WEEKLY PROGRESS REPORT – TRC SOLUTIONS

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

Project number: 283126

Period: September 10 to 14, 2018

Date of Report: September 19, 2018

Rev: 0

Prepared For: Gowanus Environmental Remediation Trust

On-Site Activities Conducted During Week:

Sevenson Environmental Services (SES)

Water Treatment and Monitoring

- No discharge of treated water during period.
- No exceedances of continuous monitoring.

Turbidity Monitoring

- Exceedance of water quality monitoring quantitative trigger level criterion occurred on 09/12/18 during placement of 5% granular activated carbon/sand treatment layer. Further details provided in attached report.

Capping Activities

- Continue hydraulic capping of remainder of Turning Basin 4.
- Continue placement of upper treatment layer (i.e., granular activated carbon/sand).
- Collect cores and retrieve catch pans to measure thickness of treatment layers placed.
- Perform hydrographic surveys of treatment layers.

Citizens Site Activities

- Continue decontaminating and demobilizing equipment.

Quality Assurance and Control – Geosyntec

- Exceedance of the rolling average threshold criteria on the afternoon of September 12th. Further details provided in attached report.
- Measurements for 9/10/18:
  - Daily average for ambient buoy – 5.7 NTU
  - Daily average for sentinel buoy – 4.0 NTU
  - Greatest difference between ambient and sentinel buoy during 15-minute interval with sentinel buoy exceeding ambient buoy –3.3 NTU at 14:00. This excludes readings between 07:00 and 10:00 that were abnormal at the ambient turbidity meter.
- Measurements for 9/11/18:
  - Daily average for ambient buoy – 5.1 NTU
  - Daily average for sentinel buoy – 4.5 NTU
  - Greatest difference between ambient and sentinel buoy during 15-minute interval with sentinel buoy exceeding ambient buoy – 3.4 NTU at 17:00.
- Measurements for 9/12/18:
  - Daily average for ambient buoy – 5.7 NTU
  - Daily average for sentinel buoy – 14.0 NTU
  - Greatest difference between ambient and sentinel buoy during 15-minute interval with sentinel buoy exceeding ambient buoy – 36.7 NTU at 15:45.
- Measurements for 9/13/18:
  - Daily average for ambient buoy – 4.6 NTU
  - Daily average for sentinel buoy – 6.2 NTU
  - Greatest difference between ambient and sentinel buoy during 15-minute interval with sentinel buoy exceeding ambient buoy – 14.7 NTU at 15:45.

- Measurements for 9/14/18:
    - Daily average for ambient buoy – 4.8 NTU
    - Daily average for sentinel buoy – 7.2 NTU
    - Greatest difference between ambient and sentinel buoy during 15-minute interval with sentinel buoy exceeding ambient buoy – 8.2 NTU at 12:45.

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 – 54 $\mu g/m^3$ recorded on 09/12/18
    - Station 2 – 53 $\mu g/m^3$ recorded on 09/12/18
    - Station 3 – 103 $\mu g/m^3$ recorded on 09/12/18
    - Station 4 – 9 $\mu g/m^3$ recorded on 09/13/18
    - Station 5 – 58 $\mu g/m^3$ recorded on 09/12/18
    - Station 6 – 57 $\mu g/m^3$ recorded on 09/12/18
    - Station 7 – <1 $\mu g/m^3$ recorded throughout the week
- Maximum weekly measurements of TVOC in ppb
    - Station 1 – 19 ppb recorded on 09/12/18
    - Station 2 – <1 ppb recorded throughout the week
    - Station 3 – 56 ppb recorded on 09/10/18
    - Station 4 – 94 ppb recorded on 09/14/18
    - Station 5 – 149 ppb recorded on 09/14/18
    - Station 6 – 127 ppb recorded on 09/11/18
    - Station 7 – 140 ppb recorded on 09/12/18
- All real-time readings of formaldehyde, hydrogen sulfide, or ammonia less than instrument reporting limit.
- 23-hour samples collected at ST-5 collected on 09/10 through 09/11 and ST-6 (collocated) collected on 09/12 through 09/13. Laboratory turnaround time is 10 business days.
- Tabulated laboratory analytical results for 23-hour sample collected at ST-6 on 08/21 through 08/22, ST-7 on 08/23 through 08/24, ST-1 on 08/27 through 08/28 and ST-2 on 08/29 through 08/30 presented in weekly CAMP report.

Noise and Vibration Monitoring – Wilson Ihrig

- Operated and maintained two (2) noise monitors: NM-1 (north side of canal on Whole Foods promenade) and NM-2 (south side of canal on southeast corner of 386 3rd Avenue).
- No exceedance of the hourly Leq noise limit of 80 dBA.
- Greatest hourly Leq noise measurements
    - Northern monitor (NM-1) – 73 dBA during 1100-1200 on 09/13/18
    - Southern monitor (NM-2) – 70.5 dBA during 1300-1400 on 09/13/18

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

- No activities conducted during week.

Two-Week Look Ahead:

Sevenson:

- Treatment and discharge of water accumulated during decontamination operations.
- Perform optical monitoring of bulkheads and surrounding structures with autonomous total survey stations. Along with weekly optical surveys conducted by subcontractor.
- Complete hydraulic placement of treatment layers in two (2) areas based on loss on ignition sample results and documented thicknesses.
- Commence and complete hydraulic placement of isolation and filter layer.
- Mobilize crane and articulated concrete block mats for installation following placement of isolation and filter layer.
- Cleaning of rip rap adjacent to Whole Foods, pending approval from EPA.

Geosyntec – Perform construction quality assurance responsibilities, including collection of water samples from dredge water treatment system.

TRC CAMP Monitoring – Perform community air monitoring.

Wilson Ihrig – Perform noise monitoring,

AHRS – Prepare inventory and final report for EPA review.

Key Milestones

- No milestones during 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 week)
5. Water Treatment System Monitoring Analytical Laboratory Data (no activities during week)
6. Cumulative Dredged Material Chart (no activities during week)

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

Photo No.	Date
001	09-10-2018

Description
Placing slurry piping against the southern bulkhead to allow the survey boat access to TB-4.

Photo No.	Date
002	09-10-2018

Description
Survey boat running lines in the turning basin.

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

Photo No.	Date
003	09-11-2018

Description
Evaluating core samples collected 9/11.

Photo No.	Date
004	09-11-2018

Description
GAC/sand placement in hydraulic demonstration area #2.

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

Photo No.	Date
005	09-12-2018

Description
Sand and 5% GAC placement in TB-4 in northern lane outside of demonstration areas.

Photo No.	Date
006	09-12-2018

Description
Super sack of GAC being placed in feed hopper.

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

Photo No.	Date
007	09-13-2018

Description
Layers of sand/5% GAC mixture in catch pan.

Photo No.	Date
008	09-13-2018

Description
Placing 5% GAC/sand on the south side of the turning basin.

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

Photo No.	Date
009	09-14-2018

Description
Placing 5% GAC/sand mixture in the turning basin on the south side.

Photo No.	Date
010	09-14-2018

Description
Processing catch pans for quality assurance, and collecting samples for loss on ignition testing.

GEOSYNTEC IN-CANAL WATER QUALITY MONITORING WEEKLY DATA SUMMARY

Prepared for

Gowanus Canal Remedial Design Group

GOWANUS CANAL SUPERFUND SITE DREDGING AND CAPPING PILOT STUDY

Water Quality Monitoring Weekly Data Summary

Week of September 10th, 2018

Report Contents

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

Prepared by

Geosyntec consultants
engineers | scientists | innovators

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Project Number HPH106A (52)

1. SCOPE OF MONITORING

The following report summarizes water quality monitoring data collected during the week of September 10th, 2018. 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 September 10th. Average and maximum turbidity are also presented. 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.

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 September 10th to September 14th, 2018. Background data prior to the start of dredging is provided in Appendix A. An exceedance to the numerical rolling average trigger criterion was observed on the afternoon of September 12. Further information regarding the exceedance is provided in Section 5.

2.1 Monday, September 10th, 2018

Time (Local)	Ambient Turbidity (NTU)	Sentinel Turbidity (NTU)	Sentinel >Ambient (Y/N)	Time (Local)	Ambient Turbidity (NTU)	Sentinel Turbidity (NTU)	Sentinel >Ambient (Y/N)
9/10/2018 7:00	--	3.2	N	9/10/2018 12:15	6.8	4.9	N
9/10/2018 7:15	--	2.4	N	9/10/2018 12:30	6.4	4.7	N
9/10/2018 7:30	--	3.3	N	9/10/2018 12:45	5.7	6.4	Y
9/10/2018 7:45	--	3.2	N	9/10/2018 13:00	5.1	5.2	Y
9/10/2018 8:00	--	3.0	N	9/10/2018 13:15	6.6	4.5	N
9/10/2018 8:15	--	2.3	N	9/10/2018 13:30	7.3	5.1	N
9/10/2018 8:30	--	3.3	N	9/10/2018 13:45	5.3	4.1	N
9/10/2018 8:45	--	2.2	N	9/10/2018 14:00	5.7	9.0	Y
9/10/2018 9:00	--	2.6	N	9/10/2018 14:15	5.2	4.6	N
9/10/2018 9:15	--	2.1	N	9/10/2018 14:30	5.5	5.3	N
9/10/2018 9:30	--	2.1	N	9/10/2018 14:45	5.2	4.0	N
9/10/2018 9:45	--	2.9	N	9/10/2018 15:00	5.2	6.3	Y
9/10/2018 10:00	--	1.6	N	9/10/2018 15:15	7.2	4.5	N
9/10/2018 10:15	6.9	3.0	N	9/10/2018 15:30	6.0	5.3	N
9/10/2018 10:30	4.0	3.7	N	9/10/2018 15:45	4.8	4.9	Y
9/10/2018 10:45	3.5	2.7	N	9/10/2018 16:00	5.2	6.6	Y
9/10/2018 11:00	4.4	2.2	N	9/10/2018 16:15	6.7	6.5	N
9/10/2018 11:15	5.1	2.7	N	9/10/2018 16:30	5.9	4.1	N
9/10/2018 11:30	4.8	2.6	N	9/10/2018 16:45	6.8	5.0	N
9/10/2018 11:45	5.7	4.1	N	9/10/2018 17:00	3.8	5.4	Y
9/10/2018 12:00	8.1	3.8	N				
Average	5.7	4.0	N				
Maximum	8.1	9.0	Y				

Notes:

Data from ambient buoy unavailable from 07:00 to 10:00 due to malfunctioning sensor.

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, September 11th, 2018

Time (Local)	Ambient Turbidity (NTU)	Sentinel Turbidity (NTU)	Sentinel >Ambient (Y/N)	Time (Local)	Ambient Turbidity (NTU)	Sentinel Turbidity (NTU)	Sentinel >Ambient (Y/N)
9/11/2018 7:00	2.9	2.4	N	9/11/2018 12:15	7.0	3.5	N
9/11/2018 7:15	2.1	2.0	N	9/11/2018 12:30	8.5	5.6	N
9/11/2018 7:30	2.4	2.8	Y	9/11/2018 12:45	7.5	4.5	N
9/11/2018 7:45	2.0	2.4	Y	9/11/2018 13:00	8.0	4.3	N
9/11/2018 8:00	2.0	2.9	Y	9/11/2018 13:15	6.8	4.9	N
9/11/2018 8:15	2.5	2.6	Y	9/11/2018 13:30	6.2	5.7	N
9/11/2018 8:30	2.0	2.6	Y	9/11/2018 13:45	4.7	5.8	Y
9/11/2018 8:45	2.6	2.3	N	9/11/2018 14:00	5.4	5.8	Y
9/11/2018 9:00	3.2	2.5	N	9/11/2018 14:15	5.4	6.7	Y
9/11/2018 9:15	2.6	2.5	N	9/11/2018 14:30	5.8	6.0	Y
9/11/2018 9:30	2.7	5.1	Y	9/11/2018 14:45	4.6	5.7	Y
9/11/2018 9:45	2.5	2.1	N	9/11/2018 15:00	6.0	4.5	N
9/11/2018 10:00	4.6	2.5	N	9/11/2018 15:15	5.6	4.8	N
9/11/2018 10:15	4.1	2.1	N	9/11/2018 15:30	7.8	5.0	N
9/11/2018 10:30	3.3	2.0	N	9/11/2018 15:45	7.6	6.3	N
9/11/2018 10:45	4.5	2.5	N	9/11/2018 16:00	6.8	8.6	Y
9/11/2018 11:00	4.5	3.9	N	9/11/2018 16:15	8.6	9.0	Y
9/11/2018 11:15	4.1	2.9	N	9/11/2018 16:30	7.9	7.8	N
9/11/2018 11:30	5.3	4.1	N	9/11/2018 16:45	8.1	8.3	Y
9/11/2018 11:45	5.5	4.3	N	9/11/2018 17:00	9.0	12.4	Y
9/11/2018 12:00	7.6	3.9	N				

Average	5.1	4.5	N
Maximum	9.0	12.4	Y

Notes:

No exceedance 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, September 12th, 2018

Time (Local)	Ambient Turbidity (NTU)	Sentinel Turbidity (NTU)	Sentinel >Ambient (Y/N)	Time (Local)	Ambient Turbidity (NTU)	Sentinel Turbidity (NTU)	Sentinel >Ambient (Y/N)
9/12/2018 7:00	3.6	5.3	Y	9/12/2018 12:15	7.5	23.1	Y
9/12/2018 7:15	4.1	3.0	N	9/12/2018 12:30	9.8	23.0	Y
9/12/2018 7:30	3.4	4.2	Y	9/12/2018 12:45	11.6	18.1	Y
9/12/2018 7:45	3.5	3.6	Y	9/12/2018 13:00	6.4	14.0	Y
9/12/2018 8:00	3.0	3.7	Y	9/12/2018 13:15	6.8	16.0	Y
9/12/2018 8:15	3.0	5.5	Y	9/12/2018 13:30	5.8	21.7	Y
9/12/2018 8:30	2.8	3.4	Y	9/12/2018 13:45	5.7	25.4	Y
9/12/2018 8:45	3.8	2.8	N	9/12/2018 14:00	6.0	9.9	Y
9/12/2018 9:00	4.3	2.9	N	9/12/2018 14:15	7.4	21.7	Y
9/12/2018 9:15	3.5	4.1	Y	9/12/2018 14:30	6.9	19.9	Y
9/12/2018 9:30	5.5	3.3	N	9/12/2018 14:45	6.4	40.6	Y
9/12/2018 9:45	4.1	3.5	N	9/12/2018 15:00	6.4	35.7	Y
9/12/2018 10:00	4.4	4.7	Y	9/12/2018 15:15	6.5	30.4	Y
9/12/2018 10:15	4.9	4.5	N	9/12/2018 15:30	6.2	20.9	Y
9/12/2018 10:30	4.9	4.0	N	9/12/2018 15:45	7.2	43.9	Y
9/12/2018 10:45	4.0	4.5	Y	9/12/2018 16:00	6.7	24.0	Y
9/12/2018 11:00	3.1	3.9	Y	9/12/2018 16:15	7.2	21.8	Y
9/12/2018 11:15	3.8	4.3	Y	9/12/2018 16:30	8.0	21.1	Y
9/12/2018 11:30	4.4	9.9	Y	9/12/2018 16:45	8.2	12.6	Y
9/12/2018 11:45	7.0	12.7	Y	9/12/2018 17:00	7.5	14.3	Y
9/12/2018 12:00	7.9	21.6	Y				

Average	5.7	14.0	Y
Maximum	11.6	43.9	Y

Notes:

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, September 13th, 2018

Time (Local)	Ambient Turbidity (NTU)	Sentinel Turbidity (NTU)	Sentinel >Ambient (Y/N)	Time (Local)	Ambient Turbidity (NTU)	Sentinel Turbidity (NTU)	Sentinel >Ambient (Y/N)
9/13/2018 7:00	3.1	3.8	Y	9/13/2018 12:15	4.0	3.4	N
9/13/2018 7:15	2.2	3.0	Y	9/13/2018 12:30	5.6	3.2	N
9/13/2018 7:30	3.0	3.2	Y	9/13/2018 12:45	4.7	4.3	N
9/13/2018 7:45	2.9	2.6	N	9/13/2018 13:00	4.6	5.5	Y
9/13/2018 8:00	2.2	1.6	N	9/13/2018 13:15	8.2	5.2	N
9/13/2018 8:15	2.6	1.8	N	9/13/2018 13:30	7.1	6.8	N
9/13/2018 8:30	2.5	2.0	N	9/13/2018 13:45	6.1	6.0	N
9/13/2018 8:45	3.9	2.2	N	9/13/2018 14:00	6.4	6.7	Y
9/13/2018 9:00	3.4	1.8	N	9/13/2018 14:15	6.3	7.2	Y
9/13/2018 9:15	3.3	2.0	N	9/13/2018 14:30	7.2	8.2	Y
9/13/2018 9:30	3.7	1.4	N	9/13/2018 14:45	6.1	11.0	Y
9/13/2018 9:45	4.9	2.0	N	9/13/2018 15:00	5.7	11.0	Y
9/13/2018 10:00	4.3	7.4	Y	9/13/2018 15:15	5.6	16.6	Y
9/13/2018 10:15	4.8	5.1	Y	9/13/2018 15:30	4.6	15.2	Y
9/13/2018 10:30	4.5	3.7	N	9/13/2018 15:45	4.5	19.2	Y
9/13/2018 10:45	4.7	2.6	N	9/13/2018 16:00	5.6	13.8	Y
9/13/2018 11:00	5.6	3.4	N	9/13/2018 16:15	4.7	9.4	Y
9/13/2018 11:15	3.5	4.4	Y	9/13/2018 16:30	4.2	13.1	Y
9/13/2018 11:30	3.5	4.6	Y	9/13/2018 16:45	4.7	11.3	Y
9/13/2018 11:45	3.6	3.3	N	9/13/2018 17:00	5.8	12.5	Y
9/13/2018 12:00	4.6	3.8	N				

Average	4.6	6.2	Y
Maximum	8.2	19.2	Y

Notes:

No exceedance 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, September 14th, 2018

Time (Local)	Ambient Turbidity (NTU)	Sentinel Turbidity (NTU)	Sentinel >Ambient (Y/N)	Time (Local)	Ambient Turbidity (NTU)	Sentinel Turbidity (NTU)	Sentinel >Ambient (Y/N)
9/14/2018 7:00	3.9	4.4	Y	9/14/2018 12:15	3.2	9.8	Y
9/14/2018 7:15	5.1	4.6	N	9/14/2018 12:30	4.7	9.2	Y
9/14/2018 7:30	4.0	5.5	Y	9/14/2018 12:45	5.1	13.3	Y
9/14/2018 7:45	3.5	5.6	Y	9/14/2018 13:00	4.7	11.2	Y
9/14/2018 8:00	3.0	5.8	Y	9/14/2018 13:15	5.8	9.2	Y
9/14/2018 8:15	3.3	4.2	Y	9/14/2018 13:30	3.6	8.8	Y
9/14/2018 8:30	4.0	5.4	Y	9/14/2018 13:45	4.5	9.6	Y
9/14/2018 8:45	4.7	5.1	Y	9/14/2018 14:00	6.4	8.7	Y
9/14/2018 9:00	4.7	9.2	Y	9/14/2018 14:15	6.5	12.3	Y
9/14/2018 9:15	4.9	5.9	Y	9/14/2018 14:30	6.9	10.9	Y
9/14/2018 9:30	5.2	3.9	N	9/14/2018 14:45	4.9	10.3	Y
9/14/2018 9:45	5.4	4.3	N	9/14/2018 15:00	5.2	10.5	Y
9/14/2018 10:00	4.1	4.7	Y	9/14/2018 15:15	6.0	12.9	Y
9/14/2018 10:15	4.6	5.1	Y	9/14/2018 15:30	6.4	10.7	Y
9/14/2018 10:30	4.7	4.7	N	9/14/2018 15:45	5.1	12.8	Y
9/14/2018 10:45	5.0	3.5	N	9/14/2018 16:00	5.2	10.7	Y
9/14/2018 11:00	5.1	4.3	N	9/14/2018 16:15	3.7	5.5	Y
9/14/2018 11:15	5.4	4.6	N	9/14/2018 16:30	3.6	5.0	Y
9/14/2018 11:30	4.5	4.4	N	9/14/2018 16:45	4.6	3.9	N
9/14/2018 11:45	4.8	5.0	Y	9/14/2018 17:00	5.9	4.3	N
9/14/2018 12:00	3.7	5.6	Y				

Average	4.8	7.2	Y
Maximum	6.9	13.3	Y

Notes:

No exceedance 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 MEASURMENTS

A handheld measurement was collected adjacent to the sentinel turbidity buoy at 16:15 on September 12 in response to the exceedance of the numerical trigger criterion. The reading from the handheld meter of 27.4 NTU confirmed the readings of the sentinel turbidity buoy.

4. SUMMARY OF VISUAL OBSERVATIONS

During the time of the exceedance of the numerical trigger criterion on September 12 no visible suspended capping material was detected beyond the turning basin. Canal conditions outside of the turning basin appeared consistent with background conditions.

5. REPORT OF EXCEEDANCES

An exceedance of the quantitative trigger level criterion occurred on the afternoon of September 12 due to the rolling average of the sentinel turbidity buoy measurements over a one-hour period exceeding the rolling average of the ambient buoy turbidity measurements by 20 NTU. Analysis of the buoy readings indicated that no readings could be eliminated as outliers. The exceedance occurred between 14:45 and 15:45 when sand mixed with 5 percent granular activated carbon was being hydraulically placed in the pilot study area. During the time of the exceedance, no visible suspended capping material was detected beyond the turning basin. The tide was ebbing out of the turning basin and there was some light precipitation throughout the day. Immediately after the exceedance there was a brief period of heavy rainfall lasting less than thirty minutes. The Contractor was notified of the exceedance and checked the turbidity curtain to ensure that the curtain was fully closed. Capping for the day ceased at 16:00. The Contractor will continue to ensure that the turbidity curtain is fully closed during ongoing cap construction activities.

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 Superfund Site
TB-4 Dredging and Capping Pilot Study
Brooklyn, New York
Weekly Report

(TRC Project No.274286-0000-00000)

Community Air Monitoring Project
49th Weekly Monitoring Period
Summary Report:

September 10th, through September 14th, 2018

Report Contents

- Executive Summary
- Daily Data Summary Report – PM_{10}/TVOC
- Daily Meteorological Summary Report
- Periodic Monitoring Results
- Volatile Organic Compounds (USEPA Method TO-15)

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

Executive Summary – Week 49 Monitoring Period
September 10th through September 14th, 2018

The following report summarizes site air monitoring activities for the Week 49 monitoring period from September 10th through September 14th, 2018. 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 49 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. Figure 3 depicts the station locations along the Gowanus Canal.

Additional monitoring for hydrogen sulfide, ammonia, and formaldehyde took place at all stations throughout the Week 49 monitoring period twice daily. The results of these measurements are shown in Table 1.

During the Week 49 monitoring period of September 10th through September 14th, 2018 TRC conducted Volatile Organic Compounds (USEPA Method TO-15) sampling at Stations 5 and 6. The ST-5 sample was collected on September 10th through September 11th, 2018. Co-located samples (ST-6A and ST-6B) were collected at Station 6 on September 12th, through September 13th, 2018. Both samples were collected over a 23-

hour period and shipped to Con-Test Analytical Laboratory for analyses. The results of the summa canister sampling are pending lab analyses

Table 2 presents the analytical results for 23-hour samples collected at Stations 6 and 7 during Week 46. ST-6 was collected on August 21st, through August 22nd, 2018 and ST-7 was collected on August 23rd, through August 24th 2018. Sampling results were either not detected above the laboratory detection limit or consistent with concentrations detected during background monitoring conducted between August 28th and 31st, 2017.

Table 3 presents the analytical results for 23-hour samples collected at Station 1 and 2 during Week 47. ST-1 was collected on August 27th, through August 28th,2018 and ST-2 was collected on August 29th, through August 30th ,2018. Results for the Stations 1 and 2 samples included concentrations for a number of aromatic hydrocarbons that were slightly elevated above background levels. These included a number of compounds commonly associated with Manufactured Gas Plant (MGP) residuals (naphthalene, toluene, benzene, trimethyl benzenes, ethyl toluene and xylene isomers (o,m,p).

Site activities which were conducted at the Citizen Property during September 10th through September 14th, 2018 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
- Continue decontaminating and demobilizing equipment

Site activities which were conducted at the 4th St Turning Basin Area of the Canal during September 10th through September 14th, 2018 included the following:

- Continue hydraulic capping of remainder of 4th St Turning Basin
- Completed placement of upper treatment layer (i.e., granular activated carbon/sand), pending hydrographic survey and analytical sampling results
- Collect cores and retrieve catch pans to measure thickness of treatment layer placed
- Perform hydrographic survey of northern lane of Oleophilic clay/sand mix

Gowanus Canal Superfund Site
TB-4 Dredging and Capping Pilot Study
Brooklyn, New York
Daily Station Report – TVOC/PM_{10}
(TRC Project No.274286-0000-00000)
09/10/2018 06:30 AM - 09/10/2018 23:45 PM

Station 1 (Citizen Property near Construction Trailers)

TVOC			PM_{10}		
Max.	<1	ppb	Max.	5	ug/m^3
Avg.	<1	ppb	Avg.	2	ug/m^3
Exc.	0	total	Exc.	0	Total

Station 2 (Citizen Property near Pad Area)

TVOC			PM_{10}		
Max.	<1	ppb	Max.	8	ug/m^3
Avg.	<1	ppb	Avg.	4	ug/m^3
Exc.	0	total	Exc.	0	Total

Station 3 (Whole Foods Property NW Riverwalk Location)

TVOC			PM_{10}		
Max.	56	ppb	Max.	19	ug/m^3
Avg.	20	ppb	Avg.	9	ug/m^3
Exc.	0	total	Exc.	0	Total

Station 4 (Whole Foods Property Central Riverwalk Location)

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 5 (Whole Foods Property near 3rd Avenue Bridge)

TVOC			PM_{10}		
Max.	28	ppb	Max.	9	ug/m^3
Avg.	11	ppb	Avg.	4	ug/m^3
Exc.	0	total	Exc.	0	Total

Station 6 (Maritime Estates Property along Canal Fencing)

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 7 (386 3rd Avenue along Canal Fencing)

TVOC			PM_{10}		
Max.	29	ppb	Max.	<1	ug/m^3
Avg.	19	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 Superfund Site
TB-4 Dredging and Capping Pilot Study
Brooklyn, New York
Daily Station Report – TVOC/PM_{10}
(TRC Project No.274286-0000-00000)
09/11/2018 00:00 AM - 09/11/2018 23:45 PM

Station 1 (Citizen Property near Construction Trailers)

TVOC			PM_{10}		
Max.	11	ppb	Max.	51	ug/m^3
Avg.	2	ppb	Avg.	20	ug/m^3
Exc.	0	total	Exc.	0	Total

Station 2 (Citizen Property near Pad Area)

TVOC			PM_{10}		
Max.	<1	ppb	Max.	41	ug/m^3
Avg.	<1	ppb	Avg.	19	ug/m^3
Exc.	0	total	Exc.	0	Total

Station 3 (Whole Foods Property NW Riverwalk Location)

TVOC			PM_{10}		
Max.	41	ppb	Max.	94	ug/m^3
Avg.	34	ppb	Avg.	43	ug/m^3
Exc.	0	total	Exc.	0	Total

Station 4 (Whole Foods Property Central Riverwalk Location)

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 5 (Whole Foods Property near 3rd Avenue Bridge)

TVOC			PM_{10}		
Max.	144	ppb	Max.	56	ug/m^3
Avg.	34	ppb	Avg.	25	ug/m^3
Exc.	0	total	Exc.	0	Total

Station 6 (Maritime Estates Property along Canal Fencing)

TVOC			PM_{10}		
Max.	127	ppb	Max.	48	ug/m^3
Avg.	30	ppb	Avg.	16	ug/m^3
Exc.	0	total	Exc.	0	Total

Station 7 (386 3rd Avenue along Canal Fencing)

TVOC			PM_{10}		
Max.	138	ppb	Max.	<1	ug/m^3
Avg.	67	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 Superfund Site
TB-4 Dredging and Capping Pilot Study
Brooklyn, New York
Daily Station Report – TVOC/PM_{10}
(TRC Project No.274286-0000-00000)
09/12/2018 00:00 AM - 09/12/2018 23:45 PM

Station 1 (Citizen Property near Construction Trailers)

TVOC			PM_{10}		
Max.	19	ppb	Max.	54	ug/m^3
Avg.	6	ppb	Avg.	28	ug/m^3
Exc.	0	total	Exc.	0	Total

Station 2 (Citizen Property near Pad Area)

TVOC			PM_{10}		
Max.	<1	ppb	Max.	53	ug/m^3
Avg.	<1	ppb	Avg.	26	ug/m^3
Exc.	0	total	Exc.	0	Total

Station 3 (Whole Foods Property NW Riverwalk Location)

TVOC			PM_{10}		
Max.	48	ppb	Max.	103	ug/m^3
Avg.	23	ppb	Avg.	34	ug/m^3
Exc.	0	total	Exc.	0	Total

Station 4 (Whole Foods Property Central Riverwalk Location)

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 5 (Whole Foods Property near 3rd Avenue Bridge)

TVOC			PM_{10}		
Max.	144	ppb	Max.	58	ug/m^3
Avg.	34	ppb	Avg.	16	ug/m^3
Exc.	0	total	Exc.	0	Total

Station 6 (Maritime Estates Property along Canal Fencing)

TVOC			PM_{10}		
Max.	63	ppb	Max.	57	ug/m^3
Avg.	42	ppb	Avg.	32	ug/m^3
Exc.	0	total	Exc.	0	Total

Station 7 (386 3rd Avenue along Canal Fencing)

TVOC			PM_{10}		
Max.	140	ppb	Max.	<1	ug/m^3
Avg.	57	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 Superfund Site
TB-4 Dredging and Capping Pilot Study
Brooklyn, New York
Daily Station Report – TVOC/PM_{10}
(TRC Project No.274286-0000-00000)
09/13/2018 00:00 AM - 09/13/2018 23:45 PM

Station 1 (Citizen Property near Construction Trailers)

TVOC			PM_{10}		
Max.	7	ppb	Max.	8	ug/m^3
Avg.	3	ppb	Avg.	5	ug/m^3
Exc.	0	total	Exc.	0	Total

Station 2 (Citizen Property near Pad Area)

TVOC			PM_{10}		
Max.	<1	ppb	Max.	25	ug/m^3
Avg.	<1	ppb	Avg.	9	ug/m^3
Exc.	0	total	Exc.	0	Total

Station 3 (Whole Foods Property NW Riverwalk Location)

TVOC			PM_{10}		
Max.	33	ppb	Max.	49	ug/m^3
Avg.	4	ppb	Avg.	18	ug/m^3
Exc.	0	total	Exc.	0	Total

Station 4 (Whole Foods Property Central Riverwalk Location)

TVOC			PM_{10}		
Max.	<1	ppb	Max.	9	ug/m^3
Avg.	<1	ppb	Avg.	4	ug/m^3
Exc.	0	total	Exc.	0	Total

Station 5 (Whole Foods Property near 3rd Avenue Bridge)

TVOC			PM_{10}		
Max.	112	ppb	Max.	14	ug/m^3
Avg.	29	ppb	Avg.	9	ug/m^3
Exc.	0	total	Exc.	0	Total

Station 6 (Maritime Estates Property along Canal Fencing)

TVOC			PM_{10}		
Max.	66	ppb	Max.	12	ug/m^3
Avg.	30	ppb	Avg.	6	ug/m^3
Exc.	0	total	Exc.	0	Total

Station 7 (386 3rd Avenue along Canal Fencing)

TVOC			PM_{10}		
Max.	121	ppb	Max.	<1	ug/m^3
Avg.	22	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 Superfund Site
TB-4 Dredging and Capping Pilot Study
Brooklyn, New York
Daily Station Report – TVOC/PM_{10}
(TRC Project No.274286-0000-00000)
09/14/2018 00:00 AM - 09/14/2018 16:00 PM

Station 1 (Citizen Property near Construction Trailers)

TVOC			PM_{10}		
Max.	6	ppb	Max.	9	ug/m^3
Avg.	2	ppb	Avg.	5	ug/m^3
Exc.	0	total	Exc.	0	Total

Station 2 (Citizen Property near Pad Area)

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

Station 3 (Whole Foods Property NW Riverwalk Location)

TVOC			PM_{10}		
Max.	55	ppb	Max.	25	ug/m^3
Avg.	19	ppb	Avg.	7	ug/m^3
Exc.	0	total	Exc.	0	Total

Station 4 (Whole Foods Property Central Riverwalk Location)

TVOC			PM_{10}		
Max.	94	ppb	Max.	5	ug/m^3
Avg.	4	ppb	Avg.	<1	ug/m^3
Exc.	0	total	Exc.	0	Total

Station 5 (Whole Foods Property near 3rd Avenue Bridge)

TVOC			PM_{10}		
Max.	149	ppb	Max.	10	ug/m^3
Avg.	36	ppb	Avg.	1	ug/m^3
Exc.	0	total	Exc.	0	Total

Station 6 (Maritime Estates Property along Canal Fencing)

TVOC			PM_{10}		
Max.	54	ppb	Max.	14	ug/m^3
Avg.	15	ppb	Avg.	9	ug/m^3
Exc.	0	total	Exc.	0	Total

Station 7 (386 3rd Avenue along Canal Fencing)

TVOC			PM_{10}		
Max.	112	ppb	Max.	<1	ug/m^3
Avg.	22	ppb	Avg.	<1	ug/m^3
Exc.	0	total	Exc.	0	Total

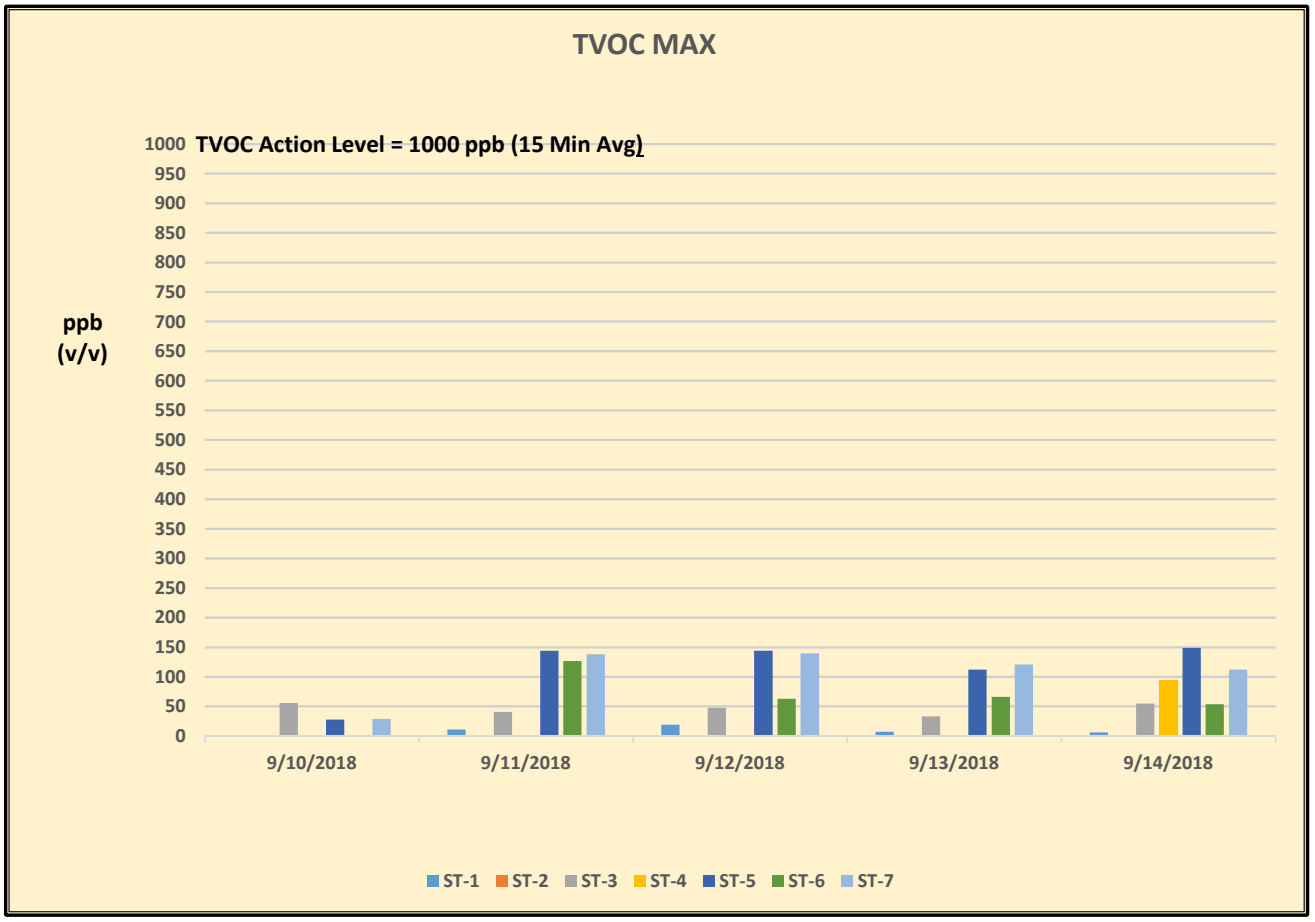
TVOC – Total Volatile Organic Compounds PM_{10} – Particulates as PM_{10}

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 49



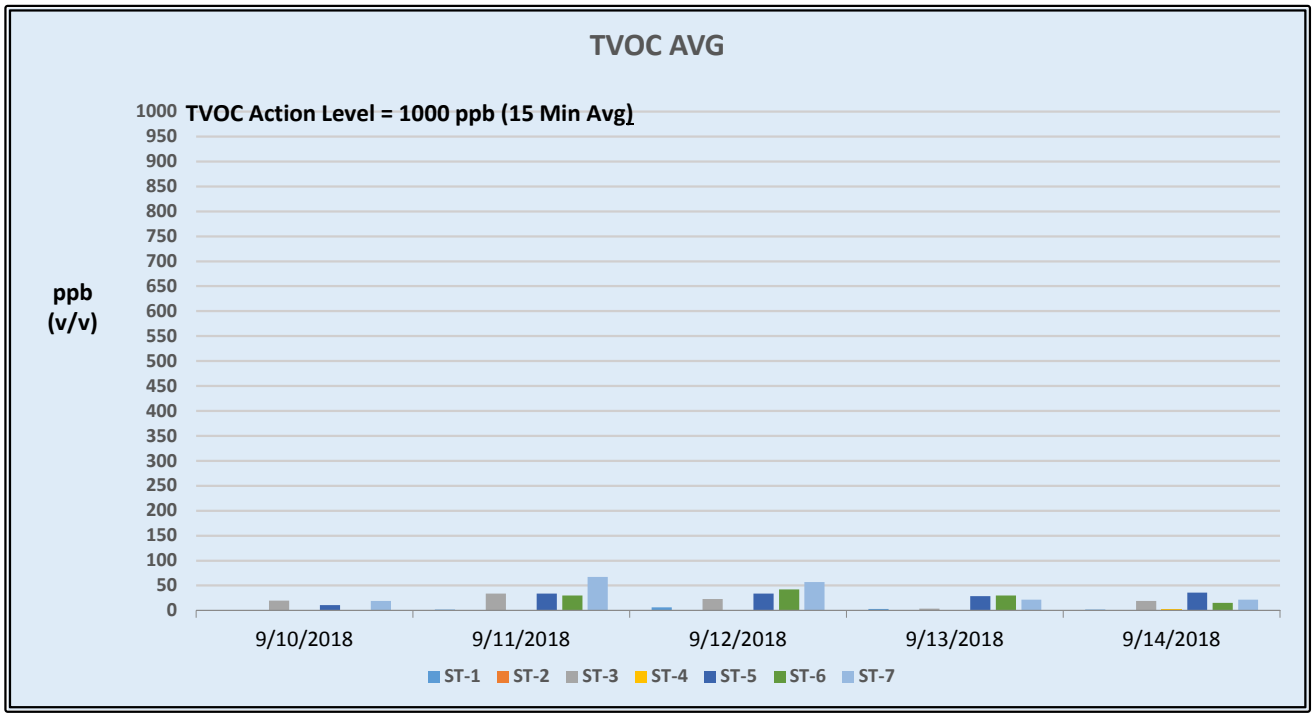
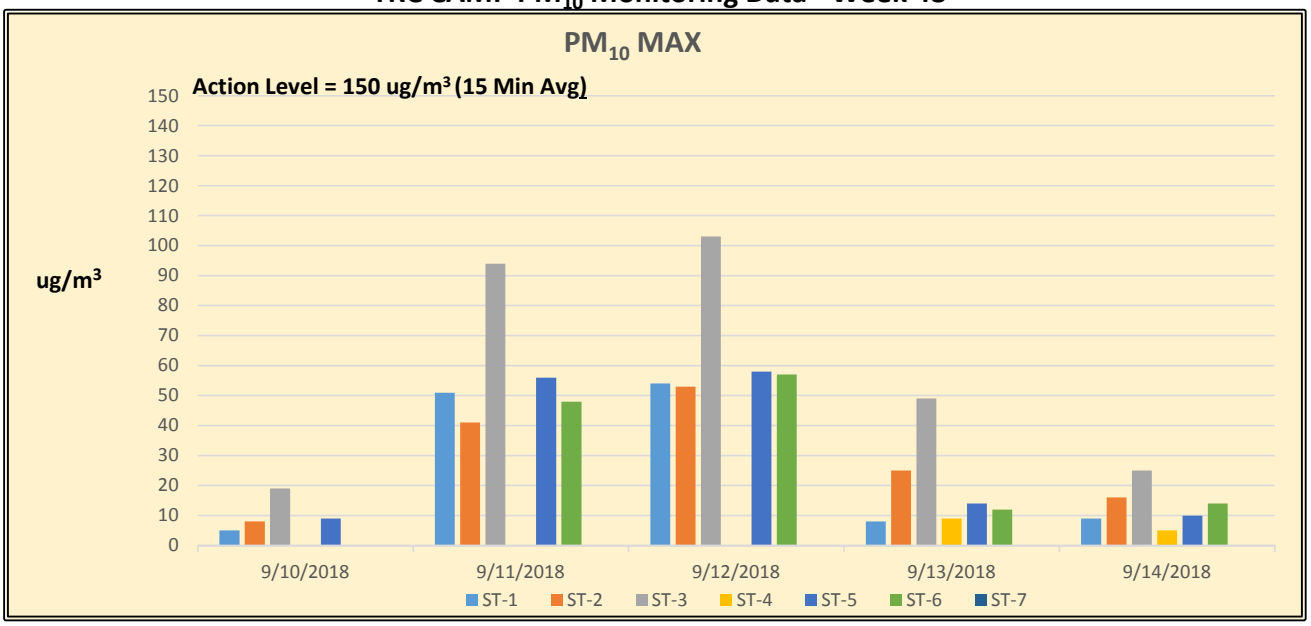
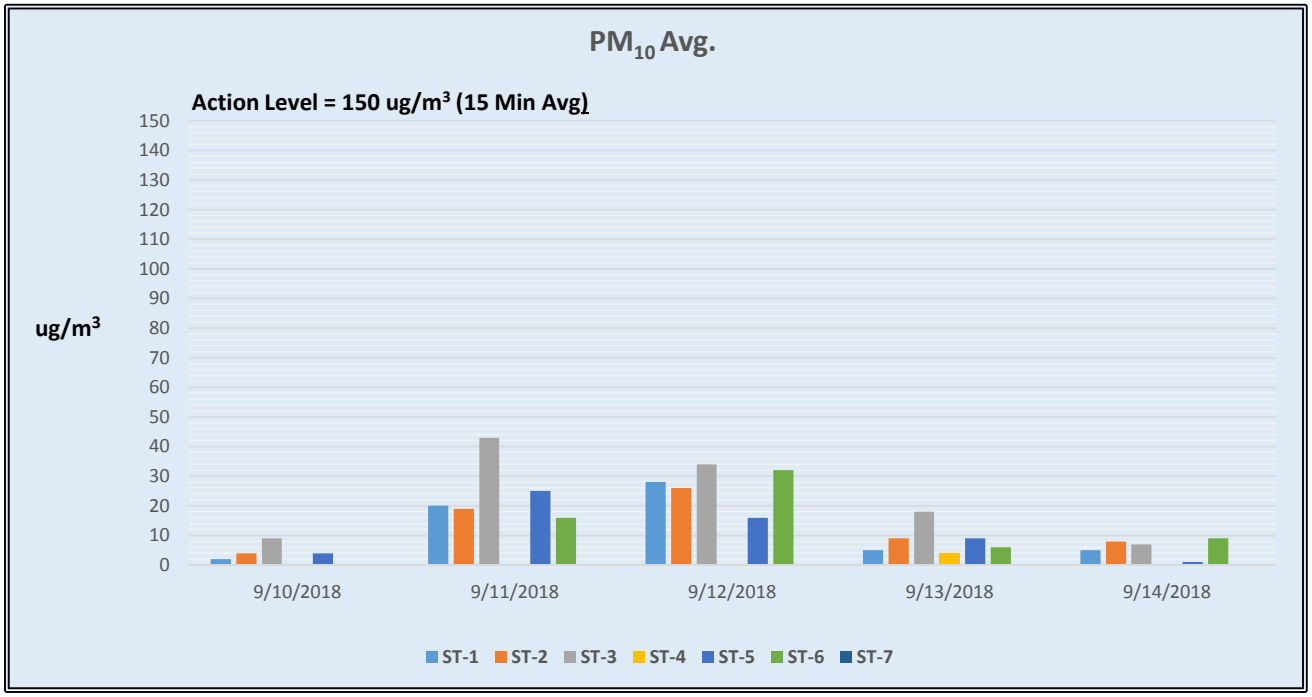
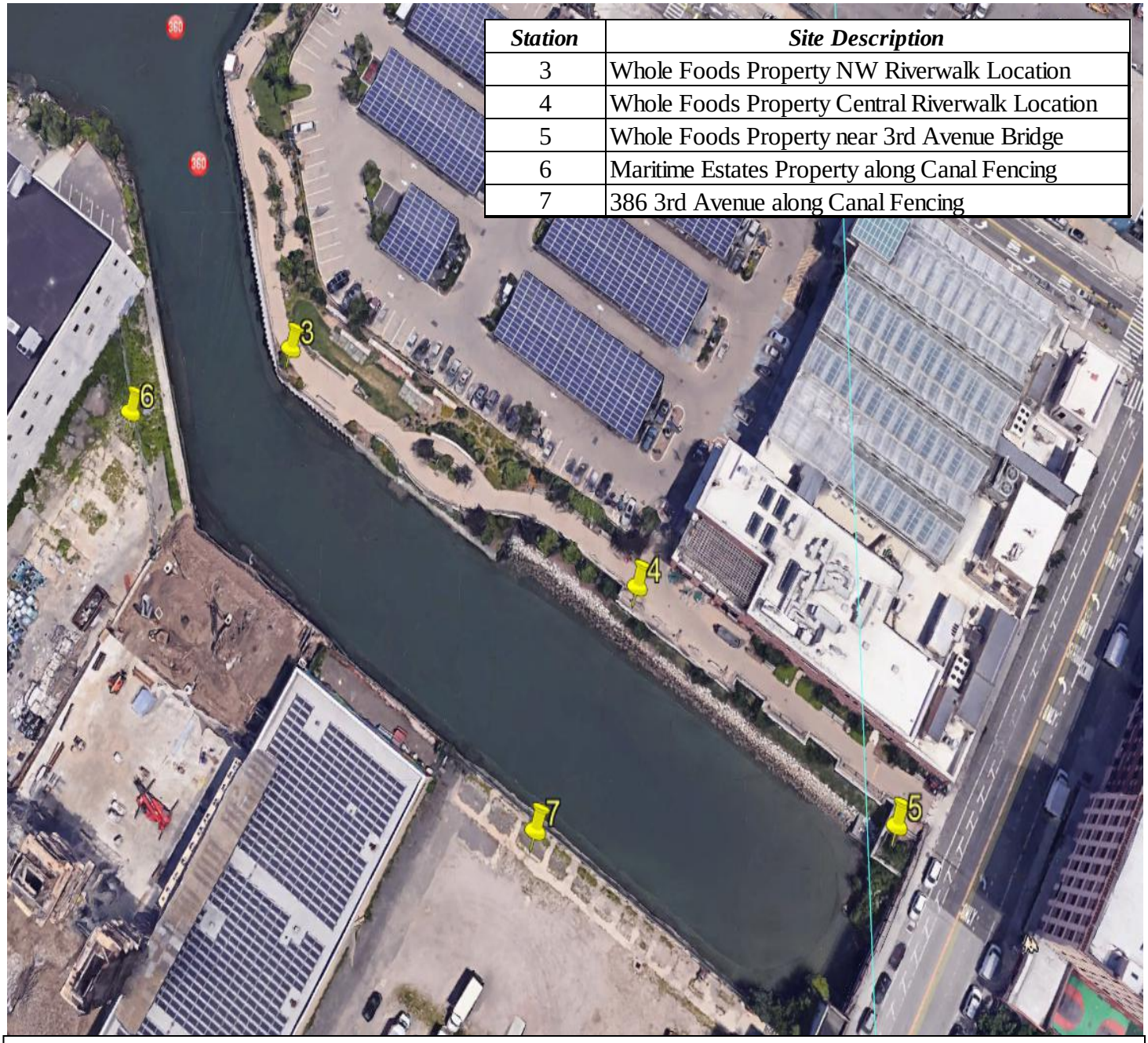


Figure 2
Gowanus Canal Superfund Site - TB4 Dredging and Capping Pilot Program
TRC CAMP PM_{10} Monitoring Data - Week 48







Station	*Site Description*
3	Whole Foods Property NW Riverwalk Location
4	Whole Foods Property Central Riverwalk Location
5	Whole Foods Property near 3rd Avenue Bridge
6	Maritime Estates Property along Canal Fencing
7	386 3rd Avenue along Canal Fencing

FIGURE 3
Gowanus Canal Superfund Site-TB4
Dredging and Capping Pilot Program

Table 1

Week 49
Summary of Additional Periodic (Daily) Monitoring Data

September 10th, 2018				
Station Id	Time	Formaldehyde (CHO) (ppb)*	Hydrogen Sulfide (H_2S) (ppb)*	Ammonia (NH_3) (ppm)**
ST-1	9:00	<50	<3	<1.0
	14:30	<50	<3	<1.0
ST-2	9:05	<50	<3	<1.0
	14:35	<50	<3	<1.0
ST-3	9:45	<50	<3	<1.0
	14:50	<50	<3	<1.0
ST-4	10:00	<50	<3	<1.0
	14:55	<50	<3	<1.0
ST-5	10:05	<50	<3	<1.0
	15:20	<50	<3	<1.0
ST-6	10:15	<50	<3	<1.0
	15:35	<50	<3	<1.0
ST-7	10:25	<50	<3	<1.0
	16:00	<50	<3	<1.0

September 11th, 2018				
Station Id	Time	Formaldehyde (CHO) (ppb)*	Hydrogen Sulfide (H_2S) (ppb)*	Ammonia (NH_3) (ppm)**
ST-1	8:00	<50	<3	<1.0
	13:30	<50	<3	<1.0
ST-2	8:05	<50	<3	<1.0
	13:35	<50	<3	<1.0
ST-3	8:25	<50	<3	<1.0
	13:45	<50	<3	<1.0
ST-4	8:30	<50	<3	<1.0
	13:50	<50	<3	<1.0
ST-5	8:35	<50	<3	<1.0
	13:55	<50	<3	<1.0
ST-6	8:45	<50	<3	<1.0
	14:20	<50	<3	<1.0
ST-7	8:55	<50	<3	<1.0
	15:00	<50	<3	<1.0

Table 1

Week 49
Summary of Additional Periodic (Daily) Monitoring Data

September 12th, 2018				
Station Id	Time	Formaldehyde (CHO) (ppb)*	Hydrogen Sulfide (H_2S) (ppb)*	Ammonia (NH_3) (ppm)**
ST-1	7:55	<50	<3	<1.0
	14:00	<50	<3	<1.0
ST-2	8:05	<50	<3	<1.0
	14:20	<50	<3	<1.0
ST-3	8:25	<50	<3	<1.0
	14:40	<50	<3	<1.0
ST-4	8:30	<50	<3	<1.0
	14:45	<50	<3	<1.0
ST-5	8:35	<50	<3	<1.0
	14:50	<50	<3	<1.0
ST-6	9:00	<50	<3	<1.0
	15:00	<50	<3	<1.0
ST-7	9:15	<50	<3	<1.0
	15:20	<50	<3	<1.0

September 13th, 2018				
Station Id	Time	Formaldehyde (CHO) (ppb)*	Hydrogen Sulfide (H_2S) (ppb)*	Ammonia (NH_3) (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	8:25	<50	<3	<1.0
	15:25	<50	<3	<1.0
ST-4	8:30	<50	<3	<1.0
	15:30	<50	<3	<1.0
ST-5	8:35	<50	<3	<1.0
	15:45	<50	<3	<1.0
ST-6	8:50	<50	<3	<1.0
	16:00	<50	<3	<1.0
ST-7	9:10	<50	<3	<1.0
	16:20	<50	<3	<1.0

Table 1

Week 49
Summary of Additional Periodic (Daily) Monitoring Data

September 14th, 2018				
Station Id	**Time**	**Formaldehyde (CHO) (ppb)***	**Hydrogen Sulfide (H_2S) (ppb)***	**Ammonia (NH_3) (ppm)****
ST-1	9:00	<50	<3	<1.0
	15:00	<50	<3	<1.0
ST-2	9:05	<50	<3	<1.0
	15:05	<50	<3	<1.0
ST-3	9:15	<50	<3	<1.0
	15:20	<50	<3	<1.0
ST-4	9:20	<50	<3	<1.0
	15:25	<50	<3	<1.0
ST-5	9:25	<50	<3	<1.0
	15:30	<50	<3	<1.0
ST-6	9:45	<50	<3	<1.0
	15:50	<50	<3	<1.0
ST-7	9:55	<50	<3	<1.0
	16:10	<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 46 VOCs Results: August 21st through 22nd and August 23rd through 24th

Sample ID	ST-6-VOC-082118		ST-7-VOC-082318	
Laboratory ID	18H1393-01		18H1393-02	
Date Sampled	8/21/18 13:00 - 8/22/18 12:00		8/23/18 09:00 - 8/24/18 08:00	
Location	Station 6		Station 7	
VOCs - TO-15	ppbV	ug/m3	ppbV	ug/m3
Acetone	**12**	**29**	**10**	**24**
Benzene	**0.1**	**0.32**	**0.24**	**0.77**
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	<0.035	<0.078	<0.035	<0.078
2-Butanone (MEK)	<1.4	<4.1	<1.4	<4.1
Carbon Disulfide	<0.35	<1.1	<0.35	<1.1
Carbon Tetrachloride	**0.077**	**0.49**	**0.077**	**0.49**
Chlorobenzene	<0.035	<0.16	<0.035	<0.16
Chloroethane	<0.035	<0.093	<0.035	<0.19
Chloroform	<0.035	<0.17	**0.041**	**0.2**
Chloromethane	**0.56**	**1.2**	**0.52**	**1.1**
Cyclohexane	<0.035	<0.12	**0.18**	**0.63**
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 J-	<0.035	<0.21 J-
1,3-Dichlorobenzene	<0.070	<0.21	<0.070	<0.21
1,4-Dichlorobenzene	<0.070	<0.21	<0.070	<0.21
Dichlorodifluoromethane (Freon 12)	**0.33**	**1.7**	**0.35**	**1.7**
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	<0.035	<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	**6**	**11**	**16**	**30**
Ethyl Acetate	**0.35**	**1.3**	**0.39**	**1.4**
Ethylbenzene	**0.036**	**0.16**	**0.11**	**0.46**
4-Ethyltoluene	<0.035	<0.17	<0.035	<0.17
Heptane	**0.072**	**0.29**	**0.15**	**0.63**
Hexachlorobutadiene	<0.035	<0.37	<0.035	<0.37
Hexane	<1.4	<4.9	<1.4	<4.9
2-Hexanone (MBK)	<0.035	<0.14	<0.035	<0.14
Isopropanol	<1.4	<3.4	**2.8**	**6.8**
Methyl tert-Butyl Ether (MTBE)	<0.035	<0.13	<0.035	<0.13
Methylene Chloride	<0.35	<1.2	<0.35	<1.2
4-Methyl-2-pentanone (MIBK)	<0.035	<0.14	<0.035	<0.14
Naphthalene	**0.043**	**0.22**	**0.11**	**0.57**
Propene	<1.4	<2.4	<1.4	<2.4
Styrene	<0.035	<0.15	<0.035	<0.15
1,1,2,2-Tetrachloroethane	<0.035	<0.24	<0.035	<0.24
Tetrachloroethylene	<0.035	<0.24	**0.2**	**1.4**
Tetrahydrofuran	<0.035	<0.10	<0.035	<0.10
Toluene	**0.55**	**2.1**	**0.72**	**2.7**
1,2,4-Trichlorobenzene	<0.035	<0.26	<0.035	<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)	**0.34**	**1.9**	**0.41**	**2.3**
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	<0.14	<1.1	**0.15**	**1.1**
1,2,4-Trimethylbenzene	<0.035	<0.17	**0.11**	**0.53**
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	**0.11**	**0.48**	**0.32**	**1.4**
o-Xylene	**0.043**	**0.19**	**0.11**	**0.49**

Notes:

Values in **bold** indicate detected concentrations

J-: The reported results for 1,2-dichlorobenzene 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

Table 3:
Gowanus Canal Superfund Site - TB4 Dredging and Capping Pilot Program
Week 47 VOCs Results: August 27th through 28th and August 29th through 30th

Sample ID	ST-1-VOC-082718		ST-2-VOC-082918	
Laboratory ID	18I0137-01		18I0137-02	
Date Sampled	8/27/18 08:30 - 8/28/18 07:30		8/29/18 14:00 - 8/30/18 13:00	
Location	Station 1		Station 2	
VOCs - TO-15	ppbV	ug/m3	ppbV	ug/m3
Acetone	**12**	**28**	**15**	**36**
Benzene	**0.25**	**0.79**	**0.75**	**2.4**
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	<0.035	<0.078	<0.035	<0.078
2-Butanone (MEK)	<1.4	<4.1	**1.4**	**4.2**
Carbon Disulfide	<0.35	<1.1	<0.35	<1.1
Carbon Tetrachloride	**0.077**	**0.49**	**0.071**	**0.45**
Chlorobenzene	<0.035	<0.16	<0.035	<0.16
Chloroethane	<0.035	<0.093	<0.035	<0.19
Chloroform	**0.048**	**0.24**	**0.25**	**1.2**
Chloromethane	**0.8**	**1.7**	**0.68**	**1.4**
Cyclohexane	**0.15**	**0.52**	**0.23**	**0.79**
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)	**0.33**	**1.6**	**0.31**	**1.5**
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	<0.035	<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	**12**	**22**	**10**	**19**
Ethyl Acetate	**0.37**	**1.3**	**0.45**	**1.6**
Ethylbenzene	**0.11**	**0.49**	**0.25**	**1.1**
4-Ethyltoluene	**0.042**	**0.21**	**0.051**	**0.25**
Heptane	**0.17**	**0.7**	**0.2**	**0.82**
Hexachlorobutadiene	<0.035	<0.37	<0.035	<0.37
Hexane	<1.4	<4.9	<1.4	<4.9
2-Hexanone (MBK)	<0.035	<0.14	**0.2**	**0.82**
Isopropanol	<1.4	<3.4	**1.5**	**3.8**
Methyl tert-Butyl Ether (MTBE)	<0.035	<0.13	<0.035	<0.13
Methylene Chloride	<0.35	<1.2	<0.35	<1.2
4-Methyl-2-pentanone (MIBK)	<0.035	<0.14	**0.11**	**0.46**
Naphthalene	**0.19**	**1**	**0.15**	**0.78**
Propene	<1.4	<2.4	<1.4	<2.4
Styrene	<0.035	<0.15	<0.035	<0.15
1,1,2,2-Tetrachloroethane	<0.035	<0.24	<0.035	<0.24
Tetrachloroethylene	**0.036**	**0.25**	**0.15**	**1**
Tetrahydrofuran	**0.052**	**0.15**	<0.035	<0.10
Toluene	**0.72**	**2.7**	**0.91**	**3.4**
1,2,4-Trichlorobenzene	<0.035	<0.26	<0.035	<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)	**0.29**	**1.6**	**0.27**	**1.5**
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	<0.14	<1.1	<0.14	<1.1
1,2,4-Trimethylbenzene	**0.15**	**0.73**	**0.19**	**0.93**
1,3,5-Trimethylbenzene	**0.046**	**0.23**	**0.053**	**0.26**
Vinyl Acetate	<0.70	<2.5	**1.1**	**3.8**
Vinyl Chloride	<0.035	<0.090	<0.035	<0.090
m&p-Xylene	**0.36**	**1.6**	**0.43**	**1.9**
o-Xylene	**0.14**	**0.59**	**0.17**	**0.74**

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 Superfund Site
TB-4 Dredging and Capping Pilot Study
Brooklyn, New York

Meteorological Summary
September 10th through September 14th, 2018

September 10th, 2018 *		
Wind Direction (°)	Wind Speed (mph)	Temperature (°F)
NE	**8.42**	**70.0**

September 11th, 2018 **		
Wind Direction (°)	Wind Speed (mph)	Temperature (°F)
ENE	**2.39**	**69.0**

September 12th, 2018 **		
Wind Direction (°)	Wind Speed (mph)	Temperature (°F)
NNE	**2.76**	**79.6**

September 13th, 2018 **		
Wind Direction (°)	Wind Speed (mph)	Temperature (°F)
NNE	**5.26**	**82.5**

September 14th, 2018 ***		
Wind Direction (°)	Wind Speed (mph)	Temperature (°F)
WSW	**2.42**	**78.5**

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

** Tuesday's, Wednesday's, and Thursday's meteorological data represents averages for the time period of 00:00 to 23:45.

*** Friday's meteorological data represents an average for the time period of 00:00 to 16:00.

WILSON IHRIG WEEKLY NOISE AND VIBRATION MONITORING REPORT

WILSON IHRIG
ACOUSTICS, NOISE & VIBRATION

CALIFORNIA
WASHINGTON
NEW YORK

WI #15-081

MEMORANDUM

September 17, 2018

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 Monitoring Report, 10 September – 14 September, 2018

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. Photos 1 and 2 show the recent field conditions at the monitors.

Noise Monitoring Results

Figures 2 through 11 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.

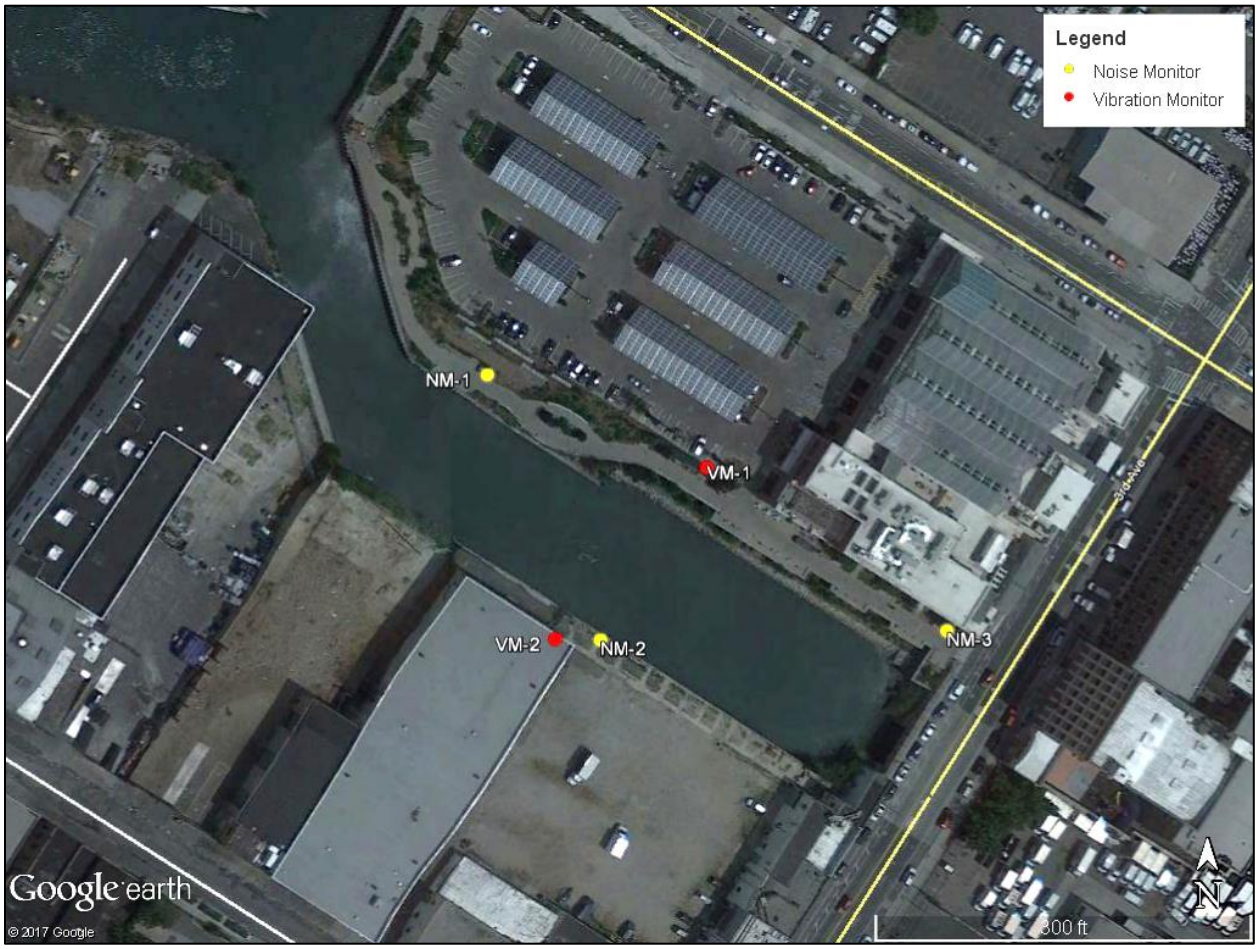


Figure 1: Long-term Noise and Vibration Monitoring Locations for Gowanus TB4 Dredging and Capping Pilot Study

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

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

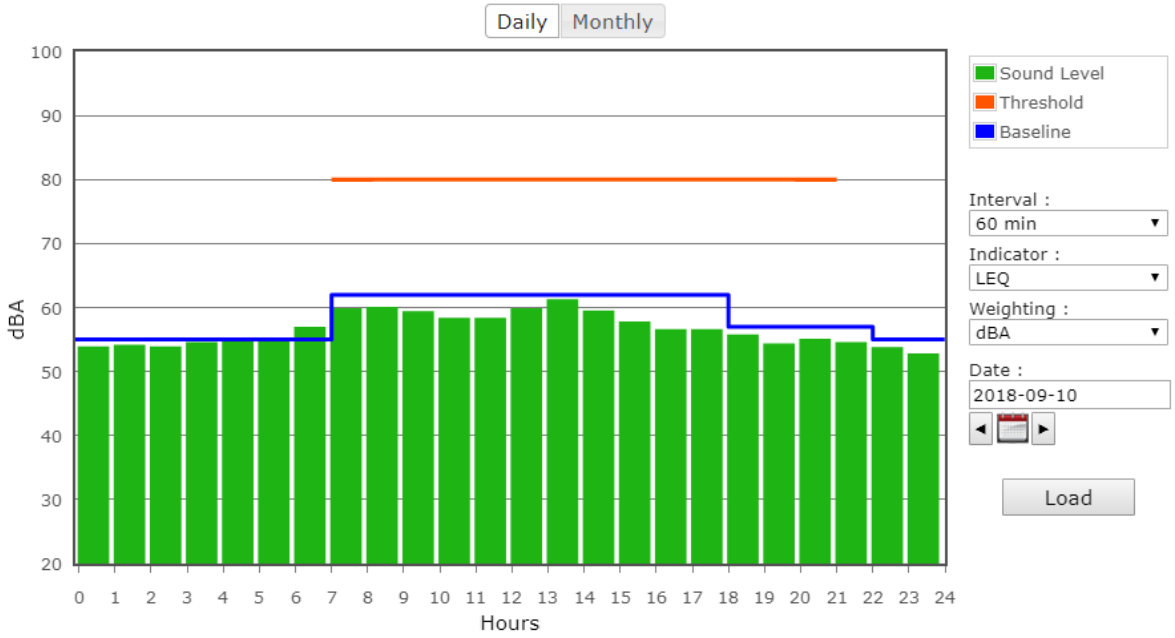


Figure 2: North Monitor NM-1 on Monday

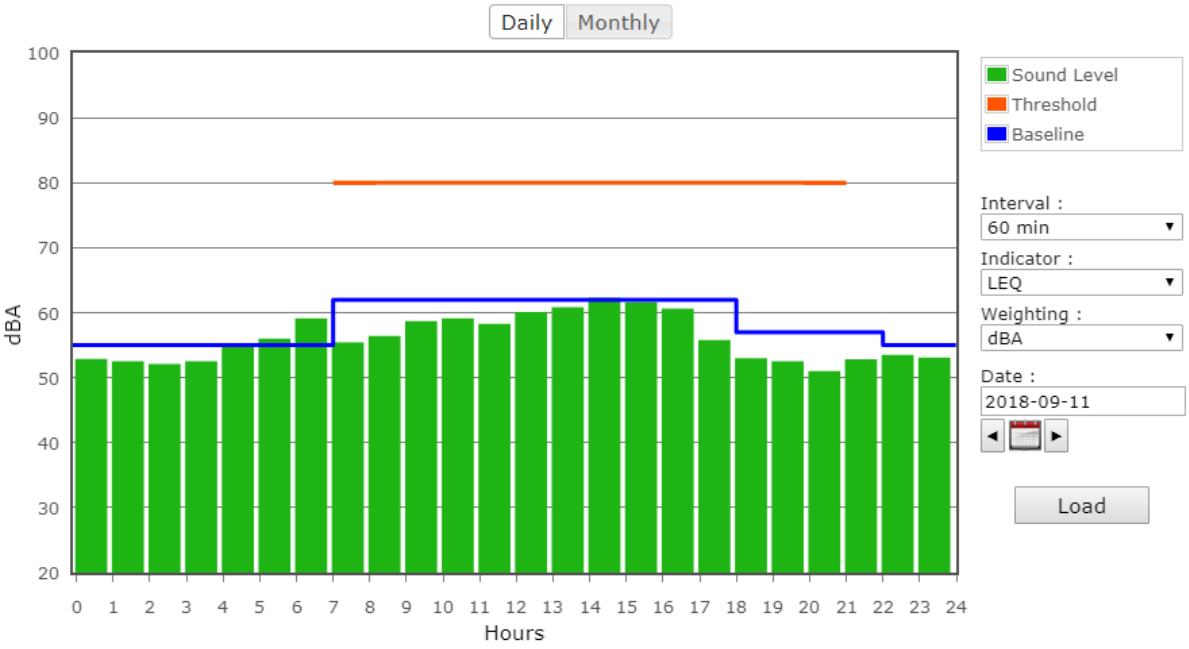


Figure 3: North Monitor NM-1 on Tuesday

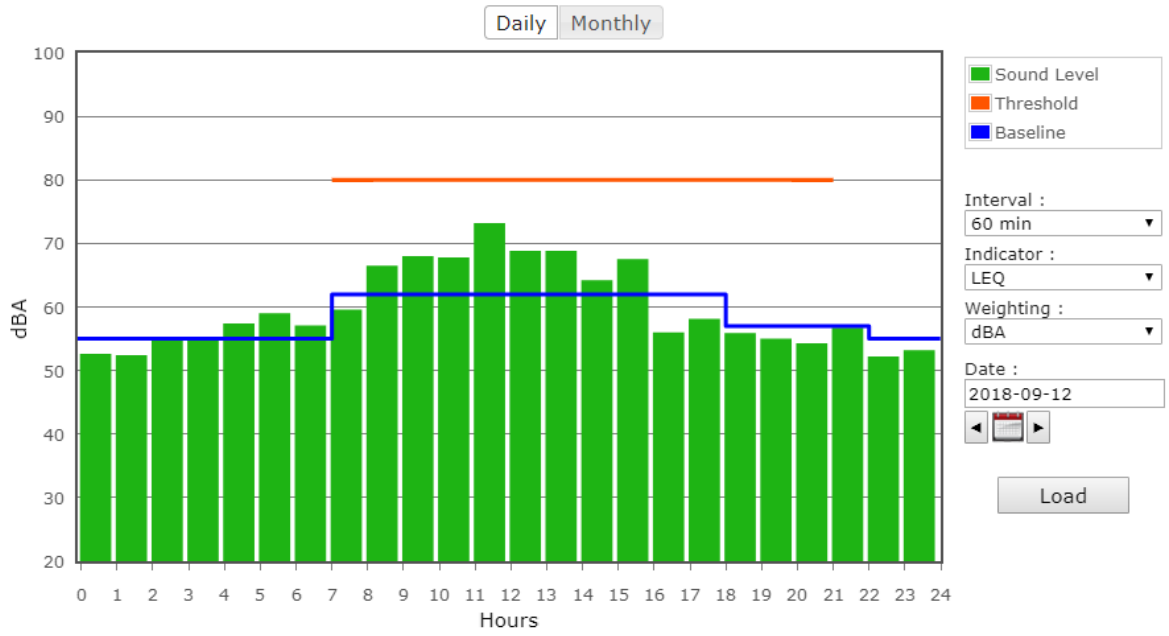


Figure 4: North Monitor NM-1 on Wednesday

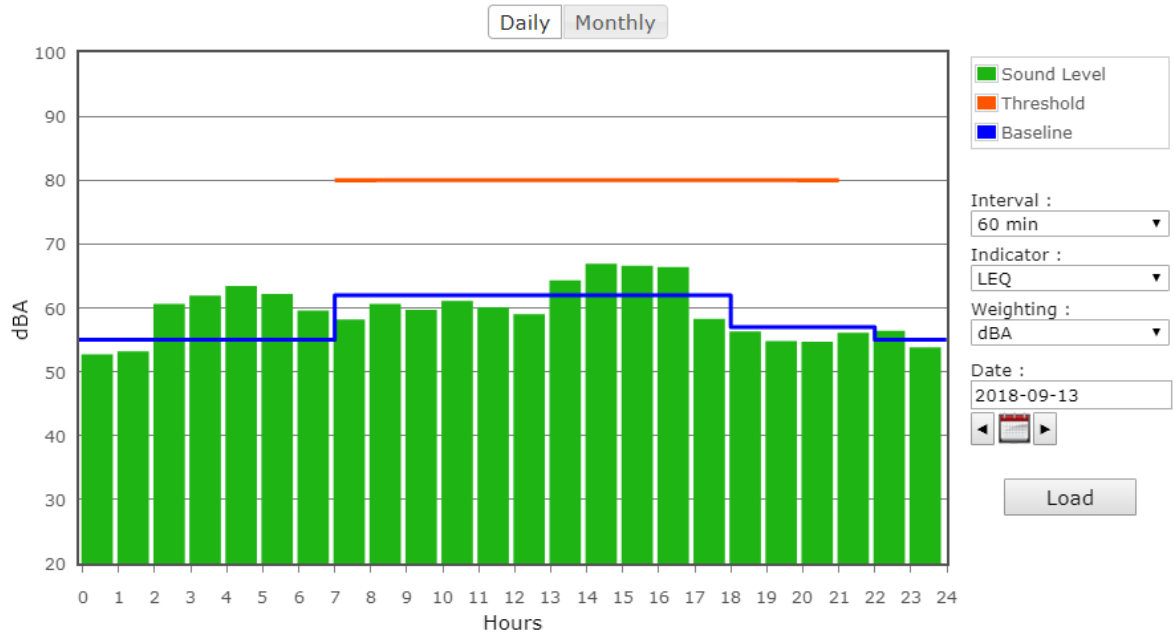


Figure 5: North Monitor NM-1 on Thursday

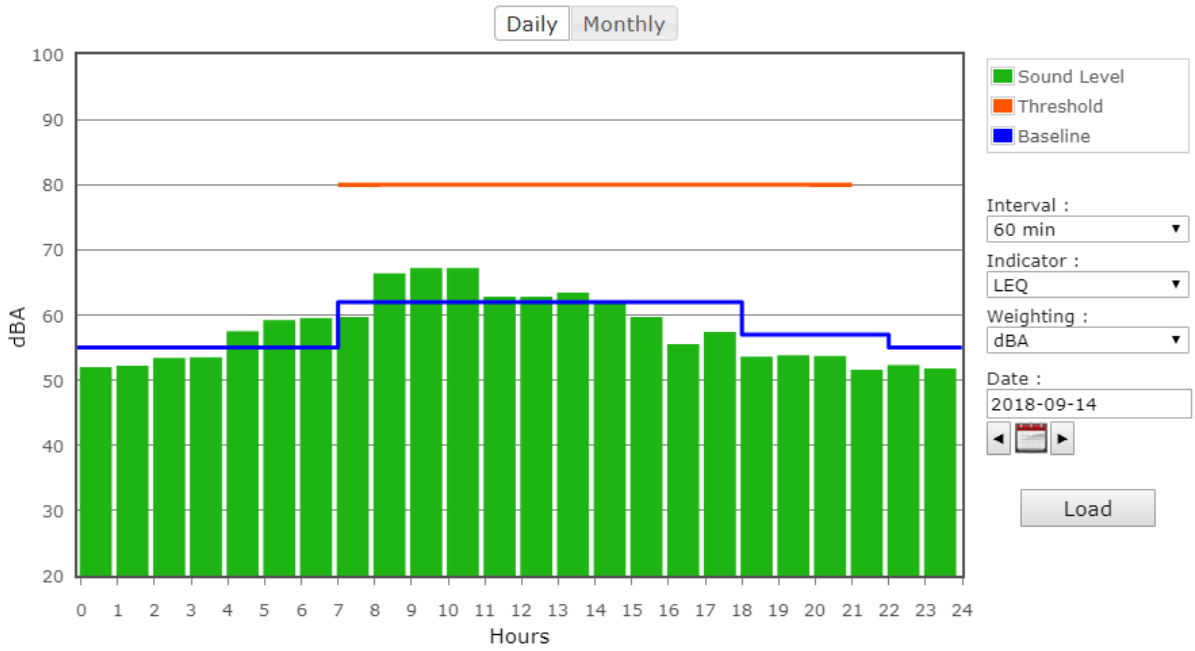


Figure 6: North Monitor NM-1 on Friday

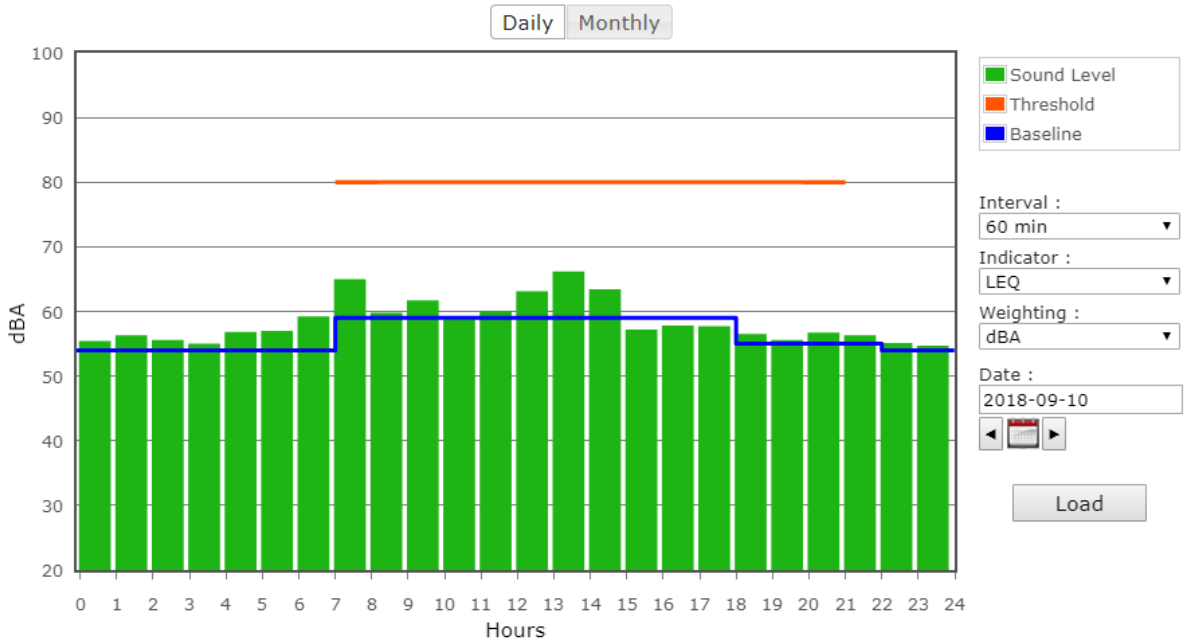


Figure 7: South Monitor NM-2 on Monday

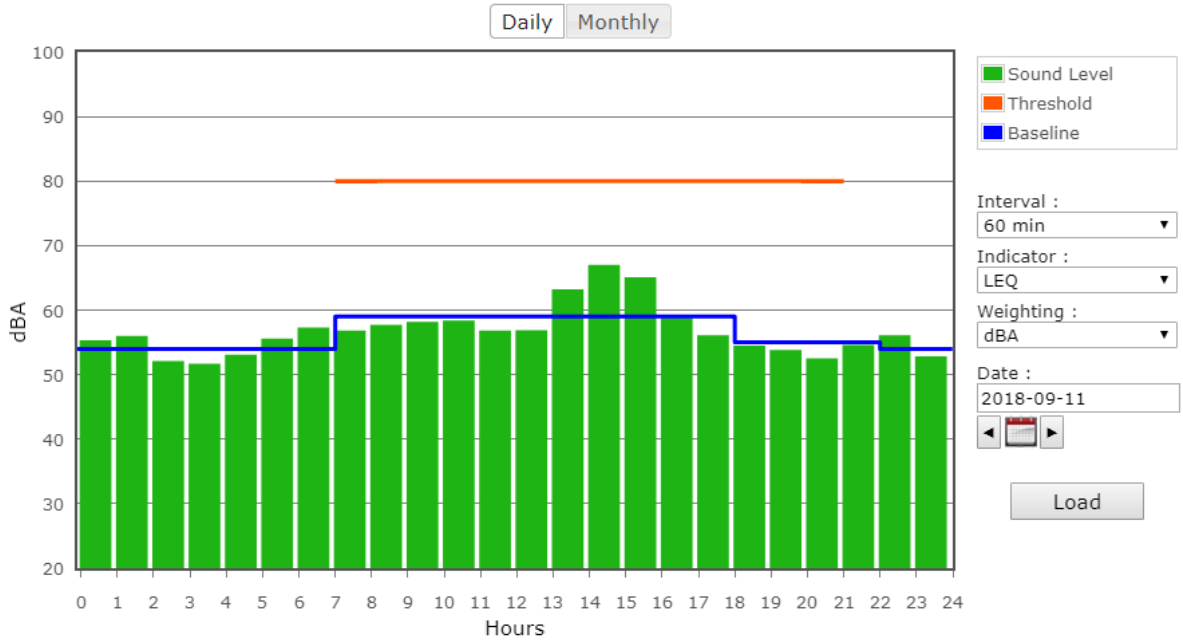


Figure 8: South Monitor NM-2 on Tuesday

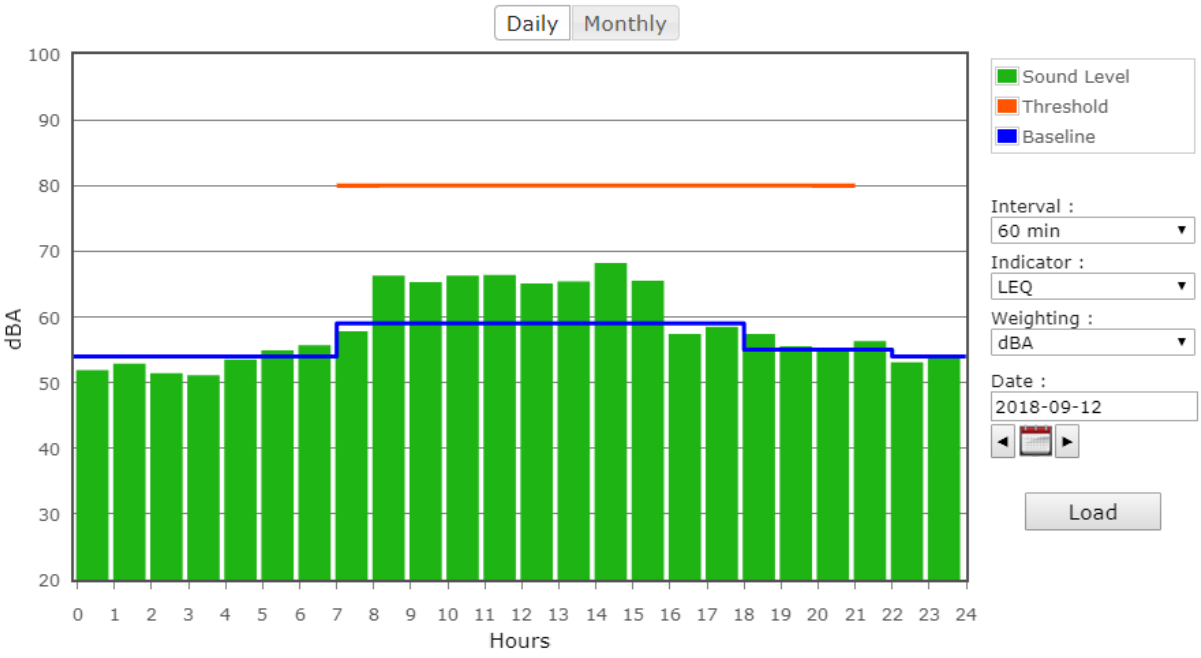


Figure 9: South Monitor NM-2 on Wednesday

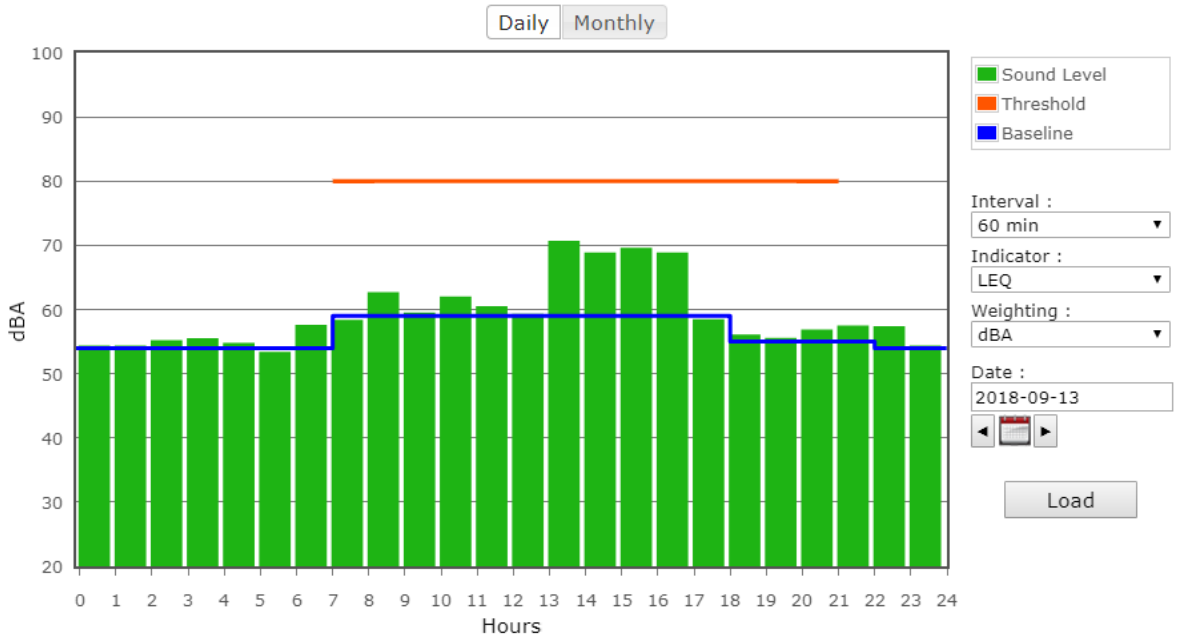


Figure 10: South Monitor NM-2 on Thursday

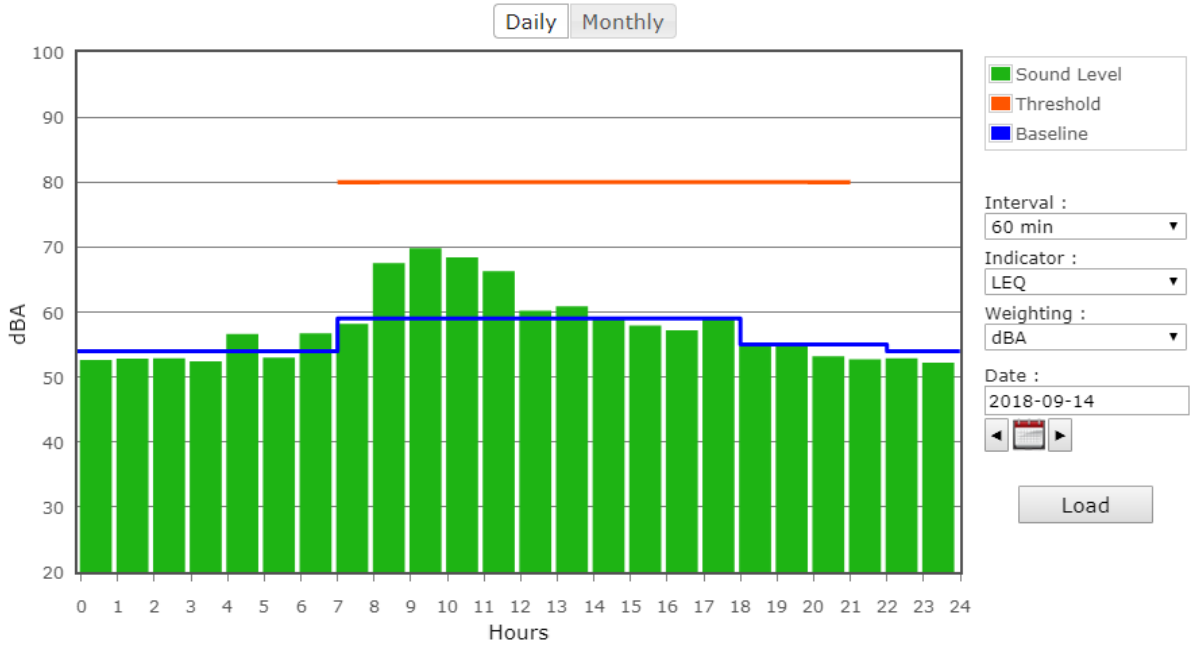


Figure 11: South Monitor NM-2 on Friday

AHRS WEEKLY REPORT

(NO ACTIVITIES DURING WEEK)

WATER TREATMENT SYSTEM MONITORING LABORATORY ANALYTICAL DATA

(NO ACTIVITIES DURING WEEK)

CUMULATIVE DREDGED MATERIAL CHART

(NO ACTIVITIES DURING WEEK)