BATTERY PARK CITY RESILIENCY PROJECT

MONTHLY COMMUNITY AIR QUALITY MONITORING REPORT

06 | 2023

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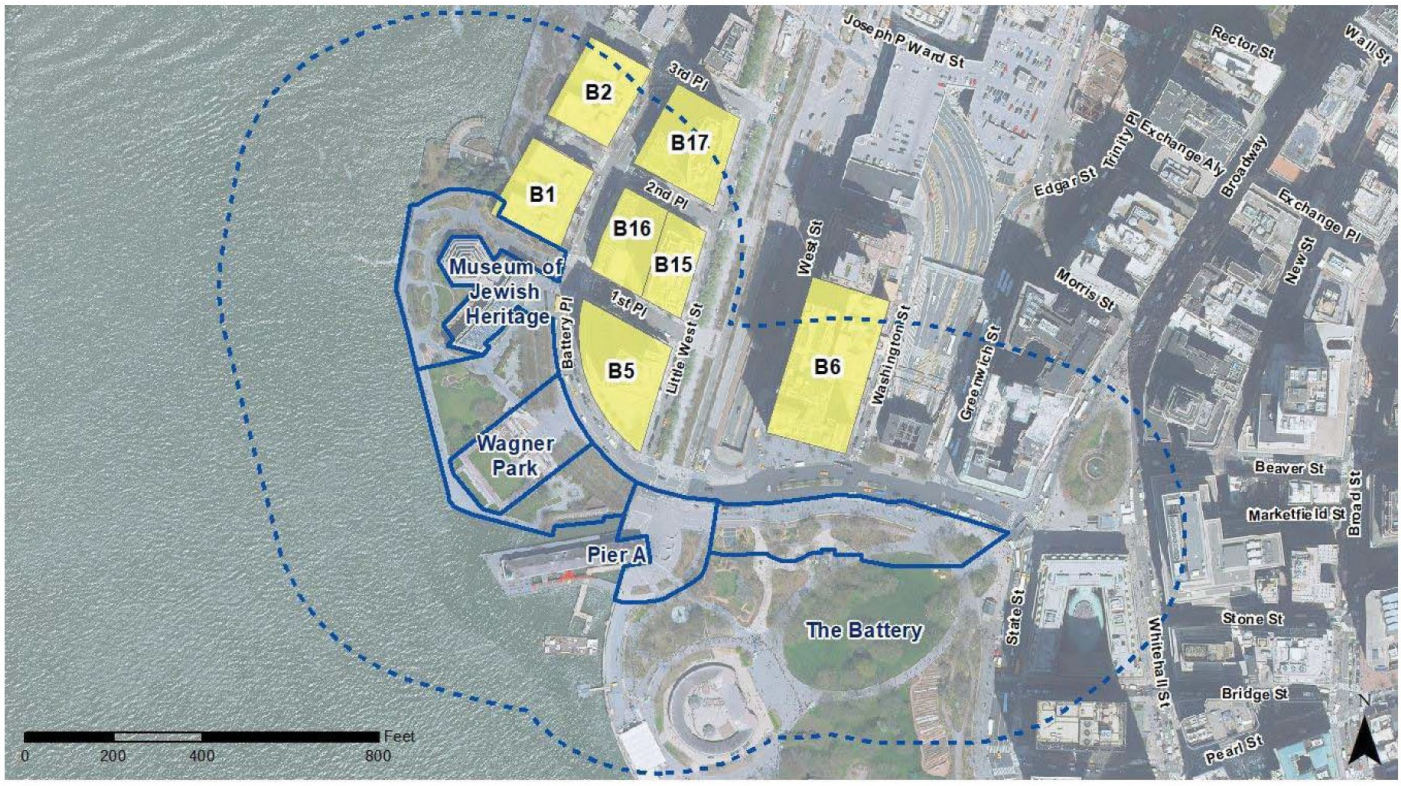
NEW YORK STATE OF OPPORTUNITY. | Battery Park City Authority

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 $\mu g/m^3$
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 three (3) 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). 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 $\mu g/m^3$ 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 $\mu g/m^3$ above the upwind level and provided that no visible dust is migrating from the work area. As a background, the value of 28 $\mu g/m^3$ has been adopted based on the final Environmental Impact Statement (EIS) for the project. **Hence, the PM10 criterion 1 (warning level) is >128 $\mu g/m^3$.**

PM10 Criterion 2 (action level). If, after implementation of dust suppression techniques, downwind PM10 particulate levels are greater than 150 $\mu g/m^3$ 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 $\mu g/m^3$ of the upwind level and in preventing visible dust migration. **Hence, the PM10 criterion 2 (action level) is >178 $\mu g/m^3$.**

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 three (3) 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) and action level (PM10 Criterion2) are shown as well.

The mobile station, given its proximity to the work site, reported elevated concentration levels on June 1st at 14:45. However, this increase was an isolated event and was promptly addressed by implementing dust suppression measures to lower the PM10 levels. Although these occasional spikes are expected due to the station's closeness to active worksites, they do not pose significant environmental safety or hygiene risks, given the immediacy and effectiveness of the remedial actions.

On June 7th, an extraordinary environmental situation unfolded that caused a significant spike in PM10 concentration levels. This was recorded by all three stationary monitoring stations, which noted values above the established action level. At the peak of this event, a PM10 concentration of 431.96 $\mu g/m^3$ was logged at 15:00. The reason behind this unusual increase can be traced back to widespread wildfires in Eastern Canada, which escalated the PM10 ambient concentration not just in New York, but throughout Eastern and Central USA.

Despite the extensive environmental disturbance, the mobile station's readings were significantly lower than those recorded by the stationary stations. This could likely be due to the localized dust suppression measures such as water spraying employed at the work site. These measures had a direct impact on the immediate environment, effectively controlling the PM10 levels and preventing them from reaching the high concentrations recorded by the stationary stations. This comparative analysis between the stationary and mobile readings during the period of increased environmental disturbance provides valuable insights into the effectiveness of immediate response measures and their role in maintaining a safer work environment.

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) is shown as well.

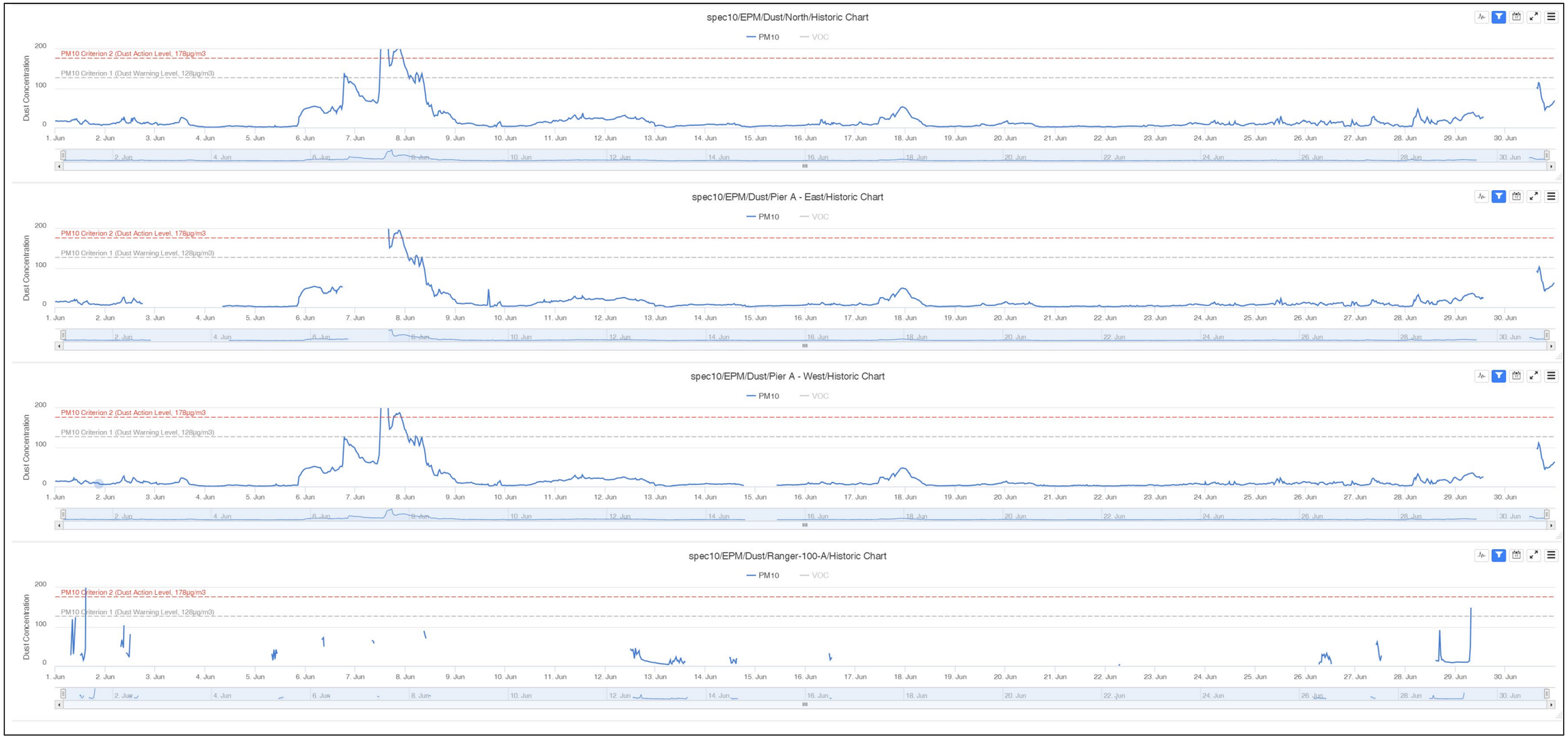
None of the three (3) stationary monitoring stations recorded concentrations above the action level (VOCs Criterion 1).

The mobile monitoring station did not record any concentrations above the action level (VOC Criterion 1) although it is expected for a monitoring station very close to the work site to register elevated peaks. However, this is not an environmental, safety of hygiene report as long as the action is immediate and effective.

Appendix A – Monitoring location

Appendix B – Time-series plots of PM10 and VOCs

PM10


spec10/EPM/Dust/North/Historic Chart
PM10
VOC
PM10 Criterion 2 (Dust Action Level, 178µg/m3
PM10 Criterion 1 (Dust Warning Level, 128µg/m3)
Dust Concentration
200
100
0
1. Jun
2. Jun
3. Jun
4. Jun
5. Jun
6. Jun
7. Jun
8. Jun
9. Jun
10. Jun
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29. Jun
30. Jun
spec10/EPM/Dust/Pier A - East/Historic Chart
PM10
VOC
PM10 Criterion 2 (Dust Action Level, 178µg/m3
PM10 Criterion 1 (Dust Warning Level, 128µg/m3)
Dust Concentration
spec10/EPM/Dust/Pier A - West/Historic Chart
PM10
VOC
PM10 Criterion 2 (Dust Action Level, 178µg/m3
PM10 Criterion 1 (Dust Warning Level, 128µg/m3)
Dust Concentration
spec10/EPM/Dust/Ranger-100-A/Historic Chart
PM10
VOC
PM10 Criterion 2 (Dust Action Level, 178µg/m3
PM10 Criterion 1 (Dust Warning Level, 128µg/m3)
Dust Concentration

VOCs


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