

EAST SIDE COASTAL RESILIENCY

SANDRESM1 | PROJECT AREA 1

AIR QUALITY MONITORING REPORT

Q2 | 2023

ISSUE DATE: SEPTEMBER 27, 2023

PERIOD COVERED: APRIL-JUNE 2023

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WITH DATA COLLECTED BY: SA ENGINEERING, LLC.

SUBCONSULTANT TO IPC RESILIENCY PARTNERS



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

TABLE OF CONTENTS

- PART 1** 3
- I. Air Quality Monitoring: Introduction 4
 - How to Read the Data Plots 6
- II. Executive Summary 8
 - Summary of Air Quality Monitoring Reports 11
- PART 2** 12
- Summary of Data April 2023 13
- APRIL 2023 DATA PLOTS 16
- Summary of Data May 2023 27
- MAY 2023 DATA PLOTS 29
- Summary of Data June 2023 40
- JUNE 2023 DATA PLOTS 42
- APPENDIX** 53
- I. ESCR Air Quality Management Program 54
- II. RESOURCES 56

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).

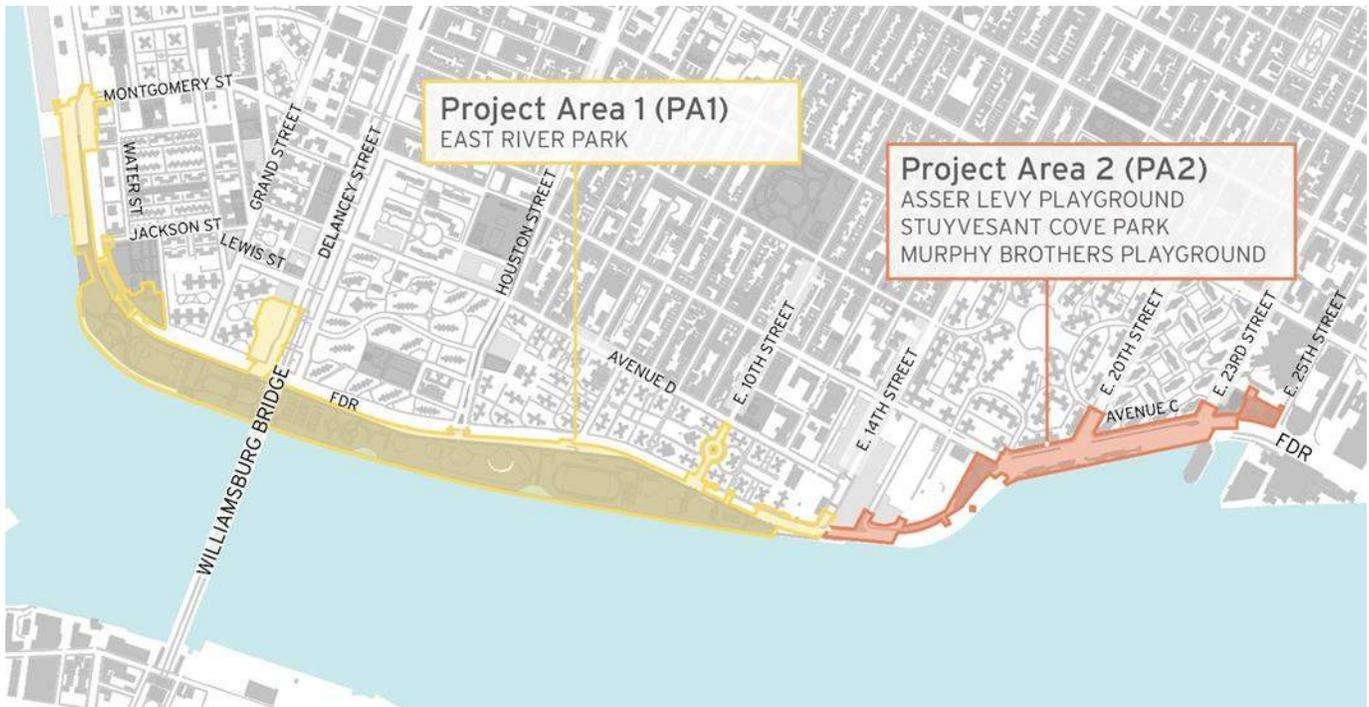


Fig.1 East Side Coastal Resiliency Project Areas

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.

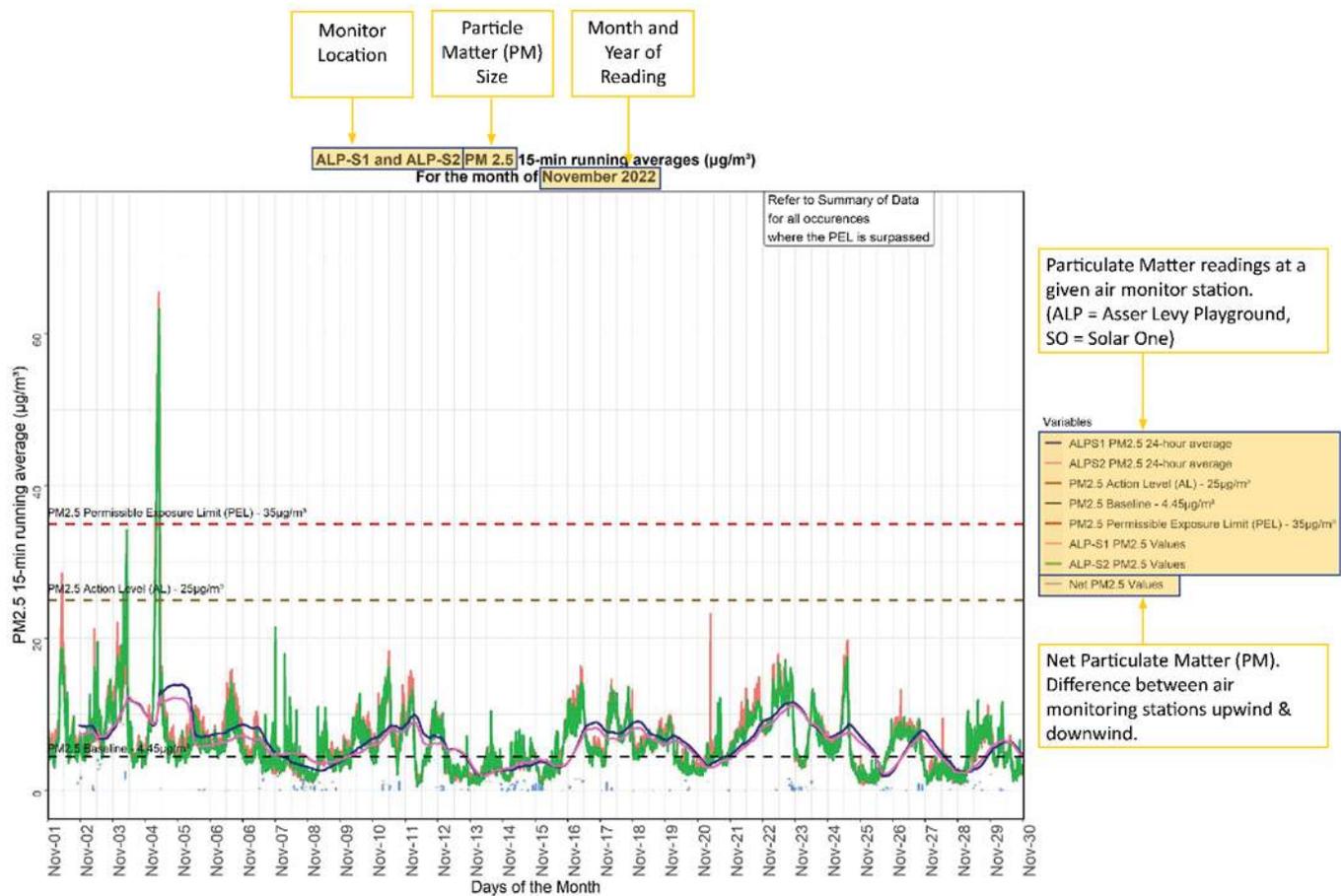


Fig.2 Sample Air Quality Data Plot

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) April through June 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 sixteen (16) 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 March 24, 2023.

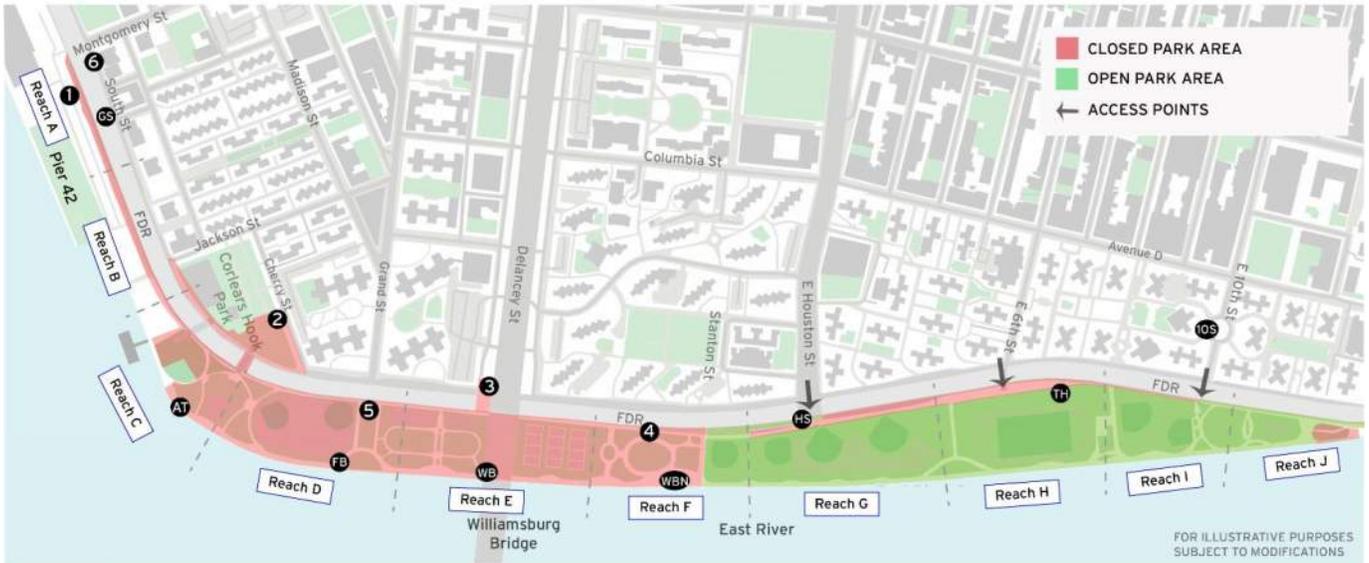


Fig.3A ESCR Project Area 1 Phase 1 Air Quality Monitoring Station Locations, as of January 13, 2023



Fig.3B ESCR Project Area 1 Phase 1 Air Quality Monitoring Station Locations, as of March 24, 2023

Due to construction activities, by March 24, 2023, the AQM-CH and AQM-CHR monitors were installed in Reach B at the location shown below; the monitor began recording upon installation. Figure 3B details the updated locations of the air quality monitoring stations.

Work Activities from April to June 2023:

Reach A* (April: 9:00 PM – 5:00 AM; April, 5/22 and 5/23, and 7:00 AM – 3:30 PM; Saturday 6/10):

- Con-Edison electric layout
- Remove Support of excavation, backfill, & restore pavement
- Install micropiles at roller gate monolith & place concrete for combi-wall pile caps
- Place concrete for pipe piles
- Install micropiles at Montgomery Street gate monolith
- Con-Edison support for management and protection of traffic

Reach B*:

- Carbon fiber wrapping
- Encapsulating Con-Edison utilities
- Carbon fiber testing & breakdown tent at carbon fiber at I-cap wall

Reach C:

- Excavate & shore interceptor sewer
- Install pre-cast box sewer, reinforced concrete pipe interceptor, & pull sheeting
- Set & install box sewer, and backfill

Reach D (3:30PM – 12:00 AM 6/5 – 6/23; Monday through Friday):

- Installing combi-wall piles & sheeting
- Marine support services
- Bulkhead demolition & timber pile extraction
- Pre-drill & drive combi-wall piles & sheeting
- Floodwall – obstruction probing

Reach E:

- Install precast box sewer
- Bulkhead demolition & timber pile extraction
- Floodwall obstruction probing
- Floodwall pre-drilling
- Electrical layout

Reach F:

- Remove header pipe & prep area for fill
- Assembly of pier cap platform for pier cap repairs
- Demolition & timber pile extraction

East 10th Street:

- Electrical vault demolition & duct bank layout
- Electrical layout

Houston Street (3:00 PM – 11:00 PM; 6/5-6/7 & 6/12):

- Timber pile extraction

*: 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 April-June 2023, construction-related levels of PM at both net PM2.5 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. Air quality impacts including 24-hour TWA exceedance from Canadian wildfires were observed during multiple days in June 2023.

April 2023:

- PM2.5 levels surpassed the PEL (15-minute TWA) at AQM-1 on April 13 and April 27; AQM-CHR on April 12, April 16, April 17, April 18, April 20, April 21, April 25, April 26, and April 27; AQM-5 on May 9 and May 10; AQM-WB on April 2; AQM-FB on April 7; AQM-5 on April 27 and April 28; AQM-WBN on April 6; AQM-4 on April 21, April 25, and April 28; and AQM-HS on April 12.
- PM10 levels surpassed the PEL (15-minute TWA) at AQM-1 on April 10 and April 13; AQM-CHR on April 12, April 16, April 17, April 18, April 20, April 21, April 25, April 26, and April 27; AQM-WB on April 2, AQM-FB on 4/19; AQM-WBN on April 6 and April 12; and AQM-4 on April 25.

May 2023:

- PM2.5 levels surpassed the PEL (15-minute TWA) at AQM-1 on May 23, May 24, and May 31; AQM-CHR on May 7, May 10, May 11, May 12, May 15, May 16, and May 24; AQM-CH on May 10; AQM-WB on May 12 and May 15; AQM-FB on May 15 and May 16; AQM-5 on May 9, May 10, May 15, May 18, and May 23; and AQM-4 on May 5, May 10, May 15, and May 26.
- PM10 levels surpassed the PEL (15-minute TWA) at AQM-1 on May 14, May 24, and May 29; AQM-CHR on May 3, May 6, May 7, May 10, May 11, May 12, May 15, May 16, and May 24; AQM-CH on May 10 and May 15; AQM-FB on May 12; AQM-WB on May 12, May 15, and May 23; and AQM-5 on May 15 and May 31.

June 2023*:

- PM2.5 levels surpassed the PEL (15-minute TWA) at AQM-1 on June 2, June 3, June 10, June 20, and June 28; AQM-CHR on June 1, June 5, June 12, June 25, and June 28; AQM-WB on June 1, AQM-FB on June 2 and June 21; and AQM-4 on June 20.
- PM10 levels surpassed the PEL (15-minute TWA) at AQM-1 on June 2, June 20, and June 28; AQM-CHR on June 6/1, June 5, June 16, June 25, and June 28; AQM-WB on June 1; AQM-FB on June 21; and AQM-4 on June 20.

*: Particulates from the Canadian wildfire impacted air quality city and state-wide and are discussed in the summary of the data for June 2023.

Baselines:

- PM10 baseline air quality at the site were previous determined to be between 0.149 and 5.00 $\mu\text{g}/\text{m}^3$
- PM2.5 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 April 2023

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

- AQM-1 on 4/13 for 8 minutes
- AQM-6 on 4/27 for 28 minutes;
- AQM-CHR on 4/12 for 16, 4/16 for 28 minutes and 15 minutes, 4/17 for 31 minutes, 4/20 for 77 minutes, 4/21 for 30 minutes, 4/25 for 15 minutes, 4/26 for 17 minutes and 16 minutes, and 4/27 for 15 minutes;
- AQM-WB on 4/2 for 16 minutes;
- AQM-FB on 4/17 for 15 minutes;
- AQM-5 on 4/27 for 33 minutes and 4/28 for 33 minutes;
- AQM-WBN on 4/6 for 22 minutes;
- AQM-4 on 4/21 for 17 minutes, 4/25 for 22 minutes, and 4/28 for 22 minutes; and
- AQM-HS on 4/12 for 18 minutes

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

- AQM-1 on 4/10 for 16 minutes and 4/16 for 8 minutes;
- AQM-CHR on 4/12 for 15 minutes and 18 minutes, 4/16 for 25 minutes and 15 minutes, 4/17 for 32 minutes, 4/18 for 15 minutes, 4/20 for 81 minutes, 4/21 for 32 minutes, 4/25 for 30 minutes, 4/26 for 18 minutes and 21 minutes, and 4/27 for 21 minutes;
- AQM-WB on 4/2 for 16 minutes;
- AQM-FB on 4/17 for 15 minutes;
- AQM-WBN on 4/6 for 12 minutes and 4/12 for 15 minutes; and
- AQM-4 on 4/25 for 20 minutes.

For the month of April 2023, PM net 2.5 levels were surpassed on 4/2, 4/6, 4/12, 4/13, 4/15, 4/16, 4/17, 4/20, 4/21, 4/25, 4/26, 4/27, and 4/28. PM net 10 were exceeded on 4/2, 4/6, 4/10, 4/11, 4/12, 4/13, 4/15, 4/16, 4/17, 4/18, 4/19, 4/20, 4/21, 4/25, 4/26, and 4/27.

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

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 21 occasions (4/2, 4/12, 4/13, 4/16, 4/17, 4/20, 4/21, 4/25, 4/26, 4/27, and 4/28) for between 8 and 77 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 4/13 were related to the movement of materials onsite. A water truck was deployed to mitigate airborne dust.
 - AQM-6 is located near the site at Montgomery Street and South Street; the elevated readings on 4/27 was related to onsite construction activities. A water truck was deployed to mitigate airborne dust.
 - AQM-CHR is located on the construction access road/shared use path in Reach B.
 - Elevated readings on 4/12, 4/17, 4/20, 4/26, and 4/27 were related to offsite construction activity under a different contract. A water truck was deployed to mitigate airborne dust.
 - Elevated readings on 4/16, 4/21, and 4/25 were related to traffic on the FDR. 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 4/2 were related condensation on the unit sensor and is considered anomalous. No mitigation was required.
- AQM-FB is located in the vicinity of the Fire Boat House; the elevated readings from 4/17 occurred in the vicinity of a moored construction barge outside of construction hours.
- AQM-5 is located south of the Williamsburg Bridge near the construction trailers onsite; the elevated readings on 4/27 and 4/28 were related to construction activities in the vicinity of the monitor. A water truck was deployed to mitigate airborne dust.
- AQM-WBN is north of the Williamsburg Bridge; the elevated reading on 4/6 was related to construction activities in the vicinity of the monitor. A water truck was deployed to mitigate airborne dust.
- AQM-4 is located adjacent to the shared use path/construction access road; the elevated readings on 4/21, 4/25, and 4/28 were related to traffic on the FDR. 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 4/12 were caused by construction vehicles in the vicinity of the monitor. A water truck was deployed to mitigate airborne dust.

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

- PM 10 $\mu\text{g}/\text{m}^3$ levels surpassed the PEL (15-minute TWA) 19 occasions (4/2, 4/10, 4/12, 4/13, 4/16, 4/17, 4/18, 4/20, 4/21, 4/25, 4/26, and 4/27) for between 8 and 81 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 4/10 were related condensation on the unit sensor and is considered anomalous. No mitigation was required.
 - Elevated readings on 4/13 were related to the movement of materials onsite. A water truck was deployed to mitigate airborne dust.
 - AQM-CHR is located on the construction access road/shared use path in Reach B.
 - Elevated readings on 4/12, 4/17, 4/20, 4/26, and 4/27 were related to offsite construction activity under a different contract. A water truck was deployed to mitigate airborne dust.
 - Elevated readings on 4/16 and 4/21 were related to traffic on the FDR. A water truck was deployed to mitigate airborne dust.
 - Elevated readings on 4/18 and 4/21 were related to the onsite construction activities. 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 4/2 were related condensation on the unit sensor and is considered anomalous. No mitigation is required.
 - AQM-FB is located in the vicinity of the Fire Boat House; the elevated readings from 4/17 occurred in the vicinity of a moored construction barge outside of construction hours.
 - AQM-WBN is north of the Williamsburg Bridge; the elevated readings on 4/6 and 4/12 was related to construction activities in the vicinity of the monitor. A water truck was deployed to mitigate airborne dust.
 - AQM-4 is located adjacent to the shared use path/construction access road; the elevated readings on 4/25 were related to traffic on the FDR. A water truck was deployed to mitigate airborne dust.

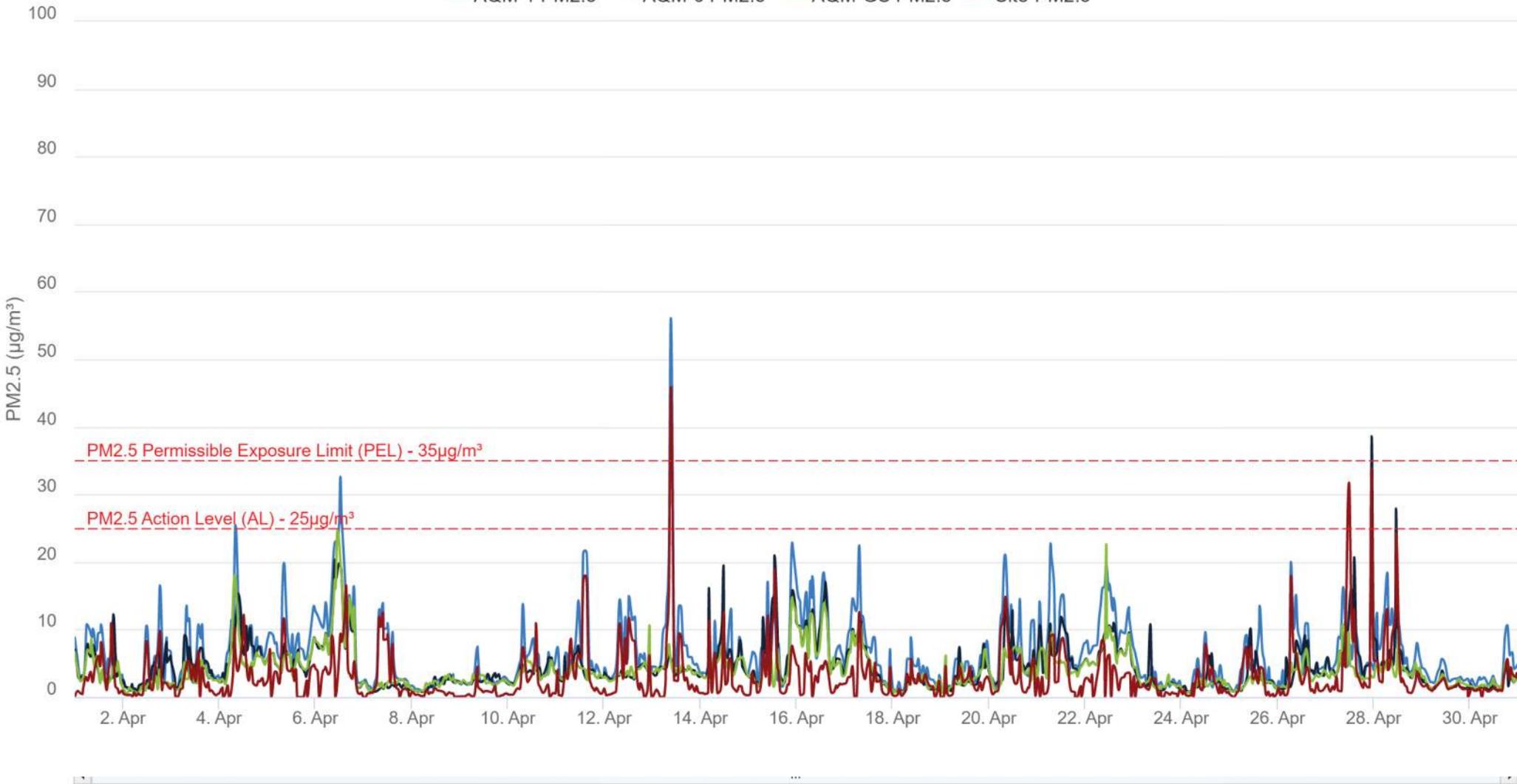
Mitigation Measures

- 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.

APRIL 2023 DATA PLOTS

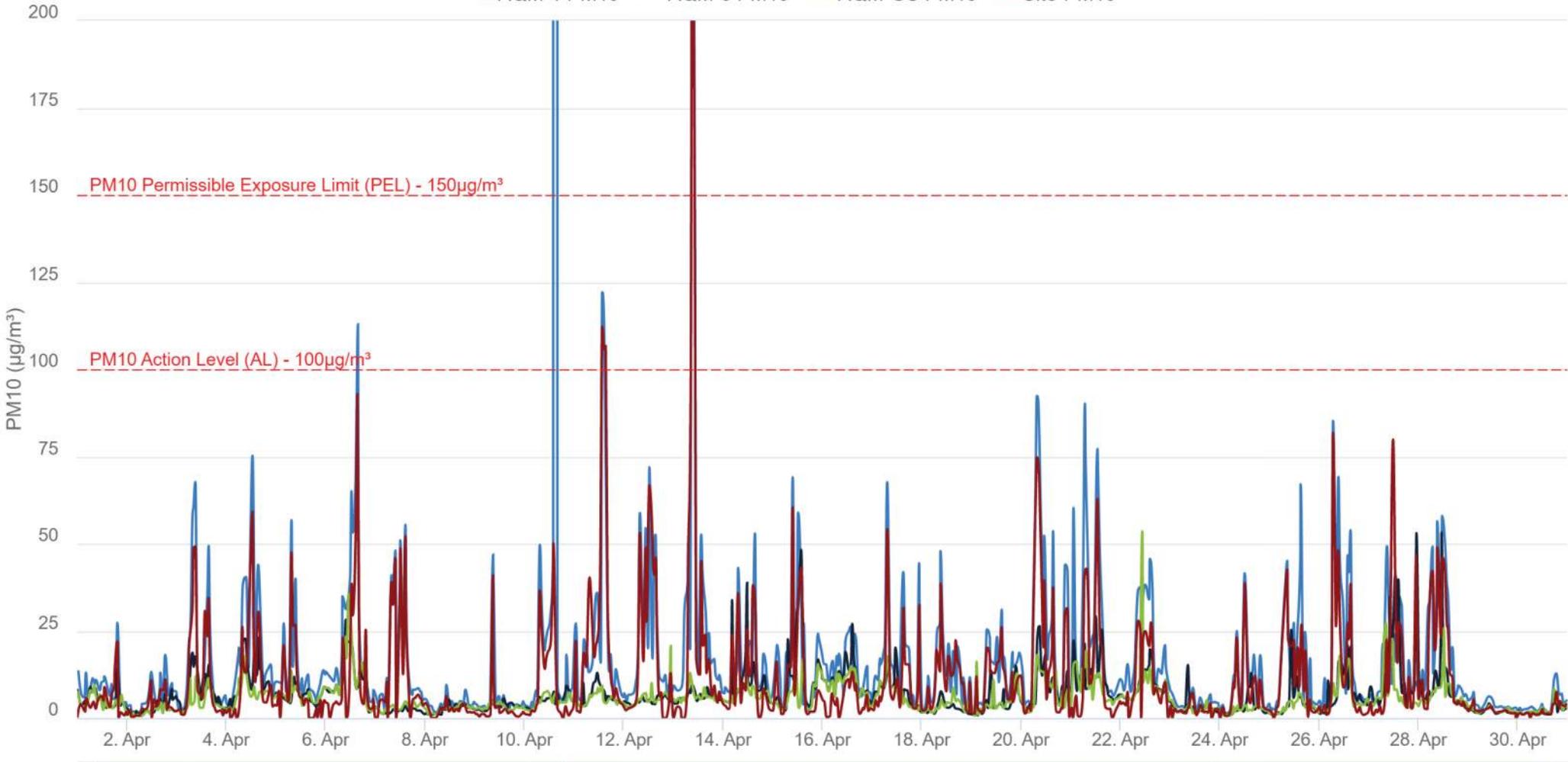
Reach A - PM2.5 - 15 min Running avg. (April 2023)

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



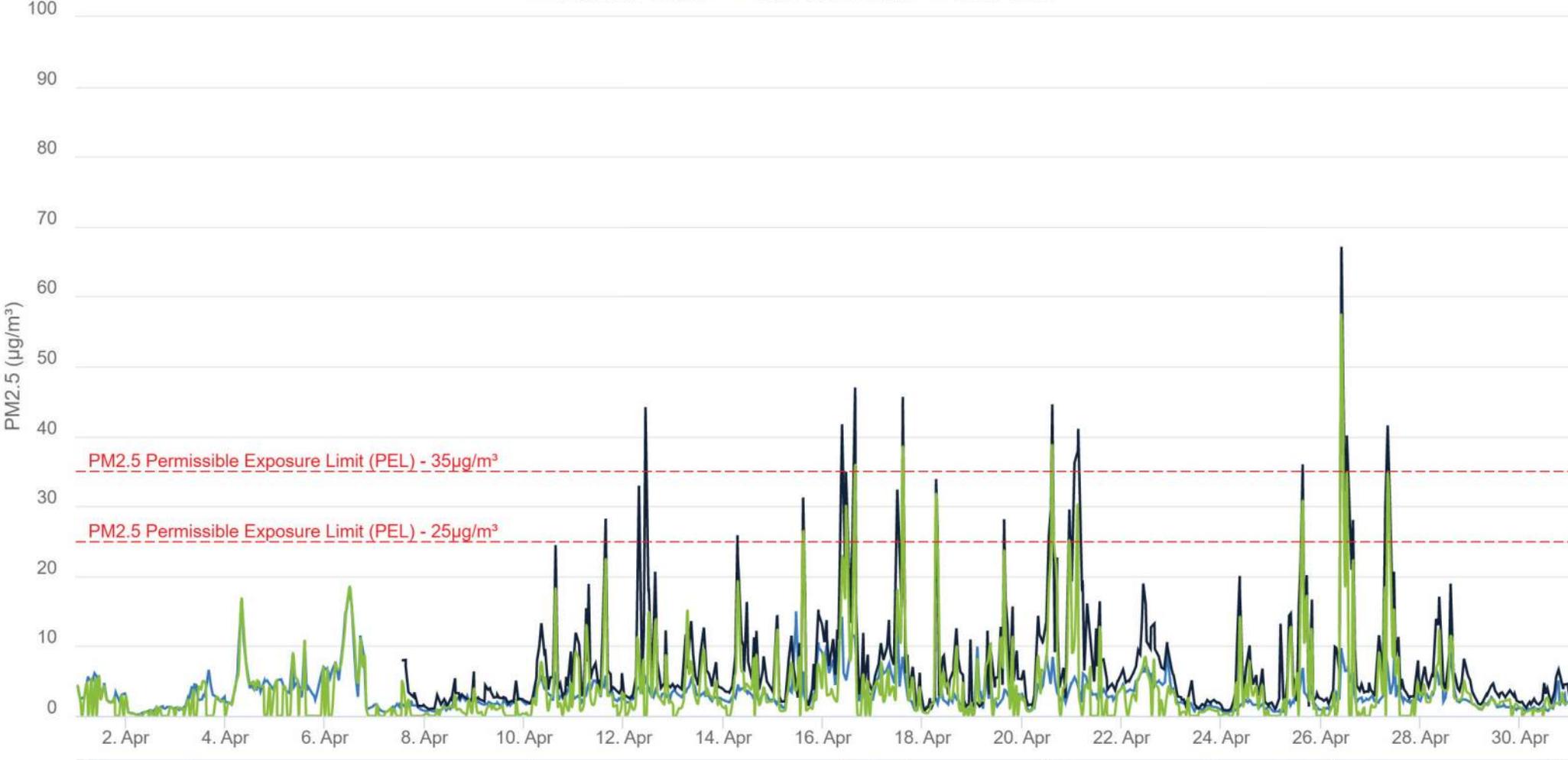
Reach A - PM10 - 15 min Running Avg. (April 2023)

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



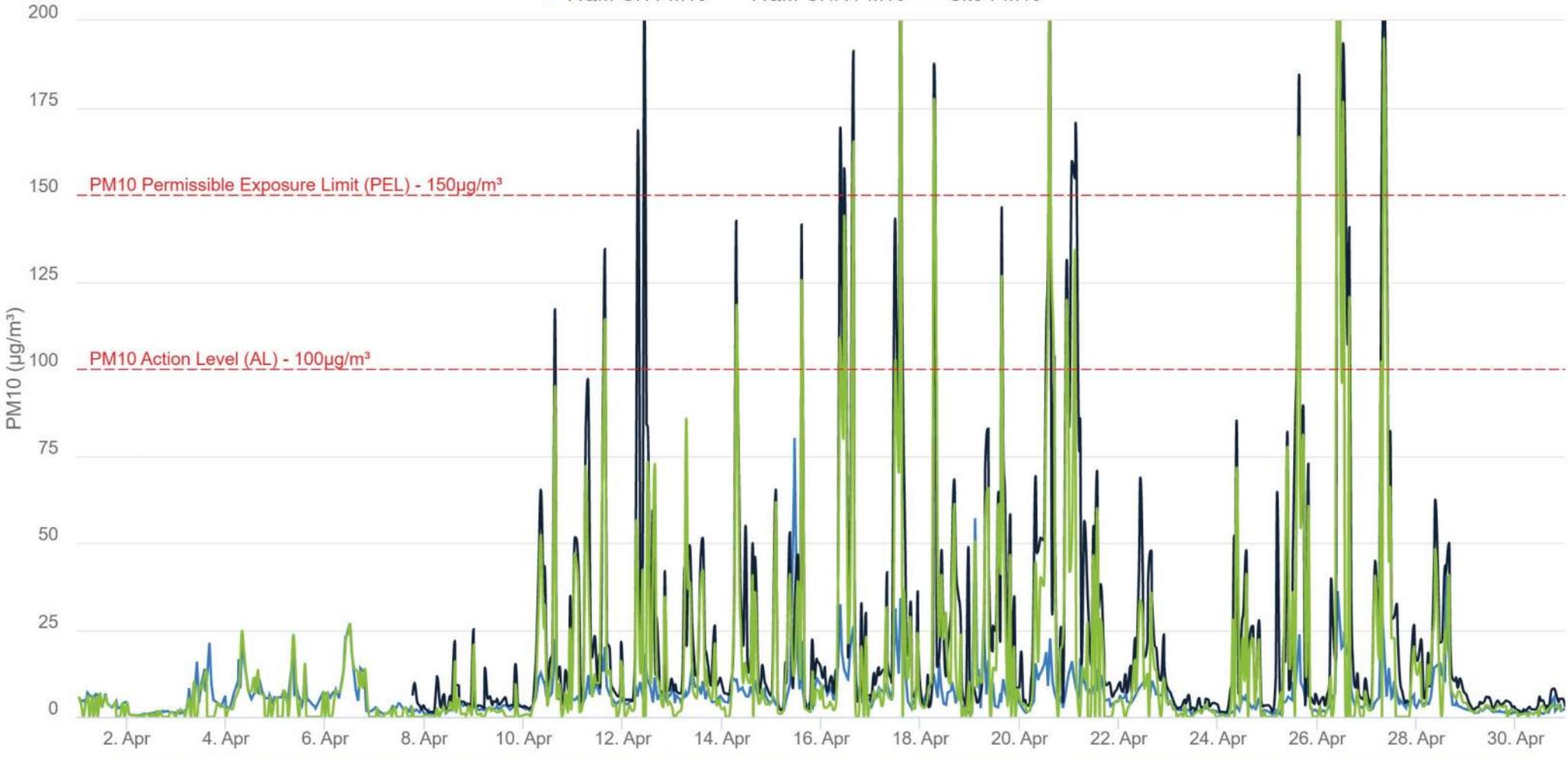
Reach B - PM2.5 - 15 min Running Avg. (April 2023)

— AQM-CH PM2.5 — AQM-CHR PM2.5 — Site-PM2.5



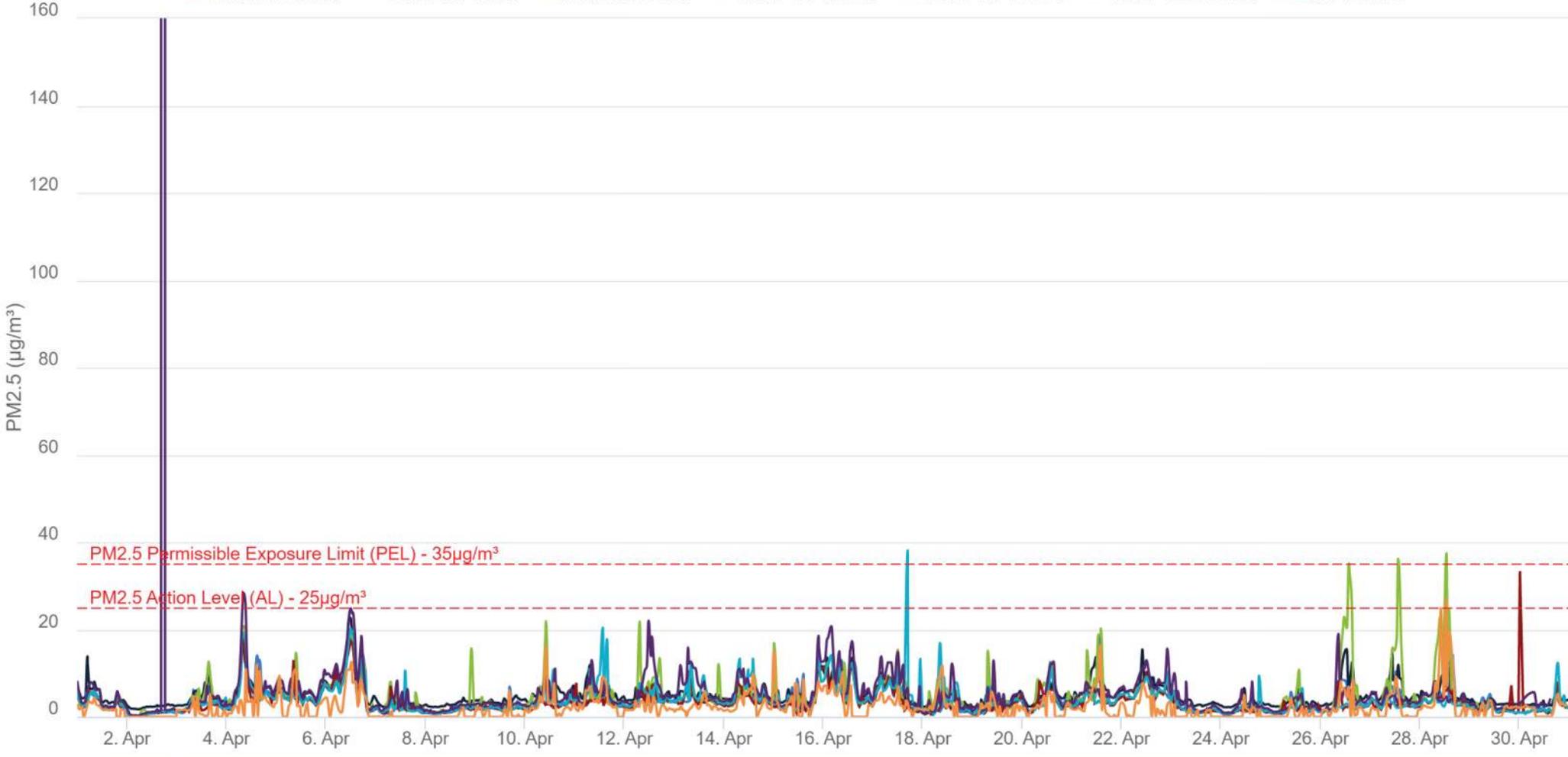
Reach B - PM10 - 15 min Running avg. (April 2023)

— AQM-CH PM10 — AQM-CHR PM10 — Site-PM10



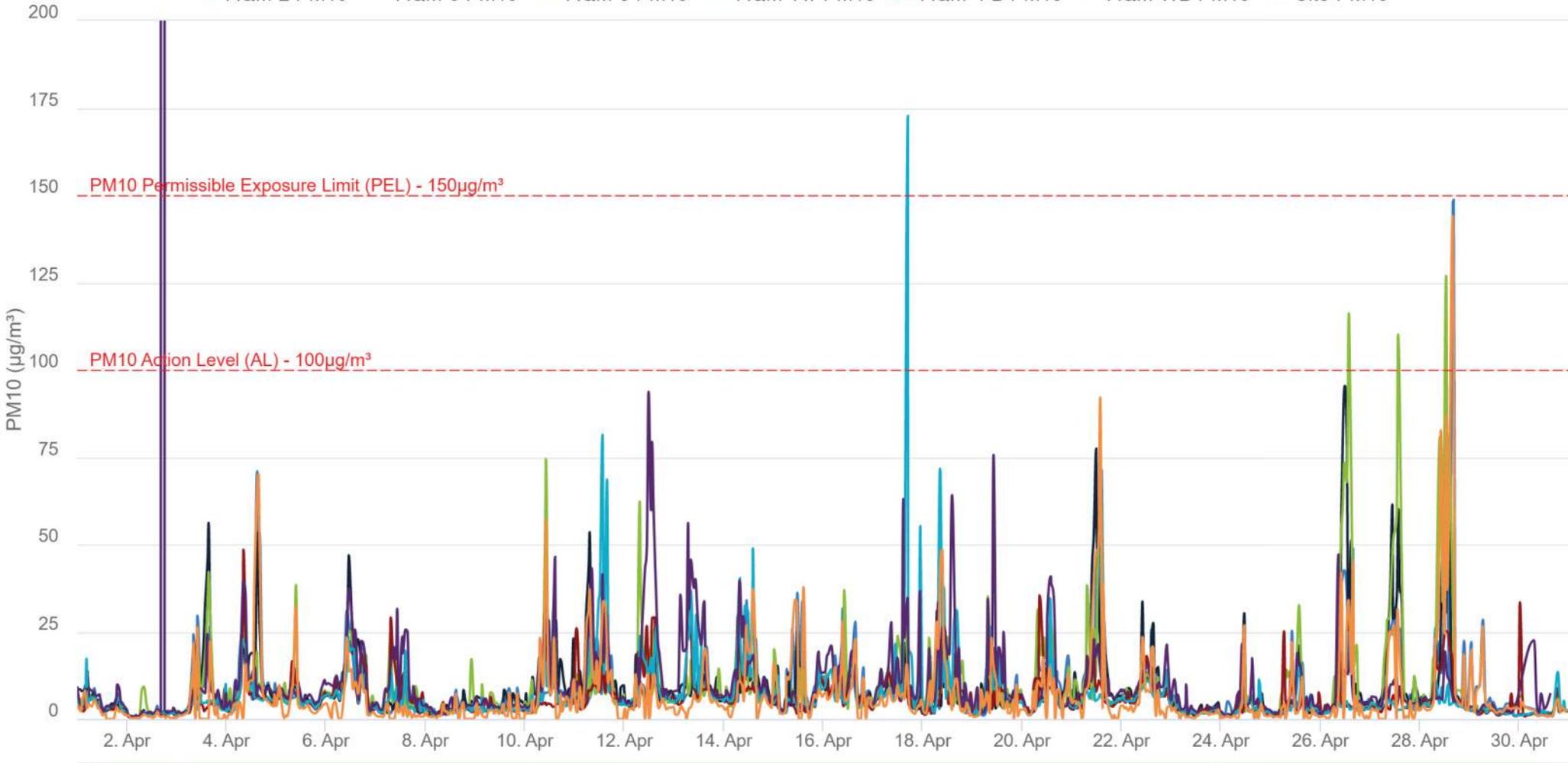
Reach C,D,& E - PM2.5 - 15 min Running Avg. (April 2023)

— 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



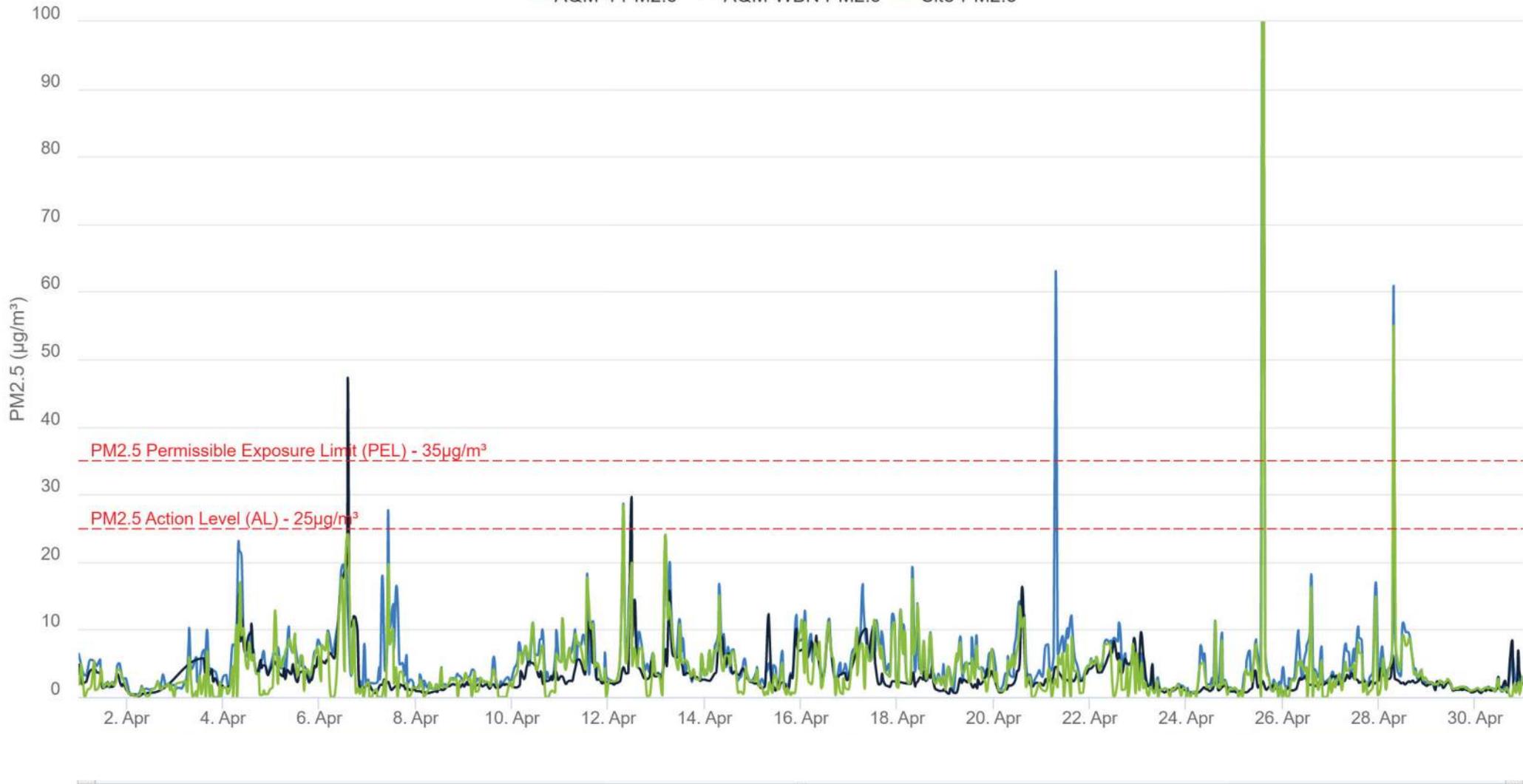
Reach C,D,& E - PM10 - 15 min Running avg. (April 2023)

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

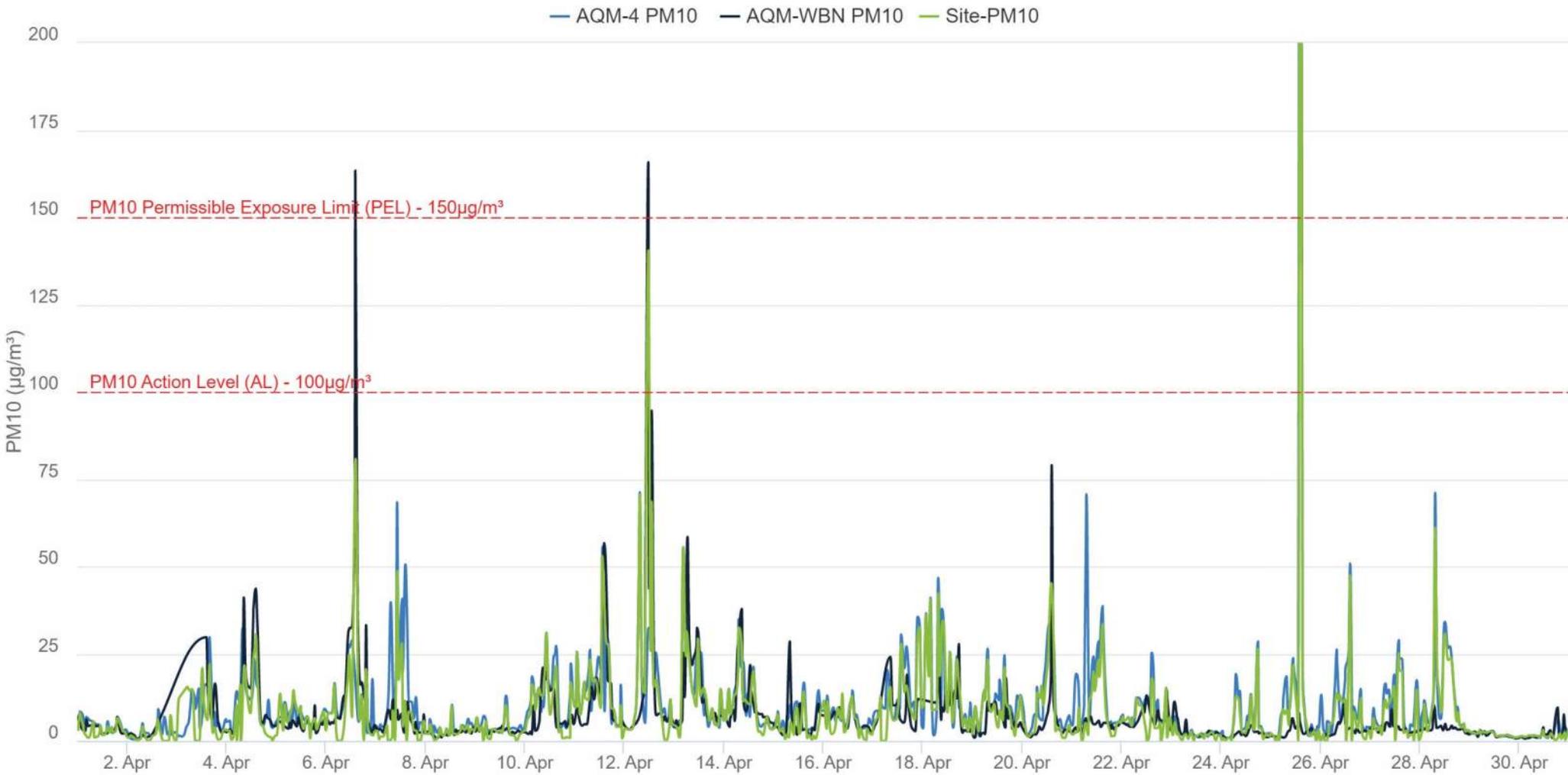


Reach F - PM2.5 - 15 min Running avg. (April 2023)

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

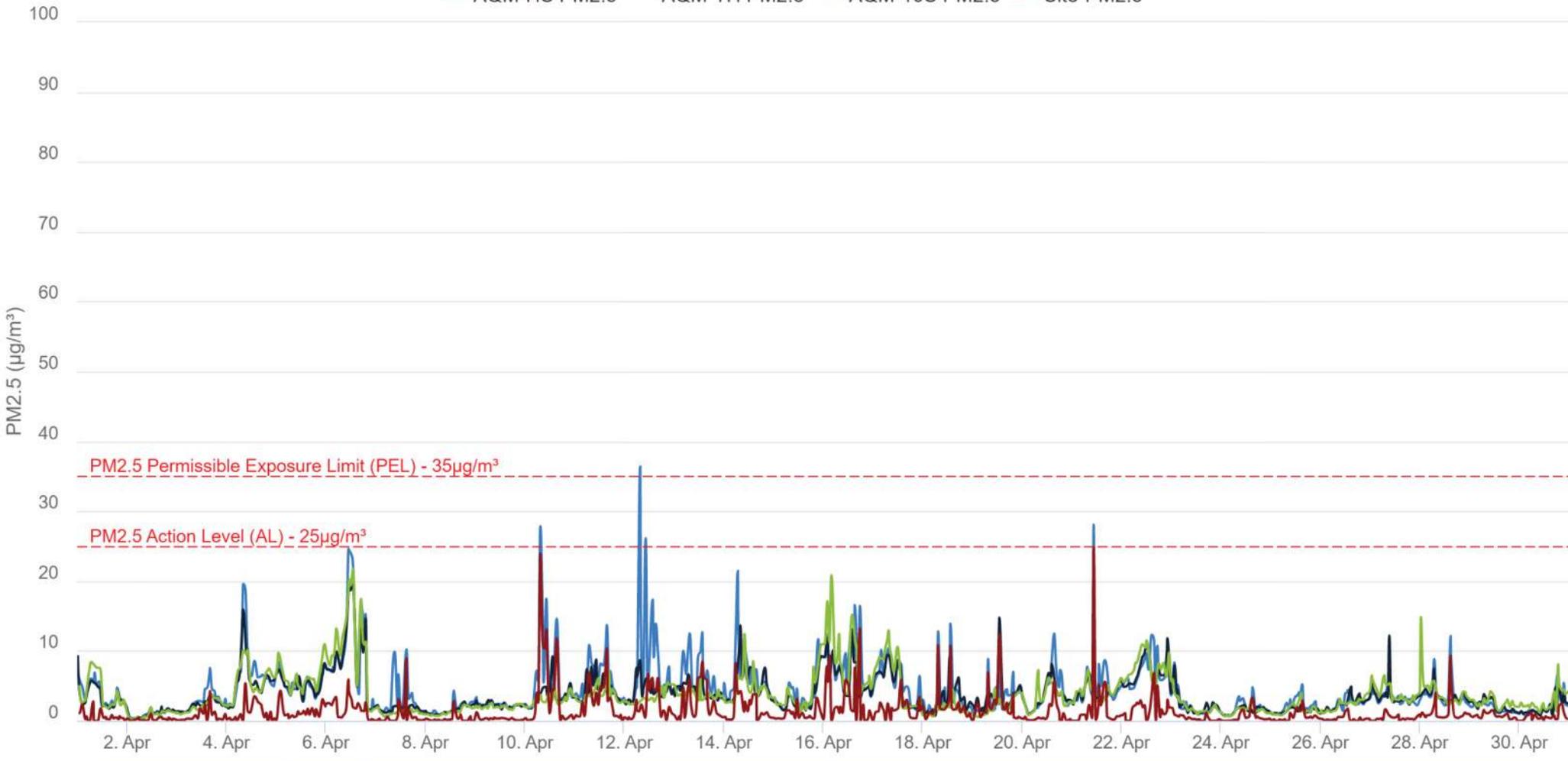


Reach F - PM10 - 15 min Running avg. (April 2023)



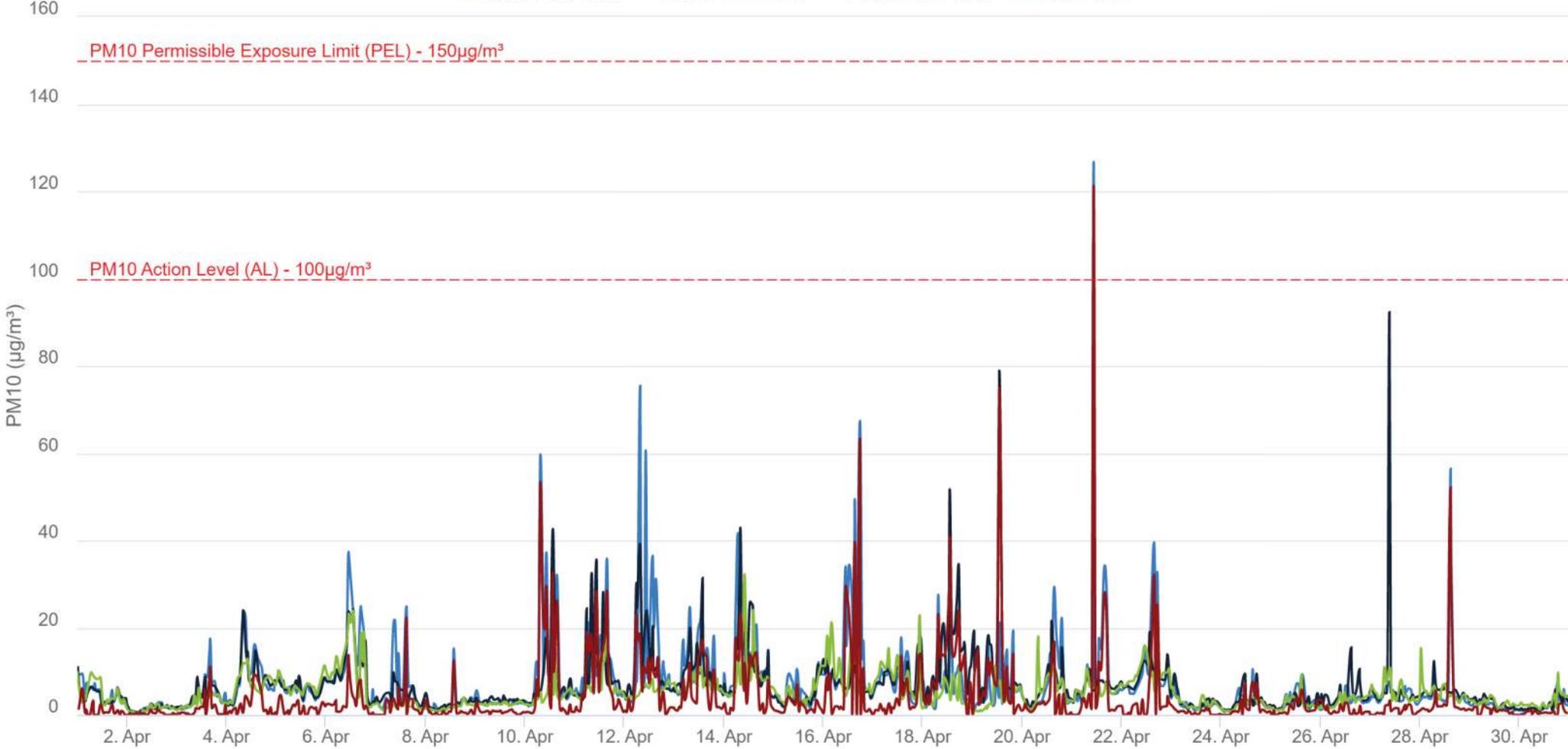
Reach G, H & I - PM2.5 - 15 min Running avg. (April 2023)

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



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

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



Summary of Data May 2023

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

- AQM-1 on 5/23 for 16 minutes, 5/ 24 for 21 minutes, 5/ 31 for 14 minutes;
- AQM-CHR on 5/7 for 22 minutes, 5/10 for 70 minutes and 46 minutes, 5/11 for 8 minutes, 24 minutes, and 28 minutes, 5/12 for 17 minutes and 19 minutes, 5/15 for 45 minutes and 14 minutes; 5/16 for 59 minutes and 30 minutes, and 5/24 for 14 minutes and 36 minutes;
- AQM-CH on 5/10 for 46 minutes;
- AQM-5 on 5/9 for 16 minutes, 5/10 for 48 minutes, 5/15 for 69 minutes and 17 minutes, 5/18 for 22 minutes, and 5/23 for 2 minutes;
- AQM-FB on 5/15 for 51 minutes and 5/ 16 for 35 minutes;
- AQM-WB on 5/12 for 16 minutes, 5/15 for 45 minutes; and
- AQM-4 on 5/5 for 28 minutes, 5/10 for 31 minutes, 5/15 for 19 minutes, and 5/26 for 17 minutes.

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

- AQM-1 on 5/14 for 21 minutes, 5/24 for 20 minutes, and 5/29 for 14 minutes;
- AQM-CHR on 5/3 for 26 minutes, 5/6 for 17 minutes, 5/7 for 26 minutes, 5/10 for 70 minutes, 5/11 for 8 minutes, 24 minutes, and 15 minutes, 5/12 for 19 minutes, 5/15 got 45 minutes, 17 minutes, 32 minutes, and 16 minutes, 5/16 for 79 minutes, 17 minutes, ad 32 minutes, and 5/24 for 15 minutes and 45 minutes;
- AQM-CH on 5/10 for 46 minutes and 5/15 for 42 minutes;
- AQM-FB on 5/12 for 19 minutes;
- AQM-WB on 5/12 for 15 minutes, 5/15 for 104 minutes, and 5/31 for 1 minute; and
- AQM-5 on 5/23 for 2 minutes.

For the month of May 2023, PM net 2.5 levels were exceeded on 5/5, 5/6, 5/7, 5/10, 5/11, 5/14, 5/15, 5/16, 5/17, 5/19, 5/23, 5/24, and 5/26. PM net 10 levels were exceeded on 5/3, 5/5, 5/6, 5/7, 5/10, 5/11, 5/14, 5/15, 5/16, 5/17, 5/18, 5/19, 5/24, and 5/29.

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

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

- PM 2.5 $\mu\text{g}/\text{m}^3$ levels surpassed the PEL on 25 occasions (5/5, 5/7, 5/10, 5/11, 5/12, 5/15, 5/16, 5/18, 5/23, 5/24, 5/26, and 5/31) for between 2 and 70 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 5/23, 5/24, and 5/31 were related to offsite construction activity under a different contract.
 - AQM-CHR is located on the construction access road/shared use path in Reach B.
 - Elevated readings on 5/7, 5/11 and 5/12 were related to vehicle traffic on the FDR.
 - Elevated readings on 5/10, 5/11, 5/15, 5/16, and 5/24 were related to offsite construction activity under a different contract. A water truck was deployed to mitigate airborne dust.
 - AQM-CH is located on Jackson Street adjacent to the FDR; the elevated readings on 5/10 were most likely related to traffic on the FDR.
 - AQM-5 is located south of the Williamsburg Bridge near the construction trailers onsite.

- Elevated readings on 5/9, 5/10, 5/15, and 5/18 were related to idling construction vehicles and construction activities in the vicinity of the monitor. A water truck was deployed to mitigate airborne dust.
 - Elevated readings on 5/23 were caused by vehicle traffic onsite and on the FDR.
- AQM-WB is in the vicinity of the Williamsburg Bridge along the East River; the elevated readings on 5/12 and 5/15 were due to onsite construction activities. A water truck was deployed to mitigate airborne dust.
- AQM-FB is located in the vicinity of the Fire Boat House; the elevated readings on 5/15 and 5/16 were due to onsite construction activities. 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 5/5, 5/10, 5/15, and 5/26 were caused by vehicle traffic onsite and on the FDR. A water truck was deployed to mitigate airborne.

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

- PM 10 $\mu\text{g}/\text{m}^3$ levels surpassed the PEL on 24 occasions (5/3, 5/6, 5/7, 5/10, 5/11, 5/12, 5/14, 5/15, 5/16, 5/23, 5/24, 5/29, and 5/31) for between 1 and 104 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 5/14 were related were related to traffic on the FDR.
 - Elevated readings on 5/24 and 5/29 were related to offsite construction activity under a different contract.
 - AQM-CHR is located on the construction access road/shared use path in Reach B.
 - Elevated readings on 5/7 and 5/11 were related to vehicle traffic on the FDR.
 - Elevated readings on 5/3, 5/6, 5/10, 5/11, 5/12, 5/15, 5/16, and 5/24 were related to offsite construction activity under a different contract. A water truck was deployed to mitigate airborne dust.
 - AQM-CH is located on Jackson Street adjacent to the FDR; the elevated readings on 5/15 related to offsite construction activity under a different contract.
 - AQM-5 is located south of the Williamsburg Bridge near the construction trailers onsite.
 - Elevated readings on 5/15 were related to idling construction vehicles and construction activities in the vicinity of the monitor. A water truck was deployed to mitigate airborne dust.
 - Elevated readings on 5/23 were caused by vehicle traffic onsite and on the FDR.
 - AQM-WB is in the vicinity of the Williamsburg Bridge along the East River; the elevated readings on 5/12, 5/15, and 5/31 were due to onsite construction activities. A water truck was deployed to mitigate airborne dust.
 - AQM-FB is located in the vicinity of the Fire Boat House; the elevated readings on 5/12 were due to onsite construction activities. A water truck was deployed to mitigate airborne dust.

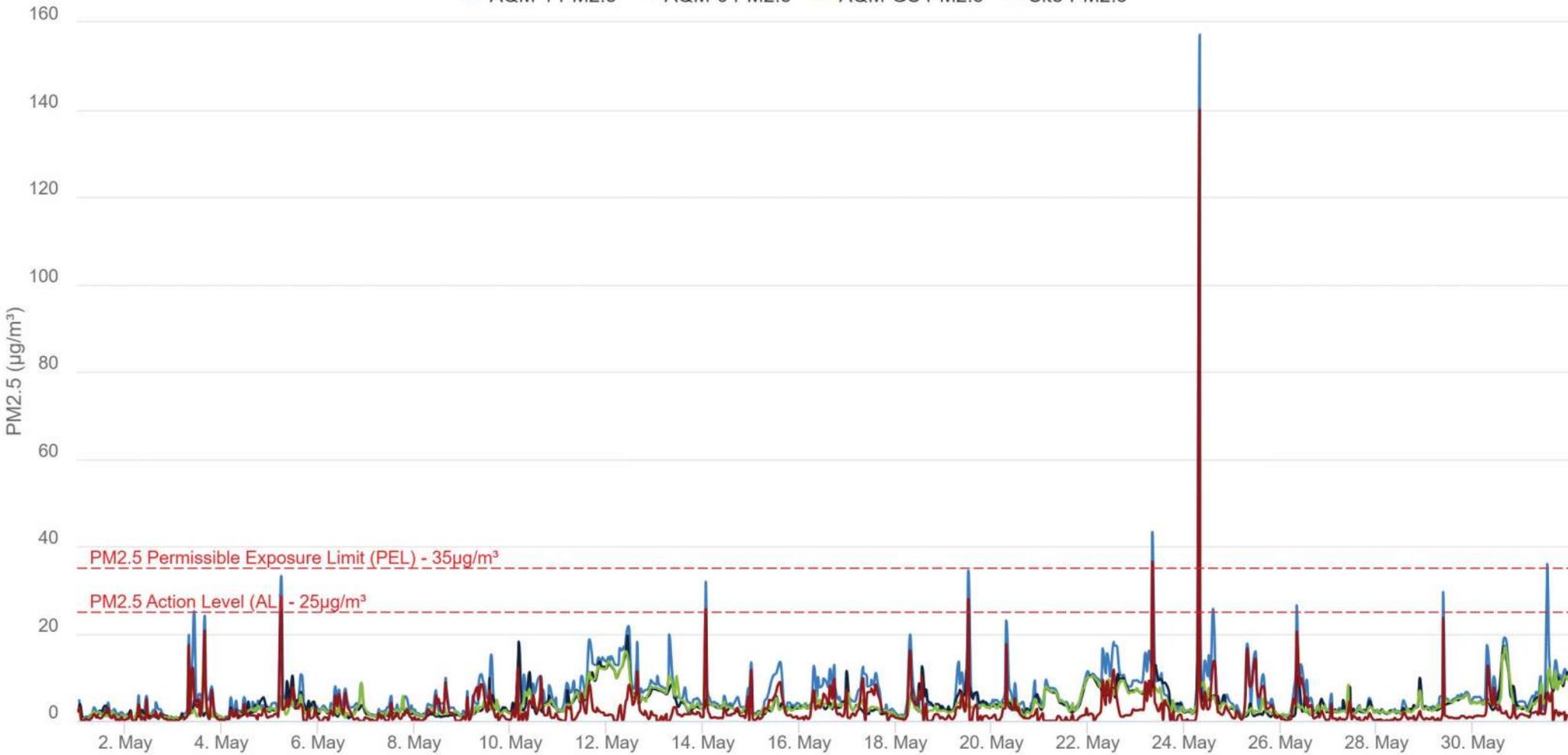
Mitigation Measures:

- 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.

MAY 2023 DATA PLOTS

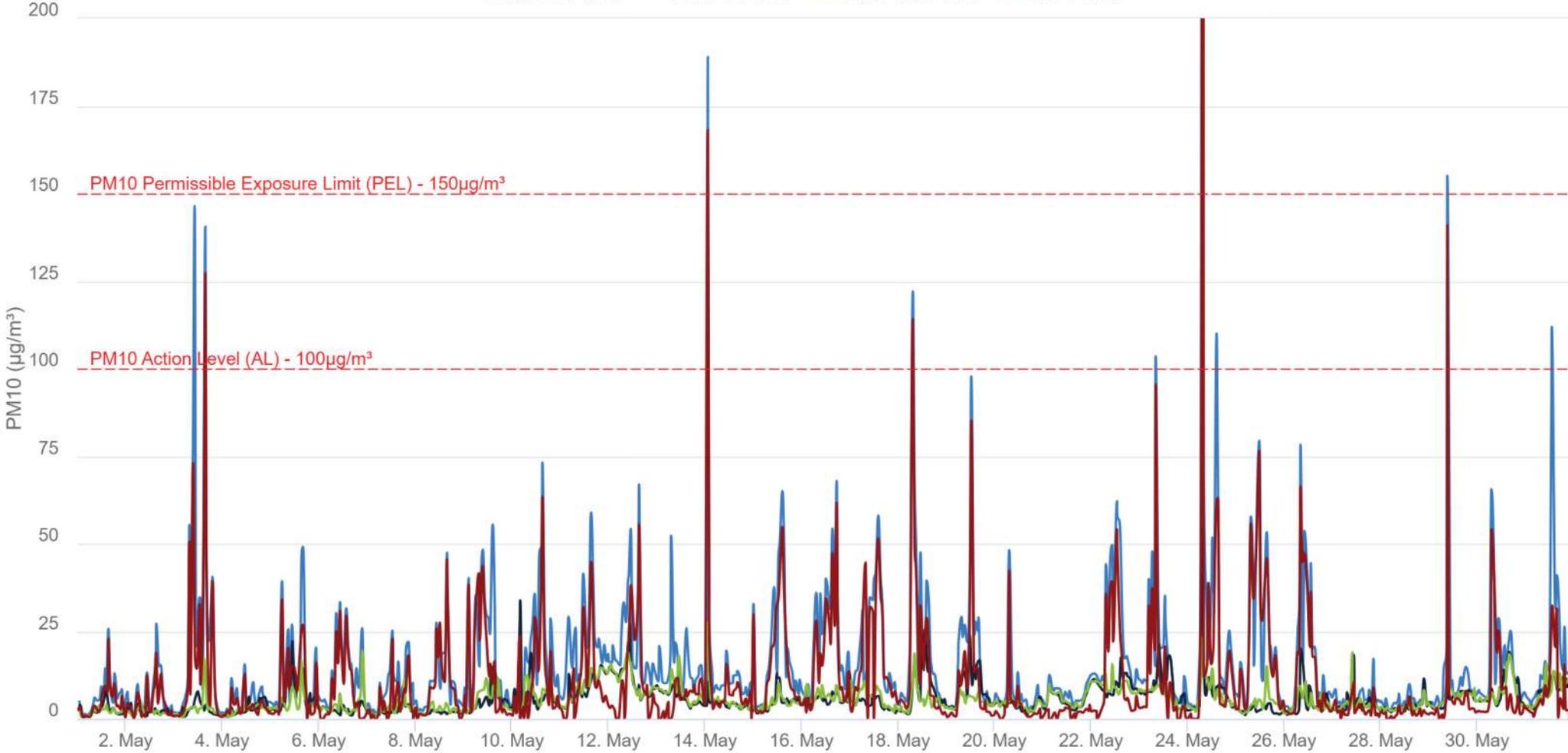
Reach A - PM2.5 - 15 min Running avg. (May 2023)

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

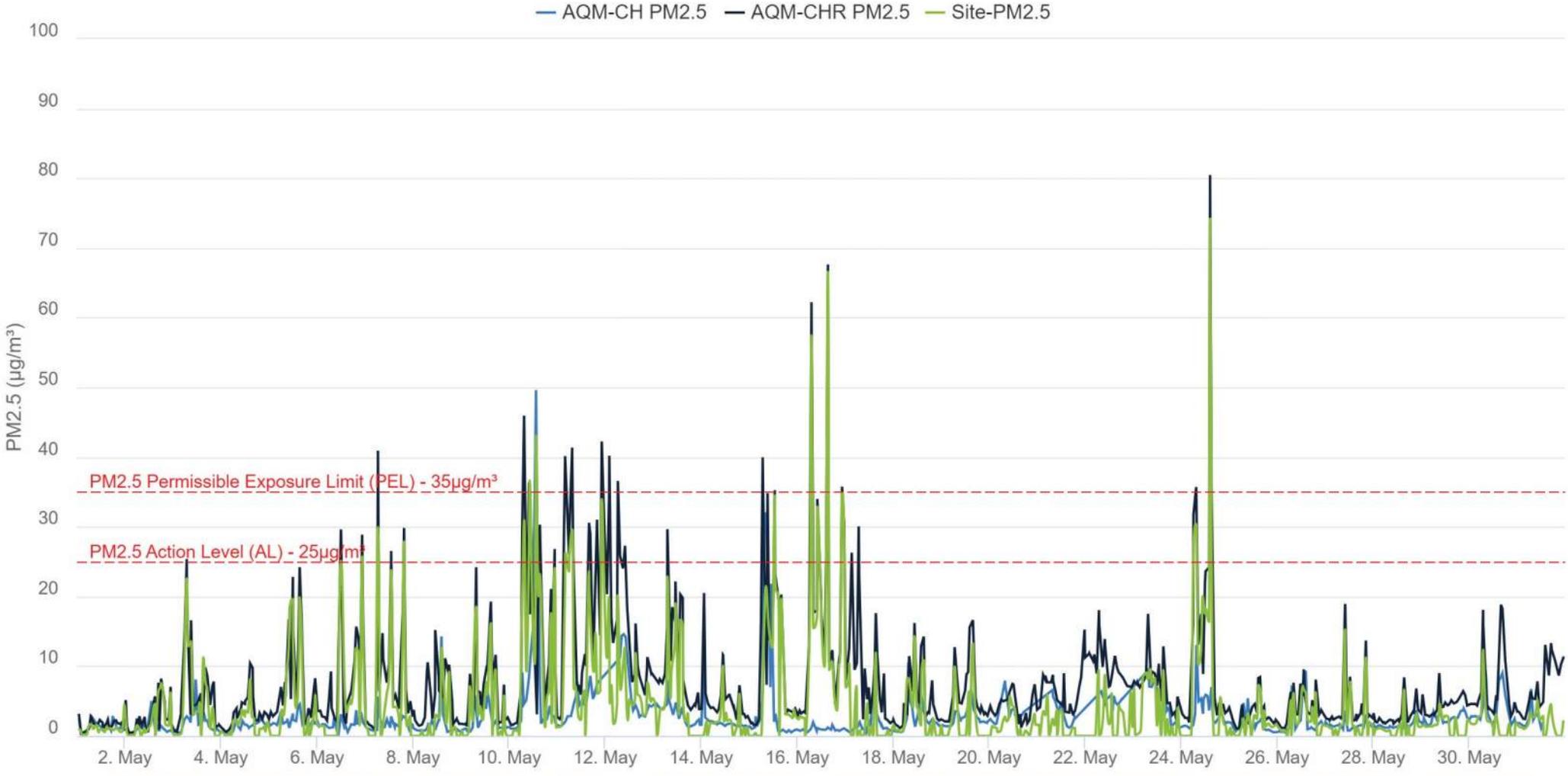


Reach A - PM10 - 15 min Running Avg. (May 2023)

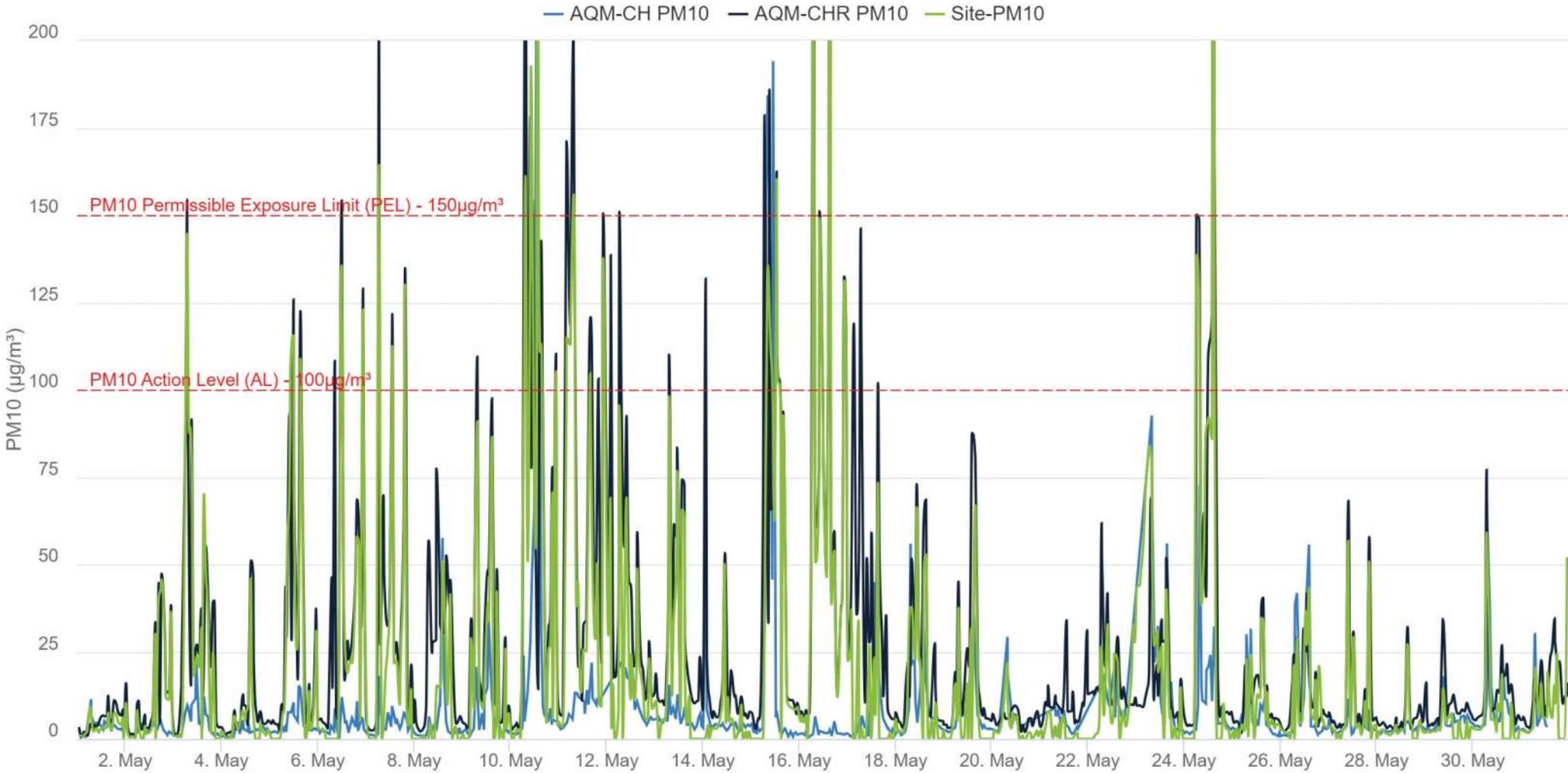
— AQM-1 PM10 — AQM-6 PM10 — AQM-GS PM10 — Site-PM10



Reach B - PM2.5 - 15 min Running Avg. (May 2023)

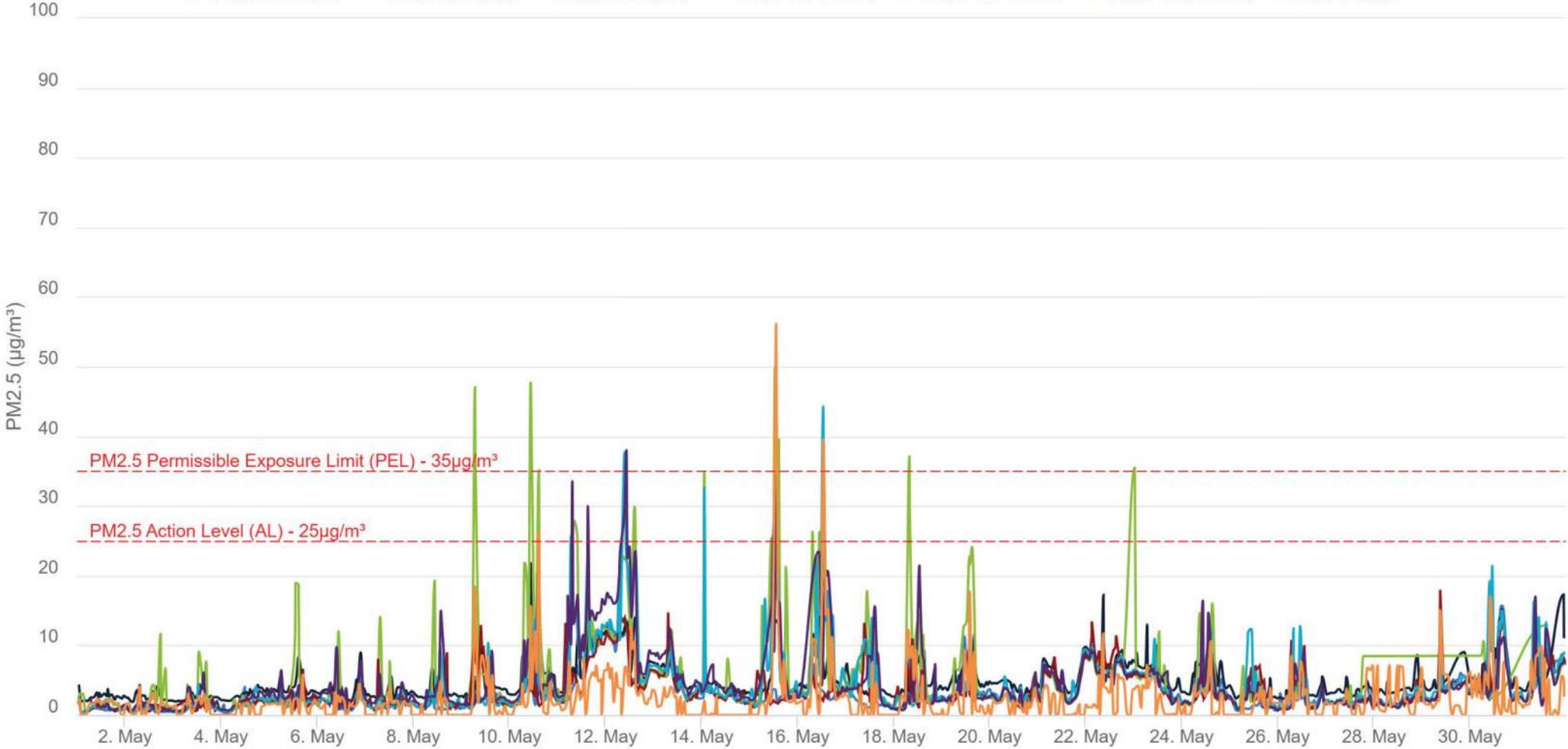


Reach B - PM10 - 15 min Running avg. (May 2023)



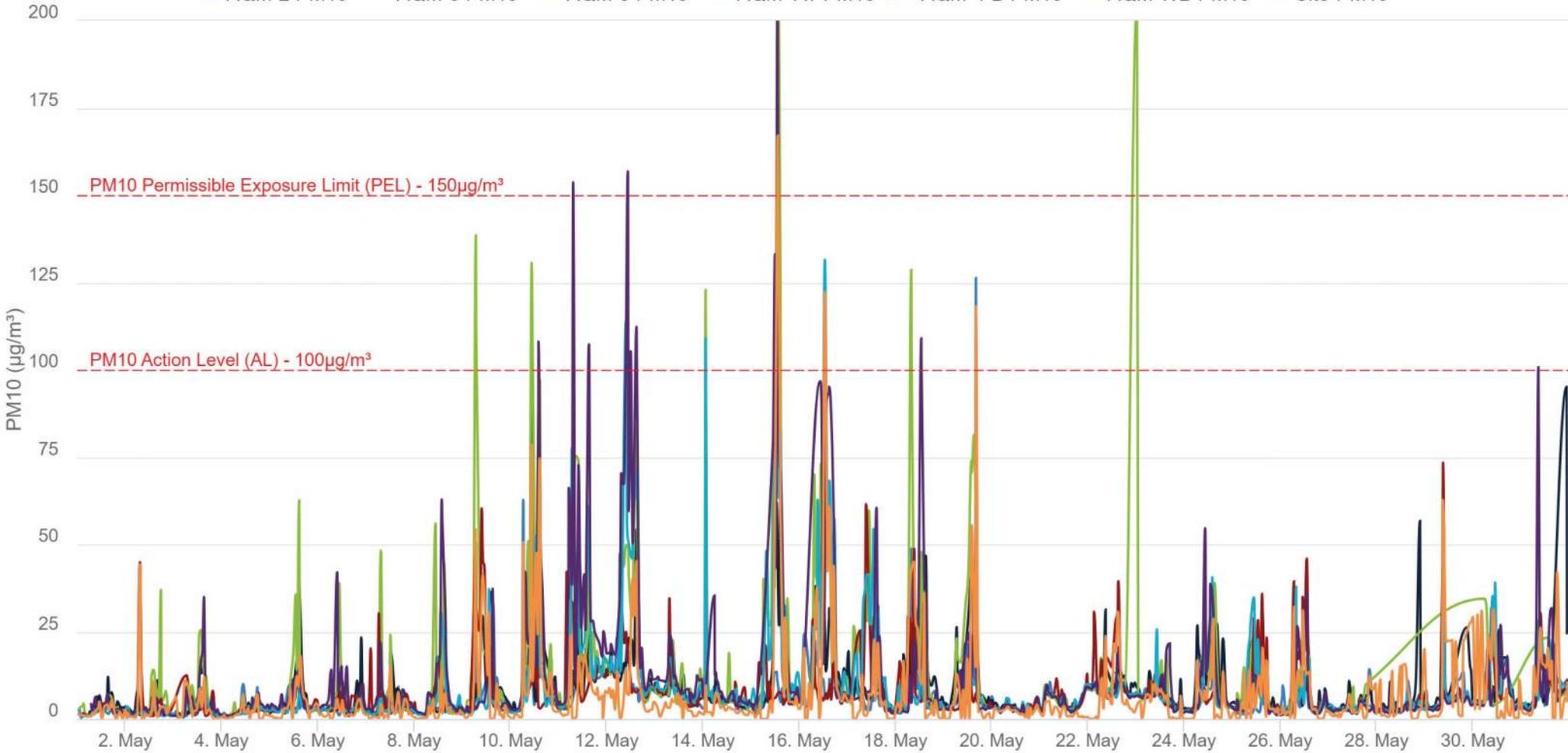
Reach C,D,& E - PM2.5 - 15 min Running Avg. (May 2023)

— 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

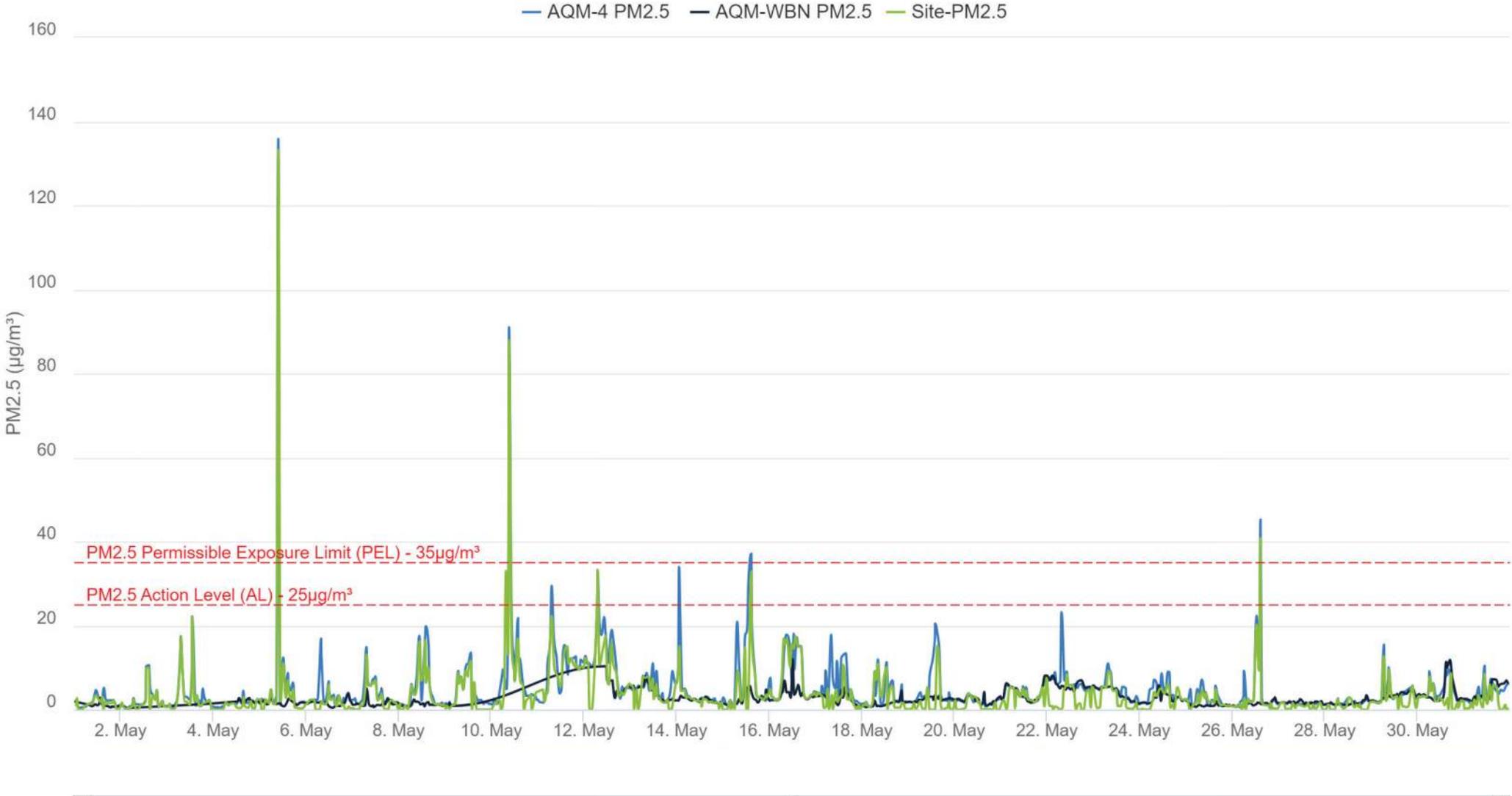


Reach C,D,& E - PM10 - 15 min Running avg. (May 2023)

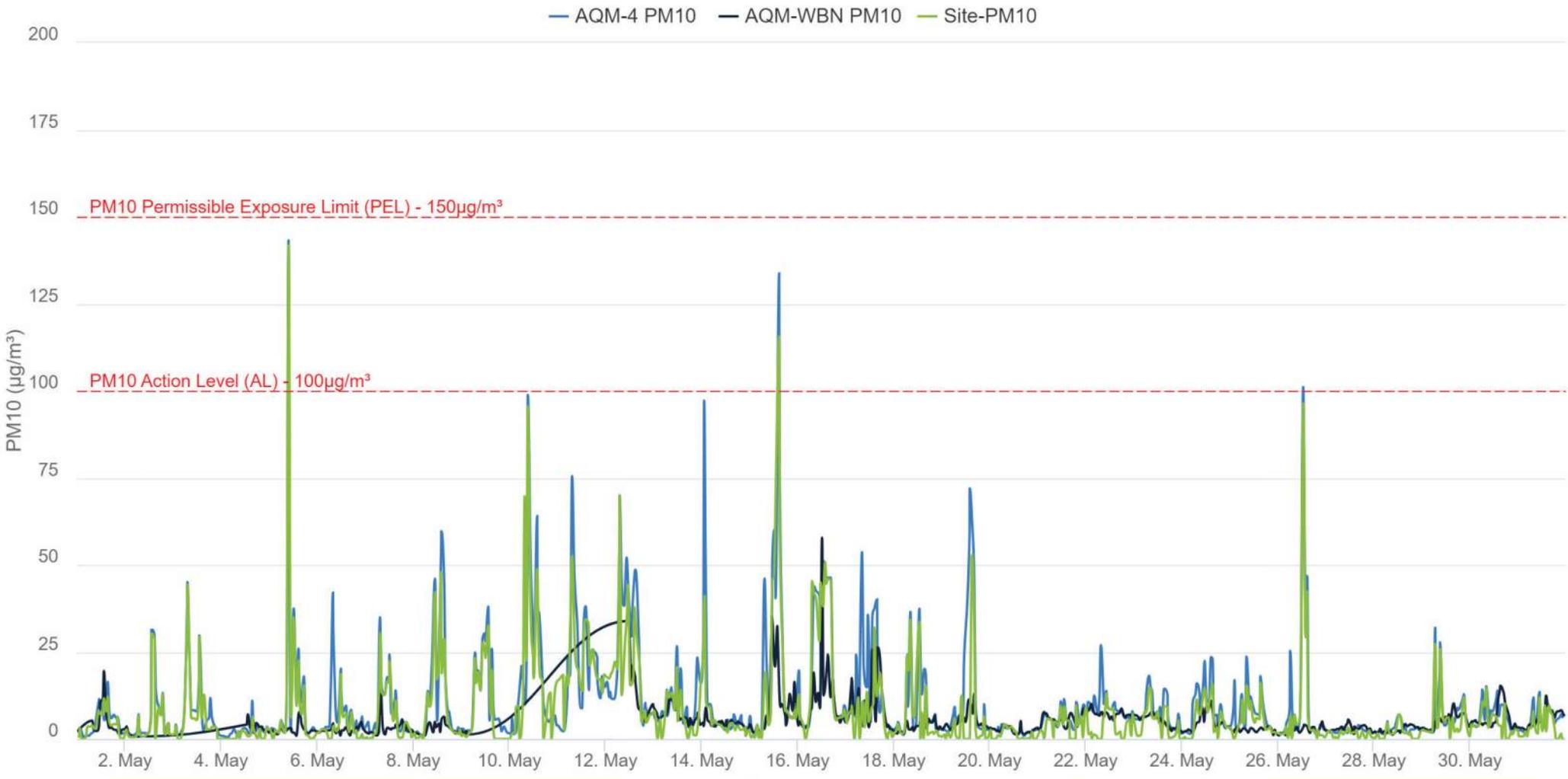
— AQM-2 PM10 — AQM-3 PM10 — AQM-5 PM10 — AQM- AT PM10 — AQM- FB PM10 — AQM-WB PM10 — Site-PM10



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

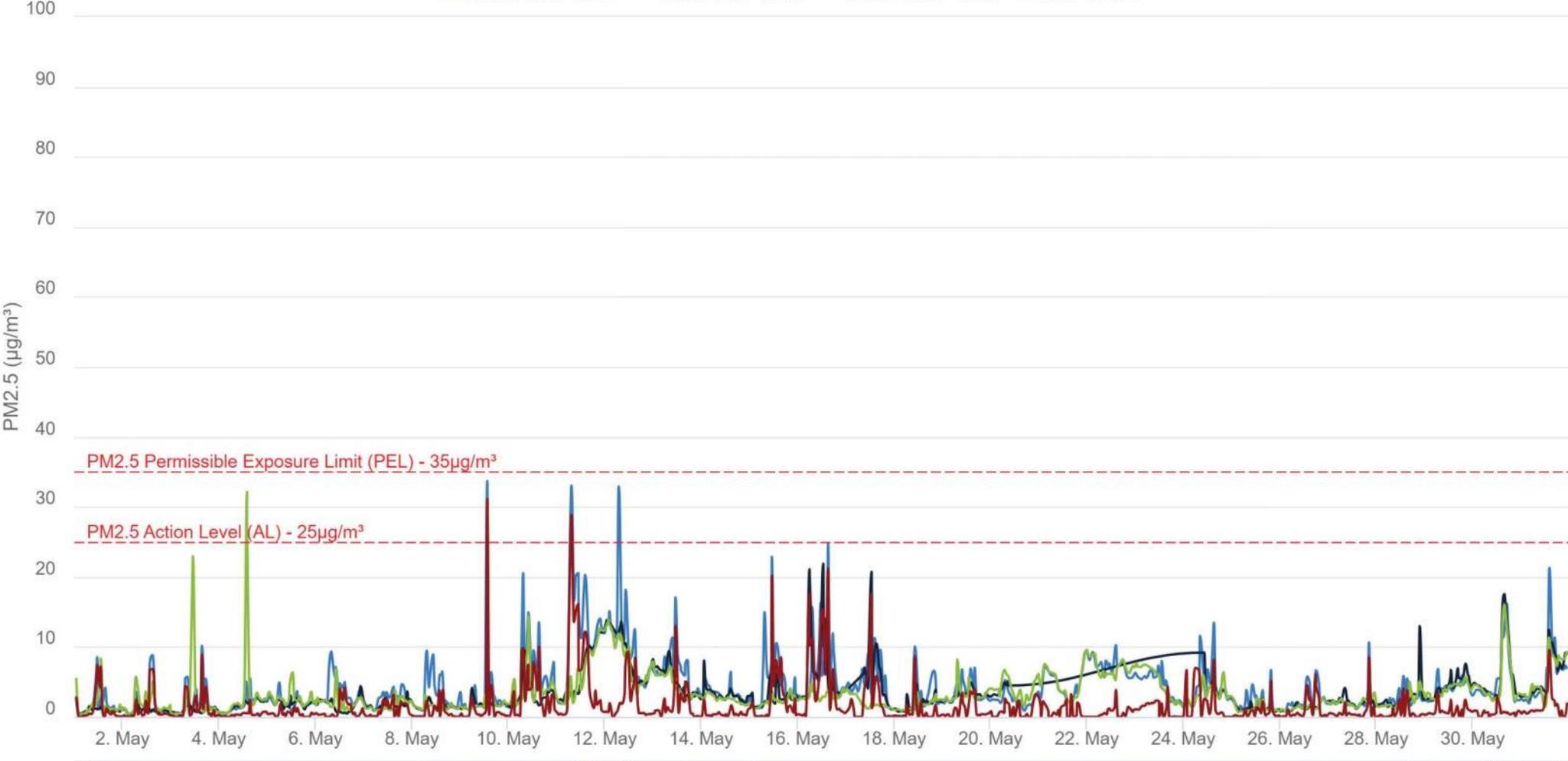


Reach F - PM10 - 15 min Running avg. (May 2023)



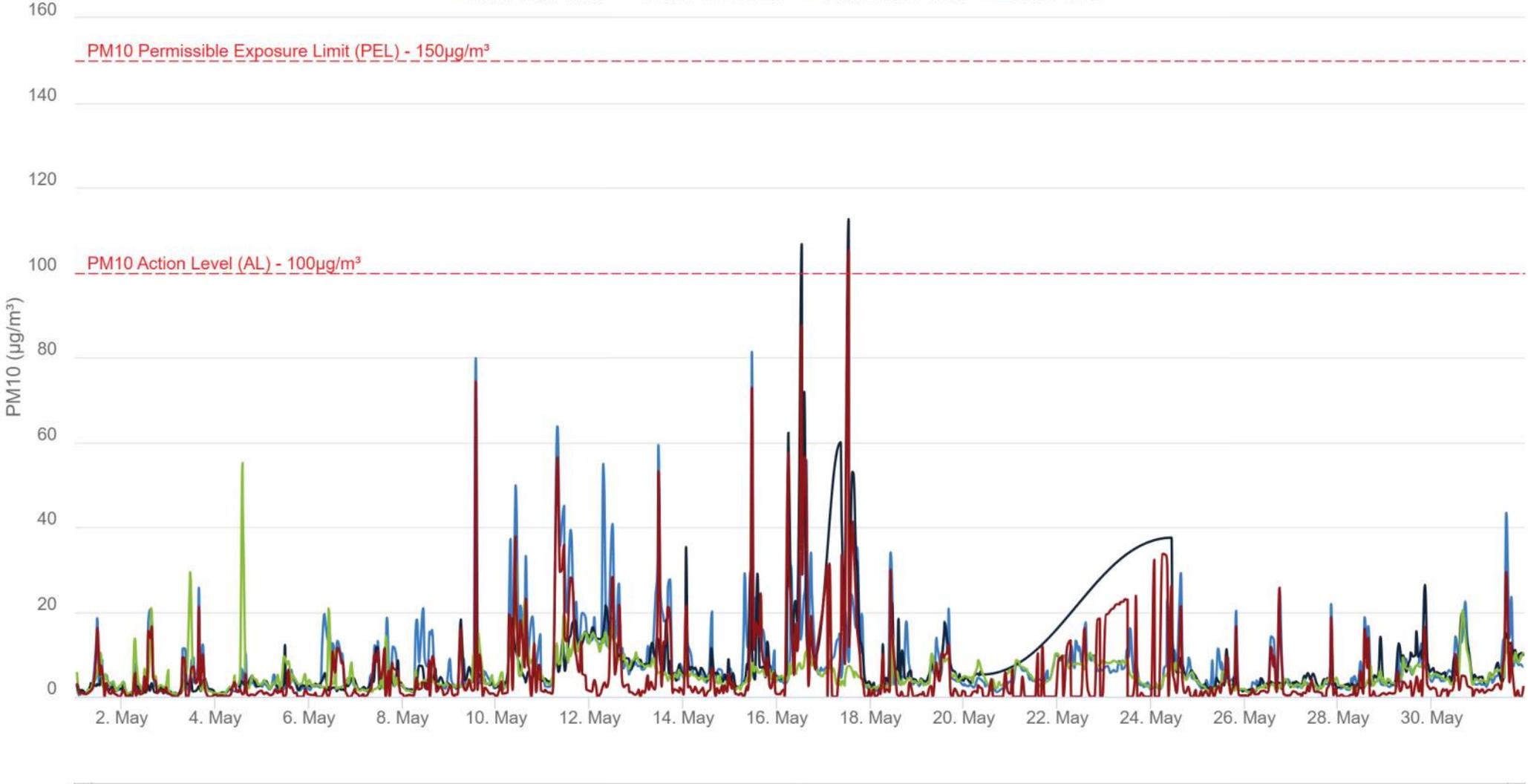
Reach G, H & I - PM2.5 - 15 min Running avg. (May 2023)

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



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

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



Summary of Data June 2023

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

- AQM-1 on 6/2 for 17 minutes, 6/3 for 13 minutes, 6/10 for 14 minutes and 29 minutes, 6/20 for 14 minutes and 6/28 for 17 minutes;
- AQM-CHR on 6/1 for 20 minutes, 6/5 for 16 minutes, 6/12 for 96 minutes, 6/25 for 15 minutes, and 6/28 for 22 minutes;
- AQM-WB on 6/1 for 18 minutes;
- AQM-FB on 6/2 for 31 minutes and 6/21 for 15 minutes; and
- AQM-4 on 6/20 for 15 minutes.
- All locations on 6/7 to 6/9 and 6/29 to 6/30 due to city and state-wide Canadian wildfire impacts

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

- AQM-1 on 6/2 for 17 minutes, 6/20 for 14 minutes and 6/28 for 17 minutes;
- AQM-CHR on 6/1 for 19 minutes, 6/5 for 21 minutes, 6/16 for 16 minutes and 15 minutes, 6/25 for 15 minutes, and 6/28 for 23 minutes;
- AQM-WB on 6/1 for 13 minutes;
- AQM-FB on 6/21 for 19 minutes; and
- AQM-4 on 6/20 for 15 minutes.

For the month of June 2023, PM net 2.5 levels were exceeded on 6/1, 6/2, 6/3, 6/9, 6/10, 6/12, 6/14, 6/16, 6/19, 6/20, 6/21, 6/25, and 6/28. PM net 10 levels were exceeded on 6/1, 6/2, 6/3, 6/9, 6/13, 6/16, 6/21, 6/25, 6/27, and 6/28.

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

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 15 occasions (6/1, 6/2, 6/3, 6/5, 6/10, 6/12, 6/20, 6/21, 6/25, and 6/28) for between 13 and 96 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 6/10, 6/20, and 6/28 were related to onsite construction vehicle traffic. A water truck was deployed to mitigate airborne dust.
 - Elevated readings on 6/2 were related to offsite construction activity under a different contract. A water truck was deployed to mitigate airborne dust.
 - Elevated readings on 6/3 and 6/10 were related to vehicle traffic on the FDR.
 - AQM-CHR is located on the construction access road/shared use path in Reach B.
 - Elevated readings on 6/1, 6/5, 6/12, and 6/28 were related to onsite construction vehicle traffic. A water truck was deployed to mitigate airborne dust.
 - Elevated readings on 6/25 were related to vehicle traffic on the FDR.
 - AQM-WB is in the vicinity of the Williamsburg Bridge along the East River; the elevated readings on 6/1 were due to onsite construction activities. A water truck was deployed to mitigate airborne dust.
 - AQM-FB is located in the vicinity of the Fire Boat House; the elevated readings on 6/2 and 6/21 were due to onsite construction activities. 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 6/20 were related to onsite construction vehicle traffic. A water truck was deployed to mitigate airborne dust.

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

- PM 10 $\mu\text{g}/\text{m}^3$ levels surpassed the PEL (15-minute TWA) on 12 occasions (6/1, 6/2, 6/5, 6/16, 6/20, 6/25, and 6/28) for between 13 and 23 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 6/20 and 6/28 were related to onsite construction vehicle traffic. A water truck was deployed to mitigate airborne dust.
 - Elevated readings on 6/2 were related to offsite construction activity under a different contract. A water truck was deployed to mitigate airborne dust.
 - AQM-CHR is located on the construction access road/shared use path in Reach B.
 - Elevated readings on 6/1, 6/5, 6/16, and 6/28 were related to onsite construction vehicle traffic. A water truck was deployed to mitigate airborne dust.
 - Elevated readings on 6/25 were related to vehicle traffic on the FDR.
 - AQM-WB is in the vicinity of the Williamsburg Bridge along the East River; the elevated readings on 6/1 were due to onsite construction activities. A water truck was deployed to mitigate airborne dust.
 - AQM-FB is located in the vicinity of the Fire Boat House; the elevated readings on 6/21 were due to onsite construction activities. 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 6/20 were related to onsite construction vehicle traffic. 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.

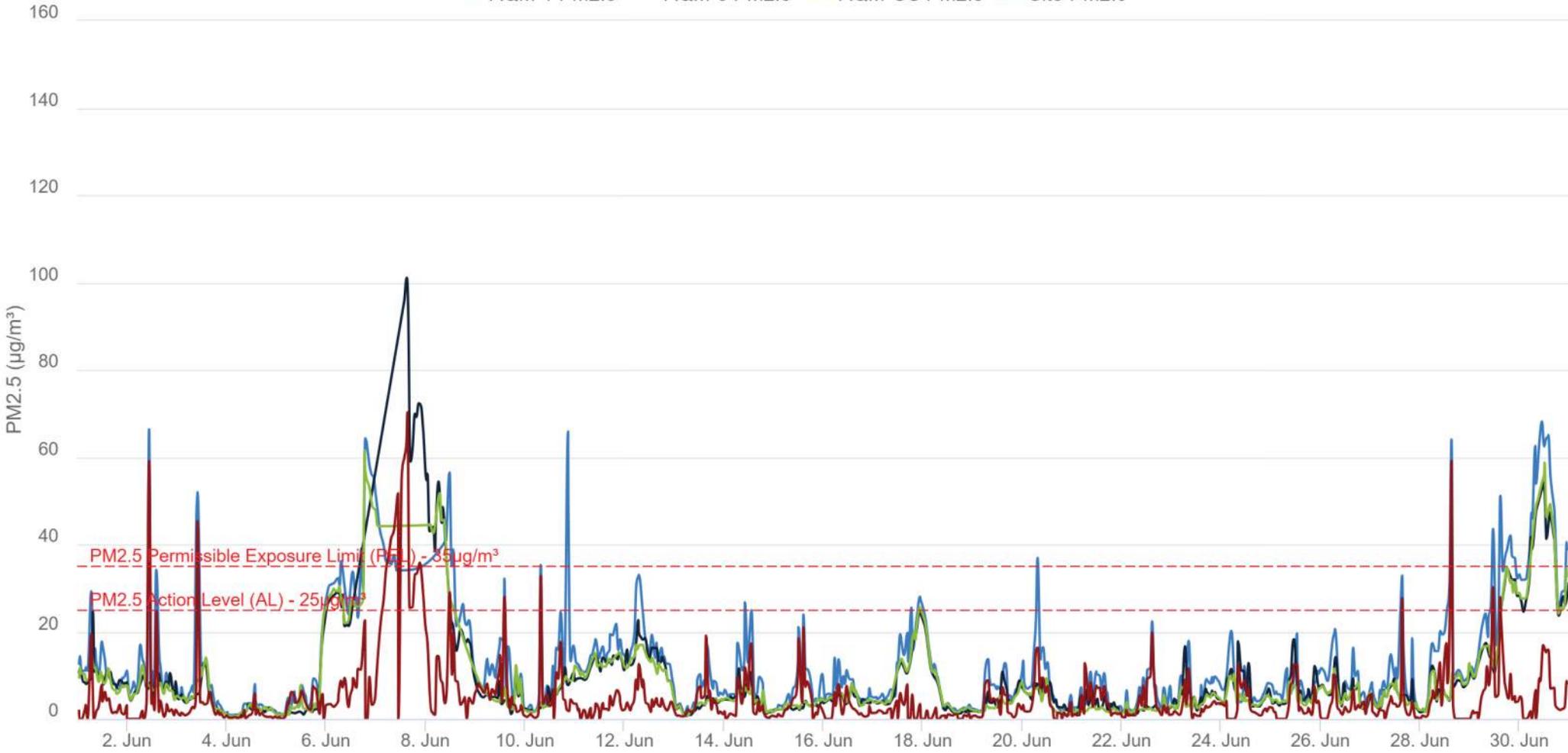
Canadian Wildfire Impacts

- From June 7th through June 9th and June 29th through June 30th, particulates from wildfires burning in the northern Canadian provinces impacted air quality city and state-wide. Impacts from the Canadian wildfires was observed at the air quality monitors present throughout the SANDRESM1 project site causing the 24-hour TWA to exceed the allowable project limits. Site-wide construction was halted midday on June 7th and resumed once city-wide air quality improved on June 9th in order to protect worker and community health and safety. The Canadian wildfire impacts were noted in the June 2023 Air Quality Monitoring Report submitted by the contractor and presented to the Community Action Group (CAG).

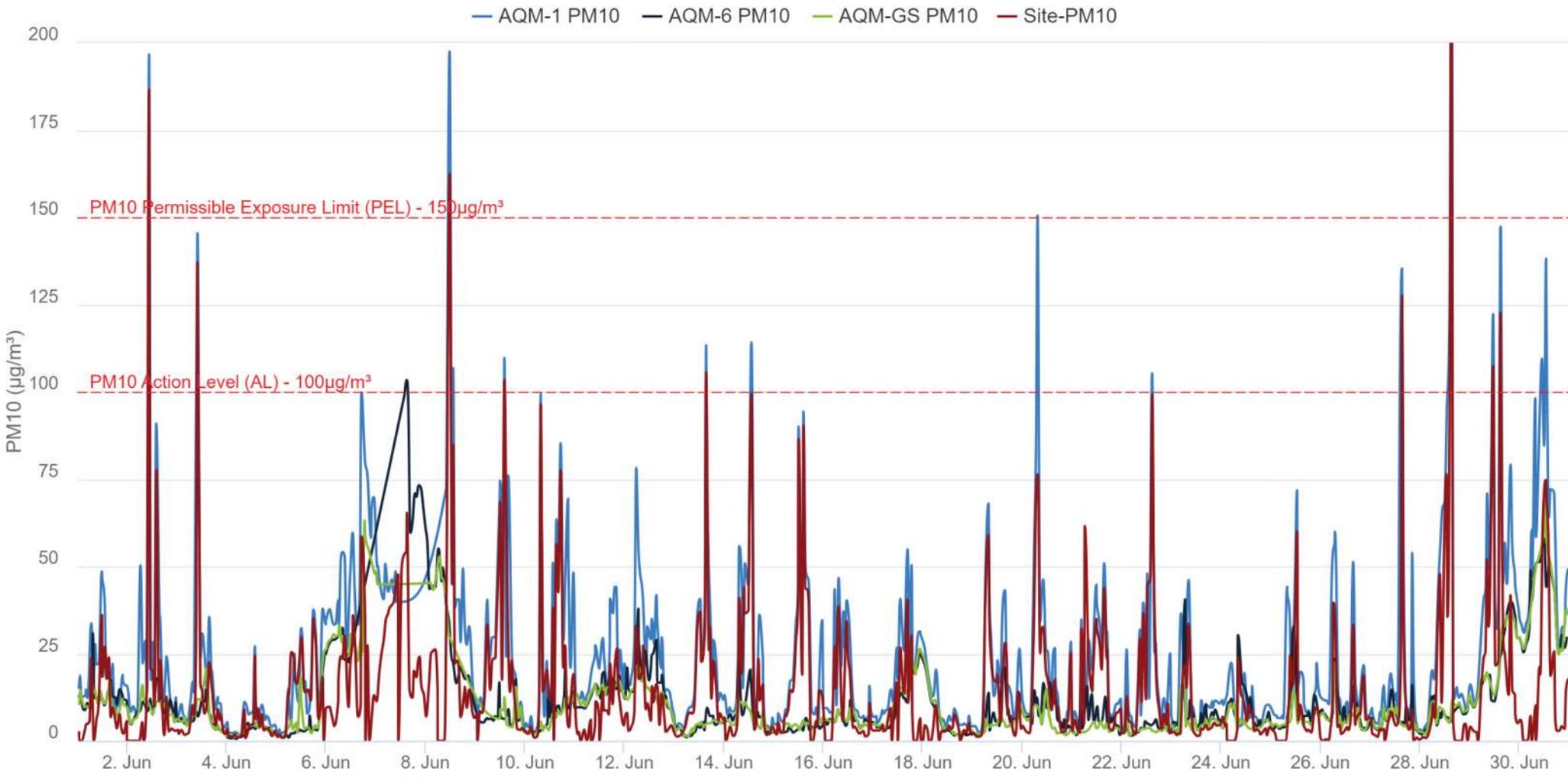
JUNE 2023 DATA PLOTS

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

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

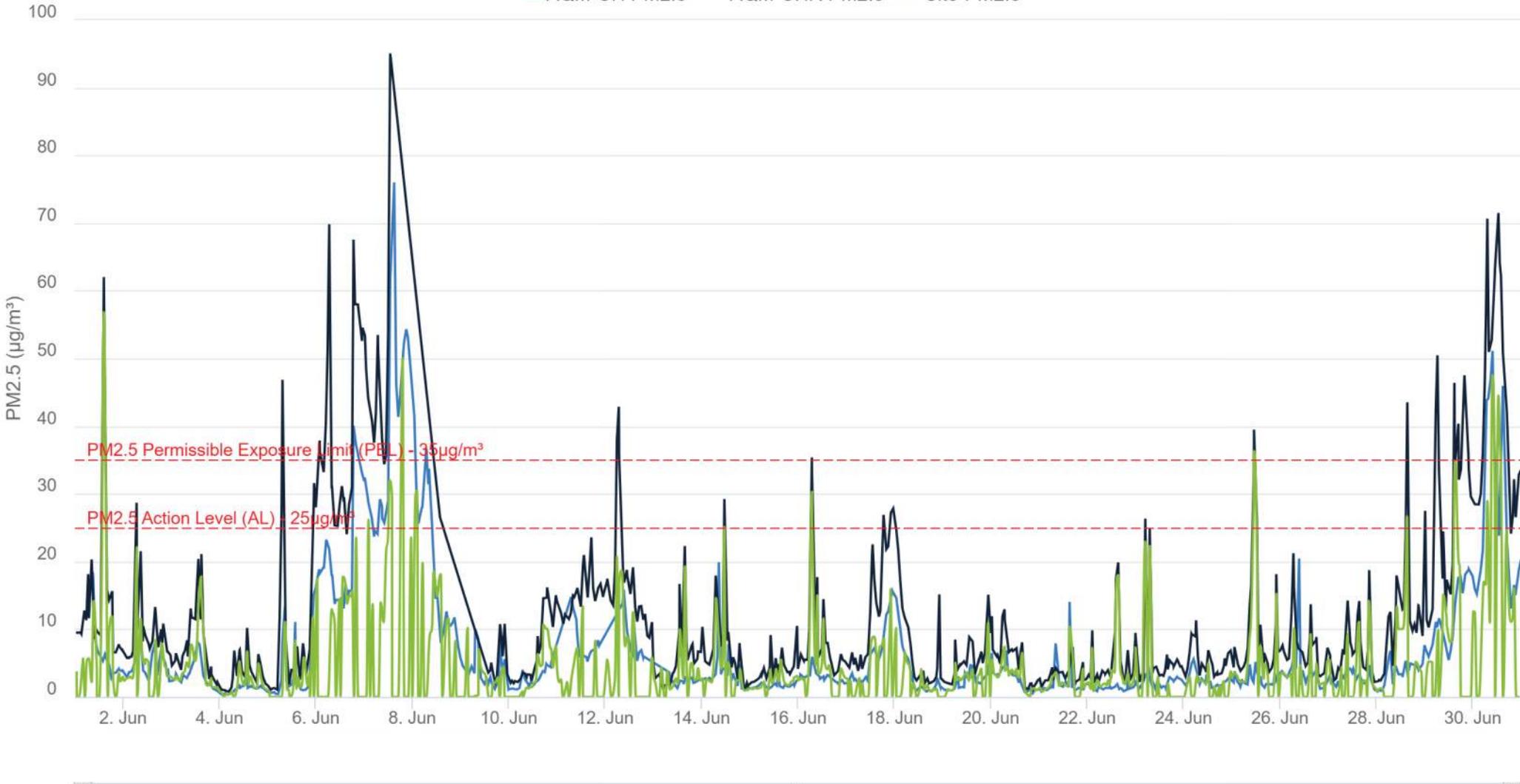


Reach A - PM10 - 15 min Running Avg. (June 2023)

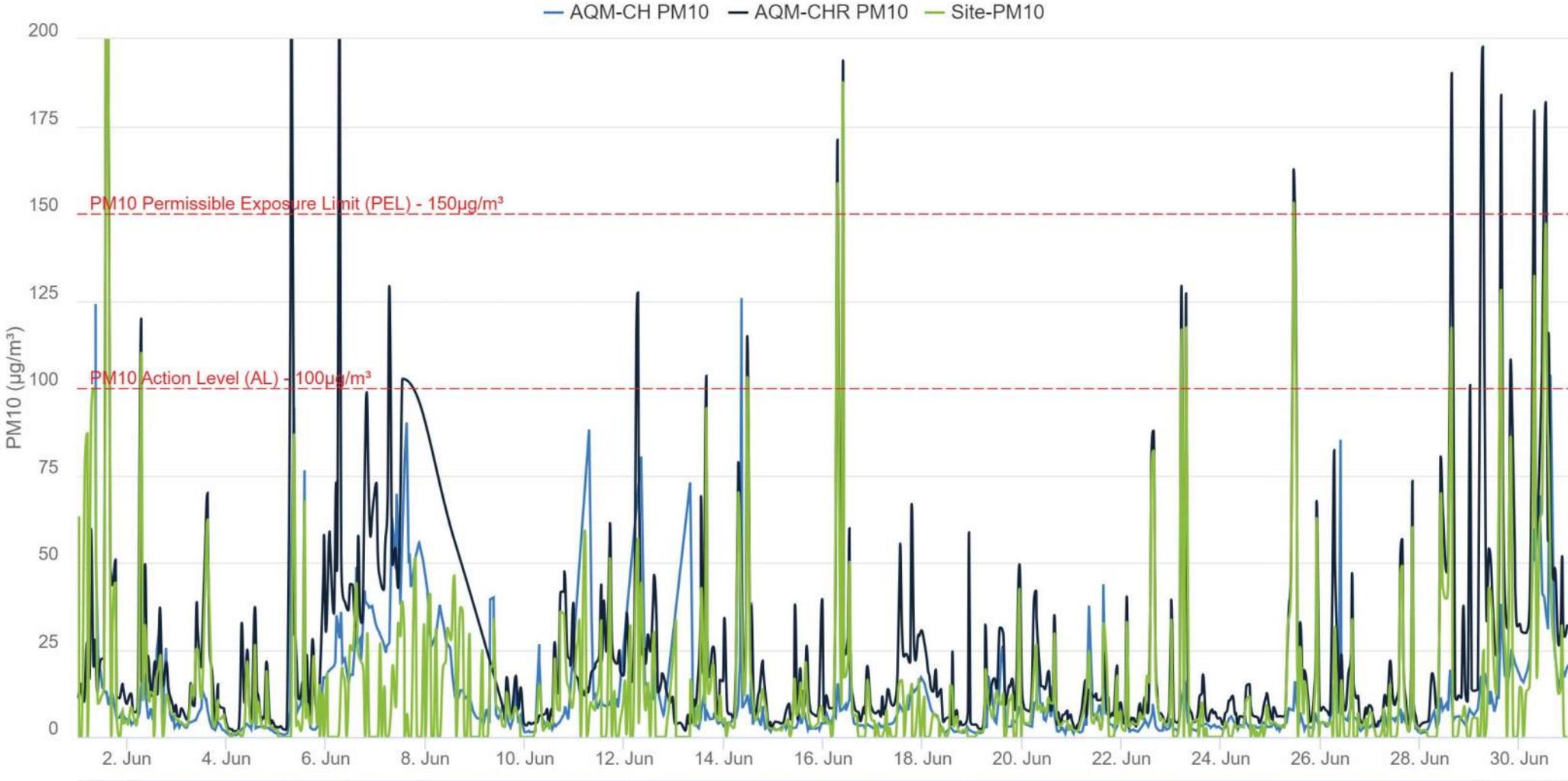


Reach B - PM2.5 - 15 min Running Avg. (June 2023)

— AQM-CH PM2.5 — AQM-CHR PM2.5 — Site-PM2.5

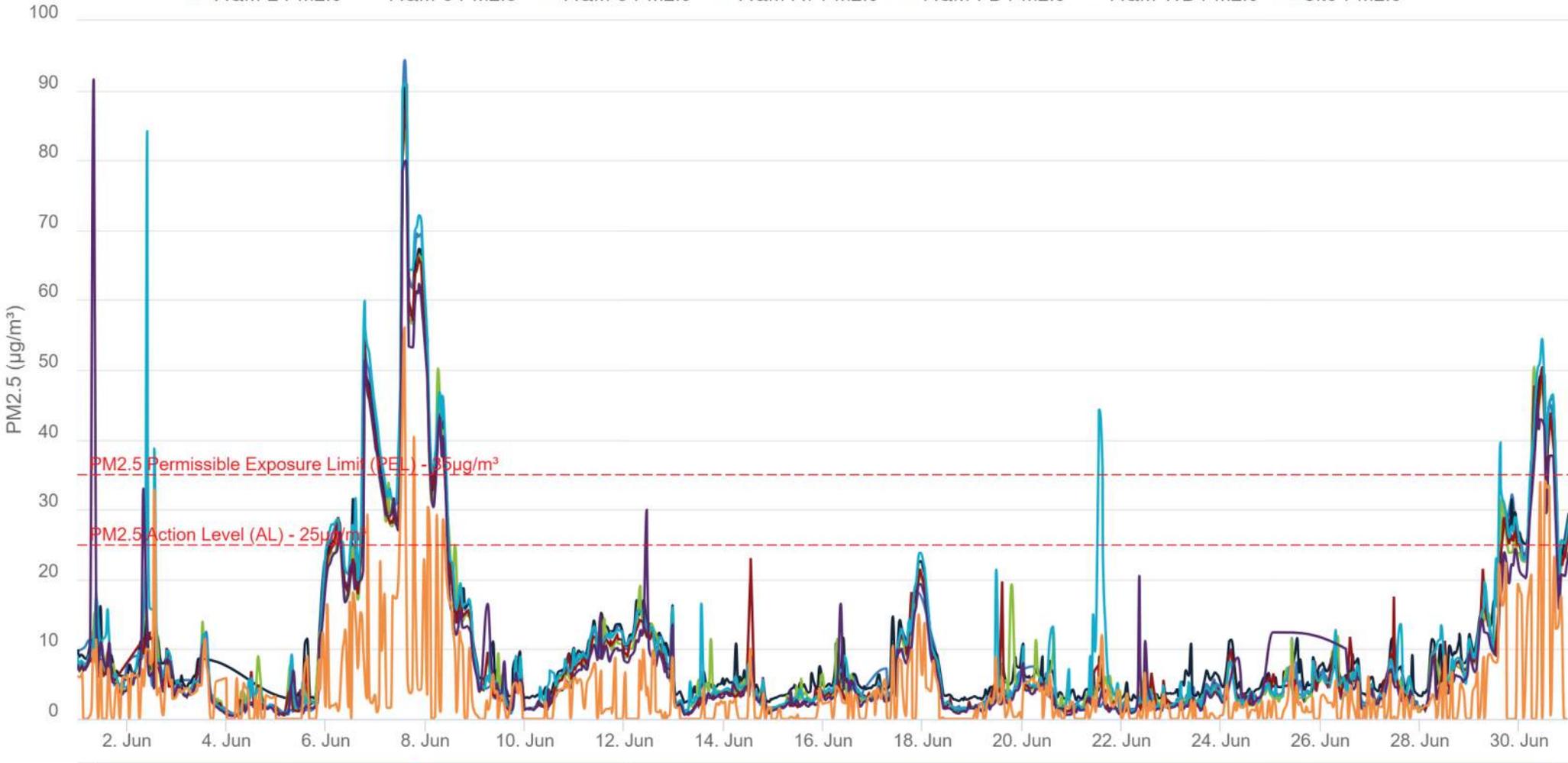


Reach B - PM10 - 15 min Running avg. (June 2023)



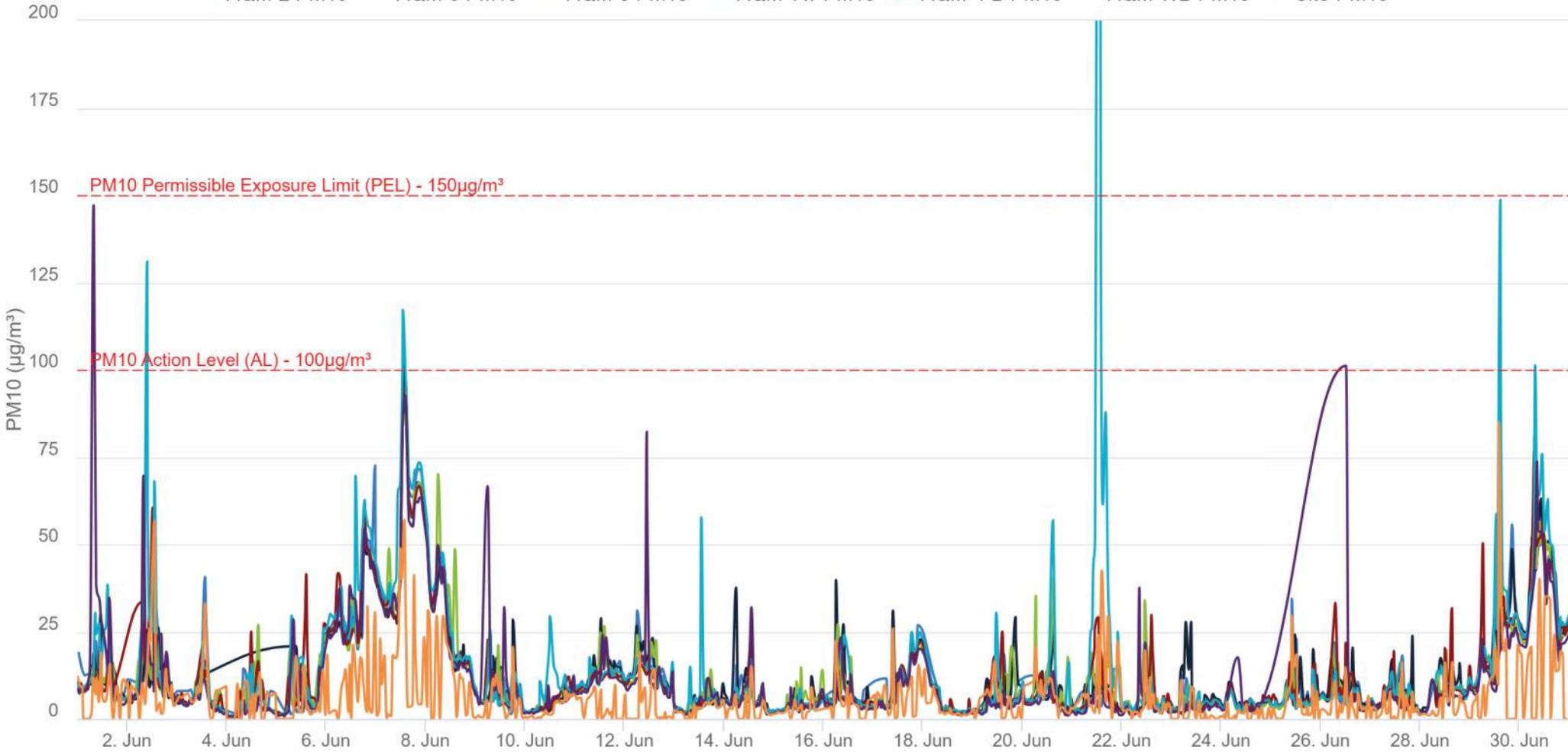
Reach C,D,& E - PM2.5 - 15 min Running Avg. (June 2023)

— 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

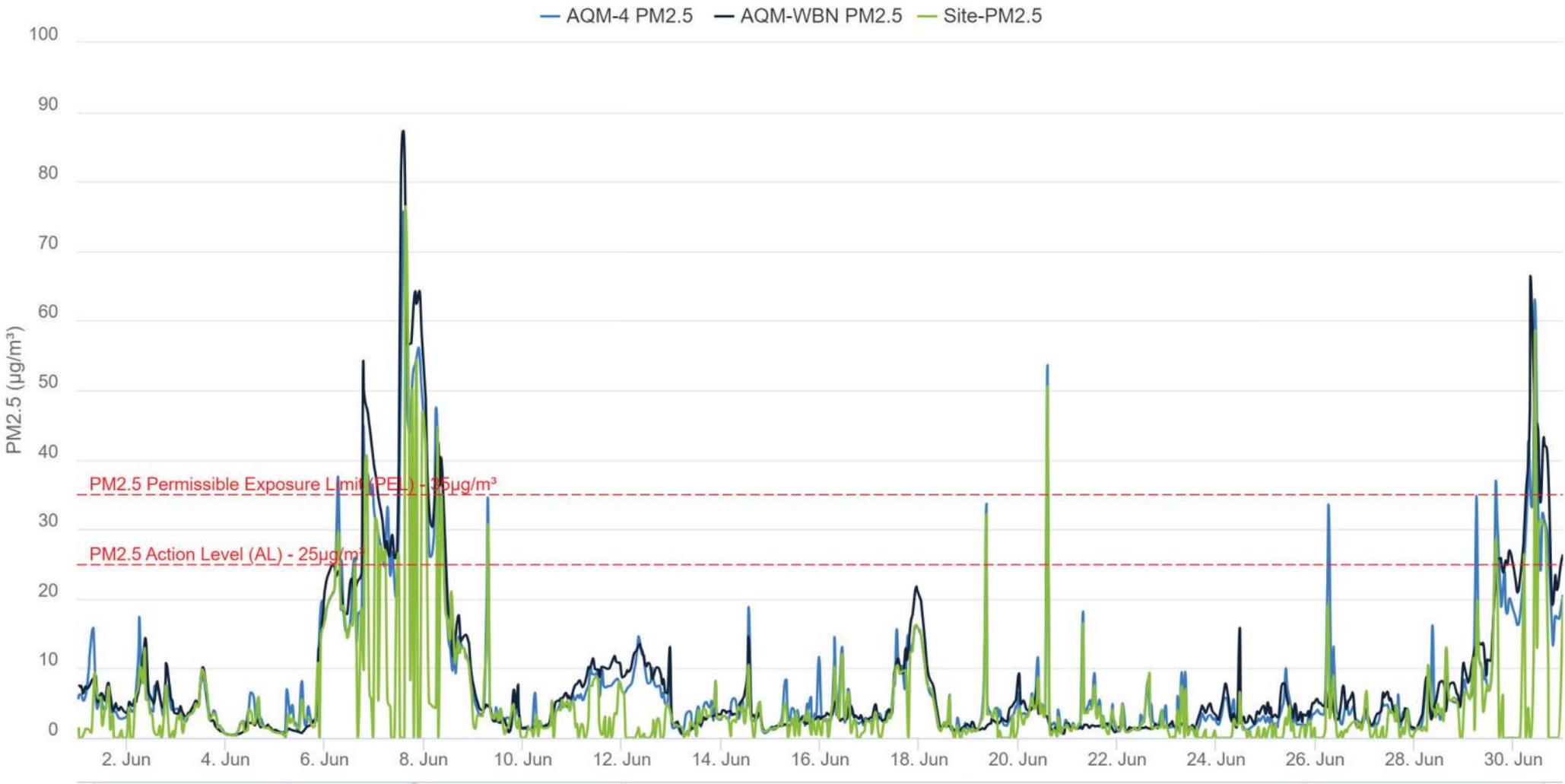


Reach C,D,& E - PM10 - 15 min Running avg. (June 2023)

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

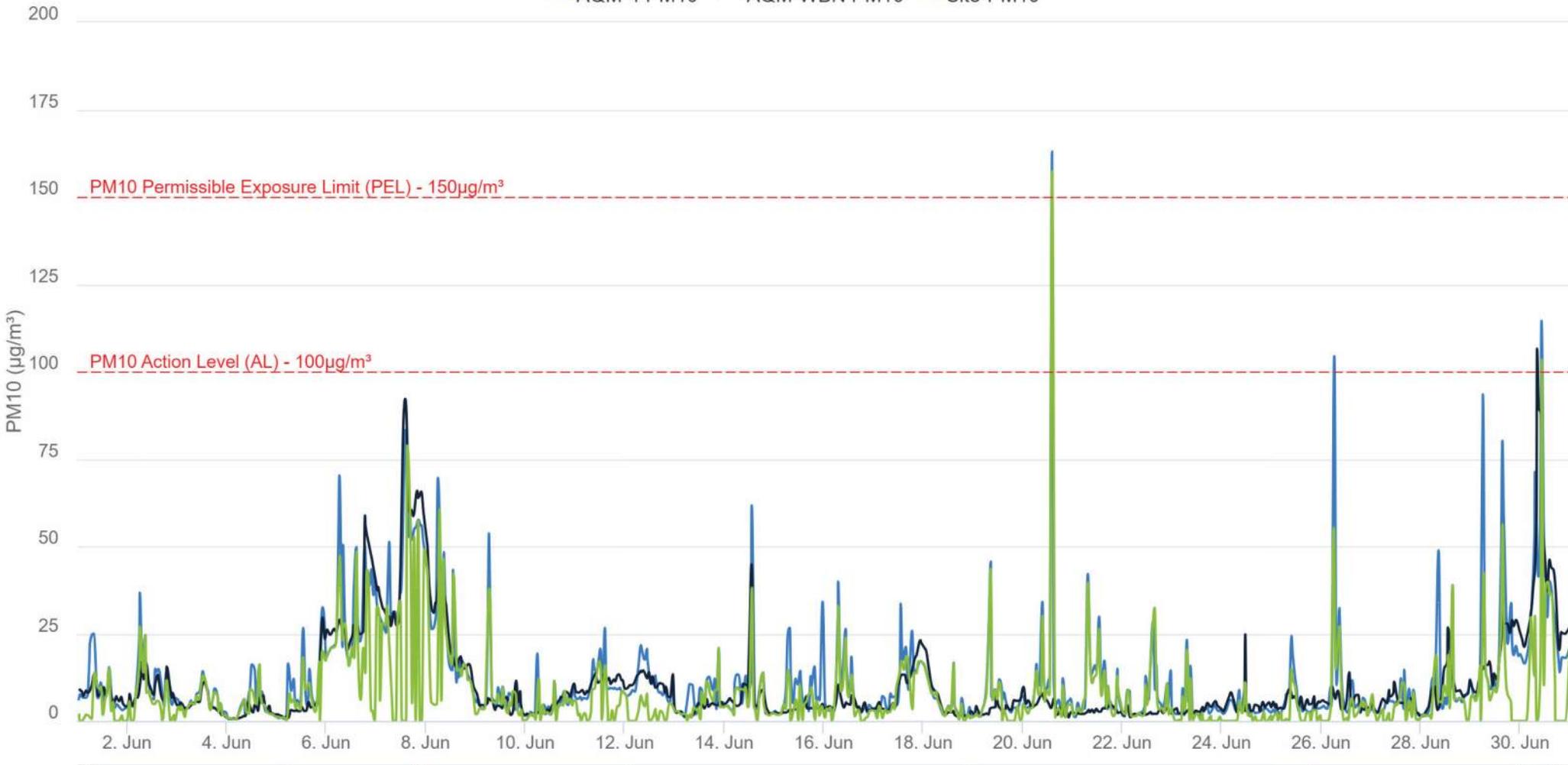


Reach F - PM2.5 - 15 min Running avg. (June 2023)



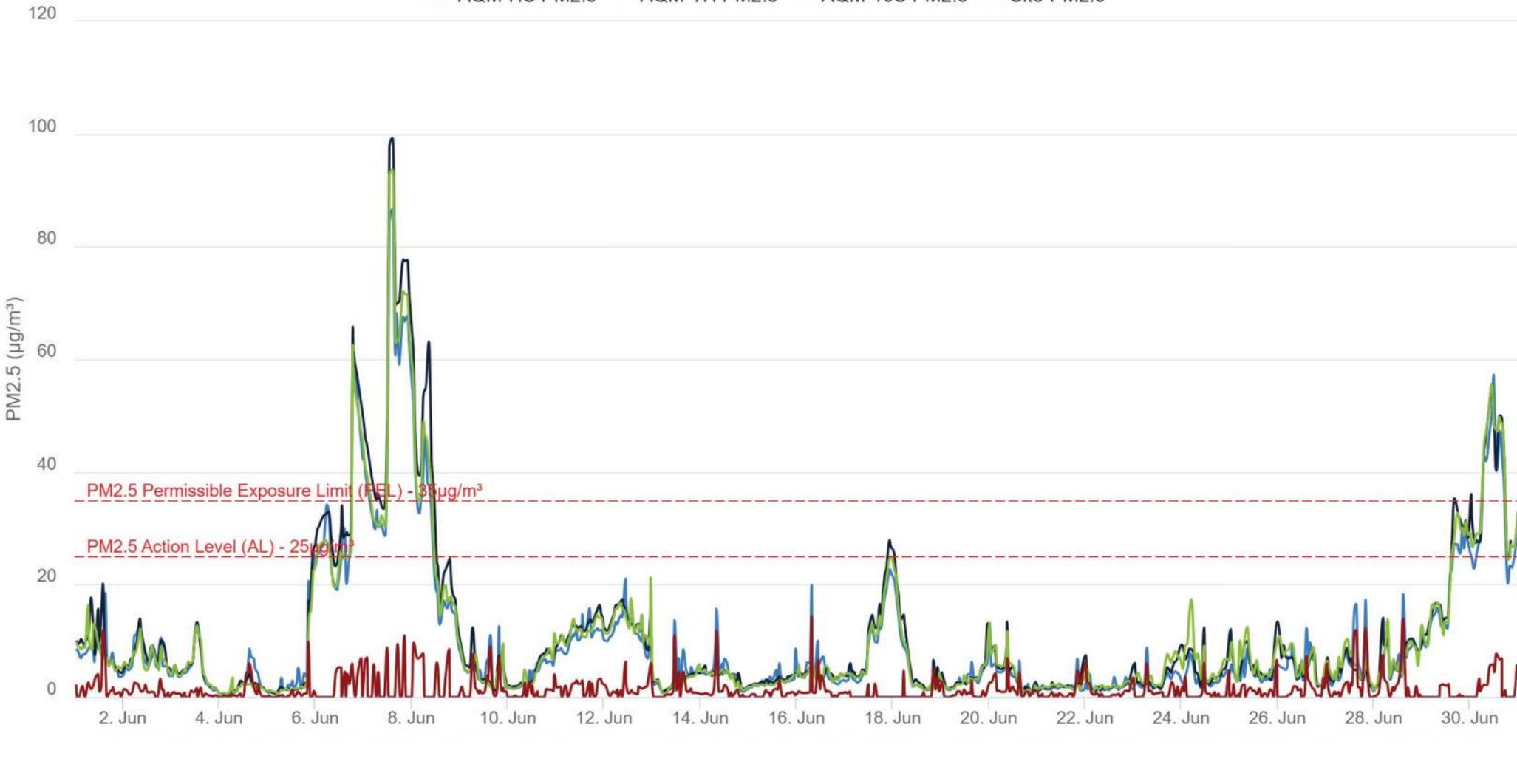
Reach F - PM10 - 15 min Running avg. (June 2023)

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



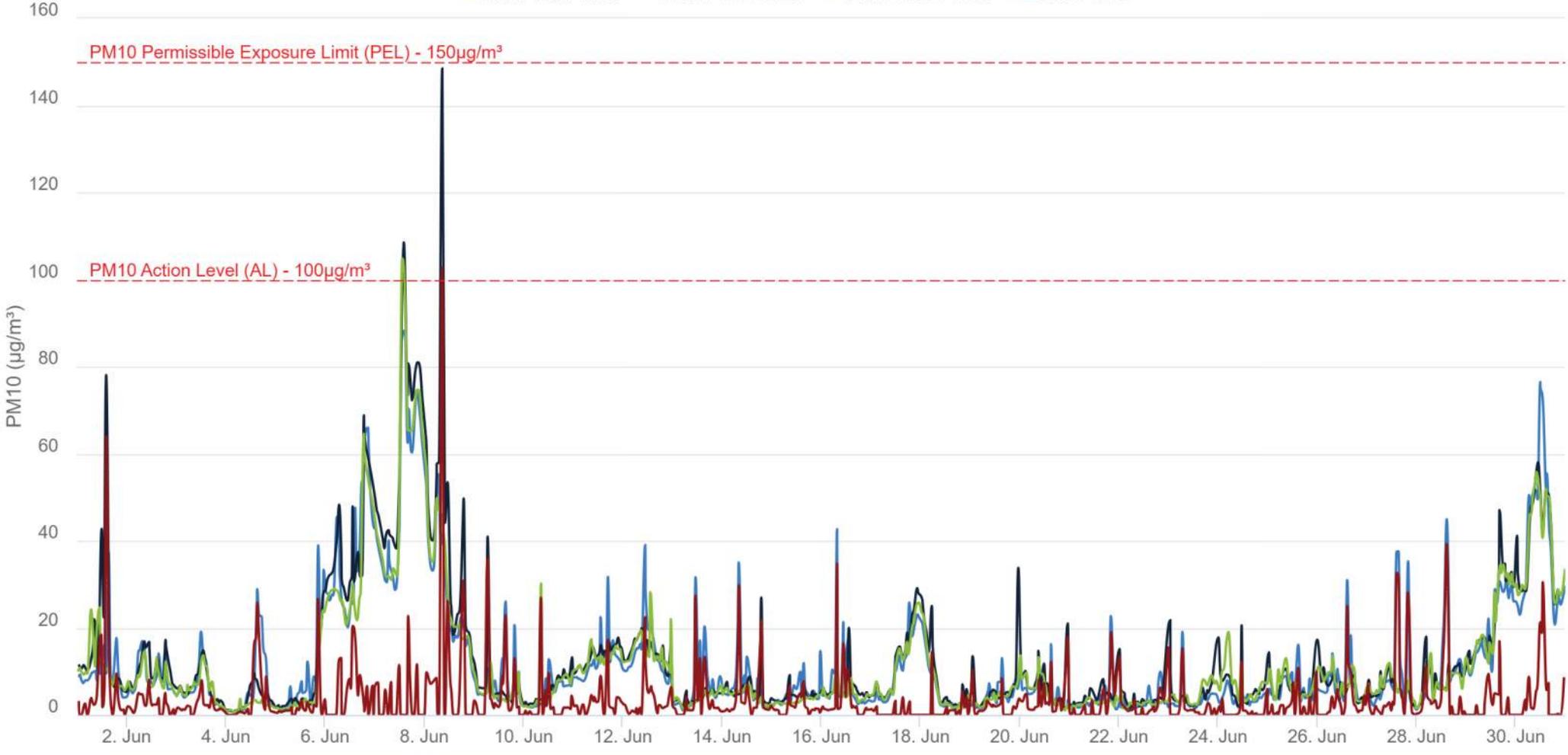
Reach G, H & I - PM2.5 - 15 min Running avg. (June 2023)

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



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

— 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](#)

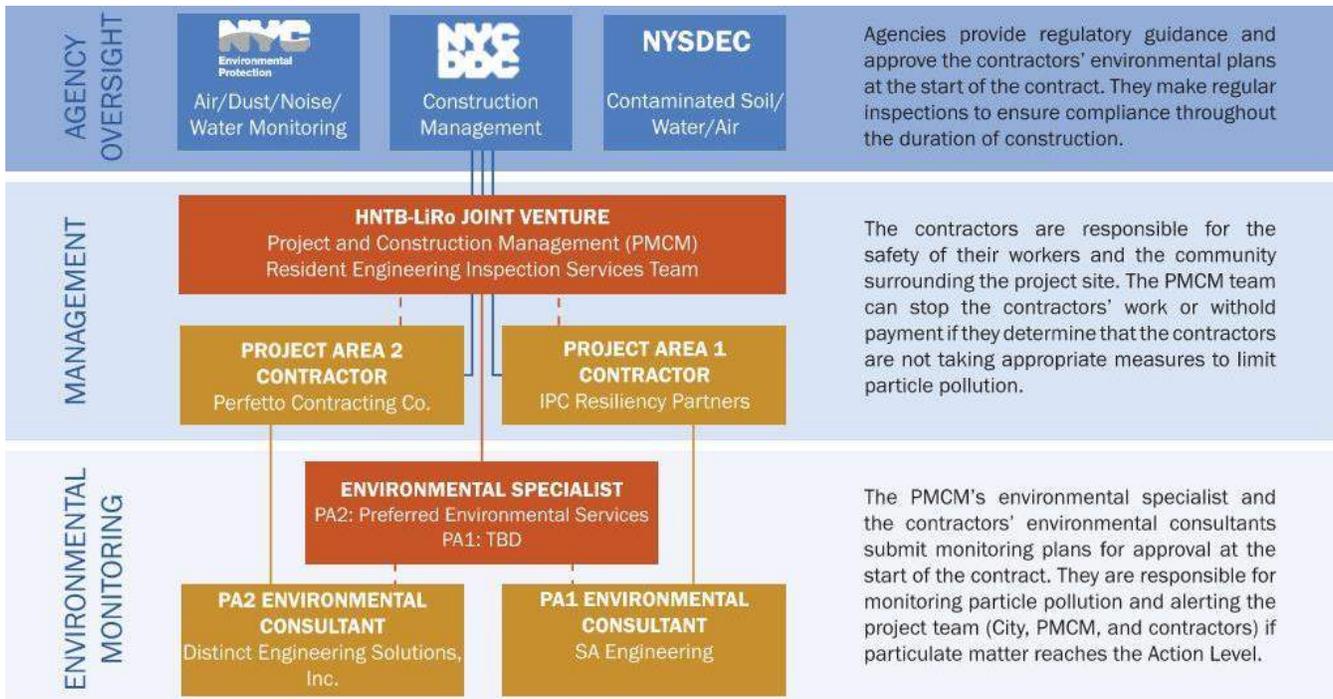


Fig.4 East Side Coastal Resiliency Air Quality Monitoring Flow Chart

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>