GOWANUS CANAL SUPERFUND SITE
RTA1 REMEDIAL CONSTRUCTION
Water Quality Monitoring Weekly Data Summary

PERIOD: July 1, 2024 – July 5, 2024

Date of Report: July 9, 2024

Report Contents

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1. SCOPE OF MONITORING

1.1 Initial Buoy Locations

In accordance with the Water Quality Monitoring Plan for In-waterway Construction Activities (WQMP) three turbidity buoys were deployed to monitor turbidity related to dredging activities. One turbidity buoy was deployed just south of the 3rd Street Bridge outside of the air curtain and traditional turbidity curtain and was referred to as the 3rd Street Sentinel Buoy. A second turbidity buoy was deployed just south of Carroll St Bridge to monitor dredging activities north of Carroll Street Bridge and was referred to as the Carroll Street Sentinel Buoy. The third turbidity buoy was deployed in the Fourth Street Turning Basin (TB4) in order to monitor background turbidity unaffected by in-water construction activities and was referred to as the Ambient Buoy.

Each turbidity buoy was initially equipped with a YSI EXO3 water quality meter with optical turbidity sensor. The buoys were field calibrated and programmed such that readings were collected every 15 minutes. After each measurement, the turbidity data were transmitted to a File Transfer Portal (FTP) site via telemetry.

1.2 Summary of Monitoring Adjustments during Construction

- On January 22, 2021, prior to dredging north of the Union Street Bridge, a fourth turbidity buoy was deployed just south of the Union Street Bridge and was referred to as the Union Street Sentinel Buoy. This fourth turbidity buoy was removed prior to the start of pipe pile installation.

- On Wednesday, September 22, 2021, the Carroll Street Sentinel Buoy was relocated to the west side of the canal where Degraw Street intersects the canal to monitor cofferdam removal activities conducted in the vicinity of the Flushing Tunnel. This buoy was renamed the Degraw Street Sentinel Buoy during cofferdam removal activities.

- On October 14, 2021, the Degraw Street Sentinel Buoy was removed from the canal for servicing. On October 20, 2021, the Degraw Street Sentinel Buoy was redeployed to its position south of the Carroll Street Bridge and was renamed to the Carroll Street Sentinel Buoy.

- On November 15, 2021, the Carroll Street Sentinel Buoy was moved to the Union Street Bridge and renamed the Union Street Sentinel Buoy. On December 3, 2021, the Union Street Buoy was removed from the canal for servicing and re-deployed at 3rd Street Bridge in preparation for the resumption of ISS operations. On December 8, 2021, a sentinel buoy was re-deployed just south of the Carroll Street Bridge.

- Since December 8, 2021, the sentinel buoy deployed at the northern-most portion of the canal has alternated positioning between the Union Street Bridge and Carroll Street Bridge locations based on the in-canal construction activities being conducted at any given time.

- On January 9, 2023, the Carroll Street Sentinel Buoy was moved to the Third Street Bridge location and renamed the Third Street Sentinel Buoy. Additionally, the former Third Street Sentinel Buoy was removed from the canal for servicing.

- On February 6, 2023, the newly serviced Third Street Sentinel Buoy was reinstalled at Third Street Bridge, and the former Carroll Street Sentinel Buoy was reinstalled at Carroll Street Bridge.

- The Ambient Buoy was removed from service on Friday, February 17, 2023, due to a faulty communications system. Following investigation into the cause of the fault and the appropriate repairs made, the Ambient Buoy was returned to service on Thursday, April 13, 2023. Due to similar issues, the Ambient Buoy was removed from service again on Monday, April 24, 2023, before being redeployed on Friday, May 12, 2023, and again removed from service on Monday, May 15, 2023, before being redeployed on Monday, June 12, 2023.

- On Thursday April 13, 2023, the Carroll Street Sentinel Buoy was assessed to be within 100ft of in-canal construction activities being conducted at Carroll Street Bridge, and consequently was repositioned to the North Third Street Sentinel Buoy location.

- Data from the Third Street Sentinel Buoy was not reported from Thursday June 1, 2023 to June 2, 2023 due to a power failure and/or faulty communications system preventing transmission of readings. The Third Street Sentinel Buoy was returned to service with data collection resuming on June 5, 2023.

- On Wednesday, July 26, 2023, a fourth monitoring buoy was deployed just north of the Union Street Bridge to monitor dissolved oxygen (DO) in RTA1.

- On Tuesday, September 19, 2023, the fourth monitoring buoy (originally deployed north of the Union Street Bridge to monitor DO) was moved to just south of the Carroll Street Bridge due to ongoing in-waterway construction activities within 100 feet. In addition to dissolved oxygen, this served as an additional sentinel buoy and was referred to as the South Carroll Street Bridge Sentinel Buoy.

- On Thursday, November 2, 2023, the monitoring buoy deployed just south of the Third Street Bridge was removed from the canal to conduct maintenance and necessary repairs.

- On Monday, November 13, 2023, the monitoring buoy most recently deployed south of the Carroll Street Bridge was moved to just south of the Union Street Bridge due to ongoing in-waterway construction activities within 100 feet. In addition to dissolved oxygen, this served as an additional sentinel buoy and was referred to as the South Union Street Bridge Sentinel Buoy.

- On Tuesday, December 19, 2023, the monitoring buoy most recently deployed south of the Union Street Bridge was moved back to just south of the Carroll Street Bridge (referred to as the South Carroll Street Bridge Sentinel Buoy) due to ongoing in-waterway construction activities within 100 feet of Union Street Bridge.

- On Monday, February 12, 2024, the monitoring buoy most recently deployed south of the Carroll Street Bridge was moved to just south of the Third Street Bridge (referred to as the South Third Street Bridge Sentinel Buoy) due to ongoing in-waterway construction activities progressing south of the Carroll Street Bridge and into the south pool.

- On Wednesday, March 27, 2024, the monitoring buoy deployed south of the Third Street Bridge was moved to just north of the Third Street Bridge (referred to as the North Third Street Bridge Sentinel Buoy) due to ongoing in-waterway construction activities on the south side of the Third Street Bridge.

- During the week of April 29, 2024, all three of the monitoring buoys were removed from the water. There was not active dredging, capping, or ISS activity on the water during the reporting period, so this time was used to deploy four newly purchased buoys. The buoys were placed as follows: just north of the Third Street Bridge (referred to as the North Third Street Bridge Sentinel Buoy or NTS Buoy), twenty meters south of the Union Street Bridge (referred to as the Union Street Sentinel Buoy or USB Buoy), east end of Turning Basin Four (referred as the Ambient Buoy), and adjacent to the bulkhead of Turning Basin One (referred to as Turning Basin One Sentinel Buoy or TB1 Buoy).

- On Friday June 7, 2024, the Ambient Buoy was moved 30 meters west in Turning Basin Four to decrease the biofouling of the sensors.

- On Thursday June 20, 2024, post construction operation hours, the buoy north of the Third Street Bridge was moved to the west bulkhead north of 9th Street Bridge for RTA2 work.

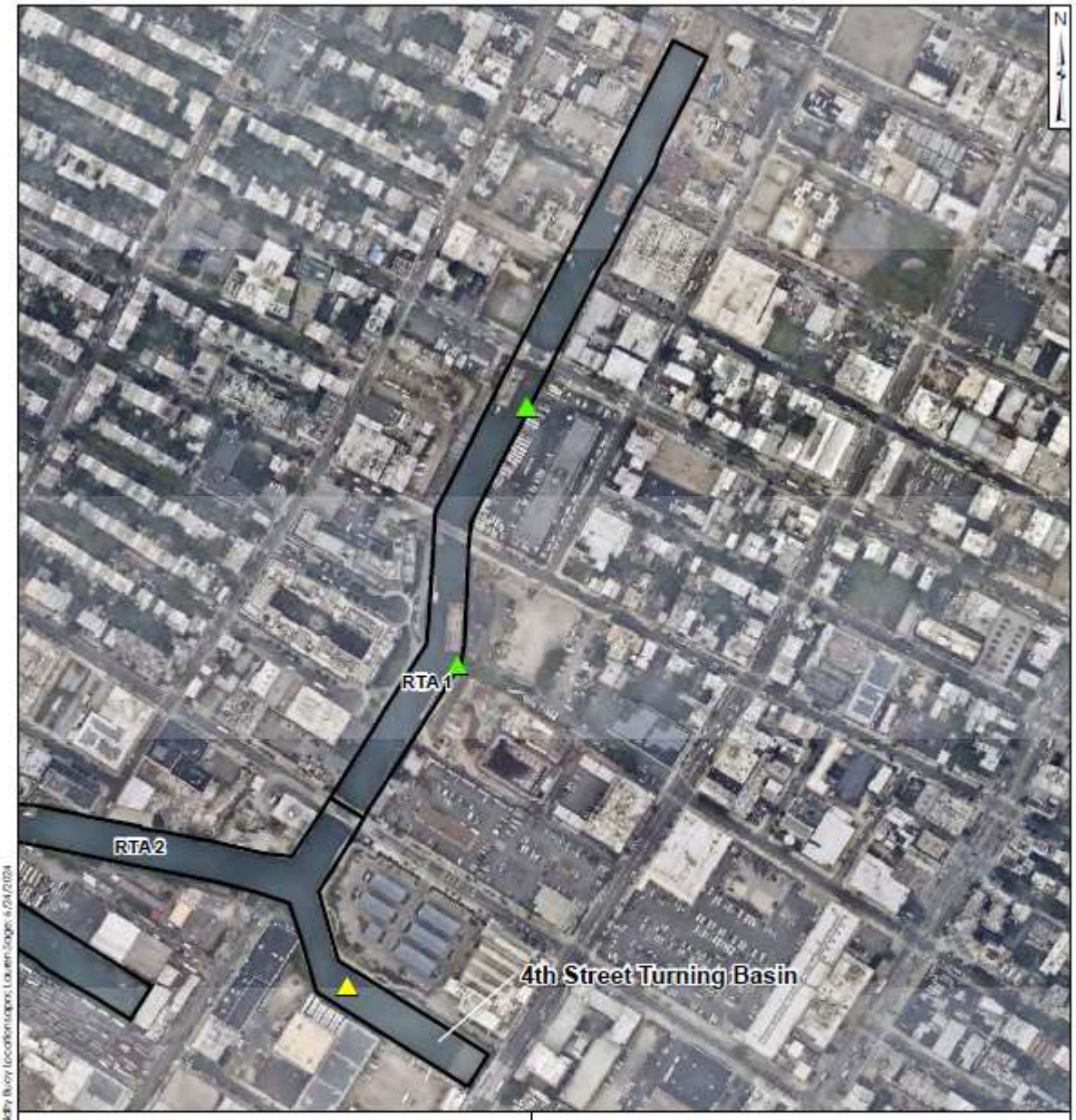
1.3 Current Reporting Period Scope of Monitoring

During the week of July 1, 2024, three turbidity buoys were deployed consisting of a Sentinel Buoy (USB) approximately twenty meters south of the Union Street Bridge, a Sentinel Buoy (TB1) located south of the supplemental dredging water treatment barge near Turning Basin One, and an Ambient Buoy (Ambient) in the middle of Turning Basin Four. All Sentinel Buoys were positioned on the eastern side of the Canal. There were no RTA1 construction activities on Thursday, July 4, as it was an observed holiday.

All readings from buoys were transmitted via telemetry at 15-minute intervals. The instrument used to collect turbidity and DO from the buoys is an In-Situ VuLink (telemetry) and AquaTroll500 (sonde), equipped with optical sensors capable of reading turbidity levels with an accuracy of +/-0.5 NTU and DO levels with an accuracy of +/-0.1 mg/L.

No instrument downtime was noted during the monitoring period.

Visual observations of turbidity and sheen are summarized in Section 5.



Legend

- Ambient Buoy
- Sentinel Buoy
- RTA Boundary

300 150 0 300 Feet

Turbidity Buoy Locations

Gowanus Canal, Brooklyn, NY

B&B Engineers & Geologists of new york, p.c.

an affiliate of Geosyntec Consultants

Figure 1

Brooklyn, NY | June 2024

2. REPORT OF EXCEEDANCES

No exceedances of the trigger or action criteria occurred during the reporting period due to construction activities. Turbidity and floatables were observed throughout the reporting period unrelated to construction activities.

Trigger criterion – Any of the following:

- The rolling average of the relevant 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 and in-waterway construction activities cannot be immediately excluded as the source following consultation with EPA; or
- Either an oil sheen or a turbidity plume is visually observed at the relevant sentinel buoy and in-waterway construction activities are readily identified as the source.

- **Action criterion** – Any of the following:
  - The rolling average of the turbidity measurements of the sentinel buoy outside of RTA1 over a one-hour period exceeds the rolling average of the ambient buoy turbidity measurements by 40 NTU excluding any eliminated outlier measurements and in-waterway construction activities cannot be immediately excluded as the source following consultation with EPA; or
  - Either an oil sheen or a turbidity plume is visually observed outside of RTA1, and any deployed engineering controls and in-waterway construction activities are readily identified as the source.

An outlier is defined as a reading that is outside the range of 50 to 200 percent of the average of the three previous readings. In addition, to be considered an outlier, the subsequent reading must return to a range of 75 to 133 percent of the average of the three readings preceding the outlier.

2.1 Response to Criteria Exceedances

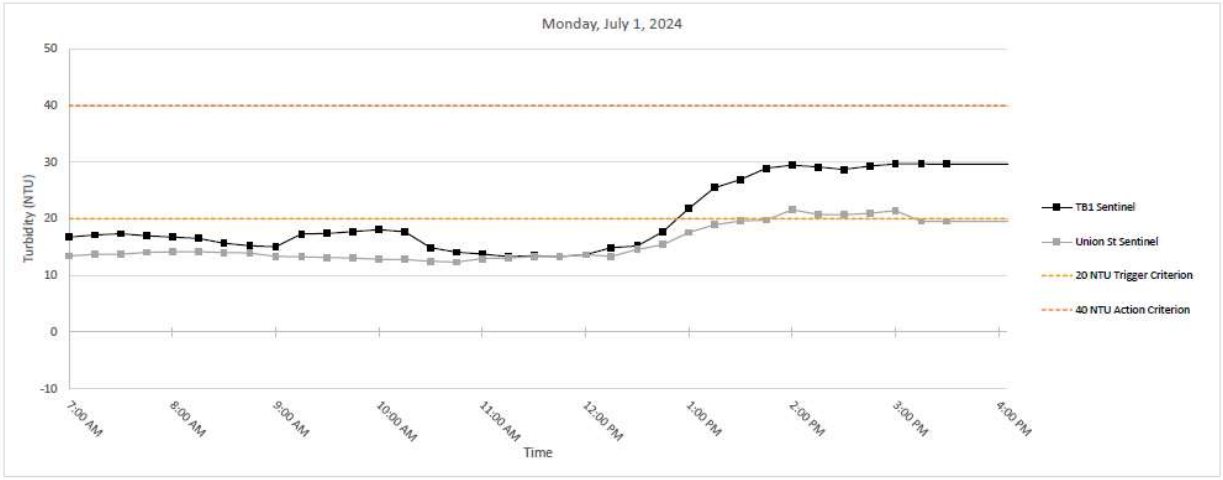
The trigger level criterion serves to provide early notification to the contractor of construction activities that may lead to an exceedance of the action level criterion. In the event of an exceedance to the trigger criterion, the contractor will not be stopped, and the contractor will be directed to investigate the source of the exceedance and evaluate Best Management Practices (BMPs). In the event of an exceedance to the action level criterion, in-waterway construction activities may be slowed or temporarily suspended as necessary while the contractor investigates the source of the exceedance and appropriate mitigation, and corrective measures are determined. A more detailed description of responses to exceedances of the trigger and action level criteria is provided in Section 4.2 of the WQMP.

3. TURBIDITY BUOY DATA

Throughout the week, anomalous readings were recorded at the Ambient Buoy in Turning Basin Four due to biofouling of the sensor and were eliminated completely. Elevated turbidity was measured throughout RTA1 during the reporting period unrelated to construction activities and was detected both before and after active construction. Discharge from the water treatment system remained clear and is not contributing to the elevated turbidity readings.

3.1 Monday, July 1, 2024

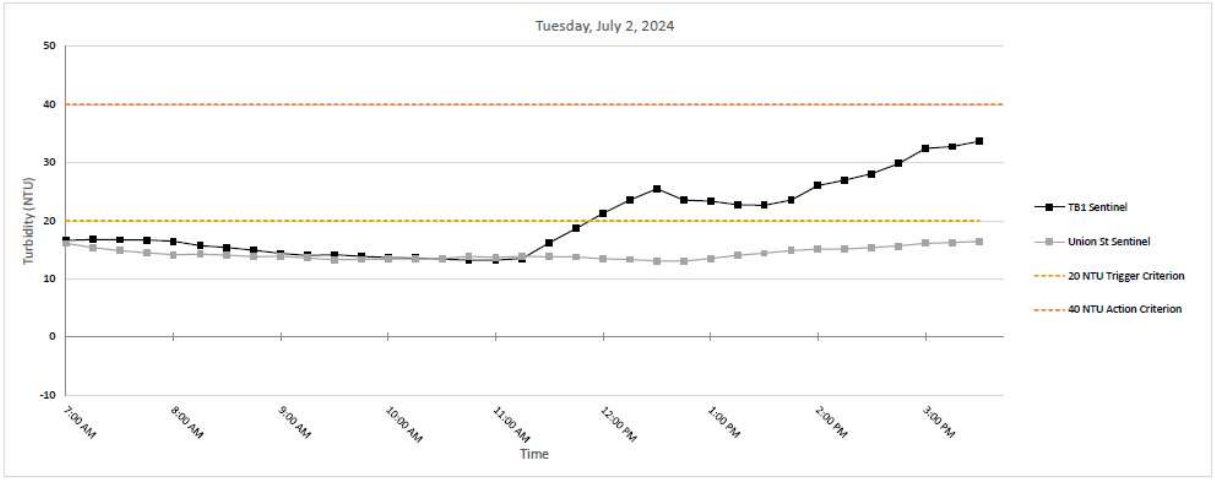
Figure 2. Hourly rolling average turbidity readings on Monday July 1, 2024, from 7 AM to 3:30 PM.



Note: During the reporting period, ambient buoy readings were excluded due to erroneous recordings occurring after work hours. Elevated turbidity levels were observed in RTA1, unrelated to construction activities, and persisted both before and after active construction.

3.2 Tuesday, July 2, 2024

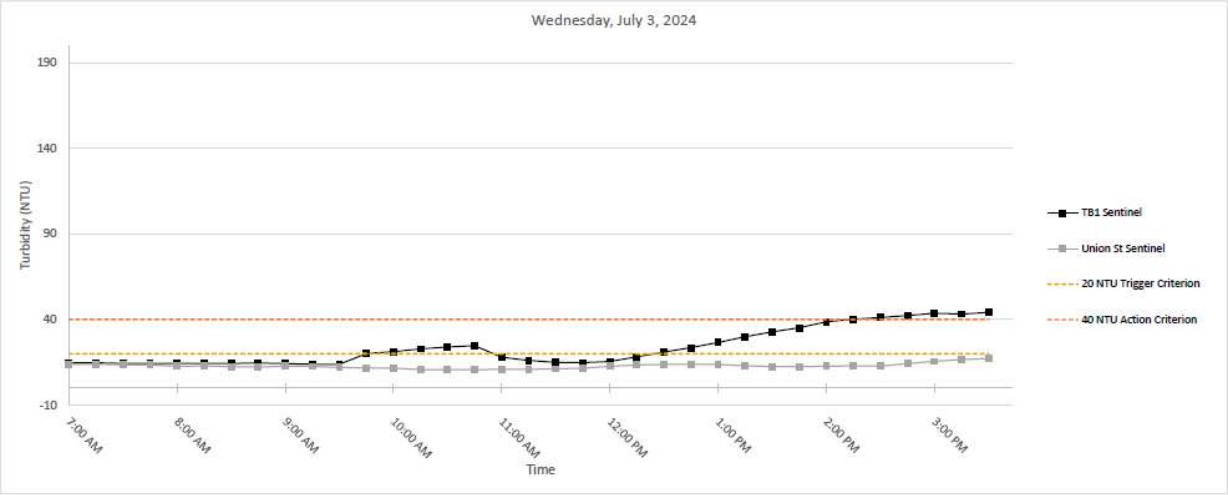
Figure 3. Hourly rolling average turbidity readings on Tuesday, July 2, 2024, from 7 AM to 3:30 PM.



Note: During the reporting period, ambient buoy readings were excluded due to erroneous recordings occurring after work hours. Elevated turbidity levels were observed in RTA1, unrelated to construction activities, and persisted both before and after active construction.

3.3 Wednesday, July 3, 2024

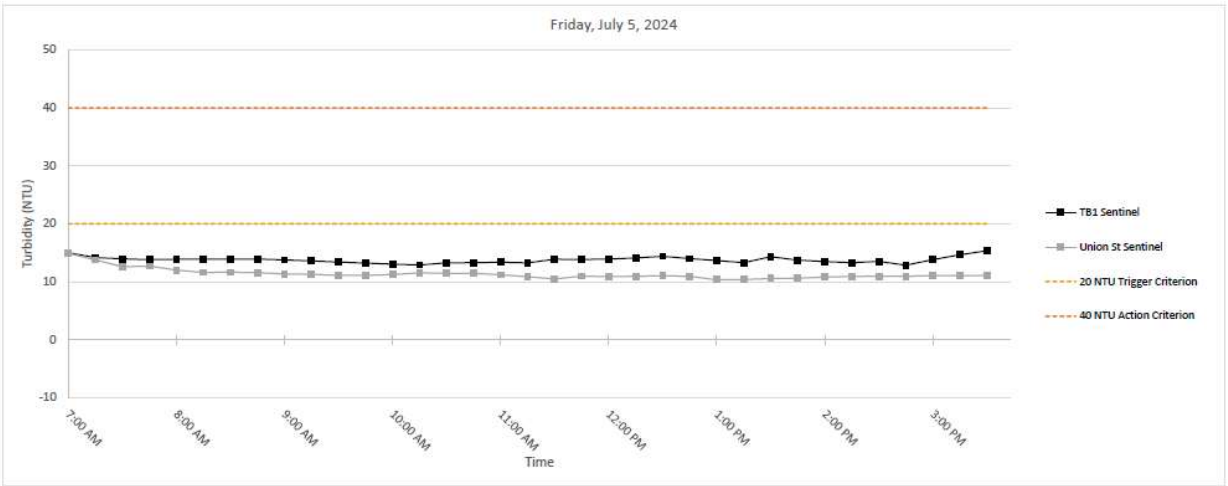
Figure 4. Hourly rolling average turbidity readings on Wednesday, July 3, 2024, from 7 AM to 3:30 PM.



Note: During the reporting period, ambient buoy readings were excluded due to erroneous recordings occurring after work hours. Elevated turbidity levels were observed in RTA1, unrelated to construction activities, and persisted both before and after active construction.

3.4 Friday, July 5, 2024

Figure 5. Hourly rolling average turbidity readings on Friday, July 5, 2024, from 7 AM to 3:30 PM.



Note: During the reporting period, ambient buoy readings were excluded due to erroneous recordings occurring after work hours. Elevated turbidity levels were observed in RTA1, unrelated to construction activities, and persisted both before and after active construction.

4. DISSOLVED OXYGEN MONITORING DATA

Dissolved oxygen measured at the monitoring buoys throughout the reporting period are summarized below:

- Turning Basin 1 (TB1)
  - Average = 0.13 (+/-0.1) mg/L
  - Min = 0.0 (+/-0.1) mg/L on multiple days
  - Max = 7.53 (+/-0.1) mg/L on Sunday, July 7, 2024

- South Union Street Bridge (S USB)
  - Average = 0.01 (+/-0.1) mg/L
  - Min = 0.0 (+/-0.1) mg/L on multiple days
  - Max = 1.75 (+/-0.1) mg/L on Sunday, July 7, 2024

5. SUMMARY OF VISUAL OBSERVATIONS

Visual indications of elevated turbidity unrelated to construction activities were observed throughout the reporting period. Sheens were observed during construction activities at the Flushing Tunnel and were contained by two turbidity curtains and oil absorbent booms. Sheens in other areas of RTA1 were minimal. A rainfall event which triggered a CSO discharge occurred on Thursday, July 4 between 10:30PM and Friday, July 5 at 3:00AM.

The dark discoloration of the water in RTA1 was noted north the Union Street Bridge and north of 3rd Street Bridge periodically throughout the week. Sulfurous odors were detected north of Third Street Bridge throughout the week.

Figure 6 – July 1, 2024. Canal water with a dark coloration observed north of the Union Street Bridge. Turbidity unrelated to construction activities also observed.

Figure 7- July 4, 2024. Rainfall event.

APPENDIX A
Turbidity Data Tables

Table 1

Monday July 1, 2024

Date	Time	Turbidity (NTU)		Rolling Average Turbidity (NTU)	
		TB1	USB	TB1	USB
7/1/2024	7:00:00 AM	16.73	13.44	16.73	13.44
7/1/2024	7:15:00 AM	17.55	13.99	17.14	13.71
7/1/2024	7:30:00 AM	17.84	13.73	17.37	13.72
7/1/2024	7:45:00 AM	15.85	15.07	16.99	14.06
7/1/2024	8:00:00 AM	15.72	14.51	16.74	14.15
7/1/2024	8:15:00 AM	15.72	13.55	16.53	14.17
7/1/2024	8:30:00 AM	13.12	13.33	15.65	14.04
7/1/2024	8:45:00 AM	15.71	13.26	15.22	13.94
7/1/2024	9:00:00 AM	14.79	11.97	15.01	13.32
7/1/2024	9:15:00 AM	27.26	14.23	17.32	13.27
7/1/2024	9:30:00 AM	16.14	12.98	17.40	13.15
7/1/2024	9:45:00 AM	14.65	12.77	17.71	13.04
7/1/2024	10:00:00 AM	17.40	12.22	18.05	12.83
7/1/2024	10:15:00 AM	13.10	11.81	17.71	12.80
7/1/2024	10:30:00 AM	13.21	12.75	14.90	12.50
7/1/2024	10:45:00 AM	12.11	12.11	14.10	12.33
7/1/2024	11:00:00 AM	12.98	15.90	13.76	12.96
7/1/2024	11:15:00 AM	15.19	12.68	13.32	13.05
7/1/2024	11:30:00 AM	13.84	13.43	13.47	13.37
7/1/2024	11:45:00 AM	12.48	12.41	13.32	13.30
7/1/2024	12:00:00 PM	13.73	13.80	13.64	13.64
7/1/2024	12:15:00 PM	19.29	14.37	14.91	13.34
7/1/2024	12:30:00 PM	16.64	18.95	15.20	14.59
7/1/2024	12:45:00 PM	26.45	17.56	17.72	15.42
7/1/2024	1:00:00 PM	32.91	23.15	21.81	17.57
7/1/2024	1:15:00 PM	32.14	20.58	25.49	18.92
7/1/2024	1:30:00 PM	26.38	17.74	26.91	19.60
7/1/2024	1:45:00 PM	26.84	19.83	28.95	19.77
7/1/2024	2:00:00 PM	29.02	26.69	29.46	21.60
7/1/2024	2:15:00 PM	31.43	19.00	29.16	20.77
7/1/2024	2:30:00 PM	29.95	20.25	28.72	20.70
7/1/2024	2:45:00 PM	29.19	18.97	29.29	20.95
7/1/2024	3:00:00 PM	28.81	22.18	29.68	21.42
7/1/2024	3:15:00 PM	29.08	17.28	29.69	19.54
7/1/2024	3:30:00 PM	31.12	19.05	29.63	19.55

Table 2

Tuesday July 2, 2024

Date	Time	Turbidity (NTU)		Rolling Average Turbidity (NTU)	
		TB1	USB	TB1	USB
7/2/2024	7:00:00	18.10	13.63	16.62	16.12
7/2/2024	7:15:00	16.49	14.36	16.76	15.39
7/2/2024	7:30:00	15.95	14.48	16.75	14.86
7/2/2024	7:45:00	16.40	13.83	16.68	14.48
7/2/2024	8:00:00	15.60	14.49	16.51	14.16
7/2/2024	8:15:00	14.12	14.00	15.71	14.23
7/2/2024	8:30:00	14.84	13.78	15.38	14.12
7/2/2024	8:45:00	13.63	13.08	14.92	13.84
7/2/2024	9:00:00	13.72	14.23	14.38	13.92
7/2/2024	9:15:00	13.90	12.98	14.04	13.61
7/2/2024	9:30:00	14.79	12.39	14.18	13.29
7/2/2024	9:45:00	13.44	14.10	13.90	13.36
7/2/2024	10:00:00	12.49	13.36	13.67	13.41
7/2/2024	10:15:00	13.28	14.47	13.58	13.46
7/2/2024	10:30:00	13.08	13.16	13.42	13.50
7/2/2024	10:45:00	13.82	14.25	13.22	13.87
7/2/2024	11:00:00	13.50	13.31	13.23	13.71
7/2/2024	11:15:00	13.98	14.32	13.53	13.90
7/2/2024	11:30:00	26.81	13.97	16.24	13.80
7/2/2024	11:45:00	25.35	13.04	18.69	13.78
7/2/2024	12:00:00	26.81	12.50	21.29	13.43
7/2/2024	12:15:00	25.10	12.82	23.61	13.33
7/2/2024	12:30:00	23.57	13.02	25.53	13.07
7/2/2024	12:45:00	17.10	13.93	23.58	13.06
7/2/2024	13:00:00	24.31	15.36	23.38	13.53
7/2/2024	13:15:00	23.72	15.17	22.76	14.06
7/2/2024	13:30:00	24.65	14.68	22.67	14.43
7/2/2024	13:45:00	28.06	15.13	23.56	14.85
7/2/2024	14:00:00	29.56	15.34	26.06	15.13
7/2/2024	14:15:00	29.04	15.52	27.00	15.17
7/2/2024	14:30:00	29.13	16.29	28.09	15.39
7/2/2024	14:45:00	33.46	16.07	29.85	15.67
7/2/2024	15:00:00	41.06	17.50	32.45	16.14
7/2/2024	15:15:00	31.09	16.01	32.76	16.28
7/2/2024	15:30:00	--	--	33.69	16.46

Table 3

Wednesday July 3, 2024

	Time	Turbidity (NTU)		Rolling Average Turbidity (NTU)	
Date		TB1	USB	TB1	USB
7/3/2024	7:00:00	14.30	12.90	14.64	13.85
7/3/2024	7:15:00	14.30	13.80	14.74	13.91
7/3/2024	7:30:00	14.25	12.33	14.31	13.45
7/3/2024	7:45:00	14.72	13.35	14.29	13.50
7/3/2024	8:00:00	14.38	11.47	14.39	12.77
7/3/2024	8:15:00	14.27	13.40	14.38	12.87
7/3/2024	8:30:00	13.73	11.54	14.27	12.42
7/3/2024	8:45:00	16.06	11.71	14.63	12.29
7/3/2024	9:00:00	12.59	15.76	14.20	12.78
7/3/2024	9:15:00	12.76	10.71	13.88	12.62
7/3/2024	9:30:00	13.97	10.48	13.82	12.04
7/3/2024	9:45:00	45.11	10.00	20.10	11.73
7/3/2024	10:00:00	21.86	10.99	21.26	11.59
7/3/2024	10:15:00	20.46	11.55	22.83	10.75
7/3/2024	10:30:00	18.20	10.55	23.92	10.71
7/3/2024	10:45:00	17.88	10.38	24.70	10.69
7/3/2024	11:00:00	11.70	10.90	18.02	10.87
7/3/2024	11:15:00	12.32	10.94	16.11	10.86
7/3/2024	11:30:00	14.52	13.13	14.93	11.18
7/3/2024	11:45:00	18.12	12.23	14.91	11.51
7/3/2024	12:00:00	20.64	16.54	15.46	12.75
7/3/2024	12:15:00	25.16	14.33	18.15	13.43
7/3/2024	12:30:00	26.66	12.37	21.02	13.72
7/3/2024	12:45:00	26.92	13.05	23.50	13.70
7/3/2024	13:00:00	33.38	12.21	26.55	13.70
7/3/2024	13:15:00	37.88	13.39	30.00	13.07
7/3/2024	13:30:00	39.33	11.80	32.84	12.56
7/3/2024	13:45:00	38.15	11.63	35.13	12.42
7/3/2024	14:00:00	44.36	14.65	38.62	12.74
7/3/2024	14:15:00	40.94	12.63	40.13	12.82
7/3/2024	14:30:00	43.10	13.57	41.18	12.86
7/3/2024	14:45:00	44.75	18.35	42.26	14.17
7/3/2024	15:00:00	44.73	18.41	43.58	15.52
7/3/2024	15:15:00	42.38	19.85	43.18	16.56
7/3/2024	15:30:00	46.02	15.80	44.20	17.20

Table 4

Friday July 5, 2024

Date	Time	Turbidity (NTU)		Rolling Average Turbidity (NTU)	
		TB1	USB	TB1	USB
7/5/2024	7:00:00	13.90	13.78	15.04	14.90
7/5/2024	7:15:00	13.69	10.91	14.19	13.78
7/5/2024	7:30:00	13.76	11.44	13.97	12.59
7/5/2024	7:45:00	14.14	12.26	13.81	12.73
7/5/2024	8:00:00	13.89	11.64	13.88	12.01
7/5/2024	8:15:00	14.01	11.79	13.90	11.61
7/5/2024	8:30:00	13.74	11.21	13.91	11.67
7/5/2024	8:45:00	13.89	11.07	13.93	11.60
7/5/2024	9:00:00	13.45	11.13	13.79	11.37
7/5/2024	9:15:00	12.81	11.24	13.58	11.29
7/5/2024	9:30:00	13.17	10.92	13.41	11.11
7/5/2024	9:45:00	12.76	11.14	13.22	11.10
7/5/2024	10:00:00	13.17	11.90	13.07	11.26
7/5/2024	10:15:00	12.55	12.47	12.89	11.53
7/5/2024	10:30:00	14.66	10.99	13.26	11.48
7/5/2024	10:45:00	13.42	10.80	13.31	11.46
7/5/2024	11:00:00	13.02	9.91	13.36	11.21
7/5/2024	11:15:00	12.68	10.15	13.26	10.86
7/5/2024	11:30:00	15.60	10.57	13.87	10.49
7/5/2024	11:45:00	14.59	13.49	13.86	10.98
7/5/2024	12:00:00	13.80	10.39	13.94	10.90
7/5/2024	12:15:00	14.00	10.10	14.13	10.94
7/5/2024	12:30:00	13.96	10.60	14.39	11.03
7/5/2024	12:45:00	13.64	10.12	14.00	10.94
7/5/2024	13:00:00	12.85	10.50	13.65	10.34
7/5/2024	13:15:00	12.06	10.77	13.30	10.42
7/5/2024	13:30:00	19.17	10.88	14.34	10.57
7/5/2024	13:45:00	11.02	10.86	13.75	10.63
7/5/2024	14:00:00	12.29	10.92	13.48	10.78
7/5/2024	14:15:00	11.97	11.13	13.30	10.91
7/5/2024	14:30:00	13.18	11.00	13.52	10.96
7/5/2024	14:45:00	15.79	10.83	12.85	10.95
7/5/2024	15:00:00	15.82	11.46	13.81	11.07
7/5/2024	15:15:00	16.58	10.96	14.67	11.08
7/5/2024	15:30:00	--	11.24	15.34	11.10