BATTERY PARK CITY RESILIENCY PROJECT

MONTHLY COMMUNITY AIR QUALITY MONITORING REPORT

01 | 2025

ISSUE DATE: February 7. 2025
PERIOD COVERED: January 2025
PREPARED BY: EPM
WITH DATA COLLECTED BY: EPM

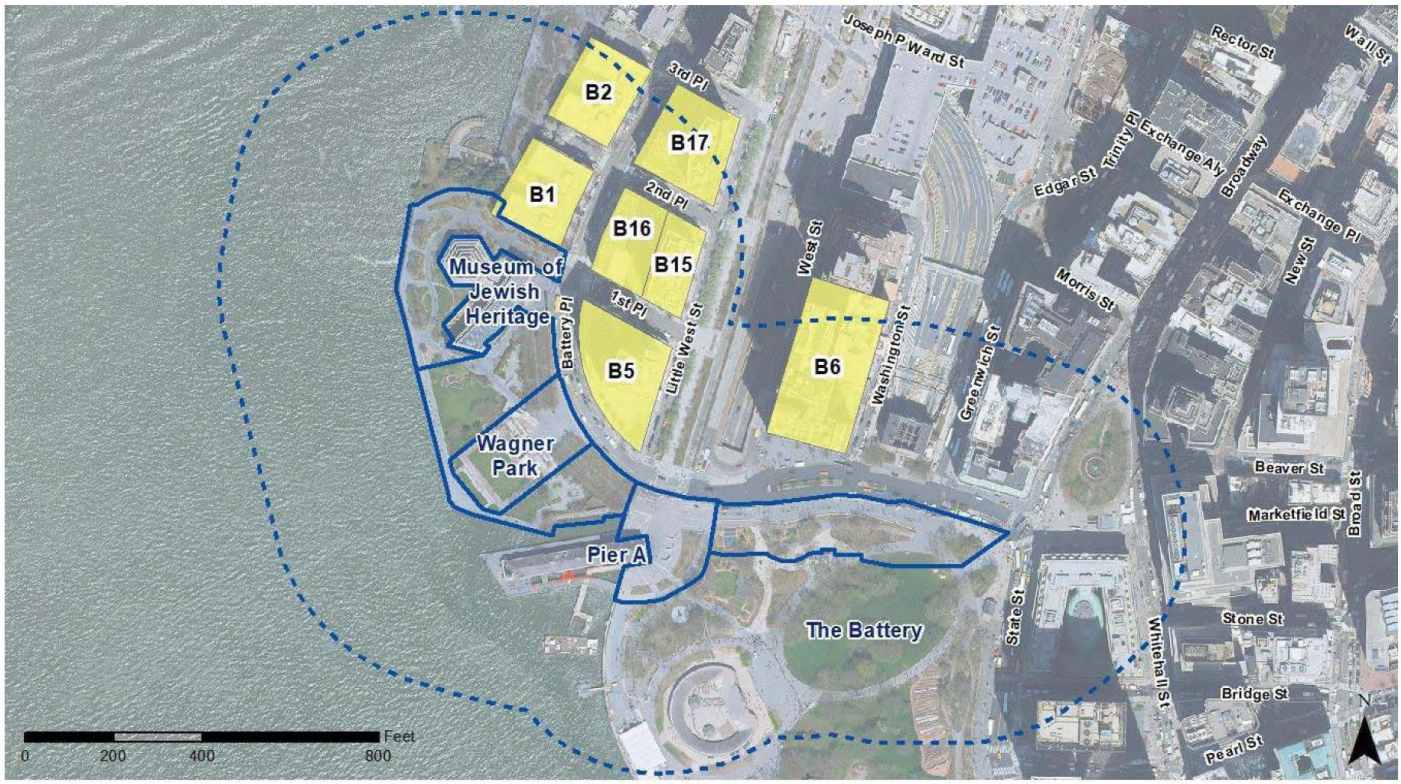
NEW YORK STATE OF OPPORTUNITY.

Battery Park City Authority

Introduction

In response to the devastating impact of Superstorm Sandy in Lower Manhattan and in anticipation of future severe storm activity related to climate change, the South Battery Park City Resiliency Project (SBPCR) Project has been developed as an integrated coastal flood risk management project in Lower Manhattan.

The SBPCR contemplates creation of an integrated coastal flood risk management system from the Museum of Jewish Heritage, across Wagner Park and Pier A Plaza, and along the northern border of the Historic Battery. The SBPCR Project represents one of several projects within the overall Lower Manhattan Coastal Resiliency (LMCR) Master Plan.



Legend

- Modeled Construction Sites
- Study Area (400-Foot Buffer)
- Sensitive Use within 400 Feet

The purpose of the SBPCR Project is to:

- Provide a reliable coastal flood control system to provide risk reduction to property, residents and assets within the vicinity of South Battery Park City in response to the design storm event.
- Protect and preserve to the maximum extent practicable, open space resources and opportunities to view and interact with the Manhattan waterfront, particularly in Wagner Park, Pier A Plaza and The Battery; and,
- Avoid or minimize disruption to existing below and above-ground infrastructure (i.e., water and sewer infrastructure, subways, tunnels, utilities, etc.) from flood events.

The SBPCR Project enhances Wagner Park's programmatic diversity and provides an opportunity for a new waterfront marine habitat educational area along the Pier A inlet. The Pier A inlet design converts a concrete relieving platform and rip-rap edge to a terraced condition that improves habitat opportunities.

This project involves the construction of an integrated flood barrier alignment system in the southern portion of Battery Park City and portions of Lower Manhattan. The flood alignment runs from 1st Place and the Museum of Jewish Heritage, through Wagner Park, across Pier A Plaza, and then along the north side of the Battery Bikeway in The Battery to higher ground near the intersection of Battery Place and State Street. In addition, the following interior drainage improvements are proposed: a near surface isolation (NSI) system along West Street between Battery Place and Albany Street; tide gates at 1st Place near the Museum of Jewish Heritage, Rector Place near the Hudson River, as well as in Pier A Plaza; and two isolation valves in The Battery portion of the Project Area.

The flood alignment is composed of multiple different integrated features such as flip-up deployable gates (flip-up deployable), glass-topped floodwalls, buried floodwalls underneath terraced slopes, exposed floodwalls, and bermed floodwalls. The term "flood alignment" is used to differentiate the combination of flood control measures represented by the SBPCR Project from a traditional freestanding flood wall for risk reduction. In addition, interior drainage improvements will be required for the Project. The purpose of the flood alignment is to meet the requirements for FEMA accreditation and to allow for future protection against a 100-year storm event, with adaptability for protection against a 2050's 100-year storm upon the completion of the North/West Battery Park City Resiliency Project and a tie-in between the projects.

The potential affected residential receptors within the study area are shown below along with the construction site.

An Environmental Impact Statement (EIS) was conducted for this project, which involved an assessment of the construction activities on air quality among other parameters. The air quality analysis for construction activities considered the following on-site emission sources:

- Trucks and non-road equipment diesel engine exhaust.
- Surface fugitive dust resulting from the movement of trucks and non-road equipment.
- Dust from material handling activities.

Community Air Quality Monitoring for PM10

PM stands for **particulate matter** (also called particle pollution or dust): 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 inhalable particles, with aerodynamic diameters that are generally 10 micrometers and smaller (PM10; also refer to as dust).

The Clean Air Act requires EPA to set National Ambient Air Quality Standards (NAAQS) 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 primary standard 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 primary standard for PM10 is:

Averaging time:	24 hours
Regulatory level:	150 μg/m^3
NAAQS form:	Not to be exceeded more than once per year on average over 3 years

The SBPCR team will be conducting real-time air quality monitoring throughout construction to ensure the ongoing health and safety of the adjacent community. In particular, the SBPCR Air Quality Monitoring program will measure levels of Particulate Matter (PM) at PM10.

There are four (4) stationary monitoring locations for PM10 equipped with continuous, real-time remote sensing instrument and one (1) mobile work-shift-based, real-time remote sensing instrument. The mobile one ("Ranger") is being used only during construction and is typically located within the right-of-way of the project and typically at the perimeter of the work area(s). Stationary units, located at pre-set sites, monitor wider ambient air conditions. They provide consistent air quality measurements over time, offering an extensive overview of regional air quality changes. On the other hand, the mobile unit, meant to monitor more localized conditions, is often stationed near specific particulate matter sources, like construction sites in our instance. Hence, due to its proximity to dust generation sources, it is expected to register elevated airborne particulate concentrations. However, this is not an environmental, safety of hygiene report as long as the action is immediate and effective. An aerial photograph showing all four (4) monitoring locations (indicative for the mobile one) is included in **Appendix A**.

In the line graphs presented in the SBPCR 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 SBPCR project team monitor the project's effect on air quality more closely.

The contract applicable criteria are:

PM10 Criterion 1 (warning level). If the downwind PM10 particulate level is 100 μg/m^3 greater than background for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques must be employed. Work may continue with dust suppression techniques provided that downwind PM10 particulate levels do not exceed 150 μg/m^3 above the upwind level and provided that no visible dust is migrating from the work area. As a background, the value of 28 μg/m^3 has been adopted based on the final Environmental Impact Statement (EIS) for the project. **Hence, the PM10 criterion 1 (warning level) is >128 μg/m^3.**

PM10 Criterion 2 (action level). If, after implementation of dust suppression techniques, downwind PM10

particulate levels are greater than 150 μg/m^3 above the upwind level, work must be stopped, and a re-evaluation of activities initiated. Work can resume provided that dust suppression measures and other controls are successful in reducing the downwind PM10 particulate concentration to within 150 μg/m^3 of the upwind level and in preventing visible dust migration. **Hence, the PM10 criterion 2 (action level) is >178 μg/m^3.**

The PM10 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 PM10 readings on the 15-minute TWA, the SBPCR project can ensure that Net PM10 never exceeds the 24-hour TWA, or daily value.

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.

Community Air Quality Monitoring for VOCs

The SBPCR team will be conducting air quality monitoring throughout construction to ensure the ongoing health and safety of the adjacent community. In particular, the SBPCR Air Quality Monitoring program will measure levels of Volatile Organic Compounds (VOCs).

There are four (4) stationary monitoring locations for VOCs equipped with continuous, real-time remote sensing instruments and one (1) mobile work-shift-based, real-time remote sensing instrument. . The mobile one ("Ranger"), as mentioned earlier, is being used only during construction and is typically located within the right-of-way of the project and typically at the perimeter of the work area(s). Due to its proximity to potential VOCs emitting sources, it is expected to register elevated airborne particulate concentrations. However, this is not an environmental, safety of hygiene report as long as the action is immediate and effective. An aerial photograph showing all four (4) monitoring locations (indicative for the mobile one) is included in **Appendix A**.

The contract applicable criteria are:

VOC Criterion 1 (action level). If the ambient air concentration of total organic vapors at the downwind perimeter of the work area or exclusion zone exceeds 5 ppm above background for the 15-minute average, work activities must be temporarily halted and monitoring continued. If the total organic vapor level readily decreases (per instantaneous readings) below 5 ppm over background, work activities can resume with continued monitoring. As a background, the value of 0 ppm has been adopted based on the final Environmental Impact Statement (EIS) for the project. **Hence, the VOC Criterion 1 is >5 ppm.**

VOC Criterion 2. If total organic vapor levels at the downwind perimeter of the work area or exclusion zone persist at levels in excess of 5 ppm over background but less than 25 ppm, work activities must be halted, the source of vapors identified, corrective actions taken to abate emissions, and monitoring continued. After these steps, work activities can resume provided that the total organic vapor level 200 feet downwind of the exclusion zone or half the distance to the nearest potential receptor or residential/commercial structure, whichever is less - but in no case less than 20 feet, is below 5 ppm over background for the 15-minute average. **Hence, the VOC Criterion 2 is applicable when the range is >5 and <25 ppm.**

VOC Criterion 3. If the organic vapor level is above 25 ppm at the perimeter of the work area, activities must be shutdown. **Hence, the VOC Criterion 1 is >25 ppm.**

Results

PM10

Time series plots of PM10 15-min average concentrations are shown in **Appendix B** for each monitoring location. The warning level (PM10 Criterion 1: PM10 > 128 µg/m³) and action level (PM10 Criterion 2: PM10 > 178 µg/m³) are shown as well.

All PM-10 exceedances are shown in Appendix C. The following exceedances were recorded this month:

PM10 and VOCs Criteria Exceedances

	PM10 > 128 µg/m³		PM10 > 178 µg/m³
	Pier A - East	Ranger 100A	Ranger 100A
1/18/2025 4:00:00 AM	158.8		
1/28/2025 8:30:00 AM		357.1	357.1

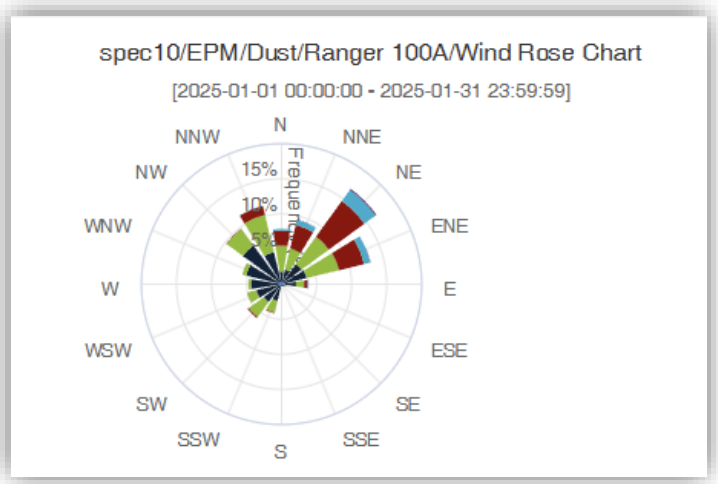
VOCs

Time series plots of VOCs 15-min average concentrations are shown in **Appendix B** for each monitoring location. The action level (VOC Criterion 1: VOC > 5ppm) is shown as well.

All VOCs exceedances are shown in Appendix C. No VOCs exceedances were recorded this month.

Wind Rose

The wind rose chart for the work site is shown below. The prevailing wind direction is from NW to ENE with a mode from NE.



Due to the relative position of the fixed monitoring stations with the job site, the exceedances could originate from the job site only if the wind direction for each monitoring station was as follows:

Monitoring Station	Work area azimuth range and average±deviation from monitoring station for: R. Wagner Park Battery Park	Average wind azimuth and bearing±deviation in reference to: R. Wagner Park Battery Park
North	155° to 215° (185°±30°) 120° to 180° (150°±30°)	5° or NE5°±30° 330° or NW30°±30°
Pier A – East	285° to 5° (325°±40°) 65° to 195° (130°±65°)	145° or SE35°±40° 310° or NW50°±65°
Pier A- West	325° to 75° (20°±55°) 80° to 150° (115°±35°)	145° or SW35°±55° 295° or NW65°±35°
Monitoring Station 04	270° to 310° (290°±20°) 95° to 275° (185°±90°)	110° or SE70°±20° 5° or NE5°±90°

Note, that the upwind/downwind designation is not included for the mobile station because the relative position changes.

Summary of Results

All PM10 and VOCs criteria exceedances (if any) for the four (4) stationary stations and the mobile one are summarized in **Appendix C**. All exceedances are categorized daily for each location along with exceedance time. These exceedances are based on 15-min average concentrations, as well.

In January 2025, our monitoring systems recorded two (2) notable PM10 exceedances that, upon closer examination, turned out to be isolated incidents driven by local environmental conditions rather than any project-related activities. An explanation for this event is given below

A. Exceedance at Pier A – East

On January 18, at around 4:00 AM, the Pier A-East station detected a PM10 level of 158.8 μg/m^3 - well above the warning threshold of 128 μg/m^3. This reading immediately flagged our attention, but further investigation revealed no ongoing construction activities during that period that might have contributed to the spike. Instead, the evidence pointed to transient factors such as wind-borne dust. Moreover, since no other nearby monitoring stations showed a similar spike, we concluded that this was a localized event with no broader impact on community air quality.

B. Exceedance at Mobile Station (Ranger 100A)

The environmental inspector's mobile ranger unit, which continuously monitors PM levels during construction hours, detected one exceedance of Criterion 2 (Action Level) in this vicinity on January 28th, 2025 at 8:30 am. This was a single isolated event, indicating that the contractor was actively implementing precautionary measures and underscores the effectiveness of the contractor's response to the situation. The spike was attributed to a burst of street dust that was stirred up during an environmental inspector's walk near the 400-foot radius of construction site. Neither of the 4 fixed monitoring stations did register a similar spike, reinforcing the conclusion that this was a localized, temporary disturbance.

Additionally, the monitoring strategy employing 15-minute intervals represents a conservative approach, ensuring that these temporary spikes do not impact the broader community air quality

The following daily action plan is being followed and implemented:

I. *A real-time mobile air quality unit consistently monitors PM-10 levels and covers areas around Pier A,*

including 3rd Place, 2nd Place, 1st Place, Battery Place, Little West Street, and adjacent sections of West Street, Washington Street, and Greenwich Street. This targeted approach ensures that sensitive areas within a 400-foot radius of construction sites are adequately monitored, safeguarding residential and other vulnerable zones.

II. *The mobile unit remains actively operational and will continue to function during peak work hours. An environmental inspector conducts several continuous readings a day during heavy work periods, with readings taken at a minimum every 15 minutes to the hour downwind. Upon detecting spikes in particulate levels, immediate Best Management Practices (BMP) such as dust suppression measures (e.g., water spraying and truck wheel wash systems) are implemented and will continue to mitigate air quality impacts.*

III. *All real-time data from mobile unit have been managed and will continue to be managed through the Eagle.io platform, providing high-resolution spatial data and immediate access to air quality information to identify pollution hotspots and assess pollutant dispersion patterns.*

IV. *Four stationary PM10 monitors around the construction site will continue to provide a broad overview of regional air quality, with readings averaged every 15 minutes to ensure comprehensive monitoring of both localized and broader community exposure levels. Note that Pier A – East monitoring station remains active and continues to collect data. However, due to it's proximity to current construction activities, this data is being used primarily for internal reference and cross-validation purposes. In the event that PM-10 levels at the Pier A-East station increase significantly, indicating a potential skewing of regional ambient air quality data due to localized construction activities, the station may be temporarily deactivated. This precaution is taken to prevent the misrepresentation of the wider area's ambient air quality conditions.*

Furthermore, please note that the mobile unit provides temporary, localized PM-10 and VOCs readings to identify brief/occasional spikes due to the station's closeness to active construction worksites. However, these spikes do not pose significant environmental safety or hygiene risks, given the immediacy and effectiveness of the remedial actions taken. Usually, the stationary units are not affected by these transient spikes due to a) the physical diffusion involved in the propagation of airborne particulates, b) particle settlement involved, and c) most importantly, the immediate corrective actions taken at the source.

Typically, these spikes do not indicate a broader community exposure risk. Warning spikes by the mobile station are being used to direct the Contractor to deploy on-site all required best practices, such as water spraying of roads and excavations, gravel laying, truck wheel wash systems, covered soil transport, etc., to minimize the risk of occupational and community exposure.

Hence, the localized spikes recorded by the mobile unit are warnings prompting to swiftly implement dust suppression measures, rather than report them. The primary metric for regional community impact is the stationary units' data which are the guiding indicators of community exposure, while the ranger's localized spikes drive an on-site immediate, targeted response to suppress dust at its source.

Appendix A – Monitoring Locations

N
Museum of
Jewish Heritage
W
R. F. Wagner Jr Park
WA
M
MS04
PA-E
PA-W
Pier A (PA)
Battery Park
WA
M
N: North
E: East
W: West
M: Mobile
PA: Pier A
MS: Monitoring Station
C: Camera
P: PM10
V: VOCs
S: Sound
WA: Work area

Appendix B – Time-Series Plots of PM10 and VOCs

PM10

spec10/EPM/Dust/Dust Package 4/Historic Chart
spec10/EPM/Dust/North/Historic Chart
spec10/EPM/Dust/Pier A - East/Historic Chart
spec10/EPM/Dust/Pier A - West/Historic Chart
spec10/EPM/Dust/Ranger 100A/Historic Chart
PM10
VOC
VOC Concentration
VOC Criterion 1 (VOC Action Level, 5ppm)
Jan '25

spec10/EPM/Dust/Dust Package 4/Historic Chart
PM10
VOC
PM10 Criterion 2 (Dust Action Level, 128E+g/m3)
PM10 Criterion 1 (Dust Warning Level, 128E+g/m3)
Dust Concentration
spec10/EPM/Dust/North/Historic Chart
spec10/EPM/Dust/Pier A - East/Historic Chart
spec10/EPM/Dust/Pier A - West/Historic Chart
spec10/EPM/Dust/Ranger 100A/Historic Chart

VOCs

Appendix C – Chronology of PM10 and VOCs Criteria Exceedances

PM10 and VOCs Criteria Exceedances

	PM10 > 128 µg/m³		PM10 > 178 µg/m³
	Pier A - East	Ranger 100A	Ranger 100A
1/18/2025 4:00:00 AM	158.8		
1/28/2025 8:30:00 AM		357.1	357.1