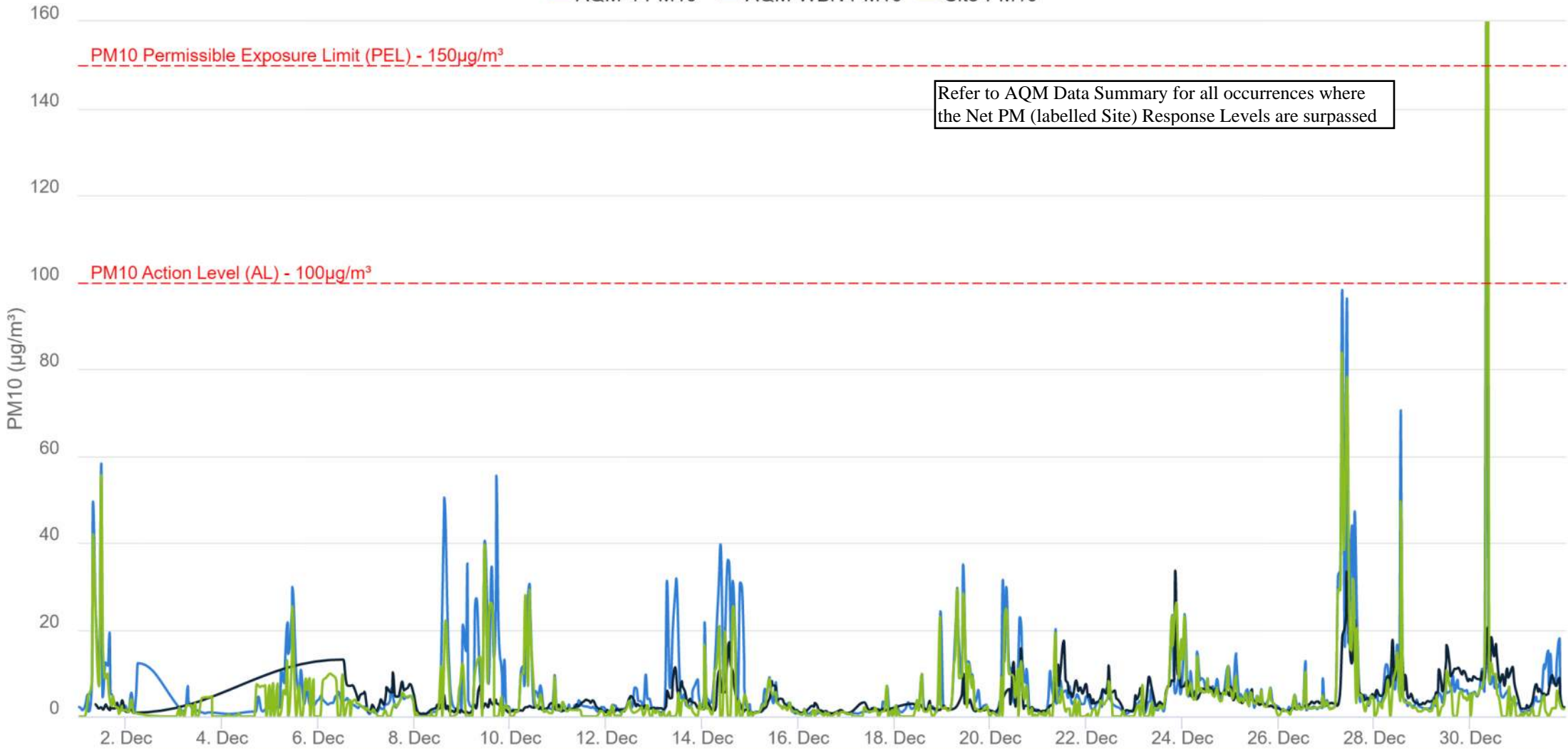
Reach F - PM2.5 - 15 min Running avg. (December 2022)

— AQM-4 PM2.5 — AQM-WBN PM2.5 — Site-PM2.5



Reach F - PM10 - 15 min Running avg. (December 2022)

— AQM-4 PM10 — AQM-WBN PM10 — Site-PM10



Reach G, H & I - PM2.5 - 15 min Running avg. (December 2022)

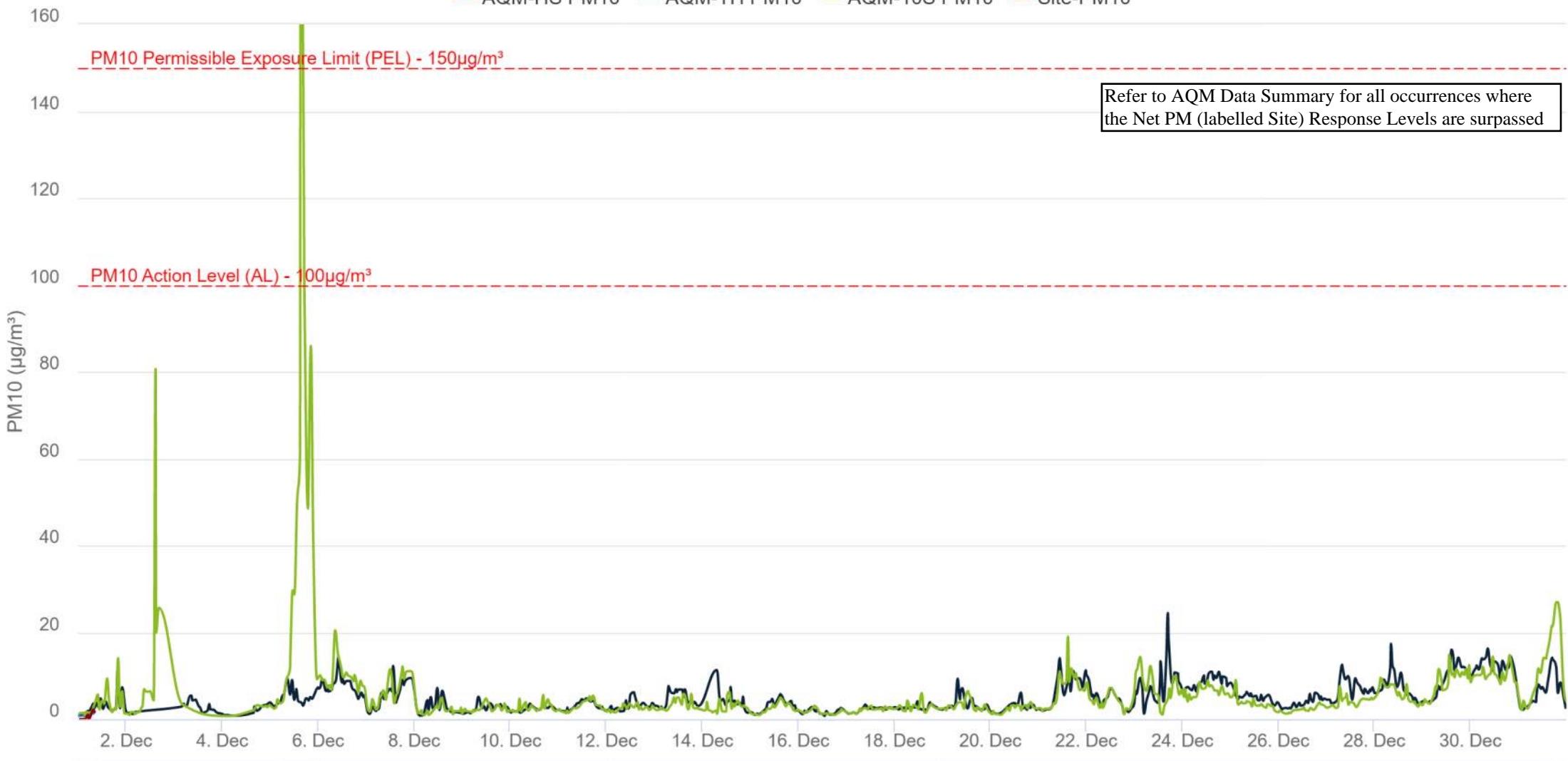
— AQM-HS PM2.5 — AQM-TH PM2.5 — AQM-10S PM2.5 — Site-PM2.5

Refer to AQM Data Summary for all occurrences where the Net PM (labelled Site) Response Levels are surpassed



Reach G, H & I - PM10 - 15 min Running avg. (December 2022)

— AQM-HS PM10 — AQM-TH PM10 — AQM-10S PM10 — Site-PM10



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](#)

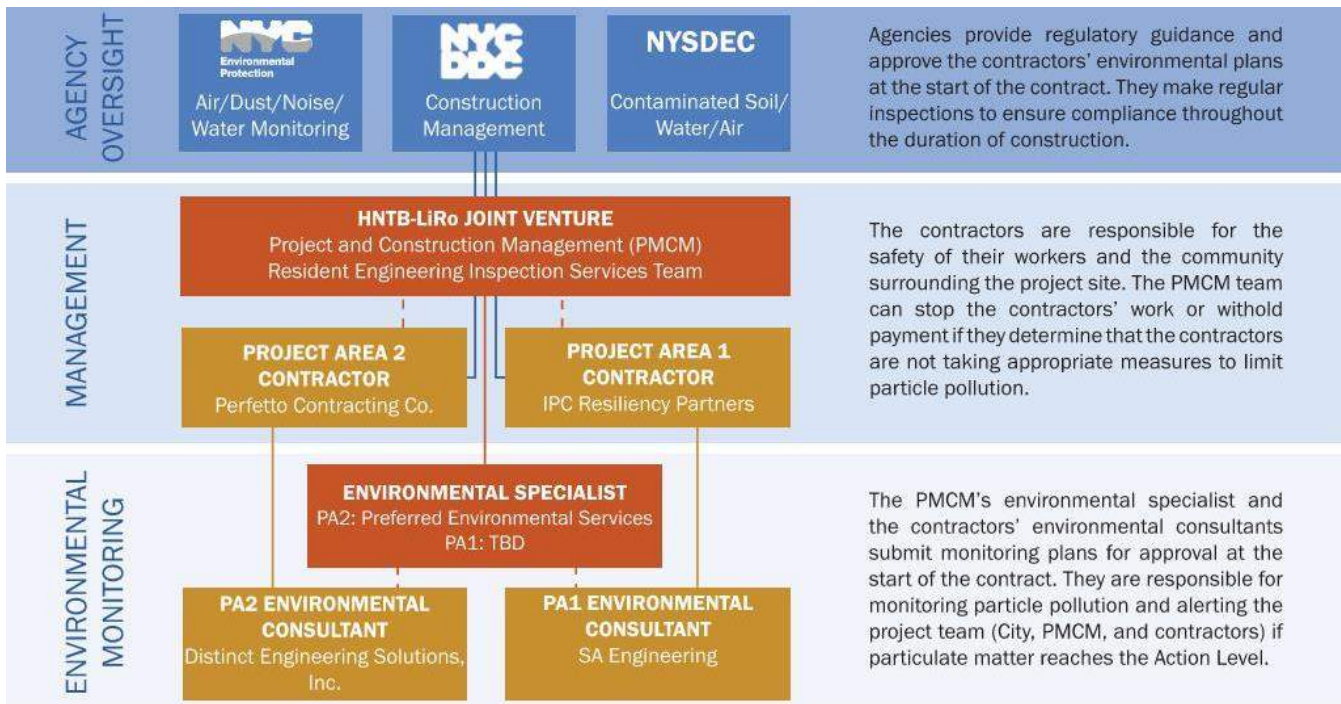


Fig.4 East Side Coastal Resiliency Air Quality Monitoring Flow Chart

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>