

**WEEKLY PROGRESS REPORT – TRC SOLUTIONS**

**Gowanus Canal Turning Basin 4 Dredging and Capping Pilot Study  
Brooklyn, New York**

**Project number: 283126**

**Period: December 11 to 15, 2017**

**Date of Report: December 20, 2017**

**Rev: 0**

**Prepared For: Gowanus Environmental Remediation Trust**



## **On-Site Activities Conducted During Week:**

*Sevenson Environmental Services (SES)*

### Sheet Pile Installation

- Installation of 8.5 pairs of sheet pile to approximate Station 7+00.
- Removal and reinstallation of four (4) sheet pile pairs at Station 7+60 to correct vertical realignment.
- Probing and locating of the timber crib bulkhead and installation of falsework east of Station 7+44.
- Driving of sheet piles between Station 8+63 and 7+44 to final elevation.

### Water Treatment and Monitoring

- No discharge of treated water during the week.
- Complete construction of winterization structures.

### Turbidity Monitoring

- Turbid water not observed migrating from the 4<sup>th</sup> Street Turning Basin.

### Vibration Monitoring (subcontractor – Vibra-Tech)

- Operated and maintained five (5) stationary vibration monitors. Two (2) stationary monitors located on the south side of the canal, one (1) stationary monitor located on the north side of the canal, two (2) stationary monitors located on the 3<sup>rd</sup> Avenue Bridge abutments. Additionally, employed two (2), at a minimum, portable vibration monitors to measure vibration levels within 15 feet of the sheet pile installation work.
- Performed daily crack gauge inspections at 386 3<sup>rd</sup> Avenue during sheet pile installation.
- No exceedances of the peak particle velocity level specified in the Contract Documents (0.40 inches per second) or acceleration level specified in the Contract Documents (0.1 g) during the week.

### *Quality Assurance and Control - Geosyntec*

On December 13<sup>th</sup> the sentinel buoy detected a one-time spike in turbidity of 62.2 NTU at 14:15. This one-time spike met the criteria to be considered an outlier and did not result in an exceedance. There were no exceedances of the trigger criterion of the rolling average of the sentinel buoy over a one-hour period exceeding the rolling average of the ambient buoy by 20 nephelometric turbidity units (NTUs).

- Measurements for 12/11/17:
  - Daily average for ambient buoy – 11.3 NTU
  - Daily average for sentinel buoy – 10.0 NTU
  - Greatest difference between ambient and sentinel buoy during 15-minute interval with sentinel buoy exceeding ambient buoy – 1.0 NTU at 0700
- Measurements for 12/12/17:
  - Daily average for ambient buoy – 9.9 NTU
  - Daily average for sentinel buoy – 9.6 NTU
  - Greatest difference between ambient and sentinel buoy during 15-minute interval with sentinel buoy exceeding ambient buoy – 3.9 NTU at 1030.
- Measurements for 12/13/17:
  - Daily average for ambient buoy – 12.7 NTU
  - Daily average for sentinel buoy – 13.6 NTU
  - Greatest difference between ambient and sentinel buoy during 15-minute interval with sentinel buoy exceeding ambient buoy – 47.48 NTU at 1415.



- Measurements for 12/14/17:
  - Daily average for ambient buoy – 12.3 NTU
  - Daily average for sentinel buoy – 12.0 NTU
  - Greatest difference between ambient and sentinel buoy during 15-minute interval with sentinel buoy exceeding ambient buoy – 4.8 NTU at 1145.
- Measurements for 12/15/17:
  - Daily average for ambient buoy – 11.3 NTU
  - Daily average for sentinel buoy – 10.2 NTU
  - Greatest difference between ambient and sentinel buoy during 15-minute interval with sentinel buoy exceeding ambient buoy – 1.6 NTU at 1330.

*Community Air Monitoring Program – TRC CAMP*

- Operated and maintained two (2) air monitoring stations at the upland staging area and five (5) monitoring station at the 4<sup>th</sup> Street Turning Basin Area.
- No exceedances of particulate matter of 10 microns in diameter or smaller (PM<sub>10</sub>) or total volatile organic compounds (TVOC) of the action level of 150 micrograms per cubic meter or 1,000 parts per billion, respectively.
- Maximum weekly measurements of PM<sub>10</sub> in µg/m<sup>3</sup>
  - Station 1 – 55 µg/m<sup>3</sup> recorded on 12/12/17
  - Station 2 – 37 µg/m<sup>3</sup> recorded on 12/12/17
  - Station 3 – <1 µg/m<sup>3</sup> recorded throughout the week
  - Station 4 – 48 µg/m<sup>3</sup> recorded on 12/11/17
  - Station 5 – 34 µg/m<sup>3</sup> recorded on 12/11/17
  - Station 6 – 50 µg/m<sup>3</sup> recorded on 12/11/17
  - Station 7 – 19 µg/m<sup>3</sup> recorded on 12/14/17
- Maximum weekly measurements of TVOC in ppb
  - Station 1 – 33 ppb recorded on 12/15/17
  - Station 2 – 25 ppb recorded on 12/13/17 and 12/14/17
  - Station 3 – 60 ppb recorded on 12/15/17
  - Station 4 – 6 ppb recorded on 12/13/17
  - Station 5 – 47 ppb recorded on 12/11/17
  - Station 6 – 13 ppb recorded on 12/12/17
  - Station 7 – 5 ppb recorded on 12/13/17
- All real-time readings of hydrogen sulfide, ammonia, or formaldehyde less than instrument reporting limit except for the following hydrogen sulfide readings on 12/13/17.
  - ST-4 at 0720 – 2.8 ppb
  - ST-4 at 1350 – 7.2 ppb
- 24-hour sample collected at ST-3 on 12/10 through 12/11 and at ST-1 on 12/13 through 12/14. Laboratory turnaround time is 10 business days.
- Tabulated laboratory analytical results for 24-hour sample collected at ST-1 on 11/09 through 11/10, ST-2 on 11/15 through 11/16, and ST-3 11/13 through 11/14 presented in weekly CAMP report.

*Noise and Vibration Monitoring – Wilson Ihrig*

- Operated and maintained three (3) noise monitors: NM-1 (north side of canal on Whole Foods promenade), NM-2 (south side of canal on southeast corner of 386 3rd Avenue), and NM-3 (southeast corner of Whole Foods at 3rd Avenue Bridge).



- Exceedances of the hourly Leq noise limit of 80 dBA during sheet pile installation measured at all monitors. Mitigating measures being evaluated and implemented. Noise monitor NM-1 located within exclusion zone and not indicative of public exposure.
- Greatest hourly Leq noise measurements
  - Northern monitor (NM-1) – 92.2 dBA during 1200-1300 on 12/14/17
  - Southern monitor (NM-2) – 95.1 dBA during 1200-1300 on 12/14/17
  - 3<sup>rd</sup> Avenue Bridge monitor (NM-3) – 91.5 dBA during 1200-1300 on 12/14/17
- No exceedances of the commercial and industrial structures vibration criterion of 2.0 inches per second peak particle velocity.
- Greatest peak particle velocity measurements
  - Northern monitor (VM-1) – 0.15 in/sec event between 0700 and 0800 on 12/13/17
  - Southern monitor (VM-2) – 0.0596 in/sec event between 1000 and 1100 on 12/15/17

*Cultural Natural Resource Monitoring – Archeology and Historic Resource Services (AHRS)*

- No inspections conducted during week and expected prior to commencing Phase 1 dredging.

**Two-Week Look Ahead:**

Sevenson:

- Continue installation of steel sheet pile bulkhead supports.
- Perform vibration, benchmark, and optical monitoring of bulkheads and surrounding structures.
- Treat and discharge accumulated water.

Geosyntec – Perform construction quality assurance responsibilities. Collect and submit for analysis influent and effluent samples from dredge water treatment system.

TRC CAMP Monitoring – Perform community air monitoring.

Wilson Ihrig – Perform noise and vibration monitoring,

AHRS – No activities planned.

**Project Milestones:** Key project milestones either established or completed this period include the following:

- None during this period.

Attachments:

1. Geosyntec In-Canal Water Quality Monitoring Weekly Data Summary
2. TRC Weekly CAMP Report
3. Wilson Ihrig Weekly Noise and Vibration Monitoring Report
4. AHRS Weekly Report (no activities during current week)
5. Water Treatment System Monitoring Analytical Laboratory Data (no activities during current week)
6. Cumulative Dredged Material Chart (no activities during current week)



<b>Client Name:</b> Gowanus ERT	<b>Site Location:</b> TB-4 Pilot Study	<b>Project No.:</b> 283126.0000.0001
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<b>Photo No.</b> 001	<b>Date</b> 12-11-2107
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**Description**  
Driving sheet piles to final elevation.



<b>Photo No.</b> 002	<b>Date</b> 12-11-2017
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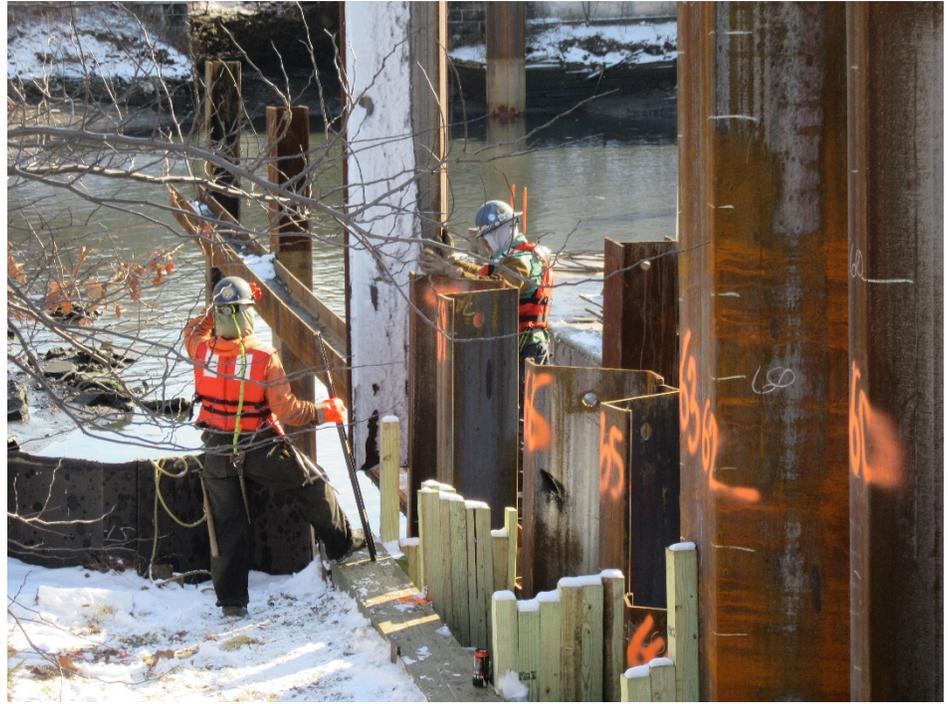
**Description**  
Installing bolt to hold sheet piles in place and prevent the pile from any further downward movement.



<b>Client Name:</b> Gowanus ERT	<b>Site Location:</b> TB-4 Pilot Study	<b>Project No.:</b> 283126.0000.0001
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<b>Photo No.</b> 003	<b>Date</b> 12-14-2017
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**Description**  
Threading sheet piles prior to driving.



<b>Photo No.</b> 004	<b>Date</b> 12-14-2017
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**Description**  
Hammer with extension preparing to drive a single sheet.



<b>Client Name:</b> Gowanus ERT	<b>Site Location:</b> TB-4 Pilot Study	<b>Project No.:</b> 283126.0000.0001
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<b>Photo No.</b> 005	<b>Date</b> 12-15-2107
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**Description**  
Photo illustrating driving of single sheets.



<b>Photo No.</b> 006	<b>Date</b> 12-15-17
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**Description**  
Moving the 170 hammer to the rear single pile to complete installation.



**GEOSYNTEC IN-CANAL WATER QUALITY MONITORING WEEKLY DATA SUMMARY**



# **GOWANUS CANAL SUPERFUND SITE DREDGING AND CAPPING PILOT STUDY Water Quality Monitoring Weekly Data Summary**

Week of December 11<sup>th</sup>, 2017

## **Report Contents**

- Scope of Monitoring
- Turbidity Buoy Data
- Handheld Measurements
- Summary of Visual Observations
  - Report of Exceedances

*Prepared by*

**Geosyntec**  **Beech and Bonaparte**   
consultants engineering p.c.

engineers | scientists | innovators

*an affiliate of Geosyntec Consultants*

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Ewing, NJ 08628  
Project Number HPH106A (52)

## 1. SCOPE OF MONITORING

The following report summarizes water quality monitoring data collected during the week of December 11<sup>th</sup>, 2017. Two turbidity buoys were deployed to monitor turbidity during the pilot study. One turbidity buoy was deployed just outside of the 4<sup>th</sup> Street Turning Basin and is referred to as the sentinel buoy. A second turbidity buoy was deployed further upstream in RTA1 in order to monitor background turbidity unaffected by on-water construction activities. This turbidity buoy is referred to as the ambient buoy. A map indicating the approximate locations of the turbidity buoys is provided in Figure 1. Each turbidity buoy was equipped with a YSI 600 OMS water quality meter with optical turbidity sensor. The buoys were programmed such that readings were collected every 15 minutes. After each measurement, the turbidity data were transmitted to a FTP site via telemetry. This report provides the turbidity data collected every 15 minutes from both the ambient and sentinel buoys during each day between 7 AM and 5 PM during the week of December 11<sup>th</sup>. Average and maximum turbidity are also presented. No handheld measurements were collected during this reporting period. Visual observations of turbidity and sheen are summarized in Section 4. The data provided in this summary report have not yet been validated and should be considered preliminary.



## 2. TURBIDITY BUOY DATA

The following section provides turbidity data for the sentinel and ambient turbidity buoys from 7 AM to 5 PM from December 11<sup>th</sup> to December 15<sup>th</sup>, 2017. Background data prior to the start of dredging is provided in Appendix A. No exceedances to the rolling average threshold criteria were observed during the reporting period. On December 13<sup>th</sup> the sentinel buoy detected a one-time spike in turbidity of 62.2 NTU at 14:15. This one-time spike was not tied to any on-water activities associated with the pilot study. In practice, it is common to get occasional one-time spikes of turbidity readings. If unexplained turbidity spikes occur more frequently, the sensor will be inspected and cleaned, repaired, or replaced.

### 2.1 Monday, December 11<sup>th</sup>, 2017

Time (Local)	Ambient Turbidity (NTU)	Sentinel Turbidity (NTU)	Sentinel >Ambient (Y/N)	Time (Local)	Ambient Turbidity (NTU)	Sentinel Turbidity (NTU)	Sentinel >Ambient (Y/N)
12/11/2017 7:00	8.1	9.1	Y	12/11/2017 12:15	10.7	11.3	Y
12/11/2017 7:15	8.9	8.1	N	12/11/2017 12:30	11.8	10.8	N
12/11/2017 7:30	8.8	7.7	N	12/11/2017 12:45	11.6	10.5	N
12/11/2017 7:45	8.1	7.6	N	12/11/2017 13:00	12.4	11.6	N
12/11/2017 8:00	9.4	7.7	N	12/11/2017 13:15	11.4	11.1	N
12/11/2017 8:15	12.1	7.3	N	12/11/2017 13:30	11.7	11.3	N
12/11/2017 8:30	14.9	8.0	N	12/11/2017 13:45	10.6	10.0	N
12/11/2017 8:45	13.4	9.2	N	12/11/2017 14:00	10.2	10.8	Y
12/11/2017 9:00	12.1	9.3	N	12/11/2017 14:15	10.7	9.7	N
12/11/2017 9:15	10.8	10.6	N	12/11/2017 14:30	10.1	9.2	N
12/11/2017 9:30	11.0	9.6	N	12/11/2017 14:45	11.6	10.2	N
12/11/2017 9:45	12.3	12.1	N	12/11/2017 15:00	10.1	10.6	Y
12/11/2017 10:00	12.0	11.0	N	12/11/2017 15:15	10.0	9.6	N
12/11/2017 10:15	14.3	10.8	N	12/11/2017 15:30	8.8	8.3	N
12/11/2017 10:30	15.2	10.5	N	12/11/2017 15:45	9.5	9.2	N
12/11/2017 10:45	14.1	10.9	N	12/11/2017 16:00	9.5	9.2	N
12/11/2017 11:00	14.5	11.1	N	12/11/2017 16:15	9.1	8.5	N
12/11/2017 11:15	13.1	12.3	N	12/11/2017 16:30	9.4	7.9	N
12/11/2017 11:30	13.1	12.9	N	12/11/2017 16:45	9.9	8.5	N
12/11/2017 11:45	13.2	12.0	N	12/11/2017 17:00	10.5	10.6	Y
12/11/2017 12:00	13.4	12.4	N				

Average	11.3	10.0	N
Maximum	15.2	12.9	N

**Notes:**

No exceedances to rolling average threshold criteria during reporting period  
 Values highlighted in green are greater than 20 NTU above the ambient buoy reading  
 Values highlighted in blue are greater than 40 NTU above the ambient buoy reading



### 2.3 Wednesday, December 13<sup>th</sup>, 2017

Time (Local)	Ambient Turbidity (NTU)	Sentinel Turbidity (NTU)	Sentinel >Ambient (Y/N)	Time (Local)	Ambient Turbidity (NTU)	Sentinel Turbidity (NTU)	Sentinel >Ambient (Y/N)
12/13/2017 7:00	9.7	8.3	N	12/13/2017 12:15	19.8	15.4	N
12/13/2017 7:15	9.5	8.1	N	12/13/2017 12:30	15.6	16.7	Y
12/13/2017 7:30	9.6	8.1	N	12/13/2017 12:45	16.0	18.4	Y
12/13/2017 7:45	9.2	8.7	N	12/13/2017 13:00	15.8	14.5	N
12/13/2017 8:00	8.5	8.3	N	12/13/2017 13:15	14.9	14.8	N
12/13/2017 8:15	8.9	8.4	N	12/13/2017 13:30	14.6	15.1	Y
12/13/2017 8:30	8.3	9.0	Y	12/13/2017 13:45	14.1	13.7	N
12/13/2017 8:45	8.1	8.2	Y	12/13/2017 14:00	13.8	13.0	N
12/13/2017 9:00	8.5	9.0	Y	12/13/2017 14:15	14.8	62.2	Y
12/13/2017 9:15	9.4	8.2	N	12/13/2017 14:30	15.6	22.0	Y
12/13/2017 9:30	10.7	8.2	N	12/13/2017 14:45	14.4	24.0	Y
12/13/2017 9:45	13.8	8.9	N	12/13/2017 15:00	13.3	16.8	Y
12/13/2017 10:00	12.5	10.8	N	12/13/2017 15:15	13.2	14.0	Y
12/13/2017 10:15	13.2	10.7	N	12/13/2017 15:30	11.1	13.3	Y
12/13/2017 10:30	13.9	11.3	N	12/13/2017 15:45	10.6	13.6	Y
12/13/2017 10:45	12.0	13.2	Y	12/13/2017 16:00	11.5	12.1	Y
12/13/2017 11:00	11.7	11.5	N	12/13/2017 16:15	10.5	11.4	Y
12/13/2017 11:15	16.6	11.6	N	12/13/2017 16:30	10.8	10.9	Y
12/13/2017 11:30	17.6	13.6	N	12/13/2017 16:45	11.3	10.2	N
12/13/2017 11:45	17.4	13.0	N	12/13/2017 17:00	11.9	11.4	N
12/13/2017 12:00	18.6	15.1	N				
Average	12.7	13.6	Y				
Maximum	19.8	62.2	Y				

**Notes:**

No exceedances to rolling average threshold criteria during reporting period

Values highlighted in green are greater than 20 NTU above the ambient buoy reading

Values highlighted in blue are greater than 40 NTU above the ambient buoy reading





### 3. HANDHELD MEASUREMENTS

No handheld measurements were collected for this reporting period.

### 4. SUMMARY OF VISUAL OBSERVATIONS

Visual observations are consistent with background conditions of the turning basin.

### 5. REPORT OF EXCEEDANCES

No exceedances of the water quality monitoring threshold criteria were met during the reporting period. Refer to the Water Quality Monitoring Plan for In-waterway Construction Activities (Geosyntec 2017) for further information regarding the Trigger and Action Criteria. Threshold criteria are summarized as follows:

- **Trigger criterion** – Any of the following:
  - The rolling average of the sentinel buoy turbidity measurements over a one-hour period exceeds the rolling average of the ambient buoy turbidity measurements by 20 NTU excluding any eliminated outlier measurements; or
  - Either an oil sheen or a turbidity plume is visually observed outside of engineering controls and in-waterway construction activities cannot be immediately excluded as the source.
- **Action criterion** – Any of the following:
  - The rolling average of the sentinel buoy turbidity measurements over a one-hour period exceeds the rolling average of the ambient buoy turbidity measurements by 40 NTU excluding any eliminated outlier measurements; or
  - Either an oil sheen or a turbidity plume is visually observed outside of engineering controls and in-waterway construction activities are readily identified as the source.

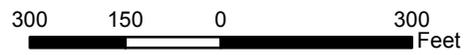
# **FIGURES**



X:\03\_GIS\mxd\Canal\_Wide\_Turbidity\_Buoy\_Locations.mxd; acarnes; 10/19/2017

**Legend**

-  Ambient Buoy
-  Sentinel Buoy
-  RTA Boundary



**Turbidity Buoy Locations**

Gowanus Canal, Brooklyn, NY

**Gowanus Canal Remedial Design Group** **Geosyntec** consultants **Beech and Bonaparte** engineering p.c. an affiliate of Geosyntec Consultants

Ewing, NJ

October 2017

**Figure**

**1**

**APPENDIX A**  
**PRE-DREDGE TURBIDITY BUOY DATA**

Time (Local)	Ambient Turbidity (NTU)	Sentinel Turbidity (NTU)	Sentinel> Ambient (Y/N)	Time (Local)	Ambient Turbidity (NTU)	Sentinel Turbidity (NTU)	Sentinel> Ambient (Y/N)	Time (Local)	Ambient Turbidity (NTU)	Sentinel Turbidity (NTU)	Sentinel> Ambient (Y/N)
10/3/2017 15:00	7.4	2.7	N	10/4/2017 4:30	4.8	7.1	Y	10/4/2017 18:00	6.9	2.7	N
10/3/2017 15:15	6.6	2.4	N	10/4/2017 4:45	5	6.3	Y	10/4/2017 18:15	7.2	2.7	N
10/3/2017 15:30	6.4	2.7	N	10/4/2017 5:00	4.7	6	Y	10/4/2017 18:30	7.8	3.4	N
10/3/2017 15:45	6.9	2	N	10/4/2017 5:15	5.1	6.4	Y	10/4/2017 18:45	8.2	4.4	N
10/3/2017 16:00	6.3	2.1	N	10/4/2017 5:30	5	7.3	Y	10/4/2017 19:00	7.5	3.1	N
10/3/2017 16:15	6.5	2.4	N	10/4/2017 5:45	5.4	7.8	Y	10/4/2017 19:15	8.7	3.6	N
10/3/2017 16:30	7.1	2.9	N	10/4/2017 6:00	5.5	8.3	Y	10/4/2017 19:30	8.7	4.5	N
10/3/2017 16:45	6.1	2.8	N	10/4/2017 6:15	5.2	9	Y	10/4/2017 19:45	9.4	4.1	N
10/3/2017 17:00	7	2.8	N	10/4/2017 6:30	5.8	7.2	Y	10/4/2017 20:00	8.4	4	N
10/3/2017 17:15	7	4.4	N	10/4/2017 6:45	5.4	8.8	Y	10/4/2017 20:15	8.2	4	N
10/3/2017 17:30	7	4.7	N	10/4/2017 7:00	5.5	8	Y	10/4/2017 20:30	9	3.6	N
10/3/2017 17:45	6.3	4	N	10/4/2017 7:15	5.6	7.5	Y	10/4/2017 20:45	8.4	3.5	N
10/3/2017 18:00	6.5	6.9	Y	10/4/2017 7:30	6.9	7.2	Y	10/4/2017 21:00	9.5	4.7	N
10/3/2017 18:15	7.8	6.7	Y	10/4/2017 7:45	6.8	6.1	N	10/4/2017 21:15	10.2	3.9	N
10/3/2017 18:30	7.9	6.5	N	10/4/2017 8:00	6.7	7.4	Y	10/4/2017 21:30	9.5	3.5	N
10/3/2017 18:45	8.5	5.9	N	10/4/2017 8:15	7.3	6.1	N	10/4/2017 21:45	8.9	3.6	N
10/3/2017 19:00	7.9	6	N	10/4/2017 8:30	7.2	4.6	N	10/4/2017 22:00	8.6	2.9	N
10/3/2017 19:15	7.4	6.3	N	10/4/2017 8:45	6.6	9	Y	10/4/2017 22:15	8.7	3.6	N
10/3/2017 19:30	7.4	4.3	N	10/4/2017 9:00	9.2	14.1	Y	10/4/2017 22:30	8.4	6.3	N
10/3/2017 19:45	8.3	4.6	N	10/4/2017 9:15	7.9	4.8	N	10/4/2017 22:45	7.3	3.3	N
10/3/2017 20:00	8.9	5.2	N	10/4/2017 9:30	9.3	4.6	N	10/4/2017 23:00	7.4	3.8	N
10/3/2017 20:15	8.6	4.5	N	10/4/2017 9:45	7.6	5.1	N	10/4/2017 23:15	7.1	4.5	N
10/3/2017 20:30	8	4.9	N	10/4/2017 10:00	8.1	3.9	N	10/4/2017 23:30	7	3.8	N
10/3/2017 20:45	10.6	4.3	N	10/4/2017 10:15	7.8	3.1	N	10/4/2017 23:45	8.3	5.3	N
10/3/2017 21:00	11.1	4.6	N	10/4/2017 10:30	7.3	4.5	N	10/5/2017 0:00	7.7	6.2	N
10/3/2017 21:15	9.8	4.7	N	10/4/2017 10:45	7.5	3.9	N	10/5/2017 0:15	7.8	5.1	N
10/3/2017 21:30	8.8	4.6	N	10/4/2017 11:00	7.6	9	Y	10/5/2017 0:30	7.2	5.7	N
10/3/2017 21:45	9	4.7	N	10/4/2017 11:15	6.5	16.7	Y	10/5/2017 0:45	7	5.4	N
10/3/2017 22:00	8.3	4.8	N	10/4/2017 11:30	7.4	6	N	10/5/2017 1:00	7.5	4.9	N
10/3/2017 22:15	7.3	6.1	N	10/4/2017 11:45	6.8	5.3	N	10/5/2017 1:15	7	8.2	Y
10/3/2017 22:30	7	4.7	N	10/4/2017 12:00	7.7	5.1	N	10/5/2017 1:30	8.1	4.9	N
10/3/2017 22:45	6.6	5.3	N	10/4/2017 12:15	6.6	6.1	N	10/5/2017 1:45	9.1	6.5	N
10/3/2017 23:00	7.1	6.1	N	10/4/2017 12:30	7.6	4	N	10/5/2017 2:00	9.2	5.2	N
10/3/2017 23:15	6.5	6	N	10/4/2017 12:45	7.7	3.9	N	10/5/2017 2:15	8.5	3.7	N
10/3/2017 23:30	6.6	6.9	Y	10/4/2017 13:00	8.3	4.8	N	10/5/2017 2:30	10.2	5.2	N
10/3/2017 23:45	7.2	5.2	N	10/4/2017 13:15	8.5	3.9	N	10/5/2017 2:45	10.1	4.2	N
10/4/2017 0:00	6.8	6.3	N	10/4/2017 13:30	9.2	5.5	N	10/5/2017 3:00	10.3	4.9	N
10/4/2017 0:15	7.2	5.6	N	10/4/2017 13:45	9.4	4.5	N	10/5/2017 3:15	9	6.3	N
10/4/2017 0:30	7.4	6.4	N	10/4/2017 14:00	11.1	3.1	N	10/5/2017 3:30	9.2	4.5	N
10/4/2017 0:45	7.1	5	N	10/4/2017 14:15	10	2.5	N	10/5/2017 3:45	8.4	4.1	N
10/4/2017 1:00	7.1	4.3	N	10/4/2017 14:30	9.8	2	N	10/5/2017 4:00	7.4	4.4	N
10/4/2017 1:15	8.3	4.6	N	10/4/2017 14:45	9.7	2.1	N	10/5/2017 4:15	7.3	4.4	N
10/4/2017 1:30	9	5.1	N	10/4/2017 15:00	9.3	2.4	N	10/5/2017 4:30	6.4	4.6	N
10/4/2017 1:45	7.9	4.5	N	10/4/2017 15:15	8.5	2.1	N	10/5/2017 4:45	6.2	5.1	N
10/4/2017 2:00	9.1	4	N	10/4/2017 15:30	8.5	1.8	N	10/5/2017 5:00	5.3	5.2	N
10/4/2017 2:15	7	5.3	N	10/4/2017 15:45	7.2	1.8	N	10/5/2017 5:15	5.3	5.3	N
10/4/2017 2:30	7.2	5.5	N	10/4/2017 16:00	7.3	1.6	N	10/5/2017 5:30	4.8	5	Y
10/4/2017 2:45	6.6	4.8	N	10/4/2017 16:15	6.4	1.8	N	10/5/2017 5:45	5.7	5	N
10/4/2017 3:00	6.6	5.7	N	10/4/2017 16:30	7	1.6	N	10/5/2017 6:00	5.6	4.8	N
10/4/2017 3:15	6.2	5.1	N	10/4/2017 16:45	7.5	2.6	N	10/5/2017 6:15	5.4	4.9	N
10/4/2017 3:30	5.9	4.7	N	10/4/2017 17:00	6.4	2.7	N	10/5/2017 6:30	6.1	5.7	N
10/4/2017 3:45	5.5	5.9	N	10/4/2017 17:15	6.5	2	N	10/5/2017 6:45	5.9	6.4	Y
10/4/2017 4:00	4.9	6.4	Y	10/4/2017 17:30	6.7	2.3	N	10/5/2017 7:00	6.1	7.8	Y
10/4/2017 4:15	5.1	7	Y	10/4/2017 17:45	6.6	2.1	N				
Average	7.5	6.0	N								
Maximum	11.1	16.7	Y								

**TRC WEEKLY COMMUNITY AIR MONITORING PROJECT REPORT**





**Gowanus Canal TB-4 Dredging and Pilot Study  
Brooklyn, New York  
Weekly Report  
(TRC Project No.274286-0000-00000)**

**Community Air Monitoring Project  
11<sup>th</sup> Weekly Monitoring Period  
Summary Report:  
December 11<sup>th</sup> through December 15<sup>th</sup>, 2017**

**Report Contents**

- Executive Summary
- Daily Data Summary Report – PM<sub>10</sub>/TVOC
  - Daily Meteorological Summary Report
    - Periodic Monitoring Results
- Volatile Organic Compounds (USEPA Method TO-15)

# **Gowanus Canal TB-4 Dredging and Pilot Study Brooklyn, New York**

## **Executive Summary – Week 11 Monitoring Period December 11<sup>th</sup> through December 15<sup>th</sup>, 2017**

The following report summarizes site air monitoring activities for the Week 11 monitoring period from December 11<sup>th</sup> through December 15<sup>th</sup>, 2017. The start and stop times associated with each daily monitoring period are listed on the respective daily reports.

TRC continued to operate two (2) air monitoring stations on the Citizen Property or Staging Area, and five (5) air monitoring stations in the 4<sup>th</sup> St Turning Basin Area using the equipment specified previously in the *Gowanus Canal TB-4 Dredging and Pilot Study Executive Summary – Background Monitoring Period Report*. During the Week 11 monitoring period there were no PM<sub>10</sub> or TVOC exceedances of the action level of 150 ug/m<sup>3</sup> or 1,000 ppb respectively as defined in the *Community Air Monitoring Plan for the Gowanus Canal TB-4 Dredging and Pilot Study Project Brooklyn, NY, August 2017*.

Figure 1 depicts Total Volatile Organics (TVOC) daily averages and maximums. Figure 2 depicts particulate monitoring (PM<sub>10</sub>) daily averages and maximums for Week 11.

Additional monitoring for hydrogen sulfide, ammonia, and formaldehyde took place at all stations throughout the Week 11 monitoring period twice daily. The results of these measurements are shown in Table 1.

During the Week 11 monitoring period of December 11<sup>th</sup>, through December 15<sup>th</sup>, 2017 TRC conducted Volatile Organic Compounds (USEPA Method TO-15) sampling at Stations 2 and 5. ST-2 was collected on December 4<sup>th</sup>, through December 5<sup>th</sup>, 2017. ST-5 was collected on December 7<sup>th</sup>, through December 8<sup>th</sup>, 2017. Both samples were collected over a 24 hour time period. Samples were shipped to Con-Test Analytical Laboratory for analyses. The results of the summa canister sampling are pending lab analyses.

Table 2 presents the results for a collocated pair of samples collected at Station 1 during the period November 8<sup>th</sup> through 9<sup>th</sup>. Results for all parameters in both samples were reported as non-detected or consistent with concentrations measured during the background monitoring program conducted between August 28<sup>th</sup> and 31<sup>st</sup>, 2017.

Table 3 presents the results for samples collected at Station 2 during the period November 15<sup>th</sup> to 16<sup>th</sup> and Station 3 during the period November 13<sup>th</sup> to 14<sup>th</sup>. Both samples represent 24 hour collection periods. Results for all parameters in both samples were reported as non-detected or consistent with concentrations measured during the background monitoring program conducted between August 28<sup>th</sup> and August 31, 2017. The only exceptions were concentrations for a number of aliphatic and aromatic hydrocarbons present in the Station 2 sample which were observed at concentrations slightly elevated above background. These included the following compounds: cyclohexane, ethylbenzene, heptane, hexane, toluene, m/p xylenes and o-xylene.

Site activities were conducted at the Citizen Property on December 11<sup>th</sup> through December 15<sup>th</sup>, 2017 which included the following:

- Material and equipment deliveries on Citizen Property
- General vehicular traffic site-wide throughout the monitoring period
- Maintenance of the barges and equipment
- Construction of dredge water treatment plant enclosure

Site activities were conducted at the 4<sup>th</sup> St Turning Basin Area of the Canal on December 11<sup>th</sup> through December 15<sup>th</sup>, 2017 which included the following:

- Installation of weep holes and final advancement of previously installed sheet piling between Stations 8+63 and 7+44
- Installation of cribbing between existing bulkhead and temporary bulkhead support
- Installation of 8.5 pairs of sheet piling on the north side of the canal near Whole Foods (up to approximately Station 7+00)

# Gowanus Canal TB-4 Dredging and Capping Pilot Study

## Brooklyn, New York

Daily Station Report – TVOC/PM<sub>10</sub>  
(TRC Project No.274286-0000-00000)

12/11/2017 06:30 AM - 12/11/17 23:45 PM

### Station 1

TVOC			PM <sub>10</sub>		
Max.	15	ppb	Max.	22	ug/m <sup>3</sup>
Avg.	<1	ppb	Avg.	13	ug/m <sup>3</sup>
Exc.	0	total	Exc.	0	Total

### Station 2

TVOC			PM <sub>10</sub>		
Max.	<1	ppb	Max.	30	ug/m <sup>3</sup>
Avg.	<1	ppb	Avg.	12	ug/m <sup>3</sup>
Exc.	0	total	Exc.	0	Total

### Station 3

TVOC			PM <sub>10</sub>		
Max.	<1	ppb	Max.	<1	ug/m <sup>3</sup>
Avg.	<1	ppb	Avg.	<1	ug/m <sup>3</sup>
Exc.	0	total	Exc.	0	Total

### Station 4

TVOC			PM <sub>10</sub>		
Max.	<1	ppb	Max.	48	ug/m <sup>3</sup>
Avg.	<1	ppb	Avg.	8	ug/m <sup>3</sup>
Exc.	0	total	Exc.	0	Total

### Station 5

TVOC			PM <sub>10</sub>		
Max.	47	ppb	Max.	34	ug/m <sup>3</sup>
Avg.	1	ppb	Avg.	10	ug/m <sup>3</sup>
Exc.	0	total	Exc.	0	Total

### Station 6

TVOC			PM <sub>10</sub>		
Max.	<1	ppb	Max.	50	ug/m <sup>3</sup>
Avg.	<1	ppb	Avg.	11	ug/m <sup>3</sup>
Exc.	0	total	Exc.	0	Total

### Station 7

TVOC			PM <sub>10</sub>		
Max.	<1	ppb	Max.	<1	ug/m <sup>3</sup>
Avg.	<1	ppb	Avg.	<1	ug/m <sup>3</sup>
Exc.	0	total	Exc.	0	Total

TVOC – Total Volatile Organic Compounds

PM<sub>10</sub> – Particulates as PM<sub>10</sub>

Max. – Maximum daily average (15 min. avg. – TVOC / 15 min. avg. – PM<sub>10</sub>)

Avg. – Daily average (15 min. avg. – TVOC / 15 min. avg. – PM<sub>10</sub>)

Exc. – Total # of averages which exceed the action level (≥1 ppm - TVOC / ≥150 ug/m<sup>3</sup> - PM<sub>10</sub>)

# Gowanus Canal TB-4 Dredging and Capping Pilot Study

## Brooklyn, New York

Daily Station Report – TVOC/PM<sub>10</sub>  
(TRC Project No.274286-0000-00000)

12/12/2017 00:00 AM - 12/12/17 23:45 PM

### Station 1

TVOC			PM <sub>10</sub>		
Max.	17	ppb	Max.	55	ug/m <sup>3</sup>
Avg.	<1	ppb	Avg.	13	ug/m <sup>3</sup>
Exc.	0	total	Exc.	0	Total

### Station 2

TVOC			PM <sub>10</sub>		
Max.	1	ppb	Max.	37	ug/m <sup>3</sup>
Avg.	<1	ppb	Avg.	11	ug/m <sup>3</sup>
Exc.	0	total	Exc.	0	Total

### Station 3

TVOC			PM <sub>10</sub>		
Max.	<1	ppb	Max.	<1	ug/m <sup>3</sup>
Avg.	<1	ppb	Avg.	<1	ug/m <sup>3</sup>
Exc.	0	total	Exc.	0	Total

### Station 4

TVOC			PM <sub>10</sub>		
Max.	2	ppb	Max.	18	ug/m <sup>3</sup>
Avg.	<1	ppb	Avg.	10	ug/m <sup>3</sup>
Exc.	0	total	Exc.	0	Total

### Station 5

TVOC			PM <sub>10</sub>		
Max.	<1	ppb	Max.	23	ug/m <sup>3</sup>
Avg.	<1	ppb	Avg.	10	ug/m <sup>3</sup>
Exc.	0	total	Exc.	0	Total

### Station 6

TVOC			PM <sub>10</sub>		
Max.	13	ppb	Max.	22	ug/m <sup>3</sup>
Avg.	<1	ppb	Avg.	10	ug/m <sup>3</sup>
Exc.	0	total	Exc.	0	Total

### Station 7

TVOC			PM <sub>10</sub>		
Max.	<1	ppb	Max.	<1	ug/m <sup>3</sup>
Avg.	<1	ppb	Avg.	<1	ug/m <sup>3</sup>
Exc.	0	total	Exc.	0	Total

TVOC – Total Volatile Organic Compounds

PM<sub>10</sub> – Particulates as PM<sub>10</sub>

Max. – Maximum daily average (15 min. avg. – TVOC / 15 min. avg. – PM<sub>10</sub>)

Avg. – Daily average (15 min. avg. – TVOC / 15 min. avg. – PM<sub>10</sub>)

Exc. – Total # of averages which exceed the action level (≥1 ppm - TVOC / ≥150 ug/m<sup>3</sup> - PM<sub>10</sub>)

# Gowanus Canal TB-4 Dredging and Capping Pilot Study

## Brooklyn, New York

Daily Station Report – TVOC/PM<sub>10</sub>  
(TRC Project No.274286-0000-00000)

12/13/2017 00:00 AM - 12/13/17 23:45 PM

### Station 1

TVOC			PM <sub>10</sub>		
Max.	32	ppb	Max.	7	ug/m <sup>3</sup>
Avg.	8	ppb	Avg.	3	ug/m <sup>3</sup>
Exc.	0	total	Exc.	0	Total

### Station 2

TVOC			PM <sub>10</sub>		
Max.	25	ppb	Max.	7	ug/m <sup>3</sup>
Avg.	21	ppb	Avg.	3	ug/m <sup>3</sup>
Exc.	0	total	Exc.	0	Total

### Station 3

TVOC			PM <sub>10</sub>		
Max.	27	ppb	Max.	<1	ug/m <sup>3</sup>
Avg.	15	ppb	Avg.	<1	ug/m <sup>3</sup>
Exc.	0	total	Exc.	0	Total

### Station 4

TVOC			PM <sub>10</sub>		
Max.	6	ppb	Max.	<1	ug/m <sup>3</sup>
Avg.	1	ppb	Avg.	<1	ug/m <sup>3</sup>
Exc.	0	total	Exc.	0	Total

### Station 5

TVOC			PM <sub>10</sub>		
Max.	20	ppb	Max.	7	ug/m <sup>3</sup>
Avg.	17	ppb	Avg.	3	ug/m <sup>3</sup>
Exc.	0	total	Exc.	0	Total

### Station 6

TVOC			PM <sub>10</sub>		
Max.	<1	ppb	Max.	18	ug/m <sup>3</sup>
Avg.	<1	ppb	Avg.	2	ug/m <sup>3</sup>
Exc.	0	total	Exc.	0	Total

### Station 7

TVOC			PM <sub>10</sub>		
Max.	5	ppb	Max.	<1	ug/m <sup>3</sup>
Avg.	2	ppb	Avg.	<1	ug/m <sup>3</sup>
Exc.	0	total	Exc.	0	Total

TVOC – Total Volatile Organic Compounds

PM<sub>10</sub> – Particulates as PM<sub>10</sub>

Max. – Maximum daily average (15 min. avg. – TVOC / 15 min. avg. – PM<sub>10</sub>)

Avg. – Daily average (15 min. avg. – TVOC / 15 min. avg. – PM<sub>10</sub>)

Exc. – Total # of averages which exceed the action level (≥1 ppm - TVOC / ≥150 ug/m<sup>3</sup> - PM<sub>10</sub>)

# Gowanus Canal TB-4 Dredging and Capping Pilot Study

## Brooklyn, New York

Daily Station Report – TVOC/PM<sub>10</sub>  
(TRC Project No.274286-0000-00000)

12/14/2017 00:00 AM - 12/14/17 23:45 PM

### Station 1

TVOC			PM <sub>10</sub>		
Max.	31	ppb	Max.	19	ug/m <sup>3</sup>
Avg.	5	ppb	Avg.	7	ug/m <sup>3</sup>
Exc.	0	total	Exc.	0	Total

### Station 2

TVOC			PM <sub>10</sub>		
Max.	25	ppb	Max.	18	ug/m <sup>3</sup>
Avg.	7	ppb	Avg.	6	ug/m <sup>3</sup>
Exc.	0	total	Exc.	0	Total

### Station 3

TVOC			PM <sub>10</sub>		
Max.	27	ppb	Max.	<1	ug/m <sup>3</sup>
Avg.	<1	ppb	Avg.	<1	ug/m <sup>3</sup>
Exc.	0	total	Exc.	0	Total

### Station 4

TVOC			PM <sub>10</sub>		
Max.	<1	ppb	Max.	<1	ug/m <sup>3</sup>
Avg.	<1	ppb	Avg.	<1	ug/m <sup>3</sup>
Exc.	0	total	Exc.	0	Total

### Station 5

TVOC			PM <sub>10</sub>		
Max.	38	ppb	Max.	29	ug/m <sup>3</sup>
Avg.	11	ppb	Avg.	10	ug/m <sup>3</sup>
Exc.	0	total	Exc.	0	Total

### Station 6

TVOC			PM <sub>10</sub>		
Max.	<1	ppb	Max.	18	ug/m <sup>3</sup>
Avg.	<1	ppb	Avg.	6	ug/m <sup>3</sup>
Exc.	0	total	Exc.	0	Total

### Station 7

TVOC			PM <sub>10</sub>		
Max.	<1	ppb	Max.	19	ug/m <sup>3</sup>
Avg.	<1	ppb	Avg.	9	ug/m <sup>3</sup>
Exc.	0	total	Exc.	0	Total

TVOC – Total Volatile Organic Compounds

PM<sub>10</sub> – Particulates as PM<sub>10</sub>

Max. – Maximum daily average (15 min. avg. – TVOC / 15 min. avg. – PM<sub>10</sub>)

Avg. – Daily average (15 min. avg. – TVOC / 15 min. avg. – PM<sub>10</sub>)

Exc. – Total # of averages which exceed the action level (≥1 ppm - TVOC / ≥150 ug/m<sup>3</sup> - PM<sub>10</sub>)

# Gowanus Canal TB-4 Dredging and Capping Pilot Study

## Brooklyn, New York

Daily Station Report – TVOC/PM<sub>10</sub>  
(TRC Project No.274286-0000-00000)

12/15/2017 00:00 AM - 12/15/17 17:00 PM

### Station 1

TVOC			PM <sub>10</sub>		
Max.	33	ppb	Max.	13	ug/m <sup>3</sup>
Avg.	12	ppb	Avg.	7	ug/m <sup>3</sup>
Exc.	0	total	Exc.	0	Total

### Station 2

TVOC			PM <sub>10</sub>		
Max.	<1	ppb	Max.	<1	ug/m <sup>3</sup>
Avg.	<1	ppb	Avg.	<1	ug/m <sup>3</sup>
Exc.	0	total	Exc.	0	Total

### Station 3

TVOC			PM <sub>10</sub>		
Max.	60	ppb	Max.	<1	ug/m <sup>3</sup>
Avg.	26	ppb	Avg.	<1	ug/m <sup>3</sup>
Exc.	0	total	Exc.	0	Total

### Station 4

TVOC			PM <sub>10</sub>		
Max.	2	ppb	Max.	20	ug/m <sup>3</sup>
Avg.	<1	ppb	Avg.	5	ug/m <sup>3</sup>
Exc.	0	total	Exc.	0	Total

### Station 5

TVOC			PM <sub>10</sub>		
Max.	20	ppb	Max.	5	ug/m <sup>3</sup>
Avg.	9	ppb	Avg.	1	ug/m <sup>3</sup>
Exc.	0	total	Exc.	0	Total

### Station 6

TVOC			PM <sub>10</sub>		
Max.	<1	ppb	Max.	11	ug/m <sup>3</sup>
Avg.	<1	ppb	Avg.	4	ug/m <sup>3</sup>
Exc.	0	total	Exc.	0	Total

### Station 7

TVOC			PM <sub>10</sub>		
Max.	<1	ppb	Max.	<1	ug/m <sup>3</sup>
Avg.	<1	ppb	Avg.	<1	ug/m <sup>3</sup>
Exc.	0	total	Exc.	0	Total

TVOC – Total Volatile Organic Compounds

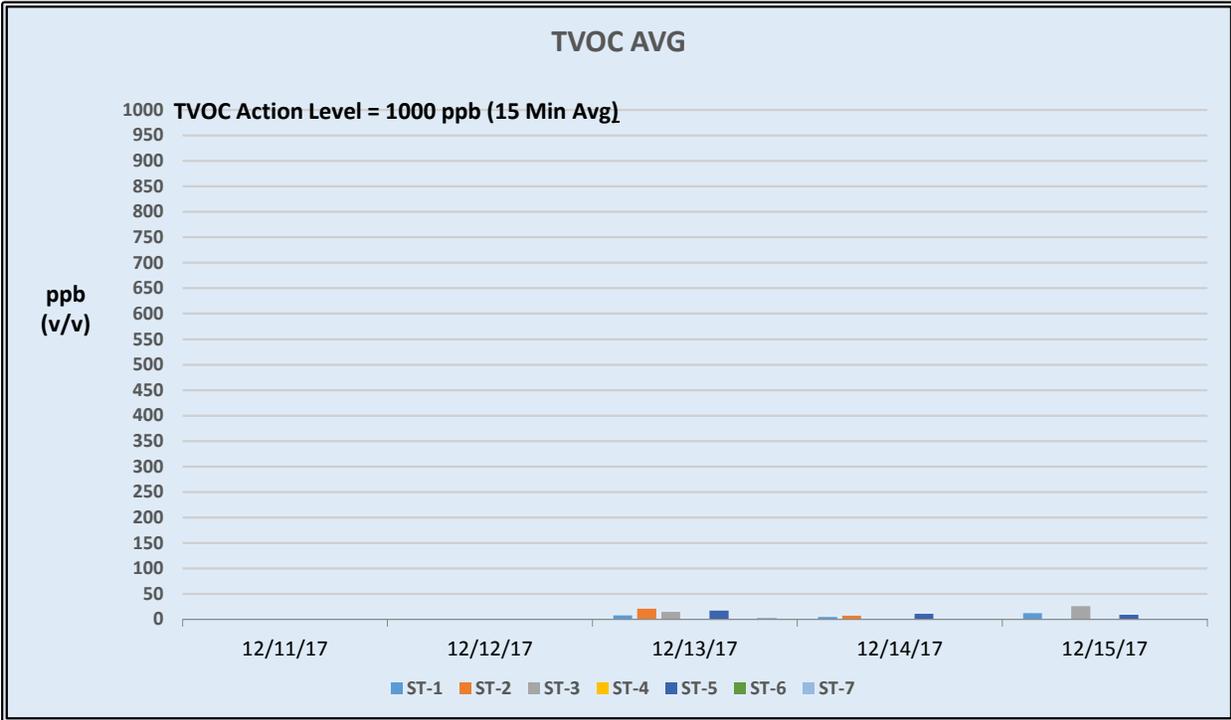
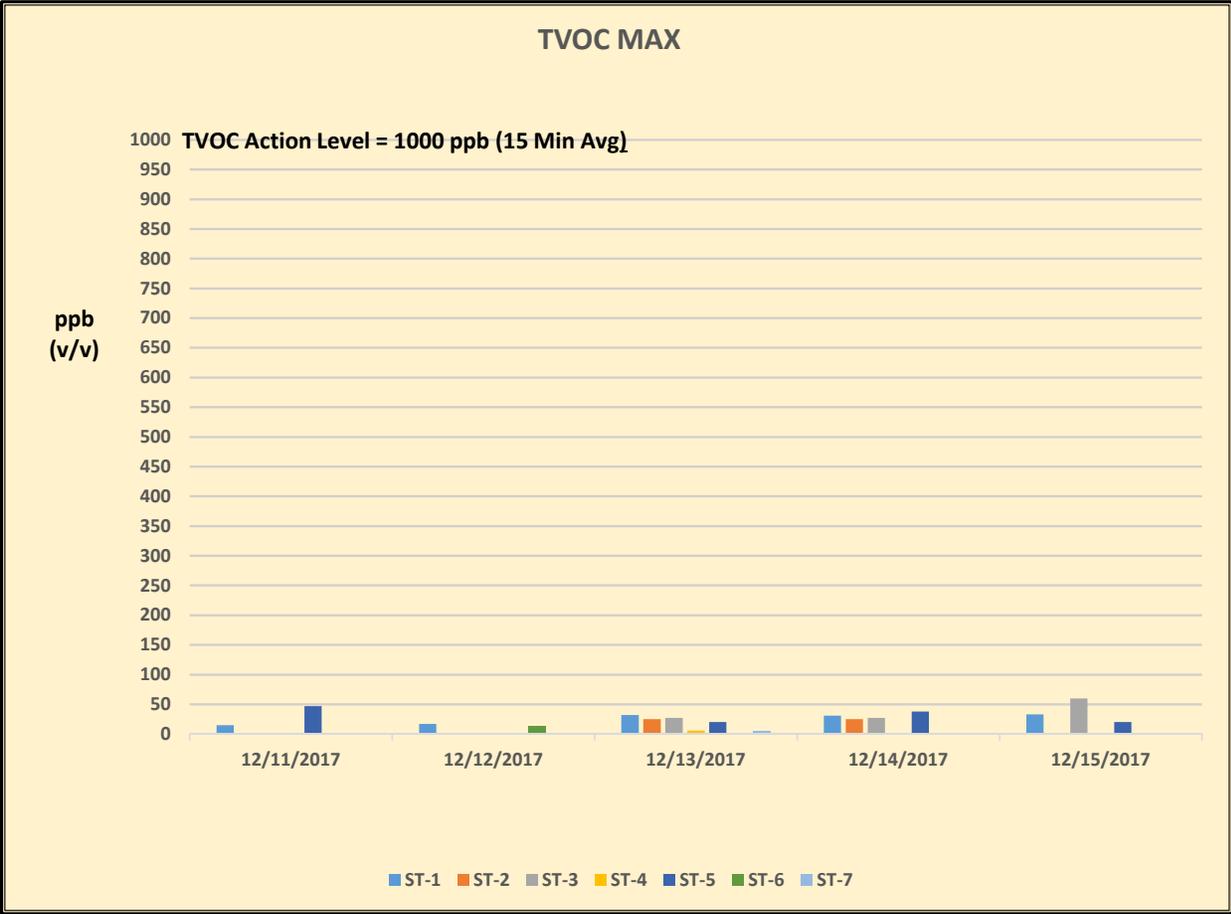
PM<sub>10</sub> – Particulates as PM<sub>10</sub>

Max. – Maximum daily average (15 min. avg. – TVOC / 15 min. avg. – PM<sub>10</sub>)

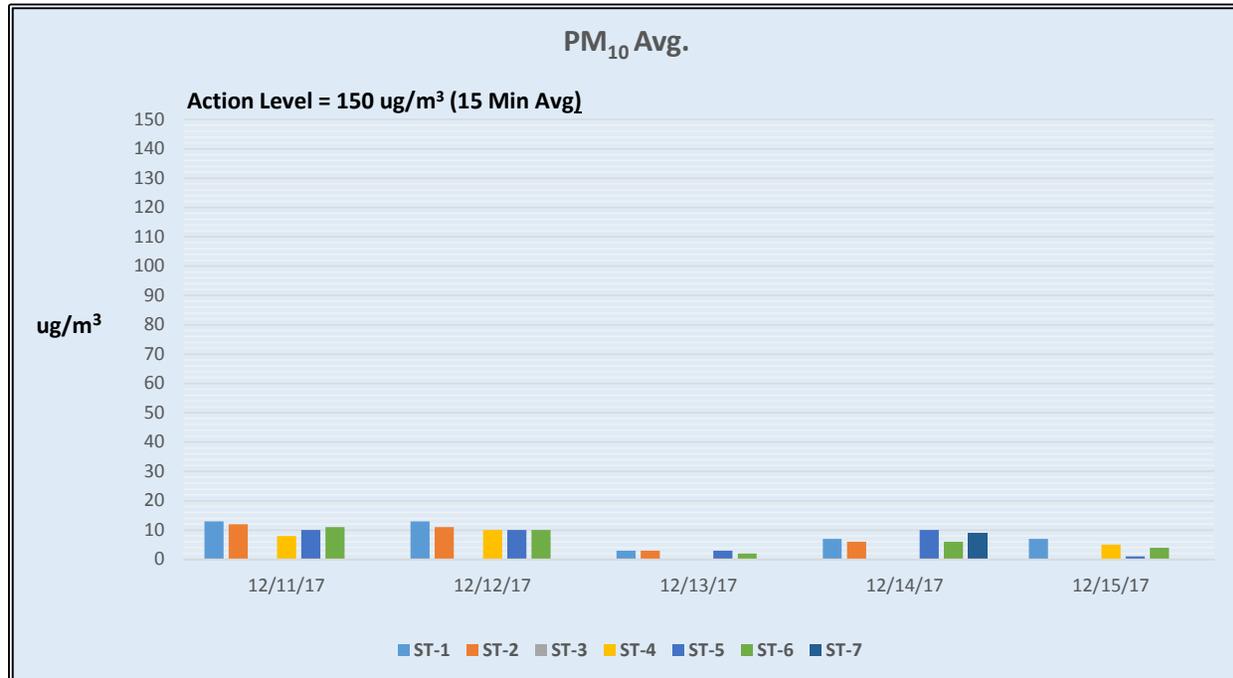
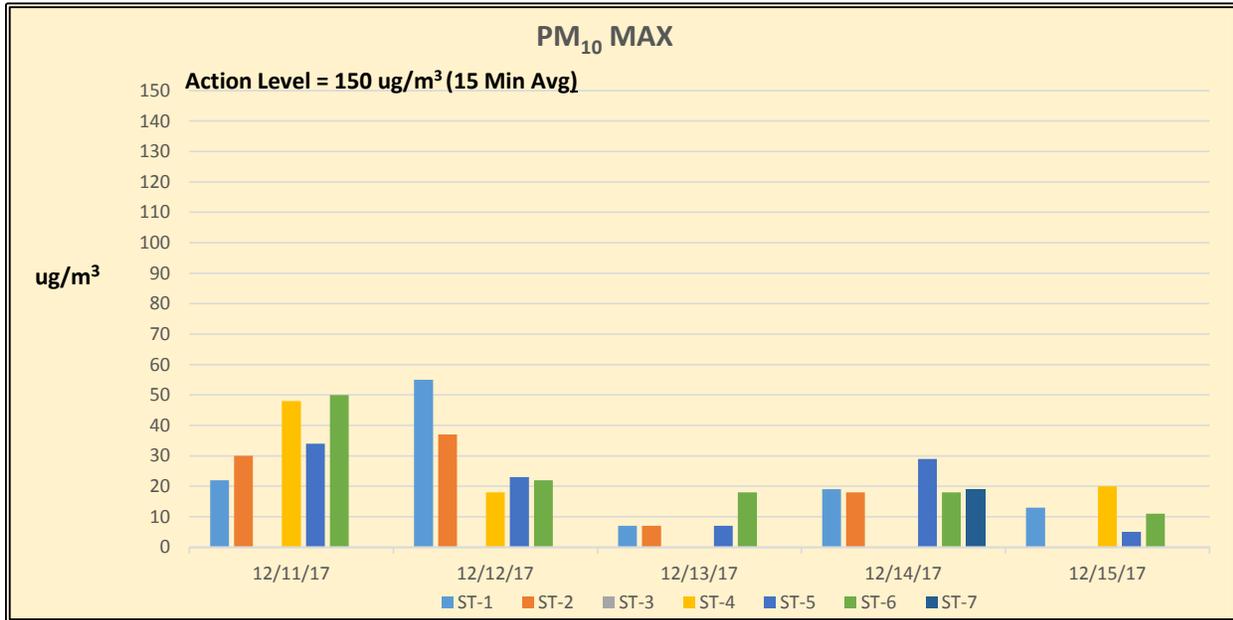
Avg. – Daily average (15 min. avg. – TVOC / 15 min. avg. – PM<sub>10</sub>)

Exc. – Total # of averages which exceed the action level (≥1 ppm - TVOC / ≥150 ug/m<sup>3</sup> - PM<sub>10</sub>)

**Figure 1**  
**Gowanus Canal Superfund Site -TB4 Dredging and Capping Pilot Program**  
**TVOC Monitoring Data - Week 11**



**Figure 2**  
**Gowanus Canal Superfund Site - TB4 Dredging and Capping Pilot Program**  
**TRC CAMP PM<sub>10</sub> Monitoring Data - Week 11**



**Table 1****Week 11****Summary of Additional Periodic (Daily) Monitoring Data**

December 11 <sup>th</sup> , 2017				
Station Id	Time	Formaldehyde (CHO) (ppb)	Hydrogen Sulfide (H <sub>2</sub> S) (ppb)	Ammonia (NH <sub>3</sub> ) (ppm)
ST-1	7:30	<50	<3	<1.0
	13:30	<50	<3	<1.0
ST-2	7:35	<50	<3	<1.0
	13:35	<50	<3	<1.0
ST-3	7:50	<50	<3	<1.0
	13:50	<50	<3	<1.0
ST-4	7:55	<50	<3	<1.0
	13:55	<50	<3	<1.0
ST-5	8:00	<50	<3	<1.0
	14:00	<50	<3	<1.0
ST-6	8:20	<50	<3	<1.0
	14:20	<50	<3	<1.0
ST-7	8:50	<50	<3	<1.0
	14:40	<50	<3	<1.0

December 12 <sup>th</sup> , 2017				
Station Id	Time	Formaldehyde (CHO) (ppb)	Hydrogen Sulfide (H <sub>2</sub> S) (ppb)	Ammonia (NH <sub>3</sub> ) (ppm)
ST-1	9:00	<50	<3	<1.0
	15:30	<50	<3	<1.0
ST-2	9:05	<50	<3	<1.0
	15:35	<50	<3	<1.0
ST-3	9:15	<50	<3	<1.0
	15:50	<50	<3	<1.0
ST-4	9:30	<50	<3	<1.0
	15:55	<50	<3	<1.0
ST-5	9:35	<50	<3	<1.0
	16:10	<50	<3	<1.0
ST-6	9:50	<50	<3	<1.0
	16:30	<50	<3	<1.0
ST-7	10:10	<50	<3	<1.0
	16:35	<50	<3	<1.0

**Table 1****Week 11****Summary of Additional Periodic (Daily) Monitoring Data**

December 13 <sup>th</sup> , 2017				
Station Id	Time	Formaldehyde (CHO) (ppb)	Hydrogen Sulfide (H <sub>2</sub> S) (ppb)	Ammonia (NH <sub>3</sub> ) (ppm)
ST-1	7:00	<50	<3	<1.0
	13:30	<50	<3	<1.0
ST-2	7:05	<50	<3	<1.0
	13:35	<50	<3	<1.0
ST-3	7:15	<50	<3	<1.0
	13:45	<50	<3	<1.0
ST-4	7:20	<50	2.8	<1.0
	13:50	<50	7.2	<1.0
ST-5	7:25	<50	<3	<1.0
	13:55	<50	<3	<1.0
ST-6	7:40	<50	<3	<1.0
	14:10	<50	<3	<1.0
ST-7	7:50	<50	<3	<1.0
	14:20	<50	<3	<1.0

December 14 <sup>th</sup> , 2017				
Station Id	Time	Formaldehyde (CHO) (ppb)	Hydrogen Sulfide (H <sub>2</sub> S) (ppb)	Ammonia (NH <sub>3</sub> ) (ppm)
ST-1	7:30	<50	<3	<1.0
	15:10	<50	<3	<1.0
ST-2	7:35	<50	<3	<1.0
	15:20	<50	<3	<1.0
ST-3	7:50	<50	<3	<1.0
	15:35	<50	<3	<1.0
ST-4	7:55	<50	<3	<1.0
	15:45	<50	<3	<1.0
ST-5	8:00	<50	<3	<1.0
	15:55	<50	<3	<1.0
ST-6	8:15	<50	<3	<1.0
	16:10	<50	<3	<1.0
ST-7	8:10	<50	<3	<1.0
	16:25	<50	<3	<1.0

**Table 1**

**Week 11**

**Summary of Additional Periodic (Daily) Monitoring Data**

December 15 <sup>th</sup> , 2017				
Station Id	Time	Formaldehyde (CHO) (ppb)	Hydrogen Sulfide (H <sub>2</sub> S) (ppb)	Ammonia (NH <sub>3</sub> ) (ppm)
ST-1	8:00	<50	<3	<1.0
	15:00	<50	<3	<1.0
ST-2	8:05	<50	<3	<1.0
	15:05	<50	<3	<1.0
ST-3	8:15	<50	<3	<1.0
	15:15	<50	<3	<1.0
ST-4	8:20	<50	<3	<1.0
	15:20	<50	<3	<1.0
ST-5	8:25	<50	<3	<1.0
	15:30	<50	<3	<1.0
ST-6	8:40	<50	<3	<1.0
	15:40	<50	<3	<1.0
ST-7	8:50	<50	<3	<1.0
	16:00	<50	<3	<1.0

**\*(ppb) Indicates results reported in parts per billion**

**\* (ppm) Indicates results reported in parts per million**

**Table 2:**  
**Gowanus Canal Superfund Site - TB4 Dredging and Capping Pilot Program**  
**Week 6 VOCs Results: November 8th through 9th (Co-located)**

Sample ID	ST-1A-VOC-110817			ST-1B-VOC-110817			Relative Percent Difference
	Laboratory ID			Laboratory ID			
	Date Sampled			Date Sampled			
Location	Station 1			Station 1 Duplicate			
	ppbV	ug/m3		ppbV	ug/m3		
<b>VOCs - TO-15</b>							
<b>Acetone</b>	<b>4</b>	<b>9.4</b>		<b>3</b>	<b>7.2</b>		<b>26.5%</b>
<b>Benzene</b>	<b>0.29</b>	<b>0.93</b>		<b>0.28</b>	<b>0.89</b>		<b>4.4%</b>
<b>Benzyl chloride</b>	<0.035	<0.18		<0.035	<0.18		NC
<b>Bromodichloromethane</b>	<0.035	<0.24		<0.035	<0.24		NC
<b>Bromoform</b>	<0.035	<0.36		<0.035	<0.36		NC
<b>Bromomethane</b>	<0.035	<0.14		<0.035	<0.14		NC
<b>1,3-Butadiene</b>	<0.035	<0.078		<0.035	<0.078		NC
<b>2-Butanone (MEK)</b>	<1.4	<4.1		<1.4	<4.1		NC
<b>Carbon Disulfide</b>	<0.35	<1.1		<0.35	<1.1		NC
<b>Carbon Tetrachloride</b>	<b>0.074</b>	<b>0.47</b>		<b>0.068</b>	<b>0.43</b>		<b>8.9%</b>
<b>Chlorobenzene</b>	<0.035	<0.16		<0.035	<0.16		NC
<b>Chloroethane</b>	<0.070	<0.19		<0.070	<0.19		NC
<b>Chloroform</b>	<b>0.3</b>	<b>1.5</b>		<b>0.051</b>	<b>0.25</b>		<b>142.9%</b>
<b>Chloromethane</b>	<b>0.43</b>	<b>0.88</b>		<b>0.45</b>	<b>0.93</b>		<b>5.5%</b>
<b>Cyclohexane</b>	<b>0.12</b>	<b>0.4</b>		<b>0.071</b>	<b>0.24</b>		<b>50.0%</b>
<b>Dibromochloromethane</b>	<0.035	<0.30		<0.035	<0.30		NC
<b>1,2-Dibromoethane (EDB)</b>	<0.035	<0.27		<0.035	<0.27		NC
<b>1,2-Dichlorobenzene</b>	<0.035	<0.21		<0.035	<0.21		NC
<b>1,3-Dichlorobenzene</b>	<0.035	<0.21		<0.035	<0.21		NC
<b>1,4-Dichlorobenzene</b>	<0.035	<0.21		<0.035	<0.21		NC
<b>Dichlorodifluoromethane (Freon 12)</b>	<b>0.45</b>	<b>2.2</b>		<b>0.46</b>	<b>2.3</b>		<b>4.4%</b>
<b>1,1-Dichloroethane</b>	<0.035	<0.14		<0.035	<0.14		NC
<b>1,2-Dichloroethane</b>	<0.035	<0.14		<0.035	<0.14		NC
<b>1,1-Dichloroethylene</b>	<0.035	<0.14		<0.035	<0.14		NC
<b>cis-1,2-Dichloroethylene</b>	<0.035	<0.14		<0.035	<0.14		NC
<b>trans-1,2-Dichloroethylene</b>	<0.035	<0.14		<0.035	<0.14		NC
<b>1,2-Dichloropropane</b>	<0.035	<0.16		<0.035	<0.16		NC
<b>cis-1,3-Dichloropropene</b>	<0.035	<0.16		<0.035	<0.16		NC
<b>trans-1,3-Dichloropropene</b>	<0.035	<0.16		<0.035	<0.16		NC
<b>1,2-Dichloro-1,1,2,2-tetrafluoroethane (Freon 114)</b>	<0.035	<0.25		<0.035	<0.25		NC
<b>1,4-Dioxane</b>	<0.35	<1.3		<0.35	<1.3		NC
<b>Ethanol</b>	<b>8.5</b>	<b>16</b>	J-	<b>7</b>	<b>13</b>	J-	<b>20.7%</b>
<b>Ethyl Acetate</b>	<b>1.5</b>	<b>5.5</b>		<0.35	<1.3		NC
<b>Ethylbenzene</b>	<b>0.1</b>	<b>0.43</b>		<b>0.079</b>	<b>0.34</b>		<b>23.4%</b>
<b>4-Ethyltoluene</b>	<0.035	<0.17		<0.035	<0.17		NC
<b>Heptane</b>	<b>0.16</b>	<b>0.64</b>		<b>0.098</b>	<b>0.4</b>		<b>46.2%</b>
<b>Hexachlorobutadiene</b>	<0.035	<0.37		<0.035	<0.37		NC
<b>Hexane</b>	<1.4	<4.9		<1.4	<4.9		NC
<b>2-Hexanone (MBK)</b>	0.088	<b>0.36</b>	J-	<b>0.1</b>	<b>0.41</b>	J-	<b>13.0%</b>
<b>Isopropanol</b>	<1.4	<3.4	J-	<1.4	<3.4	J-	NC
<b>Methyl tert-Butyl Ether (MTBE)</b>	<0.035	<0.13		<0.035	<0.13		NC
<b>Methylene Chloride</b>	<0.35	<1.2		<0.35	<1.2		NC
<b>4-Methyl-2-pentanone (MIBK)</b>	<0.070	<0.29	J-	<0.070	<0.29	J-	NC
<b>Naphthalene</b>	<0.035	<0.18	J-	<0.035	<0.18	J-	NC
<b>Propene</b>	<1.4	<2.4		<1.4	<2.4		NC
<b>Styrene</b>	<b>0.074</b>	<b>0.31</b>		<b>0.04</b>	<b>0.17</b>		<b>58.3%</b>
<b>1,1,2,2-Tetrachloroethane</b>	<0.035	<0.24		<0.035	<0.24		NC
<b>Tetrachloroethylene</b>	<b>0.13</b>	<b>0.89</b>		<b>0.15</b>	<b>1</b>		<b>11.6%</b>
<b>Tetrahydrofuran</b>	<0.14	<0.41		<0.14	<0.41		NC
<b>Toluene</b>	<b>0.9</b>	<b>3.4</b>		<b>0.65</b>	<b>2.4</b>		<b>34.5%</b>
<b>1,2,4-Trichlorobenzene</b>	<0.035	<0.26		<0.035	<0.26		NC
<b>1,1,1-Trichloroethane</b>	<0.035	<0.19		<0.035	<0.19		NC
<b>1,1,2-Trichloroethane</b>	<0.035	<0.19		<0.035	<0.19		NC
<b>Trichloroethylene</b>	<0.035	<0.19		<0.035	<0.19		NC
<b>Trichlorofluoromethane (Freon 11)</b>	<b>0.2</b>	<b>1.1</b>		<b>0.2</b>	<b>1.1</b>		<b>0.0%</b>
<b>1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)</b>	<0.14	<1.1		<0.14	<1.1		NC
<b>1,2,4-Trimethylbenzene</b>	<b>0.1</b>	<b>0.5</b>		<b>0.086</b>	<b>0.42</b>		<b>17.4%</b>
<b>1,3,5-Trimethylbenzene</b>	<0.035	<0.17		<0.035	<0.17		NC
<b>Vinyl Acetate</b>	<0.70	<2.5	J-	<0.70	<2.5	J-	NC
<b>Vinyl Chloride</b>	<0.035	<0.090		<0.035	<0.090		NC
<b>m&amp;p-Xylene</b>	<b>0.32</b>	<b>1.4</b>		<b>0.27</b>	<b>1.2</b>		<b>15.4%</b>
<b>o-Xylene</b>	<b>0.12</b>	<b>0.51</b>		<b>0.1</b>	<b>0.43</b>		<b>17.0%</b>

Notes:

Values in **bold** indicate detected concentrations

J-: The results for these compounds are estimated and may be biased low.

Results for the following compounds may be influenced by laboratory derived contamination:

acetone, ethanol, methylene chloride and isopropanol

Relative Percent Difference (RPD) calculated using the following equation:

$$RPD = \frac{|X1 - X2|}{(X1+X2)/2}$$

where: X1 = original sample, X2 = duplicate sample

NC: RPD not calculable due to a non-detect result in one or both co-located sample

**Table 3:**  
**Gowanus Canal Superfund Site - TB4 Dredging and Capping Pilot Program**  
**Week 7 VOCs Results: November 13th through 14th and November 15th through 16th**

Sample ID	ST-2-VOC-111517		ST-7-VOC-111317	
Laboratory ID	17K1264-01		17K1264-02	
Date Sampled	11/15/17 10:15 - 11/16/17 10:15		11/13/17 13:00 - 11/14/17 13:00	
Location	Station 2		Station 3	
	ppbV	ug/m3	ppbV	ug/m3
<b>VOCs - TO-15</b>				
Acetone	<b>9.8</b>	<b>23</b>	<b>5.6</b>	<b>13</b>
Benzene	<b>0.41</b>	<b>1.3</b>	<b>0.22</b>	<b>0.71</b>
Benzyl chloride	<0.035	<0.18	<0.035	<0.18
Bromodichloromethane	<0.035	<0.24	<0.035	<0.24
Bromoform	<0.035	<0.36	<0.035	<0.36
Bromomethane	<0.035	<0.14	<0.035	<0.14
1,3-Butadiene	<b>0.083</b>	<b>0.18</b>	<b>0.037</b>	<b>0.082</b>
2-Butanone (MEK)	<b>1.6</b>	<b>4.8</b>	<1.4	<4.1
Carbon Disulfide	<0.35	<1.1	<0.35	<1.1
Carbon Tetrachloride	<b>0.074</b>	<b>0.47</b>	<b>0.077</b>	<b>0.49</b>
Chlorobenzene	<0.035	<0.16	<0.035	<0.16
Chloroethane	<0.035	<0.19	<0.035	<0.19
Chloroform	<0.035	<0.17	<0.035	<0.17
Chloromethane	<b>0.51</b>	<b>1.1</b>	<b>0.51</b>	<b>1</b>
Cyclohexane	<b>2.9</b>	<b>10</b>	<b>0.25</b>	<b>0.87</b>
Dibromochloromethane	<0.035	<0.30	<0.035	<0.30
1,2-Dibromoethane (EDB)	<0.035	<0.27	<0.035	<0.27
1,2-Dichlorobenzene	<0.035	<0.21	<0.035	<0.21
1,3-Dichlorobenzene	<0.035	<0.21	<0.035	<0.21
1,4-Dichlorobenzene	<0.035	<0.21	<0.035	<0.21
Dichlorodifluoromethane (Freon 12)	<b>0.32</b>	<b>1.6</b>	<b>0.26</b>	<b>1.3</b>
1,1-Dichloroethane	<0.035	<0.14	<0.035	<0.14
1,2-Dichloroethane	<0.035	<0.14	<0.035	<0.14
1,1-Dichloroethylene	<0.035	<0.14	<0.035	<0.14
cis-1,2-Dichloroethylene	<0.035	<0.14	<0.035	<0.14
trans-1,2-Dichloroethylene	<0.035	<0.14	<0.035	<0.14
1,2-Dichloropropane	0.049	<0.16	<0.035	<0.16
cis-1,3-Dichloropropene	<0.035	<0.16	<0.035	<0.16
trans-1,3-Dichloropropene	<0.035	<0.16	<0.035	<0.16
1,2-Dichloro-1,1,2,2-tetrafluoroethane (Freon 114)	<0.035	<0.25	<0.035	<0.25
1,4-Dioxane	<0.35	<1.3	<0.35	<1.3
Ethanol	<b>15</b>	<b>29</b>	<b>5.1</b>	<b>9.7</b>
Ethyl Acetate	<b>4.5</b>	<b>16</b>	<b>0.55</b>	<b>2</b>
Ethylbenzene	<b>0.32</b>	<b>1.4</b>	<b>0.086</b>	<b>0.37</b>
4-Ethyltoluene	<0.035	<0.17	<0.035	<0.17
Heptane	<b>1.3</b>	<b>5.2</b>	<b>0.17</b>	<b>0.69</b>
Hexachlorobutadiene	<0.035	<0.37	<0.035	<0.37
Hexane	<b>1.6</b>	<b>5.6</b>	<1.4	<4.9
2-Hexanone (MBK)	<0.035	<0.29	<b>0.11</b>	<0.29
Isopropanol	<b>2.3</b>	<b>5.7</b>	<1.4	<3.4
Methyl tert-Butyl Ether (MTBE)	<0.035	<0.13	<0.035	<0.13
Methylene Chloride	<b>0.79</b>	<b>2.8</b>	<b>0.39</b>	<b>1.4</b>
4-Methyl-2-pentanone (MIBK)	<b>0.3</b>	<b>1.2</b>	<b>0.095</b>	<b>0.39</b>
Naphthalene	<0.14	<0.18	<0.14	<0.18
Propene	<1.4	<2.4	<1.4	<2.4
Styrene	<b>0.37</b>	<b>1.6</b>	<b>0.039</b>	<b>0.17</b>
1,1,1,2-Tetrachloroethane	<0.035	<0.24	<0.035	<0.24
Tetrachloroethylene	<b>0.22</b>	<b>1.5</b>	<b>0.29</b>	<b>2</b>
Tetrahydrofuran	<b>0.058</b>	<b>0.17</b>	<0.035	<0.10
Toluene	<b>7.3</b>	<b>28</b>	<b>1.5</b>	<b>5.8</b>
1,2,4-Trichlorobenzene	<0.070	<0.26	<0.070	<0.26
1,1,1-Trichloroethane	<0.035	<0.19	<0.035	<0.19
1,1,2-Trichloroethane	<0.035	<0.19	<0.035	<0.19
Trichloroethylene	<0.035	<0.19	<0.035	<0.19
Trichlorofluoromethane (Freon 11)	<b>0.21</b>	<b>1.2</b>	<b>0.21</b>	<b>1.2</b>
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	<0.14	<1.1	<0.14	<1.1
1,2,4-Trimethylbenzene	<b>0.14</b>	<b>0.67</b>	<b>0.077</b>	<b>0.38</b>
1,3,5-Trimethylbenzene	<0.035	<0.17	<0.035	<0.17
Vinyl Acetate	<0.70	<2.5	<0.70	<2.5
Vinyl Chloride	<0.035	<0.090	<0.035	<0.090
m&p-Xylene	<b>0.98</b>	<b>4.3</b>	<b>0.29</b>	<b>1.3</b>
o-Xylene	<b>0.31</b>	<b>1.3</b>	<b>0.1</b>	<b>0.44</b>

Notes:

Values in **bold** indicate detected concentrations

Results for the following compounds may be influenced by laboratory derived contamination:

acetone, ethanol, methylene chloride and isopropanol



# Gowanus Canal TB-4 Dredging and Capping Pilot Study Brooklyn, New York

## Meteorological Summary

December 11<sup>th</sup> through December 15<sup>th</sup>, 2017

December 11 <sup>th</sup> , 2017		
Wind Direction (°)	Wind Speed (mph)	Temperature (°F)
WSW	1.79	37.2

December 12 <sup>th</sup> , 2017		
Wind Direction (°)	Wind Speed (mph)	Temperature (°F)
SSW	3.62	43.5

December 13 <sup>th</sup> , 2017		
Wind Direction (°)	Wind Speed (mph)	Temperature (°F)
WSW	5.45	26.5

December 14 <sup>th</sup> , 2017		
Wind Direction (°)	Wind Speed (mph)	Temperature (°F)
SW	3.09	27.9

December 15 <sup>th</sup> , 2017		
Wind Direction (°)	Wind Speed (mph)	Temperature (°F)
WSW	2.24	24.1

\*All meteorological data represents an average for the time period of 06:30 to 23:45 for Monday.

\*All meteorological data represents averages for the time period of 00:00 to 23:45 for Tuesday.

\*All meteorological data represents an average for the time period of 00:00 to 17:00 for Friday.

**WILSON IHRIG WEEKLY NOISE AND VIBRATION MONITORING REPORT**





WI #15-081

**MEMORANDUM**

December 18, 2017

To: William Lee/ de maximis, inc.  
Kirsten Meyers / TRC

From: Silas Bensing, Ani Toncheva / Wilson Ihrig

Subject: Gowanus Canal 4th Street Turning Basin Dredging and Capping Pilot Study, Weekly Noise and Vibration Monitoring Report, 11 December – 15 December, 2017

**Noise Monitoring Locations**

Figure 1 shows the noise monitoring locations. NM-1 is installed at a light pole on the north side of TB4 and is approximately 25 feet from the north edge of the canal. NM-2 is installed at the existing guard rail on the south side of TB4, approximately 4 feet from the south edge of the canal. NM-3 is installed at a light pole on the north side of TB4 near 3rd Avenue, approximately 50 feet from the north edge of the canal. Photos 1, 2, and 3 show the recent field conditions at the monitors.

**Vibration Monitoring Locations**

Figure 1 shows the vibration monitoring locations. Vibration monitor VM-1 is installed at the parking lot curb on the north side of TB4, approximately 45 feet from the north edge of the canal. Vibration monitor VM-2 is installed near the corner of an existing building on the south side of TB4, approximately 24 feet from the south edge of the canal. Photos 4 and 5 show the recent field conditions at the monitors.

**Noise Monitoring Results**

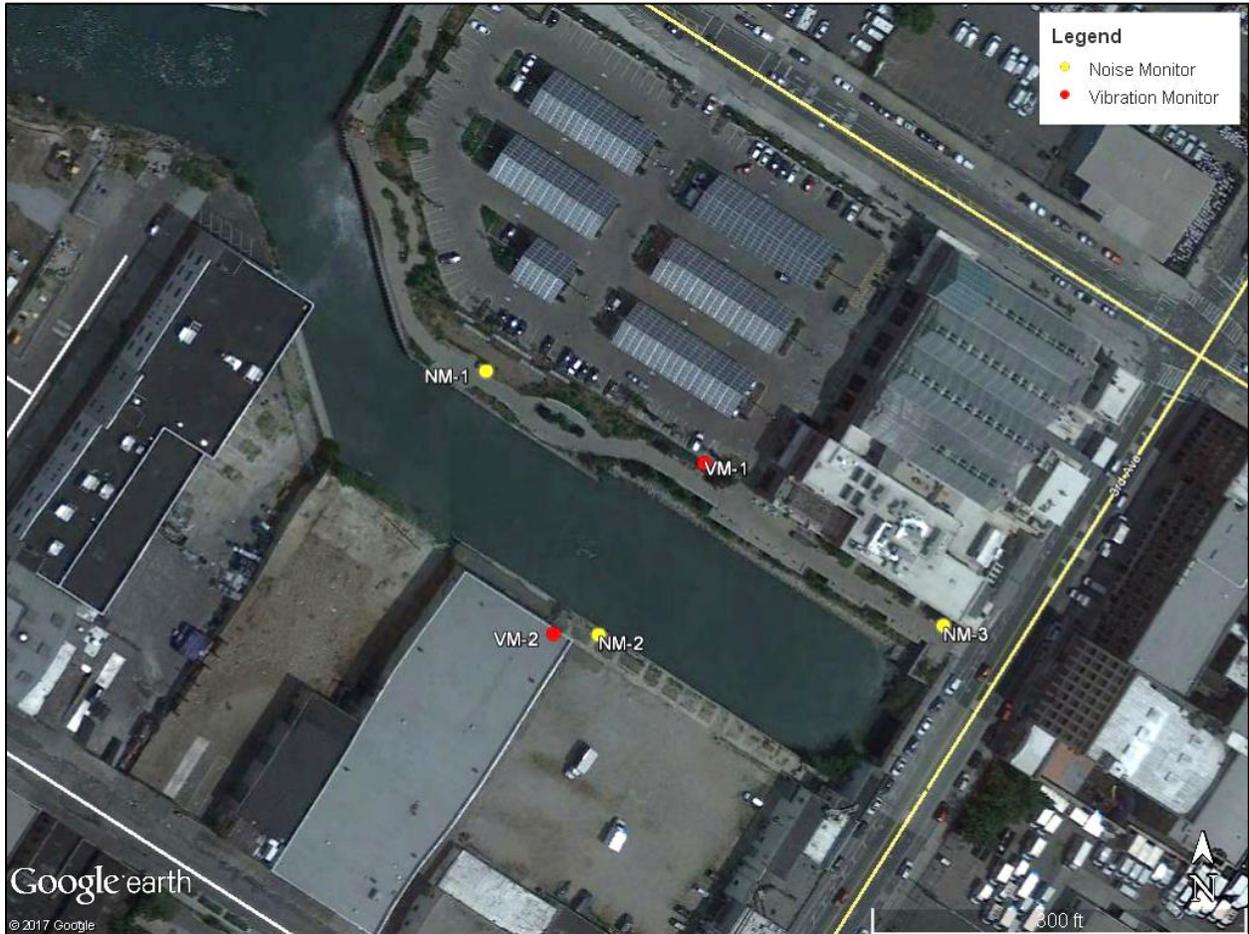
Figures 2 through 16 present the hourly Leq noise levels compared with the noise thresholds discussed in the noise monitoring plan<sup>1</sup>. Commercial and Industrial land uses are assigned an hourly Leq noise limit of 80 dBA for Daytime and Evening time periods. The average baseline noise measured in the project area in 2015 are also shown for reference<sup>2</sup>. Noise level data for Northeast Monitor NM-3 on Friday, 15 December from intervals 09:00 to 11:00 are incomplete due to intermittent equipment issues.

<sup>1</sup> Wilson Ihrig. *Gowanus Canal 4<sup>th</sup> Street Turning Basin Dredging and Capping Pilot Study Noise and Vibration Monitoring Plan*. California: prepared for Gowanus Canal Remedial Design Group, DRAFT May 2017

<sup>2</sup> Wilson Ihrig. *Gowanus Canal Remedial Design Project RTA-1 Noise and Vibration Baseline Report*. California: prepared for Geosyntec Consultants Inc., October 2015.

### Vibration Monitoring Results

Figures 17 through 26 present the maximum peak particle velocity (PPV) vibration events compared with the thresholds discussed in the vibration monitoring plan<sup>3</sup>. Commercial and Industrial structures are assigned a PPV vibration criterion of 2.0 inches/second



**Figure 1: Long-term Noise and Vibration Monitoring Locations for Gowanus TB4 Dredging and Capping Pilot Study**

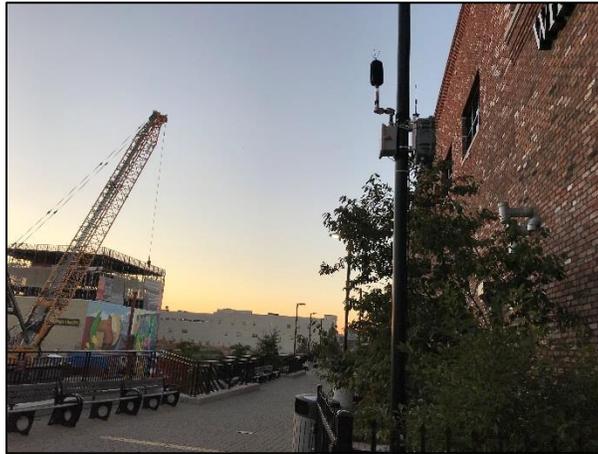
<sup>3</sup> Wilson Ihrig. *Gowanus Canal 4<sup>th</sup> Street Turning Basin Dredging and Capping Pilot Study Noise and Vibration Monitoring Plan*. California: prepared for Gowanus Canal Remedial Design Group, DRAFT May 2017



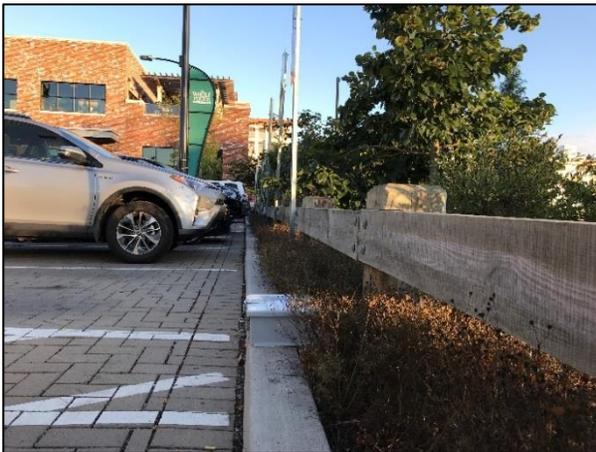
**Photo 1: Noise Monitoring Location NM-1**  
**(26 September 2017)**



**Photo 2: Noise Monitoring Location NM-2**  
**(25 September 2017)**



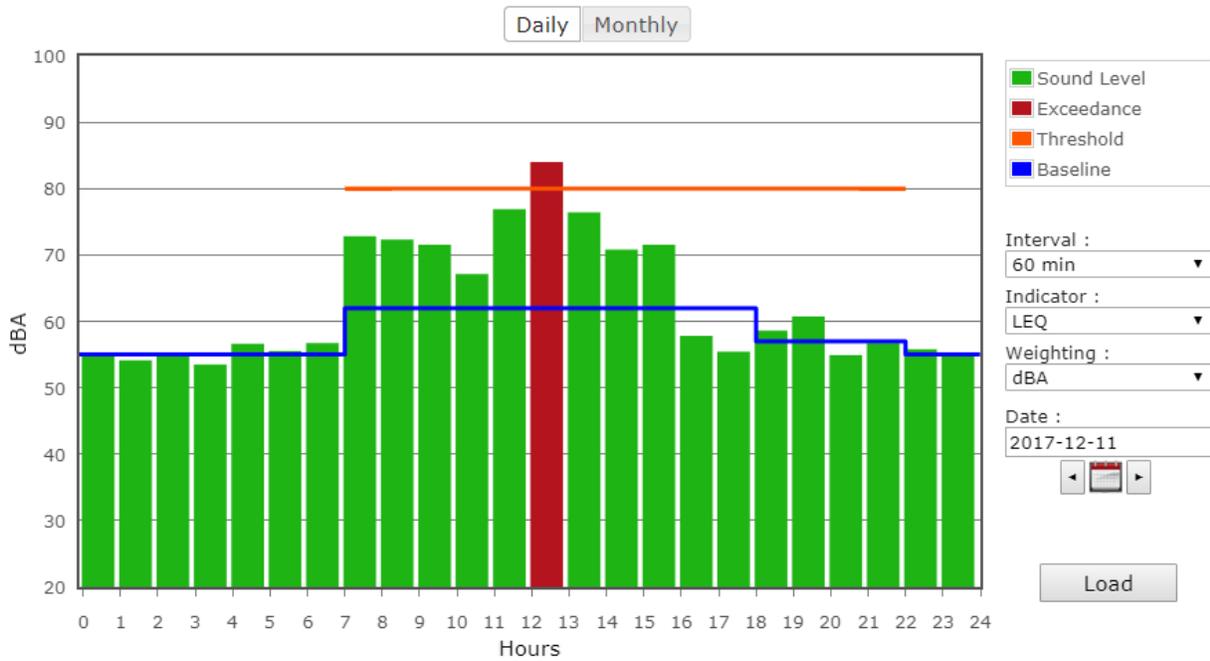
**Photo 3: Noise Monitoring Location NM-3**  
**(29 October 2017)**



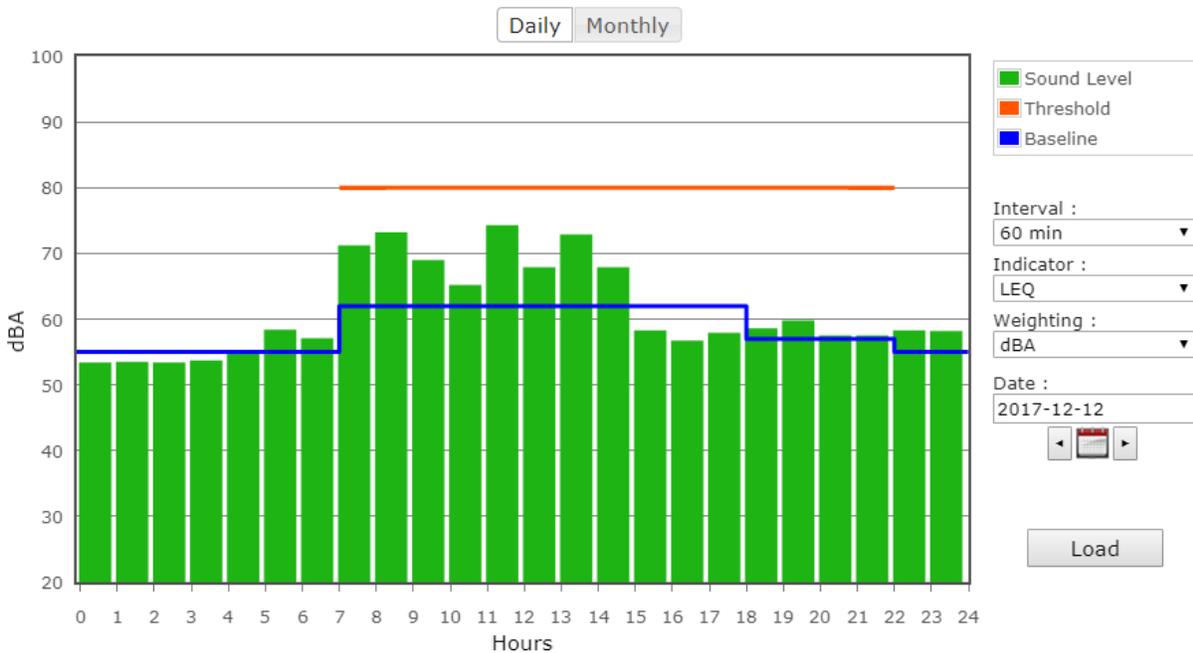
**Photo 4: Vibration Monitoring Location VM-1**  
**(12 October 2017)**



**Photo 5: Vibration Monitoring Location VM-2**  
**(12 October 2017)**



**Figure 2: North Monitor NM-1 on Monday**



**Figure 3: North Monitor NM-1 on Tuesday**

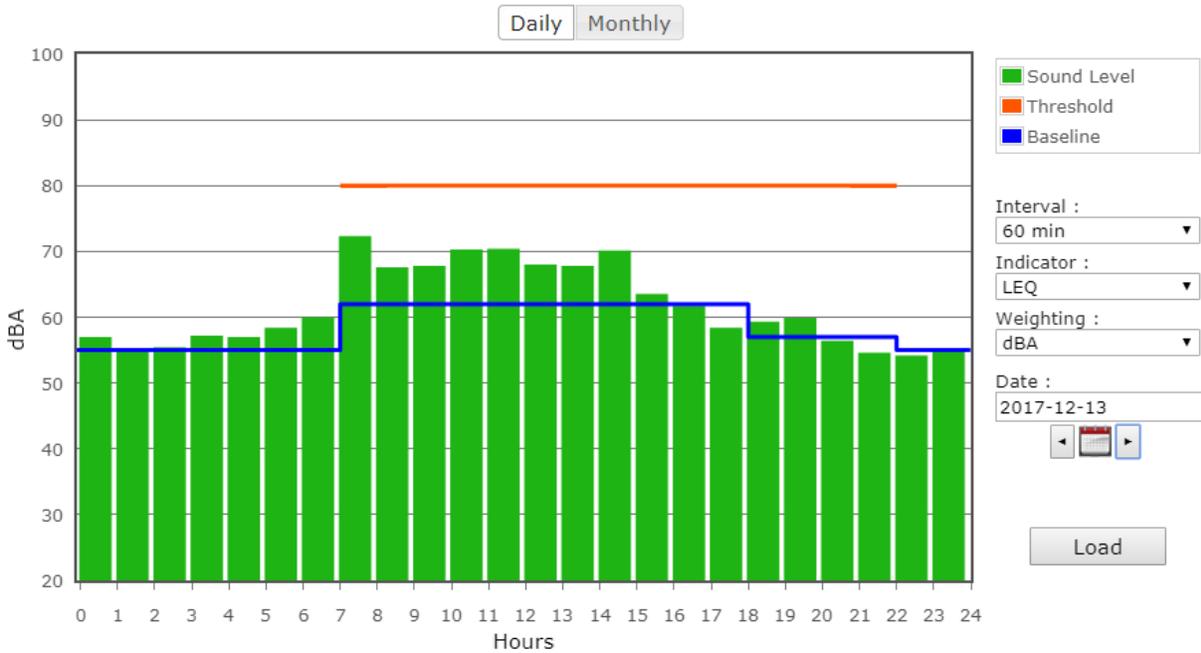


Figure 4: North Monitor NM-1 on Wednesday

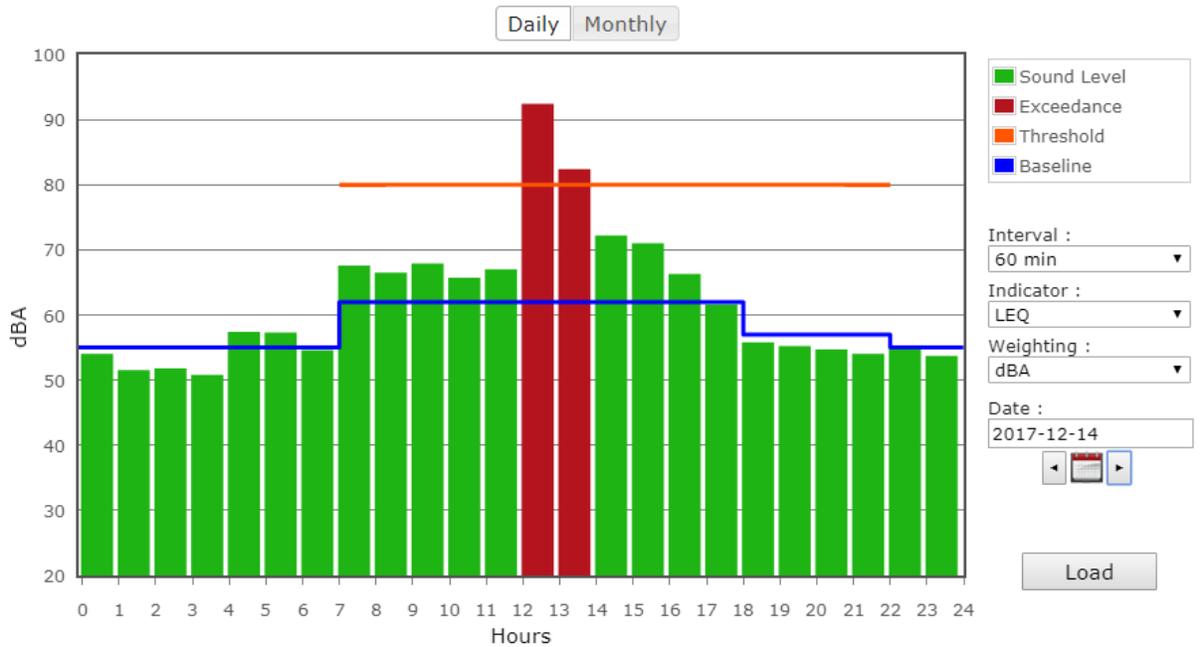


Figure 5: North Monitor NM-1 on Thursday

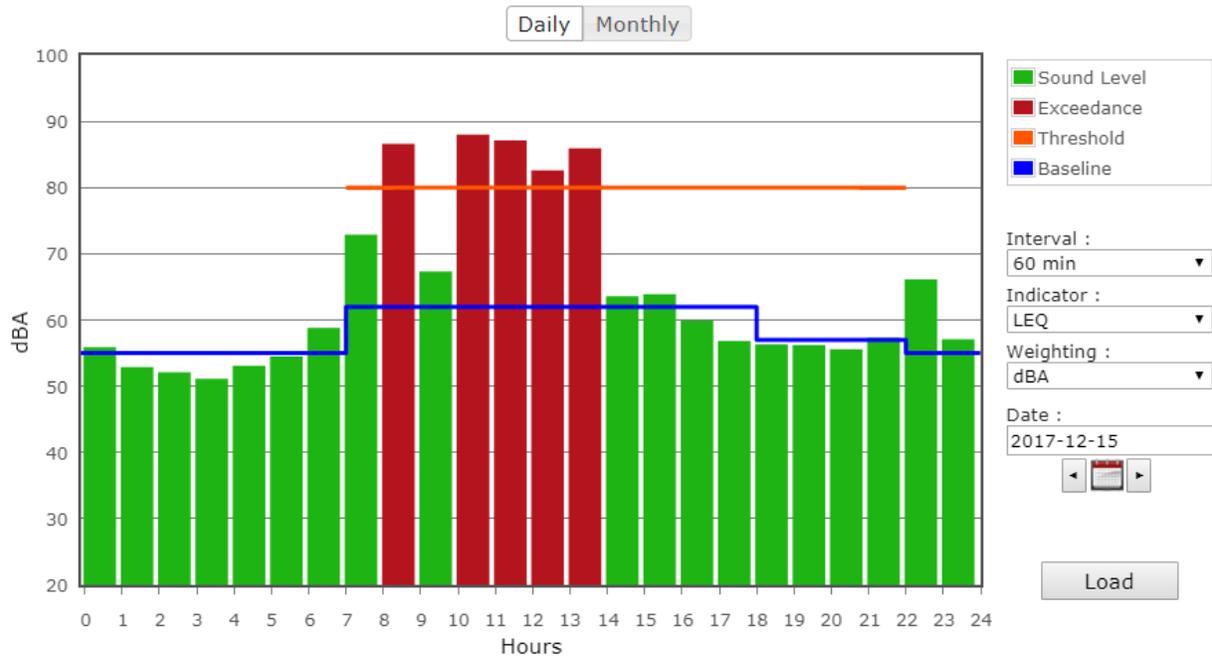


Figure 6: North Monitor NM-1 on Friday

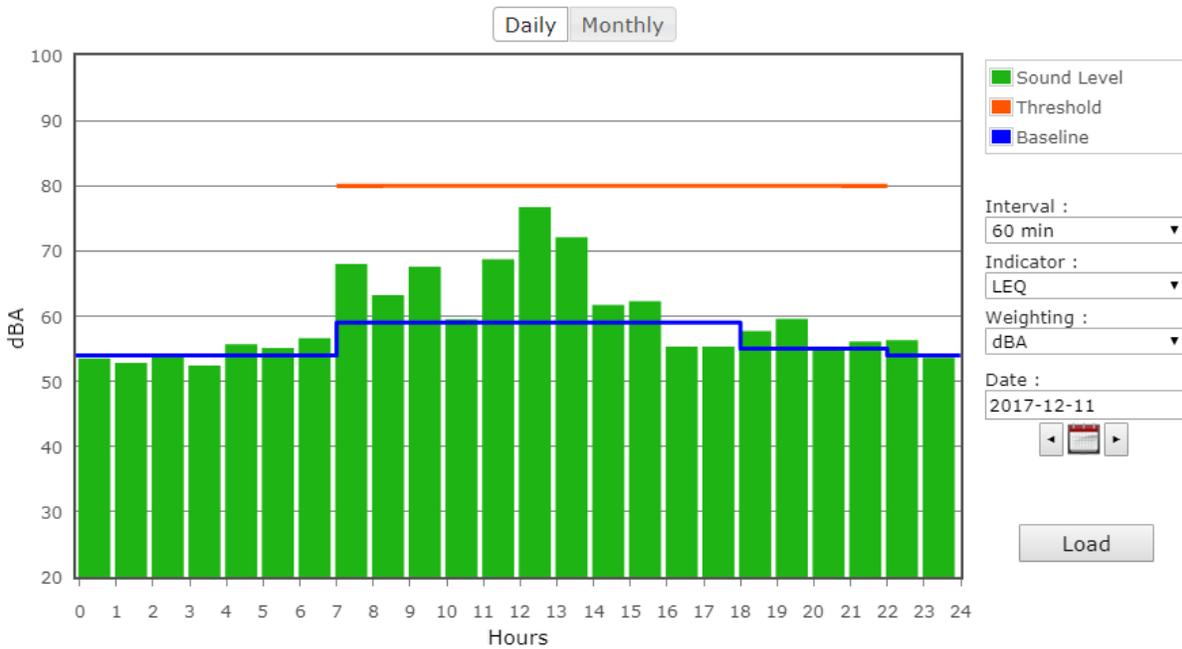


Figure 7: South Monitor NM-2 on Monday

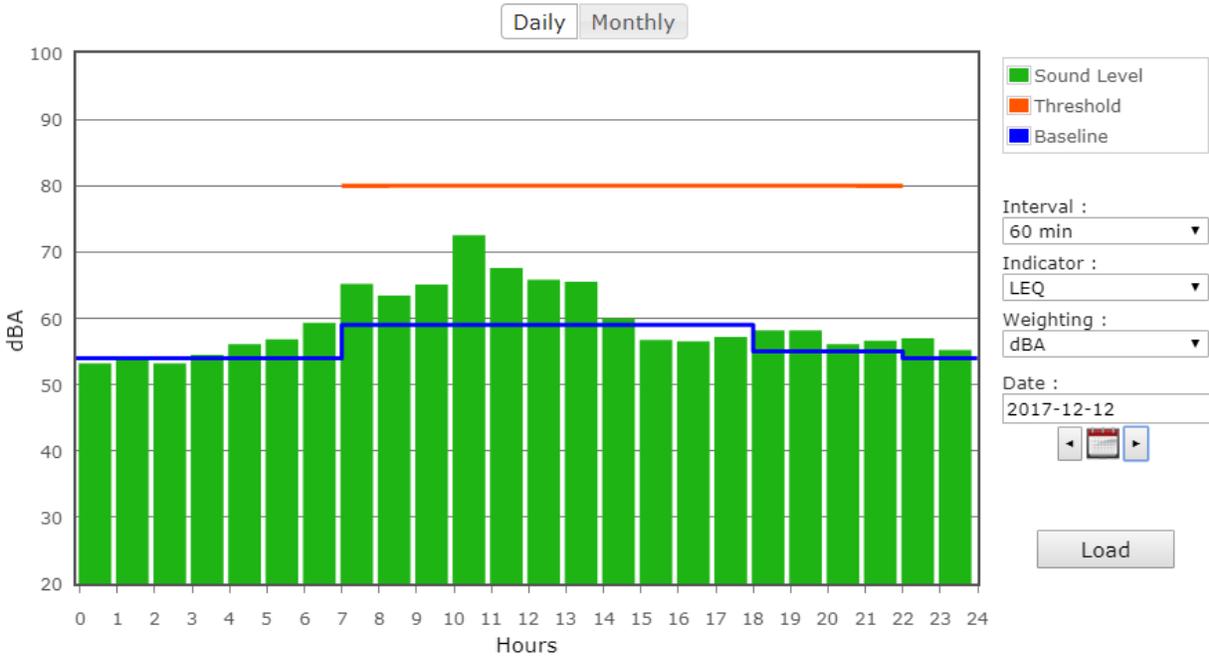


Figure 8: South Monitor NM-2 on Tuesday

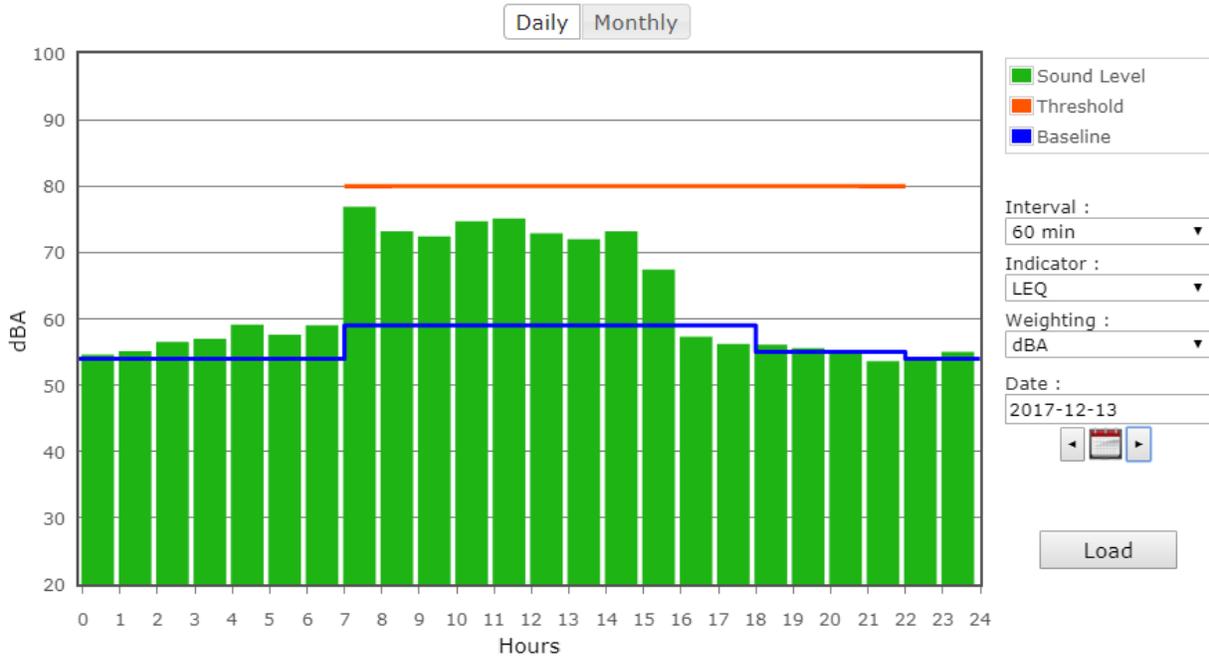


Figure 9: South Monitor NM-2 on Wednesday

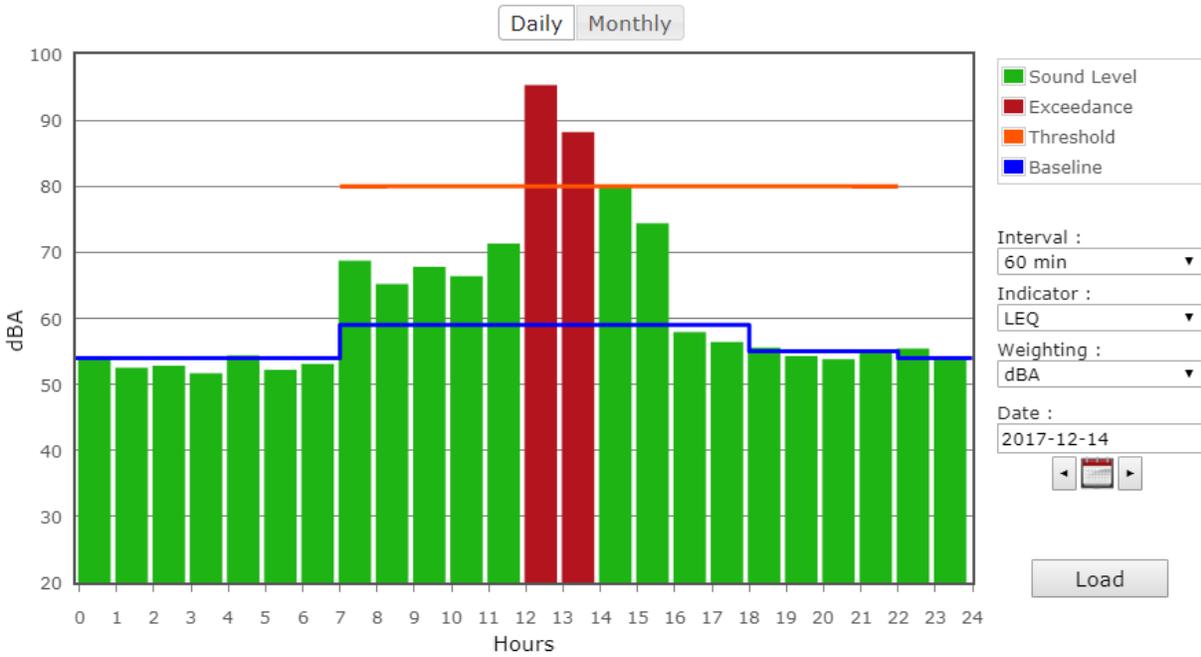


Figure 10: South Monitor NM-2 on Thursday

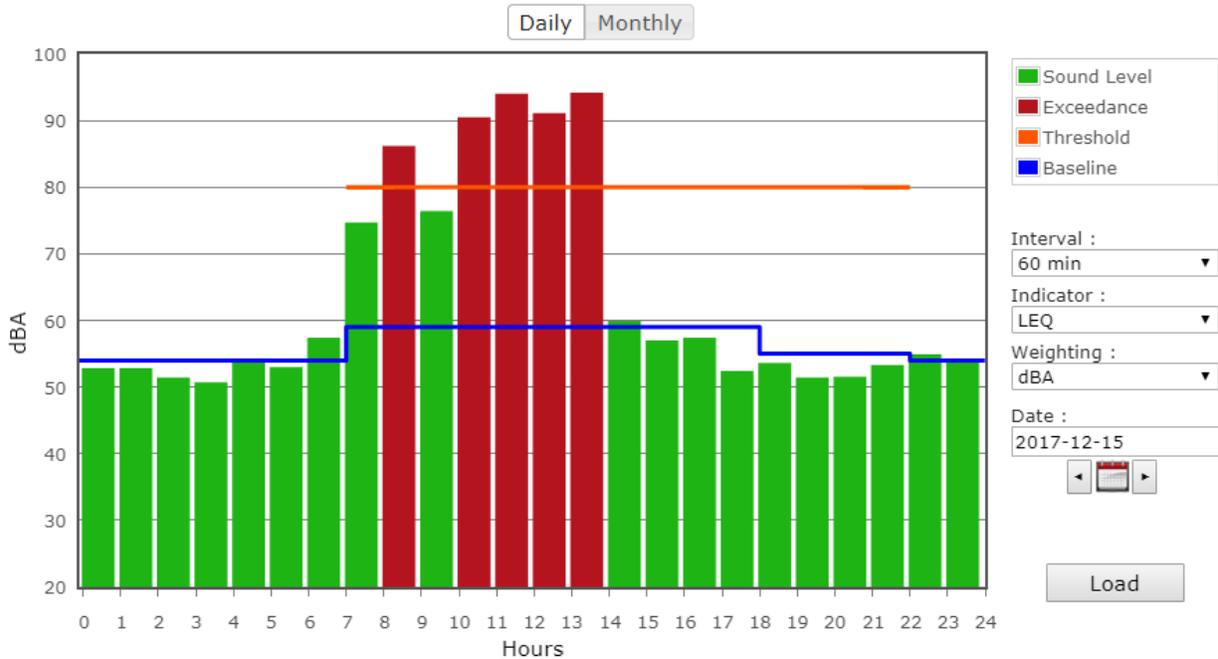
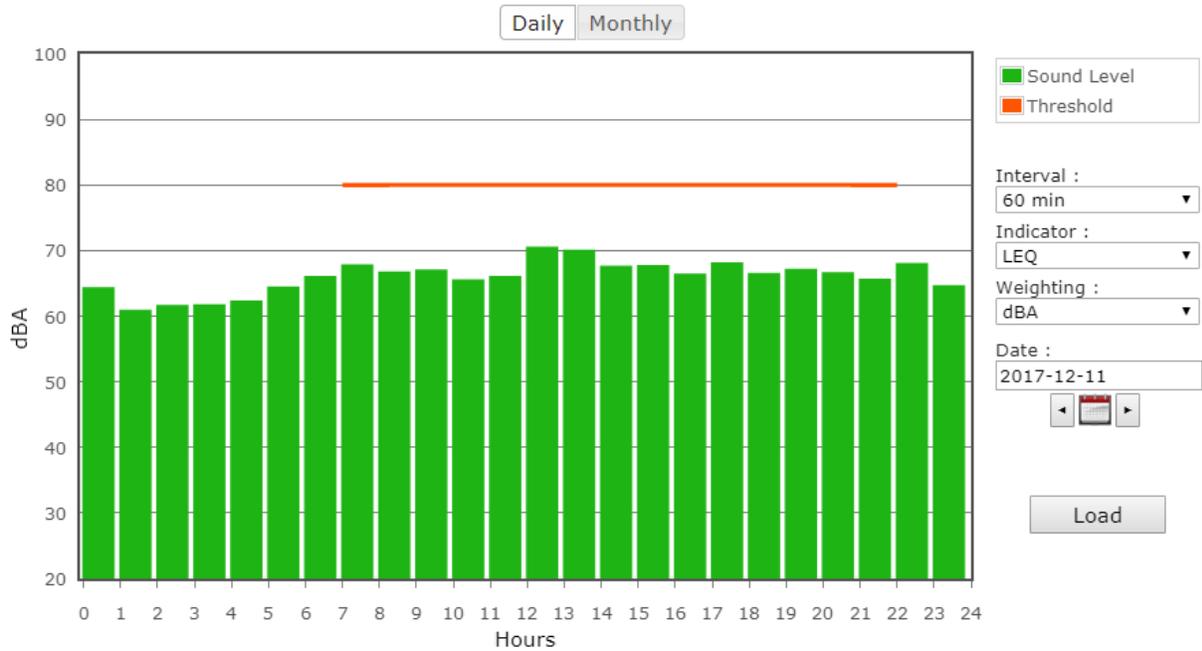
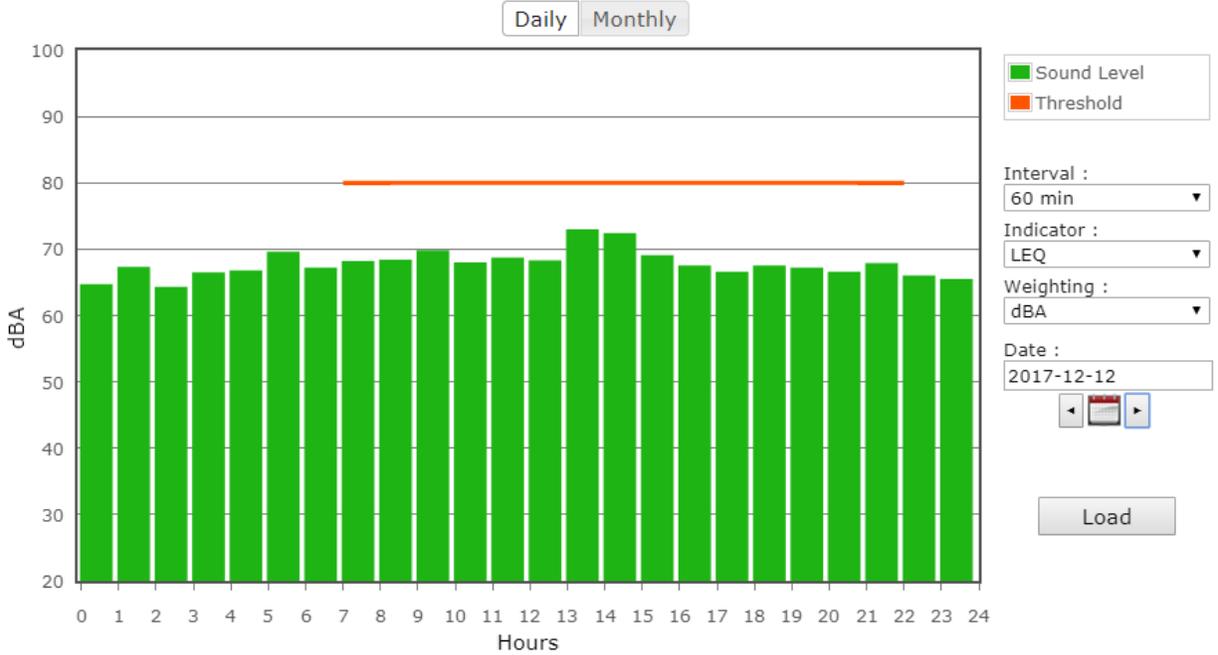


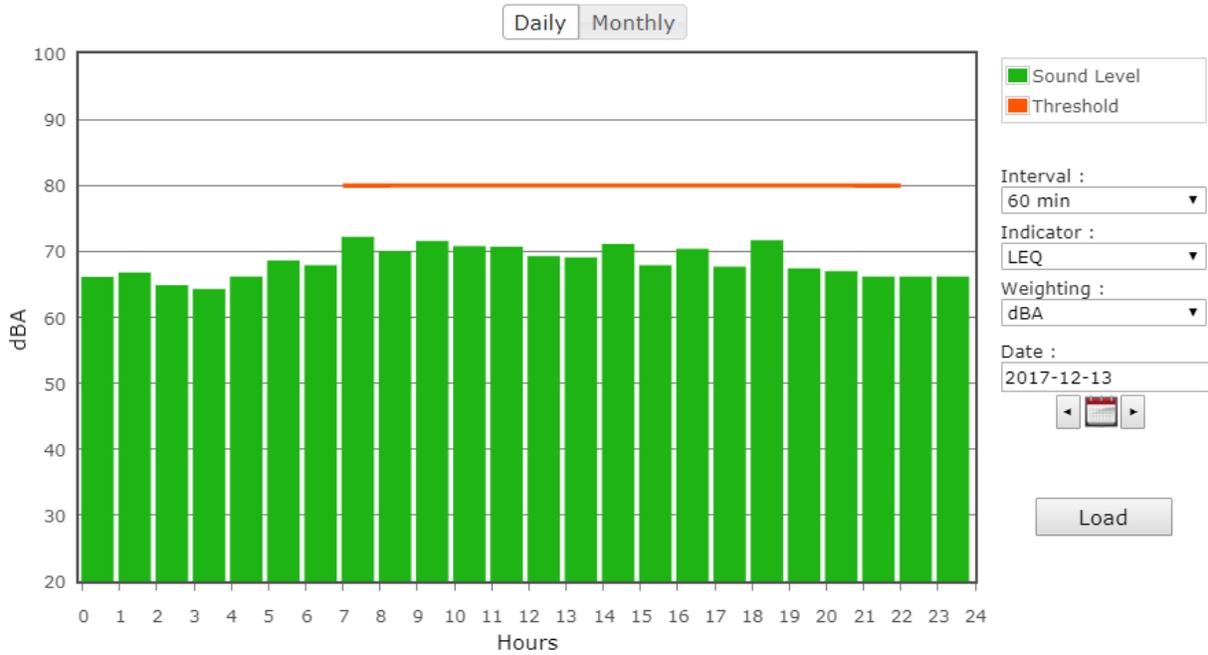
Figure 11: South Monitor NM-2 on Friday



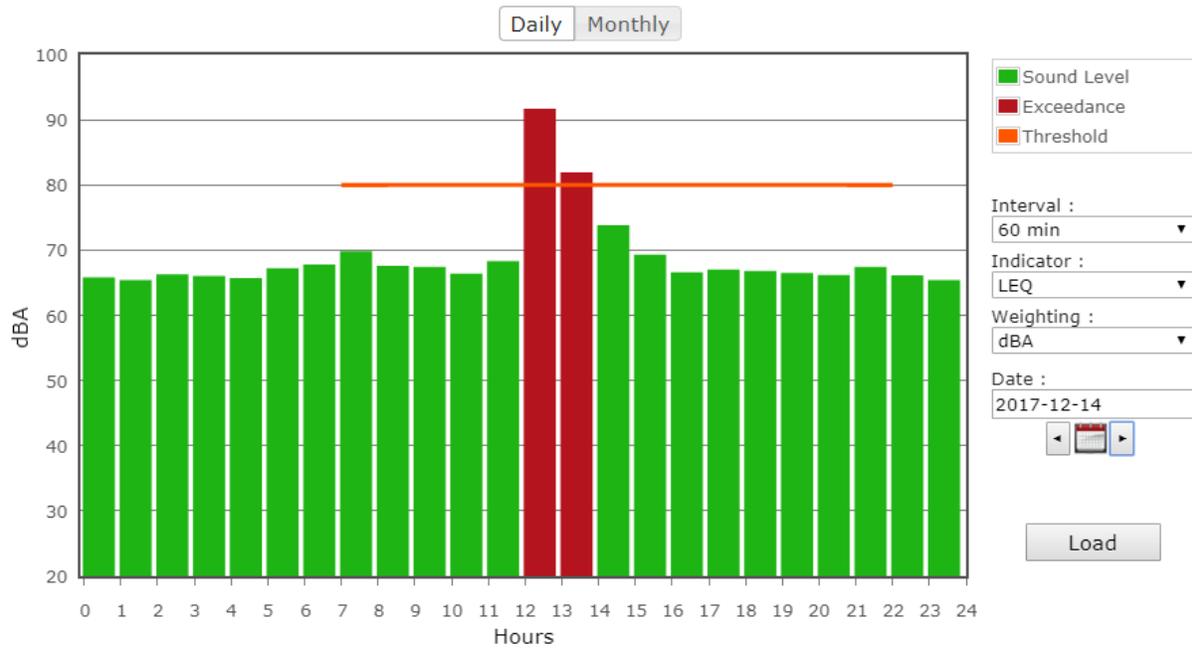
**Figure 12: Northeast Monitor NM-3 on Monday**



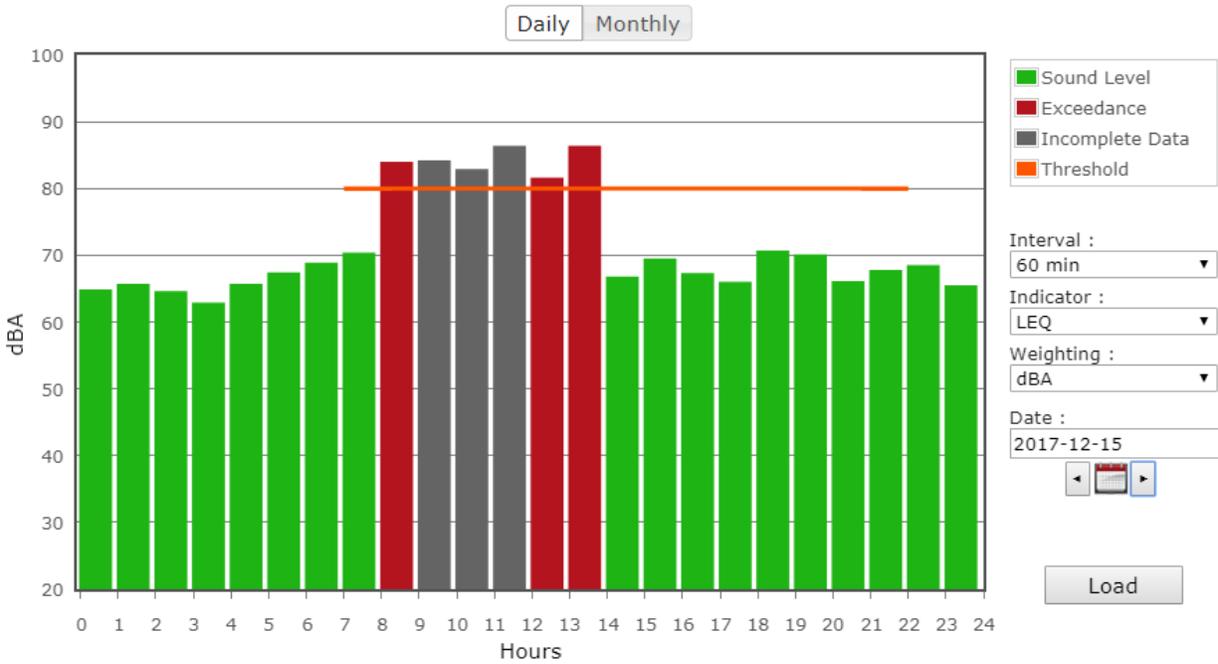
**Figure 13: Northeast Monitor NM-3 on Tuesday**



**Figure 14: Northeast Monitor NM-3 on Wednesday**

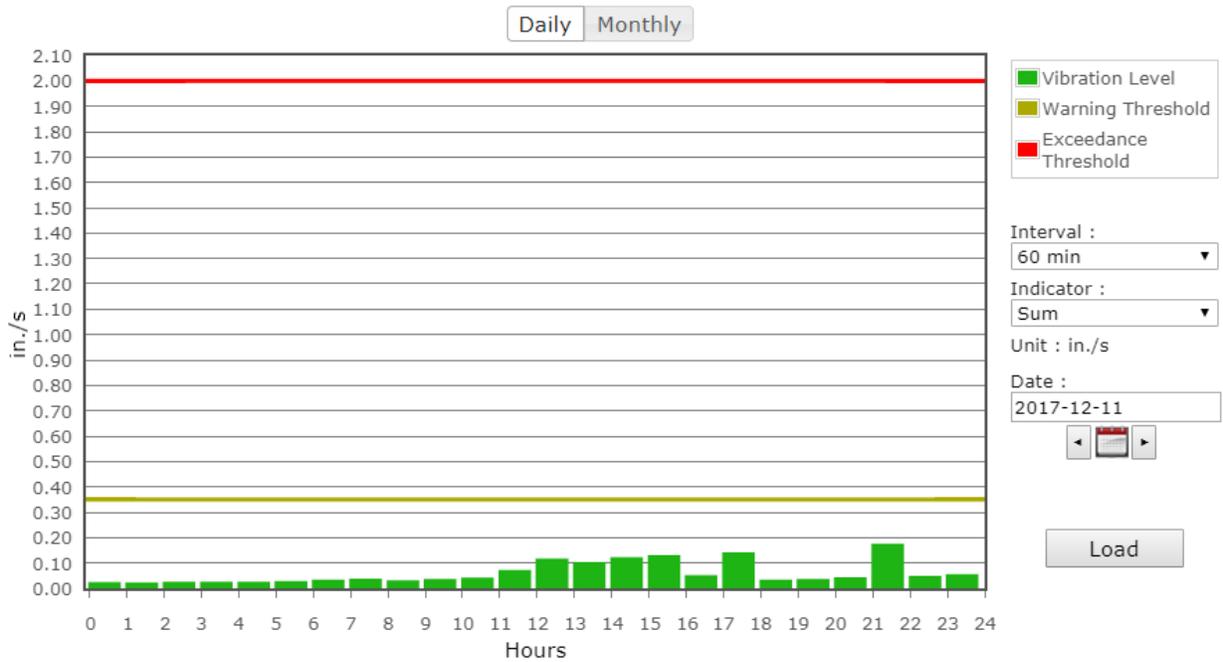


**Figure 15: Northeast Monitor NM-3 on Thursday**



**Figure 16: Northeast Monitor NM-3 on Friday\***

\*Noise Levels for the 09:00-11:00 intervals are incomplete.



**Figure 17: North Vibration Monitor VM-1 on Monday**

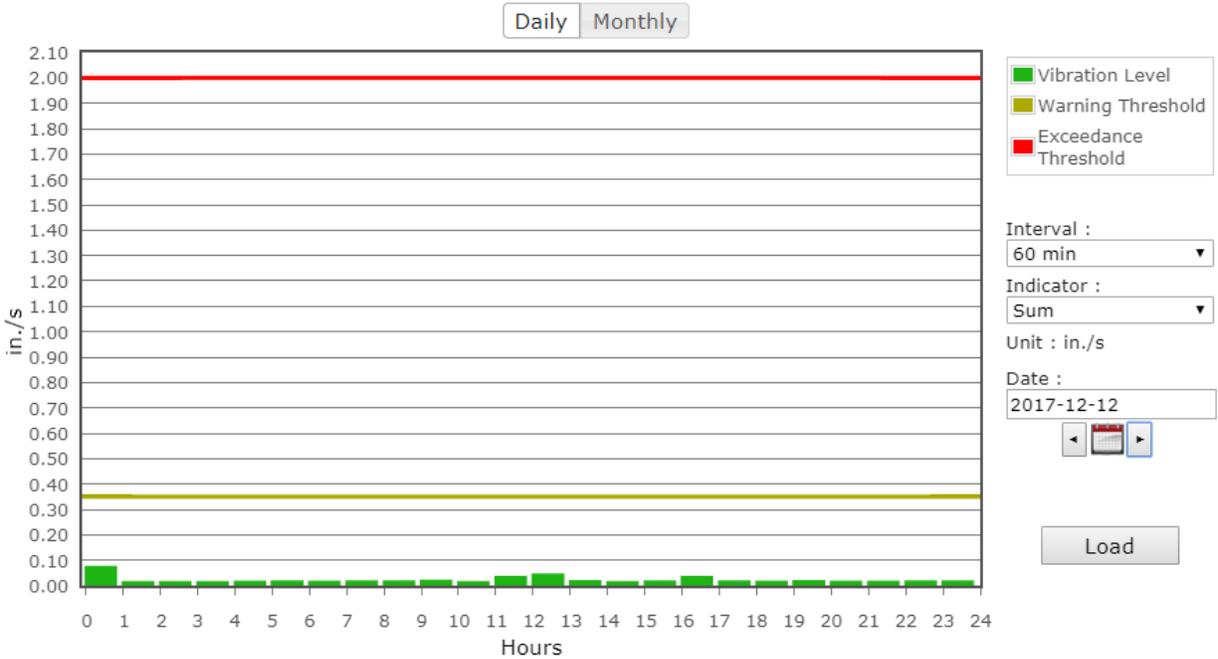


Figure 18: North Vibration Monitor VM-1 on Tuesday

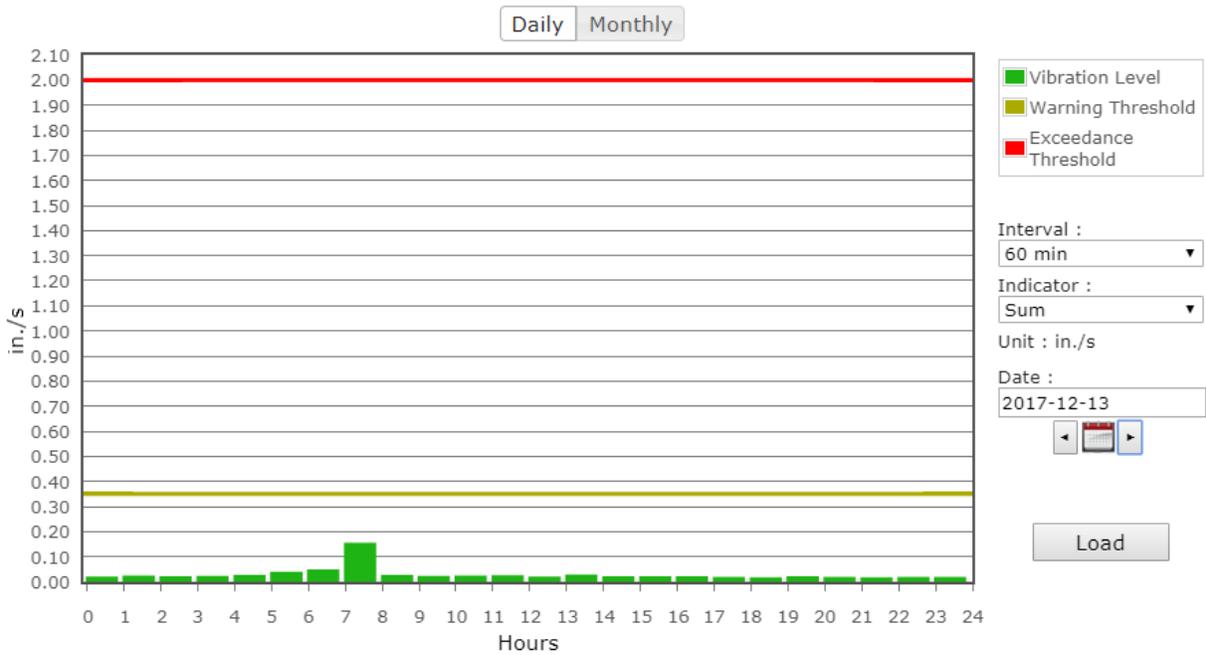
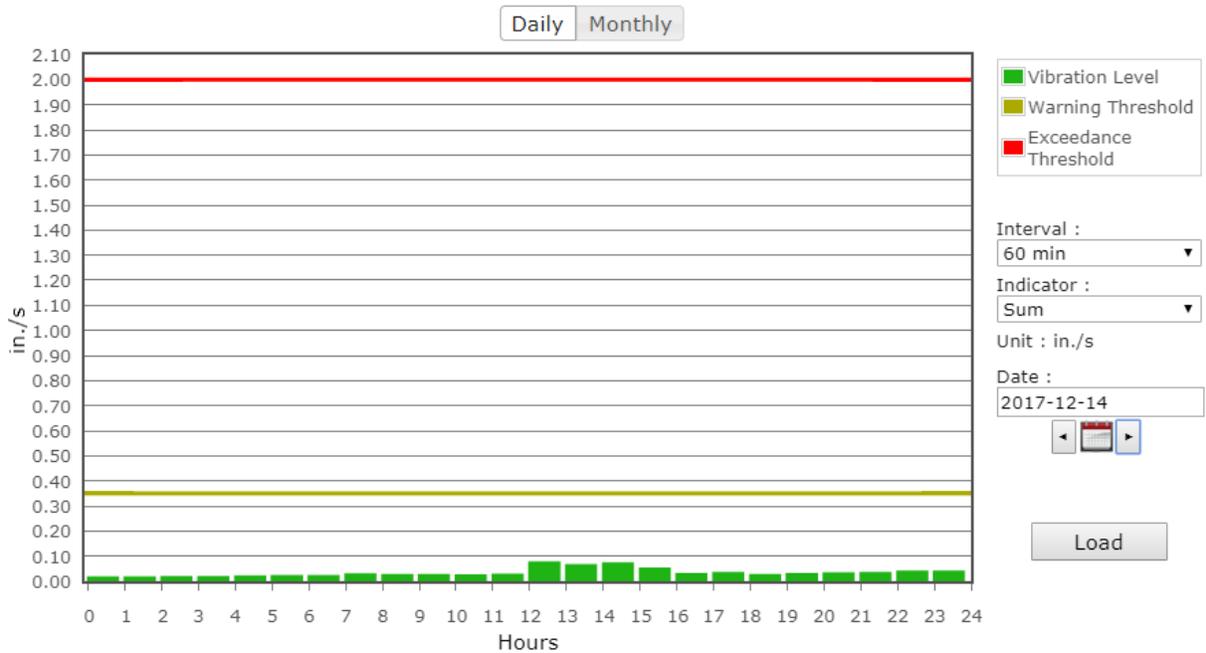
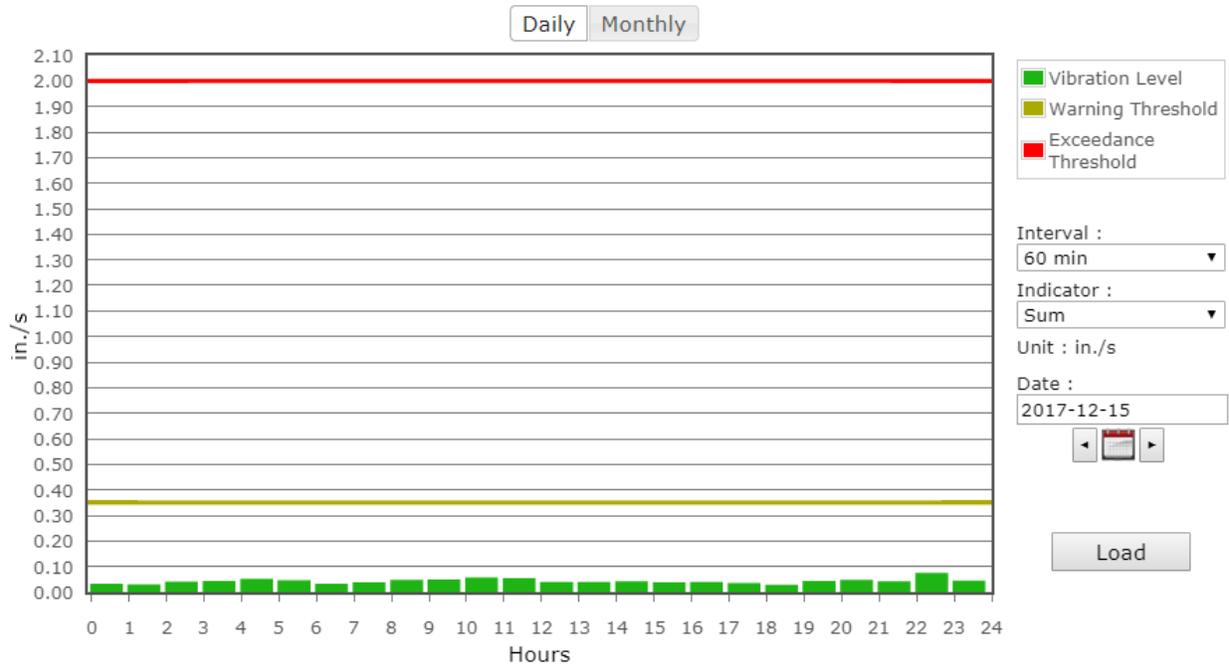


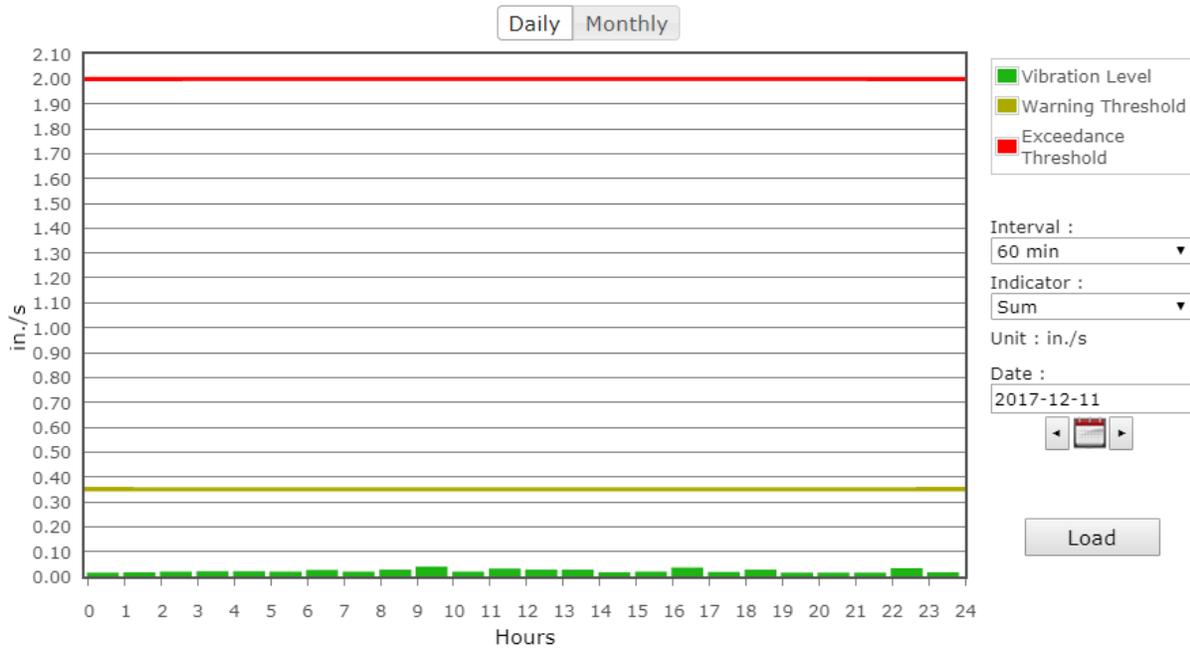
Figure 19: North Vibration Monitor VM-1 on Wednesday



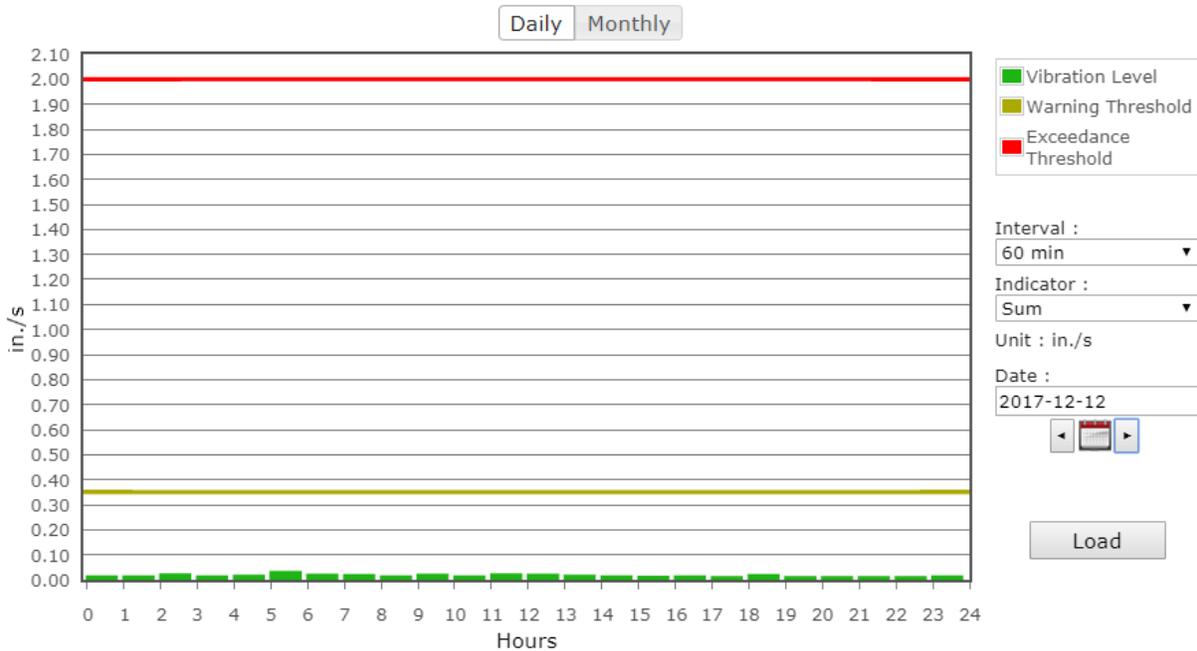
**Figure 20: North Vibration Monitor VM-1 on Thursday**



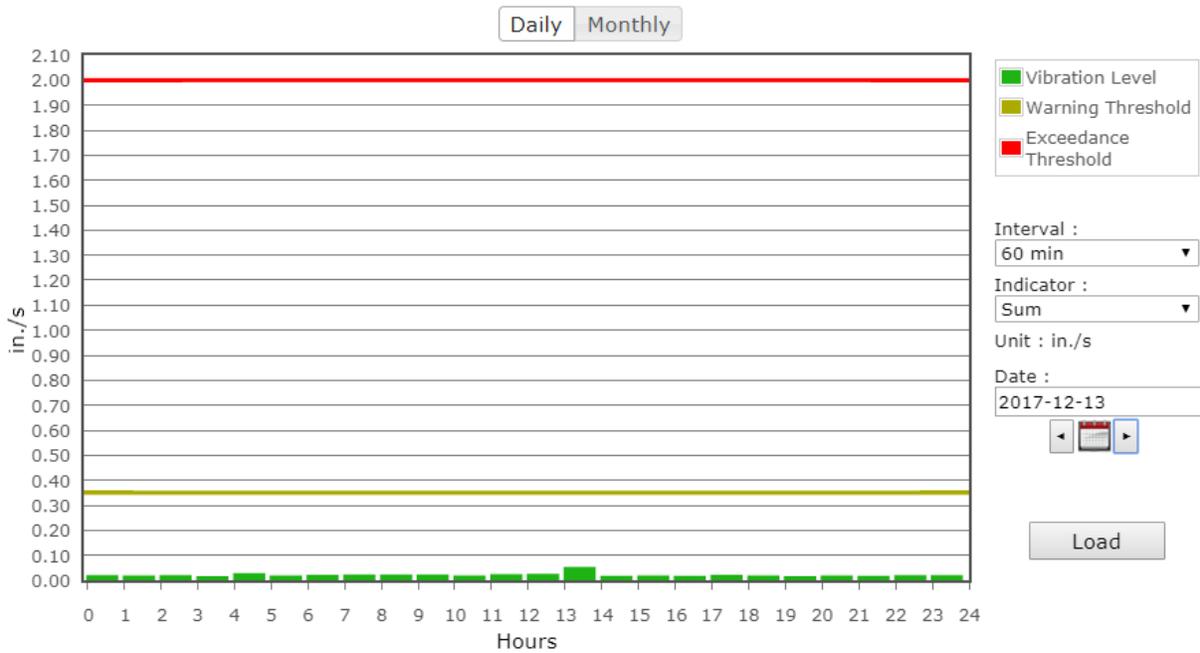
**Figure 21: North Vibration Monitor VM-1 on Friday**



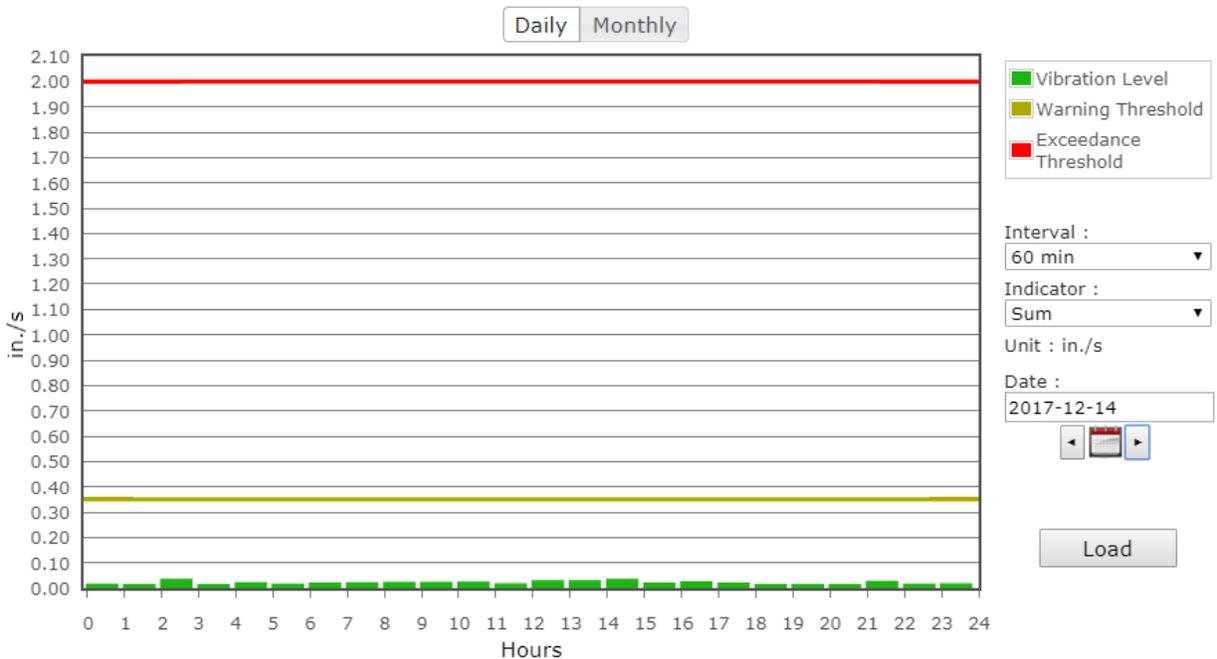
**Figure 22: South Vibration Monitor VM-2 on Monday**



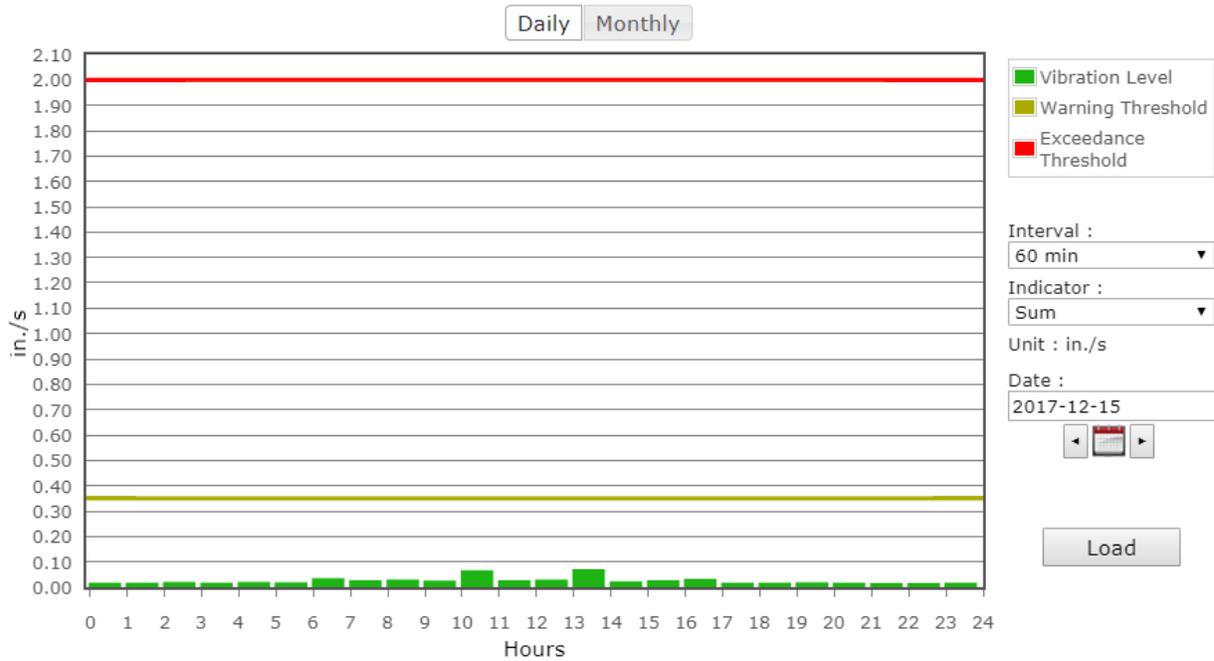
**Figure 23: South Vibration Monitor VM-2 on Tuesday**



**Figure 24: South Vibration Monitor VM-2 on Wednesday**



**Figure 25: South Vibration Monitor VM-2 on Thursday**



**Figure 26: South Vibration Monitor VM-2 on Friday**

20171218 Wilson Ihrig Weekly Noise and Vibration Report 11 Dec - 15 Dec 2017

**AHRS WEEKLY REPORT**  
**(NO ACTIVITIES DURING CURENT WEEK)**



**WATER TREATMENT SYSTEM MONITORING LABORATORY ANALYTICAL DATA  
(NO ACTIVITIES DURING CURRENT WEEK)**



**CUMULATIVE DREDGED MATERIAL CHART  
(NO ACTIVITIES DURING CURENT WEEK)**

