WEEKLY PROGRESS REPORT – TRC SOLUTIONS

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

Project number: 283126

Period: November 13 to 17, 2017

Date of Report: November 22, 2017

Rev: 0

Prepared For: Gowanus Environmental Remediation Trust

On-Site Activities Conducted During Week:

Sevenson Environmental Services (SES)

Sheet Pile Installation

- Removal of falsework along southern side of canal and relocation to Station 8+95.
- Installation of 6 pairs of sheet pile to approximate Station 8+63.
- Investigative probing along bulkhead to confirm location of toe of steel and wooden bulkhead.
- EPA directive to stop installation of sheet pile near Whole Foods on 11/16 at 11:44 am. Acceptance of sheet pile installation at Station 8+63 and progressing east accepted by EPA on 11/17 at 1:01 pm.

Access Dredging

- Two barges (Alfalfa and Chubby) of stabilized sediment transferred to Clean Earth Claremont and transported to Waste Management Fairless Hills for beneficial reuse (i.e., daily cover). Paint filter testing of stabilized material performed as required by Clean Earth prior to shipment off-site.
  - Alfalfa – 28 loads (final tonnage forthcoming)
  - Chubby – 50 loads (final tonnage forthcoming)

Water Treatment and Monitoring

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

Turbidity Monitoring

- Turbid water not observed migrating from the 4th Street Turning Basin.

Vibration Monitoring (subcontractor – Vibra-Tech)

- Operated and maintained three (3) stationary vibration monitors. Two (2) stationary monitors located on the south side of the canal and one (1) stationary monitor located on the north side of the canal. Additionally, employed two (2), at a minimum, portable vibration monitors to measure vibration levels within 15 feet of the sheet pile installation work.
- Performed crack gauge inspections at 386 3rd Avenue continuously during removal of falsework along south side of canal and daily during preparation for and installation of sheet pile on north side of canal.
- No exceedances of the peak particle velocity level specified in the Contract Documents (0.40 inches per second) during the week.
- Exceedance of the acceleration level specified in the Contract Documents (0.1 g) occurred during sheet pile installation on 11/15/17 due to obstruction encountered during installation. Obstruction determined to be existing steel sheet pile bulkhead during additional investigative probing.

Quality Assurance and Control - Geosyntec

- No exceedance of turbidity trigger level of a measurement over a one-hour period of the sentinel buoy 20 nephelometric turbidity units (NTUs) greater than the ambient buoy during access dredging. Data and report for week ending 11/10/17 included below.
- Measurements for 11/06/17:
  - Daily average for ambient buoy – 8.9 NTU
  - Daily average for sentinel buoy – 8.1 NTU
  - Greatest difference between ambient and sentinel buoy during 15-minute interval – 17.4 NTU at 1215.
- Measurements for 11/07/17:
  - Daily average for ambient buoy – 9.1 NTU
  - Daily average for sentinel buoy – 7.9 NTU
  - Greatest difference between ambient and sentinel buoy during 15-minute interval – 6.0 NTU at 1700

- Measurements for 11/08/17:
  - Daily average for ambient buoy – 7.9 NTU
  - Daily average for sentinel buoy – 7.4 NTU
  - Greatest difference between ambient and sentinel buoy during 15-minute interval – 1.8 NTU at 1400
- Measurements for 11/09/17:
  - Daily average for ambient buoy – 7.5 NTU
  - Daily average for sentinel buoy – 7.2 NTU
  - Greatest difference between ambient and sentinel buoy during 15-minute interval – 3.9 NTU at 0715
- Measurements for 11/10/17:
  - Daily average for ambient buoy – 8.3 NTU
  - Daily average for sentinel buoy – 7.6 NTU
  - Greatest difference between ambient and sentinel buoy during 15-minute interval – 1.1 NTU at 1100
- Measurements for 11/13/17:
  - Daily average for ambient buoy – 7.8 NTU
  - Daily average for sentinel buoy – 7.2 NTU
  - Greatest difference between ambient and sentinel buoy during 15-minute interval – 4.8 NTU at 0715
- Measurements for 11/14/17:
  - Daily average for ambient buoy – 9.3 NTU
  - Daily average for sentinel buoy – 12.7 NTU
  - Greatest difference between ambient and sentinel buoy during 15-minute interval – 80.1 NTU at 1130. At this time Sevenson had pulled the crane barge out of the turning basin and into the main channel to reorient the barge. This barge movement outside of the turning basin was the source of this one-time turbidity spike.
- Measurements for 11/15/17:
  - Daily average for ambient buoy – 7.5 NTU
  - Daily average for sentinel buoy – 6.8 NTU
  - Greatest difference between ambient and sentinel buoy during 15-minute interval – 0.9 NTU at 1515
- Measurements for 11/16/17:
  - Daily average for ambient buoy – 8.7 NTU
  - Daily average for sentinel buoy – 8.6 NTU
  - Greatest difference between ambient and sentinel buoy during 15-minute interval – 12.7 NTU at 0700
- Measurements for 11/17/17:
  - Daily average for ambient buoy – 7.8 NTU
  - Daily average for sentinel buoy – 8.2 NTU
  - Greatest difference between ambient and sentinel buoy during 15-minute interval – 4.9 NTU at 1445

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 4th Street Turning Basin Area.
- No exceedances of particulate matter of 10 microns in diameter or smaller (PM_{10}) 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_{10} in $\mu g/m^3$
  - Station 1 – 21 $\mu g/m^3$ recorded on 11/13/17
  - Station 2 – 21 $\mu g/m^3$ recorded on 11/13/17
  - Station 3 – <1 $\mu g/m^3$ recorded throughout week
  - Station 4 – 26 $\mu g/m^3$ recorded on 11/13/17
  - Station 5 – 29 $\mu g/m^3$ recorded on 11/13/17
  - Station 6 – 20 $\mu g/m^3$ recorded on 11/13/17
  - Station 7 – <1 $\mu g/m^3$ recorded throughout week
- Maximum weekly measurements of TVOC in ppb
  - Station 1 – 8 ppb recorded on 11/16/17
  - Station 2 – 2 ppb recorded on 11/15/17
  - Station 3 – 10 ppb recorded on 11/17/17
  - Station 4 – 36 ppb recorded on 11/15/17
  - Station 5 – 100 ppb recorded on 11/16/17
  - Station 6 – 47 ppb recorded on 11/13/17
  - Station 7 – <1 ppb recorded throughout week
- No real-time readings of hydrogen sulfide, ammonia, or formaldehyde greater than instrument detection limit throughout the week.
- 24-hour sample collected at ST-7 on 11/13 through 11/14 and at ST-2 on 11/14 through 11/15. Laboratory turnaround time is 10 business days.
- Tabulated laboratory analytical results for 24-hour sample collected at ST-7 on 10/25 through 10/26 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) – 101.5 dBA during 1300-1400 on 11/15/17
  - Southern monitor (NM-2) – 83.1 dBA during 1300-1400 on 11/15/17
  - 3rd Avenue Bridge monitor (NM-3) – 84.2 dBA during 1100-1200 on 11/16/17
- 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 (NM-1) – 0.0413 in/sec event between 1000 and 1100 and 1100 and 1200 on 11/15/17
  - Southern monitor (NM-2) – 0.0217 in/sec event between 0900 and 1000 on 11/15/17

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.
  - Transfer remaining loaded barges (i.e., Weeks 84 and Weeks 80) from Hughes Marine to Clean Earth Claremont for transportation and beneficial reuse (i.e., daily cover) at Waste Management Fairless Hills.
  - Install swing gate along Huntington Street.
  - Continue installation of winterization structures for dredged water treatment system.
- Geosyntec – Perform construction quality assurance responsibilities.
- TRC CAMP Monitoring – Perform community air monitoring.
- Wilson-Ihrig – Perform noise and vibration monitoring,
- Emilcott – No activities planned.
- AHRS – No activities planned.

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

- No milestones achieved during period.

Attachments:

1. Geosyntec In-Canal Water Quality Monitoring Weekly Data Summary (report for week ending 11/10/17 also included)
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)

Client Name:	Site Location:	Project No.:
Gowanus ERT	TB-4 Pilot Study	283126.0000.0001

Photo No.	Date
001	11-13-2107

Description
Winterization of dredged water treatment system.

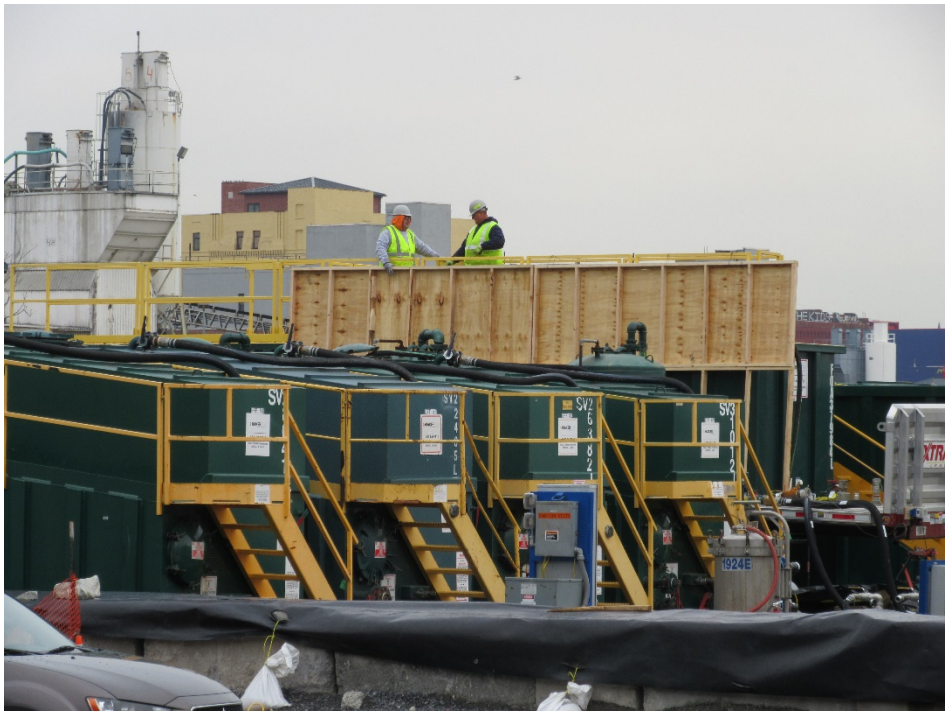


Photo No.	Date
002	11-06-2017

Description
Decanting water from hopper barge "Chubby" prior to transportation to Clean Earth Claremont.

Client Name:	Site Location:	Project No.:
Gowanus ERT	TB-4 Pilot Study	283126.0000.0001

Photo No.	Date
003	11-14-2017

Description
Pin piles and waler (i.e., falsework) installed at Station 8+95 to begin next installation alignment of sheet pile.

Photo No.	Date
004	11-15-2017

Description
Attaching chain to the support h-beam to support king pair of sheet piles as required by the corrective actions work plan.

Client Name:	Site Location:	Project No.:
Gowanus ERT	TB-4 Pilot Study	283126.0000.0001

Photo No.	Date
005	11-15-2107

Description
Placing vibration monitor into native soil to more accurately measure vibrations.

Photo No.	Date
006	11-16-2017

Description
Linear monitoring of the vibrations produced by sheet pile driving operations.

Client Name:	Site Location:	Project No.:
Gowanus ERT	TB-4 Pilot Study	283126.0000.0001

Photo No.	Date
007	11-17-2107

Description
Investigatory probing activities along existing steel sheet pile bulkhead - probe following non-vertical alignment.

Photo No.	Date
008	11-17-2017

Description
Investigatory probing activities along existing wooden bulkhead - no resistance or obstructions noted.

GEOSYNTEC IN-CANAL WATER QUALITY MONITORING WEEKLY DATA SUMMARY
(REPORT FOR WEEK ENDING 11/10/17 ALSO INCLUDED)

Prepared for

Gowanus Canal Remedial Design Group

GOWANUS CANAL SUPERFUND SITE DREDGING AND CAPPING PILOT STUDY

Water Quality Monitoring Weekly Data Summary

Week of November 6th, 2017

Report Contents

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

Prepared by

Geosyntec consultants
engineers | scientists | innovators

Beech and Bonaparte engineering p.c.
an affiliate of Geosyntec Consultants

7 Graphics Drive, Suite 106
Ewing, NJ 08628
Project Number HPH106A (52)

1. SCOPE OF MONITORING

The following report summarizes water quality monitoring data collected during the week of November 6th, 2017. Two turbidity buoys were deployed to monitor turbidity during the pilot study. One turbidity buoy was deployed just outside of the 4th 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 November 6th. 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.

Geosyntec consultants

Beech and Bonaparte engineering p.c.
an affiliate of Geosyntec Consultants

Legend

- Ambient Buoy
- Sentinel Buoy
- RTA Boundary

300 150 0 300 Feet

Turbidity Buoy Locations

Gowanus Canal, Brooklyn, NY

Gowanus Canal Remedial Design Group | Geosyntec consultants | Beech and Bonaparte engineering p.c.

Ewing, NJ | October 2017

Figure 1

2. TURBIDITY BUOY DATA

The following section provides turbidity data for the sentinel and ambient turbidity buoys from 7 AM to 5 PM from November 6th to November 10th, 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.

2.1 Monday, November 6th, 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)
11/6/2017 7:00	7.0	5.8	N	11/6/2017 12:15	12.3	29.7	Y
11/6/2017 7:15	6.9	6.1	N	11/6/2017 12:30	10.0	9.7	N
11/6/2017 7:30	6.0	4.9	N	11/6/2017 12:45	9.0	9.4	Y
11/6/2017 7:45	8.2	6.1	N	11/6/2017 13:00	7.7	11.4	Y
11/6/2017 8:00	6.6	8.4	Y	11/6/2017 13:15	8.2	10.0	Y
11/6/2017 8:15	6.6	6.3	N	11/6/2017 13:30	7.5	7.4	N
11/6/2017 8:30	8.9	5.8	N	11/6/2017 13:45	7.7	7.4	N
11/6/2017 8:45	7.9	6.0	N	11/6/2017 14:00	7.6	6.9	N
11/6/2017 9:00	7.8	6.4	N	11/6/2017 14:15	7.7	6.5	N
11/6/2017 9:15	8.3	6.3	N	11/6/2017 14:30	7.7	6.5	N
11/6/2017 9:30	12.4	8.7	N	11/6/2017 14:45	7.8	9.0	Y
11/6/2017 9:45	11.0	5.4	N	11/6/2017 15:00	7.7	7.5	N
11/6/2017 10:00	11.2	7.5	N	11/6/2017 15:15	9.1	7.0	N
11/6/2017 10:15	11.3	9.7	N	11/6/2017 15:30	8.9	6.6	N
11/6/2017 10:30	11.6	9.5	N	11/6/2017 15:45	8.7	7.2	N
11/6/2017 10:45	10.3	9.5	N	11/6/2017 16:00	9.1	6.6	N
11/6/2017 11:00	9.0	9.6	Y	11/6/2017 16:15	9.0	8.3	N
11/6/2017 11:15	9.0	7.8	N	11/6/2017 16:30	8.1	7.5	N
11/6/2017 11:30	10.1	7.1	N	11/6/2017 16:45	8.2	8.2	N
11/6/2017 11:45	10.7	7.5	N	11/6/2017 17:00	7.8	7.3	N
11/6/2017 12:00	12.9	6.9	N				
Average	8.9	8.1	N				
Maximum	12.9	29.7	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

2.2 Tuesday, November 7th, 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)
11/7/2017 7:00	5.6	5.2	N	11/7/2017 12:15	9.4	9.3	N
11/7/2017 7:15	6.1	5.2	N	11/7/2017 12:30	10.4	10.4	N
11/7/2017 7:30	6.3	5.6	N	11/7/2017 12:45	10.8	10.0	N
11/7/2017 7:45	7.1	5.6	N	11/7/2017 13:00	8.7	9.0	Y
11/7/2017 8:00	7.1	6.0	N	11/7/2017 13:15	9.0	8.7	N
11/7/2017 8:15	6.8	5.9	N	11/7/2017 13:30	8.7	8.5	N
11/7/2017 8:30	8.9	5.8	N	11/7/2017 13:45	7.8	8.4	Y
11/7/2017 8:45	8.5	6.1	N	11/7/2017 14:00	8.9	6.8	N
11/7/2017 9:00	9.8	6.2	N	11/7/2017 14:15	9.6	7.0	N
11/7/2017 9:15	10.8	7.5	N	11/7/2017 14:30	8.3	7.3	N
11/7/2017 9:30	10.0	6.0	N	11/7/2017 14:45	8.1	7.5	N
11/7/2017 9:45	10.7	7.5	N	11/7/2017 15:00	7.1	9.6	Y
11/7/2017 10:00	9.6	7.8	N	11/7/2017 15:15	8.1	7.0	N
11/7/2017 10:15	10.9	10.1	N	11/7/2017 15:30	8.6	7.0	N
11/7/2017 10:30	11.0	8.1	N	11/7/2017 15:45	7.6	7.4	N
11/7/2017 10:45	9.7	7.9	N	11/7/2017 16:00	8.7	6.3	N
11/7/2017 11:00	11.2	9.6	N	11/7/2017 16:15	8.2	6.1	N
11/7/2017 11:15	11.4	12.3	Y	11/7/2017 16:30	8.6	7.3	N
11/7/2017 11:30	13.3	10.6	N	11/7/2017 16:45	8.0	5.4	N
11/7/2017 11:45	12.9	9.3	N	11/7/2017 17:00	9.4	15.4	Y
11/7/2017 12:00	10.1	11.8	Y				

Average	9.1	7.9	N
Maximum	13.3	15.4	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

2.3 Wednesday, November 8th, 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)
11/8/2017 7:00	5.9	5.5	N	11/8/2017 12:15	10.6	7.3	N
11/8/2017 7:15	6.0	5.7	N	11/8/2017 12:30	11.7	10.0	N
11/8/2017 7:30	5.8	5.7	N	11/8/2017 12:45	8.7	8.9	Y
11/8/2017 7:45	6.3	6.1	N	11/8/2017 13:00	8.3	8.7	Y
11/8/2017 8:00	6.2	6.6	Y	11/8/2017 13:15	7.6	7.2	N
11/8/2017 8:15	7.0	6.9	N	11/8/2017 13:30	8.1	7.2	N
11/8/2017 8:30	7.7	6.1	N	11/8/2017 13:45	7.6	7.7	Y
11/8/2017 8:45	8.2	6.4	N	11/8/2017 14:00	7.8	9.6	Y
11/8/2017 9:00	8.1	6.8	N	11/8/2017 14:15	7.6	7.8	Y
11/8/2017 9:15	7.9	6.2	N	11/8/2017 14:30	8.0	7.3	N
11/8/2017 9:30	8.1	9.1	Y	11/8/2017 14:45	6.4	7.4	Y
11/8/2017 9:45	7.7	7.9	Y	11/8/2017 15:00	6.3	6.8	Y
11/8/2017 10:00	8.4	8.3	N	11/8/2017 15:15	6.7	7.2	Y
11/8/2017 10:15	8.4	7.9	N	11/8/2017 15:30	7.4	6.5	N
11/8/2017 10:30	8.0	9.1	Y	11/8/2017 15:45	6.9	6.4	N
11/8/2017 10:45	7.7	8.7	Y	11/8/2017 16:00	6.8	6.5	N
11/8/2017 11:00	8.5	9.4	Y	11/8/2017 16:15	6.9	6.6	N
11/8/2017 11:15	9.7	8.6	N	11/8/2017 16:30	6.9	6.0	N
11/8/2017 11:30	10.3	7.8	N	11/8/2017 16:45	7.1	6.4	N
11/8/2017 11:45	11.1	9.0	N	11/8/2017 17:00	7.4	7.0	N
11/8/2017 12:00	10.2	8.2	N				

Average	7.9	7.4	N
Maximum	11.7	10.0	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

2.4 Thursday, November 9th, 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)
11/9/2017 7:00	5.8	5.9	Y	11/9/2017 12:15	8.1	8.8	Y
11/9/2017 7:15	5.4	9.3	Y	11/9/2017 12:30	8.6	7.9	N
11/9/2017 7:30	5.7	6.0	Y	11/9/2017 12:45	11.0	10.3	N
11/9/2017 7:45	5.4	5.0	N	11/9/2017 13:00	11.1	10.0	N
11/9/2017 8:00	5.2	5.4	Y	11/9/2017 13:15	9.2	8.5	N
11/9/2017 8:15	6.2	5.9	N	11/9/2017 13:30	8.9	8.4	N
11/9/2017 8:30	6.6	5.6	N	11/9/2017 13:45	9.1	8.4	N
11/9/2017 8:45	6.7	6.7	N	11/9/2017 14:00	12.2	7.4	N
11/9/2017 9:00	7.2	6.2	N	11/9/2017 14:15	9.0	8.5	N
11/9/2017 9:15	7.6	6.9	N	11/9/2017 14:30	7.8	7.6	N
11/9/2017 9:30	8.2	7.4	N	11/9/2017 14:45	7.1	8.3	Y
11/9/2017 9:45	7.5	7.3	N	11/9/2017 15:00	7.3	7.3	N
11/9/2017 10:00	8.8	7.1	N	11/9/2017 15:15	8.3	7.0	N
11/9/2017 10:15	7.8	7.8	N	11/9/2017 15:30	5.3	6.7	Y
11/9/2017 10:30	8.2	7.4	N	11/9/2017 15:45	5.6	6.2	Y
11/9/2017 10:45	8.3	7.0	N	11/9/2017 16:00	5.4	5.7	Y
11/9/2017 11:00	8.3	7.3	N	11/9/2017 16:15	6.3	5.9	N
11/9/2017 11:15	6.2	8.8	Y	11/9/2017 16:30	6.5	6.4	N
11/9/2017 11:30	6.9	8.2	Y	11/9/2017 16:45	7.6	5.6	N
11/9/2017 11:45	7.5	7.0	N	11/9/2017 17:00	6.7	6.1	N
11/9/2017 12:00	8.6	6.4	N				

Average	7.5	7.2	N
Maximum	12.2	10.3	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

2.5 Friday, November 10th, 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)
11/10/2017 7:00	6.6	5.7	N	11/10/2017 12:15	8.2	8.3	Y
11/10/2017 7:15	8.5	6.1	N	11/10/2017 12:30	8.0	8.2	Y
11/10/2017 7:30	7.9	6.7	N	11/10/2017 12:45	7.9	7.7	N
11/10/2017 7:45	7.3	7.7	Y	11/10/2017 13:00	7.4	7.6	Y
11/10/2017 8:00	7.9	6.7	N	11/10/2017 13:15	7.9	8.3	Y
11/10/2017 8:15	7.0	7.2	Y	11/10/2017 13:30	7.2	8.1	Y
11/10/2017 8:30	8.5	7.3	N	11/10/2017 13:45	7.7	7.4	N
11/10/2017 8:45	7.9	7.1	N	11/10/2017 14:00	8.1	7.8	N
11/10/2017 9:00	8.7	7.3	N	11/10/2017 14:15	8.5	6.8	N
11/10/2017 9:15	8.2	7.3	N	11/10/2017 14:30	7.8	7.4	N
11/10/2017 9:30	10.3	6.5	N	11/10/2017 14:45	7.8	7.4	N
11/10/2017 9:45	9.7	7.2	N	11/10/2017 15:00	8.6	8.1	N
11/10/2017 10:00	10.3	7.1	N	11/10/2017 15:15	7.7	8.0	Y
11/10/2017 10:15	9.7	7.6	N	11/10/2017 15:30	8.9	7.5	N
11/10/2017 10:30	9.4	7.8	N	11/10/2017 15:45	7.5	7.2	N
11/10/2017 10:45	9.8	8.8	N	11/10/2017 16:00	7.4	6.9	N
11/10/2017 11:00	9.3	10.4	Y	11/10/2017 16:15	7.4	7.7	Y
11/10/2017 11:15	8.7	9.0	Y	11/10/2017 16:30	7.4	7.0	N
11/10/2017 11:30	9.6	8.2	N	11/10/2017 16:45	7.2	6.9	N
11/10/2017 11:45	9.8	8.7	N	11/10/2017 17:00	7.1	6.8	N
11/10/2017 12:00	8.3	9.2	Y				

Average	8.3	7.6	N
Maximum	10.3	10.4	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

Legend

- Ambient Buoy
- Sentinel Buoy
- RTA Boundary

300 150 0 300 Feet

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

Figure 1

Ewing, NJ | October 2017

X:\03_GIS\mxd\Canal_Wide\Turbidity Buoy Locations.mxd; acarnes; 10/19/2017

APPENDIX A
PRE-DREDGE TURBIDITY BUOY DATA

PRELIMINARY DATA
NOT YET SUBJECT TO QC REVIEW

Geosyntec consultants

Beech and Bonaparte engineering p.c.
an affiliate of Geosyntec Consultants

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

Prepared for

Gowanus Canal Remedial Design Group

GOWANUS CANAL SUPERFUND SITE DREDGING AND CAPPING PILOT STUDY

Water Quality Monitoring Weekly Data Summary

Week of November 13th, 2017

Report Contents

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

Prepared by

Geosyntec consultants
engineers | scientists | innovators

Beech and Bonaparte engineering p.c.
an affiliate of Geosyntec Consultants

7 Graphics Drive, Suite 106
Ewing, NJ 08628
Project Number HPH106A (52)

1. SCOPE OF MONITORING

The following report summarizes water quality monitoring data collected during the week of November 13th, 2017. Two turbidity buoys were deployed to monitor turbidity during the pilot study. One turbidity buoy was deployed just outside of the 4th 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 November 13th. 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.

Geosyntec consultants

Beech and Bonaparte engineering p.c.
an affiliate of Geosyntec Consultants

Legend

- Ambient Buoy
- Sentinel Buoy
- RTA Boundary

300 150 0 300 Feet

Turbidity Buoy Locations

Gowanus Canal, Brooklyn, NY

Gowanus Canal Remedial Design Group | Geosyntec consultants | Beech and Bonaparte engineering p.c.

Ewing, NJ | October 2017

Figure 1

2. TURBIDITY BUOY DATA

The following section provides turbidity data for the sentinel and ambient turbidity buoys from 7 AM to 5 PM from November 13th to November 17th, 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 November 14th the sentinel buoy detected a one-time spike in turbidity of 94.9 NTU at 11:30. At this time Sevenson had pulled the crane barge out of the turning basin and into the main channel to reorient the barge. This barge movement outside of the turning basin was the likely source of this one-time turbidity spike.

2.1 Monday, November 13th, 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)
11/13/2017 7:00	5.9	8.4	Y	11/13/2017 12:15	7.4	7.2	N
11/13/2017 7:15	5.6	10.4	Y	11/13/2017 12:30	7.3	9.8	Y
11/13/2017 7:30	5.0	5.2	Y	11/13/2017 12:45	6.7	7.3	Y
11/13/2017 7:45	4.8	4.9	Y	11/13/2017 13:00	7.3	7.4	Y
11/13/2017 8:00	4.8	5.4	Y	11/13/2017 13:15	7.0	6.3	N
11/13/2017 8:15	5.3	4.9	N	11/13/2017 13:30	6.8	6.5	N
11/13/2017 8:30	6.0	5.0	N	11/13/2017 13:45	7.4	6.4	N
11/13/2017 8:45	5.5	6.7	Y	11/13/2017 14:00	9.2	6.7	N
11/13/2017 9:00	7.1	6.0	N	11/13/2017 14:15	9.4	7.3	N
11/13/2017 9:15	8.9	6.1	N	11/13/2017 14:30	9.5	7.2	N
11/13/2017 9:30	8.5	6.1	N	11/13/2017 14:45	9.8	7.5	N
11/13/2017 9:45	9.9	6.7	N	11/13/2017 15:00	9.2	7.5	N
11/13/2017 10:00	8.1	6.5	N	11/13/2017 15:15	8.7	8.1	N
11/13/2017 10:15	9.2	6.5	N	11/13/2017 15:30	8.0	7.4	N
11/13/2017 10:30	8.9	6.7	N	11/13/2017 15:45	8.4	8.6	Y
11/13/2017 10:45	9.4	7.5	N	11/13/2017 16:00	8.1	8.4	Y
11/13/2017 11:00	9.1	7.9	N	11/13/2017 16:15	8.0	8.4	Y
11/13/2017 11:15	8.6	7.8	N	11/13/2017 16:30	7.7	7.9	Y
11/13/2017 11:30	8.4	7.8	N	11/13/2017 16:45	8.7	9.1	Y
11/13/2017 11:45	8.3	7.2	N	11/13/2017 17:00	8.3	7.9	N
11/13/2017 12:00	8.6	7.8	N				

Average	7.8	7.2	N
Maximum	9.9	10.4	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

2.2 Tuesday, November 14th, 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)
11/14/2017 7:00	6.6	6.3	N	11/14/2017 12:15	13.1	12.4	N
11/14/2017 7:15	6.2	7	Y	11/14/2017 12:30	11.6	11.4	N
11/14/2017 7:30	5.5	6.9	Y	11/14/2017 12:45	11.1	11.9	Y
11/14/2017 7:45	5.3	6.4	Y	11/14/2017 13:00	9.6	15.2	Y
11/14/2017 8:00	6.3	6.3	N	11/14/2017 13:15	10.5	14.8	Y
11/14/2017 8:15	6.2	5.9	N	11/14/2017 13:30	8.9	12	Y
11/14/2017 8:30	6.8	6.5	N	11/14/2017 13:45	9.2	10.8	Y
11/14/2017 8:45	8.2	6.2	N	11/14/2017 14:00	9.5	15	Y
11/14/2017 9:00	10.2	8.5	N	11/14/2017 14:15	9.2	12.2	Y
11/14/2017 9:15	11.3	11.3	N	11/14/2017 14:30	9.1	10.7	Y
11/14/2017 9:30	11.6	15.3	Y	11/14/2017 14:45	9.4	10.6	Y
11/14/2017 9:45	11	14.1	Y	11/14/2017 15:00	8.9	9.8	Y
11/14/2017 10:00	10.6	14.5	Y	11/14/2017 15:15	8.6	8.6	N
11/14/2017 10:15	9.9	16.6	Y	11/14/2017 15:30	7.5	9.4	Y
11/14/2017 10:30	10.3	14.8	Y	11/14/2017 15:45	7.7	8.1	Y
11/14/2017 10:45	10.7	11.6	Y	11/14/2017 16:00	7.4	8.3	Y
11/14/2017 11:00	8.9	16.6	Y	11/14/2017 16:15	7.1	8.4	Y
11/14/2017 11:15	9.7	15.2	Y	11/14/2017 16:30	8.4	6.9	N
11/14/2017 11:30	14.8	94.9	Y	11/14/2017 16:45	8.1	7.6	N
11/14/2017 11:45	15.9	14	N	11/14/2017 17:00	8	7.5	N
11/14/2017 12:00	13.1	11.8	N				

Average	9.3	12.7	Y
Maximum	15.9	94.9	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

2.3 Wednesday, November 15th, 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)
11/15/2017 7:00	8	8.2	Y	11/15/2017 12:15	7.8	7.1	N
11/15/2017 7:15	8.4	7.6	N	11/15/2017 12:30	8.4	7.4	N
11/15/2017 7:30	7.7	7.4	N	11/15/2017 12:45	7.5	6.8	N
11/15/2017 7:45	7	7	N	11/15/2017 13:00	7.2	7	N
11/15/2017 8:00	6.9	7.1	Y	11/15/2017 13:15	6.7	7.1	Y
11/15/2017 8:15	6.7	7.1	Y	11/15/2017 13:30	6.1	6.5	Y
11/15/2017 8:30	6.5	6.6	Y	11/15/2017 13:45	7	6.5	N
11/15/2017 8:45	6.9	6.1	N	11/15/2017 14:00	6.5	6.9	Y
11/15/2017 9:00	7	5.9	N	11/15/2017 14:15	6.1	6	N
11/15/2017 9:15	6.8	6.8	N	11/15/2017 14:30	6.1	6.5	Y
11/15/2017 9:30	7	6.5	N	11/15/2017 14:45	6.1	6.2	Y
11/15/2017 9:45	8.1	6.7	N	11/15/2017 15:00	5.8	6.1	Y
11/15/2017 10:00	8.5	7	N	11/15/2017 15:15	6.2	7.1	Y
11/15/2017 10:15	8.8	6.9	N	11/15/2017 15:30	6.2	6.1	N
11/15/2017 10:30	9.8	6.5	N	11/15/2017 15:45	6.4	6.2	N
11/15/2017 10:45	10.7	7.3	N	11/15/2017 16:00	7	7.1	Y
11/15/2017 11:00	11	6.6	N	11/15/2017 16:15	6.4	6.2	N
11/15/2017 11:15	10.7	8.1	N	11/15/2017 16:30	6.9	6.3	N
11/15/2017 11:30	8.5	6.9	N	11/15/2017 16:45	7	6.2	N
11/15/2017 11:45	9.6	8.1	N	11/15/2017 17:00	7.5	6.4	N
11/15/2017 12:00	9.3	6.6	N				

Average	7.5	6.8	N
Maximum	11.0	8.2	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

2.4 Thursday, November 16th, 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)
11/16/2017 7:00	7.7	20.4	Y	11/16/2017 12:15	7.8	6.9	N
11/16/2017 7:15	7.8	10.4	Y	11/16/2017 12:30	7.8	6.3	N
11/16/2017 7:30	16	5.6	N	11/16/2017 12:45	7.9	6.5	N
11/16/2017 7:45	16.3	8.2	N	11/16/2017 13:00	13	9	N
11/16/2017 8:00	14.5	13.1	N	11/16/2017 13:15	8.3	7.9	N
11/16/2017 8:15	13	11.8	N	11/16/2017 13:30	7.9	7.2	N
11/16/2017 8:30	12.6	13.8	Y	11/16/2017 13:45	6.2	8	Y
11/16/2017 8:45	11.2	10.1	N	11/16/2017 14:00	7.3	7.5	Y
11/16/2017 9:00	10.8	9.8	N	11/16/2017 14:15	6.7	7.5	Y
11/16/2017 9:15	10.8	11.2	Y	11/16/2017 14:30	6.6	7.6	Y
11/16/2017 9:30	10.3	11.7	Y	11/16/2017 14:45	6.4	7.6	Y
11/16/2017 9:45	8.1	13.4	Y	11/16/2017 15:00	7.1	6.6	N
11/16/2017 10:00	7.8	8.7	Y	11/16/2017 15:15	6.5	7.1	Y
11/16/2017 10:15	7.5	8.4	Y	11/16/2017 15:30	7.3	7.6	Y
11/16/2017 10:30	7.1	7.7	Y	11/16/2017 15:45	6.4	6.6	Y
11/16/2017 10:45	7.2	7.3	Y	11/16/2017 16:00	6.3	6.6	Y
11/16/2017 11:00	7.5	7	N	11/16/2017 16:15	7	6.7	N
11/16/2017 11:15	7.9	6.7	N	11/16/2017 16:30	11.8	6.6	N
11/16/2017 11:30	7.1	6.9	N	11/16/2017 16:45	7.2	7.5	Y
11/16/2017 11:45	7.3	8	Y	11/16/2017 17:00	7.5	7.5	N
11/16/2017 12:00	6.9	7.1	Y				

Average	8.7	8.6	N
Maximum	16.3	20.4	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

2.5 Friday, November 17th, 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)
11/17/2017 7:00	5.7	6.0	Y	11/17/2017 12:15	5.9	8.6	Y
11/17/2017 7:15	5.8	6.0	Y	11/17/2017 12:30	6.6	9.0	Y
11/17/2017 7:30	6.1	6.1	N	11/17/2017 12:45	7.0	8.5	Y
11/17/2017 7:45	6.4	6.5	Y	11/17/2017 13:00	9.8	9.0	N
11/17/2017 8:00	7.4	7.5	Y	11/17/2017 13:15	10.2	8.4	N
11/17/2017 8:15	6.9	6.9	N	11/17/2017 13:30	10.6	10.4	N
11/17/2017 8:30	6.8	6.6	N	11/17/2017 13:45	10.0	13.4	Y
11/17/2017 8:45	6.7	7.5	Y	11/17/2017 14:00	10.6	10.5	N
11/17/2017 9:00	6.6	7.1	Y	11/17/2017 14:15	11.5	10.7	N
11/17/2017 9:15	6.4	7.3	Y	11/17/2017 14:30	10.2	10.8	Y
11/17/2017 9:30	6.5	6.6	Y	11/17/2017 14:45	9.0	13.9	Y
11/17/2017 9:45	6.8	7.0	Y	11/17/2017 15:00	8.6	10.1	Y
11/17/2017 10:00	7.2	7.0	N	11/17/2017 15:15	8.1	9.8	Y
11/17/2017 10:15	6.7	7.3	Y	11/17/2017 15:30	9.1	10.7	Y
11/17/2017 10:30	6.6	7.2	Y	11/17/2017 15:45	8.7	9.2	Y
11/17/2017 10:45	6.5	6.6	Y	11/17/2017 16:00	8.8	8.5	N
11/17/2017 11:00	6.2	6.7	Y	11/17/2017 16:15	8.2	8.3	Y
11/17/2017 11:15	7.0	7.2	Y	11/17/2017 16:30	9.4	9.6	Y
11/17/2017 11:30	7.1	6.6	N	11/17/2017 16:45	9.9	7.8	N
11/17/2017 11:45	6.6	6.6	N	11/17/2017 17:00	10.1	7.8	N
11/17/2017 12:00	6.8	6.9	Y				

Average	7.8	8.2	Y
Maximum	11.5	13.9	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

Legend

- Ambient Buoy
- Sentinel Buoy
- RTA Boundary

300 150 0 300 Feet

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

Figure 1

Ewing, NJ | October 2017

X:\03_GIS\mxd\Canal_Wide\Turbidity Buoy Locations.mxd; acarnes; 10/19/2017

APPENDIX A
PRE-DREDGE TURBIDITY BUOY DATA

PRELIMINARY DATA
NOT YET SUBJECT TO QC REVIEW

Geosyntec consultants

Beech and Bonaparte engineering p.c.
an affiliate of Geosyntec Consultants

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
7th Weekly Monitoring Period
Summary Report:

November 13th through November 17th, 2017

Report Contents

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

Executive Summary – Week 7 Monitoring Period
November 13th through November 17th, 2017

The following report summarizes site air monitoring activities for the Week 6 monitoring period from November 13th through November 17th, 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 4th 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 7 monitoring period there were no PM_{10} or TVOC exceedances of the action level of 150 ug/m^3 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_{10}) daily averages and maximums for Week 7.

Additional monitoring for hydrogen sulfide, ammonia, and formaldehyde took place at all stations throughout the Week 7 monitoring period twice daily. The results of these measurements are shown in Table 1.

During the Week 7 monitoring period of November 13th, through November 17th, 2017, TRC conducted Volatile Organic Compounds (USEPA Method TO-15) sampling at Stations 7 and 2. ST-7 was collected on November 13th, through November 14th, 2017 and ST-2 was collected on November 14th, through November 15th, 2017. Both samples were collected over a 24-hour sampling period. Samples were shipped to Con-Test Analytical Laboratory for analyses. The results of the summa canister sampling are pending lab analyses.

Site activities conducted at the Citizen Property on November 13th through November 17th, 2017 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

Site activities conducted at the 4th St Turning Basin Area of the Canal on November 13th through November 17th, 2017 included the following:

- Movement of work barges to north side of canal near Whole Foods
- Installation of false work (i.e., vertical and horizontal alignment guide) in preparation for Sheet Piling
- Installation of 6 pairs of Sheet Piling on the north side of the canal near Whole Foods (starting at Station 8+95)
- Probing to determine edge of toe of existing sheet pile along north side of canal near Whole Foods

Gowanus Canal TB-4 Dredging and Capping Pilot Study
Brooklyn, New York
Daily Station Report – TVOC/PM_{10}
(TRC Project No.274286-0000-00000)

11/13/2017 06:30 AM - 11/13/17 23:45 PM

Station 1

TVOC			PM_{10}		
Max.	<1	ppb	Max.	21	ug/m^3
Avg.	<1	ppb	Avg.	16	ug/m^3
Exc.	0	total	Exc.	0	Total

Station 2

TVOC			PM_{10}		
Max.	<1	ppb	Max.	21	ug/m^3
Avg.	<1	ppb	Avg.	16	ug/m^3
Exc.	0	total	Exc.	0	Total

Station 3

TVOC			PM_{10}		
Max.	<1	ppb	Max.	<1	ug/m^3
Avg.	<1	ppb	Avg.	<1	ug/m^3
Exc.	0	total	Exc.	0	Total

Station 4

TVOC			PM_{10}		
Max.	1	ppb	Max.	26	ug/m^3
Avg.	<1	ppb	Avg.	16	ug/m^3
Exc.	0	total	Exc.	0	Total

Station 5

TVOC			PM_{10}		
Max.	94	ppb	Max.	29	ug/m^3
Avg.	32	ppb	Avg.	16	ug/m^3
Exc.	0	total	Exc.	0	Total

Station 6

TVOC			PM_{10}		
Max.	47	ppb	Max.	20	ug/m^3
Avg.	36	ppb	Avg.	14	ug/m^3
Exc.	0	total	Exc.	0	Total

Station 7

TVOC			PM_{10}		
Max.	<1	ppb	Max.	<1	ug/m^3
Avg.	<1	ppb	Avg.	<1	ug/m^3
Exc.	0	total	Exc.	0	Total

TVOC – Total Volatile Organic Compounds PM_{10} – Particulates as PM_{10}

Max. – Maximum daily average (15 min. avg. – TVOC / 15 min. avg. – PM_{10})

Avg. – Daily average (15 min. avg. – TVOC / 15 min. avg. – PM_{10})

Exc. – Total # of averages which exceed the action level (≥1 ppm - TVOC / ≥150 ug/m3 - PM_{10})

Gowanus Canal TB-4 Dredging and Capping Pilot Study
Brooklyn, New York
Daily Station Report – TVOC/PM_{10}
(TRC Project No.274286-0000-00000)

11/14/2017 00:00 AM - 11/14/17 23:45 PM

Station 1

TVOC			PM_{10}		
Max.	1	ppb	Max.	16	ug/m^3
Avg.	<1	ppb	Avg.	11	ug/m^3
Exc.	0	total	Exc.	0	Total

Station 2

TVOC			PM_{10}		
Max.	1	ppb	Max.	17	ug/m^3
Avg.	<1	ppb	Avg.	11	ug/m^3
Exc.	0	total	Exc.	0	Total

Station 3

TVOC			PM_{10}		
Max.	<1	ppb	Max.	<1	ug/m^3
Avg.	<1	ppb	Avg.	<1	ug/m^3
Exc.	0	total	Exc.	0	Total

Station 4

TVOC			PM_{10}		
Max.	<1	ppb	Max.	24	ug/m^3
Avg.	<1	ppb	Avg.	11	ug/m^3
Exc.	0	total	Exc.	0	Total

Station 5

TVOC			PM_{10}		
Max.	<1	ppb	Max.	20	ug/m^3
Avg.	<1	ppb	Avg.	11	ug/m^3
Exc.	0	total	Exc.	0	Total

Station 6

TVOC			PM_{10}		
Max.	<1	ppb	Max.	19	ug/m^3
Avg.	<1	ppb	Avg.	11	ug/m^3
Exc.	0	total	Exc.	0	Total

Station 7

TVOC			PM_{10}		
Max.	<1	ppb	Max.	<1	ug/m^3
Avg.	<1	ppb	Avg.	<1	ug/m^3
Exc.	0	total	Exc.	0	Total

TVOC – Total Volatile Organic Compounds PM_{10} – Particulates as PM_{10}

Max. – Maximum daily average (15 min. avg. – TVOC / 15 min. avg. – PM_{10})

Avg. – Daily average (15 min. avg. – TVOC / 15 min. avg. – PM_{10})

Exc. – Total # of averages which exceed the action level (≥1 ppm - TVOC / ≥150 ug/m3 - PM_{10})

Gowanus Canal TB-4 Dredging and Capping Pilot Study
Brooklyn, New York
Daily Station Report – TVOC/PM_{10}
(TRC Project No.274286-0000-00000)

11/15/2017 00:00 AM - 11/15/17 23:45 PM

Station 1

TVOC			PM_{10}		
Max.	2	ppb	Max.	12	ug/m^3
Avg.	<1	ppb	Avg.	7	ug/m^3
Exc.	0	total	Exc.	0	Total

Station 2

TVOC			PM_{10}		
Max.	2	ppb	Max.	13	ug/m^3
Avg.	<1	ppb	Avg.	8	ug/m^3
Exc.	0	total	Exc.	0	Total

Station 3

TVOC			PM_{10}		
Max.	<1	ppb	Max.	<1	ug/m^3
Avg.	<1	ppb	Avg.	<1	ug/m^3
Exc.	0	total	Exc.	0	Total

Station 4

TVOC			PM_{10}		
Max.	36	ppb	Max.	15	ug/m^3
Avg.	1	ppb	Avg.	7	ug/m^3
Exc.	0	total	Exc.	0	Total

Station 5

TVOC			PM_{10}		
Max.	7	ppb	Max.	13	ug/m^3
Avg.	15	ppb	Avg.	7	ug/m^3
Exc.	0	total	Exc.	0	Total

Station 6

TVOC			PM_{10}		
Max.	<1	ppb	Max.	12	ug/m^3
Avg.	<1	ppb	Avg.	7	ug/m^3
Exc.	0	total	Exc.	0	Total

Station 7

TVOC			PM_{10}		
Max.	<1	ppb	Max.	<1	ug/m^3
Avg.	<1	ppb	Avg.	<1	ug/m^3
Exc.	0	total	Exc.	0	Total

TVOC – Total Volatile Organic Compounds PM_{10} – Particulates as PM_{10}

Max. – Maximum daily average (15 min. avg. – TVOC / 15 min. avg. – PM_{10})

Avg. – Daily average (15 min. avg. – TVOC / 15 min. avg. – PM_{10})

Exc. – Total # of averages which exceed the action level (≥1 ppm - TVOC / ≥150 ug/m3 - PM_{10})

Gowanus Canal TB-4 Dredging and Capping Pilot Study
Brooklyn, New York
Daily Station Report – TVOC/PM_{10}
(TRC Project No.274286-0000-00000)

11/16/2017 00:00 AM - 11/16/17 23:45 PM

Station 1

TVOC			PM_{10}		
Max.	8	ppb	Max.	16	ug/m^3
Avg.	<1	ppb	Avg.	7	ug/m^3
Exc.	0	total	Exc.	0	Total

Station 2

TVOC			PM_{10}		
Max.	<1	ppb	Max.	<1	ug/m^3
Avg.	<1	ppb	Avg.	<1	ug/m^3
Exc.	0	total	Exc.	0	Total

Station 3

TVOC			PM_{10}		
Max.	<1	ppb	Max.	<1	ug/m^3
Avg.	<1	ppb	Avg.	<1	ug/m^3
Exc.	0	total	Exc.	0	Total

Station 4

TVOC			PM_{10}		
Max.	2	ppb	Max.	22	ug/m^3
Avg.	<1	ppb	Avg.	6	ug/m^3
Exc.	0	total	Exc.	0	Total

Station 5

TVOC			PM_{10}		
Max.	100	ppb	Max.	18	ug/m^3
Avg.	33	ppb	Avg.	6	ug/m^3
Exc.	0	total	Exc.	0	Total

Station 6

TVOC			PM_{10}		
Max.	<1	ppb	Max.	16	ug/m^3
Avg.	<1	ppb	Avg.	3	ug/m^3
Exc.	0	total	Exc.	0	Total

Station 7

TVOC			PM_{10}		
Max.	<1	ppb	Max.	<1	ug/m^3
Avg.	<1	ppb	Avg.	<1	ug/m^3
Exc.	0	total	Exc.	0	Total

TVOC – Total Volatile Organic Compounds PM_{10} – Particulates as PM_{10}

Max. – Maximum daily average (15 min. avg. – TVOC / 15 min. avg. – PM_{10})

Avg. – Daily average (15 min. avg. – TVOC / 15 min. avg. – PM_{10})

Exc. – Total # of averages which exceed the action level (≥1 ppm - TVOC / ≥150 ug/m3 - PM_{10})

Gowanus Canal TB-4 Dredging and Capping Pilot Study
Brooklyn, New York
Daily Station Report – TVOC/PM_{10}
(TRC Project No.274286-0000-00000)

11/17/2017 00:00 AM - 11/17/17 15:00 PM

Station 1

TVOC			PM_{10}		
Max.	4	ppb	Max.	7	ug/m^3
Avg.	<1	ppb	Avg.	3	ug/m^3
Exc.	0	total	Exc.	0	Total

Station 2

TVOC			PM_{10}		
Max.	<1	ppb	Max.	3	ug/m^3
Avg.	<1	ppb	Avg.	2	ug/m^3
Exc.	0	total	Exc.	0	Total

Station 3

TVOC			PM_{10}		
Max.	10	ppb	Max.	<1	ug/m^3
Avg.	6	ppb	Avg.	<1	ug/m^3
Exc.	0	total	Exc.	0	Total

Station 4

TVOC			PM_{10}		
Max.	<1	ppb	Max.	12	ug/m^3
Avg.	<1	ppb	Avg.	3	ug/m^3
Exc.	0	total	Exc.	0	Total

Station 5

TVOC			PM_{10}		
Max.	21	ppb	Max.	7	ug/m^3
Avg.	15	ppb	Avg.	3	ug/m^3
Exc.	0	total	Exc.	0	Total

Station 6

TVOC			PM_{10}		
Max.	<1	ppb	Max.	7	ug/m^3
Avg.	<1	ppb	Avg.	3	ug/m^3
Exc.	0	total	Exc.	0	Total

Station 7

TVOC			PM_{10}		
Max.	<1	ppb	Max.	<1	ug/m^3
Avg.	<1	ppb	Avg.	<1	ug/m^3
Exc.	0	total	Exc.	0	Total

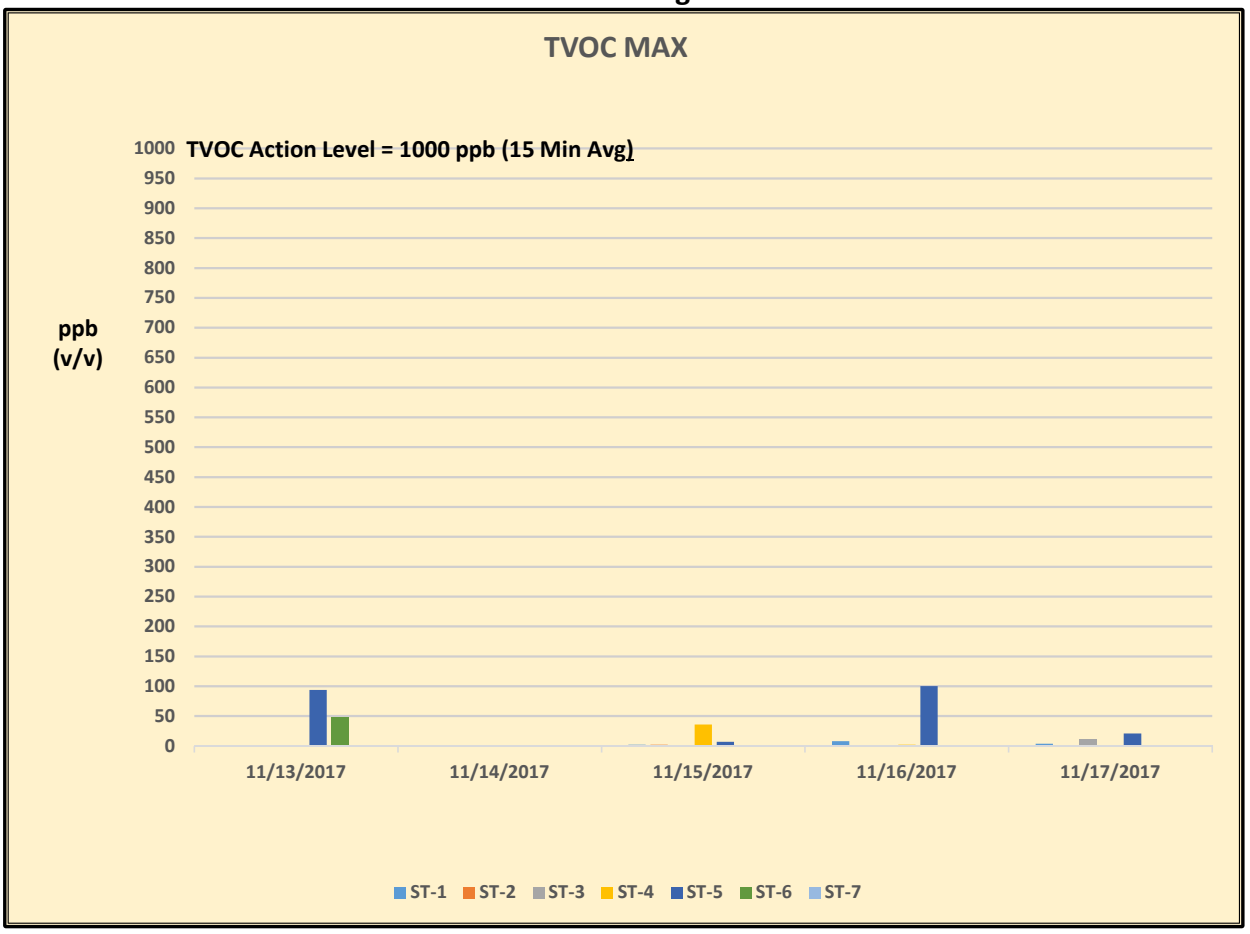
TVOC – Total Volatile Organic Compounds PM_{10} – Particulates as PM_{10}

Max. – Maximum daily average (15 min. avg. – TVOC / 15 min. avg. – PM_{10})

Avg. – Daily average (15 min. avg. – TVOC / 15 min. avg. – PM_{10})

Exc. – Total # of averages which exceed the action level (≥1 ppm - TVOC / ≥150 ug/m3 - PM_{10})

Figure 1
Gowanus Canal Superfund Site -TB4 Dredging and Capping Pilot Program
TVOC Monitoring Data - Week 7



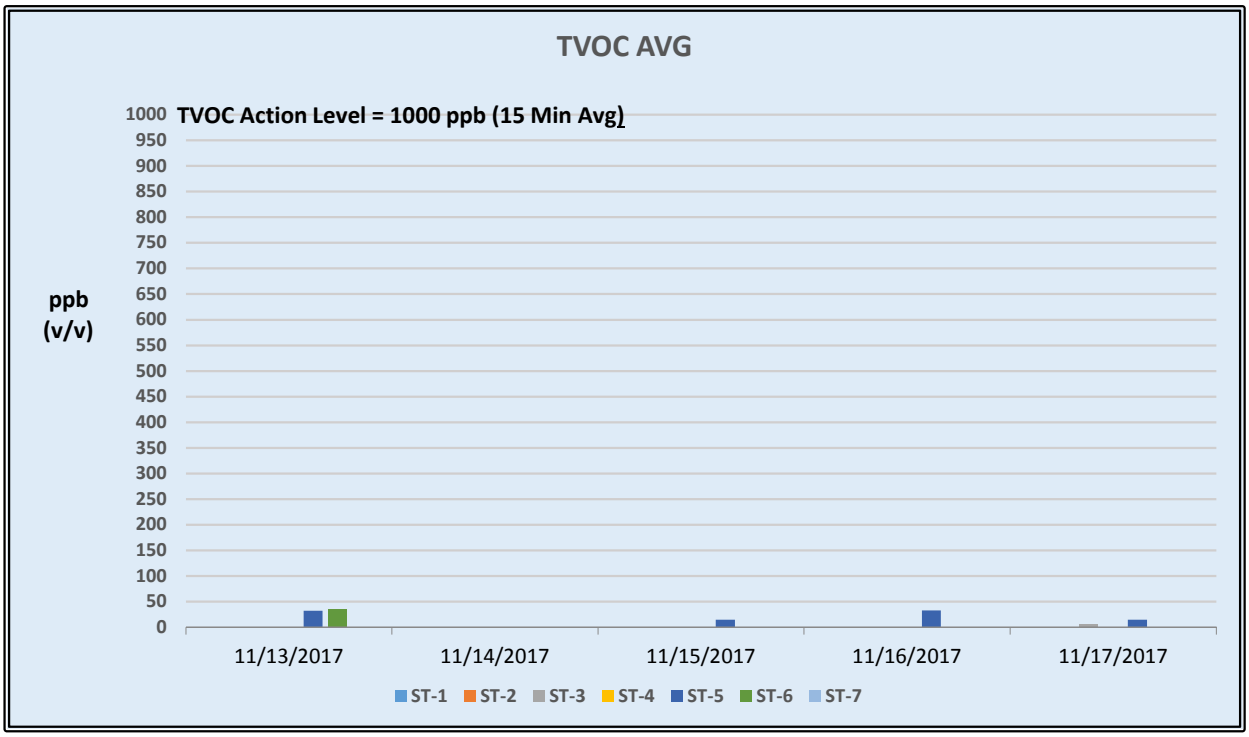
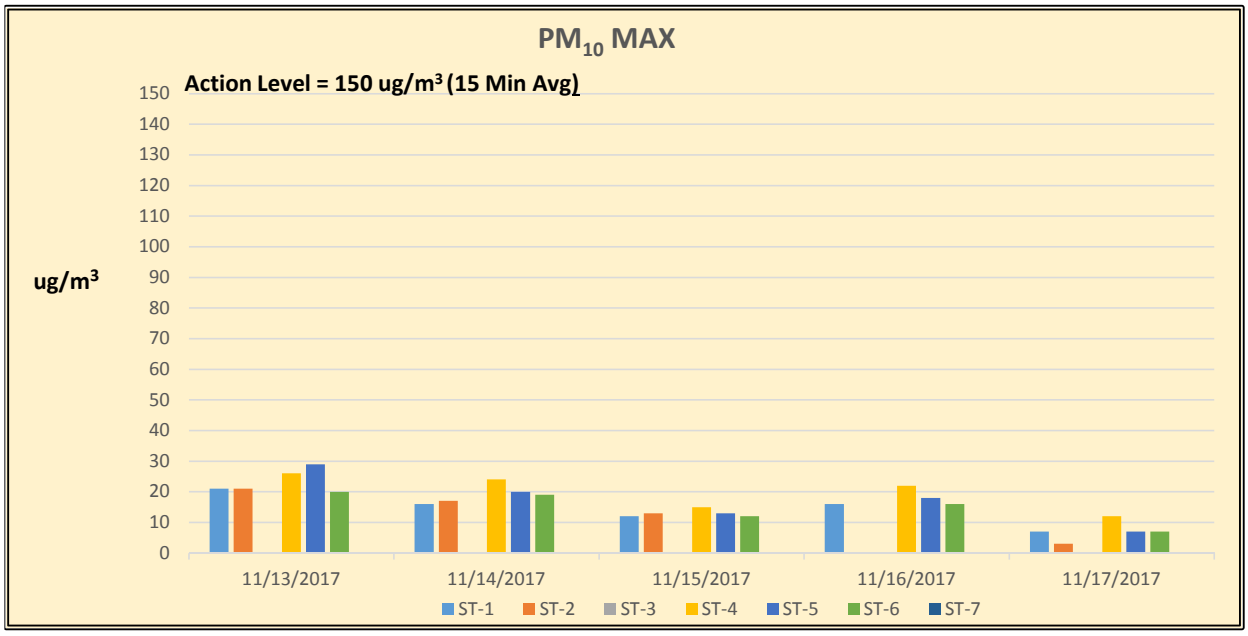


Figure 2
Gowanus Canal Superfund Site - TB4 Dredging and Capping Pilot Program
TRC CAMP PM_{10} Monitoring Data - Week 7



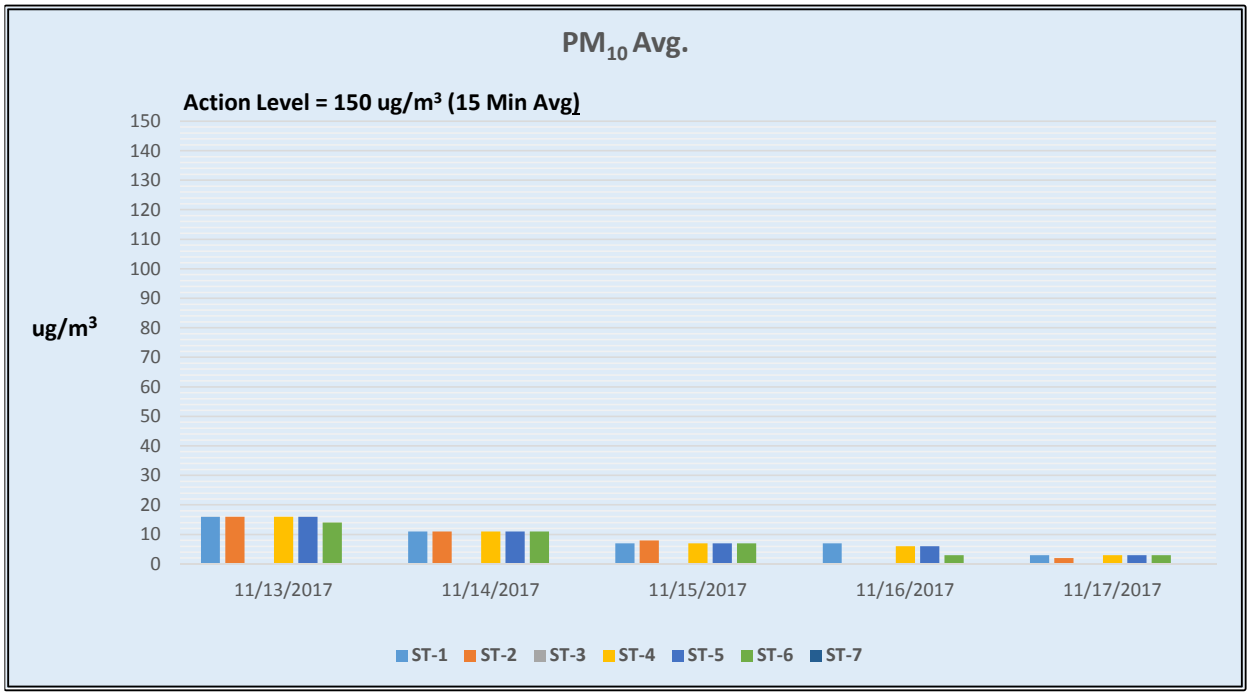


Table 1

Week 7
Summary of Additional Periodic (Daily) Monitoring Data

November 13th, 2017				
Station Id	Time	Formaldehyde (CHO) (ppb)	Hydrogen Sulfide (H_2S) (ppb)	Ammonia (NH_3) (ppm)
ST-1	7:30	<50	<3	<1
	15:15	<50	<3	<1
ST-2	7:35	<50	<3	<1
	15:20	<50	<3	<1
ST-3	7:45	<50	<3	<1
	15:40	<50	<3	<1
ST-4	7:50	<50	<3	<1
	15:45	<50	<3	<1
ST-5	7:55	<50	<3	<1
	15:50	<50	<3	<1
ST-6	8:15	<50	<3	<1
	16:20	<50	<3	<1
ST-7	8:45	<50	<3	<1
	16:35	<50	<3	<1

November 14th, 2017				
Station Id	Time	Formaldehyde (CHO) (ppb)	Hydrogen Sulfide (H_2S) (ppb)	Ammonia (NH_3) (ppm)
ST-1	7:15	<50	<3	<1
	14:15	<50	<3	<1
ST-2	7:20	<50	<3	<1
	14:20	<50	<3	<1
ST-3	7:45	<50	<3	<1
	14:50	<50	<3	<1
ST-4	7:50	<50	<3	<1
	14:55	<50	<3	<1
ST-5	7:55	<50	<3	<1
	15:00	<50	<3	<1
ST-6	8:20	<50	<3	<1
	15:15	<50	<3	<1
ST-7	8:30	<50	<3	<1
	15:30	<50	<3	<1

Table 1

Week 7
Summary of Additional Periodic (Daily) Monitoring Data

November 15th, 2017				
Station Id	Time	Formaldehyde (CHO) (ppb)	Hydrogen Sulfide (H_2S) (ppb)	Ammonia (NH_3) (ppm)
ST-1	6:35	<50	<3	<1
	13:15	<50	<3	<1
ST-2	6:40	<50	<3	<1
	13:20	<50	<3	<1
ST-3	6:50	<50	<3	<1
	13:40	<50	<3	<1
ST-4	6:55	<50	<3	<1
	13:45	<50	<3	<1
ST-5	7:00	<50	<3	<1
	13:50	<50	<3	<1
ST-6	7:15	<50	<3	<1
	14:10	<50	<3	<1
ST-7	7:25	<50	<3	<1
	14:30	<50	<3	<1

November 16th, 2017				
Station Id	Time	Formaldehyde (CHO) (ppb)	Hydrogen Sulfide (H_2S) (ppb)	Ammonia (NH_3) (ppm)
ST-1	7:20	<50	<3	<1
	13:50	<50	<3	<1
ST-2	7:25	<50	<3	<1
	13:55	<50	<3	<1
ST-3	7:40	<50	<3	<1
	14:10	<50	<3	<1
ST-4	7:50	<50	<3	<1
	14:15	<50	<3	<1
ST-5	8:10	<50	<3	<1
	14;20	<50	<3	<1
ST-6	8:20	<50	<3	<1
	14:30	<50	<3	<1
ST-7	8:40	<50	<3	<1
	14:40	<50	<3	<1

Table 1

Week 7
Summary of Additional Periodic (Daily) Monitoring Data

November 17th, 2017				
Station Id	**Time**	**Formaldehyde (CHO) (ppb)**	**Hydrogen Sulfide (H_2S) (ppb)**	**Ammonia (NH_3) (ppm)**
ST-1	7:15	<50	<3	<1
	14:00	<50	<3	<1
ST-2	7:20	<50	<3	<1
	14:05	<50	<3	<1
ST-3	7:50	<50	<3	<1
	14:20	<50	<3	<1
ST-4	7:55	<50	<3	<1
	14:30	<50	<3	<1
ST-5	8:10	<50	<3	<1
	14:40	<50	<3	<1
ST-6	8:15	<50	<3	<1
	14:55	<50	<3	<1
ST-7	8:25	<50	<3	<1
	15:10	<50	<3	<1

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

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

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

Meteorological Summary

November 13th through November 17h, 2017

November 13th , 2017		
Wind Direction (°)	Wind Speed (mph)	Temperature (°F)
E	**4.30**	**44.7**

November 14th , 2017		
Wind Direction (°)	Wind Speed (mph)	Temperature (°F)
SE	**4.20**	**42.6**

November 15th , 2017		
Wind Direction (°)	Wind Speed (mph)	Temperature (°F)
NE	**4.82**	**44.5**

November 16th , 2017		
Wind Direction (°)	Wind Speed (mph)	Temperature (°F)
S	**3.37**	**51.8**

November 17th , 2017		
Wind Direction (°)	Wind Speed (mph)	Temperature (°F)
W	**4.57**	**43.2**

*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, Wednesday, and Thursday.

*All meteorological data represents an average for the time period of 00:00 to 15:00 for Friday.

WILSON-IHRIG WEEKLY NOISE AND VIBRATION MONITORING REPORT

WILSON IHRIG
ACOUSTICS, NOISE & VIBRATION

CALIFORNIA
WASHINGTON
NEW YORK

WI #15-081

MEMORANDUM

November 20, 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, 13 November – 17 November, 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 was installed on Friday, 29 Oct. 2017, 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. VM-1 and VM-2 were installed on Thursday, 12 Oct. 2017.

Noise Monitoring Results

Figures 2 through 16 present the hourly Leq noise levels compared with the noise thresholds discussed in the noise monitoring plan[1]. 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[2].

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

[2] 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[3]. Commercial and Industrial structures are assigned a PPV vibration criterion of 2.0 inches/second.

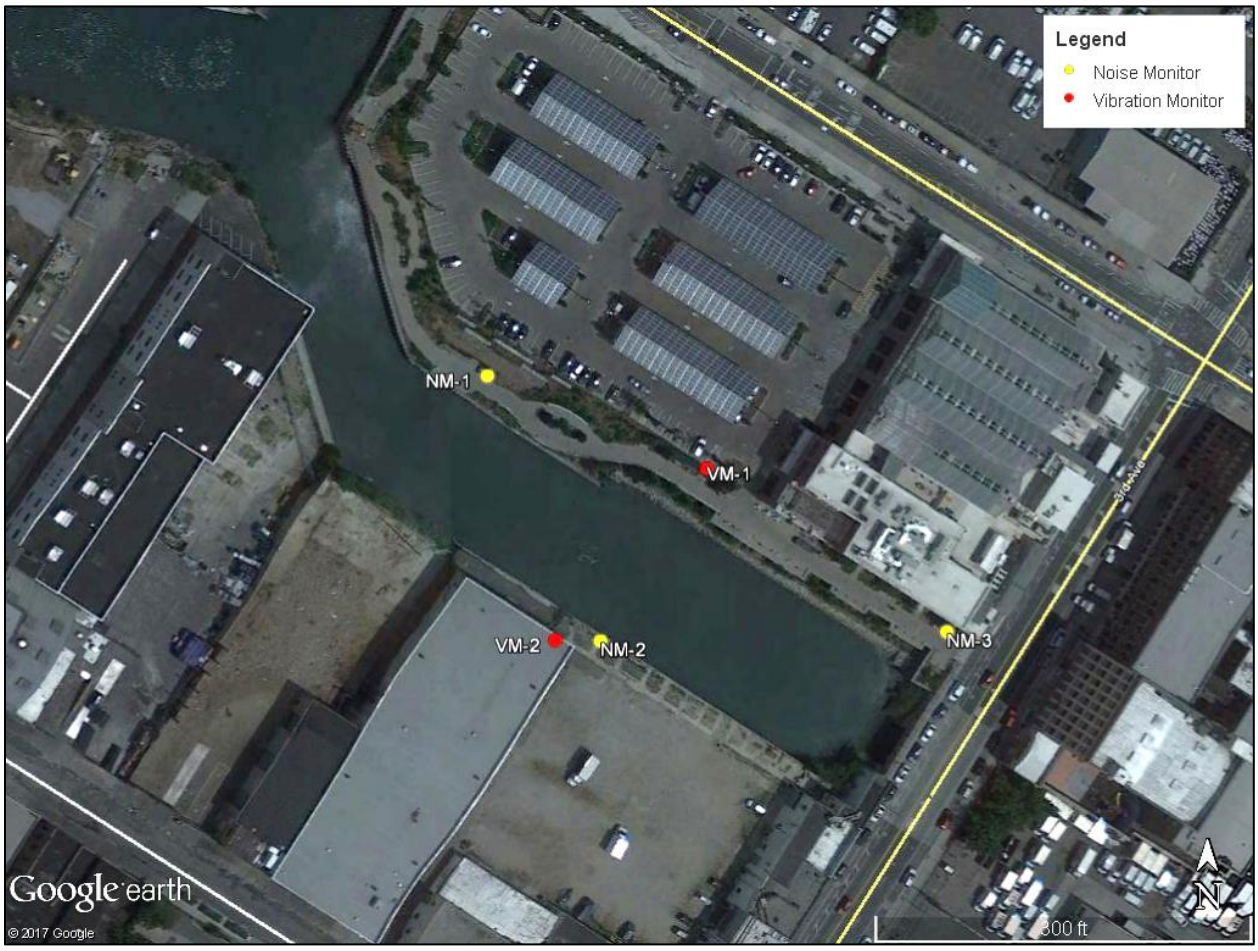


Figure 1: Long-term Noise and Vibration Monitoring Locations for Gowanus TB4 Dredging and Capping Pilot Study

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

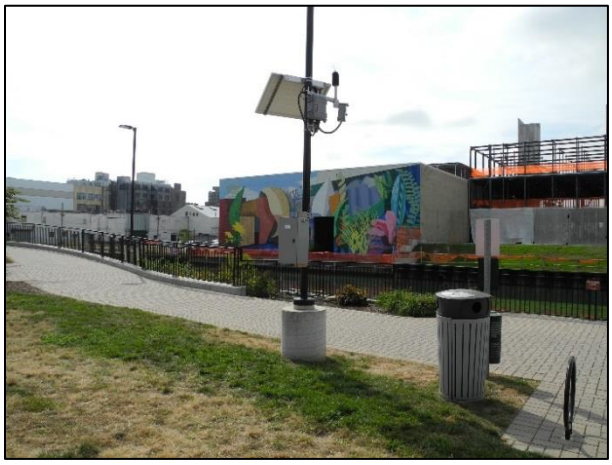


Photo 1: Noise Monitoring Location NM-1 (26 September 2017)

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

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

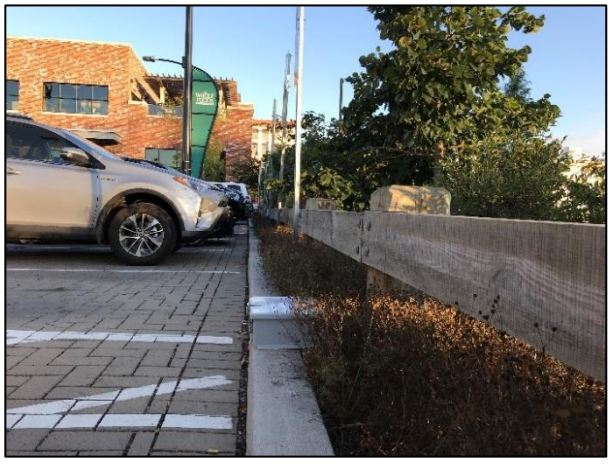


Photo 4: Vibration Monitoring Location VM-1 (12 October 2017)

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

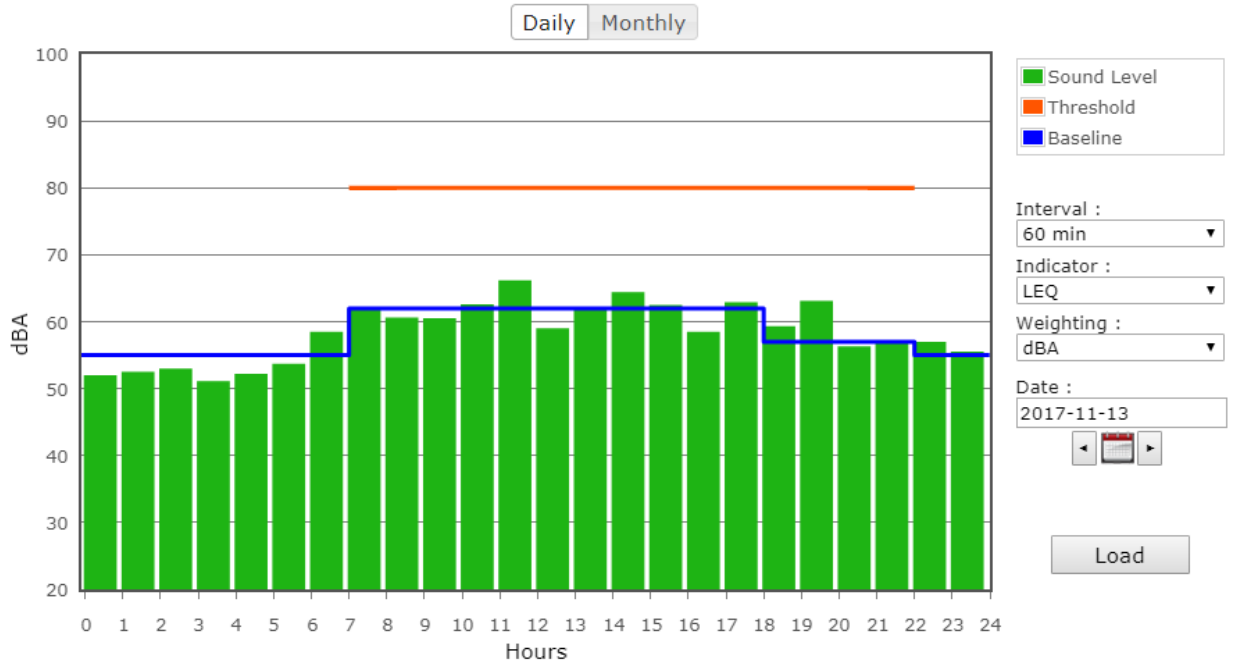


Figure 2: North Monitor NM-1 on Monday

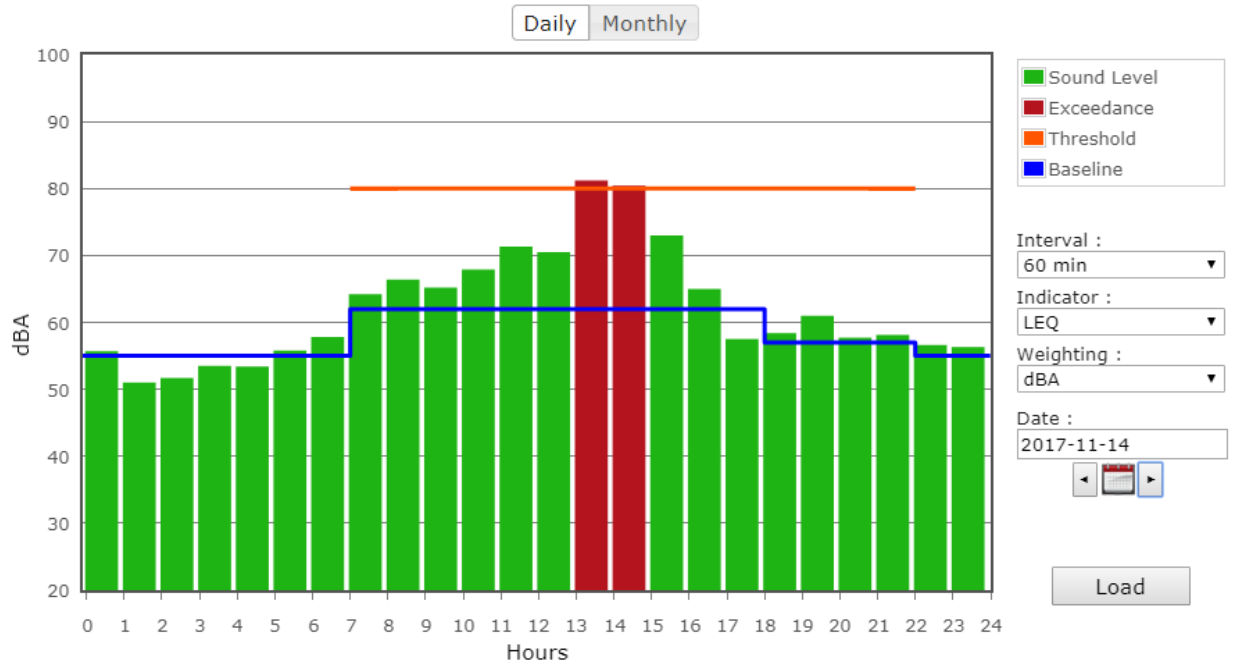


Figure 3: North Monitor NM-1 on Tuesday

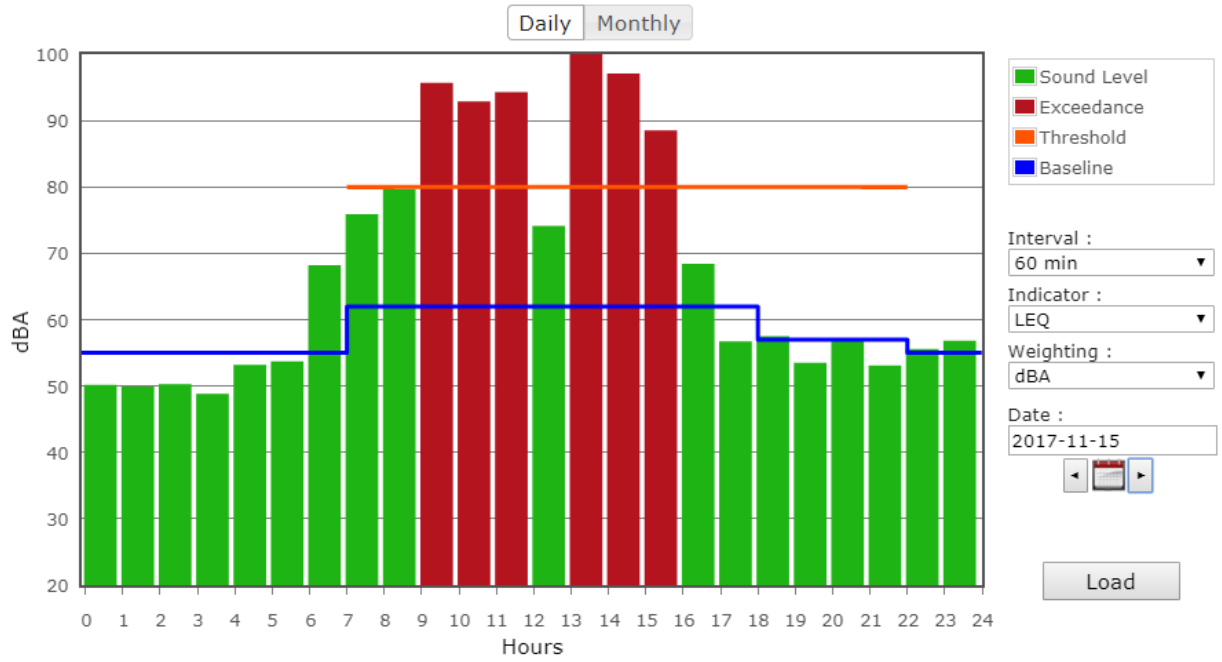


Figure 4: North Monitor NM-1 on Wednesday

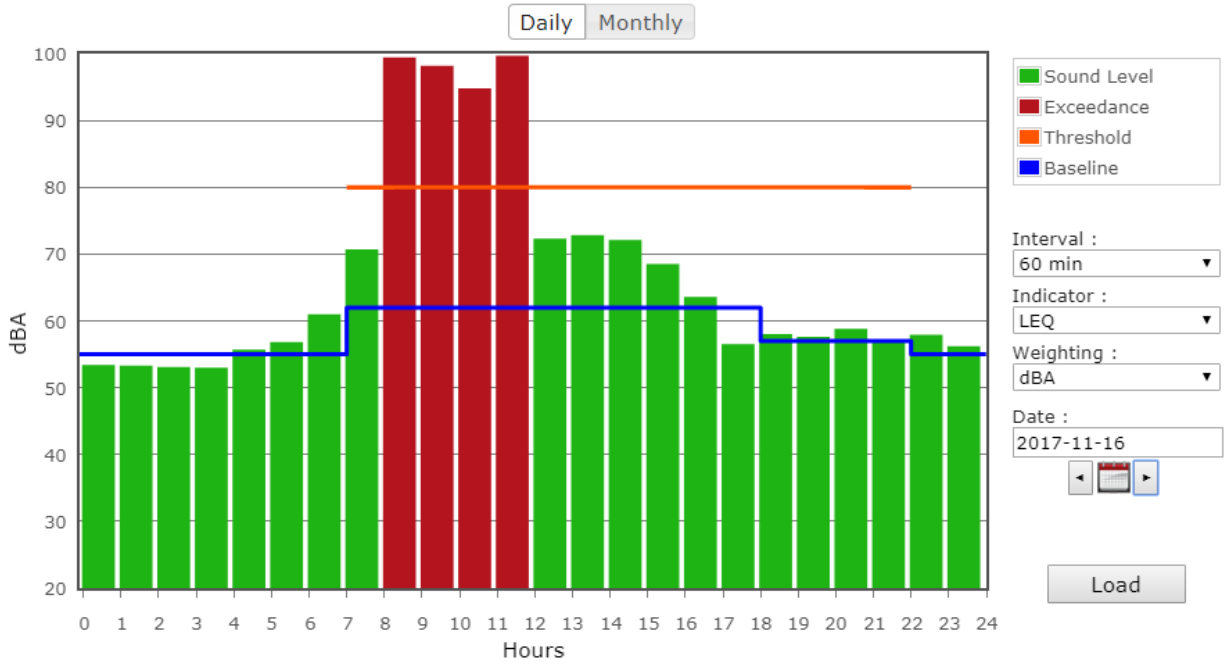


Figure 5: North Monitor NM-1 on Thursday

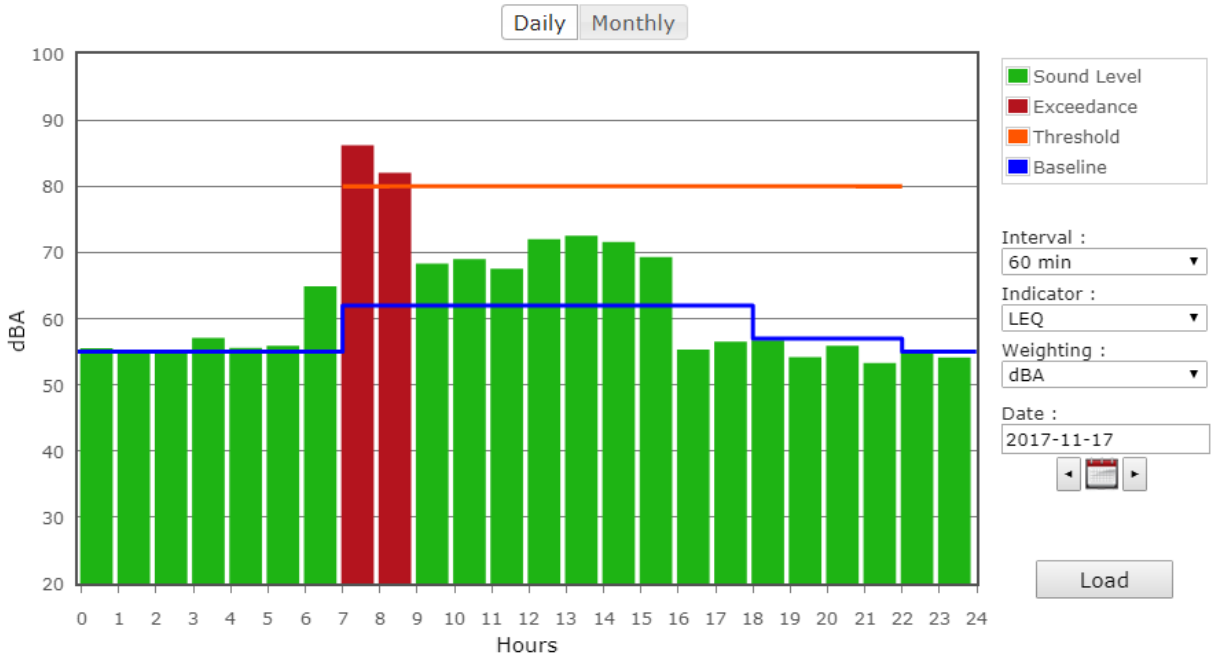


Figure 6: North Monitor NM-1 on Friday

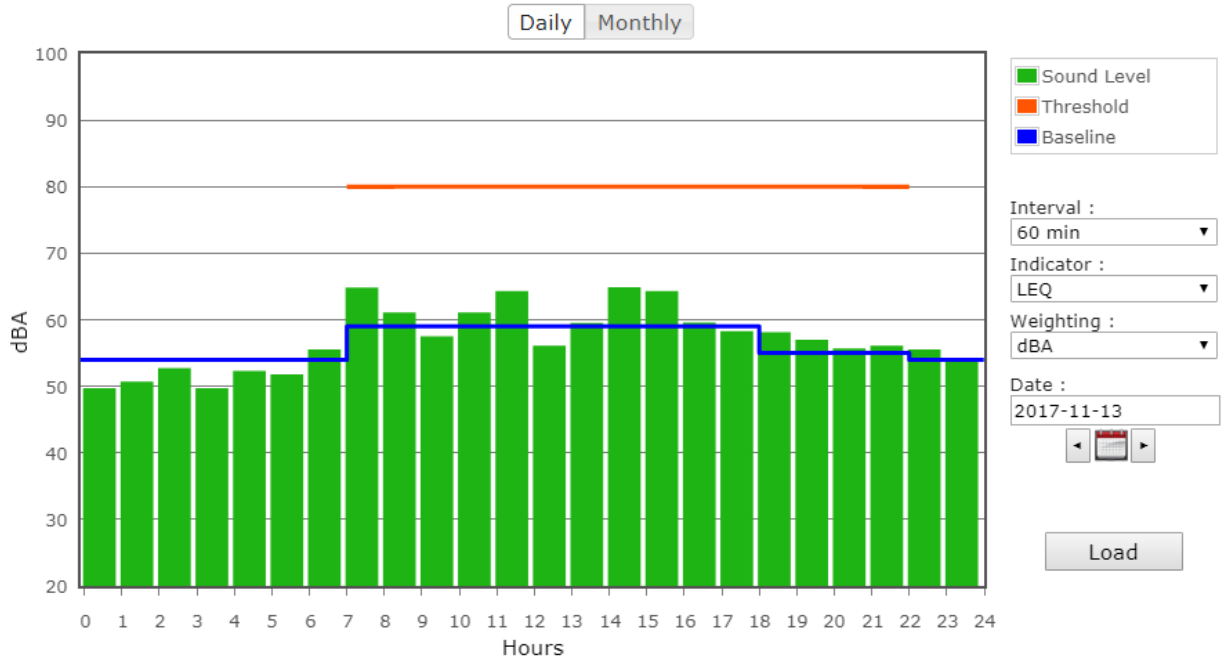


Figure 7: South Monitor NM-2 on Monday

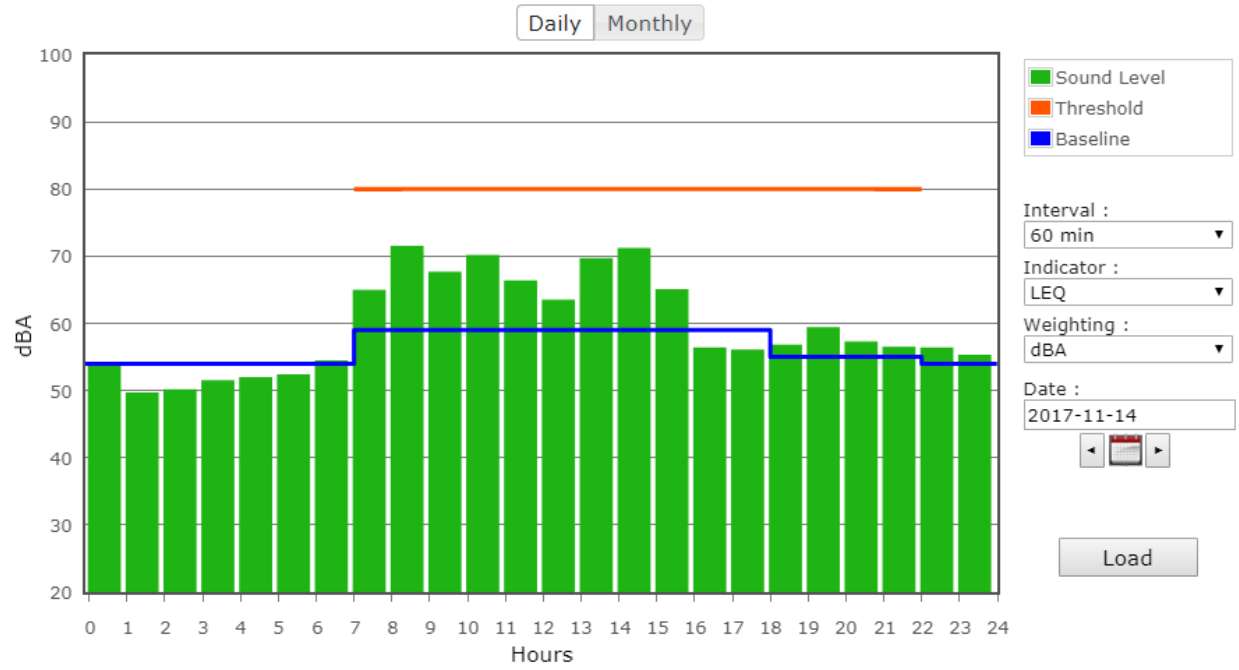


Figure 8: South Monitor NM-2 on Tuesday

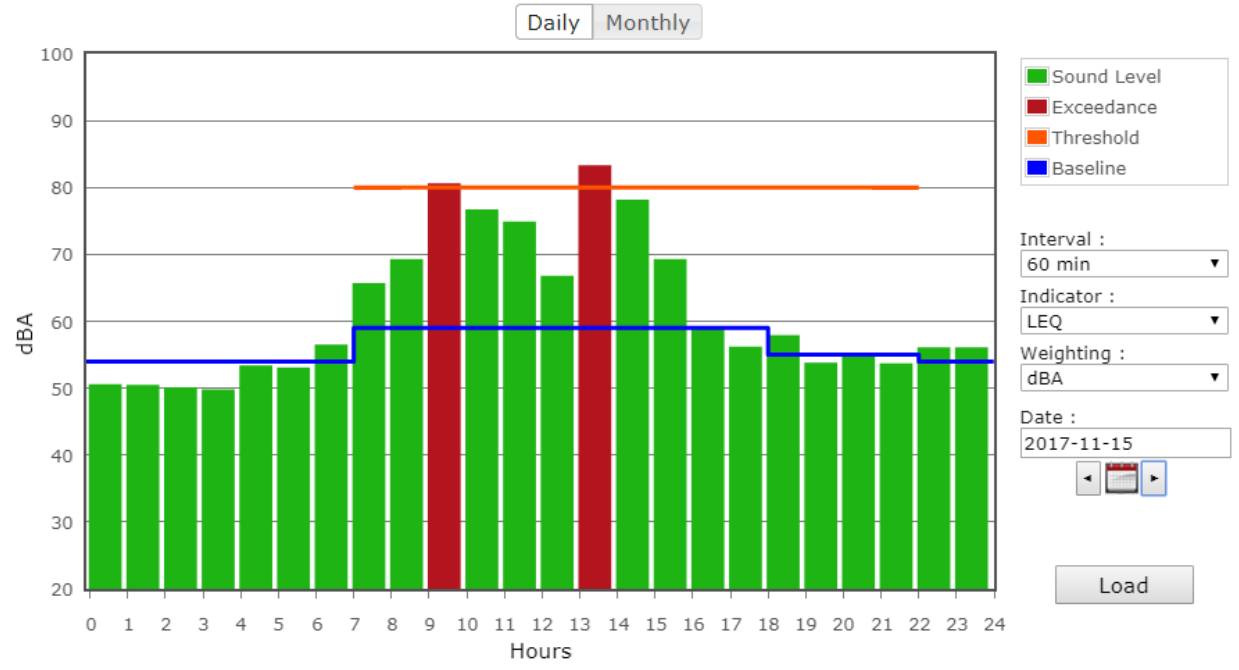


Figure 9: South Monitor NM-2 on Wednesday

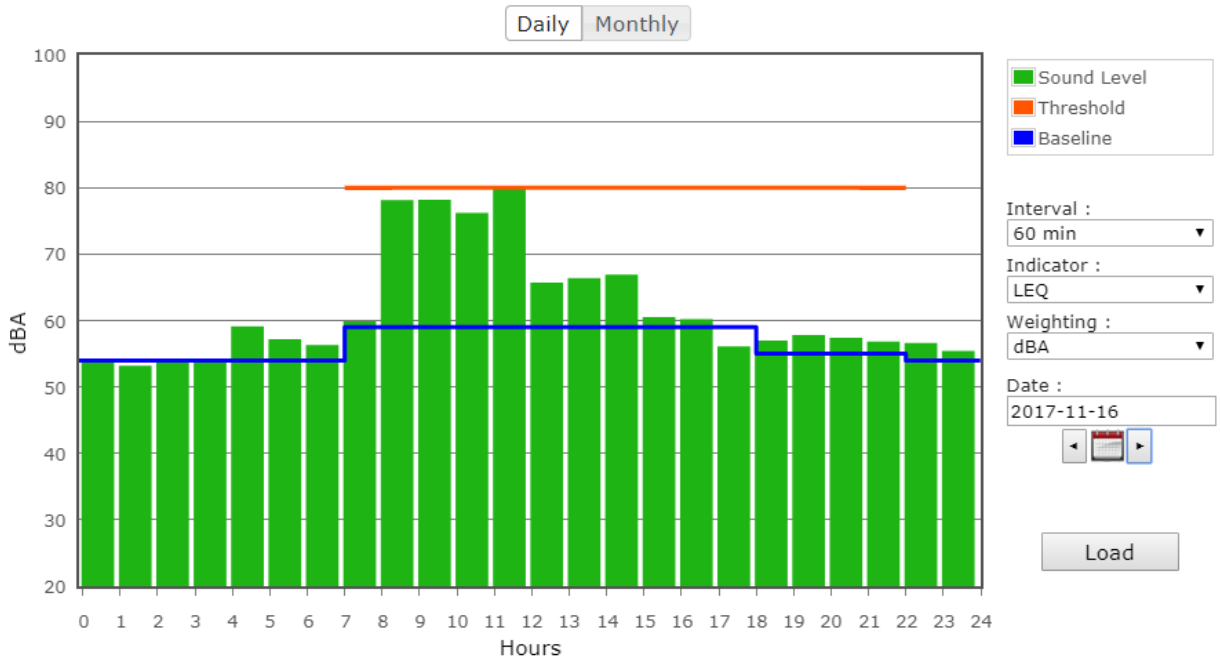


Figure 10: South Monitor NM-2 on Thursday

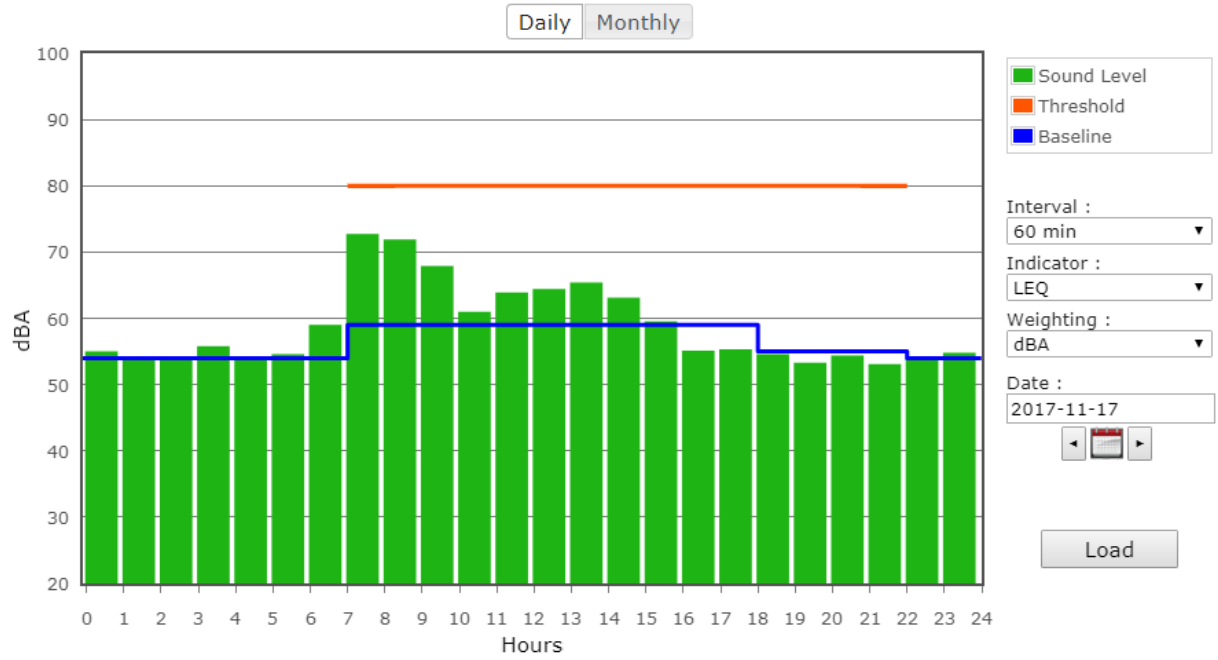


Figure 11: South Monitor NM-2 on Friday

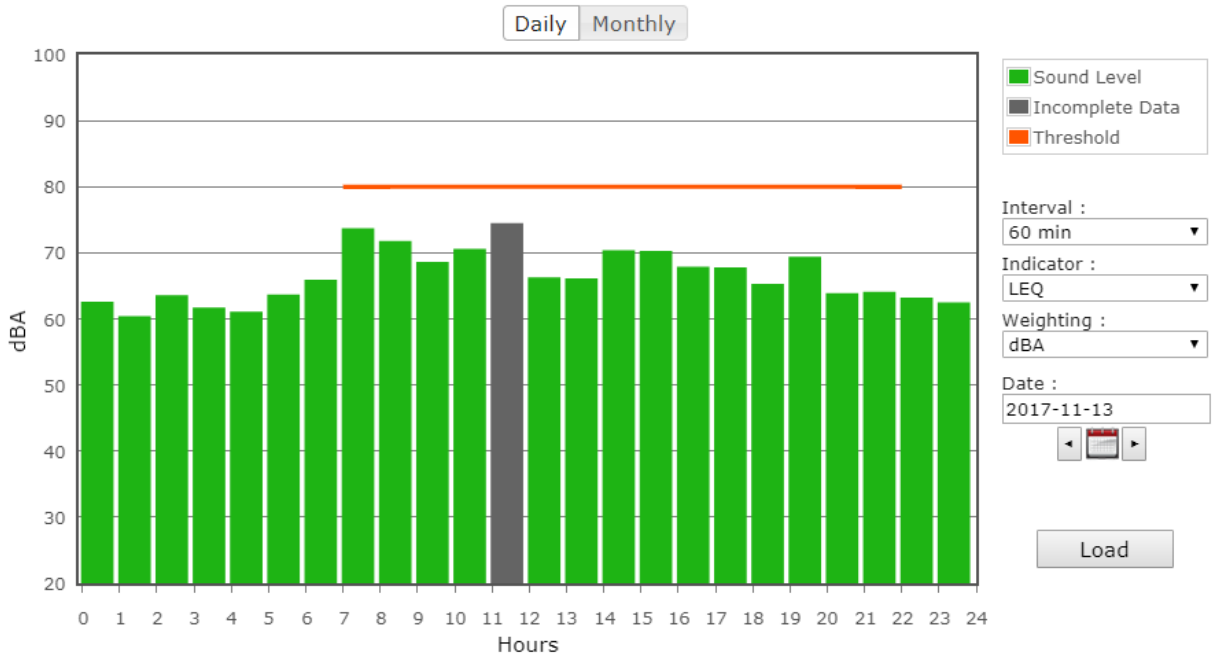


Figure 12: Northeast Monitor NM-3 on Monday

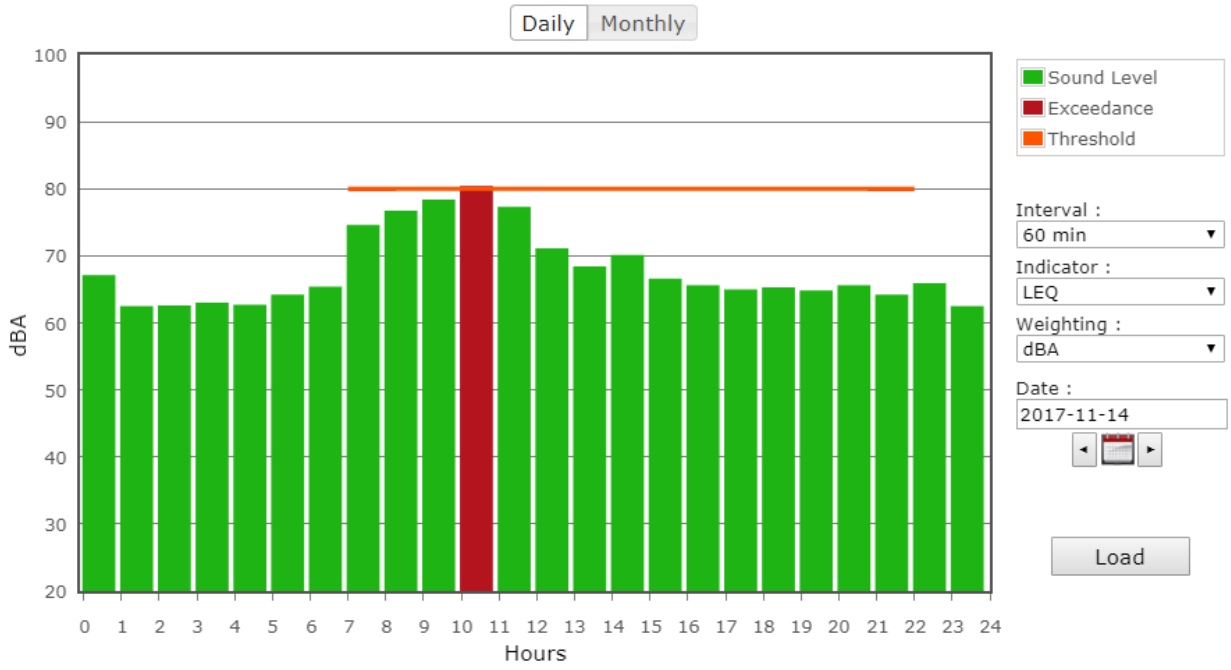


Figure 13: Northeast Monitor NM-3 on Tuesday

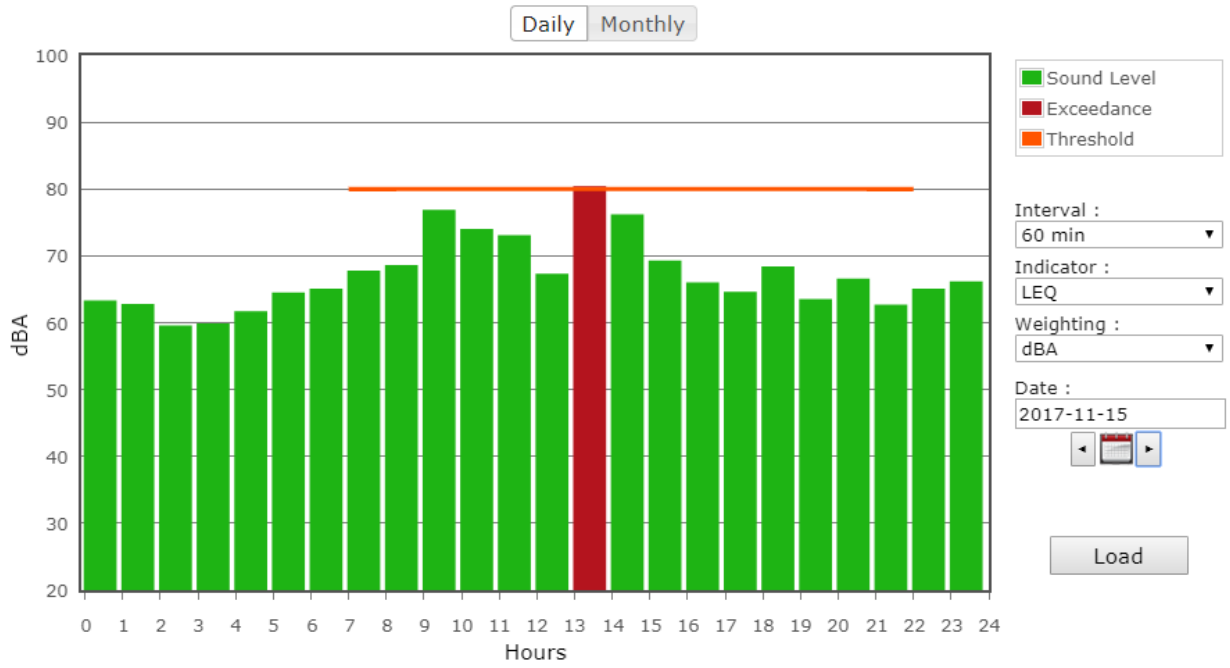


Figure 14: Northeast Monitor NM-3 on Wednesday

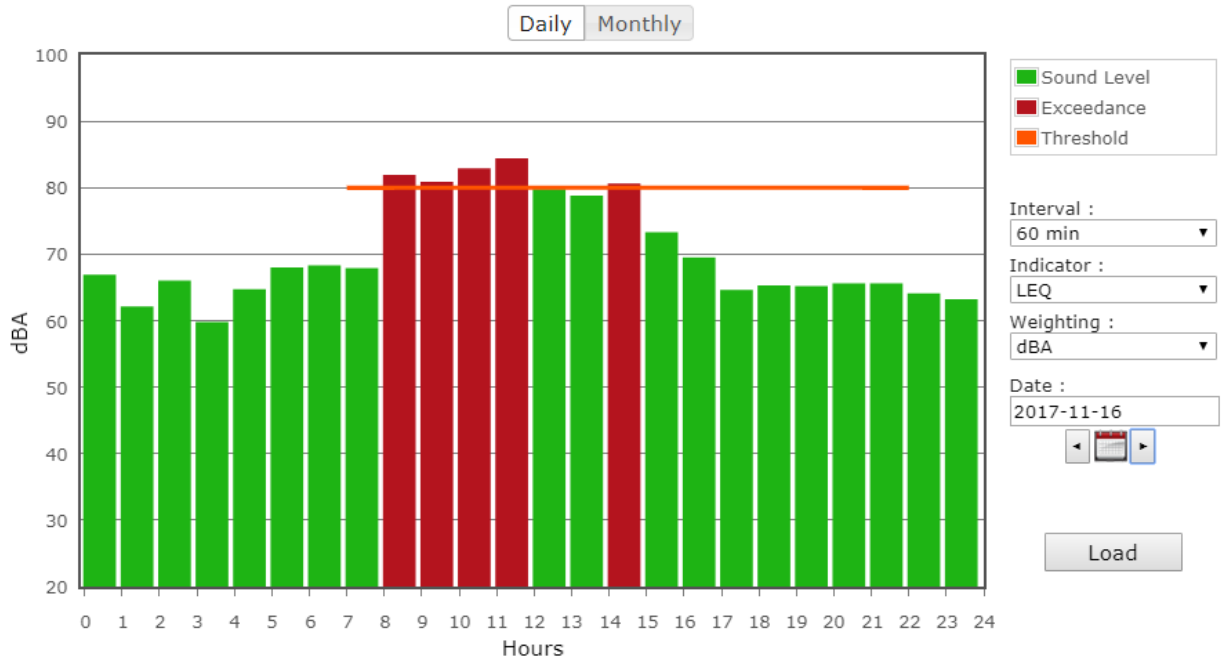


Figure 15: Northeast Monitor NM-3 on Thursday

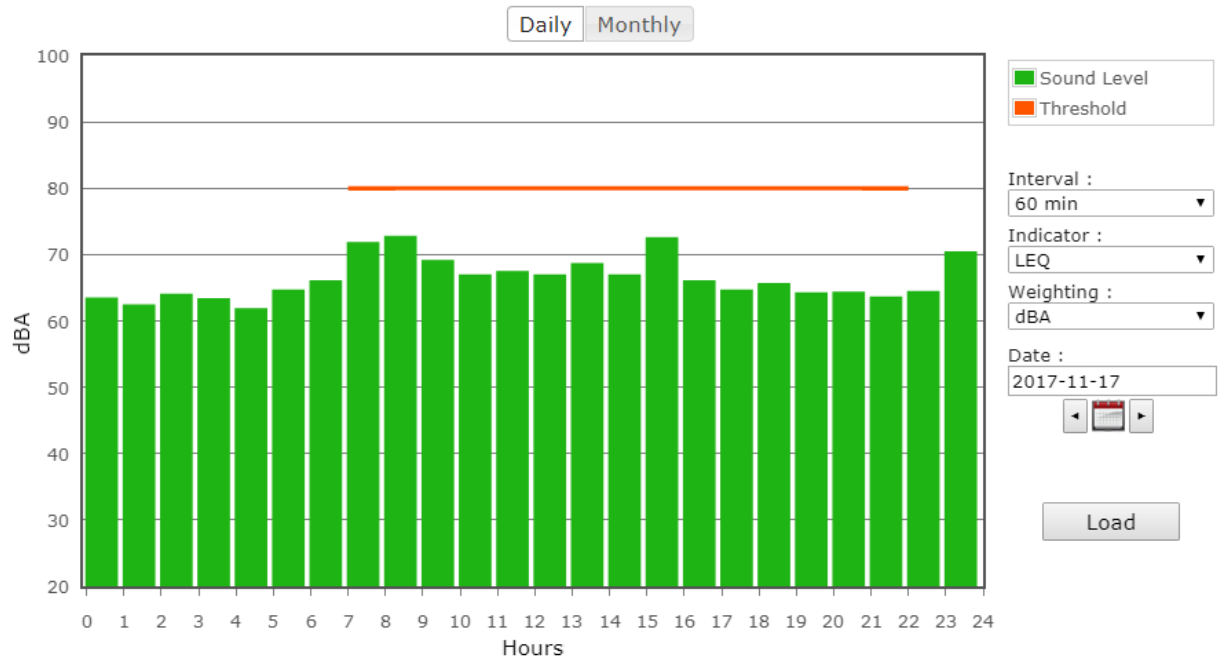


Figure 16: Northeast Monitor NM-3 on Friday

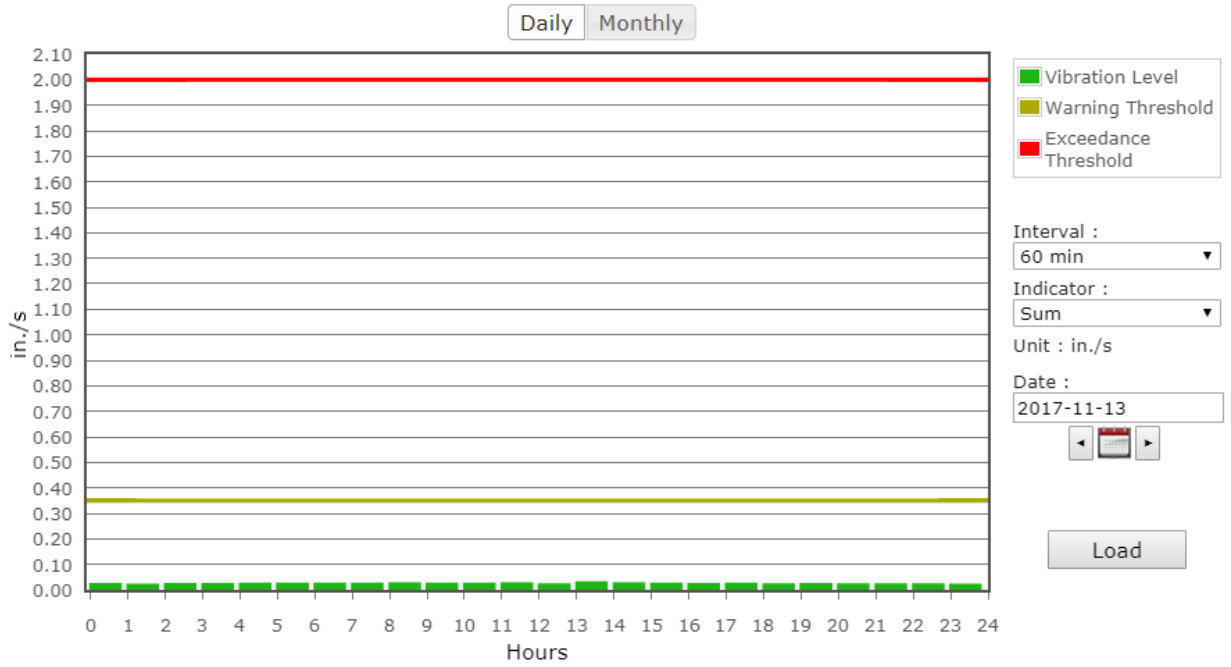


Figure 17: North Vibration Monitor VM-1 on Monday

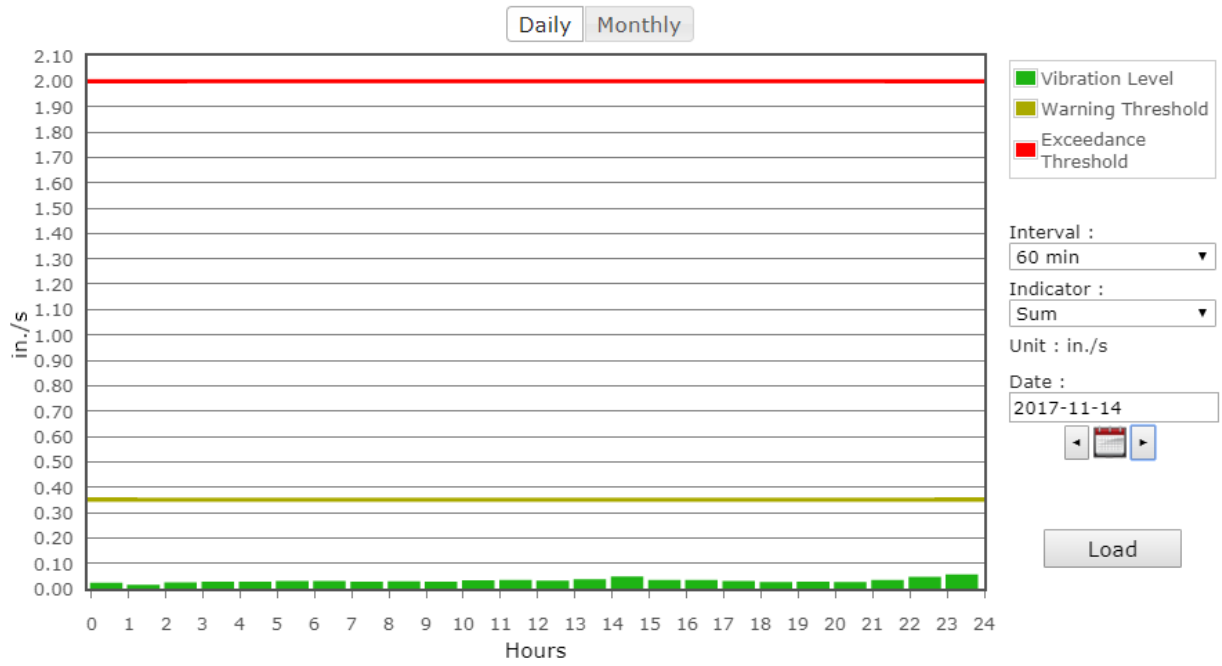


Figure 18: North Vibration Monitor VM-1 on Tuesday

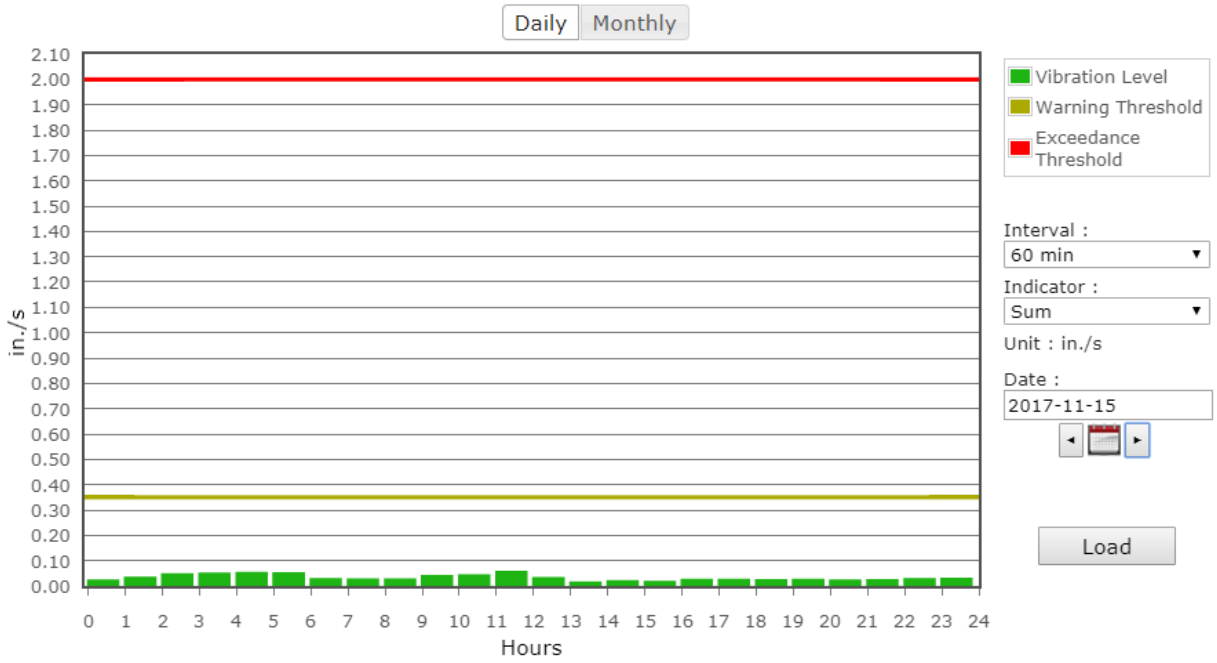


Figure 19: North Vibration Monitor VM-1 on Wednesday

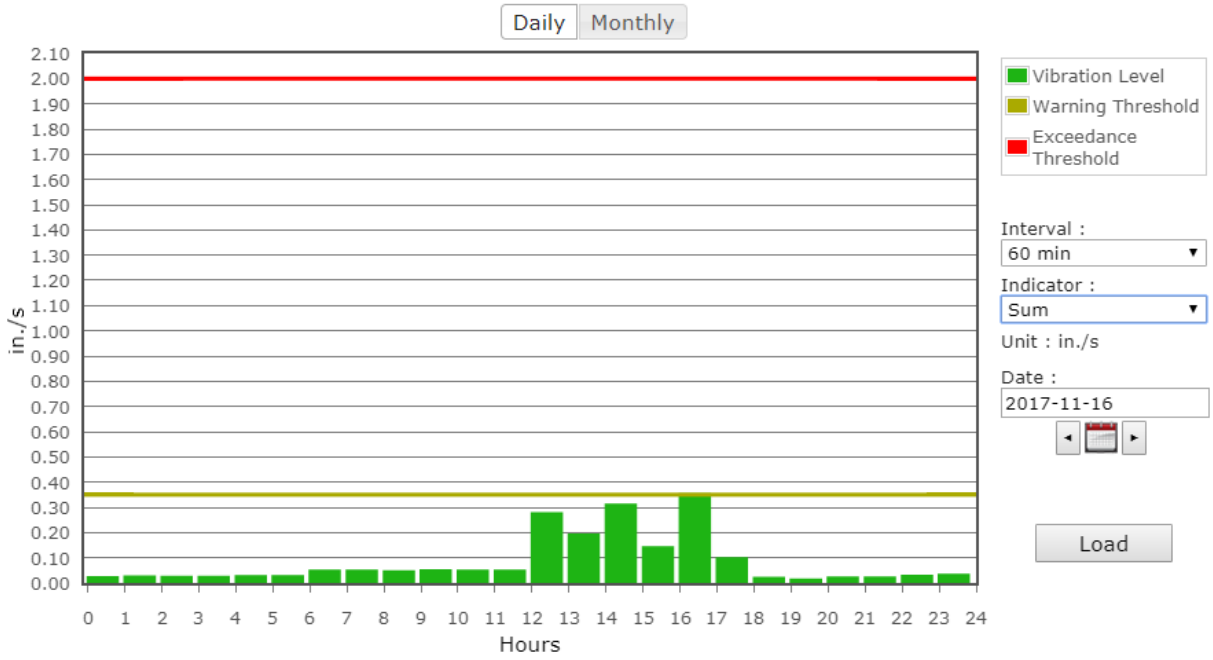


Figure 20: North Vibration Monitor VM-1 on Thursday

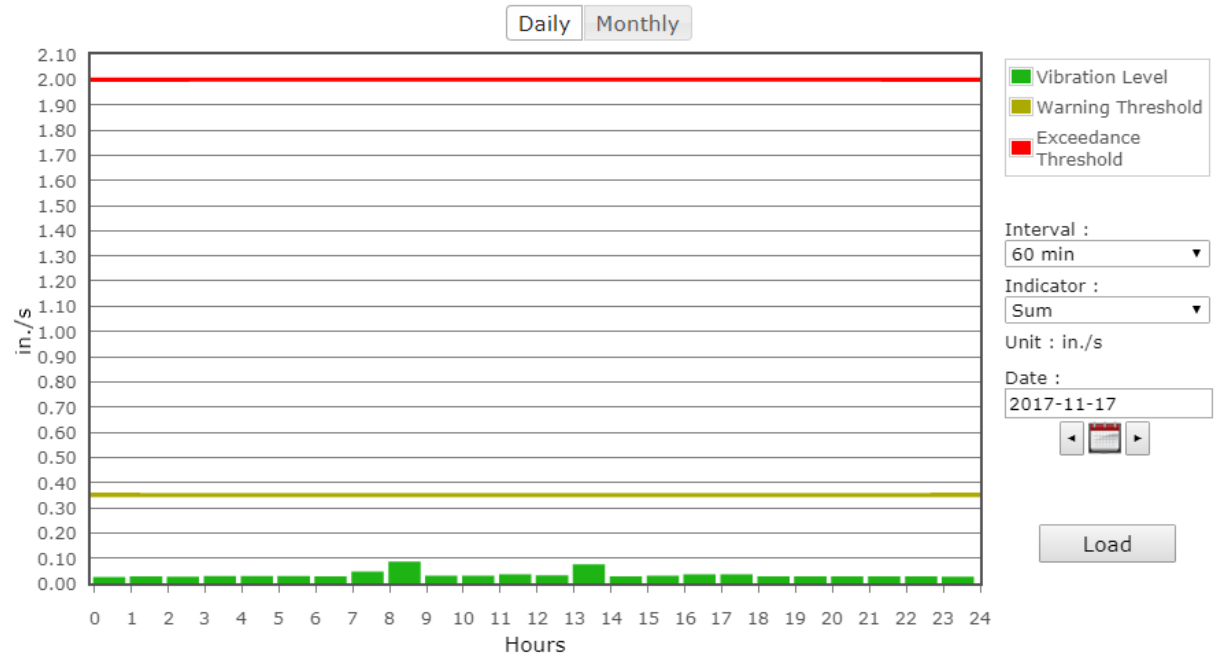


Figure 21: North Vibration Monitor VM-1 on Friday

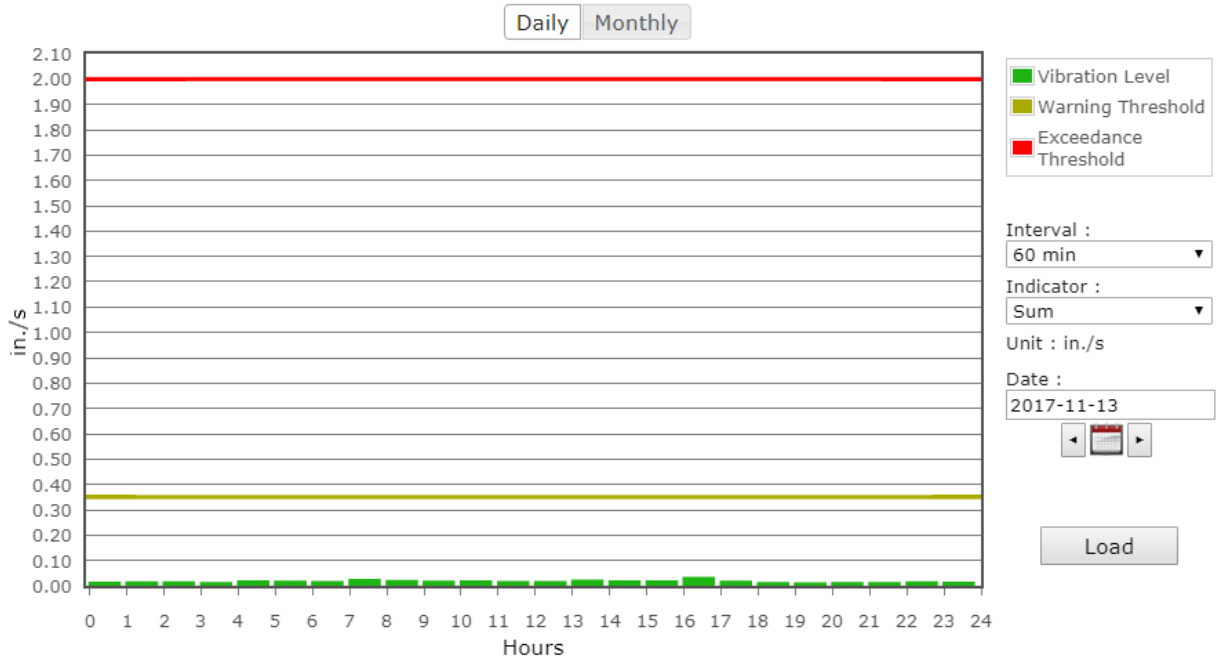


Figure 22: South Vibration Monitor VM-2 on Monday

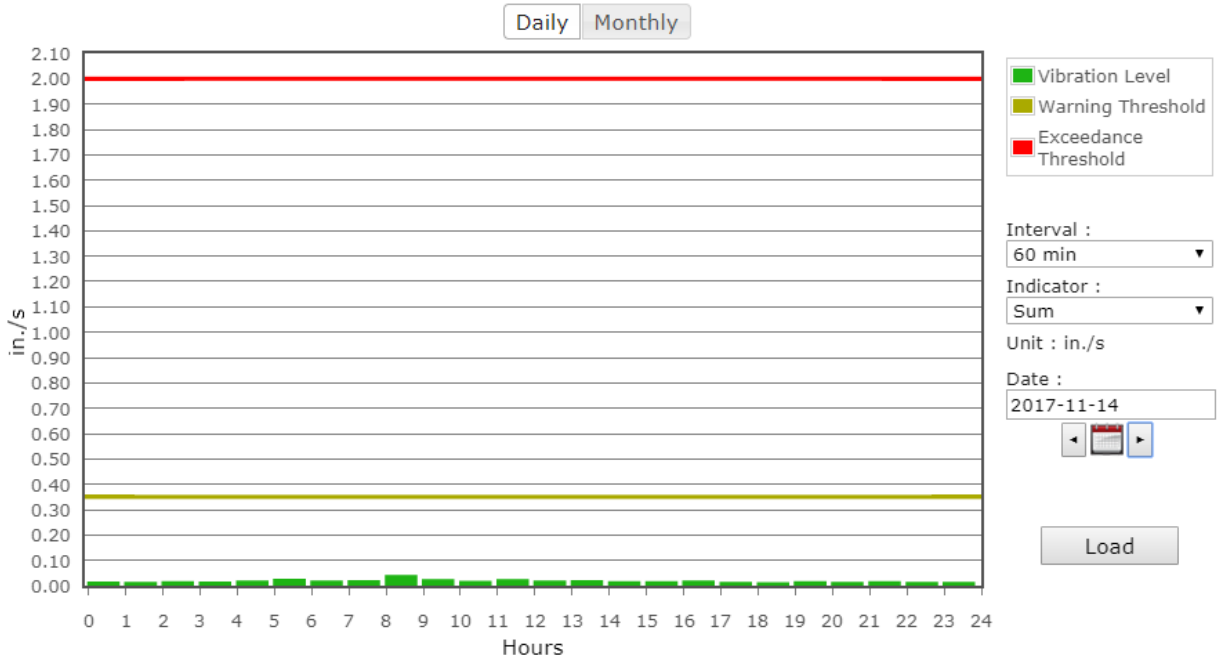


Figure 23: South Vibration Monitor VM-2 on Tuesday

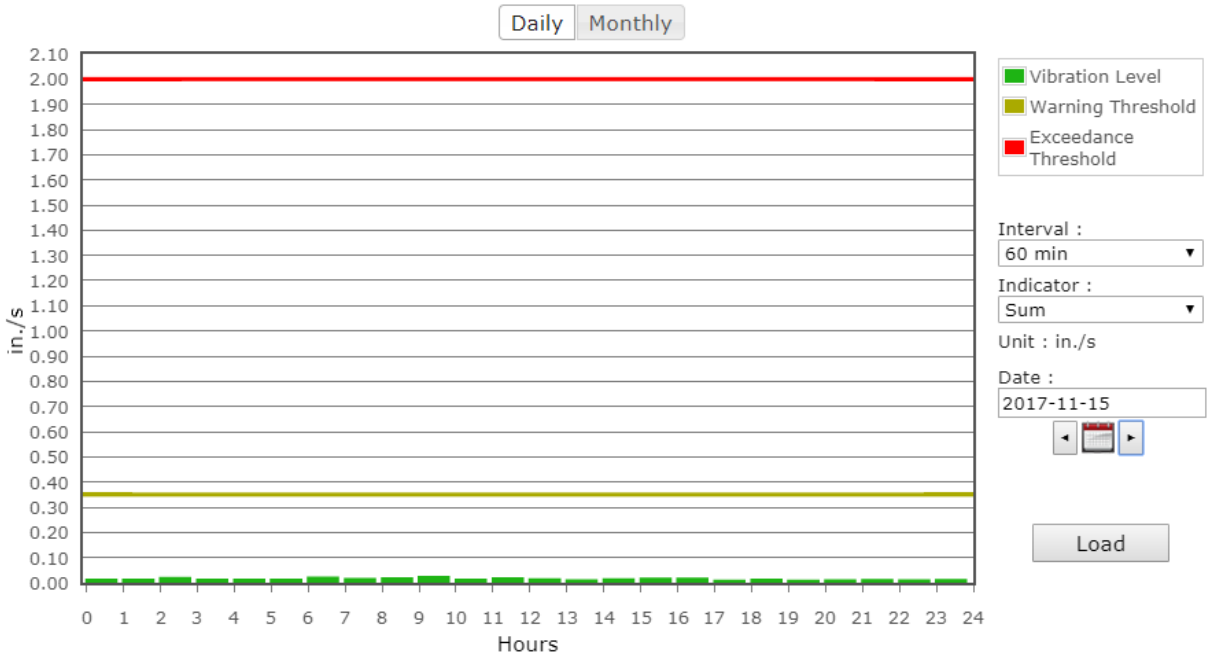


Figure 24: South Vibration Monitor VM-2 on Wednesday

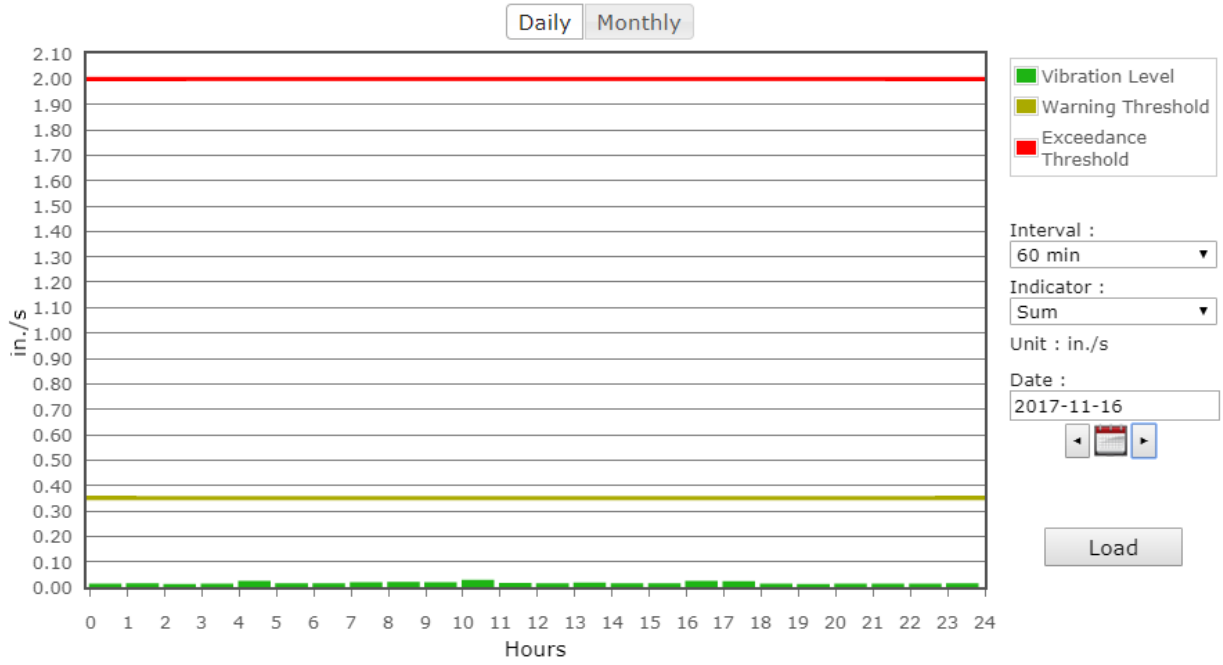


Figure 25: South Vibration Monitor VM-2 on Thursday

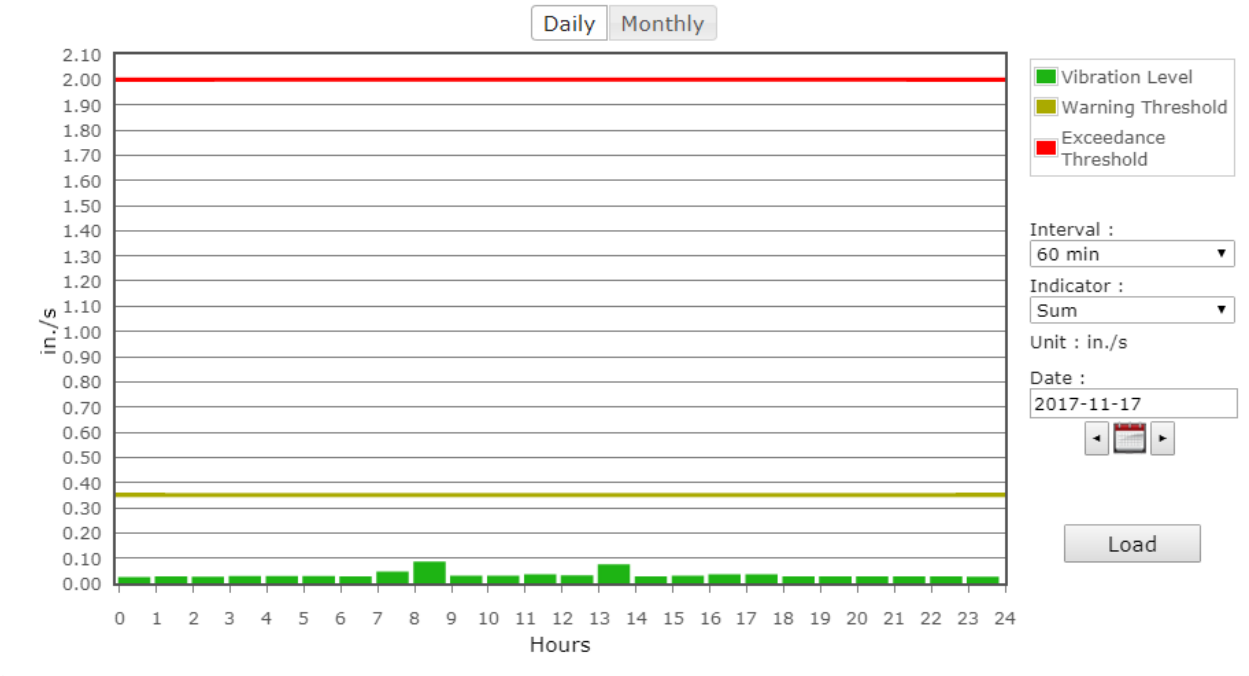


Figure 26: South Vibration Monitor VM-2 on Friday

20171120 Wilson Ihrig Weekly Noise and Vibration Report 13 Nov - 17 Nov 2017.docx

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)