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January 15, 2023

Ms. Jaclyn Kondrk
Emergency Remedial Response Division
United States Environmental Protection Agency Region II
290 Broadway, 20th Floor
New York, New York 10007-1866

Semi-annual Report – 2nd Half 2022 (July through December)
Administrative Orders Hooker Chemical/Ruco Polymer Corporation Site
Index Nos. II CERCLA 80216, II CERCLA 94 0210, and II CERCLA 02 2001 2018

Dear Ms. Kondrk

This submittal provides the Semi-annual Progress Report covering July through December 2022 for the Hooker/Ruco Site in Hicksville, New York, on behalf of Glenn Springs Holdings, Inc. (GSH). This Report covers OU 1, OU 2, and OU 3.

Submittals During Reporting Period

The following were submitted during the period July through December 2022:

- The Semi-annual Report for the time period January through June 2022 was submitted to the United States Environmental Protection Agency (USEPA) on July 12, 2022.
- A revised Work Plan for Trial/Partial Biosparge System Shutdown (Work Plan) and response to USEPA May 27, 2022 comments were submitted on August 2, 2022. USEPA approved the Work Plan via letter dated August 18, 2022

Operable Unit 1 (On-Site Soil)

All work has been successfully completed pursuant to USEPA letter dated September 28, 2007. OU 1 is closed.

Operable Unit 2 (Soils Impacted by On-Site Release of PCBs)

All work has been successfully completed pursuant to USEPA letter dated March 12, 1993. OU 2 is closed.

Operable Unit 3 (Off Site Groundwater)

A listing of the OU 3 operation and maintenance (O&M) activities performed for this reporting period is provided in Table 1. Additional details for the primary activities are provided in the following sections.

It is noted that the selected remedy for the vinyl chloride (VCM) subplume is also based on the recognition that the Northrop groundwater extraction and treatment system (i.e., pumping of Northrop Wells 1 and 3R and treatment via the Tower 96 system) is containing and remediating a commingled plume of tetrachloroethylene (PCE) and trichloroethylene (TCE) from the Northrop, Naval Weapons Industrial Reserve Plant (NWIRP) and Hooker/Ruco sites. The VCM subplume is co-located within the commingled PCE/TCE plume. Most of the PCE and TCE located within the commingled plume is associated with the Northrop and NWIRP sites. The Northrop

system captures and treats all of the PCE, TCE and VCM, not being treated by the biosparge system, associated with the Hooker/Ruco Site.

A Supplemental Treatment system to address VCM from Well 3R downgradient of the biosparge system was installed by GSH in 2002. VCM concentrations decreased over time to levels where supplemental treatment for VCM was no longer required. Agency concurrence to stop treatment of VCM with GSH's supplemental treatment system was received on January 26, 2017. Operation, maintenance and monitoring of the supplemental system was thereafter taken over by Northrop. It is noted that the VCM concentrations in Well 3R ranged between 2.0 and 3.9 micrograms per liter (µg/L) from December 2016 to May 2018, in 2019 between 1.1 and 1.7 µg/L, in 2020 between 1.5 and 2.2 µg/L, in 2021 between 1.6 µg/L and 4.4 µg/L, and in the first three quarters of 2022 between 2.2 and 3.4/3.3 µg/L. This further supports that treatment of VCM by the supplemental system is no longer needed.

Biosparge System

Figure 1 presents the biosparge system injection well and monitoring well locations. Figure 2 presents the system layout. Figures 3 and 4 present system cross sections. Also shown on the figures are the most recent VCM groundwater concentrations.

Sampler insertion for the 2nd semi-annual 2022 biosparge system performance monitoring event commenced on October 11, 2022 with sampler retrieval completed on December 20, 2022. Some wells had samplers inserted and recovered in November and December due to access issues.

Super sleeve samplers at cannot be used in MW-90D1&D2 due to the 1-inch diameter of each well; however, the passive diffusion bags (PDBs) were successfully installed and recovered. Therefore, only VOCs were analyzed. Additionally, the super sleeve sampler at MW-73D2, MW-84D2, MW-67S, and MW-63D1S were ripped but the PBDs were successfully recovered. Therefore, only VOCs were analyzed. MS/MSD samples were collected from MW-68S, MW-88D1, and MW-90D2. Duplicate samples were collected from MW-58D2, MW-72D2, and MW-87D2.

A Quality Assurance/Quality Control (QA/QC) review of the October-December 2022 results is provided in Attachment A. The electronic deliverables were provided electronically to the USEPA on Jan 15, 2023.

During the reporting period, air was injected into all north fence wells and all middle fence injection wells except for IW-4D2, IW-5D1, IW-5D2, IW-6D1, IW-6D2, IW-7D1, IW-16D1, IW-17D1, IW-17D2, IW-18D1, IW-21D1, and IW-21D2. This is further discussed in the “Well Conditions Update” section later in this report.

Summary of Biosparge System

The DO, total volatile organic compounds (TVOC), and VCM concentration trends for the individual groundwater monitoring wells around the biosparge injection system are shown on Figures 5 through 9. It is noted that figures for well pairs in which the VCM concentrations have been typically less than the maximum contaminant level (MCL) of 2 µg/L for at least the last 2 years were not prepared for this report. The wells achieving this goal were MW-61D2, MW-63, MW-70, MW-72, MW-73D1&D2, MW-77, MW-82, MW-83, MW-84, MW-85S&I, MW-87, MW-86D1&D2, and MW-90D1&D2.

MW-82D1 had a low level VCM concentration in October 2019 but was non-detect in May and November 2020. The VCM concentration in April 2021 was 13.4 µg/L and 122 µg/L in October 2021. The cause of the increase in 2021 is unknown given that air injection is occurring at biosparge wells IW-19 and IW-20 and dissolved oxygen (DO) in the MW-82D1 has been above the 2 milligrams per liter (mg/L) DO target concentration throughout this period. The DO concentration in October 2021 was 6.45 mg/L. As a corrective measure, a second weekly air injection cycle was added for IW-19D1 to supplement the two weekly air injection cycles that already occurs at IW-20D1. In 2022, MW-82D1 had a VCM concentration of 2.4 µg/L in the May event and non-detect concentration in the second event.

To date, the results show that the biosparge system is operating successfully as demonstrated by the following:

i.) DO levels in the groundwater are greater than the target concentration of 2 mg/L in 28 of the 33 monitoring wells measured in October 2022 (see Table 2).

ii.) Groundwater VCM concentrations are non-detect, low level, or decreased between the May 2022 and October 2022 performance monitoring events in 38 of the 40 monitoring wells for the biosparge system as a result of the microbial biodegradation processes. VCM concentration increases were detected in MW-75D1 (non-detect to 5.5 µg/L), and MW-89D1 (2.2 to 12 µg/L).

The wells with lowest DO concentrations are typically located in close proximity to either the north fence or the east portion of the middle fence of injection wells. It is anticipated that as the groundwater flow paths converge as they approach Northrop Well 3R, the groundwater with low DO concentrations will mix with groundwater with higher DO concentrations. This expectation is supported by the 2022 DO concentrations in well MW-68D which are above the target level of 2 mg/L and located between the middle fence and Well 3R (see Table 2).

The VCM concentrations upgradient of the north fence continued to decrease from 14.7 µg/L (October 2019) to 8.3 µg/L (October 2021) in well MW-92D1 and remained non-detect in well MW-93D2. These wells are scheduled to be sampled again in October 2023.

The VCM concentrations along the west edge of the VCM subplume between the north fence and the middle fence remained below the 2.0 µg/L in wells MW-63 since the April/May 2016 sampling event and MW-86 since the October 2015 sampling event.

The VCM concentrations along the west edge of the VCM subplume downgradient of the middle fence essentially remained the same as previous events. VCM was either not detected or detected at a concentration of less than 2.0 µg/L in monitoring wells MW-61, MW-81, MW-83, and MW-87.

The VCM concentrations along the east edge of the VCM subplume downgradient of the middle fence essentially remained the same as previous events. VCM was either not detected or detected at a concentration of 2.0 µg/L or less in these monitoring wells (MW-84, MW-85, and MW-88), with the exception of MW-89 which saw an increase in VCM from 2.2 µg/L in the May 2022 event to 12 µg/L in the October 2022 event. The reason for this increase is not known.

The VCM concentrations in monitoring wells located in between the middle fence and Northrop Well 3R (aka GP 3) essentially remained the same as previous events (MW-66D2, MW-67S, and MW-68). VCM continued to be not detected in MW-66D2 during this sampling event. VCM was not detected in MW-67S and MW-68D in May 2022; however, VCM was detected at 2.4 µg/L in MW-68S. VCM was not detected in these wells during this event. The VCM concentration in MW-68S has continued to decrease from a high of 940 µg/L in 2013.

The VCM concentrations in Northrop well MW 3-1, located in close proximity to Northrop Well 3R (south of the sub plume), decreased from 36 µg/L in June 2018 and has fluctuated between 0.36J/0.43J µg/L and 17 µg/L since. VCM remained not detected in nearby monitoring wells MW-58 and MW-59 last sampled in October 2022. The VCM concentrations in Well 3R have fluctuated to just above and just below 2 µg/L since 2018 (1.1 µg/L to 4.4 µg/L).

All of the above indicate that the extent of the VCM subplume, in general, is becoming smaller and the VCM concentrations therein are decreasing.

Table 2 also presents analytical results for the other primary VOCs in the groundwater (i.e., PCE and TCE) being sampled by the biosparge system monitoring wells. The PCE, TCE, and VCM concentrations for the time period since the start of operation of the Pilot System in October 2006 (for wells which monitor the Pilot System) and since the start of the remainder of biosparge system in September 2012 (for the wells which monitor the remainder of the system) are provided in the table.

As requested by the USEPA, the listed wells have been divided into three groups:

i.) Those wells which are monitored in accordance with the sampling frequency specified in Table 7.1 of the OU 3 Interim Remedial Action Report (Base Wells) (as modified on March 8, 2017).

ii.) Those wells which are sampled periodically on a voluntary basis to obtain a more regional view of chemical presence in the vicinity of the VCM plume (Voluntary Wells).

iii.) Those wells monitored by Northrop which aid in interpreting the chemical presence in the vicinity of the VCM plume (Northrop Wells).

For the 43 base wells listed in Table 2, the PCE concentrations since start of the biosparge system operation have:

i.) Decreased in 21 wells

ii.) Remained relatively constant with random fluctuations in 17 wells

iii.) Initially increased in 5 wells (MW-77D2, MW-81D2, MW-83D2, MW-86D2, and MW- 87D2) but decreased or fluctuated overtime

Similarly, the TCE concentrations have:

i.) Decreased in 22 wells

ii.) Remained relatively constant with random fluctuations in 20 wells

iii.) Initially increased in one well (MW-87D2) but decreased in recent years

The well in which both PCE and TCE concentrations increased was MW-87D2. Four of these wells (MW-81D2, MW-83D2, MW-86D2, and MW-87D2) are located in proximity to the western edge of the VCM plume. MW-77D2 is located in proximity to the eastern edge of the VCM plume. The reason for the initial increase is uncertain but is believed to be not related to the Hooker/Ruco Site. During installation of the north fence biosparge system injection and monitoring wells into the VCM impacted groundwater in 2011, groundwater with higher PCE and TCE concentrations were detected in the deeper groundwater below the elevation of the groundwater with VCM (see Figure 3). At that time, it was believed, and still is, that the PCE and TCE at depths below the VCM were due to sources other than the Hooker/Ruco Site. It is possible that the groundwater with higher concentrations is now impacting the groundwater chemistry in the referenced wells.

With regard to the wells which are sampled on a voluntary basis, it was noted that there was a TCE concentration increase in well nest MW-58 from the 70 to 110 µg/L range in May 2013 to the 1,910 to 7,600 µg/L range between November 2014 and April/May 2018. TCE concentrations from 2020 ranged between 149 to 220 µg/L (May) and 13.7 to 149 µg/L (November). TCE concentrations from 2021 ranged between 239 to 277 µg/L (July) and 99 to 149 µg/L (November). TCE concentrations from 2022 ranged between 99 µg/L (May) to 140 µg/L (October). It is believed that these increases in 2013 were due to the increased pumping rate of Northrop Well 3R drawing more of the highly TCE impacted groundwater from Northrop's OU 3 (see Figure 9).

Also of note is that the PCE and TCE concentrations in the well nests upgradient of the VCM plume (i.e., MW-92 and MW-93) have decreased significantly (e.g., PCE in MW-92D2 has decreased from 690 µg/L in April 2011 to 7.3 µg/L in October 2021 and from 110 µg/L in April 2011 to non-detect in October 2021 for MW-93D2). These results combined with the decreasing VCM results in these wells are consistent with the expectation that the north upgradient edge of the VCM plume is migrating southward.

Well Conditions Update

The operational status of the injection and monitoring wells for the biosparge system is provided in Table 3. Since the issuance of the 1st Semi-annual 2022 Progress Report, air injections could not be injected into well for IW-4D2, IW-5D1, IW-5D2, IW-6D1, IW-6D2, IW-7D1, IW-16D1, IW-17D1, IW-17D2, IW-18D1, IW-21D1, and IW-21D2. There is a leak in the air piping below the vault in IW-4 and IW-6. Attempts to repair the leak from via the bottom of each vault have been unsuccessful. GSH is evaluating injecting air into the liquid

injection wells in lieu of repair of IW-6D1. Actuator issues associated with IW-5, IW-6D2, and IW-7D1 are currently being investigated. It is anticipated that the actuators will be replaced in the first quarter of 2023 subject to procurement lead time. Regarding IW-16D1, IW-17D1, IW-17D2, IW-18D1, IW-21D1, and IW-21D2, it is believed that there are physical impairments in these wells. Repairs to IW-16D1, IW-17D1, IW-17D2, and IW-18D1 will not be performed unless DO concentrations decrease in downgradient monitoring wells. Regarding IW-21, access to this well was impeded in the third quarter of 2022 due to sale of the property where the well is located. Investigation into air injection into this well is ongoing. Additional air will be injected into this well (if possible) and IW-22 to address the increased VCM concentration observed in MW-89 during this sampling event.

Monitoring well MW-61D2 was found to be obstructed in October 2021. This well was subsequently inspected using a downhole video camera and was determined to be severely corroded with an obstruction at 152 feet below ground surface. Based on the results of the inspection, the well was abandoned and replaced in September 2022. The replacement well MW-61D2R was sampled during the October 2022 sampling event.

The operational status of the injection wells was updated using observations obtained during operation of the biosparge system during this reporting period. The operational status of the monitoring wells was updated using observations obtained during operation of the biosparge system during this reporting period.

Planned 1st Half 2023 Activities

The following activities are planned for the first half of 2023:

i.) Continue operation and maintenance of the biosparge system

ii.) Perform the 1st Semi-annual 2023 biosparge system performance monitoring event

iii.) Implement the Trial Shutdown Work Plan by shutting down IW-3, IW-4, IW-16, and IW-17 in late January 2023, with the first quarterly monitoring event being conducted as part of the 1st Semi-annual 2023 biosparge system performance monitoring event

Should you have any questions on the above, please do not hesitate to contact the undersigned at 519-340-4313 or email john.pentilchuk@GHD.com.

Regards

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Encl.

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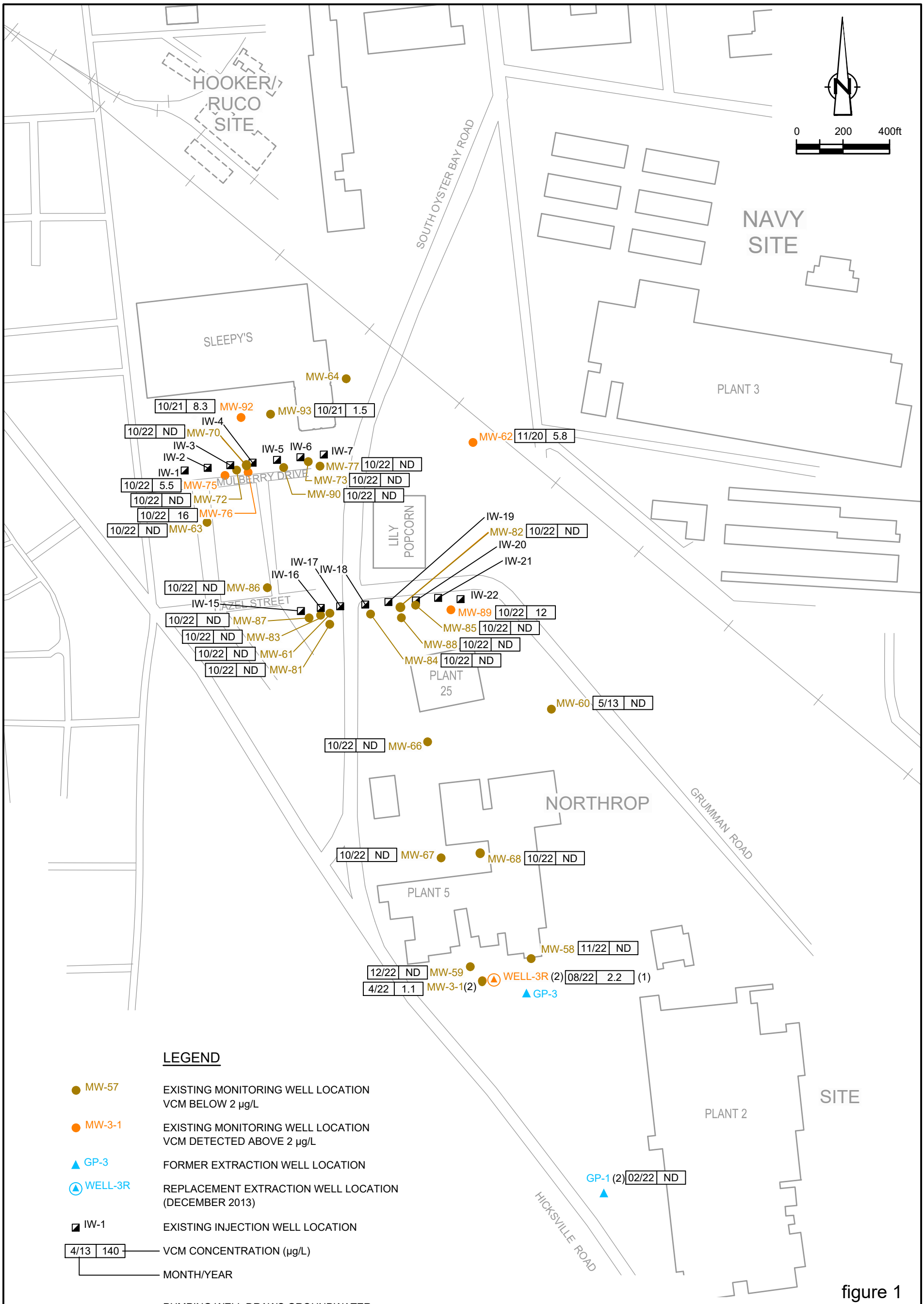

figure 1

MOST RECENT VCM GROUNDWATER CONCENTRATION

Hooker/Ruco Site, Hicksville, New York

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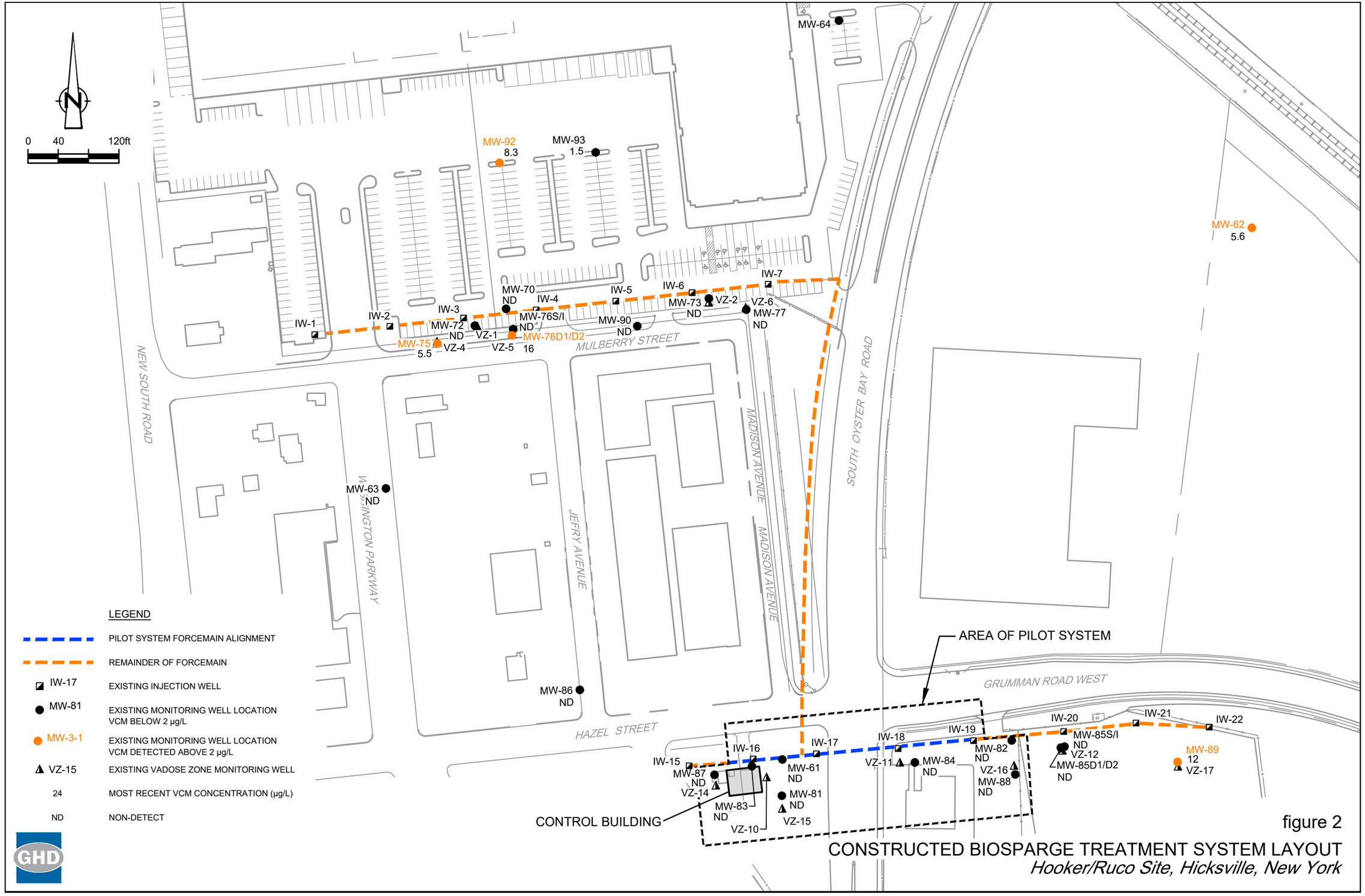

figure 2

CONSTRUCTED BIOSPARGE TREATMENT SYSTEM LAYOUT

Hooker/Ruco Site, Hicksville, New York

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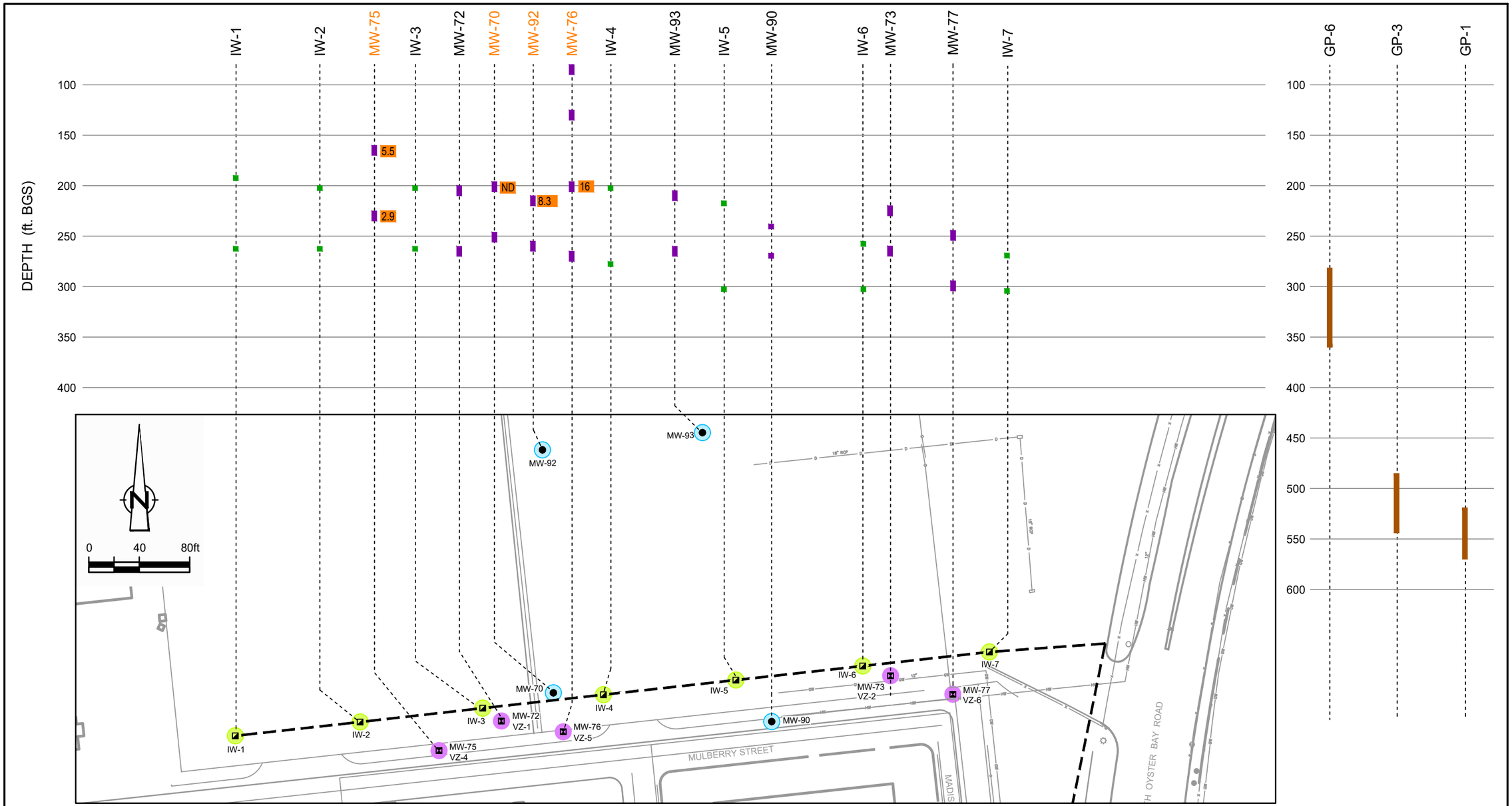

LEGEND

- FORCEMAIN ALIGNMENT
- MW-90 — GROUNDWATER MONITORING WELL LOCATION
- IW-4 — INJECTION WELL LOCATION
- MW-76 VZ-5 — GROUNDWATER AND VADOSE ZONE MONITORING WELL LOCATION
- AIR INJECTION WELL SCREENED INTERVAL
- GROUNDWATER MONITORING WELL SCREENED INTERVAL
- PUMPING WELL SCREENED INTERVAL

NOTE:
ORANGE WELL DESIGNATION AND CONCENTRATION (ug/L) HIGHLIGHTED IN ORANGE INDICATES VCM CONCENTRATION ABOVE 2ug/L.

figure 3

NORTH FENCE AIR INJECTION AND GROUNDWATER MONITORING WELL SCREENED INTERVALS

Hooker/Ruco Site, Hicksville, New York

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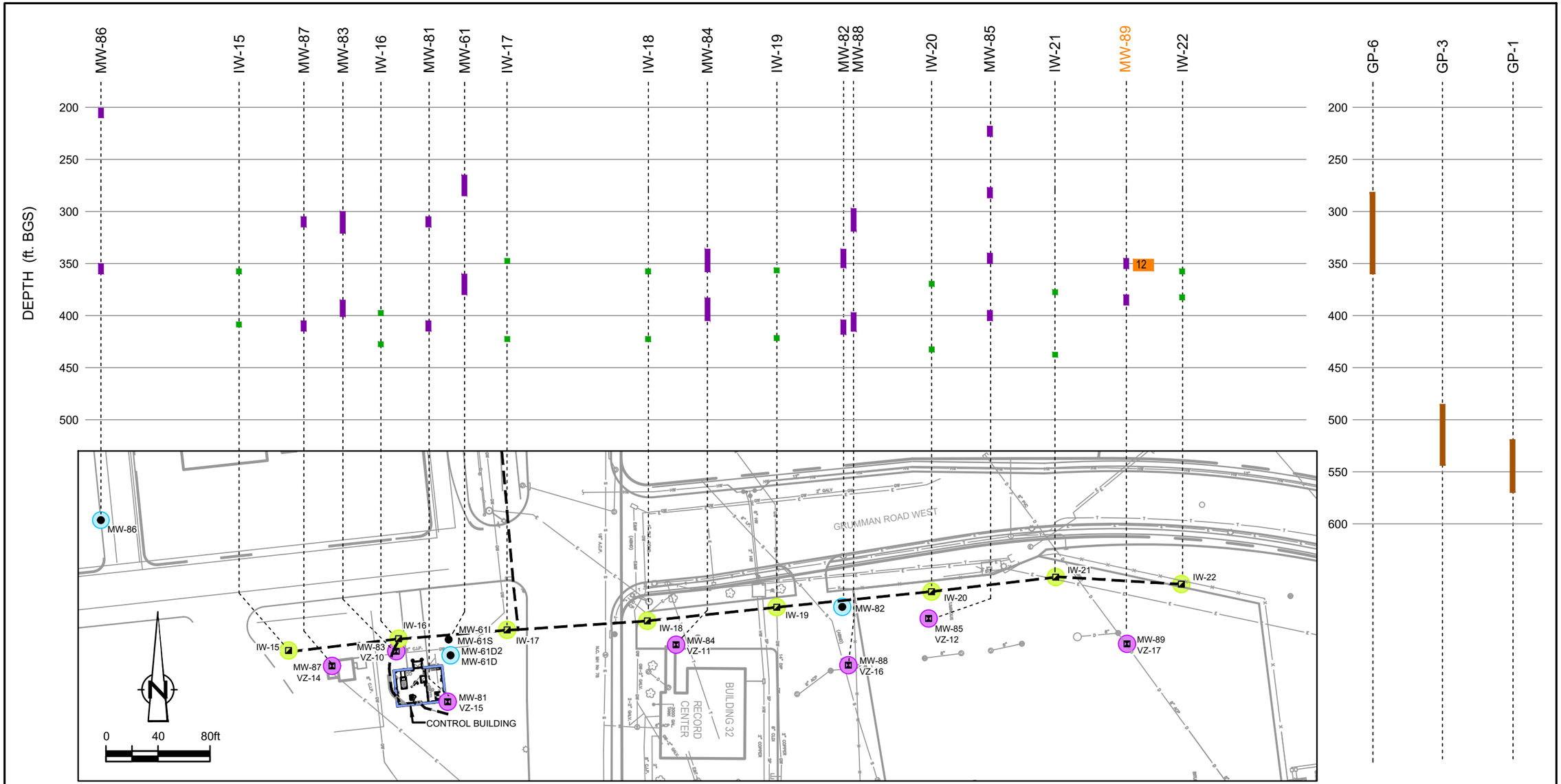

LEGEND

- FORCEMAIN ALIGNMENT
- MW-61 — GROUNDWATER MONITORING WELL LOCATION
- IW-8 — INJECTION WELL LOCATION
- MW-80 VZ-9 — GROUNDWATER AND VADOSE ZONE MONITORING WELL LOCATION
- AIR INJECTION WELL SCREENED INTERVAL
- GROUNDWATER MONITORING WELL SCREENED INTERVAL
- PUMPING WELL SCREENED INTERVAL

NOTE:
ORANGE WELL DESIGNATION AND CONCENTRATION (ug/L) HIGHLIGHTED IN ORANGE INDICATES VCM CONCENTRATION ABOVE 2ug/L.

figure 4

MIDDLE FENCE AIR INJECTION AND GROUNDWATER MONITORING WELL SCREENED INTERVALS

Hooker/Ruco Site, Hicksville, New York

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AIR INJECTIONS

IW2-D2A
IW2-D1A
IW3-D2A
IW3-D1A

VCM CHEMICAL CONCENTRATIONS (µg/L)

TVOC CHEMICAL CONCENTRATIONS (µg/L)

DISSOLVED OXYGEN (mg/L)

>20

TVOCs
VCM
DO
MW-75D1
MW-75D2

figure 5

WELL NEST MW-75
CHEMICAL CONCENTRATION PLOTS
NORTH INJECTION FENCELINE
Hooker/Ruco Site, Hicksville, New York

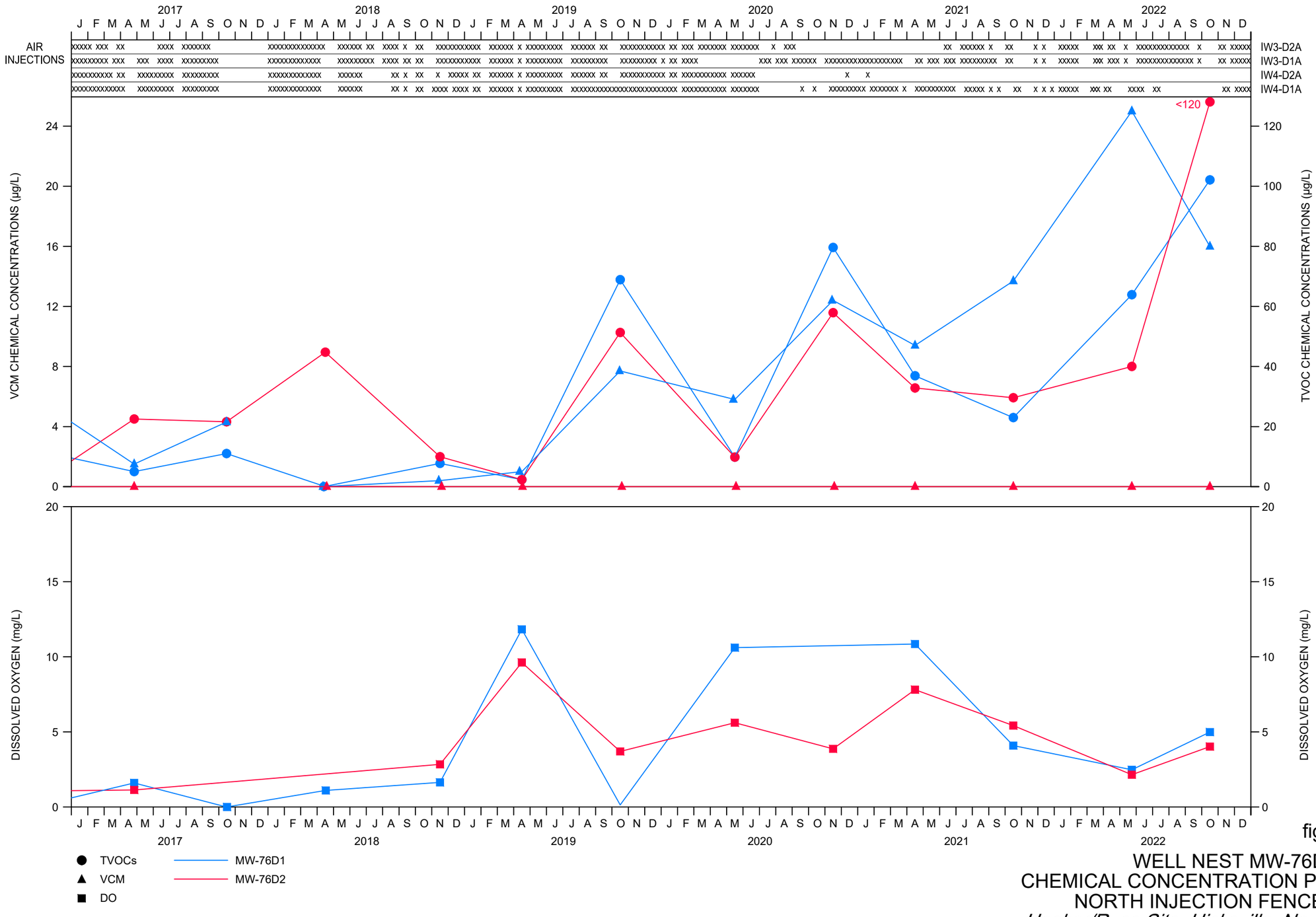

figure 6

WELL NEST MW-76D1/D2
CHEMICAL CONCENTRATION PLOTS
NORTH INJECTION FENCELINE
Hooker/Ruco Site, Hicksville, New York

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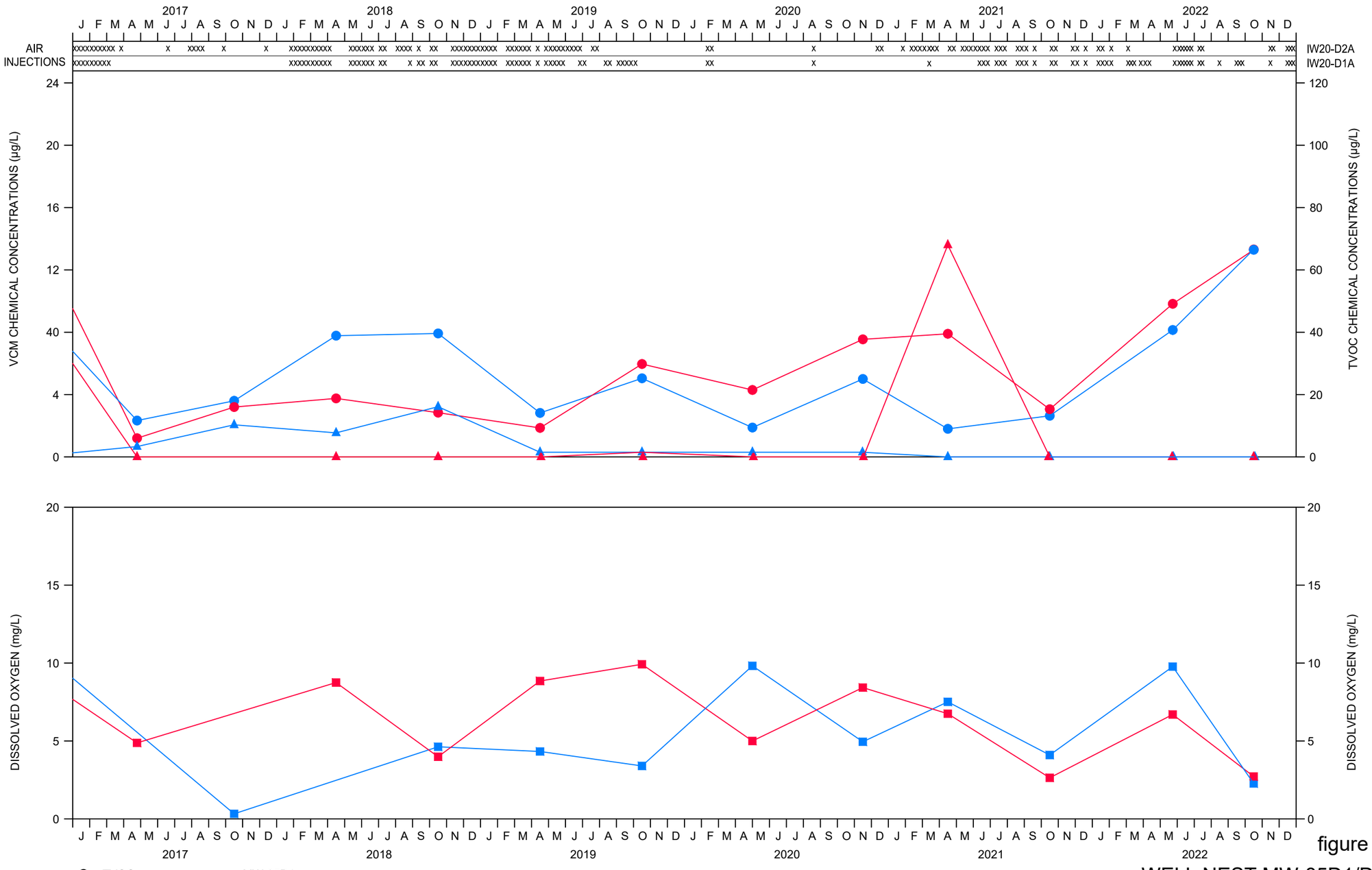

figure 7

WELL NEST MW-85D1/D2
CHEMICAL CONCENTRATION PLOTS
MIDDLE INJECTION FENCELINE
Hooker/Ruco Site, Hicksville, New York

AIR INJECTIONS

IW21-D2A
IW21-D1A
IW22-D2A
IW22-D1A

VCM CHEMICAL CONCENTRATIONS (µg/L)

TVOC CHEMICAL CONCENTRATIONS (µg/L)

>120 >120 >120

>20

DISSOLVED OXYGEN (mg/L)

DISSOLVED OXYGEN (mg/L)

TVOCs
VCM
DO

MW-89D1
MW-89D2

figure 8

WELL NEST MW-89
CHEMICAL CONCENTRATION PLOTS
MIDDLE INJECTION FENCELINE
Hooker/Ruco Site, Hicksville, New York

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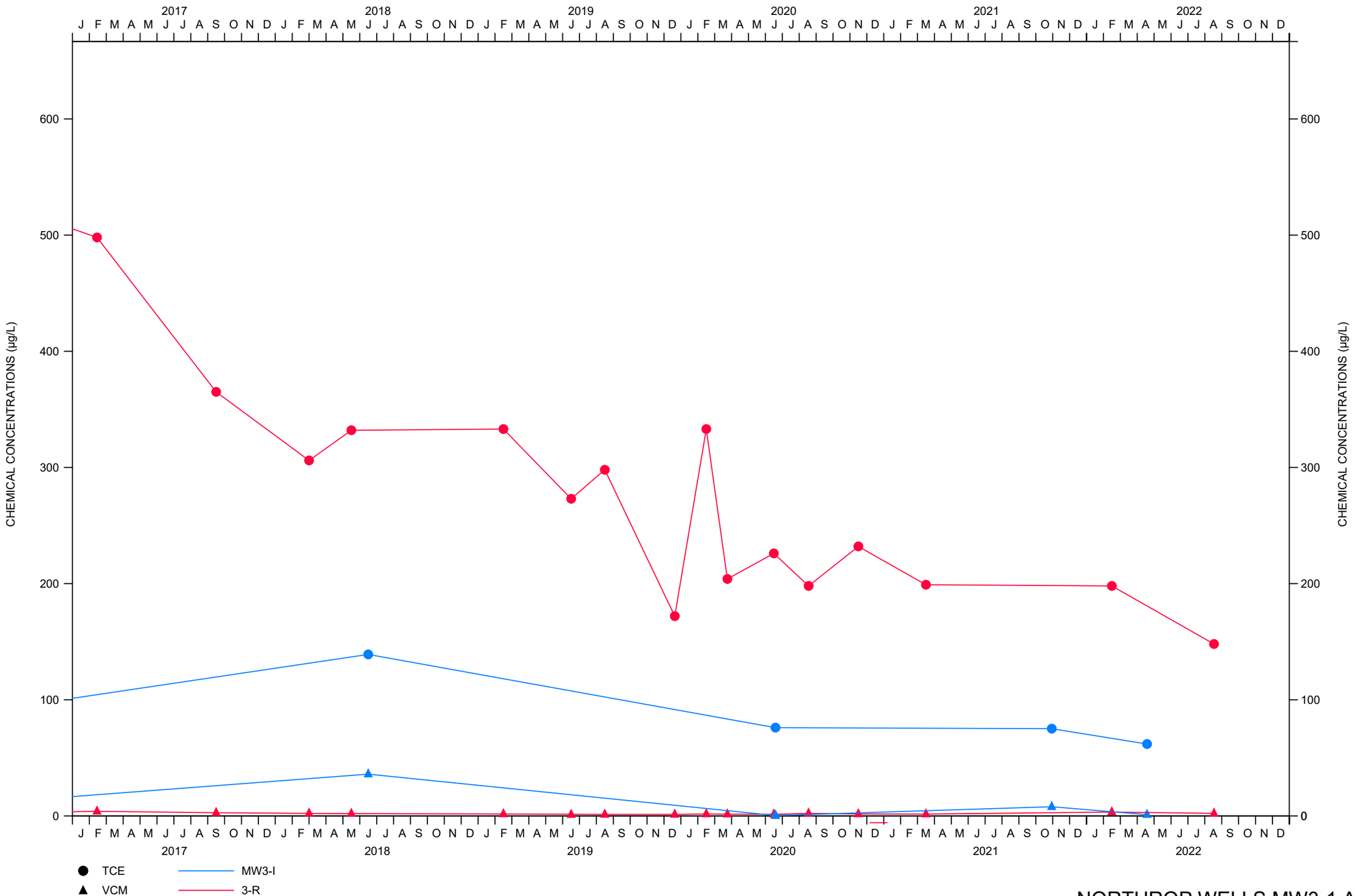

figure 9

NORTHROP WELLS MW3-1 AND 3-R
CHEMICAL CONCENTRATION PLOTS
Hooker/Ruco Site, Hicksville, New York

Table 1

2022 Summary of Biosparge System Activities
Operable Unit 3
Hooker/Ruco Site
Hicksville, New York

Date Observed	Description of Issue	Action Taken	Date of Action	Outcome of Action	Notes
7/8/22	Monthly Inspection	Completed			
8/19/22	Monthly Inspection	Completed			
8/19/22	IW-18 showing flow when closed	Repaired relief valve so that pipe could be bled of water.	8/19/22	Repair complete	
9/16/22	Monthly Inspection	Completed			
9/16/22	IW-18 and IW-01 showing flow when closed	Bled water through relief valve	9-16-22	Repair complete	
10/11/22	Groundwater Sampling Event	Commenced			
11/11/22	Monthly Inspection	Completed			
12/20/22	Battery replacement in Emergency Flood Lights	Installation Complete			
12/20/22	Monthly Inspection	Completed			
12/20/22	Groundwater Sampling Event	Completed			Biosparge system on after 10/28/2022

Table 2

Select Laboratory and Field Parameter Results
Hooker Ruco Site
Hicksville, New York

Well	Date Sampled	PCE (µg/L)	TCE (µg/L)	VCM (µg/L)	ORP (mV)	DO (mg/L)	Fe^{+2} (mg/L)
Base Wells							
MW-61I [(1)]	11/5/2012	4.4 J	4.8 J	5.0 U	111	11.23	3.99
	5/23/2012	2.3 J	3.6 J	5.0 U	NM	NM	NM
	11/30/2011	3.7 J	3.3 J	5.0 U	NM	12.81	NM
	4/19/2011	4.6 J/4.6 J	3.8 J/4.0 J	5.0 U/ 5.0	249	10.10	0.0
	1/20/2011	5.6/3.7 J	3.9 J/3.7 J	5.0 U/5.0 UJ	266	11.10	0.0
	5/10/2010	6.9	7.8 U	1.6 J	120	10.65	0.0
	10/15/2009	7.7	11	1.4 J	366	17.66	0.49
	4/8/2009	3.7 J	4.7 J	5.0 U	306	12.18	0.05
	10/28/2008	2 J	1 J	4	351	7.11	1.11
	7/16/2008	3.7 J	4.7 J	5.0 U	69	2.78	10.82
	4/23/2008	2 J	1 J	4	60	0.45	2.83
	1/24/2008	5 UJ	5 U	4.8	86	1.44	3.11
	10/11/2007	5 U	5 U	2 U	50	3.56	3.12
	7/20/2007	5 U	5 U	4	90	0.37	5.19
	4/19/2007	19	95	140	124	3.21	0.03
	1/24/2007	5 U	5 U	3 J	101	1.93	1.84
	12/21/2006	5 U/5 U	5 U/5 U	3 J/4 J	118	0.00	2.17
	11/29/2006	5 U/5U	5 U/5 U	3 J/2 J	60	0.00	1.96
	10/26/2006	5 UJ	5 U	2 J	133	0.00	2.49
	10/25/2006	NA	NA	NA	112	0.41	3.04
	10/24/2006	NA	NA	NA	102	0.00	2.76
MW-61D1 [(1)]	11/5/2012	4.2 J	3.9 J	5.0 U	124	11.85	3.0
	5/23/2012	2.2 J	3.1 J	5.0 U	170	13.55	1.8
	11/30/2011	3.7 J	3.1 J	5.0 U	NM	13.21	NM
	4/19/2011	3.8 J	3.0 J	5.0 U	248	10.38	0.0
	1/20/2011	5.6	3.6 J	5.0 UJ	231	18.80	0.0
	5/10/2010	6.3	8.0 U	1.8 J	140	10.15	0.0
	10/15/2009	6.7	9.3	5.0 U	336	10.11	0.96
	4/8/2009	3.9J /3.7 J	4.4 J/4.3 J	5.0 U/5.0 U	267	12.77	0.08
	10/28/2008	2 J	1 J	2 U	335	3.75	0.21
	7/16/2008	5 UJ/5 UJ	5 U/5 U	2/2	87	2.35	2.13
	4/22/2008	5 U	5 U	2 U	60	0.41	2.91
	1/24/2008	5 U	5 U	3	78	1.33	3.21
	10/10/2007	5 U	5 U	1 J	26	3.39	4.20
	7/20/2007	5 U/5 U	5 U/2 J	4.0/4.0	83	0.44	3.30
	4/19/2007	27	130	200	79	6.66	0.26
	1/23/2007	5 U	5 U	3 J	54	1.21	1.84
	12/21/2006	5 U	5 U	3 J	90	0.00	2.59
	11/29/2006	5 U	5 U	5.7	54	0.00	1.92
	10/26/2006	5 UJ	5 U	3 J	109	0.00	2.99
	10/25/2006	NA	NA	NA	107	0.65	3.74
	10/24/2006	NA	NA	NA	110	0.00	2.30
MW-61D2R [(1)(8)]	10/27/2022	74	58	0.9U	-6	7.17	0.7
	4/21/2021	66.1	42.3	1.0U	-66	4.31	3.32
	11/9/2020	38.7	29.5	1.0U	72	12.53	5.00
	5/12/2020	18.3	14.3	1.0U	NM	NM	NM
	10/16/2019	25.8	23.1	1.0U	-31	1.60	5.00
	4/26/2019	160	73	1.0U	NM	NM	NM
	11/12/2018	85.2	61.6	1.0U	NM	NM	NM
	4/19/2018	85.4	57.1	1.0U	NM	NM	NM
	10/19/2017[(5)]	62	55	1.0U	NM	NM	NM
	4/28/2017[(5)]	59	69	1.0U	NM	NM	NM
	10/21/2016[(5)]	28	45	2.0UJ	NM	NM	0.27
	4/26/2016	39	51	2.0 U	69	5.76	0.35
	10/22/2015	11	18	2.0 U	87	12.28	5.0
	4/24/2015[(5)]	52	150	1.3 J	NM	NM	NM

Table 2

Select Laboratory and Field Parameter Results
Hooker Ruco Site
Hicksville, New York

Well	Date Sampled	PCE (µg/L)	TCE (µg/L)	VCM (µg/L)	ORP (mV)	DO (mg/L)	Fe^{+2} (mg/L)
MW-61D2R [1][8]	10/30/2014[5]	40 J	59 J	0.88 J	NM	NM	NM
(cont'd)	4/29/2014[5]	51	73	1.2 J	NM	NM	NM
	10/29/2013[5]	30	46	1.2 J	NM	NM	NM
	5/2/2013	30	120	13	196	16.37	>5.0
	5/23/2012	13 J	110	12	123	8.54	9
	4/7/2011	110/70	240/240	18 J/10 J	196	17.58	(2)
	11/16/2010	78	360	380	55	8.75	-2
	5/10/2010	120	360	240	224	19.51	0.0
	10/14/2009	99	300	19	155	16.29	2.80
	4/9/2009	110	360	450	319	17.47	1.95
	10/27/2008	25	150	33	381	>20	0.18
	7/15/2008	40 J	330	39	173	19.99	0.08
	4/22/2008	11	89	11	248	14.49	0.09
	1/24/2008	26	140	46	326	>20	0.78
	10/11/2007	62	210	610	300	11.71	0.21
	7/23/2007	200	640	3500	71	13.45	1.34
	4/23/2007	140	580 J	2000	361	>20	0.21
	1/23/2007	160	590	3100	131	>20	0.89
	12/21/2006	130	490	3400	120	9.28	2.36
	11/29/2006	39	150	1500	110	11.12	1.91
	10/26/2006	150 J	450	5800	62	1.94	4.04
	10/25/2006	NA	NA	NA	27	1.42	5.46
	10/24/2006	NA	NA	NA	37	0.00	0.15
MW-63D1 [2]	11/29/2022	6.2	2.6	0.9U	NM	NM	NM
	10/14/2021	8.4	6.0	1.9	113	8.40	1.0
	11/5/2020	5.4/5.4	3.4/3.2	1.0U/1.0U	207	10.02	0.6
	5/12/2020	4.1	2.2	1.0U	253	15.12	0.7
	10/15/2019	6.6	2.4	1.0U	283	11.36	1.5
	4/24/2019	7	3	1.0U	117	15.95	0.1
	11/8/2018	5.08	2.70	1.0U	62	4.90	0.1
	5/8/2018	3.29	2.39	1.0U	135	6.23	0.8
	11/1/2017	4.5	1.7	1.0U	262	5.05	0.1
	5/11/2017	2.1	1.0U	1.0U	192	8.21	0.1
	10/19/2016	11	5.0U	2.0UJ	54	14.10	1.8
	4/28/2016	6.1	2.4 J	2.0 U	264	5.22	0.3
	10/20/2015	2.3 J	3.7 J	2.0 U	58	33.76	0.8
	4/22/2015	3.4 J	5.0 U	2.0 U	332	5.52	4.3
	10/21/2014	5.5	3.8 J	3.2 J	121	6.91	1.5
	7/17/2014	6.9	6	19	158	3.50	3.2
	4/24/2014	9.9	7.3	29	276	11.59	0.0
	10/24/2013	3.2 J	5.6	45	208	17.25	0.9
	5/1/2013	17	3.4 J	13	232	11.93	1.6
	5/24/2010	6.4 J	9.2	35	166	0.00	0.0
MW-63D2 [2]	5/12/2020	3.7	1.8	1.0U	187	23.38	2.02
	10/15/2019	3.1	1.9	1.0U	238	16.67	1.75
	4/24/2019	5	3	1.0U	277	15.16	0.14
	11/8/2018	4.51	2.47	1.0U	205	5.06	0.00
	5/8/2018	2.81	1.71	1.0U	184	4.62	4.59
	11/1/2017	4.7	1.8	1.0U	233	6.19	0.00
	5/11/2017[5]	3.5	1.1	1.0U	NM	NM	NM
	10/19/2016	5.0J	5.0U	2.0UJ	164	8.23	0.72
	4/28/2016	4.9 J	1.6 J	2.0 U	256	5.26	0.07
	10/20/2015	2.4 J	3.6 J	2.0 U	53	35.80	2.97
	4/22/2015	2.7 J	5.0 U	2.0 U	280	6.09	2.30
	10/21/2014	5.1	3.7 J	3.2 J	167	6.48	1.20
	7/17/2014	5.6	6.1	21	125	2.70	3.10
	4/24/2014	7.9	8.1	29	202	7.95	0.11
	10/24/2013	3.1 J	5.2	46	-17	11.03	3.86

Table 2

Select Laboratory and Field Parameter Results
Hooker Ruco Site
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Well	Date Sampled	PCE (µg/L)	TCE (µg/L)	VCM (µg/L)	ORP (mV)	DO (mg/L)	Fe^{+2} (mg/L)
MW-63D2 [(2)]	5/1/2013	21	4.0 J	13	229	9.77	1.65
(cont'd)	5/24/2010	6.4 J	9.1	46	169	0.00	0.00
MW-63S [(2)]	10/28/2022	6.2	3.9	0.9U	61	8.22	5.00
	10/29/2021	3.9	3.6	1.0UJ	94	28.71	3.1
	11/30/2020	1.6	2.1	1.0U	176	11.50	1.7
	5/26/2020	2.9	3.1	1.0U	120	16.82	2.8
	10/27/2019	2.0	1.6	1.0U	101	13.30	4.1
	5/8/2019	6	4	1.0U	209	26.80	0.0
	5/23/2018	4.68	4.33	1.0U	197	4.45	1.3
	10/18/2017	3.9	2.7	1.0U	75	8.82	0.0
	4/27/2017	1.0U	1.0U	1.0U	249	11.91	0.5
	11/2/2016	5.0UJ	5.0U	2.0UJ	201	9.74	0.3
	5/18/2016[(5)]	1.9 J	5.0 U	2.0 U	NM	NM	NM
	5/15/2014[(5)]	7	6	18	NM	NM	0.00
	11/9/2015[(5)]	3.3 J	2.5 J	2.0 U	NM	NM	NM
	5/8/2015	5.5	5.0 U	4.7 J	4	11.79	0.3
	11/14/2014	3.5 J	3.8 J	1.5 J	203	7.88	25.0
	8/6/2014	5.0 UJ	5.5	7.2	145	5.64	0.10
	11/7/2013	9.4	7.7	5.0 U	7	8.91	3.16
	5/23/2013	10	7.8	76	74	4.53	1.33
	5/21/2010	2.4 J	4.3 J	16	-111	0.00	0.06
MW-63I [(2)]	10/28/2022	4.1	2.2	1.8U	67	14.24	1.1
	10/29/2021	6.4	4.7	1.0J	146	12.12	0.4
	11/30/2020	1.9/2.0	2.3/2.4	1.0U/1.0U	NM	NM	NM
	5/26/2020	2.7	2.5	1.0U	255	12.86	0.6
	10/27/2019	3.2	2.2	1.0U	124	12.40	1.5
	5/8/2019	3	3	1.0U	212	16.78	0.0
	11/20/2018	7.09	5.21	1.0U	149	13.98	0.0
	5/23/2018	1.76	0.78J	1.0U	203	5.96	0.3
	10/18/2017	1.4	1.2	1.0U	210	5.44	0.0
	4/27/2017	1.4	1.3	1.0U	247	8.67	NM
	11/2/2016	5.0UJ	5.0U	2.0UJ	201	0.46	0.4
	5/18/2016	2.7 J	5.0 U	2.0 U	231	13.55	0.4
	11/9/2015	2.3 J	2.1 J	0.97 J	265	12.19	NM
	5/8/2015	5.8	5.0 U	2.0 U	87	12.34	0.8
	11/14/2014	4.5 J	3.3 J	4.2 J	35	8.41	14.5
	8/6/2014	5.0 UJ	5.9	15	139	2.73	0.5
	5/15/2014	1.5 J	5.0 U	3.4 J	36	2.83	0.0
	11/7/2013	12	8.2	5.0 U	70	11.37	0.7
	5/23/2013	7.9	5.5	29	75	4.40	1.7
	5/21/2010	5.4 J	8.3	47	-102	0.00	0.0
MW-70D1 [(2)]	10/25/2022	0.36U	0.46U	0.9U	173	2.73	5.0
	5/10//22	1.0U	1.0U	7.1J	193	3.77	5.0
	10/13/2021	1.0U/1.0U	1.0U/1.0U	1.0U/1.0U	77	2.67	5.0
	4/22/2021	1.0U	1.0U	1.0U	57	7.45	5.0
	11/10/2020	1.0U	1.0U	1.0U	-75	1.53	5.0
	5/14/2020	1.0U	1.0U	1.0UJ	34	7.12	5.0
	10/14/2019	1.0U	1.0U	1.0U	90	1.59	3.7
	4/25/2019	1.0U	1.0U	1	125	34.01	0.1
	11/6/2018	1.0U	1.0U	0.51J	72	2.08	1.3
	4/26/2018	1.0U	1.0U	1.0U	62	1.50	>5
	10/17/2017	1.1	0.7J	3.2	-15	2.55	0.0
	4/28/2017	1.3J	1.0U	3.7J	-100	3.49	0.5
	10/20/2016[(5)]	5.0UJ	5.0U	4.7J	NM	NM	0.0
	4/27/2016	1.5 J	5.0 U	5.1	-17	0.08	0.4
	10/22/2015	3.5 J	1.6 J	8.8	62	6.00	1.6

Select Laboratory and Field Parameter Results
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Well	Date Sampled	PCE (µg/L)	TCE (µg/L)	VCM (µg/L)	ORP (mV)	DO (mg/L)	Fe^{+2} (mg/L)
MW-70D1 [(2)]	4/24/2015	3.3 J	5.0 U	11	107	14.38	0.0
(cont'd)	10/23/2014	4.3 J	0.92 J	19	30	6.24	2.7
	7/21/2014	6.6	1.0 J	16	48	9.35	0.0
	4/23/2014	4.1 J	1.2 J	20	76	10.11	0.0
	1/23/2014	4.2 J	1.9 J	17	-109	5.06	0.0
	10/24/2013	5.8	1.1 J	21	38	12.56	2.8
	7/23/2013[(5)]	5.3	1.3 J	16	NM	NM	NM
	4/26/2013	6.4	2.0 J	26	170	9.35	3.5
	2/4/2013	8.8	2.1 J	43	8	4.80	3.0
	10/25/2012	2.0 J	5.0 U	12	NM	NM	NM
	4/11/2011	13	2.0 J	46	-135	0.69	4.0
MW-70D2 [(2)]	10/25/2022	1.9	3.4	0.9U	-101	1.40	5.0
	5/10/2022	3.3	5.2	1.0UJ	-146	4.85	5.0
	10/13/2021	1.0U	1.0U	1.0U	45	4.39	4.9
	4/22/2021	1.0U	1.0U	1.0U	-49	6.77	5.0
	11/30/2020	1.0U	1.0U	1.0U	NM	NM	NM
	5/14/2020	1.0U	1.0U	1.0UJ	68	5.66	5.0
	11/14/2019	1.0U	1.0U	1.0U	-28	0.64	3.1
	4/25/2019	1.0U	1.0U	1.0U	40	16.29	0.0
	11/6/2018	1.0U	1.0U	1.0U	51	1.75	2.4
	4/26/2018	1.0U	1.0U	1.0U	154	3.93	4.9
	10/17/2017	1.0U	1.0U	1.0U	29	0.00	0.0
	4/28/2017	1.0U	1.0U	1.0U	-73	0.76	0.0
	10/20/2016	5.0UJ	5.0U	2.0UJ	59	0.00	0.3
	4/27/2016	5.0 U	5.0 U	2.0 U	108	0.00	0.0
	10/22/2015	5.0 U	5.0 U	2.0 U	-21	4.44	NM
	4/24/2015	1.6 J	5.0 U	2.0 U	-89	8.70	0.2
	10/23/2014	1.8 J	5.0 U	5.0 U	39	3.82	4.5
	7/21/2014	11	1.4 J	5.0 U	-9	9.22	0.0
	4/23/2014	11	3.8 J	5.0 U	211	11.88	0.0
	1/23/2014[(5)]	20	8.1	5.0 U	NM	NM	NM
	10/24/2013	45	13	1.6 J	-17	3.95	0.1
	7/23/2013	49	14	5.0 U	16	1.88	1.2
	4/26/2013	51	12	4.2 J	-19	7.89	>5.0
	2/4/2013	62	23	29	27	11.14	0.0
	10/25/2012	32	26	190	-4	8.78	3.2
	4/11/2011	47	56	1000	-122	0.66	2.0
MW-72D1 [(2)]	5/15/2020	1.0U	1.0U	1.0U	17	9.43	4.4
	10/14/2019	1.0U	1.0U	1.0U	147	0.64	4.9
	4/25/2019	1.0U	1.0U	1.0U	12	12.04	0.0
	11/6/2018	1.0U	1.0U	1.0U	116	2.51	0.7
	4/26/2018	1.0U	1.0U	1.0U	150	3.92	NM
	10/19/2017	1.0U	1.0U	1.0U	38	0.00	NM
	4/27/2017	1.0U	1.0U	1.0U	24	6.03	0.4
	10/20/2016	5.0UJ	5.0U	2.0UJ	105	9.86	0.0
	4/28/2016	5.0 U	5.0 U	2.0 U	122	3.94	0.1
	10/22/2015	5.0 U	5.0 U	2.0 U	6	6.38	5.0
	4/24/2015	5.0 U	5.0 U	2.0 U	97	13.26	0.5
	10/23/2014	0.74 J	5.0 U	5.0 U	37	4.41	2.6
	7/21/2014	5.0 U	5.0 U	5.0 U	-21	10.13	0.0
	4/23/2014[(5)]	1.3 J	1.6 J	2.9 J	NM	NM	NM
	1/24/2014	5.0 U	5.0 U	5.0 U	36	10.78	NM
	10/24/2013	5.0 U	5.0 U	5.0 U	-80	4.60	4.6
	7/23/2013	1.9 J	1.3 J	5.0 U	-11	2.37	>5.0
	5/1/2013	1.3 J	1.0 J	0.99 J	103	10.48	3.7
	2/4/2013	3.5 J	1.0 J	3.0 J	54	4.65	1.0
	10/25/2012	3.2 J	5.0 U	5.0 U	139	9.82	1.0
	4/12/2011	13	1.9 J	21	-159	0.57	3.5

Table 2

Select Laboratory and Field Parameter Results
Hooker Ruco Site
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Well	Date Sampled	PCE (µg/L)	TCE (µg/L)	VCM (µg/L)	ORP (mV)	DO (mg/L)	Fe^{+2} (mg/L)
MW-72D2 [(2)]	10/25/2022	13	3.2	0.9U	116	6.34	5.0
	5/11/2022	37	5.6	1.0U	98	10.49	5.0
	10/13/2021	38	7.4	1.0U	45	6.47	5
	4/22/2021	57.8	8.4	1.0U	-79	6.05	5
	11/10.2020	35.8	6.7	1.0U	40	11.53	5
	5/15/2020	50.1 J	7.2	1.0U	50	7.09	5
	10/14/2019	39.2	6.9	1.0U	204	4.66	2.82
	4/25/2019	50	8	1.0U	85	11.79	0
	11/6/2018	74.9	9.49	1.0U	33	1.97	2.01
	4/26/2018	57	7.03	1.0U	173	0.33	>5
	10/19/2017	85	11	5.0U	93	8.24	0.0
	4/27/2017	78	12	1.0U	-82	1.47	0.0
	10/20/2016	170	19	2.0UJ	-27	0.00	0.0
	4/28/2016	200	23	2.0 U	284	0.72	0.1
	10/22/2015	190	29	2.0 U	9	4.73	1.9
	4/24/2015	240	37	2.0 U	42	9.51	0.5
	10/23/2014	560	54	5.0 U	52	3.03	2.8
	7/21/2014	500	48	0.59 J	-2	9.43	0.3
	4/23/2014[(5)]	450	43	5.0 U	NM	NM	NM
	1/24/2014	400	32	5.0 U	67	12.96	NM
	10/24/2013	480	25	5.0 U	-144	3.20	3.2
	7/23/2013	410	35	5.0 U	-134	2.03	3.7
	5/1/2013	540	16	5.0 U	-32	9.69	>5.0
	2/4/2013	850	51	5.0 U	48	7.77	0.4
	10/25/2012	380	37	5.0 U	76	7.52	0.8
	4/13/2011	330	5.3	5.0 U	-210	0.37	2.0
MW-73D1 [(2)]	10/15/2021	2.9	1.6	1.0U	60	5.72	5.0
	5/14/2020	1.2	1.0U	1.0UJ	-9	3.88	5.0
	10/14/2019	2.6	1.0U	1.0U	187	0.87	5.0
	4/24/2019	0.2J	1.0U	1.0U	104	11.37	0.0
	11/6/2018	1.25	1.0U	1.0U	80	2.94	2.6
	4/26/2018[(5)]	1.38/1.31	1.0U/1.0U	1.0U/1.0U	NM	NM	NM
	10/19/2017	1.7	0.5J	1.0U	22	1.61	0.0
	4/28/2017	2.1J	1.0U	1.0U	16	2.23	1.6
	10/21/2016	4.3J	5.0U	2.0UJ	49	4.29	0.1
	4/27/2016	2.9 J	5.0 U	2.0 U	134	1.70	0.9
	10/26/2015	2.5 J	5.0 U	2.0 U	63	8.44	0.1
	4/24/2015	1.5 J	5.0 U	0.75 J	59	15.86	NM
	10/30/2014	5.0 U	5.0 U	5.0 U	203	24.68	0.0
	7/18/2014	0.85 J	5.0 U	5.0 U	21	1.22	0.0
	4/24/2014	5.0 U	5.0 U	5.0 U	140	3.56	0.8
	1/24/2014	5.0 U	5.0 U	5.0 U	143	14.42	NM
	10/25/2013	1.9 J	5.0 U	5.0 U	-51	2.94	0.3
	7/24/2013	1.9 J	5.0 U	5.0 U	-128	0.86	3.0
	5/1/2013	5.0 U	5.0 U	5.0 U	-44	10.87	>5.0
	2/13/2013	5.0 U	5.0 U	5.0 U	296	9.91	0.0
	10/26/2012	5.0 U	5.0 U	2.6 J	7	11.93	5.0
	4/25/2011	5.0 U	5.0 U	5.0 U	-155	2.56	3.5
MW-73D2 [(2)]	10/26/2022	1.9	0.56J	0.9U	NM	NM	NM
	11/9/2020	10.5	2.1	1.0U	92	17.53	5.0
	5/14/2020	10.4	3.1	1.0UJ	67	6.47	5.0
	10/14/2019	2.6	1.3	1.0U	65	0.87	5.0
	4/24/2019	0.7J	0.4J	1.0U	NM	NM	NM
	11/6/2018	4.46	1.67	1.0U	147	3.24	>5
	4/26/2018	10.9	3.22	1.0U	NM	NM	NM
	10/19/2017	7.2	2.5	1.0U	35	3.55	0.0
	4/28/2017	34J	7.8J	1.0U	-37	3.86	0.0

Table 2

Select Laboratory and Field Parameter Results
Hooker Ruco Site
Hicksville, New York

Well	Date Sampled	PCE (µg/L)	TCE (µg/L)	VCM (µg/L)	ORP (mV)	DO (mg/L)	Fe^{+2} (mg/L)
MW-73D2 [2] (cont'd)	10/21/2016	29	11	2.0UJ	24	0.93	0.0
	4/27/2016	13	5.2	2.0 U	92	5.38	0.0
	10/26/2015	9.2	4.0 J	2.0 U	45	12.23	0.5
	4/24/2015	8.5	5.0 U	2.0 U	-58	9.53	1.4
	10/30/2014	35	11	5.0 U	55	7.73	>5.0
	7/18/2014	2.8 J	5.0 U	5.0 U	1	1.37	0.0
	4/24/2014	5.3	2.0 J	5.0 U	130	8.71	0.0
	1/24/2014[5]	6.3	5.7	1.1 J	NM	NM	NM
	10/25/2013	13	6.1	0.62 J	-32	1.74	1.3
	7/24/2013	60	17	3.0 J	-29	1.95	3.6
	5/1/2013	26	12	16	-95	7.63	>5.0
	2/13/2013	60	23	22	332	12.53	0.0
	10/26/2012	52	19	130	12	8.07	5.0
	4/25/2011	38	20	1400	-53	1.86	3.5
MW-75D1 [2]	10/25/2022	0.36U	0.46U	5.5	-12	0.98	5.0
	5/11/2022	1.0U	1.0U	1.0UJ	113	8.27	5.0
	10/13/2021	1.0U	1.0U	1.0U	80	4.33	3.7
	4/21/2021	1.0U	1.0U	1.0U	-127	6.22	5.0
	11/10/2020	1.5	1.6	1.0U	119	6.15	5.0
	5/15/2020	1.0UJ	1.8	1.0U	95	3.51	5.0
	10/14/2019	1.0U	1.8	1.0U	77	1.47	5.0
	4/25/2019	0.9J	1	1.0U	146	23.47	0.1
	11/6/2018	1.25	1.11	1.0U	35	2.14	0.7
	5/4/2018[5]	1.55/1.68	1.21/1.0U	1.0U/1.0U	NM	NM	NM
	11/1/2017	3.7	3.3	1.0U	NS	NS	NS
	10/18/2017[5]	NS	NS	NS	-61	0.00	0.0
	4/27/2017	1.7	2.1	1.0U	-85	2.54	0.1
	10/20/2016	5.0UJ	5.0U	2.0UJ	228	6.07	0.0
	4/28/2016	4.2 J	2.4 J	2.0 U	194	0.00	0.1
	10/22/2015	5.0 U	5.0 U	2.0 U	191	6.86	5.0
	4/22/2015	5.1	5.0 U	7.2	117	4.08	NM
	10/23/2014	9.4	2.8 J	66	47	3.23	>5.0
	7/18/2014[5]	10	4.9 J	46	NM	NM	NM
	4/23/2014[5]	6.3	4.9 J	9	NM	NM	NM
	1/24/2014	3.2 J	2.0 J	10	40	12.51	NM
	10/24/2013	7	2.6 J	28	48	11.80	3.2
	7/24/2013	17	6.3	120	-138	1.32	2.2
	4/30/2013	25	7	510	1	11.07	4.1
	2/4/2013	39	16	1500	-48	6.09	0.0
	10/24/2012	32	18	1100	-35	9.41	1.6
	12/1/2011	51	23 J	960	NM	3.20	NM
MW-75D2 [2]	10/25/2022	0.41J	0.46U	2.9	-27	2.32	4.7
	5/11/2022	1.0U	1.0U	5.8J	-120	2.41	5.0
	10/13/2021	1.0U	1.0U	3.4	-53	1.93	3.3
	4/21/2021	1.3	1.0U	8.5	-158	4.00	2.0
	11/10/2020	1.0U	1.2	19.7	-149	5.04	5.0
	5/15/2020	1.0UJ	1.0U	10	-173	2.67	2.3
	10/14/2019	1.0U	1.0U	5	-104	0.72	5.0
	4/25/2019	0.8J	0.6J	4	1	16.65	0.0
	11/6/2018	1.0U	0.86J	4.9	89	1.87	3.6
	5/4/2018	0.42J	0.46J	3.27	161	0.00	3.6
	10/18/2017	0.7J	0.7J	5	103	0.00	0.3
	4/27/2017	1.0U	1.6J	7.6J	-92	4.60	0.1
	10/20/2016	5.0UJ	5.0U	18J	-140	0.00	0.0
	4/28/2016	1.5 J	5.0 U	78	-41	0.98	0.3
	4/22/2015	9.3	19	150	-82	4.19	1.4
	10/23/2014	17 J	35 J	190 J	6	2.68	3.5

Table 2

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Well	Date Sampled	PCE (µg/L)	TCE (µg/L)	VCM (µg/L)	ORP (mV)	DO (mg/L)	Fe^{+2} (mg/L)
MW-75D2 [2]	10/22/2014[5]	8.3	8.6	87	NM	NM	NM
(cont'd)	4/23/2014[5]	31	47	260	NM	NM	NM
	7/18/2014	20	32	220	-37	10.65	0.0
	1/24/2014	26	45	330	0	12.93	NM
	10/24/2013	27	42	460	-92	5.56	0.0
	7/24/2013	56	87	560	-136	1.32	2.2
	4/30/2013	47	58	530	26	12.20	3.9
	2/4/2013	46	76	870	-55	16.33	0.0
	10/24/2012	34	63	600	-23	2.63	0.0
	12/1/2011	44	88	680	NM	10.91	NM
MW-76S [2]	10/20/2016	5.0UJ	5.0U	2.0UJ	62	5.70	0.0
	4/27/2016	1.4 J	5.0 U	2.0 U	180	2.26	0.0
	10/22/2015	1.4 J	5.0 U	2.0 U	42	5.77	4.8
	10/21/2014[5]	1.1 J	5.0 U	1.5 J	NM	NM	NM
	7/18/2014[5]	1.3 J	5.0 U	7.5	NM	NM	NM
	4/22/2015	5.0 U	5.0 U	2.0 U	236	5.52	2.2
	4/23/2014	2.0 J	5.0 U	5.0 U	228	4.29	0.0
	1/24/2014	1.0 J	5.0 U	2.0 J	125	12.79	0.0
	10/25/2013	5.0 U	5.0 U	2.3 J	-1	4.33	0.56
	7/23/2013	0.95 J	5.0 U	5.0 U	-157	1.71	2.90
	4/24/2013[5]	5.0 U	5.0 U	5.9	-70	5.76	1.25
	2/6/2013	5.0 U	5.0 U	19	NM	NM	NM
	10/25/2012	5.0 U	5.0 U	9.2	45	9.18	1.6
	4/6/2011	5.0 U	5.0 U	2.4 J	-148	0.78	7.0
MW-76I [2]	10/25/2022	0.36U	0.46U	0.9U	-60	3.68	3.9
	10/13/2021	1.0U	1.0U	1.4	-12	2.38	4.13
	11/10/2020	1.0U	1.0U	1.0U	NM	NM	NM
	11/6/2018	1.36	0.75J	1.0U	NM	NM	NM
	10/17/2017	1.6	1.5	1.0U	-28	0	0.62
	10/20/2016	5.0UJ	5.0U	2.0UJ	17	0.27	0.00
	4/27/2016	1.4 J	5.0 U	2.0 U	78	4.62	0.00
	10/22/2015	1.5 J	1.2 J	2.0 U	16	5.48	5.00
	4/22/2015	5.0 U	5.0 U	2.0 U	-216	4.43	NM
	10/21/2014	0.96 J	5.0 U	0.62 J	73	3.48	3.30
	7/18/2014[5]	0.74 J	5.0 U	0.96 J	NM	NM	NM
	4/23/2014	5.0 U	5.0 U	1.5 J	106	5.08	0.05
	1/24/2014	0.70 J	5.0 U	3.2 J	-8	12.62	0.7
	10/25/2013	5.0 U	5.0 U	5.1	4	3.56	0.5
	7/23/2013	5.0 U	5.0 U	13	0	2.14	2.9
	4/24/2013	5.0 U	5.0 U	50	-74	4.9	>5.0
	2/6/2013	5.0 U	5.0 U	81	4	16.35	2.2
	10/25/2012	1.1 J	5.0 U	240	-23	8.51	4.25
	4/8/2011	5.0 U	5.0 U	1000	159	1.48	4.0
MW-76D1 [2]	10/25/2022	0.36U	1.3	16	3	4.99	5.00
	5/11/2022	1.0U	0.99J	25J	-109	2.15	5.0
	10/13/2021	1.0U	1.4	13.7	-48	4.09	5.00
	4/22/2021	1.0U	1.0U	9.4	-76	10.85	5.00
	11/10/2020	1.0U	1.0U	12.4	NM	NM	NM
	5/14/2020	1.0U	1.0U	5.8 J	-146	10.61	5.00
	10/17/2019	1.0U	1.0U	7.7	-47	0.14	5.00
	4/25/2019	0.9J	0.4J	1	-120	11.83	0.07
	11/6/2018	1.53	0.51J	0.4J	75	1.64	1.87
	4/26/2018	0.55J	0.45J	1.0U	32	1.11	>5
	10/17/2017	1.9	0.6J	1.8	-34	0.00	0.00
	4/27/2017	1.2	1.0U	1.5	-57	1.61	0.00
	10/20/2016	2.1J	5.0U	2.0UJ	-171	0.00	0.00

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Well	Date Sampled	PCE (µg/L)	TCE (µg/L)	VCM (µg/L)	ORP (mV)	DO (mg/L)	Fe^{+2} (mg/L)
MW-76D1 [(2)]	4/27/2016	2.3 J	5.0 U	2.3	-77	1.00	0.00
(cont'd)	10/22/2015	4.1 J	1.3 J	3.9	-75	19.54	1.68
	4/22/2015	3.1 J	5.0 U	5.4	17	4.26	1.20
	10/21/2014	6.6	1.1 J	7	73	2.87	2.60
	7/21/2014	5.0 U	5.0 U	3.8 J	143	6.96	1.00
	4/23/2014	4.1 J	5.0 U	9.5	153	5.70	0.05
	1/24/2014	4.2 J	1.4 J	9.9	-117	5.04	NM
	10/25/2013	5.6	1.1 J	15	97	11.27	0.08
	7/23/2013	4.6 J	1.0 J	13	-148	7.76	3.94
	4/30/2013[(5)]	6.4	1.1 J	17	NM	NM	NM
	2/6/2013	8.7	5.0 U	28	-16	10.47	3.00
	10/25/2012	6.2	5.0 U	52	-14	8.32	5.00
	4/11/2011	14	1.1 J	52	-123	0.98	2.0
MW-76D2 [(2)]	10/25/2022	8.1	4.2	0.9U	-118	4.02	5.00
	5/11/2022	1.7	0.97J	1.0U	-95	2.48	5.00
	10/13/2021	13	8	1.0U	25	5.42	5.00
	4/22/2021	1.0U	1.0U	1.0U	-134	7.81	5.00
	11/10/2020	3.3	2.5	1.0U	-38	3.87	5.00
	5/14/2020	1.0U	1.0U	1.0UJ	26	5.61	5.00
	10/17/2019	1.0U	1.0U	1.0U	34	3.70	5.00
	4/25/2019	1	0.8J	1.0U	105	9.62	0.00
	11/6/2018	1.40	0.74J	1.0U	23	2.84	1.76
	4/26/2018[(5)]	25.8	13	1.0U	NM	NM	NM
	10/17/2017[(5)]	5.6	2.6	1.0U	NM	NM	NM
	4/27/2017	4.1J	1.0J	1.0U	-23	1.14	0.38
	10/20/2016	5.0UJ	5.0U	2.0UJ	-23	1.06	0.00
	4/27/2016	2.8 J	1.0 J	2.0 U	51	5.90	0.00
	10/22/2015	3.6 J	1.0 J	2.0 U	-60	4.10	5.00
	4/22/2015	60	25	2.0 U	-66	4.25	NM
	10/21/2014	26	18	0.72 J	103	7.54	>5.0
	7/21/2014	80	18	0.79 J	91	8.53	0.49
	4/23/2014	78	17	5.0 U	164	6.23	0.18
	1/24/2014[(5)]	40	18	7.6	NM	NM	NM
	10/25/2013	45	19	4.9 J	13	5.07	5.1
	7/23/2013	52	27	5.0 U	-73	2.65	>5.0
	4/30/2013	51	12	19	15	14.13	2.2
	2/6/2013	63	25	1500	-76	16.45	0.0
	10/25/2012	44	25	650	-19	8.71	0.0
	4/8/2011	74	42	1100	-59	1.37	4.8
MW-77D1	7/24/2013[(5)]	2.6 J/2.7 J	0.54 J/0.56 J	3.5 J/3.7 J	NM	NM	NM
	2/6/2013[(5)]	7.8	5.0 U	24	NM	NM	NM
	4/26/2013	4.1 J	1.0 J	17	-64	8.03	3.52
	10/25/2012	2.4 J	5.0 U	16	5	9.93	0.0
	4/14/2011	1.6 J	1.7 J	6.2	-194	0.24	3.5
MW-77D2 [(2)]	10/25/2022	1	0.46U	0.9U	154	1.50	5.00
	5/11/2022	0.38J	1.0U	1.0UJ	87	9.76	5.00
	10/14/2021	26.4	7.5	1.0U	108	3.96	5.0
	4/22/2021	40.9/40.8	8.4J/1.0UJ	1.0U/1.0U	89	4.23	5.0
	11/9/2020	21.7	6.7	1.0U	74	17.94	5.0
	5/14/2020	58.9	13.7	1.0UJ	124	10.12	5.0
	10/14/2019	47.4	9.8	1.0U	208	3.75	5.0
	4/24/2019	63	11	1.0U	173	10.10	0.0
	11/8/2018	66.2	13.3	1.0U	42	3.33	3.3
	4/26/2018	131	25.6	1.0U	223	8.12	NM
	10/18/2017	164	32	5.0U	101	0.46	0.1
	4/27/2017	140J	41J	1.0U	101	5.37	0.0

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MW-77D2 [2] (cont'd)	10/21/2016	170	37	2.0UJ	99	8.05	0.1
	4/27/2016	71	20	2.0 U	189	5.50	0.3
	10/23/2015[5]	57	21	0.74 J	NM	NM	NM
	4/24/2015	120	23	2.0 U	170	13.50	0.0
	10/21/2014	150	21	5.0 U	174	3.71	>5.0
	7/18/2014	52	19	5.0 U	78	1.37	0.0
	4/24/2014	33	18	5.0 U	46	3.49	0.0
	1/23/2014	66	28	1.4 J	-107	12.21	1.20
	10/25/2013	40	18	5.0 U	27	11.71	1.17
	7/24/2013	15	22	13	-79	2.06	1.46
	4/26/2013	10	7.4	150	-141	5.39	>5.0
	2/6/2013[5]	17/17	11/11	99/100	NM	NM	NM
	10/25/2012	5.2	12	80	-35	14.28	0.0
	4/14/2011	20	28	140	-111	0.72	4.0
MW-81D1 [1]	10/28/2022	27	20	0.9U	102	9.70	2.1
	5/13/2022	40	35	1.0U	57	15.97	1.55
	10/18/2021	21.5	12.5	1.2	112	9.73	3.58
	4/21/2021	38.4	18.4	2.9	85	11.75	2.16
	11/9/2020	17.9	6.8	1.5	169	16.98	4.07
	5/12/2020	24.1	12.7	1.2	236	18.83	2.59
	10/16/2019	58	137	1.2	215	13.34	3.76
	4/25/2019	68	150	1.0U	92	32.82	0.00
	11/13/2018	90.7	107	0.43J	130	5.12	2.35
	4/19/2018	64.6	206	5.0U	194	13.14	4.76
	10/19/2017	54	92	5.0U	117	24.82	0.00
	4/28/2017	70	91	1.8	138	10.66	0.10
	10/21/2016	45	53	2.1J	138	12.43	1.74
	4/26/2016[5]	70	110	1.8 J	NM	NM	1.03
	10/21/2015	82	120	2.0 U	43	7.42	1.35
	4/24/2015[5]	97	160	1.3 J	NM	NM	NM
	10/30/2014	96 J	190 J	6.3 J	87	19.39	0.12
	5/2/2013[5]	44	190	5.0 U	NM	NM	NM
	4/29/2014	97	220	1.8 J	146	8.94	0.00
	10/28/2013	64	190	7.5	-137	8.41	0.68
	11/5/2012	14	86	310	112	12.24	2.88
	5/23/2012	7.3 J	41	0.95 J	80	9.90	0.44
	11/30/2011	13	85	0.71 J	NM	12.58	NM
	4/7/2011	20	73	190	27	0.48	2.2
	11/17/2010	24	110	1.1 J	327	3.54	0.0
	5/6/2010	16	99	180	72	0.00	2.2
	10/15/2009	28	170	2.4 J	216	8.90	0.71
	4/7/2009	14	48	71	158	0.04	5.52
	10/28/2008	54/54	130/130	3/2	292	17.31	2.04
	4/21/2008	14	54	2	-99	0.92	2.69
	10/9/2007	39	110	620	-77	3.08	4.98
	7/23/2007	54	190	490	-22	0.74	5.19
	4/19/2007	20/21	61/61	580/550	-128	0.00	2.06
	1/29/2007	8	9	690	-55	2.26	2.36
	10/26/2006	15 J	18	790	-25	0.00	10.12
	10/25/2006	NA	NA	NA	-55	3.01	9.76
	10/24/2006	NA	NA	NA	15	2.26	3.23
MW-81D2 [1]	10/28/2022	21	5.9	0.9U	102	9.7	2.10
	5/13/2022	13	11	1.0U	-69	2.73	4.62
	10/18/2021	3.2	1.0U	1.0U	50	5.01	3.6
	4/21/2021	42	9.2	1.0U	-9	4.13	2.6
	11/9/2020	25.3J/41.6	20.8J/49.5	1.0U/1.0U	NM	NM	NM
	5/12/2020	94.2	19.8	1.0U	44	10.56	3.3

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MW-81D2 [1] (cont'd)	10/16/2019	54.9	3.5	1.0U	207	6.57	1.8
	4/25/2019	61	8	1.0U	17	14.62	0.0
	11/13/2018	4.09	0.65J	1.0U	52	1.95	3.3
	4/19/2018	84.4	16.8	1.0U	241	1.41	2.2
	10/19/2017	76	13	5.0U	108	0.00	0.0
	4/28/2017	110J	30J	1.0U	37	2.76	0.2
	10/21/2016[5]	43	13	2.0UJ	NM	NM	1.1
	4/26/2016	95	30	2.0 U	43	6.46	0.0
	10/21/2015	120	130	2.0 U	90	7.21	1.9
	4/24/2015	150	170	2.0 U	-61	5.18	1.5
	10/30/2014	18	77	5.0 U	86	15.60	NM
	4/29/2014	5.8	29	5.0 U	119	8.94	0.0
	10/28/2013	1.4 J	12	5.0 U	NM	2.97	0.0
	5/2/2013	1.9 J	11	5.0 U	46	17.28	3.9
	11/5/2012	9.1	110	1.4 J	NM	NM	NM
	5/23/2012	1.2 J	18	5.0 U	64	10.23	1.8
	11/30/2011	10	130	5.0 U	NM	11.01	NM
	4/7/2011	67	470	25 U	85	2.92	0.0
	11/16/2010	21/21	130/130	5.0 U/5.0 U	254	13.28	1
	5/10/2010	14	63	5.0 U	93	9.69	0.50
	10/14/2009	6.7	53	5.5	227	18.39	0.50
	4/7/2009	13	150	2.4 J	326	10.58	0.45
	10/22/2008	6	32	2	107	>20	0.09
	4/18/2008	2 J	20	2 U	81	4.23	0.45
	10/10/2007	13	81	37	35	7.45	9.39
	7/19/2007	15	130	40	48	14.10	1.48
	4/18/2007	1 J	14	4 J	-110	0.00	2.71
	1/24/2007	6.2	32	5	-39	2.90	0.98
	10/26/2006	5 J	26	4 J	93	15.00	0.74
	10/25/2006	NA	NA	NA	73	17.96	0.40
	10/24/2006	NA	NA	NA	78	16.87	2.37
MW-82D1 [1]	10/26/2022	2.4	9.3	0.9U	71	2.72	5.0
	5/12/2022	5.4	16	2.4	-57	3.60	2.15
	10/15/2021	3.7	12.2	122	-6	6.45	2.84
	4/19/2021	1.1	3.6	13.4	18	8.21	4.98
	11/5/2020	6	13.9	1.0U	156	7.13	5.00
	5/13/2020	5.9	12.2	1.0UJ	85	7.12	3.20
	10/15/2019	8.4	11.5	2.1	150	15.23	5.00
	4/24/2019	10	14	4	126	11.54	0.47
	11/8/2018	1.16	1.12	1.0U	37	1.04	1.04
	4/20/2018	NA	NA	NA	124	11.72	2.81
	10/17/2017	21	15	1.0U	100	14.37	0.00
	4/25/2017	31	18	1.0U	79	15.24	0.00
	10/19/2016	24	22	2.0UJ	-7	12.23	0.14
	4/26/2016	37	21	2.0 U	98	9.29	1.08
	10/21/2015	26	21	2.0 U	-31	11.27	1.59
	4/24/2015	28	24	0.95 J	7	16.00	0.00
	10/30/2014	32 J	27 J	0.84 J	56	6.75	1.40
	4/25/2014	16	20	1.7 J	177	5.83	0.00
	10/26/2012	17	23	34	95	7.18	0.67
	10/25/2013[5]	14	18	12	NM	NM	NM
	5/1/2013[5]	14	18	41	NM	NM	NM
	5/23/2012	13 J	28	1.0 J	138	7.91	5.0
	12/1/2011	12	23	9.8	NM	14.35	NM
	5/19/2011	33/32	48/49	72/76	277	6.70	0.0
	11/17/2010	110	63	3.2 J	307	8.00	NM
	5/12/2010	16	64	5.0 U	53	7.01	0.0
	10/20/2009	21	84	5.0 U	231	8.08	0.26
	4/13/2009	47	160	1.7 J	328	5.35	0.21

Select Laboratory and Field Parameter Results
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Well	Date Sampled	PCE (µg/L)	TCE (µg/L)	VCM (µg/L)	ORP (mV)	DO (mg/L)	Fe^{+2} (mg/L)
MW-82D1 [(1)]	10/30/2008	110	230	790	309	<20	NM
(cont'd)	7/18/2008	64	230	2.2	96	3.38	NM
	4/25/2008	38	160	85	108	0.13	1.49
	1/23/2008	14/14	48/49	1600/1600	-38	1.89	5.82
	10/18/2007	19	24	430	125	0.73	5.25
	7/25/2007	120	780 J	3600	95	15.15	2.58
	4/20/2007	5 U	5 U	860	-153	0.76	2.79
	1/25/2007	50	130	5500	-145	1.21	1.94
	12/20/2006	8.2	15	2500	-149	0.00	1.98
	11/30/2006	8.8	7.9	1900	-158	0.00	1.86
	10/26/2006	8 J	4 J	1100	-142	2.77	6.32
	10/25/2006	NA	NA	NA	-154	0.00	9.36
	10/24/2006	NA	NA	NA	-119	1.93	6.14
MW-82D2 [(1)]	10/26/2022	0.36U	0.46U	0.9U	50	2.65	1.06
	5/11/2022	1.0U/1.0U	1.0U/1.0U	1.0U/1.0U	-39	2.47	1.87
	10/15/2021	1.0U	1.0U	1.0U	-7	1.67	1.4
	4/19/2021	1.0U	1.0U	1.0U	-33	5.75	3.4
	11/5/2020	1.0U	1.0U	1.0U	136	2.09	2.0
	5/13/2020	1.0U	1.0U	1.0UJ	132	3.08	0.5
	10/15/2019	1.0U	1.0U	1.0U	123	5.29	3.8
	4/24/2019	0.7J	0.8J	1.0U	142	10.16	0.1
	11/8/2018	13.1	11.8	1.0U	113	6.52	0.2
	4/20/2018	0.36J	0.41J	1.0U	119	11.77	<5
	10/17/2017	1.0U	1.0U	1.0U	-24	2.38	0.1
	4/25/2017	1.0U	1.0U	1.0U	89	24.76	0.2
	10/19/2016	5.0UJ	5.0U	2.0UJ	-13	4.34	0.3
	4/26/2016	3.2 J	3.4 J	2.0 U	62	0.34	0.0
	10/21/2015	6.0	5.3	2.0 U	-61	13.98	2.9
	4/24/2015	7.3	5.0 U	2.0 U	132	15.04	0
	10/30/2014	6.2	4.7 J	5.0 U	76	0.88	0
	4/25/2014	3.0 J	3.9 J	5.0 U	73	3.38	0.13
	10/25/2013	4.2 J	3.9 J	5.0 U	-127	11.22	0
	5/1/2013	7.5	5.0 J	5.0 U	238	8.33	>5.0
	10/26/2012	11	17	3.1 J	56	>20	3.2
	5/23/2012	9.1 J	22	5.0 U	123	7.97	5
	12/1/2011	42	46	6.7	NM	11.74	NM
	4/27/2011	90	58	5.0 U	-19	3.38	1
	11/18/2010	71	74	8.3	276	0.83	1.2
	5/12/2010	100	92	7.1	-137	0.00	1.0
	10/20/2009	86	56	96	-260	0.07	1.13
	4/13/2009	130	91	3.5 J	282	>20	0.05
	10/30/2008	110	230	790	-3	0.84	3.01
	7/18/2008	21	14	10	-472	0.00	16.32
	4/24/2008	25	18	5	-352	0	2.43
	1/23/2008	150	84	160	-147	1.51	4.74
	10/18/2007	34	3 J	2100	-359	2.93	1.22
	7/25/2007	320 J	170 J	80	-192	0.50	6.56
	4/20/2007	130	91	47	-183	0.61	1.91
	1/25/2007	150	110	180	-147	1.70	2.01
	12/20/2006	52	50	600	-178	0.00	0.34
	11/30/2006	88	78	1300	-179	0.00	2.31
	10/26/2006	61 J	48	1300	-110	3.37	8.60
	10/25/2006	NA	NA	NA	-95	1.98	11.64
	10/24/2006	NA	NA	NA	-166	0.38	10.44
MW-83D1 [(1)]	10/28/2022	28	75	1.8U	85	6.03	5.0
	5/12/2022	29	86	4.0U	6	17.24	4.71
	10/14/2021	22.3	57.1	1.0U	37	8.00	5.0
	4/21/2021	32.1	71.5	1.0U	70	10.39	5.0

Table 2

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Well	Date Sampled	PCE (µg/L)	TCE (µg/L)	VCM (µg/L)	ORP (mV)	DO (mg/L)	Fe^{+2} (mg/L)
MW-83D1 [1] (cont'd)	11/6/2020	18.2J	61.8	1.3J	205	9.47	4.5
	5/12/2020	30.8	85.9	1.2	187	2.32	5.0
	10/16/2019	71.6	141	1.6	140	20.79	5.0
	4/26/2019	99	66	1.0U	69	15.46	0.0
	11/12/2018	51.5	67.3	1.0U	87	6.44	>5
	4/19/2018	38.8	133	5.0U	180	10.42	4.3
	10/20/2017	89	173	2.0UJ	116	15.19	0.0
	4/28/2017	63J	110J	1.2J	68	10.60	0.7
	10/21/2016	59	100	2.0UJ	128	10.05	0.1
	4/26/2016	55	120	1.1 J	109	7.63	0.1
	10/22/2015	48	140	1.5 J	59	7.04	1.2
	4/24/2015	37	41	2.0 U	181	17.82	0.2
	10/30/2014	50 J	200 J	2.6 J	112	11.80	1.2
	4/29/2014[5]	40	210	2.1 J	NM	NM	NM
	10/29/2013	45	200	9	NM	13.65	0.5
	5/1/2013	30	290	1.4 J	212	19.10	2.9
	10/24/2012	25	180	5.0 U	276	7.22	0.0
	5/23/2012	9.8 J	120	1.2 J	132	12.32	0.0
	11/30/2011	13	150	8.4	NM	>20	NM
	4/7/2011	52 J	180 J	30 J	135	4.18	0.0
	11/15/2010	39	180	13	271	9.14	0.0
	5/5/2010	96	240	260	284	3.50	NM
	10/14/2009	110	260	3.8 J	361	13.17	0.41
	4/8/2009	80	190	4.3 J	274	1.44	0.09
	10/24/2008	110/110	200/200	2/2	291	8.31	0.04
	7/15/2008	130 J	340	34	216	1.91	NM
	4/17/2008	40	160	2	151	2.32	0.03
	1/22/2008	140	420	51	174	8.34	0.12
	10/12/2007	68	200	220	64	3.00	0.13
	7/17/2007	130	360	310	-14	0.41	0.04
	4/18/2007	5 U	29	7.7	-70	0.00	0.0
	1/30/2007	44	320	130	6	1.74	0.01
	10/26/2006	31	290	140	-64	2.06	0.06
	10/25/2006	NA	NA	NA	-146	0.00	0.23
	10/24/2006	NA	NA	NA	70	0.00	1.94
MW-83D2 [1]	10/28/2022	69	120	1.8U	93	7.44	5.0
	5/12/2022	140	130	4.0U	97	6.99	3.95
	10/18/2021	63.5	127	1.0U	58	22.49	5.0
	4/21/2021	178	158	1.0U	47	8.57	3.5
	11/6/2020	56J	113	1.0UJ	176	5.70	5.0
	5/12/2020	76	110	1.0U	180	0.15	4.6
	10/16/2019	96	127	1.0U	248	8.07	2.5
	4/26/2019	78	100	1.0U	162	13.60	0.0
	11/12/2018	88.2	118	1.0U	46	5.61	2.3
	4/19/2018	66	95.4	5.0U	223	6.97	3.7
	10/20/2017	104	156	2.0UJ	143	1.93	0.2
	4/28/2017	120J	190J	1.0U	97	4.25	0.5
	10/21/2016[5]	93	170	2.0UJ	NM	NM	0.4
	4/26/2016	66	140	2.0 U	129	1.30	0.0
	10/22/2015[5]	53	120	2.0 U	NM	NM	NM
	4/24/2015	27	94	2.0 U	240	19.73	0.6
	10/30/2014[5]	43 J	150 J	5.0 U	NM	NM	NM
	4/29/2014	19	100	5.0 U	172	8.38	0.0
	10/29/2013	40	170	5.0 U	-63	8.73	0.3
	5/1/2013	28	74	5.0 U	162	12.34	1.0
	10/24/2012	7	71	5.0 U	225	9.81	0.0
	5/23/2012	1.8 J	21	5.0 U	79	12.67	0.0
	11/30/2011	12/12	98/150	5.0 U/8.1	NM	16.99	NM
	4/7/2011	17	96	5.0 U	249	17.54	0.0

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Well	Date Sampled	PCE (µg/L)	TCE (µg/L)	VCM (µg/L)	ORP (mV)	DO (mg/L)	Fe^{+2} (mg/L)
MW-83D2 [(1)]	11/16/2010	6.2	42	5.0 U	370	16.45	0.0
(cont'd)	5/6/2010	18	110	5.0 U	190	11.32	NM
	10/13/2009	6	34	5.0 U	380	19.81	0.01
	4/8/2009	5.2	30	5.0 U	370	20.00	0.01
	10/21/2008	2 J	14	2 U	297	0.92	0.00
	7/15/2008	8.3 J	46	2 U	270	8.50	0.04
	4/17/2008	5/4 J	22/21	2 U/2 U	295	>20	0.04
	1/22/2008	3	12	2 U	328	>20	0.14
	10/15/2007	2 J	10	2 U	279	11.44	0.23
	7/17/2007	7.9	43	1 J	289	>19.99	0.08
	4/18/2007	3 J	23	1 J	97	0.00	0.0
	1/29/2007	13	75	22	249	13.20	0.0
	10/26/2006	17	110	74	171	>20	0.06
	10/25/2006	NA	NA	NA	179	>20	0.0
	10/24/2006	NA	NA	NA	241	>19.99	9.88
MW-84D1 [(1)]	10/26/2022	13	28	0.9U	-22	6.69	4.2
	5/12/2022	1.5	0.55J	1.0U	17	6.03	5.00
	10/15/2021	1.0U	1.0U	1.0U	-7	5.59	5.00
	4/19/2021	3.4	1.0U	1.0U	15	6.89	4.65
	11/6/2020	1.0U	1.0UJ	1.0UJ	45	3.78	4.51
	5/13/2020	16.6	6.4	1.0UJ	135	8.14	5.00
	10/15/2019	8.4	7.4	1.0U	148	2.56	2.34
	4/24/2019	0.5J	0.3J	1.0U	252	28.87	0.00
	11/13/2018	3.6	0.72J	1.0U	195	4.39	1.80
	4/19/2018	3.35	1.43	1.0U	162	7.29	2.57
	10/17/2017	21	11	1.0U	120	2.87	0.54
	4/25/2017	15	12	1.0U	89	17.68	0.00
	10/20/2016	33	19	2.0UJ	-10	6.52	0.00
	4/26/2016	23	18	2.0 U	168	3.91	0.88
	10/21/2015	50	23	2.0 U	-9	6.83	2.76
	4/24/2015	54	21	2.0 U	169	14.19	0.00
	10/23/2014	51	25	5.0 U	110	7.66	2.00
	4/25/2014	41	30	5.0 U	134	6.86	0.26
	10/25/2013	83	35	5.0 U	23	12.48	1.50
	5/1/2013	81	29	5.0 U	250	12.62	0.72
	10/26/2012	80	54	5.0 U	72	7.29	1.08
	5/24/2012	4.3 J	4.4 J	5.0 U	185	10.30	0.00
	12/1/2011	94	35	0.52 J	NM	13.98	NM
	4/27/2011	27/33	8.5/10	5.0 U/5.0 U	210	7.54	NM
	11/18/2010	3.9 J	3.5 J	5.0 U	207	7.94	NM
	5/12/2010	1.4 J	5.0 U	5.0 U	127	9.85	NM
	10/19/2009	5.0 U	2.3 J	5.0 U	271	10.98	0.19
	4/9/2009	23	24	5.0 U	214	13.34	0.0
	10/29/2008	7	7	2 U	319	12.18	0.0
	7/17/2008	7.1	12	2 U	95	14.51	0.13
	4/24/2008	3 J	4 J	2 U	210	0.6	0.03
	1/28/2008	19	32	2 U	303	>20	0.0
	10/17/2007	15/15	48/56	2.1/2.4	304	8.81	0.62
	7/24/2007	47	180	12	301	>20	0.05
	4/24/2007	32	560	11	282	>20	0.05
	1/30/2007	66	640	150	160	7.53	1.24
	10/26/2006	47	350	430	78	6.51	1.19
	10/25/2006	NA	NA	NA	86	8.03	1.37
	10/24/2006	NA	NA	NA	50	7.89	1.44
MW-84D2 [(1)]	10/26/2022	13	28	0.9U	NM	NM	NM
	5/12/2022	7.4	21	1.0U	84	2.56	4.84
	10/15/2021	1.0U	1.0U	1.0U	29	5.02	4.79
	4/19/2021	20.78	39.7	1.0U	37	1.39	5.00

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Well	Date Sampled	PCE (µg/L)	TCE (µg/L)	VCM (µg/L)	ORP (mV)	DO (mg/L)	Fe^{+2} (mg/L)
MW-84D2 [1] (cont'd)	11/6/2020	1.0U	1.0UJ	1.0UJ	-61	2.31	5.00
	5/13/2020	1.0U	1.0U	1.0UJ	133	4.17	5.00
	10/15/2019	1.0U	1.0U	1.0U	198	1.70	5.00
	4/24/2019	5	10	1.0U	177	9.91	0.00
	11/13/2018	1.94	1.11	1.0U	169	7.68	2.81
	4/19/2018	6.48	19	1.0U	59	3.40	5.00
	10/17/2017	7.2	27	1.0U	29	0.00	0.00
	4/25/2017	15	49	1.0U	69	0.48	0.00
	10/20/2016[5]	15	59	2.0UJ	NM	NM	0.00
	4/26/2016[5]	15	58	2.0 U	NM	NM	NM
	10/21/2015	20	78	2.0 U	-87	8.85	5.00
	4/24/2015	22	92	2.0 U	89	8.35	0.00
	10/23/2014	19	100	5.0 U	54	3.49	1.30
	4/25/2014	28	150	5.0 U	21	1.72	0.26
	10/25/2013	21	120	5.0 U	-45	12.51	NA
	5/1/2013[5]	50	170	5.0 U	NM	NM	NM
	10/26/2012	5.4	65	5.0 U	-28	3.14	5.0
	5/24/2012	5.7	75	5.0 U	114	4.83	0.5
	12/1/2011	7.7	110	5.0 U	NM	11.00	NM
	4/15/2011	1.0 J	9.4	5.0 U	-49	0.37	0.0
	11/18/2010	8.6	79	5.0 U	-21	0.79	0.0
	5/25/2010	23 J	190	1.6 J	-20	11.75	0.0
	10/16/2009	14	110	5.0 U	135	14.65	1.45
	4/9/2009	15 J	74 J	5.0 U	70	10.15	0.08
	10/29/2008	21	110	2 U	160	8.33	0.25
	7/17/2008	20	130	2 U	13	14.05	0.27
	4/23/2008	11	100	2 U	6	3.96	0.09
	1/28/2008	27	250 J	5	97	9.91	0.79
	10/17/2007	16	170	7.1	34	4.68	0.23
	7/24/2007	59	440	20	139	>20	0.21
	4/24/2007	69	510	33	138	16.31	0.30
	1/29/2007	15	94	150	7	3.91	0.18
	10/26/2006	19 J	92	140	-77	2.67	0.64
	10/25/2006	NA	NA	NA	-47	2.84	0.27
	10/24/2006	NA	NA	NA	-90	4.69	1.53
MW-85S [2]	10/18/2016	5.0UJ	5.0U	2.0UJ	-45	2.63	0.0
	5/18/2016[5]	5.0 U	5.0 U	2.0 U	NM	NM	NM
	10/20/2015	0.75 J	5.0 U	2.0 U	-44	29.15	0.4
	4/23/2015[5]	5.0 U	5.0 U	2.0 U	NM	NM	NM
	10/31/2014	2.3 J	5.0 U	5.0 U	20	9.22	1.4
	7/17/2014	1.1 J	5.0 U	5.0 U	26	4.98	NM
	4/24/2014	0.99 J	5.0 U	5.0 U	161	5.97	0.0
	1/27/2014	0.97 J	5.0 U	5.0 U	112	11.37	NM
	10/28/2013[5]	5.0 U	5.0 U	5.0 U	NM	NM	NM
	7/24/2013	5.0 U	5.0 U	5.0 U	12	1.39	0.4
	4/30/2013	1.0 J	5.0 U	5.0 U	180	7.88	>5.0
	2/4/2013	2.5 J	5.0 U	5.0 U	NM	NM	NM
	10/26/2012	2.0 J	0.60 J	0.89 J	NM	NM	NM
	4/20/2011	3.6 J	5.0 U	5.0 U	46	4.38	0.5
MW-85I [2]	11/12/2018	3.70	2.58	1.0U	57	6.43	4.46
	10/16/2017	4.4	3.6	1.0U	NM	0.00	0.00
	10/18/2016	5.5	5.0U	2.0UJ	-124	0.33	0.00
	4/25/2016	3.4 J	2.5 J	2.0 U	237	15.03	NM
	10/20/2015	2.2 J	5.0 U	2.0 U	-3	17.60	NM
	4/23/2015	2.4 J	5.0 U	2.0 U	59	6.55	0.34
	10/31/2014	1.2 J	0.68 J	5.0 U	24	9.22	>5.0
	7/17/2014	1.2 J	0.67 J	5.0 U	92	5.36	2.30

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Well	Date Sampled	PCE (µg/L)	TCE (µg/L)	VCM (µg/L)	ORP (mV)	DO (mg/L)	Fe^{+2} (mg/L)
MW-85I [(2)] (cont'd)	4/24/2014	1.2 J	5.0 U	5.0 U	87	10.21	0.19
	1/27/2014	2.2 J	0.78 J	5.0 U	-61	10.43	NM
	10/28/2013	2.7 J	5.0 U	5.0 U	-137	10.87	1.3
	7/24/2013	1.3 J	0.53 J	5.0 U	-139	0.42	0.1
	4/30/2013	1.7 J	0.68 J	5.0 U	-57	5.63	>5.0
	2/4/2013	1.9 J	5.0 U	5.0 U	NM	NM	NM
	10/26/2012	2.6 J	0.54 J	5.0 U	NM	NM	NM
	4/20/2011	5.2	5.0 U	5.0 U	93	2.90	2.4
MW-85D1 [(2)]	10/26/2023	0.36U	4.8	0.9U	104	2.27	4.13
	5/11/2022	1.0U	1.0U	1.0UJ	57	9.77	5
	10/15/2021	1.0U	1.0U	1.0U	49	4.01	5.0
	4/19/2021	1.0U	1.0U	1.0U	-20	7.51	5.0
	11/5/2020	1.0U	1.2	1.0U	137	4.95	5.0
	5/13/2020	1.0U	1.0U	1.0U	144	10.88	5.0
	10/15/2019	1.5	1.9	1.0U	195	3.40	NM
	4/23/2019	2	4	0.3J	150	4.33	0.1
	11/12/2018	2.84	12.7	3.22	30	4.63	3.4
	4/20/2018	5.79	9.99	1.66	NM	NM	NM
	10/16/2017	1.4	1.6	2.1	110	0.33	1.4
	4/25/2017[(5)]	4.4	4.9	1.0	NM	NM	NM
	10/18/2016	6.9	12	2.0UJ	19	11.24	0.0
	4/25/2016	4.1 J	10	2.0 U	186	10.27	0.0
	10/20/2015	3.3 J	9.7	2.0 U	33	21.24	0.0
	4/23/2015	4.6 J	14	2.0 U	120	11.43	0.0
	10/31/2014	13	16	5.0 U	-10	11.29	>5.0
	7/17/2014	20	26	7.2	39	4.68	2.0
	4/24/2014	30	23	5.7	50	6.35	0.0
	1/27/2014	25	21	12	-83	11.37	NM
	10/28/2013[(5)]	22	26	7.9	NM	NM	NM
	7/24/2013	9.5	17	4.4 J	-130	2.06	>5.0
	4/30/2013	15	14	1.4 J	28	9.02	>5.0
	2/4/2013	5.8	9.2	17	1	7.26	2.0
	10/26/2012	5.0 U	5.0 U	9.9	18	>20	5.0
	4/20/2011	34/31	10/9.9	70/70	-33	3.75	(3)
MW-85D2 [(2)]	10/26/2022	1.9	2.5	0.9U	65	2.72	5.0
	5/11/2022	9.5	7.8	1.0UJ	40	6.70	5.0
	10/15/2021	2.3	2.9	1.0U	-2	2.64	5.00
	4/19/2021	9.1	7.9	13.6	-66	6.75	5.00
	11/5/2020	6.9	8.3	1.0U	155	8.43	5.00
	5/13/2020	6.2	6.2	1.0U	166	5.54	5.00
	10/15/2019	4.1	7.4	1.0U	199	9.92	NM
	4/23/2019	2	5	1.0U	172	8.85	0.00
	11/12/2018	2.31	4.9	1.0U	152	3.99	4.44
	4/20/2018	4.17	8.04	1.0U	90	8.75	NM
	10/16/2017[(5)]	4.2	5.6	1.0U	NM	NM	NM
	4/25/2017	2.4	4.6	1.0U	109	4.88	0.00
	10/18/2016	11	21	4.9J	27	9.45	NM
	4/25/2016	2.3 J	5.4	2.0 U	174	5.79	0.24
	10/20/2015[(5)]	1.0 J	4.3 J	2.0 U	NM	NM	NM
	4/23/2015	1.8 J	5.0 U	2.0 U	141	11.07	NM
	10/31/2014	4.7 J	12	5.0 U	-46	7.77	1.60
	7/17/2014	6.8	14	5.0 U	13	2.82	2.60
	4/24/2014	5.9	13	0.93 J	36	9.77	0.09
	1/27/2014	11	21	2.3 J	-98	12.81	NM
	10/28/2013	5.7	8.3	2.6 J	-98	3.03	0.7
	7/24/2013	27	44	15	6	1.89	1.6
	4/30/2013	9.2	21	25	155	7.90	>5.0

Table 2

Select Laboratory and Field Parameter Results
Hooker Ruco Site
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Well	Date Sampled	PCE (µg/L)	TCE (µg/L)	VCM (µg/L)	ORP (mV)	DO (mg/L)	Fe^{+2} (mg/L)
MW-85D2 [(2)]	2/4/2013	21/23	24/25	40/40	NM	NM	NM
(cont'd)	10/26/2012	66	37	280	29	14.34	5.0
	4/20/2011	170	160	1100	-190	1.59	4.0
MW-86D1 [(2)]	10/26/2022	2	3.1	0.9U	103	4.68	5.00
	5/12/2022	1.9	3.5	1.0U	38	5.45	5
	10/14/2021	1.0U	3.2	1.0U	110	32.14	4.7
	4/21/2021	1.0	2.7	1.0U	1	1.49	5.0
	11/9/2020	1.0U	1.0U	1.0U	73	15.75	5.0
	5/12/2020	1.0U	1.0U	1.0U	160	2.88	5.0
	10/16/2019	2.8	1.1	1.0U	322	7.22	5.0
	4/25/2019	2	2	1.0U	39	13.73	0.0
	11/8/2018	2.18	4.70	1.0U	38	1.52	4.5
	4/24/2018	1.61	1.55	1.0U	126	0.00	>5
	10/20/2017	1.2	1.0J	1.0U	175	11.97	0.0
	4/28/2017	1.1J	1.0U	1.0U	46	6.08	0.1
	10/21/2016	5.0UJ	5.0U	2.0UJ	87	1.30	0.1
	4/28/2016	2.3 J	5.0 U	2.0 U	56	0.46	0.2
	10/26/2015	3.0 J	5.0 U	2.0 U	-59	10.56	0.6
	4/24/2015	6.4	5.0 U	33	-37	7.48	0.1
	10/31/2014	13	1.3 J	110	39	6.42	0.0
	7/17/2014	9.5	0.89 J	180	-102	4.35	3.0
	4/29/2014	8.2	1.3 J	160	25	3.56	0.1
	1/23/2014	6.7	1.6 J	150	27	14.90	NM
	10/29/2013[(5)]	5	1.8 J	78	NM	NM	NM
	7/24/2013	3.1 J	1.3 J	24	-103	2.61	0.0
	4/29/2013	6	1.5 J	62	135	5.99	2.5
	2/6/2013	6.3	5.0 U	44	87	14.5	1.0
	10/24/2012	2.4 J	0.66 J	36	67	>20	0.68
	4/18/2011	2.7 J	5.0 U	14	-107	0.74	2.0
MW-86D2 [(2)]	10/26/2022	33	240	4.5U	70	3.21	5.0
	5/12/2022	11	97	4.0U	38	4.29	5.0
	10/14/2021	25.4	131	1.0U	12	20.60	4.8
	4/21/2021	84.6	67.7	1.0U	-54	3.96	4.6
	11/9/2020	49.3	62.8	1.0U	-10	5.65	5.0
	5/12/2020	32.7	42.9	1.0U	109	5.77	2.1
	10/16/2019	4.3	55	1.0U	216	1.35	5.0
	4/25/2019	6	75	1.0U	-72	13.12	0.0
	11/8/2018	10.7	141	1.0U	152	1.31	3.2
	4/24/2018	11	153	5.0U	NM	NM	NM
	10/20/2017	29	150	2.0U	-10	0.00	0.0
	4/28/2017	28J	71J	1.0U	-125	1.35	0.5
	10/21/2016	12	62	2.0UJ	-77	0.00	0.0
	4/28/2016	9.8	58	2.0 U	24	2.12	0.5
	10/26/2015	7.4	83	2.0 U	-59	8.69	0.1
	4/24/2015	9.9	130	2.0 U	-89	10.90	0.0
	10/31/2014	12	180	5.0 U	39	6.63	0.7
	7/17/2014[(5)]	15	170	0.79 J	NM	NM	NM
	4/29/2014	17	230	5.0 U	168	5.83	0.0
	1/23/2014	14	240	5.0 U	-101	12.18	0.0
	10/29/2013	10	200	5.0 U	-43	4.30	0.0
	7/24/2013	13	270	5.0 U	-165	0.93	1.8
	4/29/2013	17	320	0.51 J	-64	5.44	3.4
	2/6/2013	17	370	0.54 J	-45	13.05	2.0
	10/24/2012	8.2	170	5.0 U	-115	2.49	0.39
	4/18/2011	19	280	5.0 U	-107	1.24	3.0

Table 2

Select Laboratory and Field Parameter Results
Hooker Ruco Site
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Well	Date Sampled	PCE (µg/L)	TCE (µg/L)	VCM (µg/L)	ORP (mV)	DO (mg/L)	Fe^{+2} (mg/L)
MW-87D1 [(1)]	10/27/2022	22	3.2	0.9U	103	9.79	1.4
	5/13/2022	31	4.7	1.0U	9	16.91	2.4
	10/18/2021	23.4	4.5	1.0U	102	9.47	0.8
	4/21/2021	50.6	6.8	1.0U	26	10.15	2.1
	11/6/2020	21J	5.7	1.0UJ	172	7.15	2.6
	5/12/2020	42.3	9.7	1.0U	153	5.77	1.9
	10/16/2019	21.1	8.3	1.0U	256	12.10	2.6
	4/26/2019	40	20	1.0U	191	14.49	0.0
	11/5/2018	57.4	27	1.0U	195	15.79	0.0
	4/19/2018	49	9.14	1.0U	238	17.12	2.9
	10/19/2017	49	4.3	1.0U	215	31.89	0.0
	4/26/2017	69	12	1.0U	163	12.35	0.4
	10/21/2016	66	10	2.0UJ	168	9.77	0.5
	4/26/2016	99	11	2.0 U	71	9.20	0.2
	10/22/2015	130	18	2.0 U	179	8.49	3.8
	4/24/2015	130	23	2.0 U	-75	19.54	1.7
	10/31/2014	150	19	5.0 U	123	12.91	1.3
	7/21/2014	140	22	5.0 U	177	13.90	1.4
	4/29/2014	88	58	2.2 J	201	8.53	0.0
	10/28/2013	26	36	5.0 U	-67	13.76	0.1
	5/2/2013[(5)]	43	160	1.4 J	NM	NM	NM
	11/5/2012	53	290	2.1 J	105	>20	1.6
	5/24/2012	73 J	270	75	149	11.51	1.4
	11/30/2011	95	300	3.2 J	NM	13.98	NM
	4/19/2011	150	420	250	300	3.72	0.0
	11/29/2010	5.0 U/3.8 J	4.8 J/17	5.0 UJ/5.0 UJ	192	2.75	0.0
	5/3/2010	170/170	360/330	41/44	282	5.74	0.0
	10/13/2009	100	410	16	379	16.18	0.17
	4/7/2009	10	22	5.0 U	289	8.62	0.00
	10/21/2008	99	360	10	463	>20	0.00
	4/16/2008	52	240	4	322	8.35	0.05
	10/8/2007	37	190	190	203	4.39	0.40
	7/17/2007	83	400	190	223	0.44	0.09
	4/17/2007	56	470	160	169	0.00	0.14
	1/24/2007	74	410	220	248	0.78	0.10
	10/26/2006	96 J	320	230	226	2.63	0.05
	10/25/2006	NA	NA	NA	221	0.00	0.35
	10/24/2006	NA	NA	NA	234	0.70	0.17
MW-87D2 [(1)]	10/27/2022	200	22	3.6U	168	3.46	3.0
	5/13/2022	180	20	5.0U	100	7.00	5.00
	10/18/2021	302	38	1.0U	102	5.67	3.2
	4/21/2021	388	43.8	1.0U	43	4.19	5.0
	11/6/2020	394J	57.6	1.0UJ	155	3.54	5.0
	5/12/2020	610	38.7	1.0U	200	0.12	3.3
	10/16/2019	1000	85.4	1.0U	228	3.24	1.9
	4/26/2019	990	100	1.0U	210	11.76	0.0
	11/5/2018	731	85.7	1.0U	277	2.89	0.1
	4/19/2018[(5)]	834	64.4	20U	NM	NM	NM
	10/19/2017	909	165	20U	199	2.83	0.0
	4/26/2017	940	120	1.0U	154	4.60	0.1
	10/21/2016[(5)]	NA	NA	NA	168	3.61	NM
	4/26/2016	420	170	5.0 U	231	3.15	0.5
	10/22/2015	470	150	2.0 U	184	7.70	0.5
	4/24/2015	300	100	2.0 U	172	14.19	2.8
	10/31/2014	380	120	5.0 U	149	10.72	3.1
	7/21/2014	420	98	5.0 U	206	7.98	0.0
	4/29/2014	200	110	5.0 U	160	5.63	0.0
	10/28/2013	150	150	5.0 U	9	4.86	0.4
	5/2/2013	35	170	5.0 U	312	15.02	2.2

Table 2

Select Laboratory and Field Parameter Results
Hooker Ruco Site
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Well	Date Sampled	PCE (µg/L)	TCE (µg/L)	VCM (µg/L)	ORP (mV)	DO (mg/L)	Fe^{+2} (mg/L)
MW-87D2 [1]	11/5/2012	25	170	5.0 U	86	>20	1.0
(cont'd)	5/24/2012	16 J/15 J	180/180	5.0 U/5.0 U	NM	NM	2.1
	11/30/2011	18	110	5.0 U	NM	11.08	NM
	4/18/2011	22	75	5.0 U	234	3.46	0.0
	11/15/2010	35	470	2.7 J	397	12.41	0.0
	5/5/2010	18	55	5.0 U	222	4.15	NM
	10/13/2009	15	43	5.0 U	341	5.30	0.26
	4/7/2009	76	370	5.0 U	346	9.90	0.06
	10/21/2008	17	31	2 U	440	9.66	0.00
	4/16/2008	12	23	2 U	288	5.39	0.01
	10/9/2007	14	32	2 U	287	7.45	0.12
	7/16/2007	16	54	2 U	145	3.31	0.07
	4/17/2007	14	56	5 U	106	3.89	0.09
	1/24/2007	25	96	5 U	131	3.64	0.25
	10/26/2006	13	77	5 U	226	4.53	0.02
	10/25/2006	NA	NA	NA	137	6.68	0.09
	10/24/2006	NA	NA	NA	212	4.00	0.08
MW-88D1 [1]	10/27/2022	6.4	3.3	0.9U	NM	NM	NM
	5/12/2022	7.4	3.8	1.0U	-66	7.97	2.54
	10/15/2021	4.2	5.7	1.0U	-66	2.48	5.00
	4/19/2021	2.2	1.2	1.0U	-100	7.05	4.05
	11/5/2020	4.5	1.7	1.0U	139	12.02	4.98
	5/13/2020	10.9	3.5	1.0UJ	-23	14.13	3.41
	10/17/2019	9.1	2.9	1.0U	139	13.33	2.46
	4/24/2019	7	2	1.0U	90	15.02	0.00
	11/8/2018	7.5	2.67	1.0U	83	6.67	0.14
	4/20/2018	10.1	3.8	0.51J	163	16.54	1.43
	10/17/2017	11	5.4	1.4	143	17.94	0.00
	4/25/2017	14	4.9	1.0U	63	6.65	0.45
	10/19/2016	21	14	2.0UJ	29	12.12	0.00
	4/26/2016	14	17	1.2 J	136	9.45	0.36
	10/21/2015	16	23	2.0 U	31	9.74	5.00
	4/24/2015	19	26	2.1	150	14.59	NM
	10/30/2014	12 J	26 J	3.1 J	82	12.59	0.31
	4/25/2014	8.7	14	1.1 J	197	8.44	0.06
	10/28/2013[5]	12	12	3.2 J	NM	NM	NM
	5/1/2013	5.4	6.8	0.92 J	202	13.77	1.22
	10/26/2012	12	17	8.2	83	10.88	1.15
	5/24/2012	5.4 J	14	11	65	8.82	0.0
	12/1/2011	15	20	11	NM	17.16	NM
	4/15/2011	19	19	160	184	14.39	0.0
	11/17/2010	14	20	440	366	13.04	0.0
	5/11/2010	28	32	320	177	19.00	0.50
	10/21/2009	18/14	24/24	510/330	253	>20	0.47
	4/13/2009	27	17	410	205	16.71	0.31
	10/30/2008	40	29	320	339	>20	0.00
	4/25/2008	20	27	310	225	5.95	0.52
	10/16/2007	66	270	1100	3	0.02	5.47
	7/26/2007	37	28 J	1500	232	9.48	0.74
	4/19/2007	32	13	330	172	11.88	1.84
	1/30/2007	36	7	74	-45	1.16	2.01
	10/26/2006	39 J	9	58	33	3.36	6.56
	10/25/2006	NA	NA	NA	-13	0.00	10.20
	10/24/2006	NA	NA	NA	-43	0.00	11.04
MW-88D2 [1]	10/27/2022	1.8	1.4	0.9U	10	4.28	5.00
	5/12/2022	1.4	1.3	1.0U	-160	3.88	3.21
	10/15/2021	12.7	19.2	1.0U	-49	0.77	4.4
	4/19/2021	2.1	1.9	1.0U	-212	3.05	5.0

Table 2

Select Laboratory and Field Parameter Results
Hooker Ruco Site
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Well	Date Sampled	PCE (µg/L)	TCE (µg/L)	VCM (µg/L)	ORP (mV)	DO (mg/L)	Fe^{+2} (mg/L)
MW-88D2 [1] (cont'd)	11/5/2020	12.3	12.5	1.0U	NM	NM	NM
	5/13/2020	7.9	21.2	10.5J	-91	1.71	5.0
	10/17/2019	6.9	11.1	1.0U	38	1.72	2.5
	4/24/2019	14	22	1.0U	30	8.43	0.2
	11/8/2018	13.2	24.1	1.0U	2	2.14	2.2
	5/4/2018	41.5	34.1	0.44	NM	NM	NM
	10/17/2017	17	16	1.0U	-51	0.00	0.1
	4/25/2017	13	11	1.0U	123	8.05	0.3
	10/19/2016[5]	NA	NA	NA	-16	0.95	NM
	4/26/2016	9.2	8.3	2.0 U	67	1.56	0.0
	10/21/2015	15	9.7	2.0 U	-44	9.18	5.00
	4/24/2015	15	11	2.0 U	26	8.59	NM
	10/30/2014	19 J	16 J	5.0 U	91	14.22	0.86
	4/25/2014	5.0 U	5.0 U	0.85 J	62	2.83	0.00
	10/28/2013	5.0 U	5.0 U	5.0 U	52	12.83	0.46
	5/1/2013	14	17 J	38 J	154	11.30	1.56
	10/26/2012	1.7 J	0.82 J	5.0 U	NM	NM	NM
	5/24/2012	1.7 J	1.7 J	91	22	5.73	0
	12/1/2011	24	12	110	NM	9.81	NM
	4/19/2011	27	10	170	-585	3.35	0
	1/20/2011	56	22	160 J	232	5.58	0.00
	5/11/2010	130	85	81	-5	5.70	0.50
	10/20/2009	47	43	130	-3	4.67	4.49
	4/14/2009	200	86	59	41	9.94	0.98
	10/31/2008	250	83 J	230	45	8.94	2.70
	4/25/2008	280 J	130	230	40	8.02	2.65
	10/16/2007	41	25	31	-291	3.04	9.39
	7/26/2007	97/94	57 J/56 J	2000/1800	-333	0.44	1.21
	4/19/2007	390	330	1200	-219	0.37	2.17
	1/25/2007	180/190	180/190	3400/2900	-315	0.82	0.16
	10/26/2006	140 J	180	3200	-212	0.00	NM
	10/25/2006	NA	NA	NA	-253	1.97	11.40
	10/24/2006	NA	NA	NA	-282	1.44	18.96
MW-89D1 [2]	10/26/2022	33	29	12	-2	2.94	5.0
	5/11/2022	27	32	2.2	-127	3.26	5.00
	10/15/2021	20.2/27.9	18.4/19.0	1.1/1.1	8	6.21	5.0
	4/19/2021	30.4/28.0	18.0/17.1	1.8/1.6	10	3.65	5.0
	11/5/2020	3.4	9	1.0U	67	2.30	5.0
	5/13/2020	16.2	21.5	1.0U	114	3.05	5.0
	10/15/2019	14.9	13.9	2	226	4.89	5.0
	4/23/2019	13	12	0.7J	156	4.23	0.0
	4/20/2018[5]	16.8	18.4	4.8	NM	NM	>5
	1/12/2018	25	13.7	0.98J	70	1.98	4.7
	10/16/2017	17	14	3.8	69	1.46	0.1
	4/25/2017[5]	16	19	9	NM	NM	NM
	10/18/2016	18	20	7.9J	-21	0.00	0.2
	4/25/2016	8.9	12	4.2	-10	2.00	0.1
	10/20/2015	12	8.2	4.3	21	22.43	1.5
	4/23/2015	37	26	6.9	101	7.52	NM
	10/31/2014	37	23	4.6 J	51	19.08	>5.0
	7/17/2014	17	7.3	19	-45	2.42	3.6
	4/24/2014	7.2	3.5 J	22	-88	3.67	0.0
	1/27/2014	15	14	72	239	12.43	NM
	10/28/2013	6.2	2.8 J	51	-52	2.56	0.5
	7/24/2013	6.9	3.1 J	31	-198	0.43	1.8
	4/29/2013	12	8.3	60	-125	5.49	3.8
	2/6/2013	20	10	25	-70	8.99	0.0
	10/24/2012	2.9 J	5.0 U	6.7	17	9.68	0.0
	4/21/2011	37	47	63	-142	1.57	6.0

Table 2

Select Laboratory and Field Parameter Results
Hooker Ruco Site
Hicksville, New York

Well	Date Sampled	PCE (µg/L)	TCE (µg/L)	VCM (µg/L)	ORP (mV)	DO (mg/L)	Fe^{+2} (mg/L)
MW-89D2 [(2)]	10/26/2022	7.4	8.8	0.9U	55	2.51	5.0
	5/11/2022	7	7.7	1.0UJ	-112	2.71	5.0
	10/15/2021	6.1	6.8	1.2	25	3.33	5.0
	4/19/2021	10.9	7.4	1.8	-129	1.62	5.0
	11/5/2020	7.7	8.8	1.6	NM	NM	NM
	5/13/2020	8.9	7.5	1.2	112	0.84	5.0
	10/15/2019	6.7	5.9	1.0U	72	2.11	NM
	4/23/2019	8	7	0.6J	128	12.08	0.1
	11/12/2018	5.79	5.26	1.0U	37	4.70	3.7
	4/20/2018	6.89	5.31	0.53J	105	1.24	>5
	10/16/2017	10	6.5	1.0U	82	1.03	0.0
	4/25/2017	8.4	6.6	1.0U	134	20.49	0.0
	10/18/2016	13	8.3	2.0UJ	-119	0.66	0.0
	4/25/2016	6.7	6.0	2.0 U	-30	0.27	0.4
	10/20/2015	5.7	9.4	2.0 U	-72	19.70	2.2
	4/23/2015[(5)]	10	13	2.3	NM	NM	NM
	10/31/2014	5.8	9.4	6.5	6	12.01	1.8
	7/17/2014	3.9 J	5.6	3.7 J	-40	2.13	2.0
	4/24/2014	1.8 J	2.7 J	6.1	-27	4.26	0.0
	1/27/2014[(5)]	2.7 J	4.0 J	12	NM	NM	NM
	10/28/2013	1.6 J	2.4 J	13	-63	9.45	0.8
	7/24/2013	1.1 J	2.1 J	12	-250	0.75	2.7
	4/29/2013	1.2 J	1.9 J	26	-244	4.49	3.0
	2/6/2013	5	4.6 J	20	-122	10.05	0.0
	10/24/2012	1.7 J	2.4 J	21	-95	10.73	0.0
	4/21/2011	27	16	24	-154	2.43	1.0
MW-90D1 [(2)]	10/25/2022	3.9	1.4	1.8U	NM	NM	NM
	5/11/2022	4.5	1.7	1.0UJ	NM	NM	NM
	10/13/2021	4.3	2	1.0U	NM	NM	NM
	4/22/2021	13	7.3	1.0U	NM	NM	NM
	11/9/2020	6.4	2.5	1.0U	NM	NM	NM
	5/14/2020	7.9	3.9	1.0UJ	NM	NM	NM
	10/14/2019	5.6	4.7	1.0U	NM	NM	NM
	4/25/2019	4	2	1.0U	NM	NM	NM
	11/6/2018	10.6	4.59	1.0U	NM	NM	NM
	4/26/2018[(5)]	14.8	5.78	1.0U	NM	NM	NM
	10/19/2017[(5)]	17	5.8	0.6J	NM	NM	NM
	5/11/2017[(5)]	30	8.2	1.0U	NM	NM	NM
	10/21/2016[(5)]	21	9.6	2.0UJ	NM	NM	NM
	4/27/2016[(5)]	5.0 U	8.4	2.0 U	NM	NM	NM
	10/23/2015[(5)]	23	9.5	1.9 J	NM	NM	NM
	4/24/2015[(5)]	25	9.6	3.0	NM	NM	NM
	10/21/2014[(5)]	16	9.9	37	NM	NM	NM
	7/18/2014[(5)]	33	11	27	NM	NM	NM
	4/23/2014[(5)]	42	24	600	NM	NM	NM
	1/23/2014[(5)]	17	18	1600	NM	NM	NM
	10/25/2013[(5)]	22	13	84	NM	NM	NM
	7/23/2013[(5)]	32	16	290	NM	NM	NM
	4/30/2013[(5)]	3.9 J	2.3 J	780	NM	NM	NM
	2/6/2013[(5)]	27	6.7	2500	NM	NM	NM
	10/25/2012[(5)]	2.0 J	5.0 U	810	NM	NM	NM
	4/13/2011	29	12	4100	-103	0.34	NM
	4/25/2007	110	44	6300	-100	0.93	2.30

Table 2

Select Laboratory and Field Parameter Results
Hooker Ruco Site
Hicksville, New York

Well	Date Sampled	PCE (µg/L)	TCE (µg/L)	VCM (µg/L)	ORP (mV)	DO (mg/L)	Fe^{+2} (mg/L)
MW-90D2 [(2)]	10/25/2022	2.30	1.8	1.8U	NM	NM	NM
	5/11/2022	9.6	6.7	1.0UJ	NM	NM	NM
	10/13/2021	8.6	6.6	1.0U	NM	NM	NM
	4/22/2021	5.3	4.7	1.0U	NM	NM	NM
	11/9/2020	19.8	9.3	1.0U	NM	NM	NM
	5/14/2020	7.4	6.0	1.0UJ	NM	NM	NM
	10/14/2019	17	16.1	1.0U	NM	NM	NM
	4/25/2019	17	12.0	1.0U	NM	NM	NM
	11/6/2018	19	11.3	1.0U	NM	NM	NM
	4/26/2018[(5)]	13	5.1	1.0U	NM	NM	NM
	10/19/2017[(5)]	12	6.6	1.0U	NM	NM	NM
	4/27/2017[(5)]	11	8.2	1.0U	NM	NM	NM
	10/21/2016[(5)]	6	6.9	2.0UJ	NM	NM	NM
	4/27/2016[(5)]	27	11	2.0 U	NM	NM	NM
	10/23/2015[(5)]	74	23	2.0 U	NM	NM	NM
	4/24/2015[(5)]	26	21	2.0 U	NM	NM	NM
	10/21/2014[(5)]	6.1	3.5 J	5.0 U	NM	NM	NM
	7/18/2014[(5)]	22	22	5.0 U	NM	NM	NM
	4/23/2014[(5)]	37	26	1.5 J	NM	NM	NM
	1/23/2014[(5)]	39	25	2.9 J	NM	NM	NM
	10/25/2013[(5)]	44	23	5.0 U	NM	NM	NM
	7/23/2013[(5)]	43	29	5.0 U	NM	NM	NM
	4/30/2013[(5)]	57	25	1.8 J	NM	NM	NM
	2/6/2013[(5)]	120	37	3.1 J	NM	NM	NM
	4/14/2011	33	51	1.2 J	12	4.03	1.0
	5/17/2010	26	68	2.1 J	-112	0.00	2.5
	4/25/2007	46	220 J	49	-47	1.38	1.76
Voluntary Wells							
MW-52S	3/13/2007	25	19	2400	5	1.64	1.66
MW-52I	3/14/2007	14	5	6	259	5.85	0.04
MW-52D	3/14/2007	410	39	5 U	226	3.07	0.11
MW-58D	10/27/2022	14	140	3.6U	55	1.26	5.00
	5/25/2022	19	120	2.0U	-19	2.01	5
	10/29/2021	14.7/16.7	149/151	1.0UJ/1.0UJ	200	9.37	4.8
	6/29/2021	10.9	277	1.0U	-139	5.00	1.9
	11/30/2020	12.9	13.7	1.0U	-11	2.01	5
	5/26/2020	25.3	220	1.0U	137	9.60	4.01
	10/27/2019	18.3	357	1.0U	153	2.35	4.02
	5/8/2019	36	750	1.0U	151	6.35	0
	11/20/2018	17.9	319	1.0U	91	1.31	>5
	4/24/2018[(5)]	56	2370	50U	NM	NM	NM
	10/17/2017[(5)]	59	3670	50U	NM	NM	NM
	4/26/2017[(5)]	51	5200	1.0U	NM	NM	NM
	11/2/2016	38J	5000	2.0U	-12	0.00	0.1
	6/2/2016	28	6300	2.0 U	-44	9.46	0.0
	11/14/2014[(5)]	500 U	6500	500 U	NM	NM	NM
	5/23/2013	15 J	110	5.0 U	167	5.94	2
	11/21/2011	8.6	56	5.0 U	74	0.30	NR
	5/18/2010	18	47	5.0 U	30	0.00	1.8
	10/26/2006	20	120	5 U	21	2.42	4.30

Table 2

Select Laboratory and Field Parameter Results
Hooker Ruco Site
Hicksville, New York

Well	Date Sampled	PCE (µg/L)	TCE (µg/L)	VCM (µg/L)	ORP (mV)	DO (mg/L)	Fe^{+2} (mg/L)
MW-58D1	10/27/2022	7.4	110	3.6U	-141	0.51	5
	5/25/2022	17	99	2.0U	NM	NM	NM
	10/29/2021	10.3	110	1.0UJ	41	24.53	4.6
	6/29/2021	15.3	249	1.0U	-97	5.00	3.0
	11/30/2020	12.1	110	1.0U	-75	1.53	5.0
	5/26/2020	16	188	1.0U	-105	4.08	3.5
	10/27/2019	18.7	244	1.0U	86	4.28	2.2
	5/8/2019	32	750	1.0U	-77	6.35	0.0
	11/20/2018	23.9	522	1.0U	151	3.26	2.6
	4/24/2018	59	2300	50U	NM	NM	NM
	10/17/2017(5)	60	3300	50U	NM	NM	NM
	4/26/2017	51	4600	1.0U	-96	NM	0.0
	11/2/2016	32J	4400	2.0U	46	0.00	1.6
	6/2/2016	34	5800	2.0 U	-25	10.58	0.1
	11/14/2014(5)	250 U	4300	250 U	NM	NM	NM
	5/23/2013(5)	12 J	73	5.0 U	NM	NM	NM
	11/21/2011	2.5 J	20	5.0 U	-48	0.52	NR
	5/19/2010	18	44	5.0 U	-50	0.00	2.2
	10/26/2006	20	150	5 U	-101	2.58	8.80
MW-58D2	11/11/2022	15	140	3.6U	84	4.02	5.0
	5/10/2022	9.3/12	120/110	2.0UJ/2.0UJ	193	3.77	5.00
	10/14/2021	4.5	99	1.0U	78	22.17	4.65
	7/21/2021	15.4	239	1.0U	NM	NM	NM
	11/6/2020	15.7	149	1.0U	NM	NM	NM
	5/12/2020	17	149	1.0U	80	2.65	4.89
	10/13/2019	16.5	237	1.0UJ	-123	5.04	5.00
	4/23/2019	37	319 to	2.0U	139	8.64	1.04
	11/5/2018	115	436	5.0U	253	4.40	0.10
	5/22/2018(5)	55	1910	50U	NM	NM	4.62
	11/1/2017	83	4100	1.0U	64	1.69	0.52
	5/11/2017(5)	44	2400	1.0U	NM	NM	0.00
	10/19/2016	37	3200	2.0UJ	-46	0.00	0.72
	5/18/2016	38	7600	2.0 U	47	9.57	0.22
	10/24/2014	20	4900	5.0 U	-10	20.87	0.00
	4/29/2013	13	74	5.0 U	-81	7.70	3.87
	10/25/2006	19 J	120	5 U	-198	0.00	5.16
MW-59D1	11/29/2011	3.5 J	12	5.0 U	-43	0.30	NR
	10/25/2006	10 J	32	5 U	-20	0.58	3.24
MW-59D2	12/20/2022	0.36U	0.46U	0.9U	129	10.09	5
	5/10/2022	1.0U	1.0U	1.0UJ	44	9.23	2.84
	10/14/2021	1.0U	1.0U	1.0U	64	25.04	2.82
	6/29/2021	1.0U	1.0U	1.0U	-3	5.00	3.28
	11/6/2020	1.0U	1.0UJ	1.0UJ	-139	3.73	5.00
	5/13/2020	1.0U	1.0U	1.0U	97	4.32	5.00
	10/13/2019	1.0U	1.0U	1.0U	-32	0.46	2.73
	4/23/2019	1.0U	1	1.0U	77	13.08	0.26
	11/5/2018	0.33J	1.57	1.0U	42	3.18	0.08
	4/24/2018(5)	1.0U/1.0U	3.97/3.92	1.0U/1.0U	NM	NM	NM
	10/19/2017	0.6J	4.4	1.0U	-64	1.59	0.14
	4/26/2017	1.0U	4.7	1.0U	-114	2.52	0.00
	10/19/2016	5.0U	5.7	2.0UJ	-137	1.01	0.14
	5/18/2016(5)	5.0 U	5.5	2.0 U	NM	NM	NM
	11/29/2011	2.5 J	8.1	5.0 U	-128	0.10	NR
	10/25/2006	11 J	40	5 U	-99	0.47	2.00

Table 2

Select Laboratory and Field Parameter Results
Hooker Ruco Site
Hicksville, New York

Well	Date Sampled	PCE (µg/L)	TCE (µg/L)	VCM (µg/L)	ORP (mV)	DO (mg/L)	Fe^{+2} (mg/L)
MW-59D	11/29/2011	5.3	13	5.0 U	49	0.35	NR
	10/26/2006	10	58	5 U	-108	0.00	2.65
MW-60S	5/23/2013	45	150	5.0 U	-233	4.74	>5.0
MW-60I	5/23/2013	43	200	5.0 U	-93	3.77	>5.0
MW-60D	5/23/2013	64	99	5.0 U	-204	4.60	2.43
MW-60D1	4/30/2013	1.6 J	26	5.0 U	-108	5.84	>5.0
MW-61S	5/10/2010	5.4	8.1 U	3.5 J	100	10.95	0.0
	10/19/2009	7.4	10	5.0 U	372	>20	0.02
MW-62I	12/14/2020	5.1	1.1	5.8	186	5.40	4.2
	10/18/2017	13	2.9	7.9	145	0.00	0.0
	11/16/2015[5]	14	3.4 J	8.9	NM	NM	2.5
	5/25/2010	5.1 J	5.0 U	4.2 J	14.8	0.00	4.2
	5/16/2007	5.1	1 J	3 J	59	0.00	0.69
MW-62D	12/14/2020	1.4	1.0U	1.0U	172	4.25	5.0
	10/18/2017	1.5	2.2	3.7	-25	0.00	0.0
	11/16/2015	2.5 J	2.0 J	2.3	116	10.94	0.0
	5/25/2010	2.4 J	8.2	8	-200	0.00	6.2
	5/16/2007	5 U	5 U	5 U	-125	0.00	0.38
MW-64S [2]	5/24/2010	1.5 J	5.0 U	2.1 J	-98	0.00	4.0
	4/26/2007	3 J	2 J	8.7	-114	0.00	2.4
MW-64I [2]	5/24/2010	5.0 UJ	5.0 U	12	-110	0.00	4.0
	4/26/2007	5	3 J	16	-121	0.00	1.9
MW-64D [2]	5/24/2010	5.0 UJ	5.0 U	11	-107	0.00	2.3
	4/26/2007	5.1	4 J	14	-115	0.00	2.0
MW-66D2 [2]	10/27/2022	0.54J	0.67J	0.9U	-49	2.73	5
	10/18/2021	6.6	10.3	1.0U	3	14.06	5.0
	11/6/2020	6.4J	14.0	1.0UJ	NM	NM	NM
	5/13/2020	5.9	6.7	1.0U	150	10.77	5.0
	10/13/2019	8.4	13.4	1.0UJ	275	9.61	5.0
	4/23/2019	27	24.0	0.7J	177	8.12	0.1
	11/5/2018	10.9	12.0	1.0U	84	6.40	NM
	4/24/2018	3.8	6.9	1.0U	223	19.44	3.2
	10/16/2017	0.6J	0.9J	1.0U	137	7.45	0.2
	4/26/2017	1.0U	1.0U	1.0U	190	11.67	0.8
	10/18/2016	1.4J	2.2J	2.0UJ	35	0.02	NM
	4/25/2016	2.9 J	8.0	2.0 U	-4	13.29	0.2
	10/21/2015[5]	5.8	10	2.0 U	NM	NM	NM
	4/23/2015	10	15	2.0 U	161	13.98	NM
	10/27/2014	22	25	5.0 U	166	3.42	2.8
	4/25/2014	47	61	5.0 U	53	4.55	0.7
	10/29/2013	43	58	5.0 U	-111	3.88	0.3
	4/25/2013	100	110	5.0 U	-44	6.58	0.2

Table 2

Select Laboratory and Field Parameter Results
Hooker Ruco Site
Hicksville, New York

Well	Date Sampled	PCE (µg/L)	TCE (µg/L)	VCM (µg/L)	ORP (mV)	DO (mg/L)	Fe^{+2} (mg/L)
MW-67S [2]	10/27/2022	0.36U	0.7	0.9U	NM	NM	NM
	5/11/2022	1.0U	1.0U	1.0UJ	27	5.14	5.0
	10/14/2021	1.0U	1.0U	1.0U	34	5.06	5.0
	6/29/2021	3.65	3.55	1.0U	-34	5.00	2.4
	11/6/2020	1.9J	9.3	1.0UJ	-96	1.44	5.0
	5/13/2020	1.0U	1.0U	1.0U	162	2.93	5.0
	10/13/2019	1.0U	1.0	1.0U	141	0.00	4.2
	4/23/2019	2	0.6J	1.0U	152	7.11	0.2
	11/5/2018	51.3	51.4	1.21	NM	NM	NM
	4/24/2018	43.8	53.4	1.0U	243	9.39	1.6
	10/16/2017	60	66	0.7J	87	2.77	0.0
	4/26/2017	67	61	1.0U	100	4.02	NM
	10/19/2016	41	66	2.0UJ	26	0.29	0.2
	4/25/2016	58	44	2.0 U	104	20.69	0.7
	10/21/2015	1.7 J	2.5 J	2.0 U	177	11.68	NM
	4/23/2015	6	5.4	2.0 U	155	12.71	0.4
	10/24/2014[5]	18	19	6.2	NM	NM	NM
	4/25/2014	4.9 J	9.6	38	77	2.76	0.0
	10/29/2013	4.6 J	16	100	-161	2.49	1.0
	4/25/2013	2.8 J	19	140	45	5.14	1.9
	11/22/2011	1.5 J	8.7	47	-35	0.14	NR
	5/20/2010	26/27	37/39	87/95	-170	0.00	7.0
MW-67D [2]	5/13/2020	1.0U	1.0U	1.0U	NM	NM	NM
	10/13/2019	1.0U	1.0U	1.0UJ	71	0.77	5.0
	4/23/2019	1.0U	1.0U	1.0U	139	6.83	0.1
	11/5/2018	1.0U	0.4J	1.0U	8	2.62	NM
	4/24/2018	1.0U	1.0U	1.0U	NM	NM	NM
	10/16/2017	0.7J	0.8J	1.0U	NM	0.00	0.0
	4/26/2017	1.0U	2.1	1.0U	2	3.25	0.5
	10/19/2016	5.0U	5.0U	2.0UJ	50	2.37	0.1
	4/25/2016	5.0 J	1.2 J	2.0 U	53	4.62	0.3
	10/21/2015[5]	5.0 U	2.1 J	2.0 U	NM	NM	NM
	4/23/2015	2.9 J	5.0 U	2.0 U	-274	9.51	NM
	10/24/2014[5]	1.4 J	4.3 J	5.0 U	NM	NM	NM
	4/25/2014	4.8 J	25	5.0 U	2	5.35	0.0
	10/29/2013	11	36	5.0 U	-204	3.78	0.0
	4/25/2013	8.6	32	5.0 U	45	11.98	1.9
	11/22/2011	6.2	58	5.0 U	129	2.97	NR
	5/20/2010	74/73	280/280 J	5.0 U/5.0 U	-187	1.30	0.2
MW-68S [2]	11/11/2022	2	2.1	0.9U	NM	NM	NM
	5/10/2022	6.8	8.1	2.4J	NM	NM	NM
	10/14/2021	7.3	10	1.0U	0.07	6.83	5.0
	6/29/2021	9.8	9.3	1.0U	-91	4.57	4.4
	11/6/2020	1.2J	1.8	1.0UJ	-201	1.03	5.0
	5/13/2020	14.6 J	25.8 J	5.9	-79	3.49	3.7
	10/13/2019	18.4	28.2	5.2J	-81	0.00	1.6
	4/23/2019	58	84	42	-97	4.72	0.0
	4/24/2018	60.4	84.4	66	163	3.39	0.5
	1/5/2018	67.4	83.3	27.9J	-36	1.79	1.5
	10/16/2017	87	93	143	-163	0.00	0.2
	4/26/2017[5]	50	83	190	NM	NM	NM
	10/19/2016	87	120	230J	-201	0.47	0.1
	4/25/2016	62	100	220	1	24.40	0.0
	10/21/2015	65	110	260	47	9.22	NM
	4/23/2015	77	110	2.0 U	-15	15.09	NM
	10/24/2014	67	93	400	68	21.08	0.0
	4/25/2014	99	81	270	-50	2.49	0.0

Table 2

Select Laboratory and Field Parameter Results
Hooker Ruco Site
Hicksville, New York

Well	Date Sampled	PCE (µg/L)	TCE (µg/L)	VCM (µg/L)	ORP (mV)	DO (mg/L)	Fe^{+2} (mg/L)
MW-68S [(2)]	10/29/2013	6.8	11	580	-128	3.58	1.0
(cont'd)	4/25/2013	11	27	940	-190	6.84	1.9
	11/28/2011	83	110	690	-107	0.05	NR
MW-68D [(2)]	11/11/2022	4.2	4.7	0.9U	-55	5.11	3.8
	5/10/2022	1.6	3.9	1.0UJ	3	12.16	5.0
	10/14/2021	1.9	6.4	1.0U	-77	21.35	5.0
	6/29/2021	2.0	6.6	1.0U	82	4.89	4.4
	11/6/2020	1.0U	1.0UJ	1.0UJ	28	3.25	5.0
	5/13/2020	2.7	9.9	1.0U	-109	4.64	2.6
	10/13/2019	5.9	20.3	1.0UJ	121	4.38	5.0
	4/23/2019	3	13	1.0U	83	7.22	0.2
	11/5/2018	3.75	9.34	1.0U	0	1.59	0.0
	4/24/2018	2.54	8.1	1.0U	NM	NM	>5.0
	10/16/2017	2.5	5.4	1.0U	82	0.00	0.6
	4/26/2017	1.0U	4.7	1.0U	18	4.64	NM
	10/19/2016	5.0U	4.6J	2.0UJ	-39	0.50	0.0
	4/25/2016	5.0 U	4.3 J	2.0 U	37	9.21	0.0
	10/21/2015[(5)]	1.7 J	5.9	2.0 U	NM	NM	NM
	4/23/2015[(5)]	1.8 J	6.8	1.0 J	NM	NM	NM
	10/24/2014	2.2 J	14	5.0 U	36	12.79	0.0
	4/25/2014	7.3	47	5.0 U	-71	5.27	0.0
	10/29/2013	19	78	5.0 U	-91	4.12	0.2
	4/25/2013	36	160	1.3 J	-174	5.88	0.7
	11/28/2011	47	290	1.2 J	-38	0.97	NR
	5/19/2010	320	970	34	-29	0.00	2.4
MW-92D1	10/18/2021	1.0U	3.3	8.3	82	13.73	5.0
	10/17/2019	1.0U	3.9	14.7	-92	0.88	5.0
	10/18/2017	2.4	6.8	24	-105	0.00	0.0
	10/23/2015	3.9 J	6.2	42	32	6.61	1.0
	10/27/2014	3.4 J	4.6 J	51	-18	2.62	4.1
	4/24/2013	3.7 J	6.2	79	12	6.57	3.0
	4/12/2011	5.7	1.3 J	100	-190	1.13	4.0
MW-92D2	10/18/2021	7.3	2.6	1.0U	41	4.43	5.0
	10/17/2019	29.9	4.3	1.0U	-100	2.30	5.0
	10/18/2017	18	2.4	1.0U	-91	0.00	0.4
	10/23/2015	30	5.4	2.0 U	-77	8.07	0.1
	10/27/2014	92	8.2	5.0 U	-120	2.20	75.0
	4/24/2013	280	17	5.0 U	-104	5.52	>5.0
	4/25/2011	690	12	5.0 U	-156	2.00	1.5
MW-93D1	10/18/2021	2.9	1.0U	1.5	6	6.29	3.4
	10/17/2019	1.0U	1.0U	1.0U	6	2.68	4.2
	10/18/2017	1.4	0.5J	1.0U	-94	0.00	0.4
	10/23/2015	8	1.2 J	3.8	11	9.79	0.2
	10/27/2014	16	2.3 J	7.0	33	3.10	2.3
	4/24/2013	14	4.5 J	20	-140	5.16	2.2
	4/26/2011	21	3.7 J	190	-191	2.18	2.5
MW-93D2	10/18/2021	1.0U	1.0U	1.0U	31	4.53	5.0
	10/17/2019	1.0U	1.0U	1.0U	NM	NM	NM
	10/18/2017	13	1.2	1.5	-77	3.48	0.4
	10/23/2015	5.0 U	5.0 U	2.0 U	-105	9.40	0.0
	10/27/2014	1.0 J	5.0 U	5.0 U	-12	2.98	3.4
	4/23/2013	24	21	5.0 U	-105	4.58	4.5
	4/26/2011	110	15	5.0 U	-219	2.96	2.0

Table 2

Select Laboratory and Field Parameter Results
Hooker Ruco Site
Hicksville, New York

Well	Date Sampled	PCE (µg/L)	TCE (µg/L)	VCM (µg/L)	ORP (mV)	DO (mg/L)	Fe^{+2} (mg/L)
Northrop Wells							
GP-1 (Well 1)	2/16/2022	16.6	678	ND	NR	NR	NR
	11/11/2021	14.7	803	ND	NR	NR	NR
	8/18/2021	18	833	ND	NR	NR	NR
	5/13/2021	16	698	ND	NR	NR	NR
	3/16/2021	18	578	ND	NR	NR	NR
	11/17/2020	13/17	629/597	ND/ND	NR	NR	NR
	8/19/2020	13	578	ND	NR	NR	NR
	5/13/2020	16	647	ND	NR	NR	NR
	3/26/2020	17	629	ND	NR	NR	NR
	12/23/2019	14	569	ND	NR	NR	NR
	8/6/2019	17	546	ND	NR	NR	NR
	6/13/2019	15	488	ND	NR	NR	NR
	2/13/2019	17	589	ND	NR	NR	NR
	12/6/2018	18	578	ND	NR	NR	NR
	9/5/2018	19	554	ND	NR	NR	NR
	5/10/2018	20	631	ND	NR	NR	NR
	2/28/2018	18	558	ND	NR	NR	NR
	9/12/2017	22	603	ND	NR	NR	NR
	2/22/2017	28	702	ND	NR	NR	NR
	12/15/2016	22	703	ND	NR	NR	NR
	8/17/2016	28	838	ND	NR	NR	NR
	5/12/2016	24	615	ND	NR	NR	NR
	3/14/2016	30	792	ND	NR	NR	NR
	12/12/2015	31	768	ND	NR	NR	NR
	9/09/2015	35	852	ND	NR	NR	NR
	5/05/2015	31	748	ND	NR	NR	NR
	3/16/2015	41	713	ND	NR	NR	NR
	11/13/2014	39	695	ND	NR	NR	NR
	9/11/2014	35	730	ND	NR	NR	NR
	6/10/2014	40	490	ND	NR	NR	NR
	2/24/2014	39	400	ND	NR	NR	NR
	8/21/2013	48/44	400/390	ND/ND	NR	NR	NR
	6/06/2013	48	380	ND	NR	NR	NR
	2/18/2013	49	360	ND	NR	NR	NR
	12/11/2012	51	410	ND	NR	NR	NR
	5/08/2012	48	410	ND	NR	NR	NR
	8/20/2010	NR	101	ND	NR	NR	NR
	7/28/2010	NR	NA	ND	NR	NR	NR
	4/20/2010	NR	368	ND	NR	NR	NR
	3/15/2010	NR	149	ND	NR	NR	NR
	2/15/2010	NR	108	ND	NR	NR	NR
	1/18/2010	NR	106	ND	NR	NR	NR
	12/4/2009	NR	151	ND	NR	NR	NR
	11/16/2009	NR	173	ND	NR	NR	NR
	10/20/2009	NR	132	ND	NR	NR	NR
	9/16/2009	NR	112	ND	NR	NR	NR
	8/18/2009	NR	126	ND	NR	NR	NR
	7/21/2009	NR	156	ND	NR	NR	NR
	6/15/2009	NR	93	ND	NR	NR	NR
	5/18/2009	NR	217	ND	NR	NR	NR
	4/13/2009	NR	203	ND	NR	NR	NR
	3/16/2009	NR	202	ND	NR	NR	NR
	2/16/2009	NR	186	ND	NR	NR	NR
	1/05/2009	NR	106	ND	NR	NR	NR
	12/16/2008	NR	82	ND	NR	NR	NR
	11/18/2008	NR	145	ND	NR	NR	NR
	10/13/2008	NR	78	ND	NR	NR	NR
	9/22/2008	NR	78	ND	NR	NR	NR
	8/18/2008	NR	54	ND	NR	NR	NR

Table 2

Select Laboratory and Field Parameter Results
Hooker Ruco Site
Hicksville, New York

Well	Date Sampled	PCE (µg/L)	TCE (µg/L)	VCM (µg/L)	ORP (mV)	DO (mg/L)	Fe^{+2} (mg/L)
GP-1 (Well 1) (cont'd)	7/15/2008	NR	353	ND	NR	NR	NR
	6/16/2008	NR	113	ND	NR	NR	NR
	5/19/2008	NR	195	ND	NR	NR	NR
	4/14/2008	NR	233	ND	NR	NR	NR
	3/17/2008	NR	212	ND	NR	NR	NR
	2/18/2008	NR	373	ND	NR	NR	NR
	1/14/2008	NR	273	ND	NR	NR	NR
	12/18/2007	NR	371	ND	NR	NR	NR
	11/12/2007	NR	428	ND	NR	NR	NR
	10/15/2007	NR	285	ND	NR	NR	NR
	9/11/2007	NR	452	ND	NR	NR	NR
	8/13/2007	NR	333	ND	NR	NR	NR
	7/23/2007	NR	410	ND	NR	NR	NR
	6/18/2007	NR	414	ND	NR	NR	NR
	5/14/2007	NR	587	ND	NR	NR	NR
	4/16/2007	NR	473	ND	NR	NR	NR
	3/12/2007	NR	439	ND	NR	NR	NR
	2/12/2007	NR	373	ND	NR	NR	NR
	1/15/2007	NR	547	ND	NR	NR	NR
	12/18/2006	NR	634	ND	NR	NR	NR
	11/13/2006	NR	NA	ND	NR	NR	NR
	10/23/2006	NR	NA	ND	NR	NR	NR
GP-3 (Well 3R)	8/18/2022[6]	36.4	148	2.2	NR	NR	NR
	5/17/2022[6]	38.4	151	2.4	NR	NR	NR
	2/16/2022 [6]	46/45.1	199/197	3.4/3.3	NR	NR	NR
	11/11/2021 [6]	50.1	174	4.4	NR	NR	NR
	8/18/2021 [6]	50	187	2.3	NR	NR	NR
	5/13/2021 [6]	35	176	2.2	NR	NR	NR
	3/16/2021 [6]	37	199	1.6	NR	NR	NR
	11/17/2020 [6]	37	232	1.7	NR	NR	NR
	8/19/2020 [6]	30	198	2.2	NR	NR	NR
	5/13/2020 [6]	28	226	1.4	NR	NR	NR
	3/26/2020 [6]	30	204	1.5	NR	NR	NR
	12/23/2019 [6]	29	172	1.3	NR	NR	NR
	8/6/2019 [6]	28	298	1.3	NR	NR	NR
	6/13/2019 [6]	25	273	1.1	NR	NR	NR
	2/13/2019 [6]	31	333J	1.7	NR	NR	NR
	12/6/2018 [6]	27	268	1.9	NR	NR	NR
	9/5/2018 [6]	26	272	1.9	NR	NR	NR
	5/10/2018 [6]	28	332	2.0	NR	NR	NR
	2/28/2018 [6]	26	306	2.2	NR	NR	NR
	9/12/2017 [6]	31	365	2.7	NR	NR	NR
	2/14/2017 [6]	31	498	3.9	NR	NR	NR
	12/15/2016 [6]	27	508	3.5	NR	NR	NR
	8/17/2016 [6]	33	579	5.0	NR	NR	NR
	5/12/2016 [6]	29	487	7.6	NR	NR	NR
	3/14/2016 [6]	31	529	8.6	NR	NR	NR
	12/15/2015 [6]	34	510	10	NR	NR	NR
	9/09/2015 [6]	37	557	13	NR	NR	NR
	5/05/2015 [6]	34	533	18	NR	NR	NR
	3/16/2015 [6]	44	493	29	NR	NR	NR
	11/13/2014 [6]	44	394	35	NR	NR	NR
	9/11/2014 [6]	43	270	36	NR	NR	NR
	6/10/2014 [6]	40	140	36	NR	NR	NR
	2/24/2014 [6]	38	98	38	NR	NR	NR

Select Laboratory and Field Parameter Results
Hooker Ruco Site
Hicksville, New York

Well	Date Sampled	PCE (µg/L)	TCE (µg/L)	VCM (µg/L)	ORP (mV)	DO (mg/L)	Fe^{+2} (mg/L)
GP-3 (Well 3R)	8/21/2013	57	1200	58	NR	NR	NR
(cont'd)	6/06/2013	54	1400	60	NR	NR	NR
	2/18/2013	53	1400	72	NR	NR	NR
	12/11/2012	51	1500	84	NR	NR	NR
	5/08/2012	58	1700	140	NR	NR	NR
	8/12/2010	NR	132	155	NR	NR	NR
	7/19/2010	NR	308	137	NR	NR	NR
	6/21/2010	NR	450	135	NR	NR	NR
	4/20/2010	NR	890	173	NR	NR	NR
	3/15/2010	NR	852	134	NR	NR	NR
	2/15/2010	NR	1191	177	NR	NR	NR
	1/18/2010	NR	1263	188	NR	NR	NR
	12/14/2009	NR	1262	179	NR	NR	NR
	11/16/2009	NR	1262	182	NR	NR	NR
	10/20/2009	NR	1591	178	NR	NR	NR
	9/16/2009	NR	1462	163	NR	NR	NR
	8/18/2009	NR	1226	151	NR	NR	NR
	7/21/2009	NR	1180	148	NR	NR	NR
	6/15/2009	NR	856	94	NR	NR	NR
	0/18/2009	NR	1012	151	NR	NR	NR
	4/13/2009	NR	1410	153	NR	NR	NR
	3/16/2009	NR	1082	112	NR	NR	NR
	2/16/2009	NR	1159	104	NR	NR	NR
	1/12/2009	NR	862	93	NR	NR	NR
	12/16/2008	NR	1227	83	NR	NR	NR
	11/18/2008	NR	846	112	NR	NR	NR
	10/13/2008	NR	1130	98	NR	NR	NR
	9/22/2008	NR	1083	101	NR	NR	NR
	8/18/2008	NR	907	51	NR	NR	NR
	7/15/2008	NR	1106	89	NR	NR	NR
	6/16/2008	NR	1196	86	NR	NR	NR
	5/19/2008	NR	985	81	NR	NR	NR
	4/14/2008	NR	1717	130	NR	NR	NR
	3/17/2008	NR	1700	146	NR	NR	NR
	2/18/2008	NR	1472	143	NR	NR	NR
	1/14/2008	NR	1655	109	NR	NR	NR
	12/18/2007	NR	2264	130	NR	NR	NR
	11/12/2007	NR	2123	113	NR	NR	NR
	10/15/2007	NR	2080	117	NR	NR	NR
	9/11/2007	NR	2013	114	NR	NR	NR
	8/13/2007	NR	1964	113	NR	NR	NR
	7/23/2007	NR	2900	128	NR	NR	NR
	6/18/2007	NR	2268	92	NR	NR	NR
	5/14/2007	NR	3107	144	NR	NR	NR
	4/16/2007	NR	2476	49	NR	NR	NR
	3/12/2007	NR	2200	74	NR	NR	NR
	2/12/2007	NR	2545	81	NR	NR	NR
	1/15/2007	NR	3038	121	NR	NR	NR
	12/18/2006	NR	3968	148	NR	NR	NR
	11/13/2006	NR	NR	143	NR	NR	NR
	10/23/2006	NR	NR	122	NR	NR	NR
	09/25/2006	NR	NR	100	NR	NR	NR

Table 2

Select Laboratory and Field Parameter Results
Hooker Ruco Site
Hicksville, New York

Well	Date Sampled	PCE (µg/L)	TCE (µg/L)	VCM (µg/L)	ORP (mV)	DO (mg/L)	Fe^{+2} (mg/L)
MW-3-1	4/19/2022	12.2	61.9	1.1	NR	NR	NR
	10/29/2021	24.5J	75.1	7.9	NR	NR	NR
	4/12/2021	35	149	16	NR	NR	NR
	10/28/2020	17	169	6.6	NR	NR	NR
	5/8/2020	25.5/24.7	74.2/76.0	0.36J/0.43J	NR	NR	NR
	10/3/2019	57.4/55.5	1	4.9/4.5	NR	NR	NR
	5/2/2019	46	229	8	NR	NR	NR
	10/29/2018	31	156	17	NR	NR	NR
	6/11/2018	19	139	36	NR	NR	NR
	10/18/2016	14	96	14	NR	NR	NR
	5/11/2016	16	87	16	NR	NR	NR
	11/11/2015	11	58	5.2	NR	NR	NR
	6/5/2015	12	68	4.8	NR	NR	NR
	6/19/2013	7.8	37	78	NR	NR	NR
	3/28/2012	56	220	1300	NR	NR	NR
	1/30/2012 (7)	150	240	170	NR	NR	NR

Notes:

(1) Pilot System Monitoring Well
(2) Remainder of System Monitoring Well
(3) Black colored water prevented reading on colorimetric meter
(4) Orange colored water prevented reading on colorimeter meter
(5) Insufficient sample volume to obtain measurement/reading
(6) Sample from replacement well 3R
(7) Sample collected from vertical profile boring at depth 439 ft bgs
(8) Well replaced in September 2022 New well is designated with a "R".
NA - Not analyzed
NM - Not measured (insufficient sample volume for all samples subsequent to 11/30/2011)
NR - Not reported by Northrop
NS - Not Sampled
U - Not detected at associated value
J - Estimated concentration

Biosparge System Well Status December 31, 2022
Operable Unit 3
Hooker/Ruco Site
Hicksville, New York

Well Designation	Date Completed	Well Functional	Comments/Proposed Action
IW-1D1A	04/28/11	Y	
IW-1D1L	04/28/11	N	
IW-1D2A	04/28/11	Y	
IW-2D1A	04/8/11	Y	
IW-2D1L	04/8/11	N	
IW-2D2A	04/8/11	Y	
IW-3D1A	03/25/11	Y	
IW-3D1L	03/25/11	N	
IW-3D2A	03/25/11	Y	
IW-4D1A	01/27/11	Y	
IW-4D1L	01/27/11	N	
IW-4D2A	01/27/11	Y	Off due to air leak beneath vault. DO in downgradient MW-76 >2.0 mg/L.
IW-5D1A	04/12/11	Y	
IW-5D1L	04/12/11	N	
IW-5D2A	04/12/11	Y	
IW-6D1A	01/17/11	N	Off due to air leak beneath vault. DO in downgradient MW-73 >2.0 mg/L.
IW-6D1L	01/17/11	N	
IW-6D2A	01/17/11	N	DO in downgradient MW-73 >2.0 mg/L. No action planned.
IW-7D1A	03/29/11	Y	
IW-7D1L	03/29/11	N	
IW-7D2A	03/29/11	N	DO in downgradient MW-77 >2.0 mg/L. No action planned.
IW-15D1A	10/05/10	Y	
IW-15DIL	10/05/10	N	
IW-15D2A	10/05/10	Y	
IW-16D1A	11/01/05	N	DO in downgradient MW-83 >2.0 mg/L. No action planned.
IW-16D1L	11/01/05	N	
IW-16D2A	11/01/05	Y	
IW-17D1A	12/01/05	N	DO in downgradient MW-81 >2.0 mg/L. No action planned.
IW-17D1L	12/01/05	N	
IW-17D2A	12/01/05	Y	
IW-18D1A	01/09/06	N	DO in downgradient MW-84 >2.0 mg/L. No action planned.
IW-18D1L	01/09/06	N	
IW-18D2A	01/09/06	Y	
IW-19D1A	01/13/06	Y	DO in downgradient MW-82/88 >2.0 mg/L.
IW-19D1L	01/13/06	N	
IW-19D2A	01/13/06	Y	DO in downgradient MW-82/88 >2.0 mg/L.
IW-20D1A	10/13/10	Y	DO in downgradient MW-85 >2.0 mg/L.
IW-20D1L	10/13/10	N	
IW-20D2A	10/13/10	Y	DO in downgradient MW-85 >2.0 mg/L.
IW-21D1A	10/23/10	N	DO in downgradient MW-89 >2.0 mg/L.
IW-21D1L	10/23/10	N	
IW-21D2A	10/23/10	N	DO in downgradient MW-89 >2.0 mg/L.
IW-22D1A	11/03/10	Y	
IW-22D1L	11/03/10	N	
IW-22D2A	11/03/10	Y	
MW-50D1	02/23/95	N	Abandoned by Bayer during site closure.
MW-50D2	02/13/95	N	Abandoned by Bayer during site closure.
MW-51D1	10/24/95	N	Well no longer needed to monitor remediation of VCM subplume.
MW-51D2	10/02/95	N	Well no longer needed to monitor remediation of VCM subplume.
MW-52S	01/17/96	N	Abandoned March 2007
MW-52I	12/14/95	N	Abandoned March 2007
MW-52D	12/12/95	N	Abandoned March 2007
MW-53I	06/08/95	Y	Well no longer needed to monitor remediation of VCM subplume.
MW-53D1	06/19/95	N	Well no longer needed to monitor remediation of VCM subplume. Well paved over.
MW-53D2	06/05/95	Y	Well no longer needed to monitor remediation of VCM subplume. Obstruction in well prevents sampler insertion.

Biosparge System Well Status December 31, 2022
Operable Unit 3
Hooker/Ruco Site
Hicksville, New York

Well Designation	Date Completed	Well Functional	Comments/Proposed Action
MW-56S	01/26/96	N	Abandoned October 2000
MW-56I	01/25/96	N	Abandoned October 2000
MW-57S	01/23/96	Y	Well no longer needed to monitor remediation of VCM subplume.
MW-57I	01/25/96	Y	Well no longer needed to monitor remediation of VCM subplume.
MW-58D	03/26/02	Y	
MW-58D1	03/26/02	Y	
MW-58D2	03/26/02	Y	
MW-59D	04/06/02	N	VCM subplume can be monitored using Northrop well MW-3-1.
MW-59D1	04/06/02	N	VCM subplume can be monitored using Northrop well MW-3-1.
MW-59D2	04/06/02	Y	
MW-60D1	03/05/02	Y	Well no longer needed to monitor remediation of VCM subplume.
MW-60S	03/08/02	Y	Well no longer needed to monitor remediation of VCM subplume.
MW-60I	03/08/02	Y	Well no longer needed to monitor remediation of VCM subplume.
MW-60D	03/08/02	Y	Well no longer needed to monitor remediation of VCM subplume.
MW-61S	02/22/02	Y	Well no longer needed to monitor remediation of VCM subplume.
MW-61I	02/22/02	N	Obstruction at 130 ftbgs prevents insertion of sampler. Monitoring of MW-61D2 sufficient to monitor VCM subplume.
MW-61D1	02/22/02	N	Obstruction at 130 f tbgs prevents insertion of sampler. Monitoring of MW-61D2 sufficient to monitor VCM subplume.
MW-61D2R	03/12/02	N	Well replaced in September 2022
MW-62I	05/14/02	Y	
MW-62D	04/20/02	Y	
MW-63S	02/18/02	Y	
MW-63I	02/18/02	Y	
MW-63D1	02/18/02	Y	
MW-63D2	02/18/02	Y	Well no longer needed to monitor remediation of VCM subplume.
MW-64S	02/09/02	N	Well no longer needed to monitor remediation of VCM subplume. Sampler stuck in well.
MW-64I	02/09/02	N	Well no longer needed to monitor remediation of VCM subplume. Sampler stuck in well.
MW-64D	02/09/02	N	Well no longer needed to monitor remediation of VCM subplume. Sampler stuck in well.
MW-66D2	06/08/02	Y	
MW-66I	06/19/02	N	Remediation of VCM subplume is adequately monitored by MW-66D2. Well no longer needed.
MW-66D1	06/19/02	N	Remediation of VCM subplume is adequately monitored by MW-66D2. Well no longer needed.
MW-67S	01/11/03	Y	
MW-67D	01/11/03	Y	Well no longer needed to monitor remediation of VCM subplume.
MW-68S	02/09/03	Y	
MW-68D	02/09/03	Y	
MW-70D1	02/02/11	Y	
MW-70D2	02/02/11	Y	
MW-72D1	03/16/11	Y	Well no longer needed to monitor remediation of VCM subplume.
MW-72D2	03/16/11	Y	
MW-73D1	02/11/11	Y	Well no longer needed to monitor remediation of VCM subplume.
MW-73D2	02/11/11	Y	
MW-75D1	05/02/11	Y	
MW-75D2	05/02/11	Y	
MW-76S	03/03/11	Y	Well no longer needed to monitor remediation of VCM subplume.
MW-76I	03/03/11	Y	
MW-76D1	02/15/11	Y	
MW-76D2	02/15/11	Y	
MW-77D1	02/26/11	N	Samplers stuck in well. Monitoring of MW-77D2 sufficient to monitor VCM Subplume. Abandonment of MW-77D1 could adversely impact functionality of MW-77D2. No action proposed.
MW-77D2	02/26/11	Y	
MW-81D1	11/01/05	Y	
MW-81D2	11/01/05	Y	

Biosparge System Well Status December 31, 2022
Operable Unit 3
Hooker/Ruco Site
Hicksville, New York

Well Designation	Date Completed	Well Functional	Comments/Proposed Action
MW-82D1	02/15/06	Y	Manhole cover requires repair
MW-82D2	02/15/06	Y	Manhole cover requires repair
MW-83D1	11/06/05	Y	
MW-83D2	11/06/05	Y	
MW-84D1	04/12/06	Y	Well casing degraded, may require future repair
MW-84D2	04/12/06	Y	Well casing degraded, may require future repair
MW-85S	12/04/10	Y	Well no longer needed to monitor remediation of VCM subplume.
MW-85I	12/04/10	Y	Well no longer needed to monitor remediation of VCM subplume.
MW-85D1	12/02/10	Y	
MW-85D2	12/02/10	Y	
MW-86D1	11/11/10	Y	
MW-86D2	11/11/10	Y	
MW-87D1	10/04/05	Y	
MW-87D2	10/04/05	Y	
MW-88D1	03/21/06	Y	
MW-88D2	03/21/06	Y	
MW-89D1	12/19/10	Y	
MW-89D2	12/19/10	Y	
MW-90D1	03/28/06	Y	
MW-90D2	03/28/06	Y	
MW-92D1	03/11/11	Y	
MW-92D2	03/11/11	Y	
MW-93D1	03/03/11	Y	
MW-93D2	03/03/11	Y	
VZ-1S	03/15/11	Y	Well no longer scheduled to monitor remediation of VCM subplume.
VZ-1D	03/15/11	Y	Well no longer scheduled to monitor remediation of VCM subplume.
VZ-2S	02/12/11	Y	Well no longer scheduled to monitor remediation of VCM subplume.
VZ-2D	02/12/11	Y	Well no longer scheduled to monitor remediation of VCM subplume.
VZ-4S	04/30/11	Y	Well no longer scheduled to monitor remediation of VCM subplume.
VZ-4D	04/30/11	Y	Well no longer scheduled to monitor remediation of VCM subplume.
VZ-5S	03/11/11	Y	Well no longer scheduled to monitor remediation of VCM subplume.
VZ-5D	03/11/11	Y	Well no longer scheduled to monitor remediation of VCM subplume.
VZ-6S	02/26/11	Y	Well no longer scheduled to monitor remediation of VCM subplume.
VZ-6D	02/26/11	Y	Well no longer scheduled to monitor remediation of VCM subplume.
VZ-10S	01/19/06	Y	Well no longer scheduled to monitor remediation of VCM subplume.
VZ-10D	01/19/06	Y	Well no longer scheduled to monitor remediation of VCM subplume.
VZ-11S	02/28/06	Y	Well no longer scheduled to monitor remediation of VCM subplume.
VZ-11D	02/28/06	Y	Well no longer scheduled to monitor remediation of VCM subplume.
VZ-12S	12/05/10	Y	Well no longer scheduled to monitor remediation of VCM subplume.
VZ-12D	12/05/10	Y	Well no longer scheduled to monitor remediation of VCM subplume.
VZ-14S	10/07/05	Y	Well no longer scheduled to monitor remediation of VCM subplume.
VZ-14D	10/07/05	Y	Well no longer scheduled to monitor remediation of VCM subplume.
VZ-15S	11/04/05	Y	Well no longer scheduled to monitor remediation of VCM subplume.
VZ-15D	11/04/05	Y	Well no longer scheduled to monitor remediation of VCM subplume.
VZ-16S	01/23/06	Y	Well no longer scheduled to monitor remediation of VCM subplume.
VZ-16D	01/23/06	Y	Well no longer scheduled to monitor remediation of VCM subplume.
VZ-17S	12/20/10	Y	Well no longer scheduled to monitor remediation of VCM subplume.
VZ-17D	12/20/10	Y	Well no longer scheduled to monitor remediation of VCM subplume.

Note:

NA Not Applicable

Attachment A

October 2022 Analytical Data Validation

Technical Memorandum

January 13, 2023

To	John Pentilchuk	**Tel**	716.205.1990
From	Michelle Kukta/cs/6	**Ref. No.**	11224973
Subject	Analytical Results and Full Validation OU-3 Biosparge System Semiannual Groundwater Monitoring Glenn Springs Holdings, Inc. - Hooker Chemical/Ruco Polymer Superfund Site Hicksville, New York October, November, and December 2022		

1. Introduction

This document details a validation of analytical results for groundwater samples collected in support of the OU-3 Biosparge System Semiannual Groundwater Monitoring at the Hicksville, New York site during October, November, and December 2022. Samples were submitted to Eurofins Buffalo laboratory located in Amherst, New York. A sample collection and analysis summary is presented in Table 1. The validated analytical results are summarized in Table 2. A summary of the analytical methodology is presented in Table 3.

Full Contract Laboratory Program (CLP) equivalent raw data deliverables were provided by the laboratory. Evaluation of the data was based on information obtained from the finished data sheets, raw data, chain of custody forms, calibration data, blank data, duplicate data, recovery data from surrogate spikes/laboratory control samples (LCS)/matrix spike (MS) samples, and field quality assurance/quality control (QA/QC) samples. The assessment of analytical and in-house data included checks for data consistency (by observing comparability of duplicate analyses), adherence to accuracy and precision criteria, and transmittal errors.

The QA/QC criteria by which these data have been assessed are outlined in the analytical methods referenced in Table 3 and applicable guidance from the documents entitled:

i) “National Functional Guidelines for Organic Superfund Methods Data Review", United States Environmental Protection Agency (USEPA), 540-R-20-005, November 2020

ii) “National Functional Guidelines for Inorganic Superfund Methods Data Review", USEPA, 542-R-20-006, November 2020

iii) “Hooker Chemicals/Ruco Polymers Superfund Site Quality Assurance Project Plan (QAPP)", Revision 5, July 2022

Items i) and ii) will subsequently be referred to as the "Guidelines" in this Memorandum.

2. Sample Holding Time and Preservation

The sample holding time criteria for the analyses are summarized in Table 3. Sample chain of custody documents and analytical reports were used to determine sample holding times. All samples were analyzed within the required holding times.

All samples were properly preserved, delivered on ice, and stored by the laboratory at the required temperature (0-6°C).

3. Gas Chromatography/Mass Spectrometer (GC/MS) – Tuning

3.1 Organic Analyses

Prior to volatile organic compound (VOC) analysis, GC/MS instrumentation is tuned to ensure optimization over the mass range of interest. To evaluate instrument tuning, methods require the analysis of specific tuning compounds bromofluorobenzene (BFB). The resulting spectra must meet the criteria cited in the methods before analysis is initiated. Analysis of the tuning compound must then be repeated every 12 hours throughout sample analysis to ensure the continued optimization of the instrument.

Tuning compounds were analyzed at the required frequency throughout VOC analysis periods. All tuning criteria were met indicating that proper optimization of the instrumentation was achieved.

4. Initial Calibration - Organic Analyses

To quantify VOCs of interest in samples, calibration of the GC/MS over a specific concentration range must be performed. Initially, a five-point calibration curve containing all compounds of interest is analyzed to characterize instrument response for each analyte over a specific concentration range. Linearity of the calibration curve and instrument sensitivity are evaluated against the following criteria:

i) i) All relative response factors (RRFs) must meet the criteria outlined in the analytical method

ii) ii) The percent relative standard deviation (RSD) values must not exceed 20.0 percent or a minimum correlation coefficient (R) of 0.995 and minimum coefficient of determination (R2) of 0.990 if linear and quadratic equation calibration curves, respectively, are used

The initial calibration data for VOCs were reviewed. All compounds met the criteria for sensitivity and linearity.

5. Initial Calibration – Inorganic Analyses

Initial calibration of the instruments ensures that they are capable of producing satisfactory quantitative data at the beginning of a series of analyses. For instrumental general chemistry analyses, a calibration blank and a minimum of five standards must be analyzed to establish the analytical curve and resulting correlation coefficients (R) must be 0.995 or greater.

After the analyses of the calibration curves, an initial calibration verification (ICV) standard must be analyzed to verify the analytical accuracy of the calibration curves. All analyte recoveries from the analyses of the ICVs must be within the following control limits:

Analytical Method	Parameter	Control Limits
Instrumental General Chemistry	Ammonia	90 - 110%
	Nitrate/Nitrite	90 - 110%
	Phosphorus	90 - 110%
	Total Organic Carbon	90 - 110%

Upon review of the data, it was determined that the calibration curves and ICVs were analyzed at the proper frequencies and that all of the above-specified criteria were met. The laboratory effectively demonstrated that the instrumentation used for general chemistry analyses were properly calibrated prior to sample analysis.

6. Continuing Calibration - Organic Analyses

To ensure that instrument calibration for VOC analyses is acceptable throughout the sample analysis period, continuing calibration standards must be analyzed and compared to the initial calibration curve every 12 hours. Stability of the calibration curve and instrument sensitivity are evaluated against the following criteria:

i) All RRF values must meet the criteria outlined in the analytical method

ii) Percent difference (%D) values must not exceed 20 percent

Calibration standards were analyzed at the required frequency, and most results met the method criteria for instrument sensitivity and stability. Several compounds in various calibration standards were outside of criteria and showed some variability from the initial calibration. Sample results associated with outlying percent difference values were qualified as estimated, see Table 4.

7. Continuing Calibration - Inorganic Analyses

To ensure that instrument calibration is acceptable throughout the sample analysis period, continuing calibration verification (CCV) standards are analyzed on a regular basis. Each CCV is deemed acceptable if all analyte recoveries are within the control limits specified above for the ICVs. If some of the CCV analyte recoveries are outside the control limits, samples analyzed before and after the CCV, up until the previous and proceeding CCV analyses, are affected.

For this study, CCVs were analyzed at the proper frequency. All analyte recoveries reported for the CCVs were within the specified limits.

8. Laboratory Blank Analyses

Method blanks are prepared from a purified matrix and analyzed with investigative samples to determine the existence and magnitude of sample contamination introduced during the analytical procedures. Additionally, initial and continuing calibration blanks (ICBs/CCBs) are routinely analyzed after each ICV/CCV for the inorganic parameters.

For this study, laboratory method blanks were analyzed at a minimum frequency of 1 per 20 investigative samples and/or 1 per analytical batch.

8.1 Organic Analyses

All method blank results were non-detect, indicating that laboratory contamination was not a factor for this investigation.

8.2 Inorganic Analyses

Upon review of the ICBs, CCBs, and method blanks, it was noted that low-level concentrations were observed above the method detection limit (MDL) for some general chemistry parameters. All investigative samples associated with the low-level detections reported either non-detect concentrations or concentrations significantly greater than the associated laboratory blank concentrations for the analytes of interest. These sample results were not impacted by the contamination detected and have been reported without qualification.

9. Surrogate Spike Recoveries

In accordance with the method employed, all samples, blanks, and QC samples analyzed for organics are spiked with surrogate compounds prior to sample analysis. Surrogate recoveries provide a means to evaluate the effects of laboratory performance on individual sample matrices.

All samples submitted for VOC determinations were spiked with the appropriate number of surrogate compounds prior to sample analysis.

Surrogate recoveries were assessed against laboratory control limits. All surrogate recoveries met criteria.

10. Internal Standards (IS) Analyses

IS data were evaluated for all VOC sample analyses.

To ensure that changes in the GC/MS sensitivity and response do not affect sample analysis results, IS compounds are added to each sample prior to analysis. All results are then calculated as a ratio of the IS responses.

The sample IS results were evaluated against the following criteria:

1. The retention time of the IS must not vary more than ±30 seconds from the associated calibration standard.
2. IS area counts must not vary by more than a factor of two (-50 percent to +100 percent) from the associated calibration standard.

All organic IS recoveries and retention times met the above criteria.

11. Laboratory Control Sample Analyses

LCS are prepared and analyzed as samples to assess the analytical efficiencies of the methods employed, independent of sample matrix effects

For this study, LCS were analyzed at a minimum frequency of 1 per 20 investigative samples and/or 1 per analytical batch.

11.1 Organic Analyses

The LCS contained all compounds of interest. All LCS recoveries were within the laboratory control limits, demonstrating acceptable analytical accuracy.

11.2 Inorganic Analyses

The LCS contained all analytes of interest. LCS recoveries were assessed per the "Guidelines". All LCS recoveries were within the control limits, demonstrating acceptable analytical accuracy.

12. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analyses

To evaluate the effects of sample matrices on the preparation process, measurement procedures, and accuracy of a particular analysis, samples are spiked with a known concentration of the analyte of concern and analyzed as MS/MSD samples. The RPD between the MS and MSD is used to assess analytical precision. If only the MS or MSD recovery was outside of control limits, no qualification of the data was performed based on the acceptable recovery of the companion spike and the acceptable RPD.

MS/MSD analyses were performed as specified in Table 1. The laboratory performed additional site-specific MS/MSD analyses internally.

12.1 Organic Analyses

The MS/MSD samples were spiked with all compounds of interest. Most percent recoveries and RPD values were within the laboratory control limits, demonstrating acceptable analytical accuracy and precision. Sample results associated with outlying recoveries and/or RPDs have been qualified as estimated, see Table 5.

12.2 Inorganic Analyses

The MS/MSD samples were spiked with the analytes of interest, and the results were evaluated using the "Guidelines". All percent recoveries and RPD values were within the control limits, demonstrating acceptable analytical accuracy and precision.

13. Matrix Spike Analyses

To evaluate the effects of sample matrices on the preparation, measurement procedures, and accuracy of a particular analysis, samples are spiked with a known concentration of the analyte of concern and analyzed as MS samples. For this study, MS samples were prepared and analyzed by the laboratory as specified in Table 1. The laboratory performed additional site-specific MS analyses internally.

The MS results were evaluated per the "Guidelines". All MS analyses performed were acceptable, demonstrating acceptable analytical accuracy.

14. Duplicate Sample Analyses – Inorganic Analyses

Analytical precision is evaluated based on the analysis of laboratory duplicate samples. For this study, duplicate samples were prepared and analyzed internally by the laboratory. The duplicate results were evaluated per the "Guidelines". All duplicate analyses performed were acceptable, demonstrating acceptable analytical precision.

15. Field QA/QC Samples

The field QA/QC consisted of five trip blank samples and three field duplicate sample sets.

15.1 Trip Blank Sample Analysis

To evaluate contamination from sample collection, transportation, storage, and analytical activities, five trip blanks were submitted to the laboratory for VOC analysis. All results were non-detect for the compounds of interest.

15.2 Field Duplicate Sample Analysis

To assess the analytical and sampling protocol precision, three field duplicate sample sets were collected and submitted "blind" to the laboratory, as specified in Table 1. The RPDs associated with these duplicate samples must be less than 50 percent for water samples. If the reported concentration in either the investigative sample or its duplicate is less than five times the reporting limit (RL), the evaluation criteria is one time the RL value for water samples.

Most field duplicate results were within acceptable agreement, demonstrating acceptable sampling and analytical precision. One duplicate set displayed variability for several general chemistry parameters. The associated sample results have been qualified as estimated, see Table 6.

16. Analyte Reporting

The laboratory reported detected results down to the laboratory's method detection limit (MDL) for each analyte. Positive analyte detections less than the RL but greater than the MDL were qualified as estimated (J) in Table 2 unless qualified otherwise in this memorandum. Non-detect results were presented as non-detect at the RL in Table 2.

17. Target Compound Identification

To minimize erroneous compound identification during organic analyses, qualitative criteria including compound retention time and mass spectra were evaluated according to the identification criteria established by the methods. The samples identified in Table 1 were reviewed. The organic compounds reported adhered to the specified identification criteria.

18. Conclusion

Based on the assessment detailed in the foregoing, the data summarized in Table 2 are acceptable with the specific qualifications noted herein.

Regards,

Michelle Kukta
Project Chemist

Table 1

Sample Collection and Analysis Summary
OU-3 Biosparge System Semiannual Groundwater Monitoring
Glenn Springs Holdings, Inc. - Hooker Chemical/Ruco Polymer Superfund Site
Hicksville, New York
October, November, and December 2022

					Parameters					
Sample Identification	**Location**	**Matrix**	**Collection Date (mm/dd/yyyy)**	**Collection Time (hr:min)**	**VOC**	**Ammonia**	**Nitrate/Nitrite**	**Phosphorus**	**TOC**	**Comments**
GW102522CZ001	MW-72D2	Groundwater	10/25/2022	09:20	X	X	X	X	X	
GW102522CZ00X	MW-72D2	Groundwater	10/25/2022	09:30	X	X	X	X	X	FD(GW102522CZ001)
GW102522CZ002	MW-90D2	Groundwater	10/25/2022	10:35	X					MS/MSD
GW102522CZ003	MW-90D1	Groundwater	10/25/2022	11:00	X					
GW102522CZ004	MW-77D2	Groundwater	10/25/2022	12:00	X	X	X	X	X	
GW102522CZ005	MW-70D1	Groundwater	10/25/2022	12:30	X	X	X	X	X	
GW102522CZ006	MW-70D2	Groundwater	10/25/2022	12:50	X	X	X	X	X	
GW102522CZ007	MW-75D1	Groundwater	10/25/2022	14:00	X	X	X	X	X	
GW102522CZ008	MW-75D2	Groundwater	10/25/2022	14:20	X	X	X	X	X	
GW102522CZ009	MW-76D1	Groundwater	10/25/2022	14:40	X	X	X	X	X	
GW102522CZ010	MW-76D2	Groundwater	10/25/2022	14:35	X	X	X	X	X	
GW102522CZ011	MW-76I	Groundwater	10/25/2022	15:15	X	X	X	X	X	
GW102622CZ013	MW-73D2	Groundwater	10/26/2022	09:00	X					
GW102622CZ014	MW-86D1	Groundwater	10/26/2022	09:20	X	X	X	X	X	
GW102622CZ015	MW-86D2	Groundwater	10/26/2022	09:40	X	X	X	X	X	
GW102622CZ016	MW-85D1	Groundwater	10/26/2022	10:10	X	X	X	X	X	
GW102622CZ017	MW-85D2	Groundwater	10/26/2022	10:30	X	X	X	X	X	
GW102622CZ018	MW-89D1	Groundwater	10/26/2022	11:00	X	X	X	X	X	
GW102622CZ019	MW-89D2	Groundwater	10/26/2022	11:20	X	X	X	X	X	
GW102622CZ020	MW-82D1	Groundwater	10/26/2022	11:45	X	X	X	X	X	
GW102622CZ021	MW-82D2	Groundwater	10/26/2022	12:05	X	X	X	X	X	
GW102622CZ022	MW-84D1	Groundwater	10/26/2022	12:30	X	X	X	X	X	
GW102622CZ023	MW-84D2	Groundwater	10/26/2022	13:00	X					

Table 1

Sample Collection and Analysis Summary
OU-3 Biosparge System Semiannual Groundwater Monitoring
Glenn Springs Holdings, Inc. - Hooker Chemical/Ruco Polymer Superfund Site
Hicksville, New York
October, November, and December 2022

					Parameters					
Sample Identification	**Location**	**Matrix**	**Collection Date (mm/dd/yyyy)**	**Collection Time (hr:min)**	**VOC**	**Ammonia**	**Nitrate/Nitrite**	**Phosphorus**	**TOC**	**Comments**
GW102722CZ024	MW-88D1	Groundwater	10/27/2022	09:20	X	X	X	X	X	MS/MSD
GW102722CZ025	MW-88D2	Groundwater	10/27/2022	10:00	X	X	X	X	X	
GW102722CZ026	MW-58D	Groundwater	10/27/2022	10:50	X	X	X	X	X	
GW102722CZ027	MW-58D1	Groundwater	10/27/2022	11:10	X	X	X	X	X	
GW102722CZ028	MW-67S	Groundwater	10/27/2022	11:20	X					
GW102722CZ029	MW-66D2	Groundwater	10/27/2022	11:40	X	X	X	X	X	
GW102722CZ031	MW-87D1	Groundwater	10/27/2022	13:10	X	X	X	X	X	
GW102722CZ032	MW-87D2	Groundwater	10/27/2022	13:30	X	X	X	X	X	
GW102722CZ00Y	MW-87D2	Groundwater	10/27/2022	13:40	X	X	X	X	X	FD(GW102722CZ032)
GW102722CZ033	MW-61D2	Groundwater	10/27/2022	14:10	X	X	X	X	X	
GW102822CZ034	MW-63S	Groundwater	10/28/2022	09:20	X	X	X	X	X	
GW102822CZ035	MW-63I	Groundwater	10/28/2022	09:40	X	X	X	X	X	
GW102822CZ036	MW-83D1	Groundwater	10/28/2022	10:20	X	X	X	X	X	
GW102822CZ037	MW-83D2	Groundwater	10/28/2022	10:40	X	X	X	X	X	
GW102822CZ038	MW-81D1	Groundwater	10/28/2022	11:10	X	X	X	X	X	
GW102822CZ039	MW-81D2	Groundwater	10/28/2022	11:30	X	X	X	X	X	
GW111122CZ040	MW-58D2	Groundwater	11/11/2022	09:30	X	X	X	X	X	
GW111122CZ00Z	MW-58D2	Groundwater	11/11/2022	09:40	X	X	X	X	X	FD(GW111122CZ040)
GW111122CZ041	MW-68S	Groundwater	11/11/2022	10:10	X	X	X	X	X	MS/MSD
GW111122CZ042	MW-68D	Groundwater	11/11/2022	10:40	X	X	X	X	X	
GW112922CZ044	MW-63D1	Groundwater	11/29/2022	13:45	X					
GW122022-CZ045	MW-59D2	Groundwater	12/20/2022	11:45	X	X	X	X	X	

Table 1

Sample Collection and Analysis Summary
OU-3 Biosparge System Semiannual Groundwater Monitoring
Glenn Springs Holdings, Inc. - Hooker Chemical/Ruco Polymer Superfund Site
Hicksville, New York
October, November, and December 2022

					Parameters					
Sample Identification	**Location**	**Matrix**	**Collection Date (mm/dd/yyyy)**	**Collection Time (hr:min)**	**VOC**	**Ammonia**	**Nitrate/Nitrite**	**Phosphorus**	**TOC**	**Comments**
TRIPBLANK-01	-	Water	10/25/2022	-	X					Trip Blank
TRIP BLANK-02	-	Water	10/26/2022	-	X					Trip Blank
TRIP BLANK-03	-	Water	10/27/2022	-	X					Trip Blank
Trip Blank - 04	-	Water	10/28/2022	-	X					Trip Blank
TRIP BLANK-05	-	Water	11/11/2022	-	X					Trip Blank

Notes:

FD - Field Duplicate sample of sample in parenthesis
MS/MSD - Matrix Spike/Matrix Spike Duplicate
VOC - Volatile Organic Compounds
TOC - Total Organic Carbon
"-" - Not applicable

Table 2

Analytical Results Summary
OU-3 Biosparge System Semiannual Groundwater Monitoring
Hooker Chemical/Ruco Polymer Superfund Site
Hicksville, New York
October, November, and December 2022

Location ID:		MW-58D	MW-58D1	MW-58D2	MW-58D2	MW-59D2	MW-61D2	MW-63D1	MW-63I	MW-63S	MW-66D2	MW-67S	MW-68D	MW-68S	MW-70D1
Sample Name:		GW102722CZ026	GW102722CZ027	GW111122CZ040	GW111122CZ00Z	GW122022-CZ045	GW102722CZ033	GW112922CZ044	GW102822CZ035	GW102822CZ034	GW102722CZ029	GW102722CZ028	GW111122CZ042	GW111122CZ041	GW102522CZ005
Sample Date:		10/27/2022	10/27/2022	11/11/2022	11/11/2022	12/20/2022	10/27/2022	11/29/2022	10/28/2022	10/28/2022	10/27/2022	10/27/2022	11/11/2022	11/11/2022	10/25/2022
					Duplicate										
Parameters	**Unit**														
Volatile Organic Compounds															
1,1,1-Trichloroethane	µg/L	1.0 U	4.0 U	4.0 U	4.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1,2,2-Tetrachloroethane	µg/L	1.0 U	4.0 U	4.0 U	4.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1,2-Trichloroethane	µg/L	1.0 U	4.0 U	4.0 U	4.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethane	µg/L	1.2	4.0 U	4.0 U	4.0 U	1.0 U	0.83 J	1.0 U	1.0 U	1.0 U	2.1	1.5	2.9	0.67 J	1.0 U
1,1-Dichloroethene	µg/L	6.8	5.9	2.3 J	2.2 J	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dichloroethane	µg/L	1.0 U	4.0 U	4.0 U	4.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dichloroethene (total)	µg/L	1.5 J	8.0 U	8.0 U	8.0 U	2.0 U	4.8	2.0 U	2.0 U	2.0 U	2.0 U	1.5 J	2.0 U	2.0 U	2.0 U
1,2-Dichloropropane	µg/L	1.0 U	4.0 U	4.0 U	4.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
2-Butanone (Methyl ethyl ketone) (MEK)	µg/L	10 U	40 U	40 U	40 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 UJ
2-Hexanone	µg/L	5.0 U	20 U	20 U	20 U	5.0 UJ	5.0 U	5.0 UJ	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	µg/L	5.0 U	20 U	20 U	20 U	5.0 UJ	5.0 U	5.0 UJ	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Acetone	µg/L	66	44	75	72	130	72	52	62	62	24	56	10 U	51 J	58 J
Benzene	µg/L	1.0 U	4.0 U	4.0 U	4.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Bromodichloromethane	µg/L	1.0 U	4.0 U	4.0 U	4.0 U	1.0 U	1.0 UJ	1.0 U	1.0 U	1.0 U	1.0 UJ	1.0 UJ	1.0 U	1.0 U	1.0 U
Bromoform	µg/L	1.0 U	4.0 U	4.0 U	4.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Bromomethane (Methyl bromide)	µg/L	1.0 U	4.0 U	4.0 U	4.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Carbon disulfide	µg/L	1.0 U	4.0 U	4.0 U	4.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Carbon tetrachloride	µg/L	1.0 U	4.0 U	4.0 U	4.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chlorobenzene	µg/L	1.0 U	4.0 U	4.0 U	4.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloroethane	µg/L	1.0 U	4.0 U	4.0 U	4.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.32 J	1.0 U	1.0 U	1.0 U
Chloroform (Trichloromethane)	µg/L	1.0 U	4.0 U	4.0 U	4.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloromethane (Methyl chloride)	µg/L	1.0 U	4.0 U	4.0 U	4.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
cis-1,2-Dichloroethene	µg/L	1.5	4.0 U	4.0 U	4.0 U	1.0 U	4.8	1.0 U	1.0 U	1.0 U	1.0 U	1.5	1.0 U	1.0 U	1.0 U
cis-1,3-Dichloropropene	µg/L	1.0 U	4.0 U	4.0 U	4.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Dibromochloromethane	µg/L	1.0 U	4.0 U	4.0 U	4.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Ethylbenzene	µg/L	1.0 U	4.0 U	4.0 U	4.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
m&p-Xylenes	µg/L	2.0 U	8.0 U	8.0 U	8.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Methylene chloride	µg/L	1.0 U	4.0 U	4.0 U	4.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
o-Xylene	µg/L	1.0 U	4.0 U	4.0 U	4.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Styrene	µg/L	1.0 U	4.0 U	4.0 U	4.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Tetrachloroethene	µg/L	14	7.4	15	17	1.0 U	74	6.2	4.1	6.2	0.54 J	1.0 U	4.2	2.0 J	1.0 U
Toluene	µg/L	1.0 U	4.0 U	4.0 U	4.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
trans-1,2-Dichloroethene	µg/L	1.0 U	4.0 U	4.0 U	4.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
trans-1,3-Dichloropropene	µg/L	1.0 U	4.0 U	4.0 U	4.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Trichloroethene	µg/L	150	110	140	130	1.0 U	58	2.6	2.2	3.9	0.67 J	0.71 J	4.7	2.1 J	1.0 U
Vinyl chloride	µg/L	1.0 U	4.0 U	4.0 U	4.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Xylenes (total)	µg/L	2.0 U	8.0 U	8.0 U	8.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U

Table 2

Analytical Results Summary
OU-3 Biosparge System Semiannual Groundwater Monitoring
Hooker Chemical/Ruco Polymer Superfund Site
Hicksville, New York
October, November, and December 2022

Location ID:		MW-58D	MW-58D1	MW-58D2	MW-58D2	MW-59D2	MW-61D2	MW-63D1	MW-63I	MW-63S	MW-66D2	MW-67S	MW-68D	MW-68S	MW-70D1
Sample Name:		GW102722CZ026	GW102722CZ027	GW111122CZ040	GW111122CZ00Z	GW122022-CZ045	GW102722CZ033	GW112922CZ044	GW102822CZ035	GW102822CZ034	GW102722CZ029	GW102722CZ028	GW111122CZ042	GW111122CZ041	GW102522CZ005
Sample Date:		10/27/2022	10/27/2022	11/11/2022	11/11/2022	12/20/2022	10/27/2022	11/29/2022	10/28/2022	10/28/2022	10/27/2022	10/27/2022	11/11/2022	11/11/2022	10/25/2022
					Duplicate										
Parameters	**Unit**														
General Chemistry															
Ammonia-N	mg/L	1.0	0.78	0.72	0.83	0.46	0.42	--	0.020 U	0.020 U	4.7	--	2.7	0.62	0.19
Nitrate (as N)	mg/L	0.050 U	0.050 U	0.12	0.084	0.050 U	3.0	--	1.8	1.3	0.12	--	1.2	0.72	0.050 U
Nitrite (as N)	mg/L	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	--	0.050 U	0.050 U	0.050 U	--	0.040 J	0.051	0.050 U
Phosphorus	mg/L	0.65	0.10	0.089	0.092	0.010 U	0.010 J	--	0.0067 J	0.077	0.79	--	0.098	0.050	0.12
Total organic carbon (TOC)	mg/L	1.7	1.0 U	1.0	1.1	4.1	1.2	--	1.0 U	0.64 J	0.53 J	--	4.5	3.2	2.4

Table 2

Analytical Results Summary
OU-3 Biosparge System Semiannual Groundwater Monitoring
Hooker Chemical/Ruco Polymer Superfund Site
Hicksville, New York
October, November, and December 2022

Location ID:		MW-70D2	MW-72D2	MW-72D2	MW-73D2	MW-75D1	MW-75D2	MW-76D1	MW-76D2	MW-76I	MW-77D2	MW-81D1	MW-81D2
Sample Name:		GW102522CZ006	GW102522CZ001	GW102522CZ00X	GW102622CZ013	GW102522CZ007	GW102522CZ008	GW102522CZ009	GW102522CZ010	GW102522CZ011	GW102522CZ004	GW102822CZ038	GW102822CZ039
Sample Date:		10/25/2022	10/25/2022	10/25/2022	10/26/2022	10/25/2022	10/25/2022	10/25/2022	10/25/2022	10/25/2022	10/25/2022	10/28/2022	10/28/2022
				Duplicate									
Parameters	**Unit**												
Volatile Organic Compounds													
1,1,1-Trichloroethane	µg/L	1.0 U	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1,2,2-Tetrachloroethane	µg/L	1.0 U	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1,2-Trichloroethane	µg/L	1.0 U	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethane	µg/L	1.0 U	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.45 J
1,1-Dichloroethene	µg/L	1.0 U	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dichloroethane	µg/L	1.0 U	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dichloroethene (total)	µg/L	2.2	4.9	5.1	2.0 U	1.1 J	2.3	2.4	1.4 J	2.0 U	2.0 U	1.6 J	4.5
1,2-Dichloropropane	µg/L	1.0 U	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
2-Butanone (Methyl ethyl ketone) (MEK)	µg/L	10 UJ	10 UJ	20 UJ	10 U	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 U	10 U
2-Hexanone	µg/L	5.0 U	5.0 U	10 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	µg/L	5.0 U	5.0 U	10 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Acetone	µg/L	100 J	59 J	70 J	52	55 J	56 J	80 J	140 J	85 J	36 J	52	54
Benzene	µg/L	1.0 U	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Bromodichloromethane	µg/L	1.0 U	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Bromoform	µg/L	1.0 U	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Bromomethane (Methyl bromide)	µg/L	1.0 U	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Carbon disulfide	µg/L	1.0 U	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Carbon tetrachloride	µg/L	1.0 U	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chlorobenzene	µg/L	1.0 U	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloroethane	µg/L	7.2	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.67 J	1.0 U
Chloroform (Trichloromethane)	µg/L	1.0 U	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloromethane (Methyl chloride)	µg/L	1.0 U	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
cis-1,2-Dichloroethene	µg/L	2.2	4.9	5.1	1.0 U	1.1	2.3	2.4	1.4	1.0 U	1.0 U	1.6	4.5
cis-1,3-Dichloropropene	µg/L	1.0 U	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Dibromochloromethane	µg/L	1.0 U	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Ethylbenzene	µg/L	1.0 U	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
m&p-Xylenes	µg/L	2.0 U	2.0 U	4.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Methylene chloride	µg/L	1.0 U	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
o-Xylene	µg/L	1.0 U	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Styrene	µg/L	1.0 U	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Tetrachloroethene	µg/L	1.9	13	13	1.9	1.0 U	0.41 J	1.0 U	8.1	1.0 U	1.0	27	21
Toluene	µg/L	1.0 U	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
trans-1,2-Dichloroethene	µg/L	1.0 U	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
trans-1,3-Dichloropropene	µg/L	1.0 U	1.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Trichloroethene	µg/L	3.4	3.2	3.5	0.56 J	1.0 U	1.0 U	1.3	4.2	1.0 U	1.0 U	20	5.9
Vinyl chloride	µg/L	1.0 U	1.0 U	2.0 U	1.0 U	5.5	2.9	16	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Xylenes (total)	µg/L	2.0 U	2.0 U	4.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U

Table 2

Analytical Results Summary
OU-3 Biosparge System Semiannual Groundwater Monitoring
Hooker Chemical/Ruco Polymer Superfund Site
Hicksville, New York
October, November, and December 2022

Location ID:		MW-70D2	MW-72D2	MW-72D2	MW-73D2	MW-75D1	MW-75D2	MW-76D1	MW-76D2	MW-76I	MW-77D2	MW-81D1	MW-81D2
Sample Name:		GW102522CZ006	GW102522CZ001	GW102522CZ00X	GW102622CZ013	GW102522CZ007	GW102522CZ008	GW102522CZ009	GW102522CZ010	GW102522CZ011	GW102522CZ004	GW102822CZ038	GW102822CZ039
Sample Date:		10/25/2022	10/25/2022	10/25/2022	10/26/2022	10/25/2022	10/25/2022	10/25/2022	10/25/2022	10/25/2022	10/25/2022	10/28/2022	10/28/2022
				Duplicate									
Parameters	**Unit**												
General Chemistry													
Ammonia-N	mg/L	0.19	0.60 J	0.33 J	--	0.19	0.099	0.13	0.16	0.16	0.71	0.11	1.1
Nitrate (as N)	mg/L	0.050 U	0.050 UJ	1.2 J	--	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	1.2	0.023 J
Nitrite (as N)	mg/L	0.050 U	0.050 U	0.050 U	--	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U
Phosphorus	mg/L	0.16	0.42 J	0.84 J	--	0.20	0.25	0.15	0.12	0.092	0.34	0.010 U	0.010 U
Total organic carbon (TOC)	mg/L	1.6	1.0 U	1.0 U	--	2.7	1.0	0.88 J	1.3	8.8	0.53 J	1.0 U	1.6

Table 2

Analytical Results Summary
OU-3 Biosparge System Semiannual Groundwater Monitoring
Hooker Chemical/Ruco Polymer Superfund Site
Hicksville, New York
October, November, and December 2022

Location ID:		MW-82D1	MW-82D2	MW-83D1	MW-83D2	MW-84D1	MW-84D2	MW-85D1	MW-85D2	MW-86D1
Sample Name:		GW102622CZ020	GW102622CZ021	GW102822CZ036	GW102822CZ037	GW102622CZ022	GW102622CZ023	GW102622CZ016	GW102622CZ017	GW102622CZ014
Sample Date:		10/26/2022	10/26/2022	10/28/2022	10/28/2022	10/26/2022	10/26/2022	10/26/2022	10/26/2022	10/26/2022
Parameters	**Unit**									
Volatile Organic Compounds										
1,1,1-Trichloroethane	µg/L	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1,2,2-Tetrachloroethane	µg/L	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1,2-Trichloroethane	µg/L	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethane	µg/L	3.8	1.3	2.0 U	2.0 U	1.0 U	4.7	5.7	2.7	1.0 U
1,1-Dichloroethene	µg/L	1.0 U	1.0 U	2.0 U	1.2 J	1.0 U	0.93 J	1.0 U	0.32 J	1.0 U
1,2-Dichloroethane	µg/L	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dichloroethene (total)	µg/L	2.0 U	2.0 U	5.9	15	2.0 U	1.1 J	1.0 J	2.0 U	1.8 J
1,2-Dichloropropane	µg/L	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
2-Butanone (Methyl ethyl ketone) (MEK)	µg/L	10 U	6.8 J	20 U	20 U	10 U	10 U	10 U	10 U	10 U
2-Hexanone	µg/L	5.0 U	5.0 U	10 U	10 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	µg/L	5.0 U	5.0 U	10 U	10 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Acetone	µg/L	59	25	35	39	52	48	49	57	39
Benzene	µg/L	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Bromodichloromethane	µg/L	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Bromoform	µg/L	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Bromomethane (Methyl bromide)	µg/L	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Carbon disulfide	µg/L	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Carbon tetrachloride	µg/L	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chlorobenzene	µg/L	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloroethane	µg/L	1.0 U	1.0 U	1.6 J	2.0 U	1.0 U	1.0 U	4.0	1.0 U	1.0 U
Chloroform (Trichloromethane)	µg/L	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	0.49 J	1.0 U	1.0 U	1.0 U
Chloromethane (Methyl chloride)	µg/L	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
cis-1,2-Dichloroethene	µg/L	1.0 U	1.0 U	5.9	15	1.0 U	1.1	1.0	1.0 U	1.8
cis-1,3-Dichloropropene	µg/L	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Dibromochloromethane	µg/L	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Ethylbenzene	µg/L	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
m&p-Xylenes	µg/L	2.0 U	2.0 U	4.0 U	4.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Methylene chloride	µg/L	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
o-Xylene	µg/L	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Styrene	µg/L	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Tetrachloroethene	µg/L	2.4	1.0 U	28	69	1.0 U	13	1.0 U	1.9	1.0
Toluene	µg/L	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
trans-1,2-Dichloroethene	µg/L	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
trans-1,3-Dichloropropene	µg/L	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Trichloroethene	µg/L	9.3	1.0 U	75	120	1.0 U	28	4.8	2.5	3.1
Vinyl chloride	µg/L	1.0 U	1.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Xylenes (total)	µg/L	2.0 U	2.0 U	4.0 U	4.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U

Table 2

Analytical Results Summary
OU-3 Biosparge System Semiannual Groundwater Monitoring
Hooker Chemical/Ruco Polymer Superfund Site
Hicksville, New York
October, November, and December 2022

Location ID:		MW-82D1	MW-82D2	MW-83D1	MW-83D2	MW-84D1	MW-84D2	MW-85D1	MW-85D2	MW-86D1
Sample Name:		GW102622CZ020	GW102622CZ021	GW102822CZ036	GW102822CZ037	GW102622CZ022	GW102622CZ023	GW102622CZ016	GW102622CZ017	GW102622CZ014
Sample Date:		10/26/2022	10/26/2022	10/28/2022	10/28/2022	10/26/2022	10/26/2022	10/26/2022	10/26/2022	10/26/2022
Parameters	**Unit**									
General Chemistry										
Ammonia-N	mg/L	0.038	2.9	0.020 U	0.074	0.45	--	0.020 U	1.6	0.35
Nitrate (as N)	mg/L	0.30	0.050 U	0.61	2.6	0.033 J	--	0.050 U	0.079	0.050 U
Nitrite (as N)	mg/L	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	--	0.050 U	0.050 U	0.050 U
Phosphorus	mg/L	0.037	0.010 U	0.058	0.035	0.36	--	0.071	0.50	0.52
Total organic carbon (TOC)	mg/L	1.0 U	0.54 J	1.0 U	1.0 U	0.87 J	--	1.1	1.0 U	1.4

Table 2

Analytical Results Summary
OU-3 Biosparge System Semiannual Groundwater Monitoring
Hooker Chemical/Ruco Polymer Superfund Site
Hicksville, New York
October, November, and December 2022

Location ID:		MW-86D2	MW-87D1	MW-87D2	MW-87D2	MW-88D1	MW-88D2	MW-89D1	MW-89D2	MW-90D1	MW-90D2
Sample Name:		GW102622CZ015	GW102722CZ031	GW102722CZ032	GW102722CZ00Y	GW102722CZ024	GW102722CZ025	GW102622CZ018	GW102622CZ019	GW102522CZ003	GW102522CZ002
Sample Date:		10/26/2022	10/27/2022	10/27/2022	10/27/2022 Duplicate	10/27/2022	10/27/2022	10/26/2022	10/26/2022	10/25/2022	10/25/2022
Parameters	**Unit**										
Volatile Organic Compounds											
1,1,1-Trichloroethane	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1,2,2-Tetrachloroethane	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1,2-Trichloroethane	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethane	µg/L	0.51 J	1.0 U	0.43 J	0.46 J	1.2	2.3	4.9	4.5	1.0 U	1.0 U
1,1-Dichloroethene	µg/L	1.2	1.0 U	0.91 J	0.94 J	1.0 U	0.63 J	27	3.4	1.0 U	1.0 U
1,2-Dichloroethane	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dichloroethene (total)	µg/L	24	2.0	7.2	6.9	1.8 J	2.0 U	20	3.9	2.0 U	2.0 U
1,2-Dichloropropane	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
2-Butanone (Methyl ethyl ketone) (MEK)	µg/L	10 U	10 U	10 U	10 U	10 U	3.3 J	10 U	10 U	10 UJ	10 U
2-Hexanone	µg/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	µg/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Acetone	µg/L	56	54	39	42	49	6.5 J	12	42	9.8 J	12
Benzene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.49 J	1.0 U	1.0 U	1.0 U
Bromodichloromethane	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Bromoform	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Bromomethane (Methyl bromide)	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Carbon disulfide	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Carbon tetrachloride	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chlorobenzene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.82 J	1.0 U	1.0 U	1.0 U
Chloroethane	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	0.60 J	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloroform (Trichloromethane)	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.6	1.0 U	1.0 U	1.0 U
Chloromethane (Methyl chloride)	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
cis-1,2-Dichloroethene	µg/L	24	2.0	7.2	6.9	1.8	1.0 U	20	3.9	1.0 U	1.0 U
cis-1,3-Dichloropropene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Dibromochloromethane	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Ethylbenzene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
m&p-Xylenes	µg/L	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Methylene chloride	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
o-Xylene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Styrene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	0.010 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Tetrachloroethene	µg/L	42	22	210	170	6.4	1.8	33	7.4	3.9	2.3
Toluene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	0.010 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
trans-1,2-Dichloroethene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
trans-1,3-Dichloropropene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Trichloroethene	µg/L	200	3.2	22	23	3.3	1.4	29	8.8	1.4	1.8
Vinyl chloride	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	12	1.0 U	1.0 U	1.0 U
Xylenes (total)	µg/L	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U

Table 2

Analytical Results Summary
OU-3 Biosparge System Semiannual Groundwater Monitoring
Hooker Chemical/Ruco Polymer Superfund Site
Hicksville, New York
October, November, and December 2022

Location ID:		MW-86D2	MW-87D1	MW-87D2	MW-87D2	MW-88D1	MW-88D2	MW-89D1	MW-89D2	MW-90D1	MW-90D2
Sample Name:		GW102622CZ015	GW102722CZ031	GW102722CZ032	GW102722CZ00Y	GW102722CZ024	GW102722CZ025	GW102622CZ018	GW102622CZ019	GW102522CZ003	GW102522CZ002
Sample Date:		10/26/2022	10/27/2022	10/27/2022	10/27/2022	10/27/2022	10/27/2022	10/26/2022	10/26/2022	10/25/2022	10/25/2022
					Duplicate						
Parameters	**Unit**										
General Chemistry											
Ammonia-N	mg/L	1.0	0.020 U	0.058	0.075	0.020 U	1.1	0.020 U	0.069	--	--
Nitrate (as N)	mg/L	0.86	1.2	1.9	1.9	0.15	0.27	0.050 U	0.050 U	--	--
Nitrite (as N)	mg/L	0.24	0.050 U	0.050 U	0.050 U	0.050 U	0.22	0.050 U	0.050 U	--	--
Phosphorus	mg/L	0.17	0.043	0.064	0.0067	0.014	0.033	0.18	0.15	--	--
Total organic carbon (TOC)	mg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	3.6	1.0 U	1.5	--	--

Notes:

U - Not detected at the associated reporting limit.
UJ - Not detected; associated reporting limit is estimated
J - Estimated concentration
N - Nitrogen
"--" - Not analyzed

Table 3

Analytical Methods
OU-3 Biosparge System Semiannual Groundwater Monitoring
Glenn Springs Holdings, Inc. - Hooker Chemical/Ruco Polymer Superfund Site
Hicksville, New York
October, November, and December 2022

Parameter	Method	Matrix	Holding Time: Collection or Extraction to Analysis (Days)
Volatile Organic Compounds (VOCs)	SW-846 8260C	Groundwater	14
Ammonia	EPA 350.1	Groundwater	28
Nitrate/Nitrite	EPA 353.2	Groundwater	48 hours*
Totla Organic Carbon (TOC)	SW-846 9060A	Groundwater	28
Phosphorus	SM 4500 P E	Groundwater	28

Notes:

*QAPP holding time is designated as 28 days

Method References:

SW-846 - "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", SW-846, Third Edition, 1986, with subsequent revisions
SM - "Standard Methods for the Examination of Water and Wastewater", 18th Edition, 1992, with subsequent revisions
EPA - MCAWW - '"Methods for Chemical Analysis of Water and Waste," EPA-600/4-79-020, revised March 1983, with subsequent revisions

Table 4

Qualified Sample Results Due to Outlying Continuing Calibration Results
OU-3 Biosparge System Semiannual Groundwater Monitoring
Glenn Springs Holdings, Inc. - Hooker Chemical/Ruco Polymer Superfund Site
Hicksville, New York
October, November, and December 2022

Parameter	Analyte	Calibration Date (mm/dd/yyyy)	%D	Associated Sample ID	Qualified Result	Units
VOC	2-Butanone (Methyl ethyl ketone) (MEK)	10/27/2022	33	GW102522CZ001	10 UJ	µg/L
				GW102522CZ009	10 UJ	µg/L
				GW102522CZ010	10 UJ	µg/L
				GW102522CZ011	10 UJ	µg/L
				GW102522CZ00X	20 UJ	µg/L
				GW102522CZ003	10 UJ	µg/L
				GW102522CZ004	10 UJ	µg/L
				GW102522CZ005	10 UJ	µg/L
				GW102522CZ006	10 UJ	µg/L
				GW102522CZ007	10 UJ	µg/L
				GW102522CZ008	10 UJ	µg/L
	Acetone	10/27/2022	54	GW102522CZ001	59 J	µg/L
				GW102522CZ009	80 J	µg/L
				GW102522CZ010	140 J	µg/L
				GW102522CZ011	85 J	µg/L
				GW102522CZ00X	70 J	µg/L
				GW102522CZ003	9.8 J	µg/L
				GW102522CZ004	36 J	µg/L
				GW102522CZ005	58 J	µg/L
				GW102522CZ006	100 J	µg/L
				GW102522CZ007	55 J	µg/L
				GW102522CZ008	56 J	µg/L

Table 4

Qualified Sample Results Due to Outlying Continuing Calibration Results
OU-3 Biosparge System Semiannual Groundwater Monitoring
Glenn Springs Holdings, Inc. - Hooker Chemical/Ruco Polymer Superfund Site
Hicksville, New York
October, November, and December 2022

Parameter	Analyte	Calibration Date (mm/dd/yyyy)	%D	Associated Sample ID	Qualified Result	Units
VOC	Bromodichloromethane	11/03/2022	32	GW102722CZ026	4.0 UJ	µg/L
				GW102722CZ028	1.0 UJ	µg/L
				GW102722CZ029	1.0 UJ	µg/L
				GW102722CZ032	4.0 UJ	µg/L
				GW102722CZ033	1.0 UJ	µg/L
				GW102722CZ00Y	4.0 UJ	µg/L
				GW102622CZ015	5.0 UJ	µg/L
	2-Hexanone	12/09/2022	23	GW112922CZ044	5.0 UJ	µg/L
	4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	12/09/2022	24	GW112922CZ044	5.0 UJ	µg/L
	2-Hexanone	12/27/2022	40	GW122022-CZ045	5.0 UJ	µg/L
	4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	12/27/2022	40	GW122022-CZ045	5.0 UJ	µg/L

Notes:

%D - Percent difference
UJ - Not detected; associated reporting limit is estimated
J - Estimated concentration
VOC - Volatile Organic Compounds

Table 5

Qualified Sample Results Due to Outlying MS/MSD Results
OU-3 Biosparge System Semiannual Groundwater Monitoring
Glenn Springs Holdings, Inc. - Hooker Chemical/Ruco Polymer Superfund Site
Hicksville, New York
October, November, and December 2022

Parameter	Sample ID	Analyte	MS % Recovery	MSD % Recovery	RPD (percent)	Control Limits % Recovery	Control Limits RPD	Qualified Result	Units
VOC	GW111122CZ041	Acetone	67	105	30	56-142	15	51 J	µg/L
		Tetrachloroethene	235	136	51	74-122	20	2.0 J	µg/L
		Trichloroethene	165	143	14	74-123	16	2.1 J	µg/L

Notes:

MS - Matrix Spike
MSD - Matrix Spike Duplicate
RPD - Relative Percent Difference
J - Estimated concentration
VOC - Volatile Organic Compounds

Table 6

Qualified Sample Data Due to Variability in Field Duplicate Results
OU-3 Biosparge System Semiannual Groundwater Monitoring
Glenn Springs Holdings, Inc. - Hooker Chemical/Ruco Polymer Superfund Site
Hicksville, New York
October, November, and December 2022

Parameter	Analyte	RPD	Diff	Sample ID	Qualified Result	Field Duplicate Sample ID	Qualified Result	Units
General Chemistry	Nitrate (as N)	184	1.15	GW102522CZ001	0.050 UJ	GW102522CZ00X	1.2 J	mg/L
	Ammonia-N	58	0.27		0.60 J		0.33 J	mg/L
	Phosphorus	67	0.42		0.42 J		0.84 J	mg/L

Notes:

Diff - Difference (i.e., >1X RL for waters)
RPD - Relative Percent Difference
J - Estimated concentration
UJ - Not detected; associated reporting limit is estimated
N - Nitrogen