

EAST SIDE COASTAL RESILIENCY

SANDRESM1 | PROJECT AREA 1

AIR QUALITY MONITORING REPORT

Q1 | 2022

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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 E. 15th Street, including East River Park), Project Area 2 (E. 15th Street to E. 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 E. 25th Street).

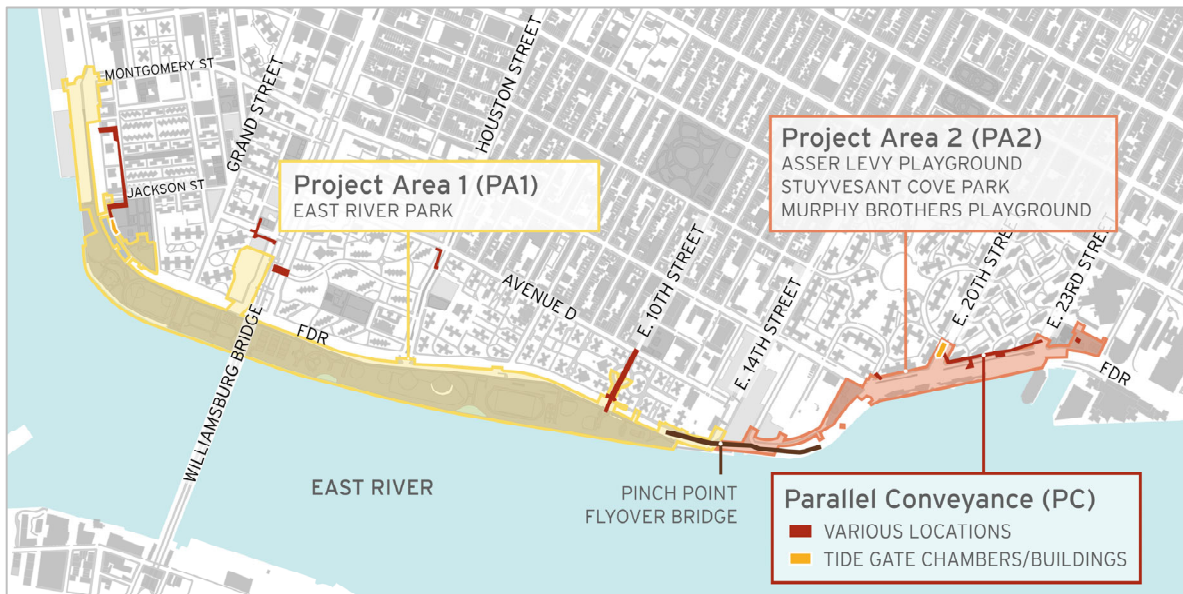


Fig.1 East Side Coastal Resiliency Project Areas

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 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 National Ambient Air Quality Standards (NAAQS) in line with the requirements of the Clean Air Act 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 Particulate Matter (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 Permissible Exposure Limit (PEL) and represents a level set by the ESCR Air Quality Monitoring 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 Permissible Exposure Limit and Action Levels for net PM2.5 and PM10 concentrations over a 24-hour Time Weighted Average (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 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 PM_{2.5} 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 **Particulate Matter (PM)** levels in a **15-minute Time Weighted Average (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.

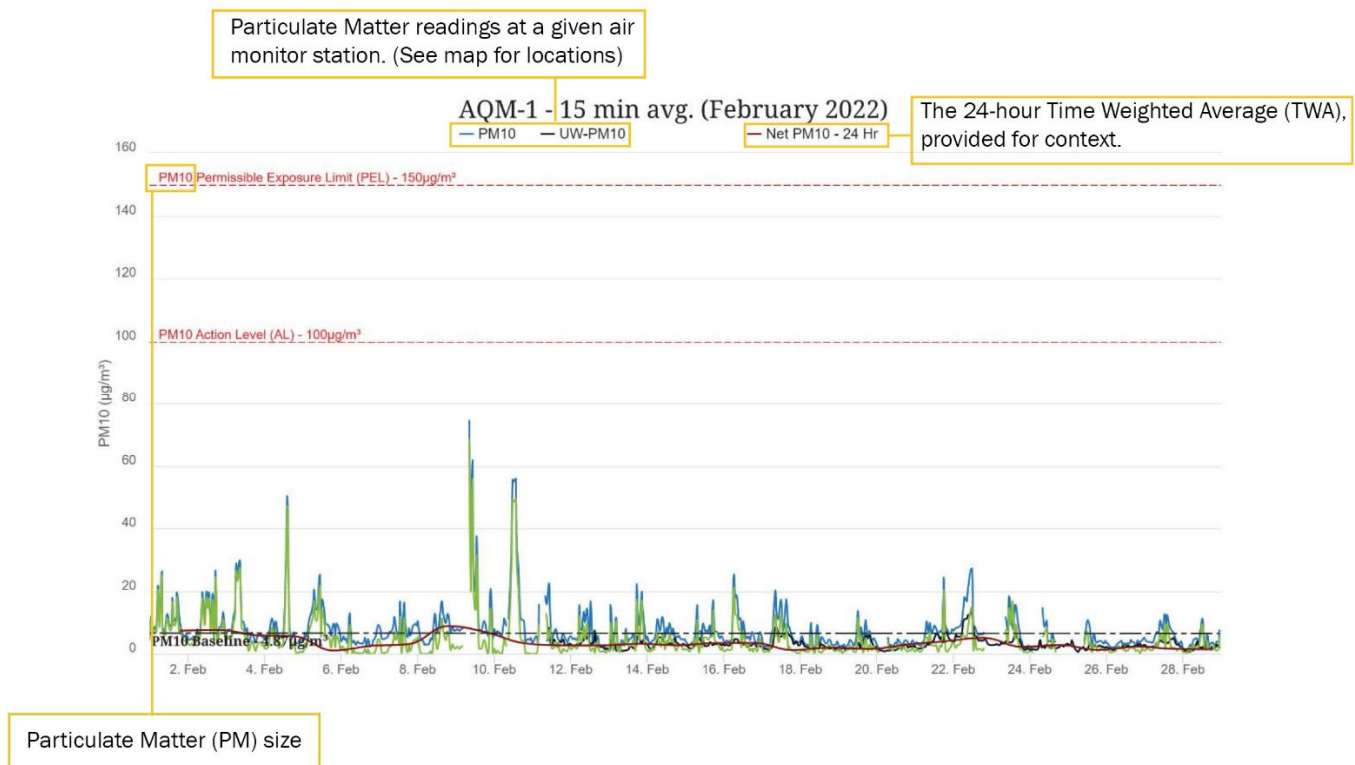


Fig.2 Sample Air Quality Data Plot

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 of the 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 time weighted average after rounding to the nearest 10 µg/m³ (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 Particulate Matter (PM) readings for ESCR Project Area 2 (PA2), collected by SA Engineering, environmental subconsultant to the PA1 contractor, IPC Resiliency Partners (IPC) from January through March 2022. The PA2 contract requires a minimum of six (6) air quality monitoring stations throughout construction, which will be relocated as necessary to reflect the phased construction activities.

During this period, the monitors have been installed in the locations shown below. For this report, each monitor will be referred to as “AQM-#” – referring to the numbers in Figure 3. **AQM-1** was installed on December 26, 2021, **AQM-2** was installed on December 30, 2021, and **AQM-3** was installed on January 27, 2022; each began recording upon installation. **AQM-4** and **AQM-5** were installed on January 27 and began recording data on February 17, 2022. **AQM-UW**, the upwind monitor located near the E. 10th Street Comfort Station, was installed on February 7, and starting recording data on February 11, 2022.



Fig.3 ESCR Project Area 1 Phase 1 Air Quality Monitoring Station Locations, Quarter 1 2022

Work Activities during this period included:

- In the closed area of East River Park south of Stanton Street, work activities in this period centered on site preparation, including clearing and grubbing, and removals. In February and March, this work also included ConEdison utility work. Weekend utility work in this area occurred 2/5-2/6, 2/12-2/13, 2/19, and 3/26 (daytime work shifts from 7:00 am to 3:30 pm).
- In late January, bridge dismantling activities for the Delancey Street Bridge began. The structure was completely removed in late March. For the period of 1/24 to 2/4, this work took place during evening work shifts, from 3:00 pm to 11:59 pm. From 3/7-3/18 and 3/21-3/25, this work occurred on weeknight shifts, from 10:00 pm to 5:00 am, and weekend shifts from 12:01 am to 11:00 am. On 3/27, the full bridge span was removed during an overnight work shift from 12:01 am to 10:00 am.
- From late January through March, ConEdison utility work took place in the Greenway near the Houston Street entrance in East River Park. In March, there was additional ConEdison work at the intersection of Montgomery Street and South Street.
- Work near the flagpole area of Corlears Hook Park began in mid-March and included installation of site fencing, site preparation and removals, and bridge dismantling preparation. From 3/18 until the end of the

March, this work included weeknight work shifts from 10:00 pm to 5:00 am, and weekend work from 12:01 am to 11:00 am.

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 2022, construction-related levels of Particulate Matter (PM) at both net PM2.5 and PM10 levels did not surpass Daily Permissible Exposure Limits (PEL) as set by federal standards for the 24-hour Time Weighted Average (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 Action Levels as well as Permissible Exposure Limits (15-minute TWA) to suppress construction activity effects on air quality in East River Park.

January 2022:

- There were no PM10 readings recorded above the Permissible Exposure Limit (PEL) in January.
- PM2.5 levels surpassed the PEL (15-minute TWA) on January 25 and January 29 at AQM-1. Both occasions lasted for a duration of 15 minutes or less.

February 2022:

- There were no PM10 or PM2.5 readings recorded above the Permissible Exposure Limit (PEL) in February.

March 2022:

- There were no PM10 readings recorded above the Permissible Exposure Limit (PEL) in March.
- PM2.5 levels surpassed the PEL (15-minute TWA) at AQM-3 on March 19, for a duration of under 15 minutes. This occurred in the morning, prior to construction work hours.

PART 2

Summary of Data January 2022:

There were no PM10 readings recorded above the Permissible Exposure Level (PEL) (15-minute time weighted average) during the month of January.

PM2.5 levels surpassed the PEL (15-minute TWA) at AQM-1 on January 25 and 29.

For the month of January 2022, construction-related Particulate Matter (PM) net 2.5 or 10 levels did not surpass Daily Permissible Exposure Limits (PEL) (24-hour time weighted average).

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

- PM 10 $\mu\text{g}/\text{m}^3$ levels remained under the Permissible Exposure Limit (PEL).

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

- PM 2.5 $\mu\text{g}/\text{m}^3$ levels surpassed the PEL (15-minute time weighted average) at AQM-1 on two occasions. On both January 25 and 29, the high levels were recorded for a duration of 15 minutes or less.
 1. On January 25, high levels were due to an idling construction vehicle. The contractor was notified not to idle and the levels decreased.
 2. On January 29, the high levels were recorded outside of construction hours, for a duration of under 15 minutes.

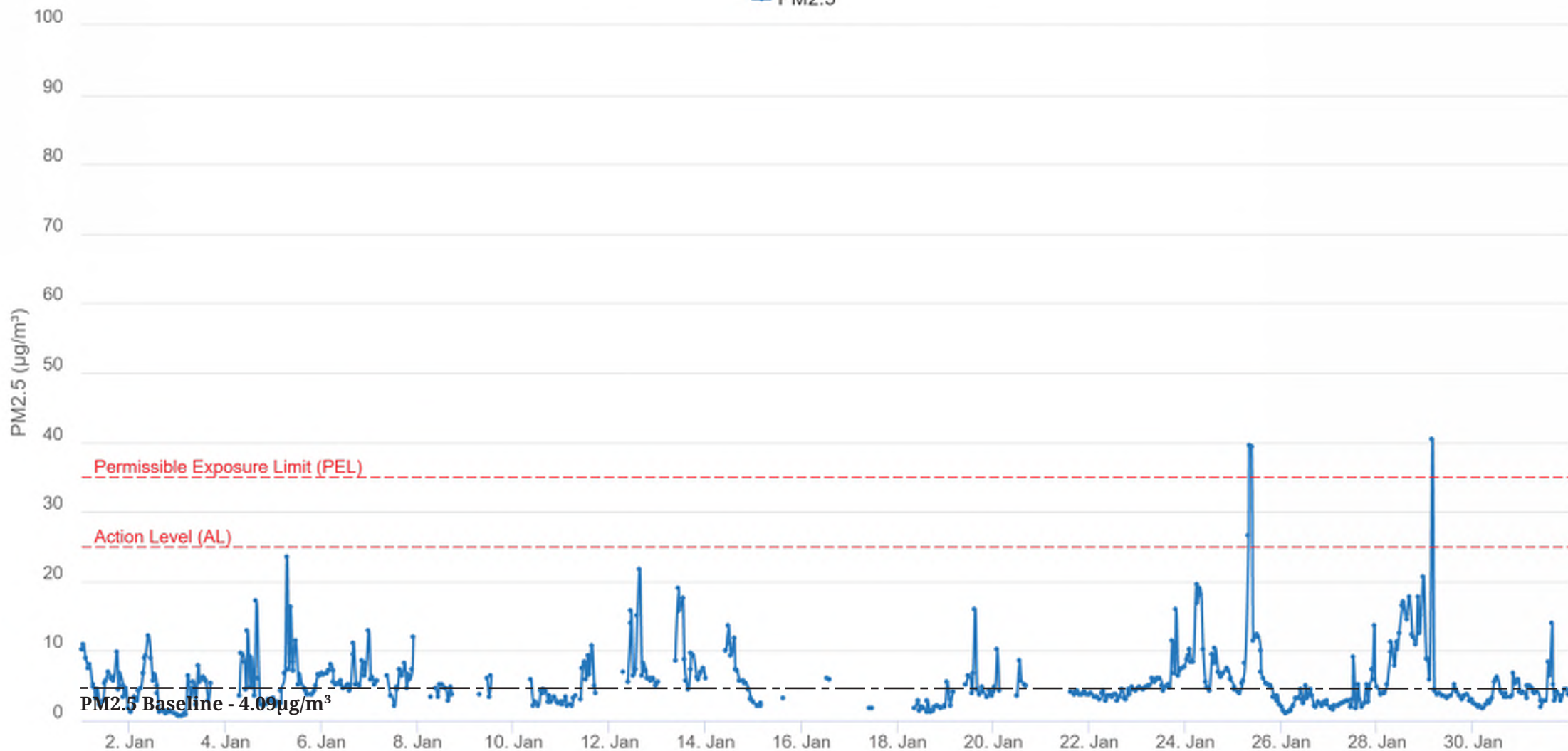
Mitigation Measures

- 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 2022 DATA PLOTS

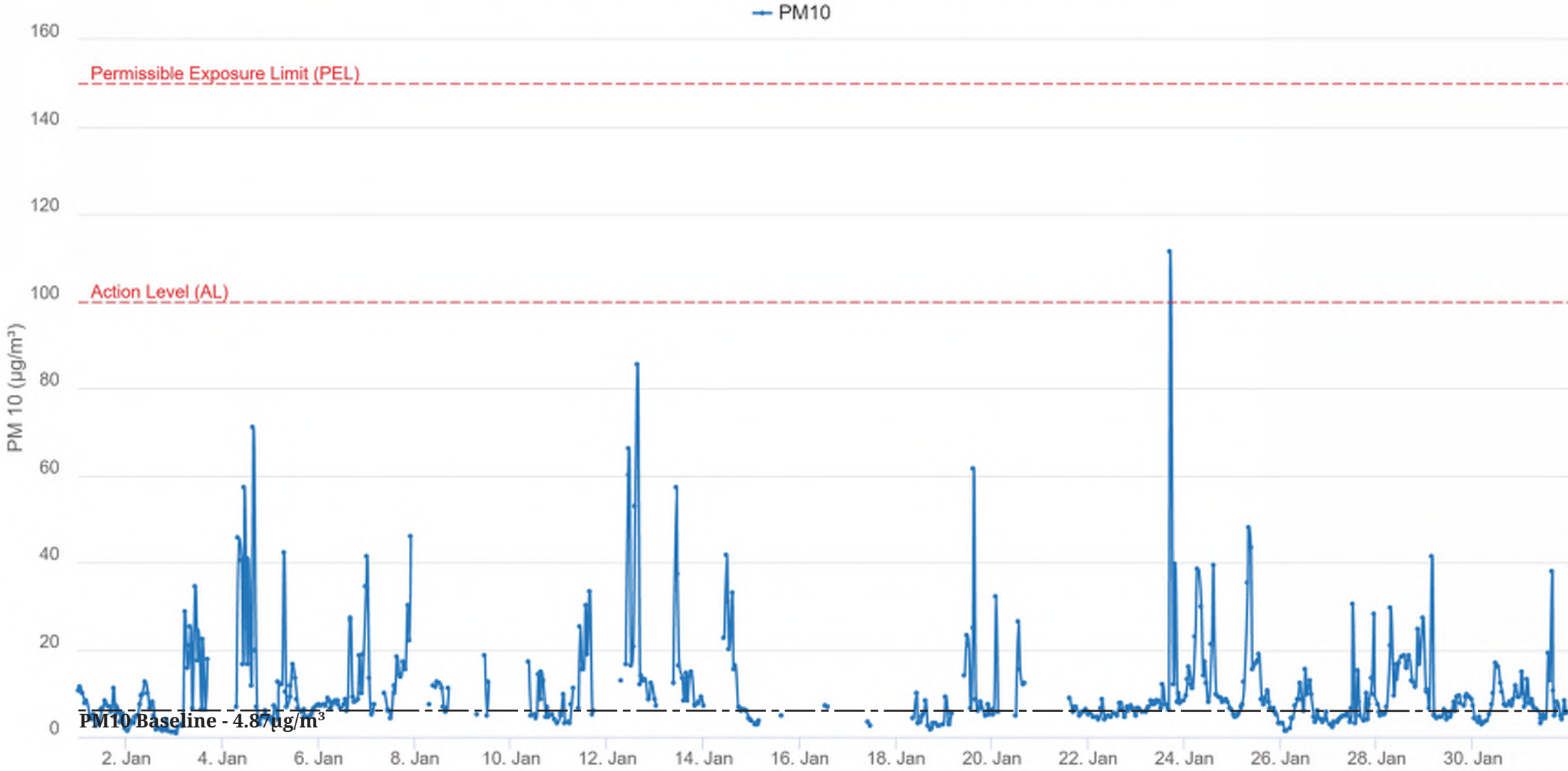
AQM-1 - 15 min avg. (January 2022)

— PM2.5



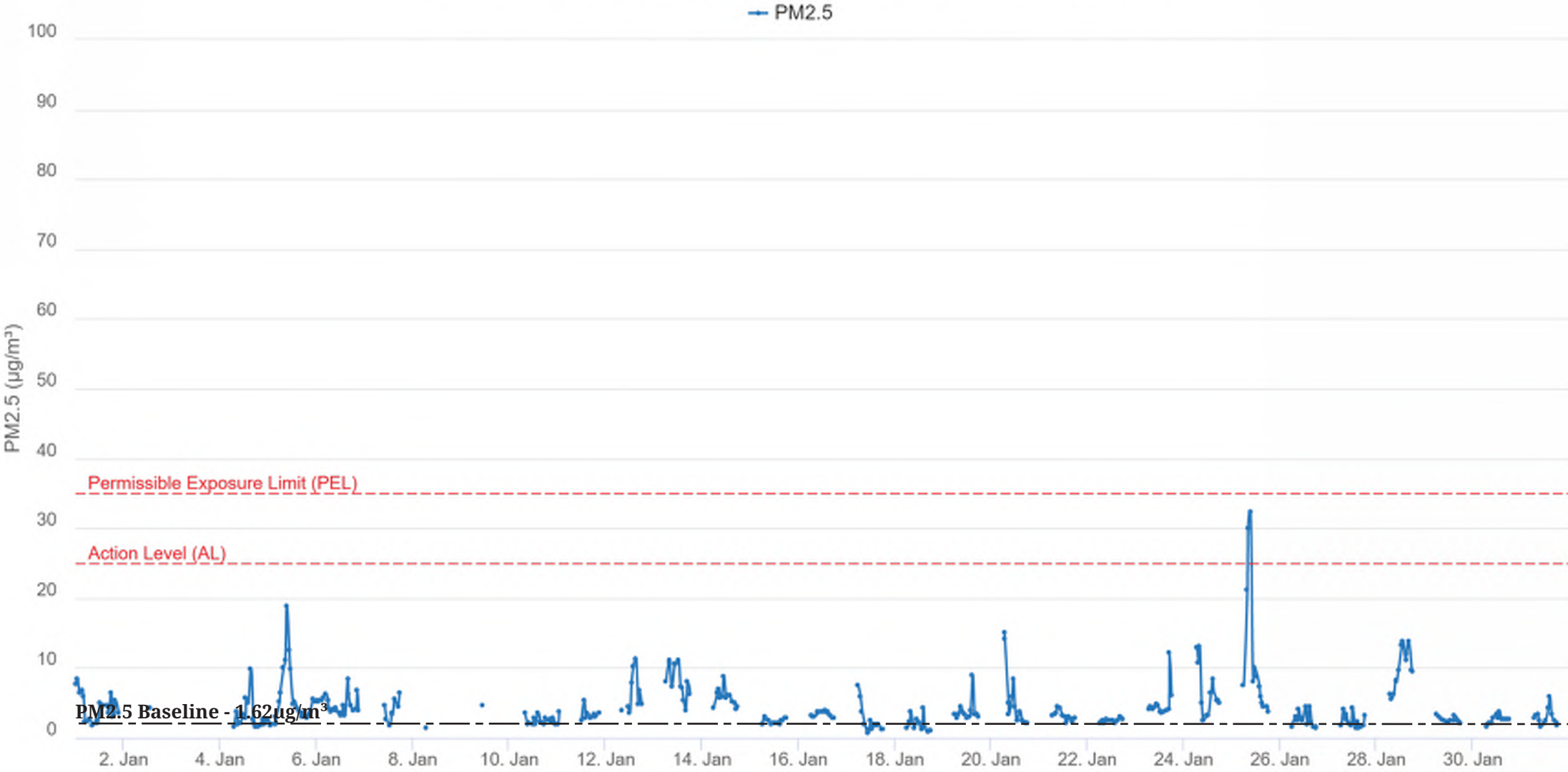
Note: future months will show AQM-UW (upwind monitor) and 24-hour Time Weighted Average

AQM-1 - 15 min avg. (January 2022)



Note: future months will show AQM-UW (upwind monitor) and 24-hour Time Weighted Average

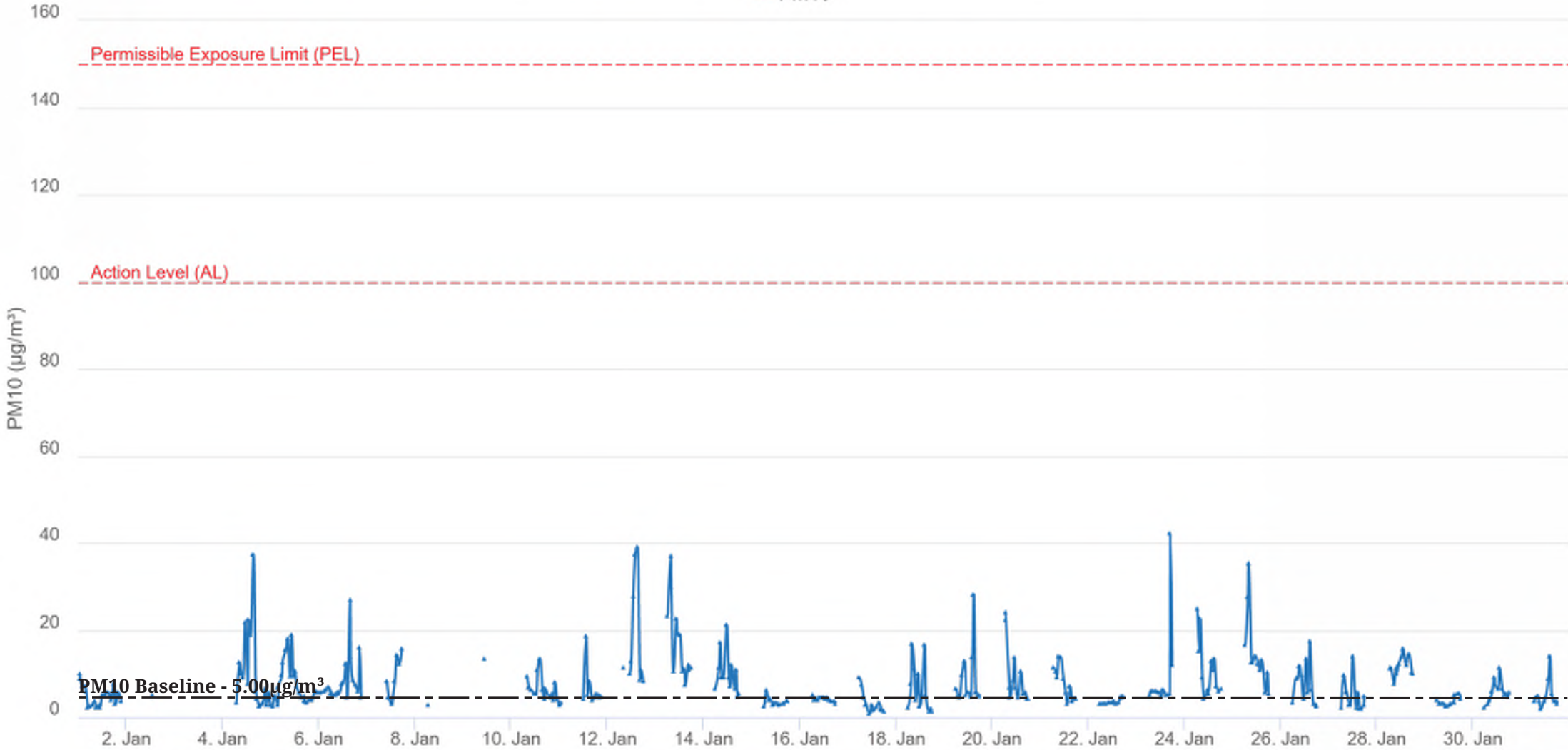
AQM-2 - 15 min avg. (January 2022)



Note: future months will show AQM-UW (upwind monitor) and 24-hour Time Weighted Average

AQM-2 - 15 min avg. (January 2022)

— PM10



Note: future months will show AQM-UW (upwind monitor) and 24-hour Time Weighted Average

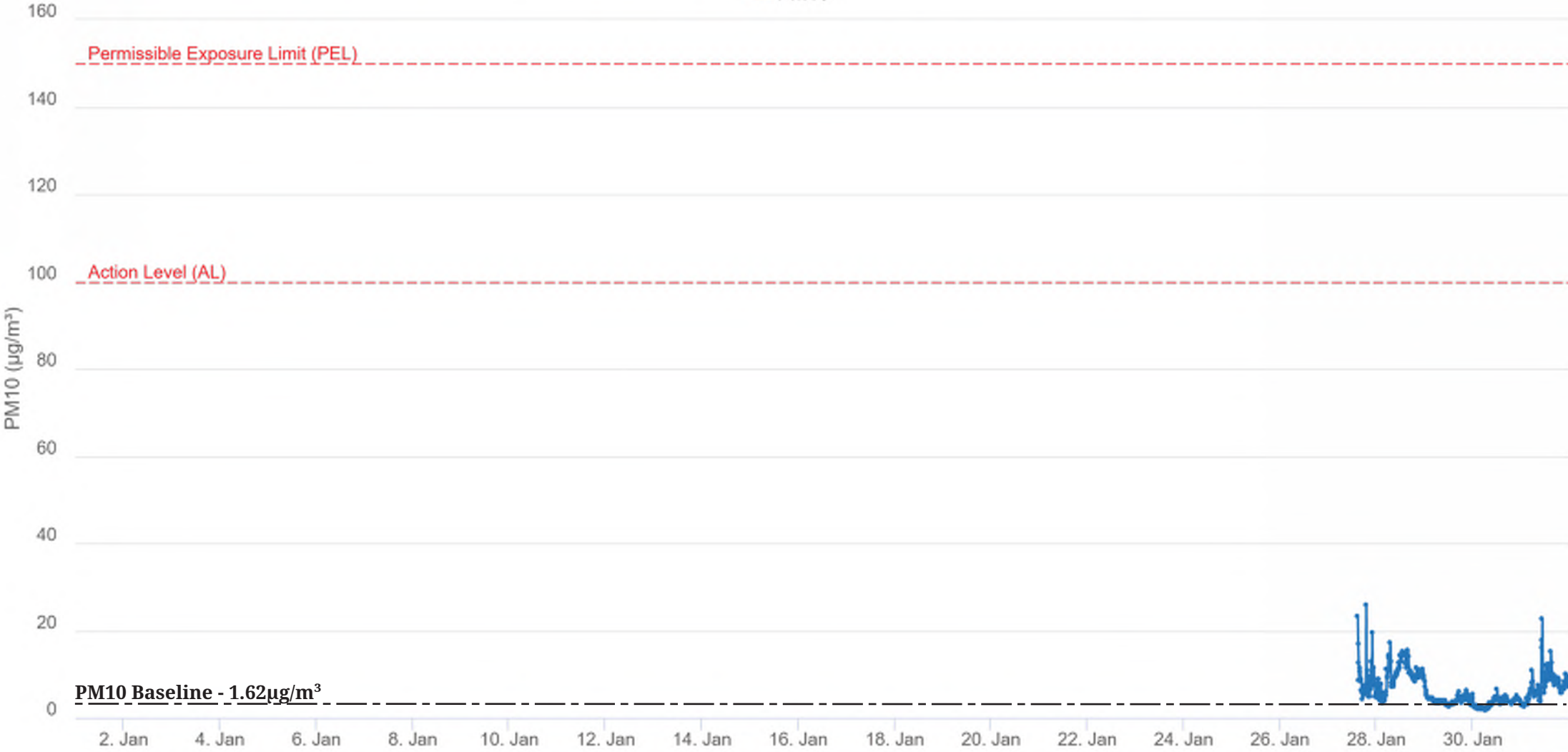
AQM-3 - 15 min avg. (January 2022)



Note: future months will show AQM-UW (upwind monitor) and 24-hour Time Weighted Average

AQM-3 - 15 min avg. (January 2022)

— PM10



Note: future months will show AQM-UW (upwind monitor) and 24-hour Time Weighted Average

Summary of Data February 2022:

For the month of February 2022, construction-related Particulate Matter (PM) net 2.5 or 10 levels did not surpass Daily Permissible Exposure Limits (PEL) (24-hour time weighted average) or for the 15-minute time weighted average.

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

- PM 10 $\mu\text{g}/\text{m}^3$ levels remained under the Permissible Exposure Limit (PEL).

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

- PM 2.5 $\mu\text{g}/\text{m}^3$ levels remained under the Permissible Exposure Limit (PEL).

Mitigation Measures:

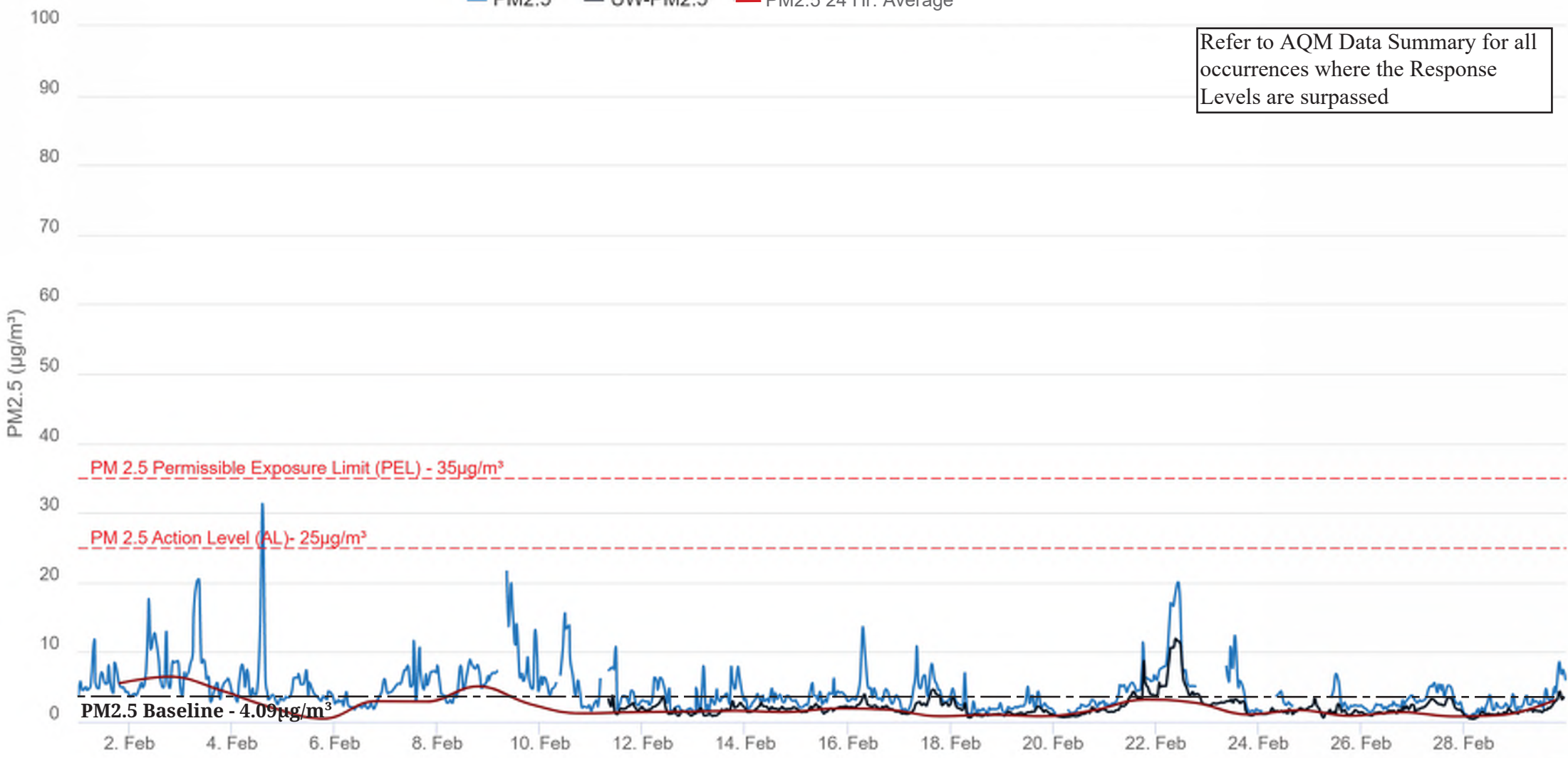
- Throughout the month, construction activity was closely monitored, and dust mitigation techniques were continuously implemented to successfully contain any airborne particulates created due to construction activity.

FEBRUARY 2022 DATA PLOTS

AQM-1 - 15 min avg. (February 2022)

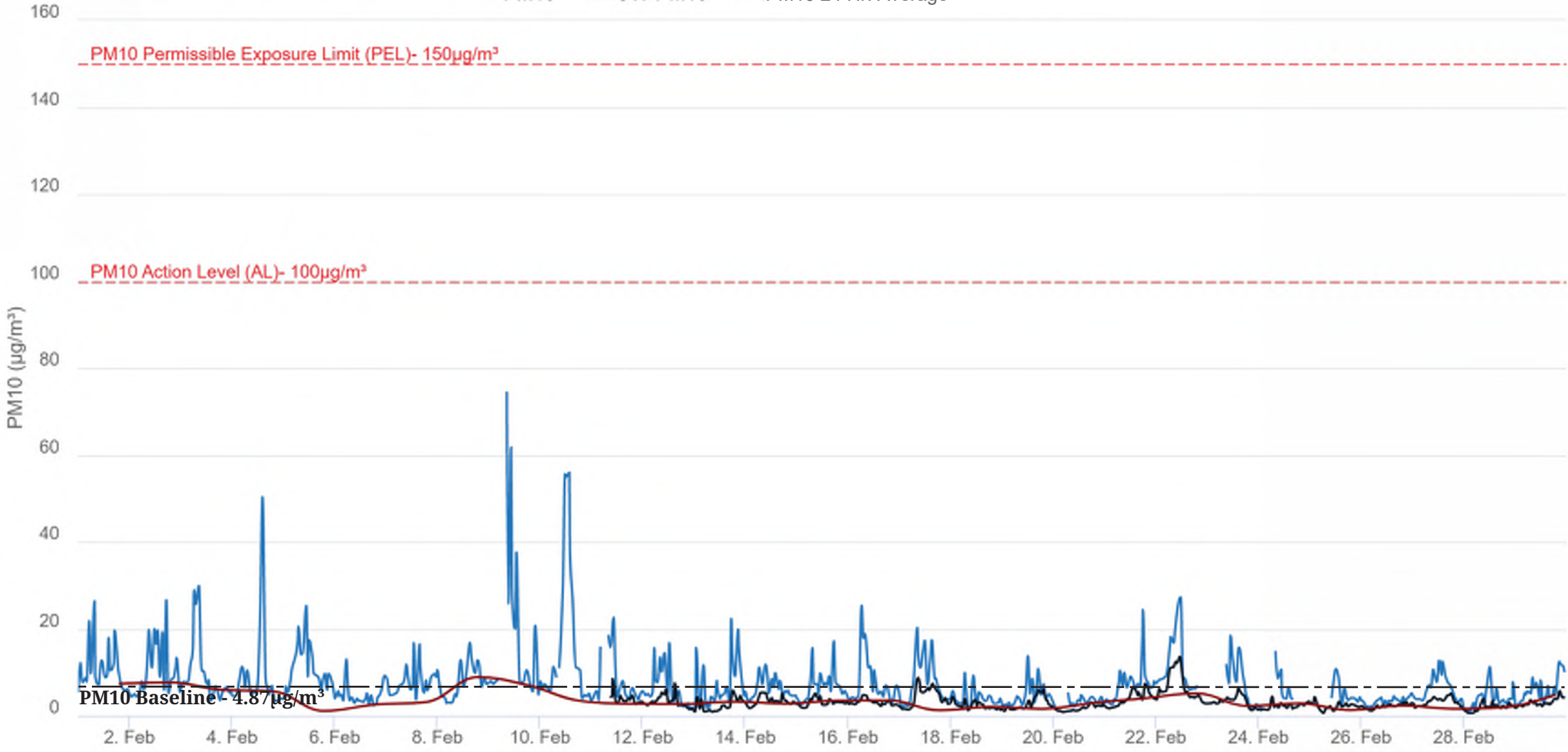
— PM2.5 — UW-PM2.5 — PM2.5 24 Hr. Average

Refer to AQM Data Summary for all occurrences where the Response Levels are surpassed



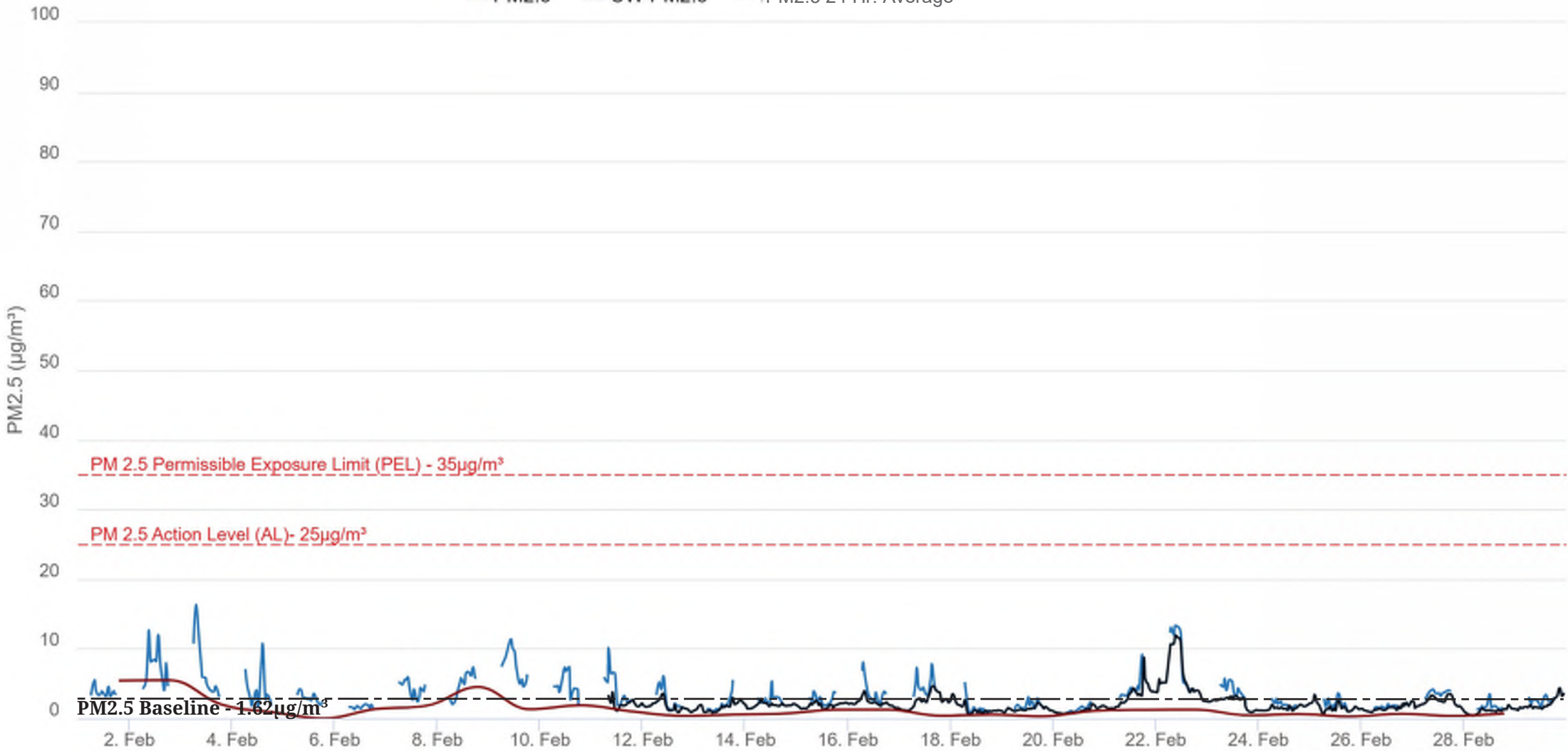
AQM-1 - 15 min avg. (February 2022)

PM10 UW-PM10 PM10 24 Hr. Average



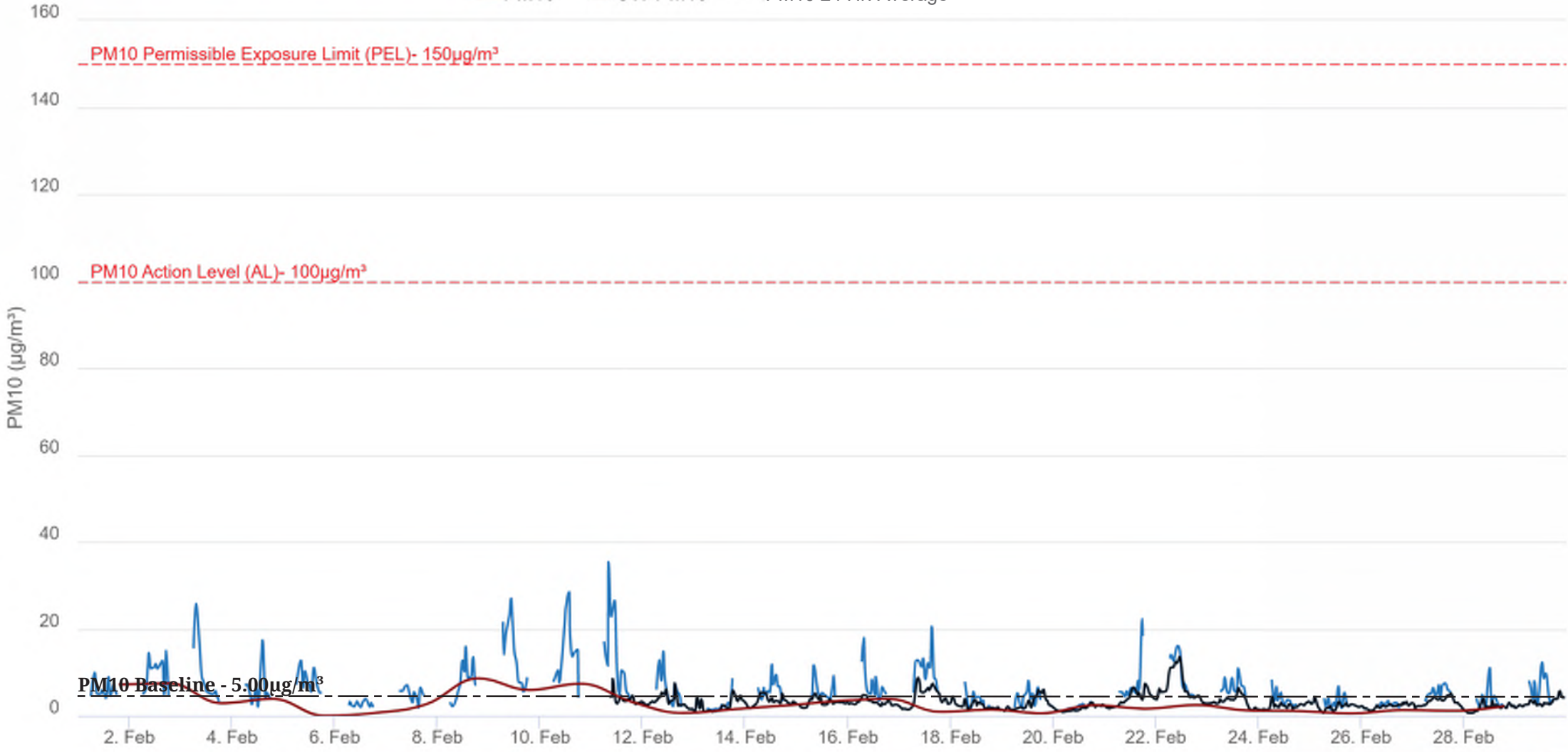
AQM-2 - 15 min avg. (February 2022)

— PM2.5 — UW-PM2.5 — PM2.5 24 Hr. Average



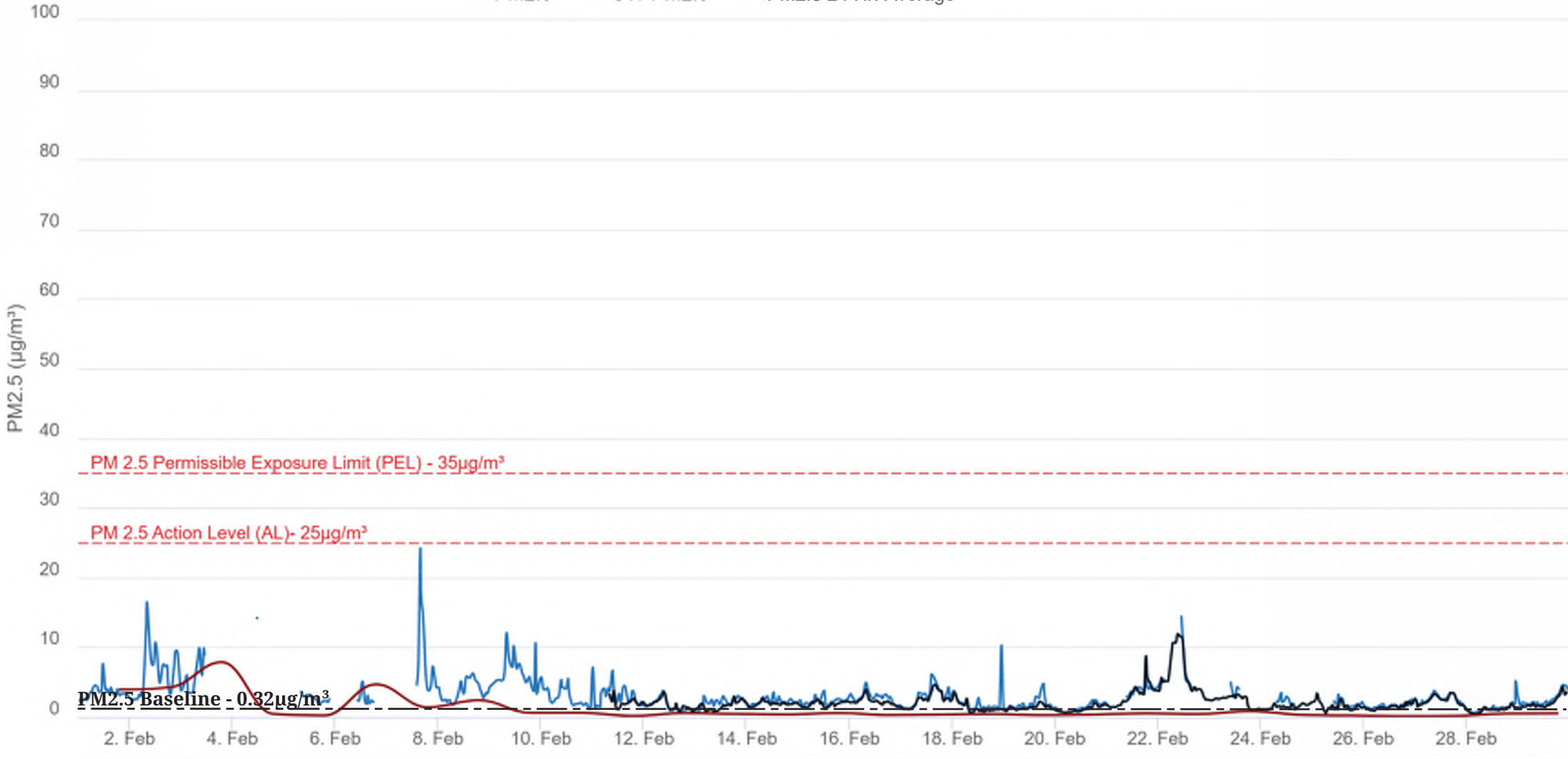
AQM-2 - 15 min avg. (February 2022)

PM10 UW-PM10 PM10 24 Hr. Average



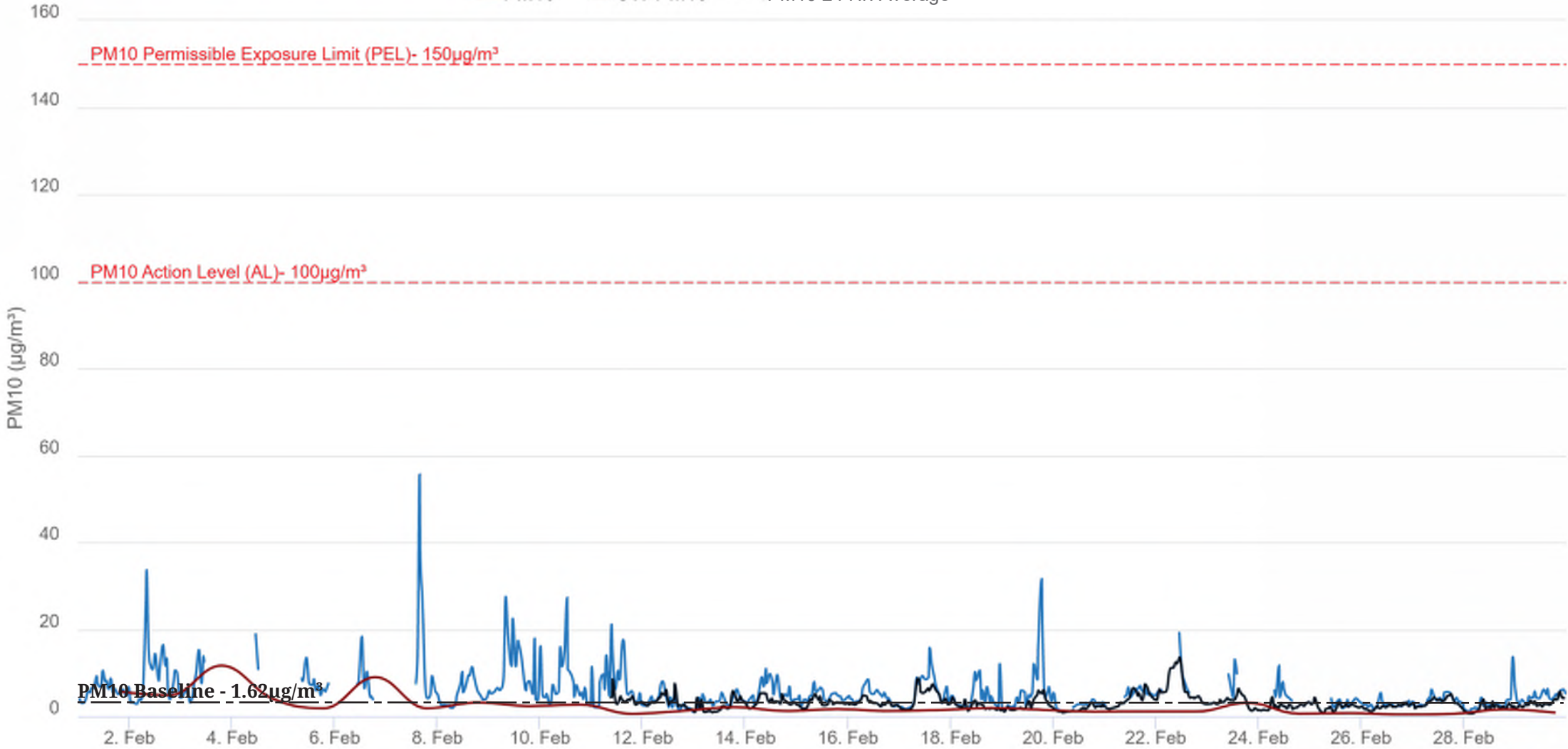
AQM-3 - 15 min avg. (February 2022)

— PM2.5 — UW-PM2.5 — PM2.5 24 Hr. Average



AQM-3 - 15 min avg. (February 2022)

PM10 UW-PM10 PM10 24 Hr. Average



AQM-4 - 15 min avg. (February 2022)

PM2.5 UW-PM2.5 Net PM2.5 Net PM2.5 - 24 Hr Average



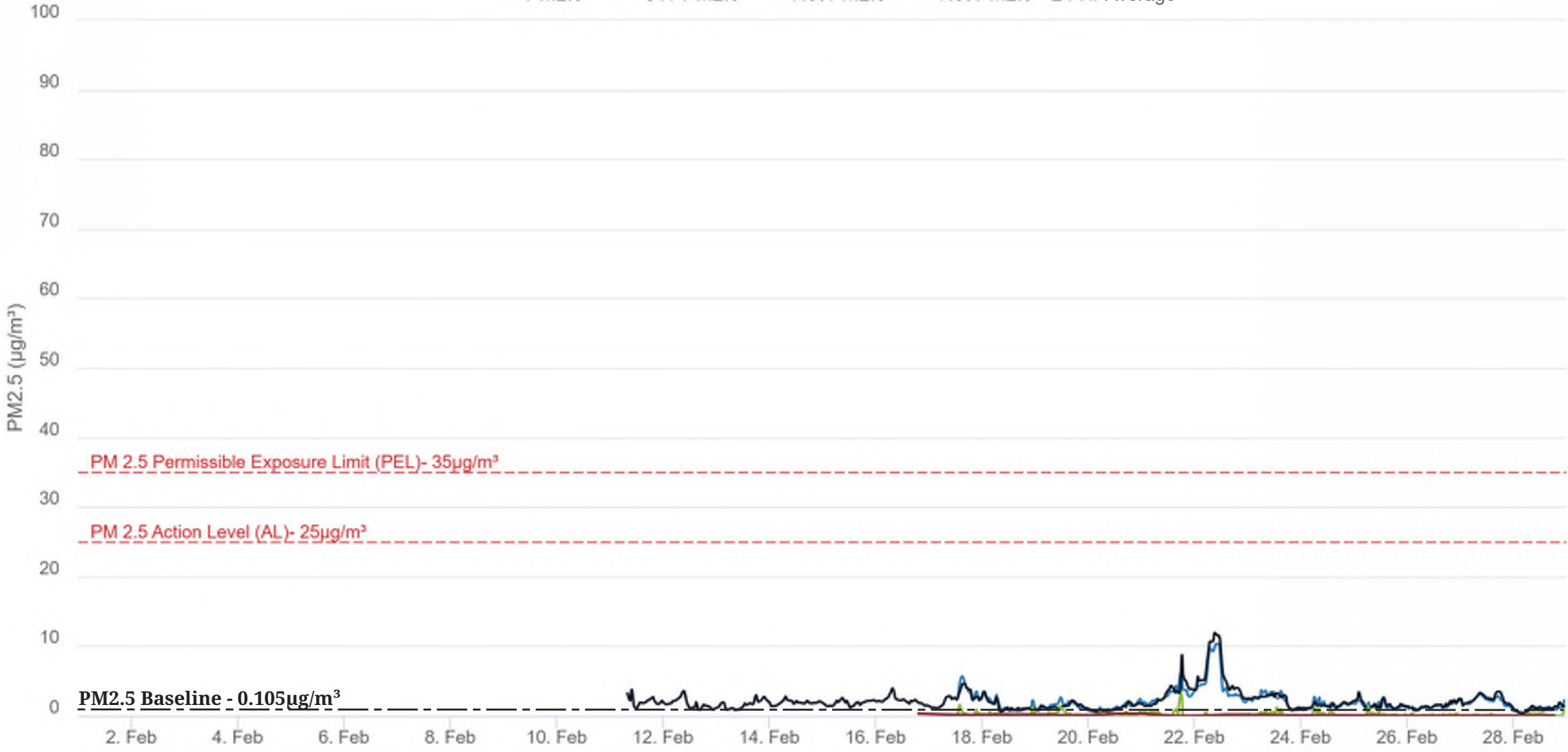
AQM-4 - 15 min avg. (February 2022)

— PM10 — UW-PM10 — Net PM10 — Net PM10 - 24 Hr Average



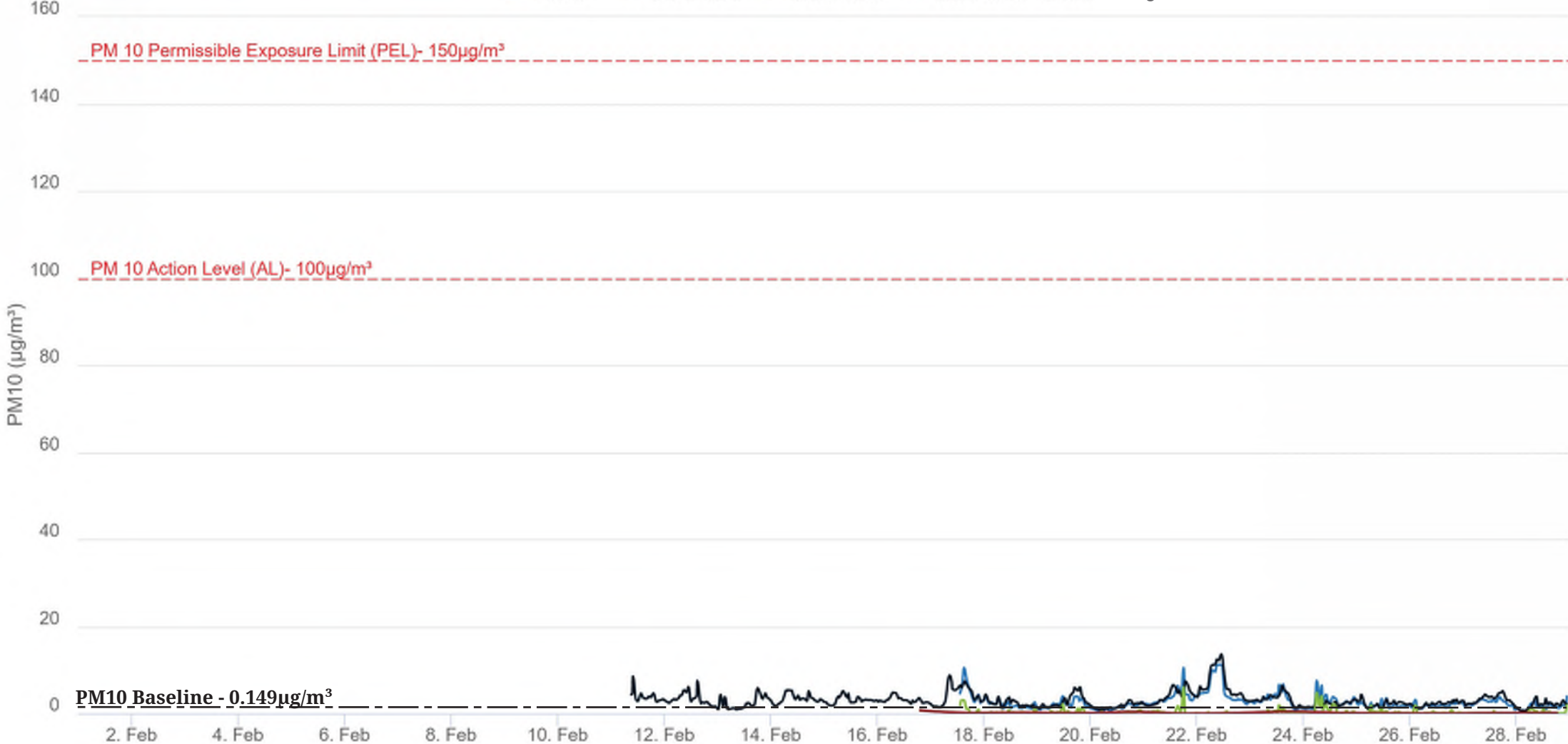
AQM-5 - 15 min avg. (February 2022)

— PM2.5 — UW-PM2.5 — Net PM2.5 — Net PM2.5 - 24 Hr Average



AQM-5 - 15 min avg. (February 2022)

— PM10 — UW-PM10 — Net PM10 — Net PM10 - 24 Hr Average



Summary of Data March 2022:

There were no PM10 readings recorded above the Permissible Exposure Level (PEL) (15-minute time weighted average) during the month of March.

PM2.5 levels surpassed the PEL (15-minute TWA) at AQM-3 on March 19.

For the month of March 2022, construction-related Particulate Matter (PM) net 2.5 or 10 levels did not surpass Daily Permissible Exposure Limits (PEL) (24-hour time weighted average).

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

- PM 10 $\mu\text{g}/\text{m}^3$ levels remained under the Permissible Exposure Limit (PEL).

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

- PM 2.5 $\mu\text{g}/\text{m}^3$ levels surpassed the PEL (15-minute time weighted average) at AQM-3 on March 19. These high levels were recorded for a duration of under 15 minutes and were recorded in the morning, outside of construction hours.

Mitigation Measures:

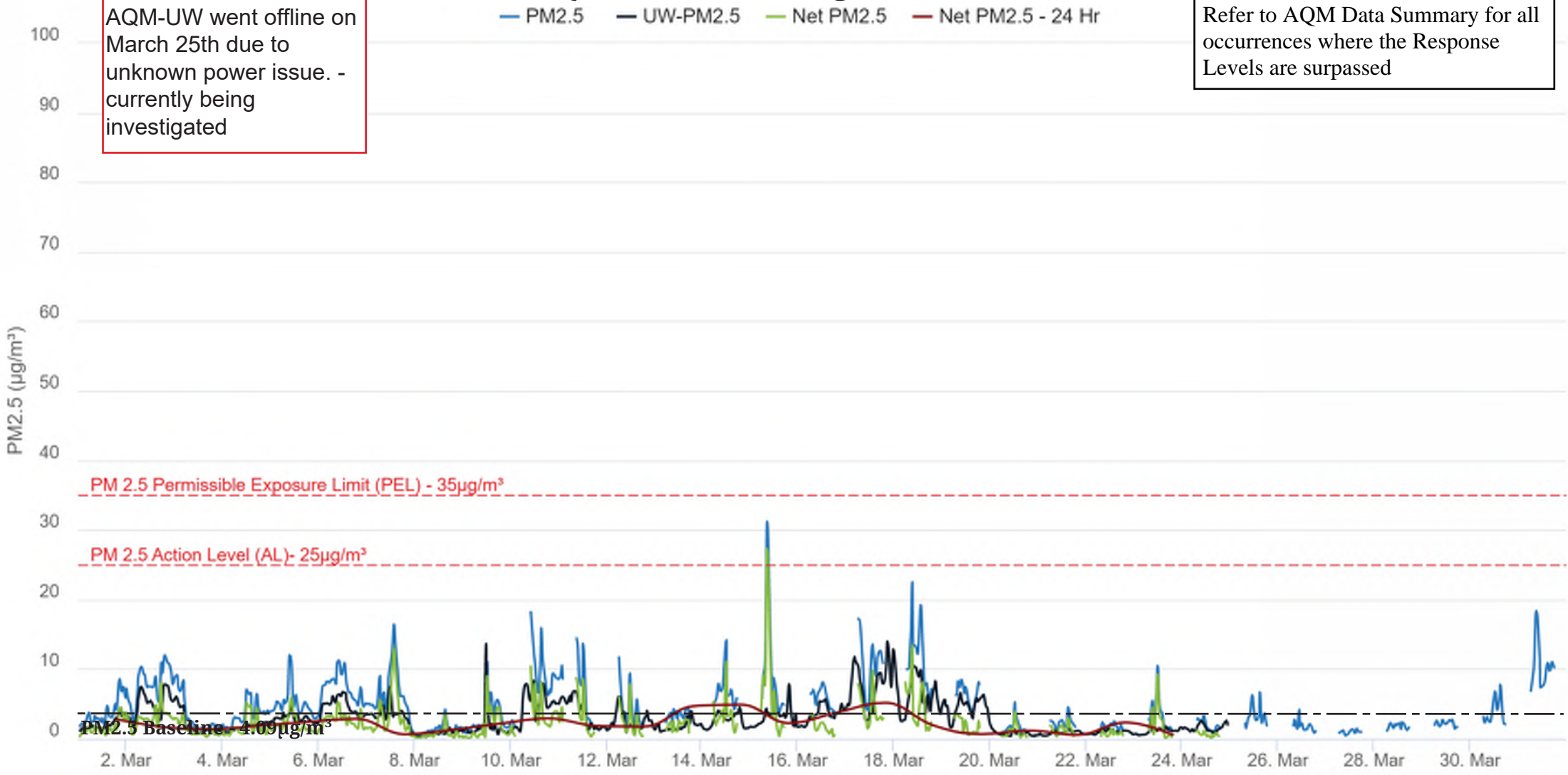
- Throughout the month, construction activity was closely monitored, and dust mitigation techniques were continuously implemented to successfully contain any airborne particulates created due to construction activity.

MARCH 2022 DATA PLOTS

AQM-1 - 15 min avg. (March 2022)

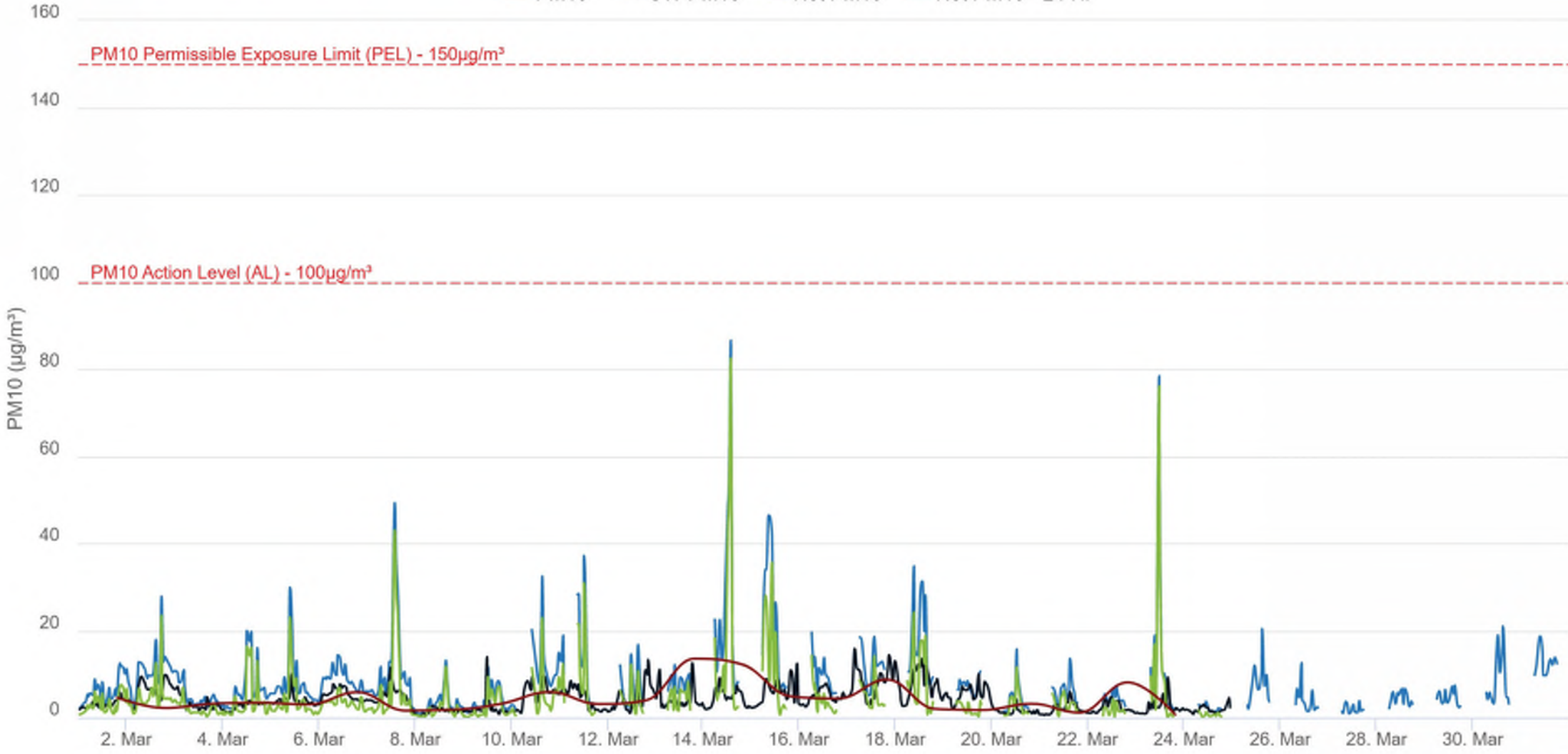
FOR ALL PLOTS:
AQM-UW went offline on
March 25th due to
unknown power issue. -
currently being
investigated

Refer to AQM Data Summary for all
occurrences where the Response
Levels are surpassed



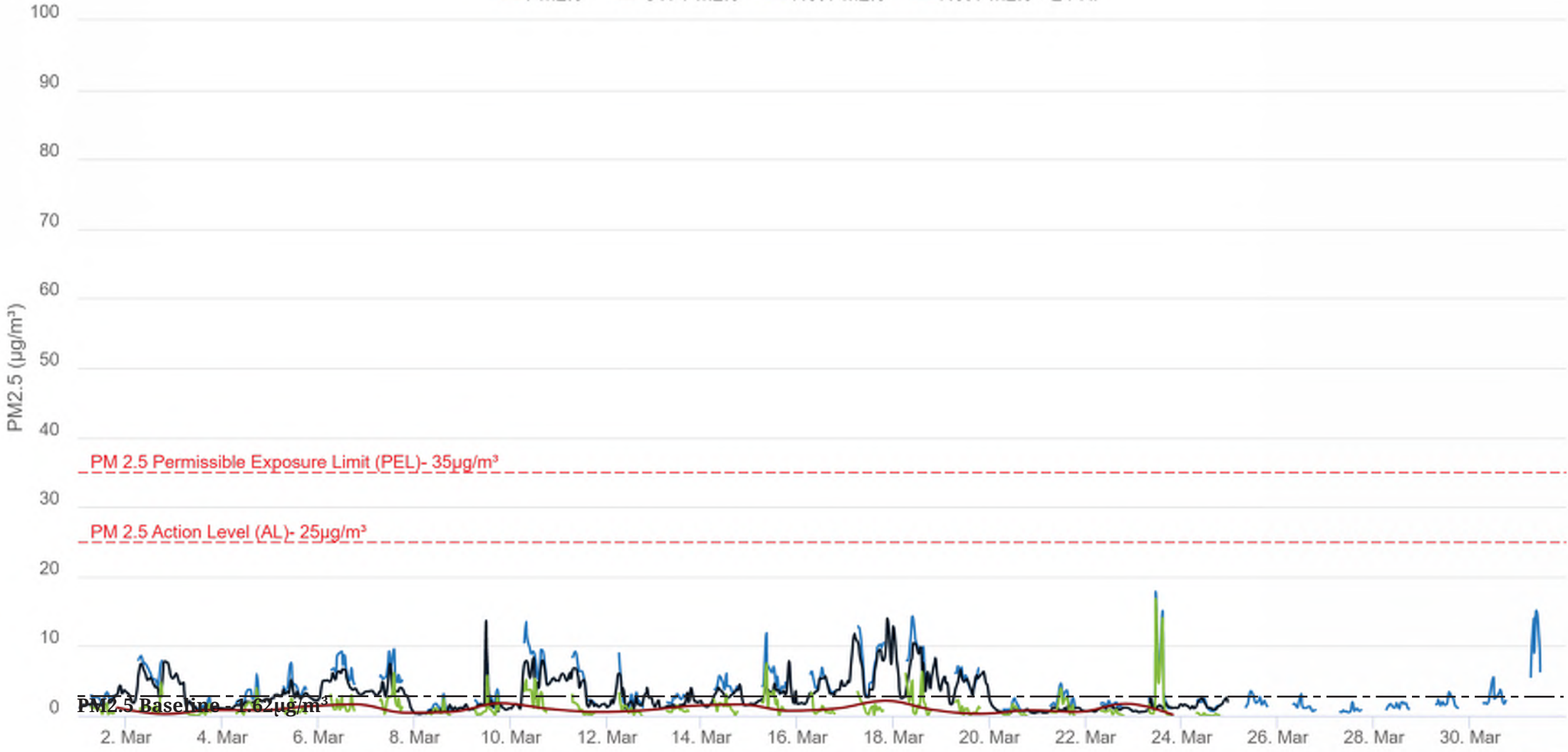
AQM-1 - 15 min avg. (March 2022)

— PM10 — UW-PM10 — Net PM10 — Net PM10 - 24 Hr



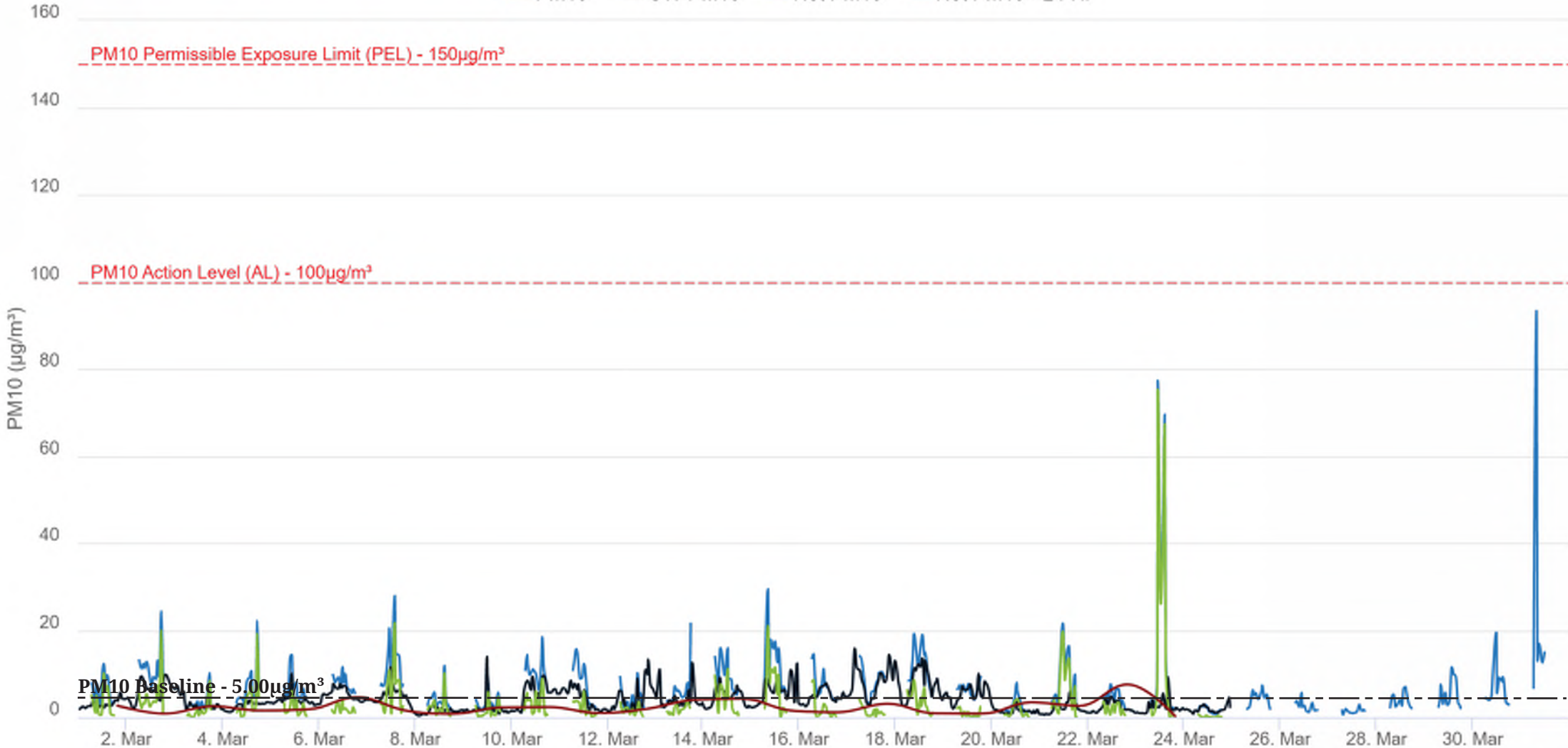
AQM-2 - 15 min avg. (March 2022)

PM2.5 UW-PM2.5 Net PM2.5 Net PM2.5 - 24 Hr



AQM-2 - 15 min avg. (March 2022)

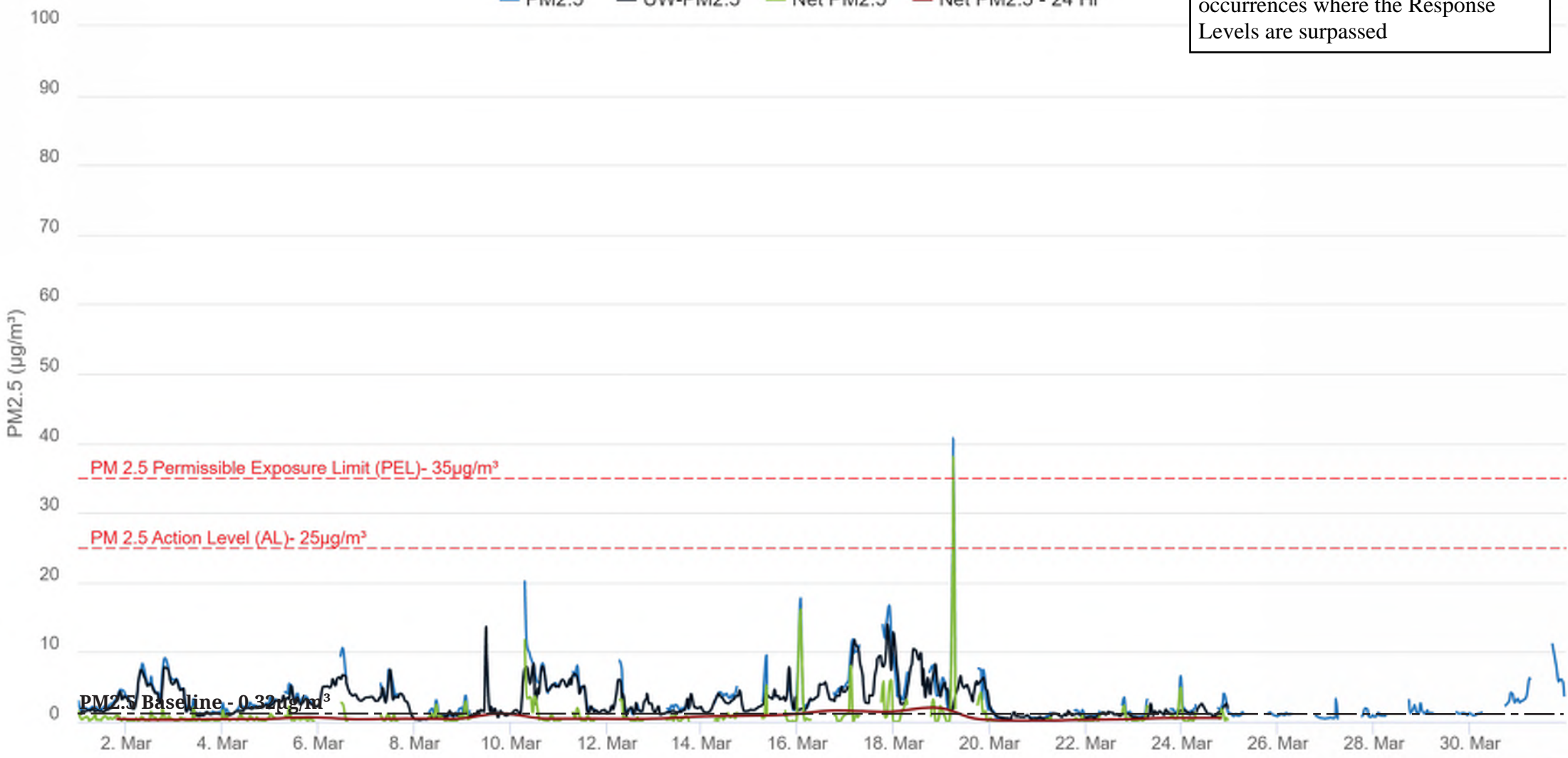
— PM10 — UW-PM10 — Net PM10 — Net PM10 - 24 Hr



AQM-3 - 15 min avg. (March 2022)

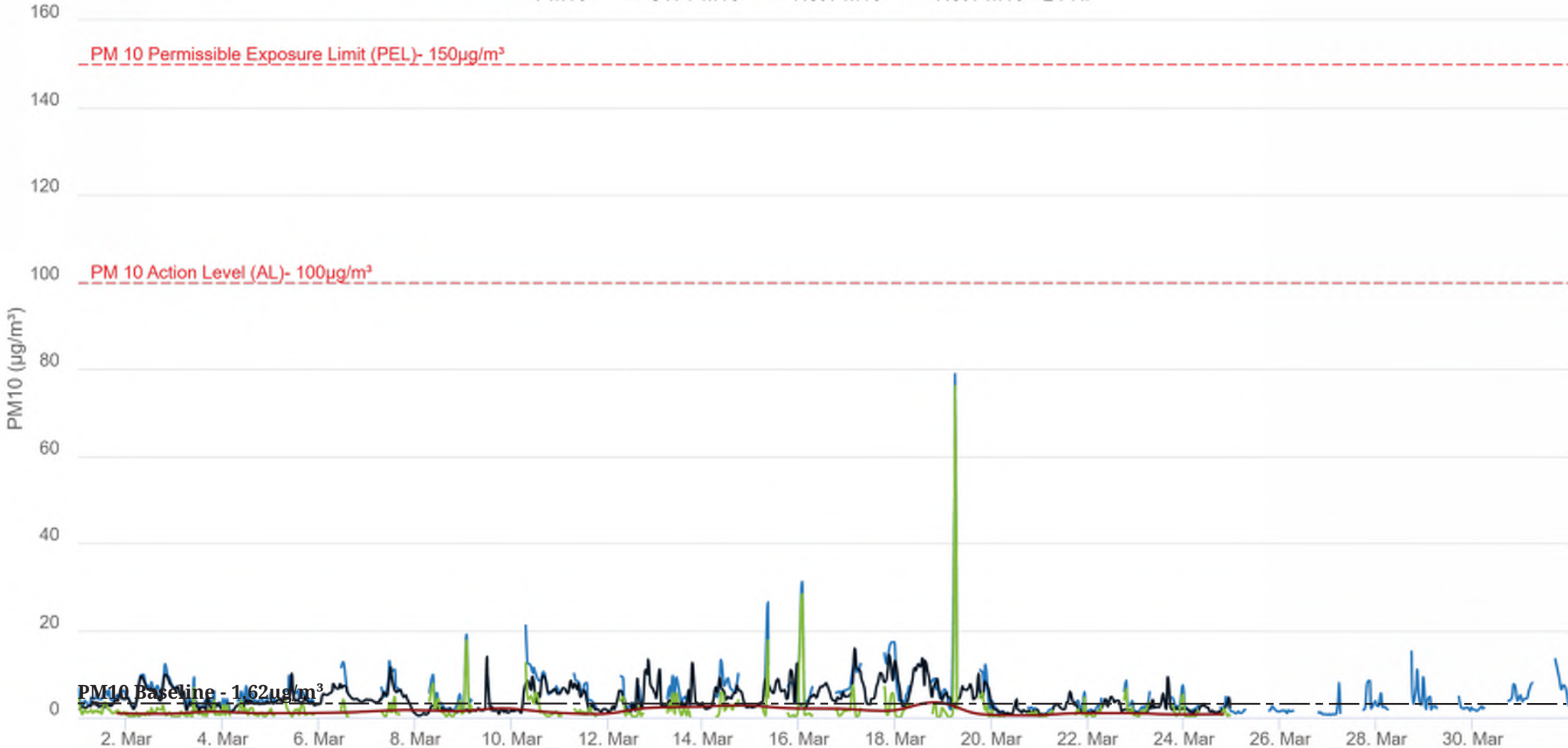
PM2.5 UW-PM2.5 Net PM2.5 Net PM2.5 - 24 Hr

Refer to AQM Data Summary for all occurrences where the Response Levels are surpassed



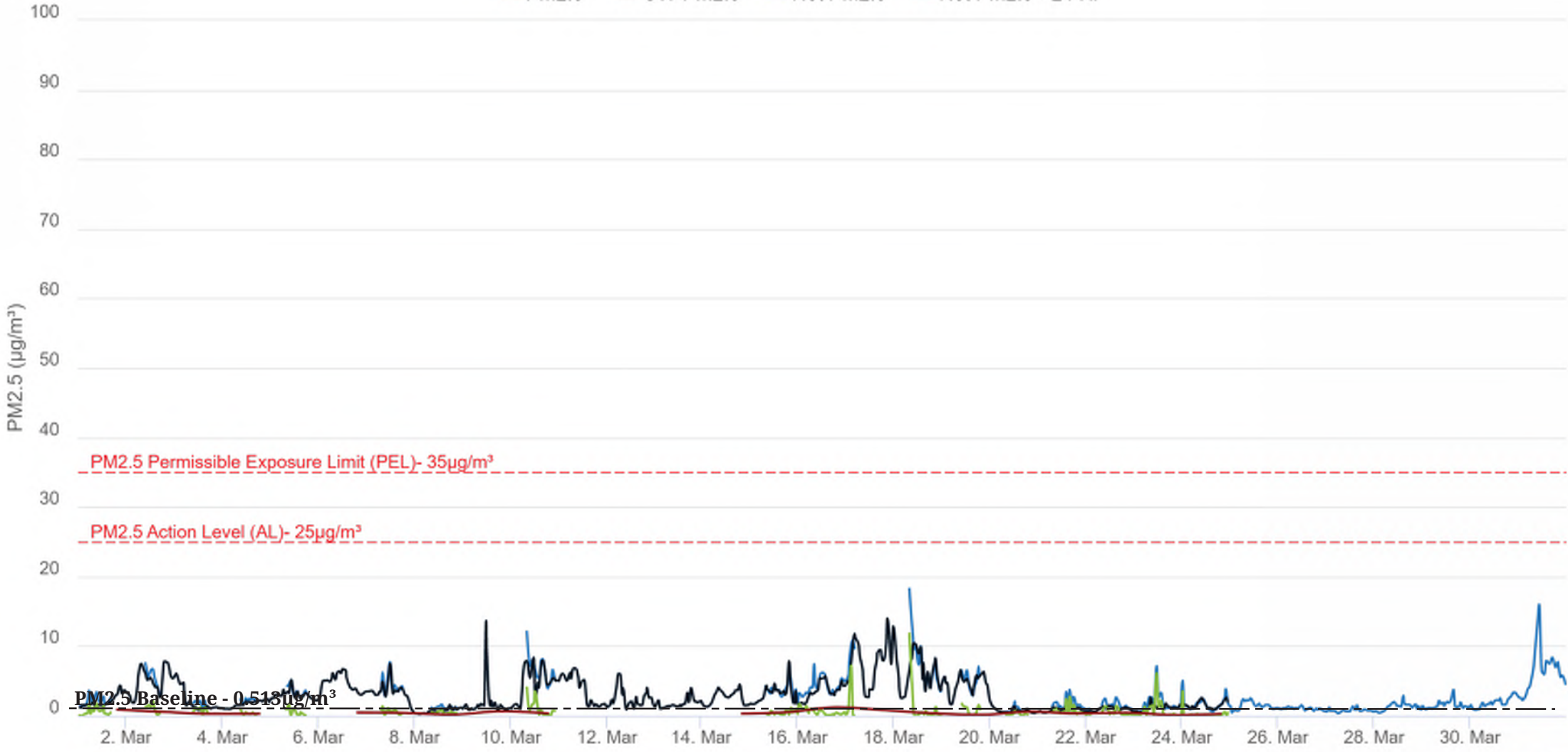
AQM-3 - 15 min avg. (March 2022)

PM10 UW-PM10 Net PM10 Net PM10 - 24 Hr



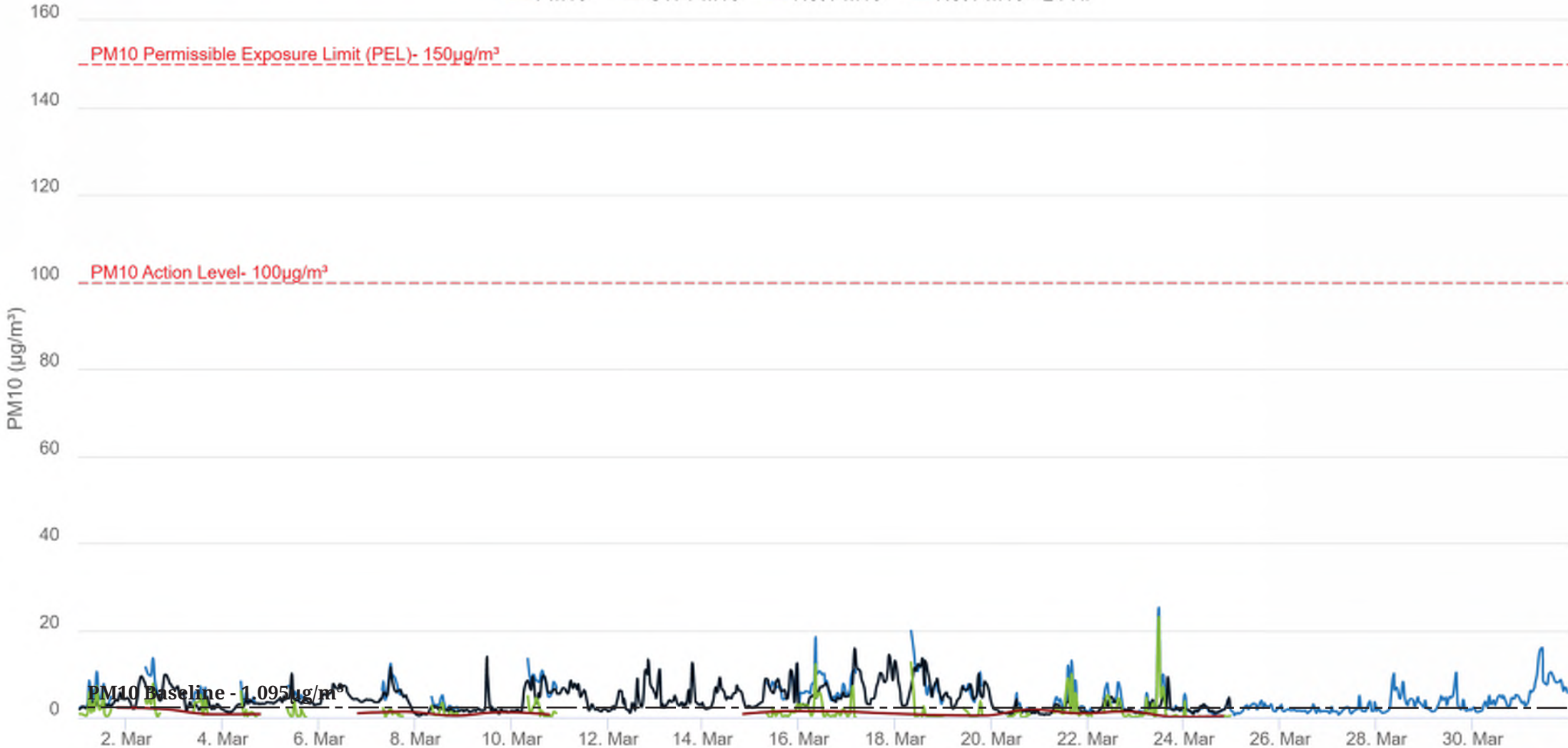
AQM-4 - 15 min avg. (March 2022)

PM2.5 UW-PM2.5 Net PM2.5 Net PM2.5 - 24 Hr



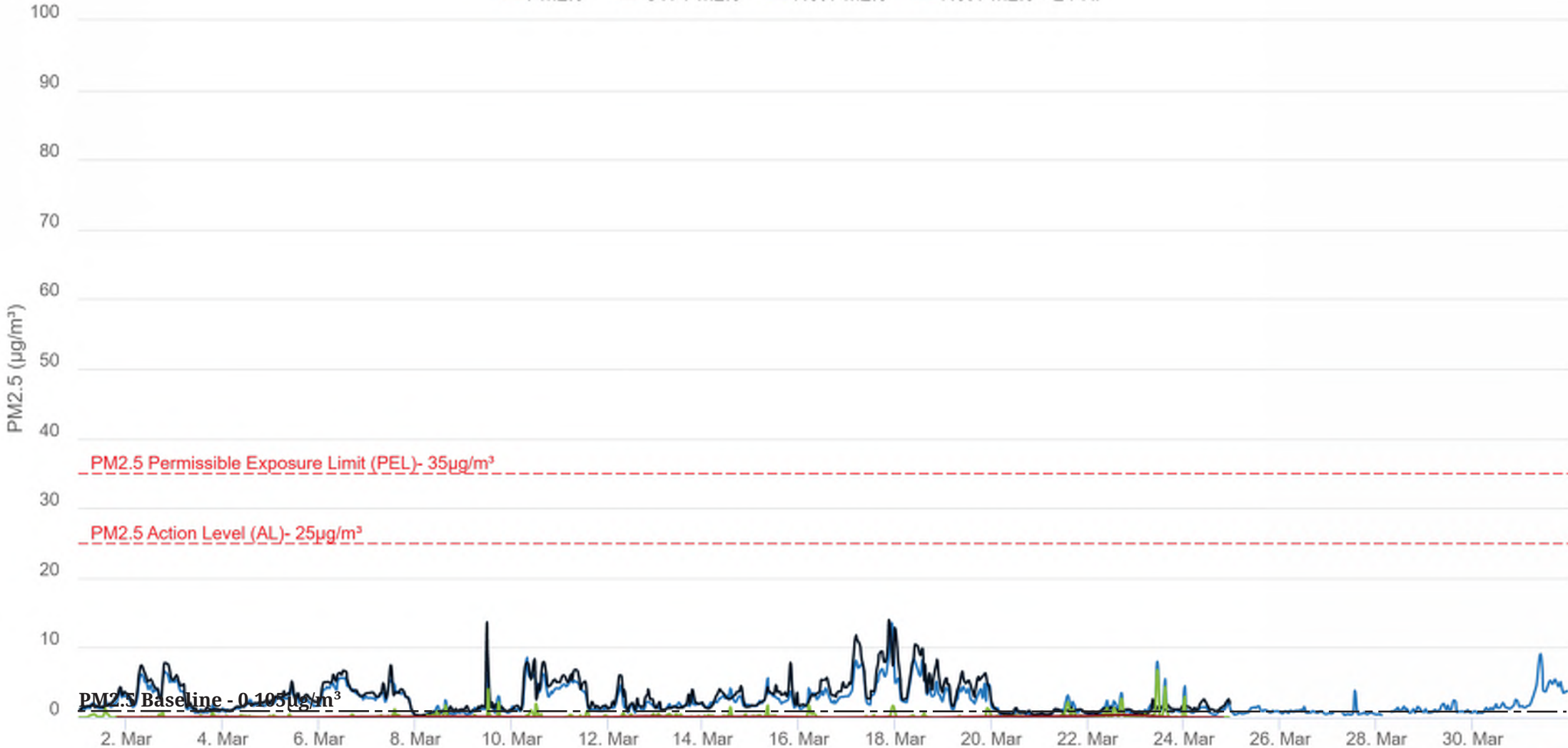
AQM-4 - 15 min avg. (March 2022)

PM10 UW-PM10 Net PM10 Net PM10 - 24 Hr



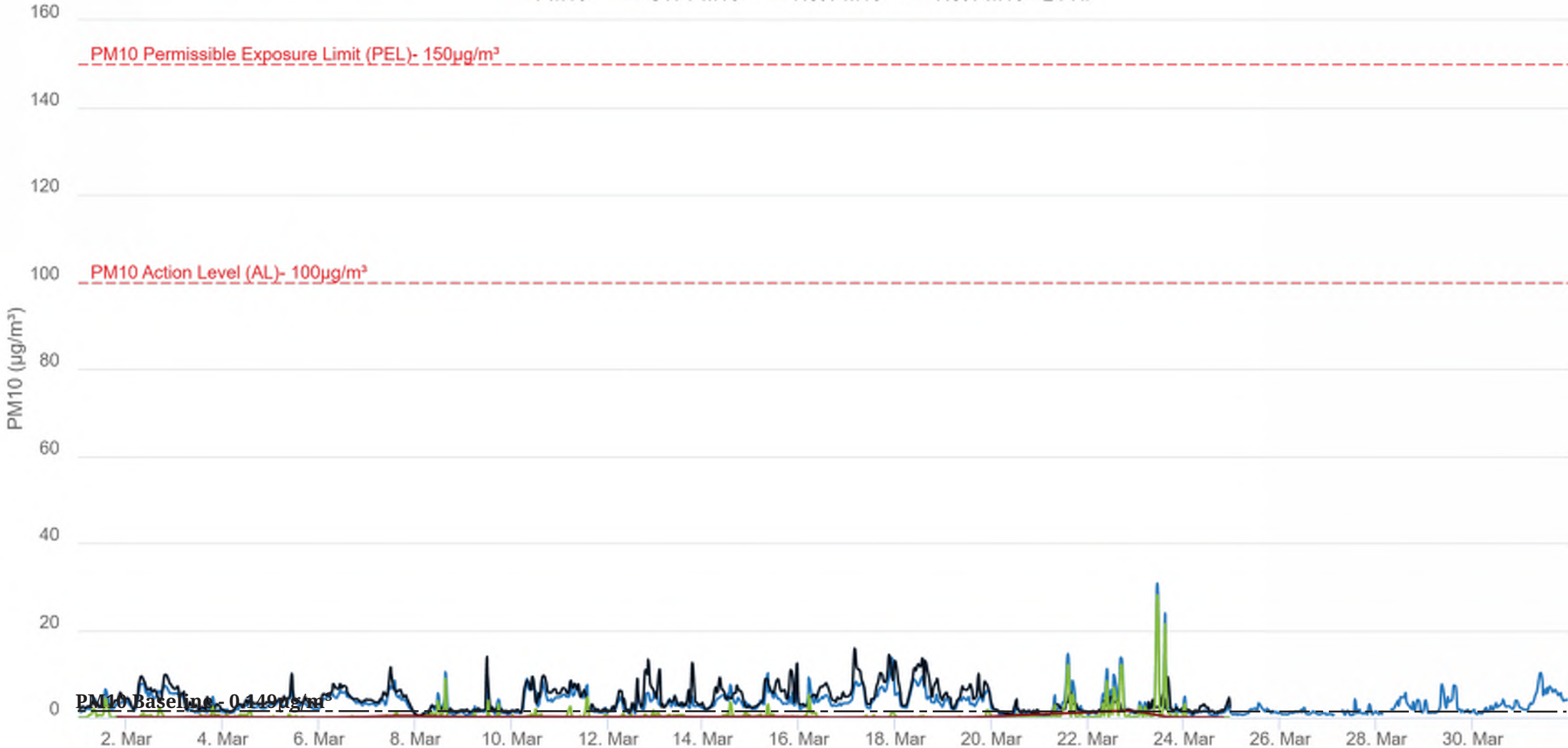
AQM-5 - 15 min avg. (March 2022)

PM2.5 UW-PM2.5 Net PM2.5 Net PM2.5 - 24 Hr



AQM-5 - 15 min avg. (March 2022)

— PM10 — UW-PM10 — Net PM10 — Net PM10 - 24 Hr



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 24hours, the ESCR project is analyzing levels more frequently at 15min 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](#)

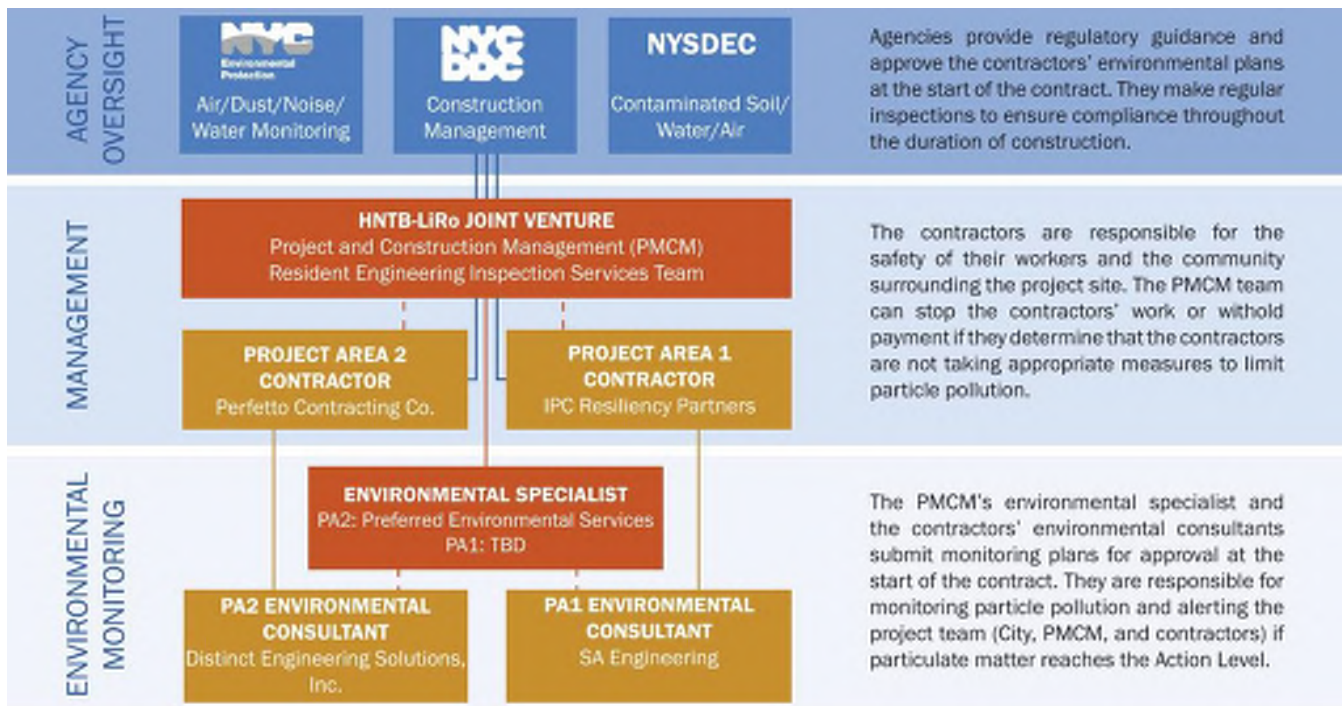


Fig.4 East Side Coastal Resiliency Air Quality Monitoring Flow Chart

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>