

TECHNICAL MEMORANDUM

To: Nevada Environmental Response Trust

Cc: Nevada Division of Environmental Protection
United States Environmental Protection Agency

From: Chris Hayes

Date: November 30, 2022

Subject: Unit 4 Source Area In-Situ Bioremediation Treatability Study Monthly Progress Report

At the direction of the Nevada Environmental Response Trust (NERT or Trust), Tetra Tech, Inc. (Tetra Tech) has prepared this memorandum to summarize Tetra Tech's progress during October 2022 toward successfully implementing the Unit 4 Source Area In-Situ Bioremediation (ISB) Treatability Study.

Task Progress Update: October 2022

Task M21 – Unit 4 Source Area ISB Treatability Study

- Current Status –

Phase 2 of the Unit 4 Source Area ISB Treatability Study is ongoing. A layout map and construction details of all injection, monitoring, and extraction wells are provided on Figure 1 and in Table 1. Operations, maintenance and monitoring activities completed during October 2022 are summarized below.

- Operations and Maintenance

- Area 1 – The first phase of the treatability study for Area 1 consists of a total dissolved solids (TDS) reduction period prior to the injection of a carbon substrate due to the presence of extremely elevated TDS concentrations in groundwater in the Area 1 deep zone. Groundwater-only circulation consisting of the injection of clean water (formerly known as stabilized Lake Mead water [SLMW]) in a pulsed manner and continuous groundwater extraction is being performed in an effort to reduce TDS concentrations to levels that will allow biodegradation processes to proceed (i.e., TDS concentrations to below 21,000 milligrams per liter [mg/L]) prior to carbon substrate/water injections. The water injection and extraction operations began in the Area 1 deep zone on September 8, 2022 and are on-going. Specific details of ongoing operations include:
 - No injection/extraction operations occurred within the Area 1 intermediate zone because TDS concentrations are already suitable for carbon substrate/water injections.

- During the month of October, a total of 82,561 gallons of SLMW was injected into four injection wells within the Area 1 deep zone, while a total of 25,384 gallons of groundwater was extracted from one extraction well. Summaries of Area 1 extractions and injections are provided in Tables 2 and 3, respectively.
- Operations were temporarily suspended for minor system maintenance related to extraction well pump maintenance and valve installation on October 3, 4, 9, 10, and 21, 2022.
- Area 2 – Because TDS concentrations in Area 2 are lower than Area 1 and averaged approximately 19,500 mg/L during baseline sampling, ISB injection/extraction activities are being implemented without an initial TDS reduction step. Carbon substrate solution/water injection and groundwater extraction operations began in both the intermediate and deep zones within Area 2 on September 13, 2022 and are on-going. The injection process consists of daily-pulsed injections of a carbon substrate solution, followed by daily injections of distribution water. The carbon substrate solution consists of molasses, filtered Fluidized Bed Reactor (FBR) biosolids, 0.5 molar sodium bicarbonate solution, trace mineral solution, and vitamin B12. As explained in previous monthly reports, the macronutrient solution consisting of urea and diammonium phosphate (DAP) is not currently being added to the injectate solution to minimize precipitate formation. This macronutrient may be added in the future if required based on effectiveness monitoring results. Specific details of ongoing operations include:
 - During the month of October 2022, a total of 30,971 gallons of carbon solution and 18,334 gallons of distribution water were injected into two injection wells within the Area 2 intermediate zone, while approximately 33,269 gallons of groundwater were extracted from two extraction wells. A total of 17,319 gallons of carbon solution and 9,810 gallons of distribution water were injected into four injection wells within the Area 2 deep zone, while approximately 12,595 gallons of groundwater were extracted from one extraction well. Summaries of Area 2 extractions and injections are provided in Tables 2 and 4, respectively.
 - Operations were temporarily suspended for minor system maintenance related to extraction well pump maintenance and valve installation on October 3, 4, 9, 10, and 21, 2022.
- Effectiveness Monitoring
 - A baseline groundwater sampling event was completed in April 2022 prior to system start-up. The baseline sampling results were provided in the June 2022 monthly progress report. Following system start-up in early September, the effectiveness monitoring program described in the NDEP-approved Unit 4 Source Area ISB Treatability Study Work Plan Addendum was subsequently implemented to evaluate the effectiveness of ISB at reducing contaminant concentrations in groundwater within the Unit 4 Treatability Study Area. As part of this monitoring program, one initial biweekly sampling event of Area 2 monitoring wells was conducted in September 2022. The monitoring program shifted to monthly sampling in October 2022, with the first monthly sampling event in Area 1 and Area 2 performed from October 10 – 14, 2022. Available groundwater analytical results from the baseline sampling event and the first effectiveness monitoring event performed in September 2022 are presented in Table 5 and summarized below. Groundwater analytical results from the October 2022 sampling event will be provided in future monthly progress reports as data become available.
 - Area 2 Intermediate – Groundwater samples collected from the three intermediate monitoring wells in Area 2 indicated reductions in perchlorate

ranging from 44 percent to 88 percent two weeks after system start-up. Similar reductions in chlorate and nitrate concentrations of up to 87 percent and 99 percent, respectively, were also observed. The results from the groundwater sample collected from U4-MW-111 indicated the highest reduction in nitrate of 99% when compared to baseline. Groundwater samples from this location also exhibited the highest increase in total organic carbon (TOC) concentration, increasing from 1.04 mg/L in baseline to 208 mg/L during the first biweekly monitoring event. Although chlorate and perchlorate concentration reductions were observed, the reductions were less than that of nitrate at 83 and 67 percent, respectively, compared to baseline concentrations. Generally, nitrate is the most favored anion resulting in it being biodegraded faster than chlorate and perchlorate. It is likely that chlorate and perchlorate concentrations will continue to reduce in future sampling events based on the nitrate concentration reduction trends, increase in TOC concentrations, and presence of anaerobic conditions (indicated by negative ORP values), all of which indicate that conditions have been established to support the anaerobic respiration of perchlorate in the presence of a continuing carbon source. Lastly, sulfate concentrations in groundwater samples collected from Area 2 intermediate monitoring wells indicated minimal concentration decreases ranging from 5 to 36%. Sulfate biodegradation often lags behind the more favorable nitrate, chlorate, and perchlorate, which also appears to be the case based on groundwater concentration reductions observed thus far.

- Area 2 Deep – Groundwater collected from two of the three deep monitoring wells in Area 2 indicated reductions in perchlorate ranging from 38 percent to 70 percent during the September 2022 sampling event. Similar reductions in chlorate and nitrate concentrations of up to 63 percent and 82 percent, respectively, were also observed. This largest concentrations reductions in groundwater samples collected from the Area 2 Deep treatment interval were observed at monitoring well U4-E-13D, where anaerobic conditions (oxidation-reduction potential [ORP] of -329.7 millivolts) and elevated TOC concentrations of 58.4 milligram per liter were present. These ORP levels and TOC concentrations are indicative of strongly reducing conditions and the presence of adequate carbon substrate.
- Results will continue to be monitored throughout the study to assess the reduction components related to biodegradation and dilution on reducing concentrations.
- The first dye sampling event was performed from September 19 – 21, 2022, which was the first week following the one-time injection of dye performed on September 16, 2022. Collection of dye samples was subsequently performed during the biweekly effectiveness monitoring event performed from September 26 – 28, 2022 and the October monthly effectiveness monitoring event performed from October 10 – 14, 2022. Available analytical results for dye samples collected during baseline activities, injection activities, and the September 2022 effectiveness monitoring events are provided in Table 6. There were several cases where charcoal samplers showed low detections of dye, but the water samples did not show visible dye, indicating that either the dye peak already passed before the water sample was collected, or the concentration of dye in the water were too low to be detectable. Results from future sampling events will be evaluated to provide additional clarification of the likely scenario. Dye testing will continue to be performed during the planned groundwater monitoring and extraction monitoring

activities. Results from the dye testing are presented in Table 6. Noteworthy results from the September 2022 sampling events are described below:

- Area 1 – During the first week following injection of fluorescein into Area 1 Deep injection wells U4-E-04D and U4-E-05D, fluorescein dye was detected in groundwater collected from monitoring wells U4-MW-07I and U4-MW-07D, which suggests some hydraulic connectivity between the deep and intermediate treatment intervals.
 - Area 2 – Rhodamine WT was not detected in groundwater collected from Area 2 monitoring wells in September 2022 following injection of Rhodamine WT into Area 2 intermediate injection wells. Although it was not detected during baseline, sulforhodamine B was detected in groundwater from several monitoring wells during the September events. Discussions with the laboratory are on-going about these results.
- Schedule and Progress Updates
 - Area 1 TDS reduction operations are anticipated to continue through March 2023.
 - Area 2 ISB operations are anticipated to continue through September 2023.
 - Health and Safety
 - There were no health and safety incidents related to Task M21 during October 2022.

CERTIFICATION

Unit 4 Source Area In-Situ Bioremediation Treatability Study Monthly Progress Report

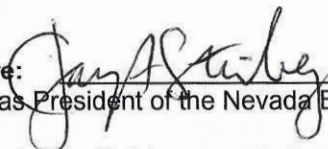
**Nevada Environmental Response Trust Site
(Former Tronox LLC Site)
Henderson, Nevada**

Nevada Environmental Response Trust (NERT) Representative Certification

I certify that this document and all attachments submitted to the Division were prepared at the request of, or under the direction or supervision of NERT. Based on my own involvement and/or my inquiry of the person or persons who manage the systems(s) or those directly responsible for gathering the information or preparing the document, or the immediate supervisor of such person(s), the information submitted and provided herein is, to the best of my knowledge and belief, true, accurate, and complete in all material respects.

Office of the Nevada Environmental Response Trust

Le Petomane XXVII, not individually, but solely in its representative capacity as the Nevada Environmental Response Trust Trustee

Signature:  Not Individually, but Solely
as President of the Trust, not
individually, but solely in his representative
capacity as President of the Nevada Environmental Response Trust Trustee

Name: Jay A. Steinberg, not individually, but solely in his representative capacity as President of the Nevada Environmental Response Trust Trustee

Title: Solely as President and not individually

Company: Le Petomane XXVII, Inc., not individually, but solely in its representative capacity as the Nevada Environmental Response Trust Trustee

Date: 11/30/22

CERTIFICATION

I hereby certify that I am responsible for the services described in this document and for the preparation of this document. The services described in this document have been prepared in a manner consistent with the current standards of the profession, and to the best of my knowledge, comply with all applicable federal, state, and local statutes, regulations, and ordinances. I hereby certify that all laboratory analytical data was generated by a laboratory certified by the NDEP for each constituent and media presented herein.

Description of Services Provided: Prepared Unit 4 Source Area In-Situ Bioremediation Treatability Study Monthly Progress Report.



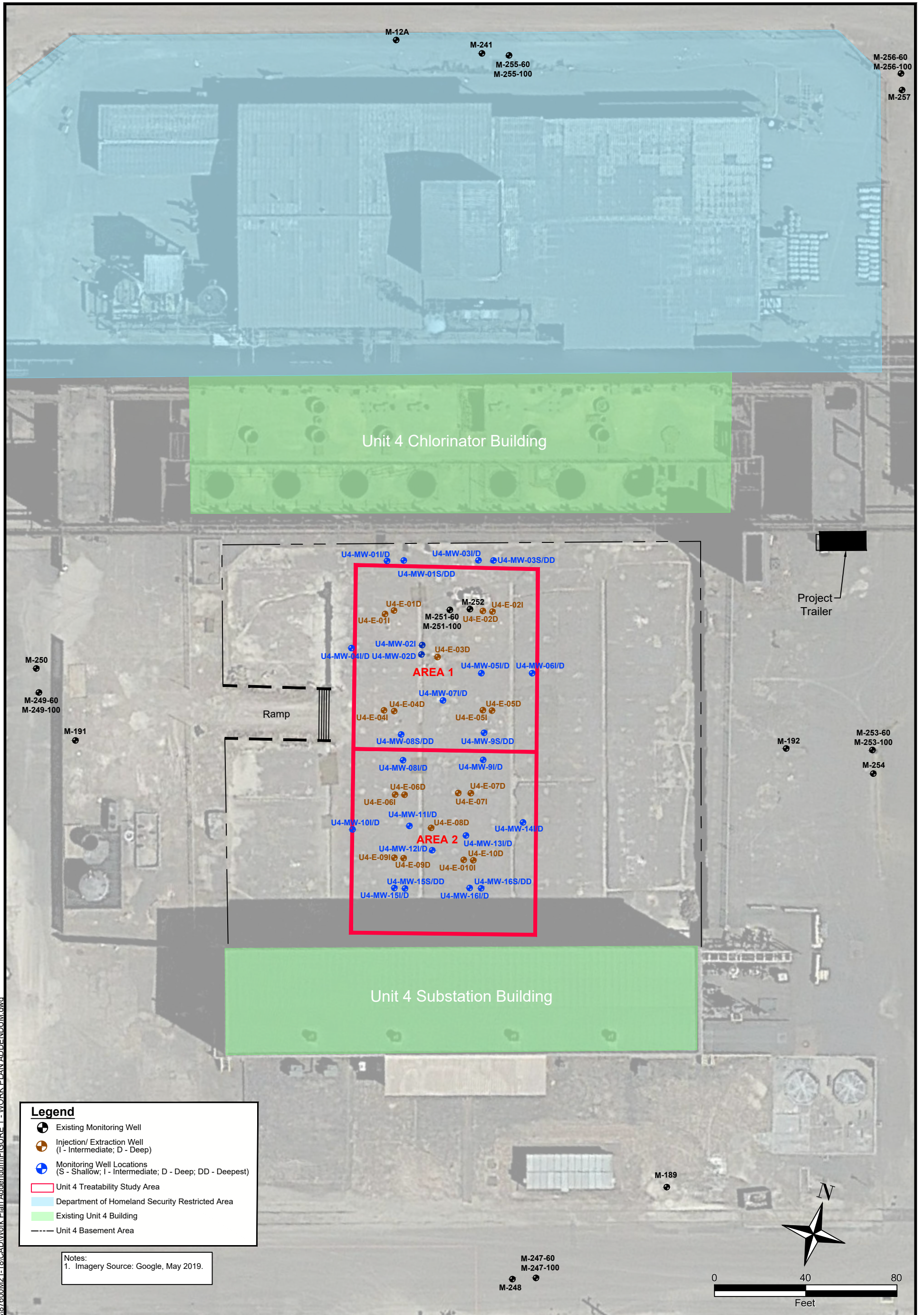
David S. Wilson, CEM
Principal Engineer
Tetra Tech, Inc.

November 30, 2022

Date

Nevada CEM Certificate Number: 2385
Nevada CEM Expiration Date: September 19, 2024

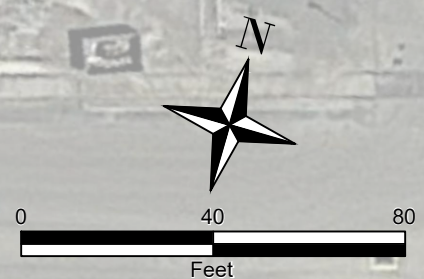
Figures



Legend

- Existing Monitoring Well
- ⊕ Injection/ Extraction Well (I - Intermediate, D - Deep)
- ⊕ Monitoring Well Locations (S - Shallow; I - Intermediate; D - Deep; DD - Deepest)
- ▭ Unit 4 Treatability Study Area
- ▭ Department of Homeland Security Restricted Area
- ▭ Existing Unit 4 Building
- Unit 4 Basement Area

Notes:
1. Imagery Source: Google, May 2019.



\\its318fs3.tl.local\CES\Projects\87600\M21-18\CAD\Work Plan Addendum\FIGURE 1 - WORK PLAN ADDENDUM.dwg

NEVADA ENVIRONMENTAL RESPONSE TRUST SITE

UNIT 4 SOURCE AREA IN-SITU BIOREMEDIATION TREATABILITY STUDY
HENDERSON, NEVADA

Project No.: 117-7502021-M21
Date: May 10, 2022
Designed By: AC

TETRA TECH

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INJECTION/ EXTRACTION AND MONITORING WELL LAYOUT

Figure No.
1

Tables

Table 1
Well Construction Details
 Unit 4 Source Area In-Situ Bioremediation Treatability Study

Well ID	Screened Lithology	Northing	Easting	Ground Surface Elevation ¹	Top of Casing Elevation	Construction Type	Casing Material	Screen Material	Slot Size	Filter Pack Gradation	Borehole Diameter	Borehole Total Depth	Well Diameter	Nominal Screen Length	Well Total Depth	Bottom of Screen	Top of Screen
				feet amsl	feet amsl				inches		inches	feet bgs ¹	inches	feet	feet bgs ¹	feet bgs ¹	feet bgs ¹
U4-E-01D	UMCf	26717332.49	828215.74	1805.50	1805.11	Single	Schedule 80 PVC	Stainless Steel	0.010	#2/16	8	115.0	4	15	110.3	94.7	109.7
U4-E-01I	UMCf	26717330.42	828212.11	1805.40	1805.15	Single	Schedule 80 PVC	Stainless Steel	0.010	#2/16	8	92.0	4	15	90.3	74.6	89.6
U4-E-02D	UMCf	26717338.47	828258.40	1805.55	1804.99	Single	Schedule 80 PVC	Stainless Steel	0.010	#2/16	8	115.0	4	15	110.3	94.4	109.4
U4-E-02I	UMCf	26717338.14	828254.24	1805.51	1804.99	Single	Schedule 80 PVC	Stainless Steel	0.010	#2/16	8	92.0	4	15	90.3	74.4	89.4
U4-E-04D	UMCf	26717288.90	828222.53	1805.49	1804.95	Single	Schedule 80 PVC	Stainless Steel	0.010	#2/16	8	115.0	4	15	110.3	95.0	110.0
U4-E-03D	UMCf	26717310.37	828241.13	1805.49	1804.94	Single	Schedule 80 PVC	Stainless Steel	0.010	#2/16	8	113.0	4	15	111.1	110.1	95.1
U4-E-04I	UMCf	26717288.51	828217.91	1805.64	1805.03	Single	Schedule 80 PVC	Stainless Steel	0.010	#2/16	8	92.0	4	15	90.3	75.0	90.0
U4-E-05D	UMCf	26717295.64	828264.86	1805.48	1804.95	Single	Schedule 80 PVC	Stainless Steel	0.010	#2/16	8	115.0	4	15	110.3	95.0	110.0
U4-E-05I	UMCf	26717295.15	828260.95	1805.58	1804.72	Single	Schedule 80 PVC	Stainless Steel	0.010	#2/16	8	92.0	4	15	90.3	75.0	90.0
U4-E-06D	UMCf	26717253.44	828232.43	1805.44	1804.74	Single	Schedule 80 PVC	Stainless Steel	0.010	#2/16	8	112.0	4	15	111.1	110.1	95.1
U4-E-06I	UMCf	26717252.90	828228.29	1805.47	1805.04	Single	Schedule 80 PVC	Stainless Steel	0.010	#2/16	8	92.5	4	15	89.2	88.2	73.2
U4-E-07D	UMCf	26717258.48	828261.02	1805.62	1805.31	Single	Schedule 80 PVC	Stainless Steel	0.010	#2/16	8	111.5	4	15	110.6	109.6	94.6
U4-E-07I	UMCf	26717257.68	828255.56	1805.62	1805.16	Single	Schedule 80 PVC	Stainless Steel	0.010	#2/16	8	92.0	4	15	90.7	89.7	74.7
U4-E-08D	UMCf	26717240.82	828246.11	1805.45	1804.91	Single	Schedule 80 PVC	Stainless Steel	0.010	#2/16	8	120.0	4	15	110.6	109.6	94.6
U4-E-09D	UMCf	26717225.92	828236.22	1805.45	1804.91	Single	Schedule 80 PVC	Stainless Steel	0.010	#2/16	8	112.0	4	15	110.5	109.5	94.5
U4-E-09I	UMCf	26717225.46	828232.18	1805.47	1805.14	Single	Schedule 80 PVC	Stainless Steel	0.010	#2/16	8	93.3	4	15	90.9	89.9	74.9
U4-E-10D	UMCf	26717229.55	828266.50	1805.66	1805.28	Single	Schedule 80 PVC	Stainless Steel	0.010	#2/16	8	112.0	4	15	110.5	109.5	94.5
U4-E-10I	UMCf	26717229.15	828262.34	1805.71	1805.37	Single	Schedule 80 PVC	Stainless Steel	0.010	#2/16	8	92.0	4	15	90.2	89.2	74.2
U4-MW-01I	UMCf	26717353.59	828209.51	1805.57	1805.14	Dual-Nested	Schedule 80 PVC	Stainless Steel	0.010	#2/16	11	108.0	2	10	86.7	86.7	76.7
U4-MW-01D	UMCf	26717353.51	828209.25	1805.57	1805.10		Schedule 80 PVC	Stainless Steel	0.010	#2/16			2	10	106.7	106.7	96.7
U4-MW-01S	UMCf	26717354.83	828216.42	1805.57	1805.02	Dual-Nested	Schedule 80 PVC	Stainless Steel	0.010	#2/16	11	131.0	2	10	64.7	64.7	54.7
U4-MW-01DD	UMCf	26717354.86	828216.87	1805.57	1805.09		Schedule 80 PVC	Stainless Steel	0.010	#2/16			2	10	129.9	129.9	119.9
U4-MW-02D	UMCf	26717315.33	828230.47	1805.50	1805.07	Single	Schedule 80 PVC	Stainless Steel	0.010	#2/16	8	115.0	4	15	110.3	95.0	110.0
U4-MW-02I	UMCf	26717319.45	828230.17	1805.47	1805.07	Single	Schedule 80 PVC	Stainless Steel	0.010	#2/16	8	92.0	4	15	90.3	75.0	90.0
U4-MW-03I	UMCf	26717359.79	828248.76	1805.61	1805.17	Dual-Nested	Schedule 80 PVC	Stainless Steel	0.010	#2/16	11	108.3	2	10	86.6	86.6	76.6
U4-MW-03D	UMCf	26717360.01	828249.20	1805.61	1805.18		Schedule 80 PVC	Stainless Steel	0.010	#2/16			2	10	106.6	106.6	96.6
U4-MW-03S	UMCf	26717360.79	828255.35	1805.56	1805.19	Dual-Nested	Schedule 80 PVC	Stainless Steel	0.010	#2/16	11	131.3	2	10	64.5	64.5	54.5
U4-MW-03DD	UMCf	26717360.84	828255.62	1805.56	1805.20		Schedule 80 PVC	Stainless Steel	0.010	#2/16			2	10	129.7	129.7	119.7
U4-MW-04I	UMCf	26717313.50	828199.89	1805.49	1805.13	Dual-Nested	Schedule 80 PVC	Stainless Steel	0.010	#2/16	11	108.5	2	10	86.8	86.8	76.8
U4-MW-04D	UMCf	26717313.36	828199.55	1805.49	1805.15		Schedule 80 PVC	Stainless Steel	0.010	#2/16			2	10	107.0	107.0	97.0
U4-MW-05I	UMCf	26717311.18	828257.53	1805.52	1805.06	Dual-Nested	Schedule 80 PVC	Stainless Steel	0.010	#2/16	11	108.0	2	10	86.6	86.6	76.6
U4-MW-05D	UMCf	26717311.18	828257.89	1805.52	1805.05		Schedule 80 PVC	Stainless Steel	0.010	#2/16			2	10	108.2	108.2	98.2
U4-MW-06I	UMCf	26717314.46	828279.53	1805.52	1805.21	Dual-Nested	Schedule 80 PVC	Stainless Steel	0.010	#2/16	11	108.3	2	10	86.5	86.5	76.5
U4-MW-06D	UMCf	26717314.51	828279.82	1805.52	1805.20		Schedule 80 PVC	Stainless Steel	0.010	#2/16			2	10	107.1	107.1	97.1
U4-MW-07I	UMCf	26717296.98	828242.85	1805.36	1805.16	Dual-Nested	Schedule 80 PVC	Stainless Steel	0.010	#2/16	11	109.2	2	10	86.8	86.8	76.8
U4-MW-07D	UMCf	26717296.68	828242.80	1805.36	1805.01		Schedule 80 PVC	Stainless Steel	0.010	#2/16			2	10	106.5	106.5	96.5
U4-MW-08I	UMCf	26717268.25	828229.36	1805.45	1804.97	Dual-Nested	Schedule 80 PVC	Stainless Steel	0.010	#2/16	11	108.0	2	10	88.0	88.0	78.0
U4-MW-08D	UMCf	26717268.30	828229.62	1805.45	1804.99		Schedule 80 PVC	Stainless Steel	0.010	#2/16			2	10	108.6	108.6	98.6
U4-MW-08S	UMCf	26717279.33	828226.78	1805.47	1804.94	Dual-Nested	Schedule 80 PVC	Stainless Steel	0.010	#2/16	11	131.2	2	10	64.9	64.9	54.9
U4-MW-08DD	UMCf	26717279.35	828227.22	1805.47	1804.95		Schedule 80 PVC	Stainless Steel	0.010	#2/16			2	10	129.8	129.8	119.8
U4-MW-09I	UMCf	26717273.70	828264.04	1805.62	1805.22	Dual-Nested	Schedule 80 PVC	Stainless Steel	0.010	#2/16	11	108.0	2	10	86.8	86.8	76.8
U4-MW-09D	UMCf	26717273.73	828264.40	1805.62	1805.20		Schedule 80 PVC	Stainless Steel	0.010	#2/16			2	10	106.9	106.9	96.9
U4-MW-09S	UMCf	26717285.44	828262.62	1805.55	1805.12	Dual-Nested	Schedule 80 PVC	Stainless Steel	0.010	#2/16	11	132.0	2	10	65.3	65.3	55.3
U4-MW-09DD	UMCf	26717285.52	828263.00	1805.55	1805.12		Schedule 80 PVC	Stainless Steel	0.010	#2/16			2	10	129.8	129.8	119.8
U4-MW-10I	UMCf	26717234.83	828212.05	1805.55	1805.10	Dual-Nested	Schedule 80 PVC	Stainless Steel	0.010	#2/16	11	109.0	2	10	87.1	87.1	77.1
U4-MW-10D	UMCf	26717235.18	828212.26	1805.55	1805.07		Schedule 80 PVC	Stainless Steel	0.010	#2/16			2	10	106.9	106.9	96.9
U4-MW-11I	UMCf	26717240.19	828236.42	1805.41	1805.03	Dual-Nested	Schedule 80 PVC	Stainless Steel	0.010	#2/16	11	109.0	2	10	87.0	87.0	77.0
U4-MW-11D	UMCf	26717240.23	828236.77	1805.41	1804.96		Schedule 80 PVC	Stainless Steel	0.010	#2/16			2	10	107.4	107.4	97.4
U4-MW-12I	UMCf	26717231.25	828247.87	1805.47	1805.11	Dual-Nested	Schedule 80 PVC	Stainless Steel	0.010	#2/16	11	108.0	2	10	86.8	86.8	76.8
U4-MW-12D	UMCf	26717231.22	828248.29	1805.47	1805.12		Schedule 80 PVC	Stainless Steel	0.010	#2/16			2	10	107.1	107.1	97.1
U4-MW-13I	UMCf	26717242.66	828261.00	1805.64	1805.28	Dual-Nested	Schedule 80 PVC	Stainless Steel	0.010	#2/16	11	109.0	2	10	87.1	87.1	77.1
U4-MW-13D	UMCf	26717242.70	828261.37	1805.64	1805.35		Schedule 80 PVC	Stainless Steel	0.010	#2/16			2	10	108.2	108.2	98.2
U4-MW-14I	UMCf	26717249.26	828285.32	1805.43	1805.13	Dual-Nested	Schedule 80 PVC	Stainless Steel	0.010	#2/16	11	109.0	2	10	87.3	87.3	77.3
U4-MW-14D	UMCf	26717249.24	828285.84	1805.43	1805.05		Schedule 80 PVC	Stainless Steel	0.010	#2/16			2	10	107.3	107.3	97.3
U4-MW-15I	UMCf	26717212.34	828233.91	1805.48	1805.03	Dual-Nested	Schedule 80 PVC	Stainless Steel	0.010	#2/16	11	109.0	2	10	86.8	86.8	76.8
U4-MW-15D	UMCf	26717212.35	828234.41	1805.48	1804.97		Schedule 80 PVC	Stainless Steel	0.010	#2/16			2	10	106.0	106.0	96.0
U4-MW-15S	UMCf	26717212.89	828238.61	1805.44	1805.05	Dual-Nested	Schedule 80 PVC	Stainless Steel	0.010	#2/16	11	132.0	2	10	64.8	64.8	54.8
U4-MW-15DD	UMCf	26717212.87	828239.01	1805.44	1804.98		Schedule 80 PVC	Stainless Steel	0.010	#2/16			2	10	130.3	130.3	120.3
U4-MW-16I	UMCf	26717217.25	828266.62	1805.68	1805.36	Dual-Nested	Schedule 80 PVC	Stainless Steel	0.010	#2/16	11	108.5	2	10	87.0	87.0	77.0
U4-MW-16D	UMCf	26717217.40	828266.90	1805.68	1805.27		Schedule 80 PVC	Stainless Steel	0.010	#2/16			2	10	106.8	106.8	96.8
U4-MW-16S	UMCf	26717217.87	828271.70	1805.59	1805.24	Dual-Nested	Schedule 80 PVC	Stainless Steel	0.010	#2/16	11	131.0	2	10	64.8	64.8	54.8
U4-MW-16DD	UMCf	26717218.04	828271.95	1805.59	1805.32		Schedule 80 PVC	Stainless Steel	0.010	#2/16			2	10	130.8	130.8	120.8

Notes

- amsl - above mean sea level
- bgs - below ground surface
- bTOC - below top of casing
- PVC - polyvinyl chloride
- UMCf - Upper Muddy Creek formation

1. Ground surface refers to the concrete floor of the Unit 4 basement, which is approximately 8 feet below the surrounding grade.
 2. Well names including E indicate an extraction/injection well. Well names including MW indicate a monitoring well.

Table 2
Summary of Groundwater Extraction Activities - October 2022
 Unit 4 Source Area Bioremediation Treatability Study

Study Area			Area 1 Deep			Area 2 Intermediate						Area 2 Deep		
Well ID			U4-E-03D			U4-E-06I			U4-E-07I			U4-E-08D		
Date	Time	Duration ⁽¹⁾	Average Flow Rate	Volume Extracted ⁽¹⁾	Cumulative Total Volume	Average Flow Rate	Volume Extracted ⁽¹⁾	Cumulative Total Volume	Average Flow Rate	Volume Extracted ⁽¹⁾	Cumulative Total Volume	Average Flow Rate	Volume Extracted ⁽¹⁾	Cumulative Total Volume
		minutes	gpm	gallons	gallons	gpm	gallons	gallons	gpm	gallons	gallons	gpm	gallons	gallons
10/1/2022	15:21	1,432	0.8	1,090.82	24,979.25	1.2	1691.69	31638.93	0.3	454.71	9554.11	0.4	574.90	9170.96
10/2/2022	14:32	1,391	0.7	1,019.49	25,998.74	1.2	1665.12	33304.05	0.3	434.94	9989.05	0.4	553.22	9724.18
10/3/2022	7:22	1,010	0.4	415.03	26,413.77	0.7	675.64	33979.69	0.2	202.77	10191.82	0.2	216.11	9940.29
10/4/2022 ⁽²⁾	---	---	---	---	---	---	---	---	---	---	---	---	---	---
10/5/2022	14:32	649	0.7	484.97	26,898.74	1.2	771.22	34750.91	0.3	216.90	10408.72	0.3	218.57	10158.86
10/6/2022	14:22	1,430	0.7	1,034.97	27,933.71	1.1	1636.45	36387.36	0.3	454.70	10863.42	0.3	492.78	10651.64
10/7/2022	14:31	1,449	0.7	1,034.85	28,968.56	1.0	1421.40	37808.76	0.3	493.88	11357.30	0.3	429.85	11081.49
10/8/2022	13:51	1,400	0.7	940.00	29,908.56	0.9	1258.51	39067.27	0.3	433.29	11790.59	0.3	449.63	11531.12
10/9/2022	5:12	921	0.7	637.73	30,546.29	0.9	868.69	39935.96	0.3	260.09	12050.68	0.3	294.66	11825.78
10/10/2022 ⁽²⁾	---	---	---	---	---	---	---	---	---	---	---	---	---	---
10/11/2022	14:45	600	0.8	465.18	31,011.47	1.0	609.15	40545.11	0.4	237.78	12288.46	0.4	257.82	12083.60
10/12/2022	14:49	1,444	0.7	1,026.77	32,038.24	0.9	1320.57	41865.68	0.3	438.28	12726.74	0.4	505.61	12589.21
10/13/2022	14:51	1,442	0.7	1,033.31	33,071.55	0.8	1204.70	43070.38	0.3	409.57	13136.31	0.3	492.75	13081.96
10/14/2022	14:31	1,420	0.7	1,023.96	34,095.51	0.8	1108.36	44178.74	0.2	349.85	13486.16	0.4	498.35	13580.31
10/15/2022	14:24	1,433	0.7	1,000.05	35,095.56	0.6	925.81	45104.55	0.2	323.89	13810.05	0.4	516.09	14096.40
10/16/2022	14:03	1,419	0.7	930.40	36,025.96	0.6	816.06	45920.61	0.2	316.54	14126.59	0.3	486.66	14583.06
10/17/2022	15:22	1,519	0.7	1,020.74	37,046.70	0.5	784.65	46705.26	0.2	332.70	14459.29	0.3	510.85	15093.91
10/18/2022	15:06	1,424	0.7	978.39	38,025.09	0.5	660.02	47365.28	0.2	319.73	14779.02	0.3	496.73	15590.64
10/19/2022	14:44	1,418 ⁽³⁾	0.6	915.40	38,940.49	0.4	603.08	47968.36	0.2	293.40	15072.42	0.3	400.53	15991.17
10/20/2022	13:58	1,394	0.6	876.49	39,816.98	0.4	546.97	48515.33	0.2	319.74	15392.16	0.3	447.69	16438.86
10/21/2022	4:45	887	0.6	529.84	40,346.82	0.4	314.38	48829.71	0.2	190.76	15582.92	0.3	266.56	16705.42
10/22/2022	14:07	585	0.7	394.74	40,741.56	0.7	395.19	49224.90	0.2	135.38	15718.30	0.3	199.25	16904.67
10/23/2022	14:04	1,437	0.7	976.27	41,717.83	0.5	739.68	49964.58	0.2	309.12	16027.42	0.3	500.99	17405.66
10/24/2022	14:11	1,447	0.7	1,010.51	42,728.34	0.5	678.04	50642.62	0.2	309.20	16336.62	0.3	495.09	17900.75
10/25/2022	14:21	1,450	0.7	996.67	43,725.01	0.5	678.05	51320.67	0.2	302.62	16639.24	0.3	479.31	18380.06
10/26/2022	15:27	1,506	0.7	1,029.92	44,754.93	0.5	682.64	52003.31	0.2	311.16	16950.40	0.3	523.40	18903.46
10/27/2022	14:52	1,405	0.7	994.63	45,749.56	0.4	617.76	52621.07	0.2	280.68	17231.08	0.3	476.76	19380.22
10/28/2022	14:03	1,391	0.7	980.70	46,730.26	0.4	620.40	53241.47	0.2	257.49	17488.57	0.3	451.16	19831.38
10/29/2022	14:24	1,461	0.7	1,016.30	47,746.56	0.4	636.62	53878.09	0.2	262.57	17751.14	0.3	490.82	20322.20
10/30/2022	14:17	1,433	0.7	1,028.62	48,775.18	0.4	619.43	54497.52	0.2	238.02	17989.16	0.4	568.53	20890.73
10/31/2022	14:38	1,461	0.7	1,029.33	49,804.51	0.4	639.19	55136.71	0.2	237.97	18227.13	0.4	577.57	21468.30
September Total					24,421.00			30,779.80			9,315.20			8,873.62
October Total					25,383.51			24,356.91			8,911.93			12,594.68

Notes:

gpm - gallons per minute

1. Extraction operations are active 24 hours per day. Volume and duration quantities represent gallons or minutes of extraction since previous record indicated.
2. No extraction wells were operated on 10/4/22 or 10/10/22 due to system maintenance.
3. The duration of active extraction for U4-E-07I on 10/19/22 totaled 1,212 minutes due to extraction pump maintenance.

**Table 3
Summary of Injection Activities
Area 1 - October 2022
Unit 4 Source Area Bioremediation Treatability Study**

Study Area				Area 1 Deep											
Well ID				U4-E-01D			U4-E-02D			U4-E-04D			U4-E-05D		
Date	Injection Start Time	Injection Stop Time	Duration	Average Flow Rate	Volume Injected	Maximum Injection Pressure	Average Flow Rate	Volume Injected	Maximum Injection Pressure	Average Flow Rate	Volume Injected	Maximum Injection Pressure	Average Flow Rate	Volume Injected	Maximum Injection Pressure
			minutes	gpm	gallons	psi	gpm	gallons	psi	gpm	gallons	psi	gpm	gallons	psi
10/1/2022	10/1/22 4:53	10/1/22 15:15	622	1.4	839.77	40	1.3	806.95	32	1.3	814.70	40	1.3	810.05	40
10/2/2022	10/2/22 4:02	10/2/22 14:20	618	1.4	869.17	41	1.4	850.28	32	1.3	773.27	44	1.4	891.28	42
10/3/2022 ⁽¹⁾	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
10/4/2022 ⁽¹⁾	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
10/5/2022	10/5/22 5:52	10/5/22 13:57	485	1.4	689.69	22	1.3	638.45	32	1.3	652.80	25	1.4	656.73	17
10/6/2022	10/6/22 4:31	10/6/22 13:50	559	1.4	756.31	23	1.3	734.31	32	1.3	729.03	20	1.3	716.99	15
10/7/2022	10/7/22 3:46	10/7/22 13:04	558	1.2	695.57	24	1.2	662.97	30	1.2	678.64	22	1.2	674.67	15
10/8/2022	10/8/22 4:05	10/8/22 8:48	283	1.5	424.61	22	1.5	419.99	32	1.5	413.83	22	1.4	404.30	14
10/9/2022 ⁽¹⁾	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
10/10/2022 ⁽¹⁾	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
10/11/2022	10/11/22 4:17	10/11/22 13:45	568	1.4	812.39	22	1.4	802.54	32	1.4	791.31	22	1.4	796.82	16
10/12/2022	10/12/22 3:46	10/12/22 14:10	624	1.4	873.85	22	1.3	840.78	31	1.3	828.65	22	1.4	845.87	14
10/13/2022	10/13/22 3:59	10/13/22 14:15	616	1.3	805.72	23	1.3	777.25	30	1.3	773.87	21	1.2	765.80	13
10/14/2022	10/14/22 3:53	10/14/22 13:55	602	1.4	837.17	23	1.4	827.24	30	1.4	830.09	21	1.4	822.24	14
10/15/2022	10/15/22 3:41	10/15/22 13:55	614	1.4	852.85	23	1.4	847.81	30	1.4	848.05	20	1.3	828.19	14
10/16/2022	10/16/22 3:31	10/16/22 13:33	602	1.4	859.19	23	1.4	828.92	30	1.4	830.50	21	1.4	820.42	14
10/17/2022	10/17/22 3:52	10/17/22 14:45	653	1.4	930.29	23	1.4	894.85	30	1.4	895.59	20	1.4	882.12	15
10/18/2022	10/18/22 3:30	10/18/22 14:47	677	1.4	956.55	23	1.4	952.54	30	1.4	944.40	21	1.4	944.69	16
10/19/2022	10/19/22 3:43	10/19/22 14:10	627	1.4	896.16	23	1.4	879.93	30	1.4	870.10	21	1.4	863.31	15
10/20/2022	10/20/22 3:30	10/20/22 13:17	587	1.4	838.45	23	1.4	811.59	30	1.4	817.04	20	1.4	804.92	15
10/21/2022 ⁽¹⁾	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
10/22/2022	10/22/22 3:50	10/22/22 13:00	550	1.3	728.35	22	1.3	729.92	30	1.3	716.29	20	1.3	713.98	15
10/23/2022	10/23/22 3:51	10/23/22 13:21	570	1.4	798.15	23	1.4	787.88	30	1.4	794.35	20	1.4	786.11	15
10/24/2022	10/24/22 3:52	10/24/22 13:22	570	1.4	798.68	23	1.4	784.76	30	1.4	790.51	19	1.4	774.73	16
10/25/2022	10/25/22 3:58	10/25/22 13:28	570	1.4	814.93	22	1.4	791.59	31	1.4	790.94	20	1.4	792.63	18
10/26/2022	10/26/22 4:45	10/26/22 14:44	599	1.4	842.84	22	1.4	827.79	30	1.4	821.24	20	1.4	837.49	18
10/27/2022	10/27/22 3:49	10/27/22 13:50	601	1.4	830.37	20	1.4	830.42	30	1.4	825.76	20	1.4	833.67	18
10/28/2022	10/28/22 3:58	10/28/22 13:33	575	1.4	783.58	20	1.4	793.04	31	1.4	798.76	20	1.4	785.37	20
10/29/2022	10/29/22 4:10	10/29/22 13:59	589	1.4	824.11	20	1.4	820.39	30	1.4	835.10	19	1.4	826.43	19
10/30/2022	10/30/22 4:16	10/30/22 13:57	581	1.4	812.59	21	1.4	805.45	30	1.4	814.58	19	1.4	800.52	18
10/31/2022	10/31/22 4:12	10/31/22 13:58	586	1.4	828.01	21	1.4	818.02	30	1.4	820.59	19	1.4	816.44	18
September Total				18,524.74			17,036.15			18,474.90			18,327.61		
October Total				20,999.35			20,565.66			20,499.99			20,495.77		
Cumulative Total				39,524.09			37,601.81			38,974.89			38,823.38		

Notes:

gpm - gallons per minute

psi - pounds per square inch

- No injections due to system maintenance.
- Injectate solution in Area 1 Deep wells consists of only Stabilized Lake Mead Water as part of the total dissolved solids (TDS)-reduction period of the treatability study.

Table 4
Summary of Injection Activities
Area 2 - October 2022
 Unit 4 Source Area Bioremediation Treatability Study

Study Area				Area 2 Intermediate								Area 2 Deep			
Well ID				U4-E-09I				U4-E-10I				U4-E-06D			
Date	Injection Start Time	Injection Stop Time	Duration ⁽¹⁾	Volume Carbon Solution Injected ⁽²⁾	Volume Distribution Water Solution Injected ⁽³⁾	Average Flow Rate	Maximum Injection Pressure	Volume Carbon Solution Injected ⁽²⁾	Volume Distribution Water Solution Injected ⁽³⁾	Average Flow Rate	Maximum Injection Pressure	Volume Carbon Solution Injected ⁽²⁾	Volume Distribution Water Solution Injected ⁽³⁾	Average Flow Rate	Maximum Injection Pressure
			minutes	gallons	gallons	gpm	psi	gallons	gallons	gpm	psi	gallons	gallons	gpm	psi
10/1/2022	10/1/22 4:54	10/1/22 15:15	572	612.02	506.95	2.0	29	597.91	494.03	1.9	28	166.05	132.57	0.5	31
10/2/2022	10/2/22 4:03	10/2/22 14:20	564	605.30	474.68	1.9	29	618.59	471.70	1.9	28	206.60	144.31	0.6	30
10/3/2022 ⁽¹⁾	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
10/4/2022 ⁽¹⁾	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
10/5/2022	10/5/22 4:52	10/5/22 13:57	495	538.92	433.54	2.0	17	530.08	438.31	2.0	15	172.44	106.66	0.6	14
10/6/2022	10/6/22 4:30	10/6/22 13:50	515	564.49	419.74	1.9	13	576.36	422.25	1.9	11	142.45	114.15	0.5	13
10/7/2022	10/7/22 3:45	10/7/22 13:04	502	555.47	408.60	1.9	13	574.04	399.89	1.9	9	130.03	109.98	0.5	12
10/8/2022	10/8/22 3:55	10/8/22 13:37	522	552.69	446.70	1.9	12	549.29	444.54	1.9	9	136.43	119.76	0.5	12
10/9/2022 ⁽⁴⁾	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
10/10/2022 ⁽⁴⁾	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
10/11/2022	10/11/22 4:15	10/11/22 13:45	521	557.30	488.72	2.0	11	535.89	479.42	1.9	8	148.33	120.81	0.5	13
10/12/2022	10/12/22 3:45	10/12/22 14:10	573	613.80	479.32	1.9	12	615.31	472.12	1.9	8	170.78	134.49	0.5	14
10/13/2022	10/13/22 3:58	10/13/22 14:15	571	607.48	468.93	1.9	12	613.59	467.17	1.9	8	173.39	122.39	0.5	17
10/14/2022	10/14/22 3:52	10/14/22 13:55	557	575.74	474.88	1.9	13	583.21	470.49	1.9	8	166.62	119.26	0.5	18
10/15/2022	10/15/22 3:40	10/15/22 13:55	570	627.47	465.09	1.9	14	616.17	460.75	1.9	8	159.76	125.49	0.5	16
10/16/2022	10/16/22 3:32	10/16/22 13:33	556	604.20	453.31	1.9	13	616.53	452.24	1.9	9	165.01	119.16	0.5	26
10/17/2022	10/17/22 3:53	10/17/22 14:45	606	666.54	493.05	1.9	13	655.18	494.86	1.9	8	184.74	127.78	0.5	28
10/18/2022	10/18/22 3:29	10/18/22 14:47	630	652.47	544.15	1.9	14	676.52	539.24	1.9	8	178.30	134.83	0.5	19
10/19/2022	10/19/22 3:42	10/19/22 14:10	583	639.50	472.58	1.9	15	634.67	460.19	1.9	10	162.31	119.87	0.5	19
10/20/2022	10/20/22 3:29	10/20/22 13:17	544	600.47	436.92	1.9	15	578.66	452.00	1.9	10	165.68	123.81	0.5	20
10/21/2022 ⁽⁴⁾	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
10/22/2022	10/22/22 3:51	10/22/22 13:00	505	547.43	412.92	1.9	14	551.38	406.56	1.9	10	166.26	114.05	0.6	18
10/23/2022	10/23/22 3:50	10/23/22 13:21	526	568.70	432.90	1.9	15	584.08	427.88	1.9	10	148.66	114.46	0.5	20
10/24/2022	10/24/22 3:51	10/24/22 13:22	526	564.60	441.85	1.9	14	556.76	441.82	1.9	10	167.02	119.84	0.5	20
10/25/2022	10/25/22 3:57	10/25/22 13:28	526	556.76	438.30	1.9	14	559.32	445.13	1.9	10	158.73	139.84	0.6	20
10/26/2022	10/26/22 4:44	10/26/22 14:44	556	598.47	443.38	1.9	13	608.72	446.66	1.9	10	174.37	120.11	0.5	20
10/27/2022	10/27/22 3:48	10/27/22 13:50	557	611.71	414.19	1.8	13	619.74	423.11	1.9	10	179.22	129.00	0.6	20
10/28/2022	10/28/22 3:57	10/28/22 13:33	531	570.45	422.39	1.9	13	589.79	437.15	1.9	10	159.78	123.85	0.5	20
10/29/2022	10/29/22 4:09	10/29/22 13:59	545	588.42	453.16	1.9	13	595.51	452.99	1.9	10	158.78	123.43	0.5	20
10/30/2022	10/30/22 4:15	10/30/22 13:57	537	590.93	438.61	1.9	13	585.80	445.37	1.9	10	167.61	119.93	0.5	20
10/31/2022	10/31/22 4:11	10/31/22 13:58	543	591.65	450.43	1.9	13	604.49	436.65	1.9	10	172.53	121.97	0.5	20
September Total				8,865.83	7,003.57			8,525.14	6,908.92			2,749.97	2,328.86		
October Total				15,362.98	9,193.13			15,427.59	9,140.59			4,281.88	2,463.51		
Cumulative Total				24,228.81	16,196.70			23,952.73	16,049.51			7,031.85	4,792.37		

Notes:

gpm - gallons per minute

psi - pounds per square inch

1. Injection duration indicates the total minutes of active injection per day, accounting for any downtime in injections that may have occurred throughout the day. Therefore, injection duration may be less than the difference in daily injection start and stop times indicated.

2. Carbon substrate solution is batch mixed. Batches of carbon substrate solution includes the following components in solution with Stabilized Lake Mead Water (SLMW): 0.5% molasses, 0.25% filtered Fluidized Bed Reactor (FBR) sludge, 1.25% 0.5 Molar Sodium Bicarbonate Solution, 0.001% trace mineral solution, and 5 milligrams per liter Vitamin B12.

3. Distribution water solution is batch mixed. Batches of distribution water solution includes 0.0025 pounds of Vitamin C per gallon of Stabilized Lake Mead Water (SLMW).

4. No injections were performed due to system maintenance.

Table 4
Summary of Injection Activities
Area 2 - October 2022
 Unit 4 Source Area Bioremediation Treatability Study

Study Area				Area 2 Deep											
Well ID				U4-E-07D				U4-E-09D				U4-E-010D			
Date	Injection Start Time	Injection Stop Time	Duration ⁽¹⁾	Volume Carbon Solution Injected ⁽²⁾	Volume Distribution Water Solution Injected ⁽³⁾	Average Flow Rate	Maximum Injection Pressure	Volume Carbon Solution Injected ⁽²⁾	Volume Distribution Water Solution Injected ⁽³⁾	Average Flow Rate	Maximum Injection Pressure	Volume Carbon Solution Injected ⁽²⁾	Volume Distribution Water Solution Injected ⁽³⁾	Average Flow Rate	Maximum Injection Pressure
			minutes	gallons	gallons	gpm	psi	gallons	gallons	gpm	psi	gallons	gallons	gpm	psi
10/1/2022	10/1/22 4:54	10/1/22 15:15	572	151.98	126.87	0.5	30	166.62	135.26	0.5	30	167.23	135.36	0.5	30
10/2/2022	10/2/22 4:03	10/2/22 14:20	564	172.22	122.20	0.5	30	171.03	126.12	0.5	30	165.00	127.74	0.5	30
10/3/2022 ⁽¹⁾	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
10/4/2022 ⁽¹⁾	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
10/5/2022	10/5/22 4:52	10/5/22 13:57	495	171.01	111.38	0.6	11	145.74	67.10	0.4	15	175.55	98.85	0.6	11
10/6/2022	10/6/22 4:30	10/6/22 13:50	515	161.56	109.99	0.5	10	148.21	116.87	0.5	13	143.27	104.91	0.5	13
10/7/2022	10/7/22 3:45	10/7/22 13:04	502	163.88	123.45	0.6	10	154.71	110.36	0.5	13	152.68	111.78	0.5	14
10/8/2022	10/8/22 3:55	10/8/22 13:37	522	151.25	118.80	0.5	8	154.47	126.97	0.5	12	161.38	117.73	0.5	12
10/9/2022 ⁽⁴⁾	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
10/10/2022 ⁽⁴⁾	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
10/11/2022	10/11/22 4:15	10/11/22 13:45	521	172.16	124.52	0.6	11	151.49	124.58	0.5	12	161.07	138.67	0.6	16
10/12/2022	10/12/22 3:45	10/12/22 14:10	573	185.47	127.55	0.5	13	162.63	127.43	0.5	12	159.94	122.70	0.5	14
10/13/2022	10/13/22 3:58	10/13/22 14:15	571	182.38	132.50	0.6	8	163.27	124.45	0.5	12	167.52	122.50	0.5	14
10/14/2022	10/14/22 3:52	10/14/22 13:55	557	168.24	127.12	0.5	9	169.05	133.55	0.5	12	161.19	126.54	0.5	13
10/15/2022	10/15/22 3:40	10/15/22 13:55	570	173.34	124.84	0.5	12	169.59	132.86	0.5	13	181.87	130.12	0.5	15
10/16/2022	10/16/22 3:32	10/16/22 13:33	556	169.14	130.41	0.5	10	171.92	121.22	0.5	13	174.49	124.52	0.5	15
10/17/2022	10/17/22 3:53	10/17/22 14:45	606	173.64	126.35	0.5	8	184.97	115.73	0.5	12	178.32	131.27	0.5	14
10/18/2022	10/18/22 3:29	10/18/22 14:47	630	184.08	146.26	0.5	10	175.50	135.88	0.5	13	187.71	141.34	0.5	15
10/19/2022	10/19/22 3:42	10/19/22 14:10	583	171.35	134.71	0.5	8	181.19	120.81	0.5	13	188.69	123.89	0.5	17
10/20/2022	10/20/22 3:29	10/20/22 13:17	544	171.77	120.00	0.5	11	159.83	110.23	0.5	13	171.80	121.99	0.5	16
10/21/2022 ⁽⁴⁾	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
10/22/2022	10/22/22 3:51	10/22/22 13:00	505	169.53	118.91	0.6	11	150.03	109.49	0.5	13	167.87	108.58	0.5	16
10/23/2022	10/23/22 3:50	10/23/22 13:21	526	169.03	128.12	0.6	13	168.04	116.80	0.5	14	155.66	106.27	0.5	17
10/24/2022	10/24/22 3:51	10/24/22 13:22	526	172.82	116.56	0.6	15	156.77	122.09	0.5	14	151.87	119.29	0.5	16
10/25/2022	10/25/22 3:57	10/25/22 13:28	526	153.99	122.93	0.5	16	154.59	129.97	0.5	13	153.07	131.52	0.5	16
10/26/2022	10/26/22 4:44	10/26/22 14:44	556	185.45	132.08	0.6	18	162.85	134.97	0.5	13	173.30	127.94	0.5	17
10/27/2022	10/27/22 3:48	10/27/22 13:50	557	187.16	114.48	0.5	17	171.54	118.09	0.5	13	166.93	125.69	0.5	16
10/28/2022	10/28/22 3:57	10/28/22 13:33	531	167.39	120.53	0.5	18	159.60	121.15	0.5	13	162.02	117.43	0.5	16
10/29/2022	10/29/22 4:09	10/29/22 13:59	545	163.33	126.96	0.5	18	165.11	126.50	0.5	13	172.61	123.98	0.5	16
10/30/2022	10/30/22 4:15	10/30/22 13:57	537	172.56	133.78	0.6	19	169.40	124.71	0.5	12	167.23	123.83	0.5	16
10/31/2022	10/31/22 4:11	10/31/22 13:58	543	175.07	128.03	0.6	20	173.44	120.25	0.5	12	167.08	121.43	0.5	16
September Total				2,796.76	2,227.39			2,693.95	2,339.33			2,696.94	2,327.15		
October Total				4,439.80	2,493.47			4,261.59	2,407.77			4,335.35	2,445.57		
Cumulative Total				7,236.56	4,720.86			6,955.54	4,747.10			7,032.29	4,772.72		

Notes:

gpm - gallons per minute

psi - pounds per square inch

1. Injection duration indicates the total minutes of active injection per day, accounting for any downtime in injections that may have occurred throughout the day. Therefore, injection duration may be less than the difference in daily injection start and stop times indicated.

2. Carbon substrate solution is batch mixed. Batches of carbon substrate solution includes the following components in solution with Stabilized Lake Mead Water (SLMW): 0.5% molasses, 0.25% filtered Fluidized Bed Reactor (FBR) sludge, 1.25% 0.5 Molar Sodium Bicarbonate Solution, 0.001% trace mineral solution, and 5 milligrams per liter Vitamin B12.

3. Distribution water solution is batch mixed. Batches of distribution water solution includes 0.0025 pounds of Vitamin C per gallon of Stabilized Lake Mead Water (SLMW).

4. No injections were performed due to system maintenance.

Table 5
Groundwater Analytical Results
 Unit 4 Source Area Bioremediation Treatability Study

Well	Sample Date	QC Type	Event	Screened Lithology	Screened Interval	E314.0	E300.1		Anions by E300.0/SW9065A			E350.1	E351.2	E365.1	Alkalinity by SM2320B				Dissolved Metals by SW6020						
						Perchlorate	Chlorate	Chlorite	Chloride	Nitrate (as N)	Sulfate	Ammonia (as N)	Total Kjeldahl Nitrogen (TKN)	Dissolved Phosphorus	Alkalinity as CaCO3	Bicarbonate Alkalinity as CaCO3	Carbonate Alkalinity as CaCO3	Hydroxide Alkalinity as CaCO3	Antimony	Arsenic	Cadmium	Copper	Lead	Nickel	Selenium
						µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
U4-MW-13D	4/14/2022	N	BL02	UMCf	98.2 - 108.2	1,330,000	14,700,000	<240,000	3,130,000	60,700	662,000	<117	<1,400	115 J+	128,000	128,000	<8,450	<8,450	<10.3	5.43 J	<1.50	<15.1	<8.49	<8.16	4.11 J
U4-MW-13D	9/28/2022	N	EM01	UMCf	98.2 - 108.2	401,000	5,370,000	<24,000	1,330,000	10,900	336,000 J	<117	<280	<33.3 UJ	----	----	----	----	----	----	----	----	----	----	----
U4-MW-13I	4/14/2022	N	BL02	UMCf	77.1 - 87.1	418,000	4,180,000	<24,000	943,000	7,030	1,090,000	<117	<1,400	109 J+	116,000	116,000	<8,450	<8,450	<1.03	12.6	<0.150	<1.51	<0.849	1.80 J	3.62
U4-MW-13I	9/28/2022	N	EM01	UMCf	77.1 - 87.1	233,000	1,720,000	<12,000	487,000	9,130 J	1,040,000	<117	<280	79.5 J	----	----	----	----	----	----	----	----	----	----	----
U4-MW-14D	4/13/2022	N	BL02	UMCf	97.3 - 107.3	140,000	462,000	<12,000	349,000	729 J	2,560,000	<117	<140	33.3 R	101,000	101,000	<8,450	<8,450	<1.03	21.3	<0.150	3.44 J	<0.849	9.04	3.31
U4-MW-14I	4/14/2022	N	BL02	UMCf	77.3 - 87.3	181,000	506,000	<2,400	274,000	2,490	1,410,000	<117	<140	173 J+	77,600	70,500	<8,450	<8,450	<1.03	16.6	<0.150	<1.51	<0.849	1.09 J	2.53
U4-MW-15D	4/13/2022	N	BL02	UMCf	96.0 - 106.0	141,000	2,400,000	<24,000	749,000	3,170	410,000	<117	<700	63.7 J	112,000	112,000	<8,450	<8,450	<1.03	9.66	<0.150	<1.51	<0.849	0.944 J	2.38
U4-MW-15DD	4/13/2022	N	BL02	UMCf	120.3 - 130.3	1,380	19,700	<2,400	152,000	878	214,000	<117	<140	<33.3	108,000	100,000	<8,450	<8,450	<1.03	18.8	<0.150	2.23 J	<0.849	2.78	2.15
U4-MW-15I	4/12/2022	N	BL02	UMCf	76.8 - 86.8	86,400	1,190,000	<24,000	420,000	5,590	1,070,000	<117	<140	85.9 J	233,000	----	----	----	<1.03	31.1	<0.150	<1.51	<0.849	<0.816	2.64
U4-MW-15S	4/13/2022	N	BL02	UMCf	54.8 - 64.8	3,800	36,100	<24.0	178,000	2,750	1,190,000	<117	<140	74.6 J	100,000	100,000	<8,450	<8,450	<1.03	35.0	<0.150	<1.51	<0.849	<0.816	2.71
U4-MW-16D	4/11/2022	N	BL02	UMCf	96.8 - 106.8	1,670,000	15,000,000	<240,000	3,030,000	39,300	722,000	<117	<2,800	33.3 R	119,000	119,000	<8,450	<8,450	<10.3	7.23 J	<1.50	<15.1	<8.49	<8.16	5.89 J
U4-MW-16DD	4/12/2022	N	BL02	UMCf	120.8 - 130.8	77,900	396,000	<240	229,000	569	623,000	<117	<140	87.1 J	94,500	----	----	----	<1.03	20.0	<0.150	2.29 J	<0.849	0.870 J	3.05
U4-MW-16I	4/11/2022	N	BL02	UMCf	77.0 - 87.0	366,000	1,820,000	<24,000	546,000	6,600	979,000	<117	<700	33.3 R	60,000	42,800	17,200 J	<8,450	<1.03	11.2	<0.150	<1.51	<0.849	<0.816	2.58
U4-MW-16S	4/12/2022	N	BL02	UMCf	54.8 - 64.8	9,400	64,100	<240	173,000	2,700	1,150,000	<117	<140	<33.3	64,800	----	----	----	<1.03	20.9	<0.150	<1.51	<0.849	<0.816	2.47
U4-MW-16S	4/12/2022	FD	BL02	UMCf	54.8 - 64.8	9,860	64,100	<240	171,000	2,850	1,140,000	<117	<140	33.3 R	64,400	----	----	----	<1.03	21.2	<0.150	<1.51	<0.849	<0.816	2.96

Table 5
Groundwater Analytical Results
 Unit 4 Source Area Bioremediation Treatability Study

Well	Sample Date	QC Type	Event	Screened Lithology	Screened Interval	Dissolved Metals by SW6020										Dissolved Metals by SW6010B										FIELD TESTS		
						Silver	Thallium	Uranium	Zinc	Aluminum	Barium	Beryllium	Calcium	Chromium	Cobalt	Iron	Magnesium	Manganese	Molybdenum	Phosphorus	Potassium	Sodium	Vanadium	Conductivity	Dissolved Oxygen	Ferrous Iron		
						µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mS/cm	mg/L	mg/L		
M-247-100	4/20/2022	N	BL02	UMCf	100.5 - 110.5	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	0.956	1.80	0.0 U			
M-249-100	4/20/2022	N	BL02	UMCf	99.6 - 109.6	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	34.552	0.56	0.0 U			
M-251-100	4/19/2022	N	BL02	UMCf	92.5 - 102.5	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	42.112	1.63	0.0 U			
M-251-60	4/18/2022	N	BL02	UMCf	52.3 - 62.3	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	5.163	5.64	0.0 U			
M-252	4/21/2022	N	BL02	UMCf	132.3 - 142.3	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	2.053	5.66	0.0 U			
M-253-100	4/20/2022	N	BL02	UMCf	100.8 - 110.8	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	2.393	3.04	0.0 U			
M-255-100	4/20/2022	N	BL02	UMCf	100.2 - 110.2	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	2.198	1.87	0.0 U			
U4-E-01D	4/18/2022	N	BL02	UMCf	94.7 - 109.7	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	42.734	0.85	0.0 U			
U4-E-01I	4/19/2022	N	BL02	UMCf	74.6 - 89.6	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	0.072	9.17	0.0 U			
U4-E-01I	4/19/2022	FD	BL02	UMCf	74.6 - 89.6	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----			
U4-E-02D	4/20/2022	N	BL02	UMCf	94.4 - 109.4	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	9.255	0.62	0.0 U			
U4-E-02I	4/18/2022	N	BL02	UMCf	74.4 - 89.4	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	9.309	4.25	0.0 U			
U4-E-03D	4/19/2022	N	BL02	UMCf	95.1 - 110.1	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	36.139	0.68	0.0 U			
U4-E-04D	4/19/2022	N	BL02	UMCf	95.0 - 110.0	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	22.249	1.29	0.0 U			
U4-E-04I	4/18/2022	N	BL02	UMCf	75.0 - 90.0	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	4.524	0.84	0.0 U			
U4-E-05D	4/19/2022	N	BL02	UMCf	95.0 - 110.0	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	26.037	3.43	0.0 U			
U4-E-05I	4/19/2022	N	BL02	UMCf	75.0 - 90.0	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	5.209	0.59	0.0 U			
U4-E-06D	4/11/2022	N	BL02	UMCf	95.1 - 110.1	<0.0700	<0.121	5.59	5.24 J	81.0 J	187 J	<0.330	515,000 J	11,900 J	<0.840	<18.0	255,000 J	19.9	3.31 J	25.3 J	32,800 J	1,310,000	<4.99	9.911	2.39	0.0 U		
U4-E-06I	4/11/2022	N	BL02	UMCf	73.2 - 88.2	<0.0700	<0.121	7.83	4.73 J	87.1 J	34.2	<0.330	223,000	2,270	<0.840	<18.0	88,400	8.86 J	13.6	45.1 J	23,300	624,000	17.4 J	4.282	2.10	0.0 U		
U4-E-06I	4/11/2022	FD	BL02	UMCf	73.2 - 88.2	<0.0700	<0.121	7.85	5.71 J	68.8 J	33.8	<0.330	222,000	2,260	<0.840	<18.0	87,900	8.46 J	13.9	46.2 J	23,200	622,000	15.5 J	----	----	----		
U4-E-07D	4/12/2022	N	BL02	UMCf	94.6 - 109.6	<0.700	<1.21	5.33 J	<30.2	<280	135	<1.65	1,450,000	79,000	<4.20	<90.0	634,000	22.5 J	8.85 J	<91.5	74,800	5,760,000	<25.0	28.599	1.02	0.0 U		
U4-E-07I	4/12/2022	N	BL02	UMCf	74.7 - 89.7	<0.0700	<0.121	9.05	3.42 J	117 J	29.6 J+	<0.330	157,000	15,100	<0.840	<18.0	66,000	8.86 J	18.0	194 J	23,400	1,610,000	45.7	6.791	2.78	0.0 U		
U4-E-08D	4/12/2022	N	BL02	UMCf	94.6 - 109.6	<0.700	<1.21	7.00 J	<30.2	<280	143	<1.65	1,670,000	92,600	<4.20	<90.0	737,000	54.7	10.2 J	<91.5	82,200	6,200,000	<25.0	31.747	1.11	0.0 U		
U4-E-09D	4/15/2022	N	BL02	UMCf	94.5 - 109.5	<0.700	<1.21	5.49 J	<30.2	106 J	106	<0.330	832,000	27,200	<0.840	18.8 J	360,000	23.2	<5.80	172 J	46,900	1,840,000	7.06 J	16.373	1.12	0.0 U		
U4-E-09I	4/14/2022	N	BL02	UMCf	74.9 - 89.9	<0.0700	<0.121	9.29	3.75 J	<56.1	27.1	<0.330	215,000	9,660	<0.840	<18.0	91,600	21.6	13.2	199 J	25,300	1,100,000	16.8 J	6.980	5.93	0.0 U		
U4-E-10D	4/13/2022	N	BL02	UMCf	94.5 - 109.5	<0.0700	<0.121	1.64	<3.02	102 J	112	<0.330	436,000	9,680	<0.840	<18.0	165,000	7.51 J	8.19	34.0 J	29,700	1,120,000	6.53 J	8.624	0.77	0.0 U		
U4-E-10I	4/13/2022	N	BL02	UMCf	74.2 - 89.2	<0.0700	<0.121	10.6	7.05 J	115 J	34.7	<0.330	307,000	16,100	<0.840	<18.0	133,000	7.93 J	11.6	<18.3	26,000	1,410,000	14.5 J	9.367	1.04	0.0 U		
U4-MW-01D	4/19/2022	N	BL02	UMCf	96.7 - 106.7	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	11.556	0.72	0.0 U			
U4-MW-01D	4/19/2022	N	BL02	UMCf	119.9 - 129.9	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	1.873	0.81	0.0 U			
U4-MW-01D	4/19/2022	FD	BL02	UMCf	119.9 - 129.9	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----		
U4-MW-01I	4/19/2022	N	BL02	UMCf	76.7 - 86.7	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	9.209	0.67	0.0 U			
U4-MW-01S	4/18/2022	N	BL02	UMCf	54.7 - 64.7	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	4.903	4.81	0.0 U			
U4-MW-02D	4/14/2022	N	BL02	UMCf	95.0 - 110.0	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	47.936	0.74	0.0 U			
U4-MW-02I	4/14/2022	N	BL02	UMCf	75.0 - 90.0	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	8.827	3.75	0.0 U			
U4-MW-03D	4/20/2022	N	BL02	UMCf	96.6 - 106.6	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	19.006	2.71	0.0 U			
U4-MW-03D	4/20/2022	N	BL02	UMCf	119.7 - 129.7	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	2.756	1.07	0.0 U			
U4-MW-03I	4/19/2022	N	BL02	UMCf	76.6 - 86.6	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	6.055	1.28	0.0 U			
U4-MW-03S	4/18/2022	N	BL02	UMCf	54.5 - 64.5	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	4.716	9.18	0.0 U			
U4-MW-03S	4/18/2022	FD	BL02	UMCf	54.5 - 64.5	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----		
U4-MW-04D	4/19/2022	N	BL02	UMCf	97.0 - 107.0	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	50.188	0.90	0.0 U			
U4-MW-04I	4/19/2022	N	BL02	UMCf	76.8 - 86.8	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	22.833	0.68	0.0 U			
U4-MW-05D	4/15/2022	N	BL02	UMCf	98.2 - 108.2	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	39.740	0.77	0.0 U			
U4-MW-05I	4/15/2022	N	BL02	UMCf	76.6 - 86.6	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	20.080	0.87	0.0 U			
U4-MW-06D	4/19/2022	N	BL02	UMCf	97.1 - 107.1	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----		
U4-MW-06I	4/19/2022	N	BL02	UMCf	76.5 - 86.5	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	6.356	0.75	0.0 U			
U4-MW-07D	4/15/2022	N	BL02	UMCf	86.8 - 106.5	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	10.924	4.48	0.0 U			
U4-MW-07I	4/15/2022	N	BL02	UMCf	76.8 - 86.8	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	5.556	0.59	0.0 U			
U4-MW-08D	4/13/2022	N	BL02	UMCf	98.6 - 108.6	<0.700	<1.21	10.1	<30.2	<280	144	<1.65	1,610,000	112,000	<4.20	<90.0	707,000	37.2 J	11.9 J	<91.5	102,000	7,950,000	<25.0	43.677	1.07	0.0 U		
U4-MW-08D	4/20/2022	N	BL02	UMCf	119.8 - 129.8	<0.0700	<0.121	3.24	<3.02	<56.1	19.0	<0.330	58,200	764	<0.840	<18.0	28,400	14.7	9.57	110 J	11,000	258,000	10.4 J	1.774	0.95	0.0 U		
U4-MW-08D	4/20/2022	FD	BL02	UMCf	119.8 - 129.8	<0.0700	<0.121	3.20	<3.02	<56.1	19.2	<0.330	58,000	780	<0.840	<18.0	28,400	14.6	9.89	107 J	11,100	258,000	9.34 J	----	----	----		
U4-MW-08I	4/13/2022	N	BL02	UMCf	78.0 - 88.0	<0.0700	<0.121	6.55	3.30 J	92.7 J	20.6	<0.330	107,000	8,950	<0.840	<18.0	44,400	5.20 J	18.7	25.4 J	23,000	1,300,000	23.5	8.786	1.97	0.0 U		
U4-MW-08S	4/15/2022	N	BL02	UMCf	54.9 - 64.9	<0.0700	<0.121	0.591 J	<3.02	<56.1	25.0	<0.330	165,000	519	<0.840	26.0 J	3,570	<0.934	20.1	<18.3	20,400	580,000	47.5	3.391	3.42	0.0 U		
U4-MW-09D	4/14/2022	N	BL02	UMCf	96.9 - 106.9	<0.700	<1.21	10.2	165 J	<56.1	14.2	<0.330	123,000	5,930	<0.840	<18.0	532,000	4.62 J	<1.16	<18.3	6,610	475,000	<4.99	25.834	1.79	0.0 U		
U4-MW-09D	4/14/2022	N	BL02	UMCf	119.8 - 129.8	<0.0700	<0.121	2.98	3.03 J	<56.1	27.6	<0.330	41,300	154	<0.840	18.0 J	20,000	7.39 J	9.61	221 J	7,460	181,000	9.16 J	1.339	1.49	0.0 U		
U4-MW-09I	4/14/2022	N	BL02	UMCf	76.8 - 86.8	<0.0700	<0.121	5.48	<3.02	<																		

Table 5
Groundwater Analytical Results
 Unit 4 Source Area Bioremediation Treatability Study

Well	Sample Date	QC Type	Event	Screened Lithology	Screened Interval	Dissolved Metals by SW6020				Dissolved Metals by SW6010B											FIELD TESTS					
						Silver	Thallium	Uranium	Zinc	Aluminum	Barium	Beryllium	Calcium	Chromium	Cobalt	Iron	Magnesium	Manganese	Molybdenum	Phosphorus	Potassium	Sodium	Vanadium	Conductivity	Dissolved Oxygen	Ferrous Iron
						µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mS/cm	mg/L	mg/L
U4-MW-13D	4/14/2022	N	BL02	UMCf	98.2 - 108.2	<0.700	<1.21	10.8	<30.2	375 J	173	<1.65	1,520,000	55,300	<4.20	<90.0	664,000	32.9 J	9.95 J	140 J	71,200	3,990,000	<25.0	32.518	0.90	0.0 U
U4-MW-13D	9/28/2022	N	EM01	UMCf	98.2 - 108.2	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	11.793	0.96	0.0 U
U4-MW-13I	4/14/2022	N	BL02	UMCf	77.1 - 87.1	<0.0700	<0.121	7.29	<3.02	<56.1	43.5	<0.330	395,000	20,300	<0.840	<18.0	169,000	28.6	13.8	132 J	33,100	1,640,000	9.14 J	11.607	2.38	0.0 U
U4-MW-13I	9/28/2022	N	EM01	UMCf	77.1 - 87.1	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	5.667	2.79	0.0 U
U4-MW-14D	4/13/2022	N	BL02	UMCf	97.3 - 107.3	<0.0700	<0.121	18.5	<3.02	<56.1	33.5	<0.330	561,000	308	<0.840	<18.0	152,000	79.2	41.2	<18.3	25,400	673,000	22.2	5.770	0.87	0.0 U
U4-MW-14I	4/14/2022	N	BL02	UMCf	77.3 - 87.3	<0.0700	<0.121	4.68	<3.02	<56.1	23.1	<0.330	237,000	2,150	<0.840	<18.0	52,400	19.0	16.2	191 J	25,400	596,000	13.3 J	5.720	0.77	0.0 U
U4-MW-15D	4/13/2022	N	BL02	UMCf	96.0 - 106.0	<0.0700	0.186 J	13.6	<3.02	149 J	56.0	<0.330	338,000	4,940	<0.840	21.8 J	157,000	26.1	9.77	<18.3	25,500	646,000	8.06 J	5.015	1.02	0.0 U
U4-MW-15DD	4/13/2022	N	BL02	UMCf	120.3 - 130.3	<0.0700	<0.121	4.23	<3.02	<56.1	21.3	<0.330	34,000	64.4	<0.840	162	15,400	2.57 J	10.4	<18.3	6,830	159,000	17.9 J	0.999	2.14	0.0 U
U4-MW-15I	4/12/2022	N	BL02	UMCf	76.8 - 86.8	<0.0700	<0.121	6.59	<3.02	<56.1	20.5 J+	<0.330	127,000	5,510	<0.840	24.4 J	56,500	14.9	17.8	25.2 J	22,300	897,000	18.7 J	5.348	1.45	0.0 U
U4-MW-15S	4/13/2022	N	BL02	UMCf	54.8 - 64.8	<0.0700	<0.121	4.94	<3.02	112 J	21.0	<0.330	166,000 J	268 J	<0.840	95.9 J	50,100 J	2.61 J	19.2	50.3 J	15,200 J	387,000 J	23.5	2.466	5.73	0.0 U
U4-MW-16D	4/11/2022	N	BL02	UMCf	96.8 - 106.8	<0.700	<1.21	6.64 J	44.4 J	<56.1	191	<0.330	474,000	12,600	<0.840	<18.0	240,000	12.4	4.62 J	<18.3	30,600	1,210,000	<4.99	27.119	4.03	0.0 U
U4-MW-16DD	4/12/2022	N	BL02	UMCf	120.8 - 130.8	<0.0700	<0.121	7.68	5.37 J	<56.1	24.7 J+	<0.330	114,000	922	<0.840	25.5 J	48,200	11.0	13.8	<18.3	12,500	390,000	18.9 J	2.380	1.10	0.0 U
U4-MW-16I	4/11/2022	N	BL02	UMCf	77.0 - 87.0	<0.0700	<0.121	2.26	3.91 J	<56.1	38.6	<0.330	231,000	8,620	<0.840	<18.0	76,200	2.20 J	13.7	<18.3	30,800	968,000	<4.99	6.673	8.63	0.0 U
U4-MW-16S	4/12/2022	N	BL02	UMCf	54.8 - 64.8	<0.0700	<0.121	3.64	<3.02	<56.1	22.2 J+	<0.330	169,000	427	<0.840	<18.0	37,500	2.69 J	18.3	28.9 J	18,500	409,000	15.4 J	2.712	4.29	0.0 U
U4-MW-16S	4/12/2022	FD	BL02	UMCf	54.8 - 64.8	<0.0700	<0.121	3.66	<3.02	<56.1	22.5 J+	<0.330	168,000	426	<0.840	<18.0	37,700	2.07 J	18.4	25.5 J	18,300	405,000	14.3 J	----	----	----

Table 5
Groundwater Analytical Results
 Unit 4 Source Area Bioremediation Treatability Study

Well	Sample Date	QC Type	Event	Screened Lithology	Screened Interval	FIELD TESTS						RSK175			SM2540C	SW7199	Volatile Organic Compounds by SW8260B						
						Oxidation-Reduction Potential	pH	Purge Rate	Sulfide	Temperature	Turbidity	Ethane	Ethene	Methane	Total Dissolved Solids	Chromium, Hexavalent	1,1,1,2-Tetrachloroethane	1,1,1-Trichloroethane	1,1,2,2-Tetrachloroethane	1,1,2-Trichloroethane	1,1-Dichloroethane	1,1-Dichloroethene	
						mV	SU	mL/min	mg/L	C	NTU	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
M-247-100	4/20/2022	N	BL02	UMCf	100.5 - 110.5	22.9	8.02	190	0.0 U	26.9	22.0	----	----	----	712,000	<150	----	----	----	----	----	----	----
M-249-100	4/20/2022	N	BL02	UMCf	99.6 - 109.6	140.6	6.99	120	0.0 U	27.5	60.6	----	----	----	54,000,000	77,000	----	----	----	----	----	----	----
M-251-100	4/19/2022	N	BL02	UMCf	92.5 - 102.5	212.1	7.36	100	0.0 U	26.3	17.1	----	----	----	39,900,000	96,900 J-	<0.147	<0.149	<0.133	<0.158	0.204 J	0.484 J	----
M-251-60	4/18/2022	N	BL02	UMCf	52.3 - 62.3	44.4	10.69	100	0.0 U	30.5	18.3	----	----	----	2,330,000 J	1,510 J-	<0.147	<0.149	<0.133	<0.158	<0.100	<0.188	----
M-252	4/21/2022	N	BL02	UMCf	132.3 - 142.3	142.6	8.13	100	0.0 U	29.6	9.9	----	----	----	1,410,000	32.5 J	<0.147	<0.149	<0.133	<0.158	<0.100	<0.188	----
M-253-100	4/20/2022	N	BL02	UMCf	100.8 - 110.8	36.4	8.03	60	0.0 U	25.2	21.0	----	----	----	2,130,000	598	----	----	----	----	----	----	----
M-255-100	4/20/2022	N	BL02	UMCf	100.2 - 110.2	175.7	7.89	100	0.0 U	25.1	12.0	----	----	----	1,600,000	1,350	----	----	----	----	----	----	----
U4-E-01D	4/18/2022	N	BL02	UMCf	94.7 - 109.7	167.3	7.78	100	0.0 U	26.2	8.7	----	----	----	43,600,000	87,000 J-	<0.735	<0.745	<0.665	<0.790	<0.500	<0.940	----
U4-E-01I	4/19/2022	N	BL02	UMCf	74.6 - 89.6	120.6	8.70	100	0.0 U	26.5	2.7	----	----	----	4,770,000 J	6,190 J-	<0.147	<0.149	<0.133	<0.158	<0.100	<0.188	----
U4-E-01D	4/19/2022	FD	BL02	UMCf	74.6 - 89.6	----	----	----	----	----	----	----	----	----	2,770,000 J	7,860 J-	<0.147	<0.149	<0.133	<0.158	<0.100	<0.188	----
U4-E-02D	4/20/2022	N	BL02	UMCf	94.4 - 109.4	129.9	7.36	130	0.0 U	27.0	2.0	----	----	----	10,800,000	17,400	<0.147	<0.149	<0.133	<0.158	<0.100	<0.188	----
U4-E-02I	4/18/2022	N	BL02	UMCf	74.4 - 89.4	190.6	8.46	105	0.0 U	24.6	9.8	----	----	----	4,130,000	8,910 J-	<0.147	<0.149	<0.133	<0.158	<0.100	<0.188	----
U4-E-03D	4/19/2022	N	BL02	UMCf	95.1 - 110.1	96.0	7.14	200	0.0 U	28.6	33.2	----	----	----	34,400,000	77,900 J-	<0.147	<0.149	<0.133	<0.158	0.126 J	0.465 J	----
U4-E-04D	4/19/2022	N	BL02	UMCf	95.0 - 110.0	34.2	7.19	70	0.0 U	25.5	15.1	----	----	----	24,000,000	37,500 J-	<0.147	<0.149	<0.133	<0.158	<0.100	0.223 J	----
U4-E-04I	4/18/2022	N	BL02	UMCf	75.0 - 90.0	-18.2	8.40	70	0.0 U	27.4	28.9	----	----	----	3,430,000	3,380 J-	<0.147	<0.149	<0.133	<0.158	<0.100	<0.188	----
U4-E-05D	4/19/2022	N	BL02	UMCf	95.0 - 110.0	177.7	7.33	100	0.0 U	28.8	45.2	----	----	----	28,400,000	47,900 J-	<0.147	<0.149	<0.133	<0.158	<0.100	0.271 J	----
U4-E-05I	4/19/2022	N	BL02	UMCf	75.0 - 90.0	101.8	8.45	100	0.0 U	28.4	10.5	----	----	----	4,070,000	5,710 J-	<0.147	<0.149	<0.133	<0.158	<0.100	<0.188	----
U4-E-06D	4/11/2022	N	BL02	UMCf	95.1 - 110.1	138.8	7.24	90	0.0 U	23.5	37.2	<4.07	<4.26	<2.91	9,590,000	10,800	<0.147	<0.149	<0.133	<0.158	<0.100	<0.188	----
U4-E-06I	4/11/2022	N	BL02	UMCf	73.2 - 88.2	128.1	7.47	90	0.0 U	25.8	11.6	<4.07	<4.26	<2.91	3,220,000	2,420	<0.147	<0.149	<0.133	<0.158	<0.100	<0.188	----
U4-E-06I	4/11/2022	FD	BL02	UMCf	73.2 - 88.2	----	----	----	----	----	----	<4.07	<4.26	<2.91	3,150,000	3,210	<0.147	<0.149	<0.133	<0.158	<0.100	<0.188	----
U4-E-07D	4/12/2022	N	BL02	UMCf	94.6 - 109.6	134.9	7.20	100	0.0 U	18.5	16.0	<4.07	<4.26	<2.91	37,900,000	76,300 J-	<0.147	<0.149	<0.133	<0.158	<0.100	0.682 J	----
U4-E-07I	4/12/2022	N	BL02	UMCf	74.7 - 89.7	164.9	8.12	100	0.0 U	20.2	2.8	<4.07	<4.26	<2.91	6,860,000	12,200 J	<0.147	<0.149	<0.133	<0.158	0.122 J	0.424 J	----
U4-E-08D	4/12/2022	N	BL02	UMCf	94.6 - 109.6	185.4	7.17	100	0.0 U	20.2	3.6	<4.07	<4.26	<2.91	39,500,000	85,100 J-	<0.147	<0.149	<0.133	<0.158	<0.100	0.759 J	----
U4-E-09D	4/15/2022	N	BL02	UMCf	94.5 - 109.5	131.3	7.20	100	0.0 U	26.7	5.2	<4.07	<4.26	<2.91	7,500,000	26,400 J-	<0.147	<0.149	<0.133	<0.158	<0.100	<0.188	----
U4-E-09I	4/14/2022	N	BL02	UMCf	74.9 - 89.9	42.3	7.51	100	0.0 U	25.0	53.8	<4.07	<4.26	<2.91	5,550,000	13,000	<0.147	<0.149	<0.133	<0.158	<0.100	0.401 J	----
U4-E-10D	4/13/2022	N	BL02	UMCf	94.5 - 109.5	200.4	8.07	100	0.0 U	23.0	13.1	<4.07	<4.26	<2.91	3,940,000	9,360	<0.147	<0.149	<0.133	<0.158	<0.100	0.398 J	----
U4-E-10I	4/13/2022	N	BL02	UMCf	74.2 - 89.2	223.7	7.20	100	0.0 U	21.6	17.0	<4.07	<4.26	<2.91	3,690,000	17,000	<0.147	<0.149	<0.133	<0.158	<0.100	<0.188	----
U4-MW-01D	4/19/2022	N	BL02	UMCf	96.7 - 106.7	130.5	7.14	130	0.0 U	30.0	7.9	----	----	----	7,230,000	16,500 J-	<0.147	<0.149	<0.133	<0.158	<0.100	<0.188	----
U4-MW-01DD	4/19/2022	N	BL02	UMCf	119.9 - 129.9	70.8	7.75	100	0.0 U	33.3	27.7	----	----	----	1,040,000	477 J	<0.147	<0.149	<0.133	<0.158	<0.100	<0.188	----
U4-MW-01DD	4/19/2022	FD	BL02	UMCf	119.9 - 129.9	----	----	----	----	----	----	----	----	----	1,020,000	458 J	<0.147	<0.149	<0.133	<0.158	<0.100	<0.188	----
U4-MW-01I	4/19/2022	N	BL02	UMCf	76.7 - 86.7	103.3	7.70	220	0.0 U	27.3	60.1	----	----	----	3,790,000	<150 UJ	<0.147	<0.149	<0.133	<0.158	<0.100	<0.188	----
U4-MW-01S	4/18/2022	N	BL02	UMCf	54.7 - 64.7	99.5	8.75	220	0.0 U	27.6	1501.7	----	----	----	3,130,000	1,770 J-	<0.147	<0.149	<0.133	<0.158	<0.100	<0.188	----
U4-MW-02D	4/14/2022	N	BL02	UMCf	95.0 - 110.0	206.4	7.25	100	0.0 U	26.4	5.4	----	----	----	63,700,000	95,800	<0.147	<0.149	<0.133	<0.158	0.135 J	0.735 J	----
U4-MW-02I	4/14/2022	N	BL02	UMCf	75.0 - 90.0	159.8	8.09	100	0.0 U	28.4	15.2	----	----	----	6,660,000	12,800	<0.147	<0.149	<0.133	<0.158	<0.100	0.431 J	----
U4-MW-03D	4/20/2022	N	BL02	UMCf	96.6 - 106.6	209.7	7.29	100	0.0 U	26.7	31.0	----	----	----	23,000,000	42,100	<0.147	<0.149	<0.133	<0.158	<0.100	<0.188	----
U4-MW-03DD	4/20/2022	N	BL02	UMCf	119.7 - 129.7	220.6	7.54	100	0.0 U	26.3	24.2	----	----	----	2,070,000	2,660	<0.147	<0.149	<0.133	<0.158	<0.100	<0.188	----
U4-MW-03I	4/19/2022	N	BL02	UMCf	76.6 - 86.6	57.0	8.02	60	0.0 U	30.2	8489.8	----	----	----	2,350,000	<150 UJ	<0.147	<0.149	<0.133	<0.158	<0.100	<0.188	----
U4-MW-03S	4/18/2022	N	BL02	UMCf	54.5 - 64.5	105.4	9.74	195	0.0 U	27.3	38.0	----	----	----	2,890,000	1,390 J-	<0.147	<0.149	<0.133	<0.158	<0.100	<0.188	----
U4-MW-03S	4/18/2022	FD	BL02	UMCf	54.5 - 64.5	----	----	----	----	----	----	----	----	----	2,190,000 J-	1,390 J-	<0.147	<0.149	<0.133	<0.158	<0.100	<0.188	----
U4-MW-04D	4/19/2022	N	BL02	UMCf	97.0 - 107.0	76.7	7.01	200	0.0 U	30.1	18.0	----	----	----	56,100,000	103,000 J	<0.147	<0.149	<0.133	<0.158	<0.100	0.560 J	----
U4-MW-04I	4/19/2022	N	BL02	UMCf	76.8 - 86.8	49.8	7.36	100	0.0 U	27.6	78.2	----	----	----	22,500,000	34,300 J-	<0.147	<0.149	<0.133	<0.158	<0.100	<0.188	----
U4-MW-05D	4/15/2022	N	BL02	UMCf	98.2 - 108.2	146.1	7.03	100	0.0 U	28.3	39.5	----	----	----	27,800,000	73,100 J-	<0.147	<0.149	<0.133	<0.158	0.181 J	0.659 J	----
U4-MW-05I	4/15/2022	N	BL02	UMCf	76.6 - 86.6	140.1	7.54	100	0.0 U	23.2	2057.3	----	----	----	12,900,000	42,800 J-	<0.147	<0.149	<0.133	<0.158	<0.100	0.359 J	----
U4-MW-06D	4/19/2022	N	BL02	UMCf	97.1 - 107.1	----	----	----	0.0 U	----	----	----	----	----	43,400,000	73,100 J-	<0.147	<0.149	<0.133	<0.158	0.134 J	0.315 J	----
U4-MW-06I	4/19/2022	N	BL02	UMCf	76.5 - 86.5	132.2	8.14	100	0.0 U	27.5	171.5	----	----	----	3,420,000	3,070 J-	<0.147	<0.149	<0.133	<0.158	<0.100	<0.188	----
U4-MW-07D	4/15/2022	N	BL02	UMCf	86.8 - 106.5	182.2	7.48	100	0.0 U	26.7	52.5	----	----	----	5,820,000	23,900 J+	<0.147	<0.149	<0.133	<0.158	<0.100	<0.188	----
U4-MW-07I	4/15/2022	N	BL02	UMCf	76.8 - 86.8	158.2	7.86	100	0.0 U	25.6	10.7	----	----	----	1,670,000	4,810 J+	<0.147	<0.149	<0.133	<0.158	<0.100	<0.188	----
U4-MW-08D	4/13/2022	N	BL02	UMCf	98.6 - 108.6	166.4	6.92	100	0.0 U	24.7	98.8 E	<4.07	<4.26	<2.91	48,000,000	106,000	<0.147	<0.149	<0.133	<0.158	<0.100	<0.188	----
U4-MW-08DD	4/20/2022	N	BL02	UMCf	119.8 - 129.8	5.0	7.70	70	0.0 U	24.6	62.4	<4.07	<4.26	<2.91	1,240,000	694	<0.147	<0.149	<0.133	<0.158	<0.100	<0.188	----
U4-MW-08DD	4/20/2022	FD	BL02	UMCf	119.8 - 129.8	----																	

Table 5
Groundwater Analytical Results
 Unit 4 Source Area Bioremediation Treatability Study

Well	Sample Date	QC Type	Event	Screened Lithology	Screened Interval	FIELD TESTS						RSK175			SM2540C	SW7199	Volatile Organic Compounds by SW8260B					
						Oxidation-Reduction Potential	pH	Purge Rate	Sulfide	Temperature	Turbidity	Ethane	Ethene	Methane	Total Dissolved Solids	Chromium, Hexavalent	1,1,1,2-Tetrachloroethane	1,1,1-Trichloroethane	1,1,2,2-Tetrachloroethane	1,1,2-Trichloroethane	1,1-Dichloroethane	1,1-Dichloroethane
						mV	SU	mL/min	mg/L	C	NTU	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
U4-MW-13D	4/14/2022	N	BL02	UMCf	98.2 - 108.2	136.1	6.94	100	0.0 U	25.2	85.7	<4.07	<4.26	<2.91	30,300,000	56,200	<0.147	<0.149	<0.133	<0.158	<0.100	0.565 J
U4-MW-13D	9/28/2022	N	EM01	UMCf	98.2 - 108.2	-329.7	6.65	100	0.0 U	28.9	50.9	----	----	----	6,280,000 J+	45,000	<1.47	<1.49	<1.33	<1.58	<1.00	<1.88
U4-MW-13I	4/14/2022	N	BL02	UMCf	77.1 - 87.1	127.9	7.42	100	0.0 U	23.7	2478.1	<4.07	<4.26	<2.91	8,680,000	21,900	<0.147	<0.149	<0.133	<0.158	<0.100	0.403 J
U4-MW-13I	9/28/2022	N	EM01	UMCf	77.1 - 87.1	96.9	7.52	100	0.0 U	27.2	70.5	----	----	----	2,540,000 J+	17,000	<0.147	<0.149	<0.133	<0.158	<0.100	<0.188
U4-MW-14D	4/13/2022	N	BL02	UMCf	97.3 - 107.3	161.5	7.20	100	0.0 U	26.5	50.4	<4.07	<4.26	<2.91	2,550,000	239	<0.147	<0.149	<0.133	<0.158	<0.100	0.409 J
U4-MW-14I	4/14/2022	N	BL02	UMCf	77.3 - 87.3	110.5	8.07	150	0.0 U	22.8	57.4	<4.07	<4.26	<2.91	3,220,000	2,270	<0.147	<0.149	<0.133	<0.158	<0.100	<0.188
U4-MW-15D	4/13/2022	N	BL02	UMCf	96.0 - 106.0	209.2	7.09	100	0.0 U	20.7	76.6	<4.07	<4.26	<2.91	3,490,000	5,240	<0.147	<0.149	<0.133	<0.158	<0.100	<0.188
U4-MW-15DD	4/13/2022	N	BL02	UMCf	120.3 - 130.3	123.8	8.36	100	0.0 U	18.6	82.3	<4.07	<4.26	<2.91	677,000	67.5	<0.147	<0.149	<0.133	<0.158	<0.100	<0.188
U4-MW-15I	4/12/2022	N	BL02	UMCf	76.8 - 86.8	125.1	7.95	150	0.0 U	22.6	20895.7 E	<4.07	<4.26	<2.91	4,080,000	5,010	<0.147	<0.149	<0.133	<0.158	<0.100	0.367 J
U4-MW-15S	4/13/2022	N	BL02	UMCf	54.8 - 64.8	165.2	8.11	200	0.0 U	21.5	71.7	<4.07	<4.26	<2.91	1,450,000	262	<0.147	<0.149	<0.133	<0.158	<0.100	<0.188
U4-MW-16D	4/11/2022	N	BL02	UMCf	96.8 - 106.8	165.2	7.15	100	0.0 U	23.7	84.8 E	<4.07	<4.26	<2.91	30,500,000	61,300	<0.147	<0.149	<0.133	<0.158	<0.100	0.237 J
U4-MW-16DD	4/12/2022	N	BL02	UMCf	120.8 - 130.8	121.7	7.62	100	0.0 U	18.3	35.4	<4.07	<4.26	<2.91	1,940,000	682	<0.147	<0.149	<0.133	<0.158	<0.100	<0.188
U4-MW-16I	4/11/2022	N	BL02	UMCf	77.0 - 87.0	129.8	8.36	200	0.0 U	23.5	-449448.0 E	<4.07	<4.26	<2.91	5,220,000	9,350	<0.147	<0.149	<0.133	<0.158	<0.100	<0.188
U4-MW-16S	4/12/2022	N	BL02	UMCf	54.8 - 64.8	136.6	8.80	200	0.0 U	22.3	-8.5	<4.07	8.07 J	19.8	1,990,000	365 J-	<0.147	<0.149	<0.133	<0.158	<0.100	<0.188
U4-MW-16S	4/12/2022	FD	BL02	UMCf	54.8 - 64.8	----	----	----	----	----	----	<4.07	<4.26	<2.91	2,000,000	361 J-	<0.147	<0.149	<0.133	<0.158	<0.100	<0.188

Table 5
Groundwater Analytical Results
 Unit 4 Source Area Bioremediation Treatability Study

Well	Sample Date	QC Type	Event	Screened Lithology	Screened Interval	Volatile Organic Compounds by SW8260B								Volatile Organic Compounds by SW8260B					
						1,1-Dichloropropene	1,2,3-Trichlorobenzene	1,2,3-Trichloropropane	1,2,4-Trichlorobenzene	1,2,4-Trimethylbenzene	1,2-Dibromo-3-Chloropropane	1,2-Dibromoethane	1,2-Dichlorobenzene	1,2-Dichloroethane	1,2-Dichloropropane	1,3,5-Trimethylbenzene (Mesitylene)	1,3-Dichlorobenzene	1,3-Dichloropropane	1,4-Dichlorobenzene
						µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
M-247-100	4/20/2022	N	BL02	UMCf	100.5 - 110.5	----	----	----	----	----	----	----	----	----	----	----	----	----	----
M-249-100	4/20/2022	N	BL02	UMCf	99.6 - 109.6	----	----	----	----	----	----	----	----	----	----	----	----	----	----
M-251-100	4/19/2022	N	BL02	UMCf	92.5 - 102.5	<0.142	<0.230	0.428 J	<0.481	<0.322	<0.276	<0.126	<0.107	0.346 J	<0.149	<0.104	<0.110	<0.110	<0.120
M-251-60	4/18/2022	N	BL02	UMCf	52.3 - 62.3	<0.142	<0.230	<0.237	<0.481	<0.322	<0.276	<0.126	<0.107	<0.0819	<0.149	<0.104	<0.110	<0.110	<0.120
M-252	4/21/2022	N	BL02	UMCf	132.3 - 142.3	<0.142	<0.230	<0.237	<0.481	<0.322	<0.276	<0.126	<0.107	<0.0819	<0.149	<0.104	<0.110	<0.110	<0.120
M-253-100	4/20/2022	N	BL02	UMCf	100.8 - 110.8	----	----	----	----	----	----	----	----	----	----	----	----	----	----
M-255-100	4/20/2022	N	BL02	UMCf	100.2 - 110.2	----	----	----	----	----	----	----	----	----	----	----	----	----	----
U4-E-01D	4/18/2022	N	BL02	UMCf	94.7 - 109.7	<0.710	<1.15	<1.19	<2.41	<1.38	<0.630	<0.535	<0.409	<0.745	<0.520	<0.550	<0.550	<0.600	
U4-E-01I	4/19/2022	N	BL02	UMCf	74.6 - 89.6	<0.142	<0.230	<0.237	<0.481	<0.322	<0.276	<0.126	<0.107	<0.0819	<0.149	<0.104	<0.110	<0.110	<0.120
U4-E-01I	4/19/2022	FD	BL02	UMCf	74.6 - 89.6	<0.142	<0.230	<0.237	<0.481	<0.322	<0.276	<0.126	<0.107	<0.0819	<0.149	<0.104	<0.110	<0.110	<0.120
U4-E-02D	4/20/2022	N	BL02	UMCf	94.4 - 109.4	<0.142	<0.230	<0.237	<0.481	<0.322	<0.276	<0.126	<0.107	<0.0819	<0.149	<0.104	<0.110	<0.110	<0.120
U4-E-02I	4/18/2022	N	BL02	UMCf	74.4 - 89.4	<0.142	<0.230	<0.237	<0.481	<0.322 UJ	<0.276	<0.126	<0.107	<0.0819	<0.149	<0.104 R	<0.110	<0.110	<0.120
U4-E-03D	4/19/2022	N	BL02	UMCf	95.1 - 110.1	<0.142	<0.230	0.293 J	<0.481	<0.322	<0.276	<0.126	<0.107	<0.0819	<0.149	<0.104	<0.110	<0.110	<0.120
U4-E-04D	4/19/2022	N	BL02	UMCf	95.0 - 110.0	<0.142	<0.230	<0.237	<0.481	<0.322	<0.276	<0.126	<0.107	<0.0819	<0.149	<0.104	<0.110	<0.110	<0.120
U4-E-04I	4/18/2022	N	BL02	UMCf	75.0 - 90.0	<0.142	<0.230	<0.237	<0.481	<0.322	<0.276	<0.126	<0.107	<0.0819	<0.149	<0.104	<0.110	<0.110	<0.120
U4-E-05D	4/19/2022	N	BL02	UMCf	95.0 - 110.0	<0.142	<0.230	<0.237	<0.481	<0.322	<0.276	<0.126	<0.107	<0.0819	<0.149	<0.104	<0.110	<0.110	<0.120
U4-E-05I	4/19/2022	N	BL02	UMCf	75.0 - 90.0	<0.142	<0.230	<0.237	<0.481	<0.322	<0.276	<0.126	<0.107	<0.0819	<0.149	<0.104	<0.110	<0.110	<0.120
U4-E-06D	4/11/2022	N	BL02	UMCf	95.1 - 110.1	<0.142	<0.230	<0.237	<0.481	<0.322	<0.276	<0.126	<0.107	<0.0819	<0.149	<0.104	<0.110	<0.110	<0.120
U4-E-06I	4/11/2022	N	BL02	UMCf	73.2 - 88.2	<0.142	<0.230	<0.237	<0.481	<0.322	<0.276	<0.126	<0.107	<0.0819	<0.149	<0.104	<0.110	<0.110	<0.120
U4-E-06I	4/11/2022	FD	BL02	UMCf	73.2 - 88.2	<0.142	<0.230	<0.237	<0.481	<0.322	<0.276	<0.126	<0.107	<0.0819	<0.149	<0.104	<0.110	<0.110	<0.120
U4-E-07D	4/12/2022	N	BL02	UMCf	94.6 - 109.6	0.594 J	<0.230	0.393 J	<0.481	<0.322	<0.276	<0.126	<0.107	<0.0819	<0.149	<0.104	<0.110	<0.110	<0.120
U4-E-07I	4/12/2022	N	BL02	UMCf	74.7 - 89.7	<0.142	<0.230	<0.237	<0.481	<0.322	<0.276	<0.126	<0.107	0.138 J	0.191 J	<0.104	<0.110	<0.110	<0.120
U4-E-08D	4/12/2022	N	BL02	UMCf	94.6 - 109.6	0.631 J	<0.230	0.429 J	<0.481	<0.322	<0.276	<0.126	<0.107	0.240 J	<0.149	<0.104	<0.110	<0.110	<0.120
U4-E-09D	4/15/2022	N	BL02	UMCf	94.5 - 109.5	<0.142	<0.230	<0.237	<0.481 UJ	<0.322	<0.276	<0.126	<0.107	<0.0819	<0.149	<0.104	<0.110	<0.110	<0.120
U4-E-09I	4/14/2022	N	BL02	UMCf	74.9 - 89.9	<0.142	<0.230	<0.237	<0.481	<0.322	<0.276	<0.126	<0.107	0.118 J	<0.149	<0.104	<0.110	<0.110	<0.120
U4-E-10D	4/13/2022	N	BL02	UMCf	94.5 - 109.5	<0.142	<0.230	<0.237	<0.481	<0.322	<0.276	<0.126	<0.107	0.132 J	<0.149	<0.104	<0.110	<0.110	<0.120
U4-E-10I	4/13/2022	N	BL02	UMCf	74.2 - 89.2	<0.142	<0.230	<0.237	<0.481	<0.322	<0.276	<0.126	<0.107	0.120 J	<0.149	<0.104	<0.110	<0.110	<0.120
U4-MW-01D	4/19/2022	N	BL02	UMCf	96.7 - 106.7	<0.142	<0.230	<0.237	<0.481	<0.322	<0.276	<0.126	<0.107	<0.0819	<0.149	<0.104	<0.110	<0.110	<0.120
U4-MW-01D	4/19/2022	N	BL02	UMCf	119.9 - 129.9	<0.142	<0.230	<0.237	<0.481	<0.322	<0.276	<0.126	<0.107	<0.0819	<0.149	<0.104	<0.110	<0.110	<0.120
U4-MW-01D	4/19/2022	FD	BL02	UMCf	119.9 - 129.9	<0.142	<0.230	<0.237	<0.481	<0.322	<0.276	<0.126	<0.107	<0.0819	<0.149	<0.104	<0.110	<0.110	<0.120
U4-MW-01I	4/19/2022	N	BL02	UMCf	76.7 - 86.7	<0.142	<0.230	<0.237	<0.481	<0.322	<0.276	<0.126	<0.107	<0.0819	<0.149	<0.104	<0.110	<0.110	<0.120
U4-MW-01S	4/18/2022	N	BL02	UMCf	54.7 - 64.7	<0.142	<0.230	<0.237	<0.481	<0.322	<0.276	<0.126	<0.107	<0.0819	<0.149	<0.104	<0.110	<0.110	<0.120
U4-MW-02D	4/14/2022	N	BL02	UMCf	95.0 - 110.0	<0.142	<0.230	<0.237	<0.481	<0.322	<0.276	<0.126	<0.107	0.322 J	<0.149	<0.104	<0.110	<0.110	<0.120
U4-MW-02I	4/14/2022	N	BL02	UMCf	75.0 - 90.0	<0.142	<0.230	<0.237	<0.481	<0.322	<0.276	<0.126	<0.107	0.102 J	<0.149	<0.104	<0.110	<0.110	<0.120
U4-MW-03D	4/20/2022	N	BL02	UMCf	96.6 - 106.6	<0.142	<0.230	<0.237	<0.481	<0.322	<0.276	<0.126	<0.107	<0.0819	<0.149	<0.104	<0.110	<0.110	<0.120
U4-MW-03D	4/20/2022	N	BL02	UMCf	119.7 - 129.7	<0.142	<0.230	<0.237	<0.481	<0.322	<0.276	<0.126	<0.107	<0.0819	<0.149	<0.104	<0.110	<0.110	<0.120
U4-MW-03I	4/19/2022	N	BL02	UMCf	76.6 - 86.6	<0.142	<0.230	<0.237	<0.481	<0.322	<0.276	<0.126	<0.107	<0.0819	<0.149	<0.104	<0.110	<0.110	<0.120
U4-MW-03S	4/18/2022	N	BL02	UMCf	54.5 - 64.5	<0.142	<0.230	<0.237	<0.481	<0.322	<0.276	<0.126	<0.107	<0.0819	<0.149	<0.104	<0.110	<0.110	<0.120
U4-MW-03S	4/18/2022	FD	BL02	UMCf	54.5 - 64.5	<0.142	<0.230	<0.237	<0.481	<0.322	<0.276	<0.126	<0.107	<0.0819	<0.149	<0.104	<0.110	<0.110	<0.120
U4-MW-04D	4/19/2022	N	BL02	UMCf	97.0 - 107.0	<0.142	<0.230	<0.237	<0.481	<0.322	<0.276	<0.126	<0.107	0.900 J	<0.149	<0.104	<0.110	<0.110	<0.120
U4-MW-04I	4/19/2022	N	BL02	UMCf	76.8 - 86.8	<0.142	<0.230	<0.237	<0.481	<0.322	<0.276	<0.126	<0.107	<0.0819	<0.149	<0.104	<0.110	<0.110	<0.120
U4-MW-05D	4/15/2022	N	BL02	UMCf	98.2 - 108.2	0.565 J	<0.230	<0.237	<0.481 UJ	<0.322	<0.276	<0.126	<0.107	<0.0819	<0.149	<0.104	<0.110	<0.110	<0.120
U4-MW-05I	4/15/2022	N	BL02	UMCf	76.6 - 86.6	0.311 J	<0.230	<0.237	<0.481 UJ	<0.322	<0.276	<0.126	<0.107	<0.0819	<0.149	<0.104	<0.110	<0.110	<0.120
U4-MW-06D	4/19/2022	N	BL02	UMCf	97.1 - 107.1	<0.142	<0.230	<0.237	<0.481	<0.322	<0.276	<0.126	<0.107	0.785 J	<0.149	<0.104	<0.110	<0.110	<0.120
U4-MW-06I	4/19/2022	N	BL02	UMCf	76.5 - 86.5	<0.142	<0.230	<0.237	<0.481	<0.322	<0.276	<0.126	<0.107	<0.0819	<0.149	<0.104	<0.110	<0.110	<0.120
U4-MW-07D	4/15/2022	N	BL02	UMCf	86.8 - 106.5	<0.142	<0.230	<0.237	<0.481 UJ	<0.322	<0.276	<0.126	<0.107	<0.0819	<0.149	<0.104	<0.110	<0.110	<0.120
U4-MW-07I	4/15/2022	N	BL02	UMCf	76.8 - 86.8	<0.142	<0.230	<0.237	<0.481 UJ	<0.322	<0.276	<0.126	<0.107	<0.0819	<0.149	<0.104	<0.110	<0.110	<0.120
U4-MW-08D	4/13/2022	N	BL02	UMCf	98.6 - 108.6	<0.142	<0.230	<0.237	<0.481	<0.322	<0.276	<0.126	<0.107	<0.0819	<0.149	<0.104	<0.110	<0.110	<0.120
U4-MW-08D	4/20/2022	N	BL02	UMCf	119.8 - 129.8	<0.142	<0.230	<0.237	<0.481	<0.322	<0.276	<0.126	<0.107	<0.0819	<0.149	<0.104	<0.110	<0.110	<0.120
U4-MW-08D	4/20/2022	FD	BL02	UMCf	119.8 - 129.8	<0.142	<0.230	<0.237	<0.481	<0.322	<0.276	<0.126	<0.107	<0.0819	<0.149	<0.104	<0.110	<0.110	<0.120
U4-MW-08I	4/13/2022	N	BL02	UMCf	78.0 - 88.0	<0.142	<0.230	<0.237	<0.481	<0.322	<0.276	<0.126	<0.107	0.345 J	<0.149	<0.104	<0.110	<0.110	<0.120
U4-MW-08S	4/15/2022	N	BL02	UMCf	54.9 - 64.9	<0													

Table 5
Groundwater Analytical Results
 Unit 4 Source Area Bioremediation Treatability Study

Well	Sample Date	QC Type	Event	Screened Lithology	Screened Interval	Volatile Organic Compounds by SW8260B							Volatile Organic Compounds by SW8260B						
						1,1-Dichloropropene	1,2,3-Trichlorobenzene	1,2,3-Trichloropropane	1,2,4-Trichlorobenzene	1,2,4-Trimethylbenzene	1,2-Dibromo-3-Chloropropane	1,2-Dibromoethane	1,2-Dichlorobenzene	1,2-Dichloroethane	1,2-Dichloropropane	1,3,5-Trimethylbenzene (Mesitylene)	1,3-Dichlorobenzene	1,3-Dichloropropane	1,4-Dichlorobenzene
						µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
U4-MW-13D	4/14/2022	N	BL02	UMCf	98.2 - 108.2	<0.142	<0.230	<0.237	<0.481	<0.322	<0.276	<0.126	<0.107	0.200 J	<0.149	<0.104	<0.110	<0.110	<0.120
U4-MW-13D	9/28/2022	N	EM01	UMCf	98.2 - 108.2	<1.42	<2.30	<2.37	<4.81	<3.22	<2.76	<1.26	<1.07	<0.819	<1.49	<1.04	<1.10	<1.10	<1.20
U4-MW-13I	4/14/2022	N	BL02	UMCf	77.1 - 87.1	<0.142	<0.230	<0.237	<0.481	<0.322	<0.276	<0.126	<0.107	0.133 J	<0.149	<0.104	<0.110	<0.110	<0.120
U4-MW-13I	9/28/2022	N	EM01	UMCf	77.1 - 87.1	<0.142	<0.230	<0.237	<0.481	<0.322	<0.276	<0.126	<0.107	<0.0819	<0.149	<0.104	<0.110	<0.110	<0.120
U4-MW-14D	4/13/2022	N	BL02	UMCf	97.3 - 107.3	<0.142	<0.230	<0.237	<0.481	<0.322	<0.276	<0.126	<0.107	0.134 J	<0.149	<0.104	<0.110	<0.110	<0.120
U4-MW-14I	4/14/2022	N	BL02	UMCf	77.3 - 87.3	<0.142	<0.230	<0.237	<0.481	<0.322	<0.276	<0.126	<0.107	<0.0819	<0.149	<0.104	<0.110	<0.110	<0.120
U4-MW-15D	4/13/2022	N	BL02	UMCf	96.0 - 106.0	<0.142	<0.230	<0.237	<0.481	<0.322	<0.276	<0.126	<0.107	<0.0819	<0.149	<0.104	<0.110	<0.110	<0.120
U4-MW-15DD	4/13/2022	N	BL02	UMCf	120.3 - 130.3	<0.142	<0.230	<0.237	<0.481	<0.322	<0.276	<0.126	<0.107	<0.0819	<0.149	<0.104	<0.110	<0.110	<0.120
U4-MW-15I	4/12/2022	N	BL02	UMCf	76.8 - 86.8	<0.142	<0.230	<0.237	<0.481	<0.322	<0.276	<0.126	<0.107	<0.0819	<0.149	<0.104	<0.110	<0.110	<0.120
U4-MW-15S	4/13/2022	N	BL02	UMCf	54.8 - 64.8	<0.142	<0.230	<0.237	<0.481	<0.322	<0.276	<0.126	<0.107	<0.0819	<0.149	<0.104	<0.110	<0.110	<0.120
U4-MW-16D	4/11/2022	N	BL02	UMCf	96.8 - 106.8	<0.142	<0.230	<0.237	<0.481	<0.322	<0.276	<0.126	<0.107	<0.0819	<0.149	<0.104	<0.110	<0.110	<0.120
U4-MW-16DD	4/12/2022	N	BL02	UMCf	120.8 - 130.8	<0.142	<0.230	<0.237	<0.481	<0.322	<0.276	<0.126	<0.107	<0.0819	<0.149	<0.104	<0.110	<0.110	<0.120
U4-MW-16I	4/11/2022	N	BL02	UMCf	77.0 - 87.0	<0.142	<0.230	<0.237	<0.481	<0.322	<0.276	<0.126	<0.107	<0.0819	<0.149	<0.104	<0.110	<0.110	<0.120
U4-MW-16S	4/12/2022	N	BL02	UMCf	54.8 - 64.8	<0.142	<0.230	<0.237	<0.481	<0.322	<0.276	<0.126	<0.107	<0.0819	<0.149	<0.104	<0.110	<0.110	<0.120
U4-MW-16S	4/12/2022	FD	BL02	UMCf	54.8 - 64.8	<0.142	<0.230	<0.237	<0.481	<0.322	<0.276	<0.126	<0.107	<0.0819	<0.149	<0.104	<0.110	<0.110	<0.120

Table 5
Groundwater Analytical Results
 Unit 4 Source Area Bioremediation Treatability Study

Well	Sample Date	QC Type	Event	Screened Lithology	Screened Interval	Volatile Organic Compounds by SW8260B															
						2,2-Dichloropropane	2-Butanone (MEK)	2-Chlorotoluene	2-Hexanone	4-Chlorotoluene	4-Methyl-2-Pentanone	Acetone	Benzene	Bromobenzene	Bromochloromethane	Bromodichloromethane	Bromoform	Bromomethane	Carbon Tetrachloride	Chlorobenzene	Chloroethane
						µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
M-247-100	4/20/2022	N	BL02	UMCf	100.5 - 110.5	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
M-249-100	4/20/2022	N	BL02	UMCf	99.6 - 109.6	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
M-251-100	4/19/2022	N	BL02	UMCf	92.5 - 102.5	<0.161	<1.19	<0.106	<0.787	<0.114	<0.478	<11.3	<0.0941	<0.118	<0.128	13.1	8.80	<0.605	<0.128	<0.116	<0.192
M-251-60	4/18/2022	N	BL02	UMCf	52.3 - 62.3	<0.161	<1.19	<0.106	<0.787	<0.114	<0.478	<11.3	0.132 J	<0.118	<0.128	<0.136	<0.129	<0.605	<0.128	<0.116	<0.192
M-252	4/21/2022	N	BL02	UMCf	132.3 - 142.3	<0.161	7.60 J	<0.106	<0.787	<0.114	<0.478	<11.3	<0.0941	<0.118	<0.128	<0.136	<0.129	<0.605	<0.128	<0.116	<0.192
M-253-100	4/20/2022	N	BL02	UMCf	100.8 - 110.8	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
M-255-100	4/20/2022	N	BL02	UMCf	100.2 - 110.2	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
U4-E-01D	4/18/2022	N	BL02	UMCf	94.7 - 109.7	<0.805	<5.95	<0.530	<3.94	<0.570	<2.39	<56.5	<0.471	<0.590	<0.640	5.46	9.81 J	<3.03	<0.640	<0.580	<0.960
U4-E-01I	4/19/2022	N	BL02	UMCf	74.6 - 89.6	<0.161	3.29 J	<0.106	<0.787	<0.114	<0.478	11.7 J	<0.0941	<0.118	<0.128	0.521 J	0.388 J	<0.605	<0.128	<0.116	<0.192
U4-E-01I	4/19/2022	FD	BL02	UMCf	74.6 - 89.6	<0.161	3.45 J	<0.106	0.848 J	<0.114	<0.478	11.7 J	<0.0941	<0.118	<0.128	0.509 J	<0.129	<0.605	<0.128	<0.116	<0.192
U4-E-02D	4/20/2022	N	BL02	UMCf	94.4 - 109.4	<0.161	<1.19	<0.106	<0.787	<0.114	<0.478	<11.3	<0.0941	<0.118	<0.128	3.33 J+	1.82	<0.605	<0.128	<0.116	<0.192
U4-E-02I	4/18/2022	N	BL02	UMCf	74.4 - 89.4	<0.161	<1.19	<0.106	<0.787	<0.114	<0.478	<11.3	<0.0941	<0.118 UJ	<0.128	1.65	1.65	<0.605	<0.128	<0.116	<0.192
U4-E-03D	4/19/2022	N	BL02	UMCf	95.1 - 110.1	<0.161	<1.19	<0.106	<0.787	<0.114	<0.478	<11.3	<0.0941	<0.118	<0.128	10.9	6.45	<0.605	<0.128	<0.116	<0.192
U4-E-04D	4/19/2022	N	BL02	UMCf	95.0 - 110.0	<0.161	<1.19	<0.106	<0.787	<0.114	<0.478	<11.3	<0.0941	<0.118	<0.128	2.28	0.947 J	<0.605	<0.128	<0.116	<0.192
U4-E-04I	4/18/2022	N	BL02	UMCf	75.0 - 90.0	<0.161	<1.19	<0.106	<0.787	<0.114	<0.478	<11.3	<0.0941	<0.118	<0.128	0.591 J	<0.129	<0.605	<0.128	<0.116	<0.192
U4-E-05D	4/19/2022	N	BL02	UMCf	95.0 - 110.0	<0.161	2.86 J	<0.106	<0.787	<0.114	<0.478	<11.3	<0.0941	<0.118	<0.128	4.11	3.20	<0.605	<0.128	<0.116	<0.192
U4-E-05I	4/19/2022	N	BL02	UMCf	75.0 - 90.0	<0.161	4.61 J	<0.106	<0.787	<0.114	<0.478	<11.3	<0.0941	<0.118	<0.128	1.41	1.99	<0.605	<0.128	<0.116	<0.192
U4-E-06D	4/11/2022	N	BL02	UMCf	95.1 - 110.1	<0.161	<1.19	<0.106	<0.787	<0.114	<0.478	<11.3	<0.186 J	<0.118	<0.128	0.502 J	0.185 J	<0.605	<0.128	<0.116	<0.192
U4-E-06I	4/11/2022	N	BL02	UMCf	73.2 - 88.2	<0.161	<1.19	<0.106	<0.787	<0.114	<0.478	<11.3	0.166 J	<0.118	<0.128	0.679 J	<0.129	<0.605	<0.128	<0.116	<0.192
U4-E-06I	4/11/2022	FD	BL02	UMCf	73.2 - 88.2	<0.161	<1.19	<0.106	<0.787	<0.114	<0.478	<11.3	0.153 J	<0.118	<0.128	0.605 J	<0.129	<0.605	<0.128	<0.116	<0.192
U4-E-07D	4/12/2022	N	BL02	UMCf	94.6 - 109.6	<0.161	<1.19	<0.106	<0.787	<0.114	<0.478	<11.3	<0.0941	<0.118	<0.128	3.05	<0.129	<0.605	2.62	<0.116	<0.192
U4-E-07I	4/12/2022	N	BL02	UMCf	74.7 - 89.7	<0.161	1.25 J	<0.106	<0.787	<0.114	<0.478	<11.3	<0.0941	<0.118	<0.128	1.21	0.866 J	<0.605	1.03	<0.116	<0.192
U4-E-08D	4/12/2022	N	BL02	UMCf	94.6 - 109.6	<0.161	<1.19	<0.106	<0.787	<0.114	<0.478	<11.3	<0.0941	<0.118	0.298 J	2.74	0.954 J	<0.605	2.96	<0.116	<0.192
U4-E-09D	4/15/2022	N	BL02	UMCf	94.5 - 109.5	<0.161	<1.19	<0.106	<0.787	<0.114	<0.478	<11.3	<0.0941	<0.118	<0.128	0.642 J	0.461 J	<0.605	0.533 J	<0.116	<0.192
U4-E-09I	4/14/2022	N	BL02	UMCf	74.9 - 89.9	<0.161	1.24 J	<0.106	<0.787	<0.114	<0.478	<11.3	0.188 J	<0.118	<0.128	1.00 J	0.618 J	<0.605	0.610 J	<0.116	<0.192
U4-E-10D	4/13/2022	N	BL02	UMCf	94.5 - 109.5	<0.161	<1.19	<0.106	<0.787	<0.114	<0.478	<11.3	<0.0941	<0.118	<0.128	1.14	0.707 J	<0.605	0.717 J	<0.116	<0.192
U4-E-10I	4/13/2022	N	BL02	UMCf	74.2 - 89.2	<0.161	<1.19	<0.106	<0.787	<0.114	<0.478	<11.3	<0.0941	<0.118	<0.128	0.478 J	0.509 J	<0.605	0.585 J	<0.116	<0.192
U4-MW-01D	4/19/2022	N	BL02	UMCf	96.7 - 106.7	<0.161	3.67 J	<0.106	<0.787	<0.114	<0.478	<11.3	<0.0941	<0.118	<0.128	0.564 J	0.346 J	<0.605	<0.128	<0.116	<0.192
U4-MW-01DD	4/19/2022	N	BL02	UMCf	119.9 - 129.9	<0.161	5.15 J	<0.106	<0.787	<0.114	<0.478	<11.3	<0.0941	<0.118	<0.128	0.170 J	<0.129	<0.605	<0.128	<0.116	<0.192
U4-MW-01DD	4/19/2022	FD	BL02	UMCf	119.9 - 129.9	<0.161	5.81 J	<0.106	<0.787	<0.114	<0.478	<11.3	<0.0941	<0.118	<0.128	<0.136	<0.129	<0.605	<0.128	<0.116	<0.192
U4-MW-01I	4/19/2022	N	BL02	UMCf	76.7 - 86.7	<0.161	<1.19	<0.106	<0.787	<0.114	<0.478	<11.3	<0.0941	<0.118	<0.128	0.622 J	0.371 J	<0.605	<0.128	<0.116	<0.192
U4-MW-01S	4/18/2022	N	BL02	UMCf	54.7 - 64.7	<0.161	<1.19	<0.106	<0.787	<0.114	<0.478	<11.3	<0.0941	<0.118	<0.128	0.375 J	0.147 J	<0.605	<0.128	<0.116	<0.192
U4-MW-02D	4/14/2022	N	BL02	UMCf	95.0 - 110.0	<0.161	<1.19	<0.106	<0.787	<0.114	<0.478	<11.3	<0.0941	<0.118	<0.128	9.08	5.28	<0.605	2.50	<0.116	<0.192
U4-MW-02I	4/14/2022	N	BL02	UMCf	75.0 - 90.0	<0.161	<1.19	<0.106	<0.787	<0.114	<0.478	<11.3	<0.0941	<0.118	<0.128	2.73	1.62	<0.605	0.809 J	<0.116	<0.192
U4-MW-03D	4/20/2022	N	BL02	UMCf	96.6 - 106.6	<0.161	<1.19	<0.106	<0.787	<0.114	<0.478	<11.3	<0.0941	<0.118	<0.128	1.81 J+	0.629 J	<0.605	<0.128	<0.116	<0.192
U4-MW-03DD	4/20/2022	N	BL02	UMCf	119.7 - 129.7	<0.161	3.03 J	<0.106	<0.787	<0.114	<0.478	<11.3	<0.0941	<0.118	<0.128	0.152 J	<0.129	<0.605	<0.128	<0.116	<0.192
U4-MW-03I	4/19/2022	N	BL02	UMCf	76.6 - 86.6	<0.161	17.3	<0.106	1.71 J	<0.114	<0.478	<11.3	<0.0941	<0.118	<0.128	0.846 J	0.580 J	<0.605	<0.128	<0.116	<0.192
U4-MW-03S	4/18/2022	N	BL02	UMCf	54.5 - 64.5	<0.161	<1.19	<0.106	<0.787	<0.114	<0.478	<11.3	<0.0941	<0.118 UJ	<0.128	0.176 J	<0.129	<0.605	<0.128	<0.116	<0.192
U4-MW-03S	4/18/2022	FD	BL02	UMCf	54.5 - 64.5	<0.161	<1.19	<0.106	<0.787	<0.114	<0.478	<11.3	<0.0941	<0.118 UJ	<0.128	0.182 J	<0.129	<0.605	<0.128	<0.116	<0.192
U4-MW-04D	4/19/2022	N	BL02	UMCf	97.0 - 107.0	<0.161	<1.19	<0.106	<0.787	<0.114	<0.478	<11.3	<0.0941	<0.118	<0.128	4.27	1.46	<0.605	<0.128	<0.116	<0.192
U4-MW-04I	4/19/2022	N	BL02	UMCf	76.8 - 86.8	<0.161	2.71 J	<0.106	<0.787	<0.114	<0.478	<11.3	<0.0941	<0.118	<0.128	1.86	0.968 J	<0.605	<0.128	<0.116	<0.192
U4-MW-05D	4/15/2022	N	BL02	UMCf	98.2 - 108.2	<0.161	<1.19	<0.106	<0.787	<0.114	<0.478	<11.3	<0.0941	<0.118	<0.128	14.8	8.45 J	<0.605	3.80	<0.116	<0.192
U4-MW-05I	4/15/2022	N	BL02	UMCf	76.6 - 86.6	<0.161	<1.19	<0.106	<0.787	<0.114	<0.478	<11.3	<0.0941	<0.118	<0.128	9.46	5.71 J-	<0.605	2.53	<0.116	<0.192
U4-MW-06D	4/19/2022	N	BL02	UMCf	97.1 - 107.1	<0.161	4.05 J	<0.106	<0.787	<0.114	<0.478	<11.3	<0.0941	<0.118	<0.128	10.0	5.10	<0.605	<0.128	<0.116	<0.192
U4-MW-06I	4/19/2022	N	BL02	UMCf	76.5 - 86.5	<0.161	<1.19	<0.106	<0.787	<0.114	<0.478	<11.3	0.128 J	<0.118	<0.128	0.674 J	0.297 J	<0.605	<0.128	<0.116	<0.192
U4-MW-07D	4/15/2022	N	BL02	UMCf	86.8 - 106.5	<0.161	<1.19	<0.106	<0.787	<0.114	<0.478	<11.3	<0.0941	<0.118	<0.128	1.13	0.515 J	<0.605	0.461 J	0.137 J	<0.192
U4-MW-07I	4/15/2022	N	BL02	UMCf	76.8 - 86.8	<0.161	<1.19	<0.106	<0.787	<0.114	<0.478	<11.3	<0.0941	<0.118	<0.128	0.676 J	0.206 J	<0.605	0.313 J	<0.116	<0.192
U4-MW-08D	4/13/2022	N	BL02	UMCf	98.6 - 108.6	<0.161	<1.19	<0.106	<0.787	<0.114	<0.478	<11.3	<0.0941	<0.118	<0.128	<0.136	0.452 J	<0.605	<0.128	<	

Table 5
Groundwater Analytical Results
 Unit 4 Source Area Bioremediation Treatability Study

Well	Sample Date	QC Type	Event	Screened Lithology	Screened Interval	Volatile Organic Compounds by SW8260B															
						2,2-Dichloropropane	2-Butanone (MEK)	2-Chlorotoluene	2-Hexanone	4-Chlorotoluene	4-Methyl-2-Pentanone	Acetone	Benzene	Bromobenzene	Bromochloromethane	Bromodichloromethane	Bromoform	Bromomethane	Carbon Tetrachloride	Chlorobenzene	Chloroethane
						µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
U4-MW-13D	4/14/2022	N	BL02	UMCf	98.2 - 108.2	<0.161	<1.19	<0.106	<0.787	<0.114	<0.478	<11.3	<0.0941	<0.118	<0.128	1.63	0.706 J	<0.605	1.11	<0.116	<0.192
U4-MW-13D	9/28/2022	N	EM01	UMCf	98.2 - 108.2	<1.61	<11.9	<1.06	<7.87	<1.14	<4.78	<113	<0.941	<1.18	<1.28	<1.36	<1.29	<6.05	<1.28	<1.16	<1.92
U4-MW-13I	4/14/2022	N	BL02	UMCf	77.1 - 87.1	<0.161	<1.19	<0.106	<0.787	<0.114	<0.478	<11.3	<0.0941	<0.118	<0.128	1.18	0.624 J	<0.605	0.865 J	<0.116	<0.192
U4-MW-13I	9/28/2022	N	EM01	UMCf	77.1 - 87.1	<0.161	<1.19	<0.106	<0.787	<0.114	<0.478	<11.3	0.157 J	<0.118	<0.128	0.584 J	<0.129	<0.605	0.400 J	<0.116	<0.192
U4-MW-14D	4/13/2022	N	BL02	UMCf	97.3 - 107.3	<0.161	<1.19	<0.106	<0.787	<0.114	<0.478	<11.3	<0.0941	<0.118	<0.128	0.920 J	0.628 J	<0.605	0.805 J	<0.116	<0.192
U4-MW-14I	4/14/2022	N	BL02	UMCf	77.3 - 87.3	<0.161	<1.19	<0.106	<0.787	<0.114	<0.478	<11.3	<0.0941	<0.118	<0.128	0.557 J	0.536 J	<0.605	0.537 J	<0.116	<0.192
U4-MW-15D	4/13/2022	N	BL02	UMCf	96.0 - 106.0	<0.161	<1.19	<0.106	<0.787	<0.114	<0.478	<11.3	<0.0941	<0.118	<0.128	0.402 J	<0.129	<0.605	<0.128	<0.116	<0.192
U4-MW-15DD	4/13/2022	N	BL02	UMCf	120.3 - 130.3	<0.161	<1.19	<0.106	<0.787	<0.114	<0.478	<11.3	<0.0941	<0.118	<0.128	<0.136	<0.129	<0.605	<0.128	<0.116	<0.192
U4-MW-15I	4/12/2022	N	BL02	UMCf	76.8 - 86.8	<0.161	<1.19	<0.106	<0.787	<0.114	<0.478	<11.3	<0.0941	<0.118	<0.128	0.609 J	0.428 J	<0.605	0.809 J	<0.116	<0.192
U4-MW-15S	4/13/2022	N	BL02	UMCf	54.8 - 64.8	<0.161	<1.19	<0.106	<0.787	<0.114	<0.478	<11.3	<0.0941	<0.118	<0.128	<0.136	<0.129	<0.605	<0.128	<0.116	<0.192
U4-MW-16D	4/11/2022	N	BL02	UMCf	96.8 - 106.8	<0.161	<1.19	<0.106	<0.787	<0.114	<0.478	<11.3	0.261 J	<0.118	<0.128	1.91	0.510 J	<0.605	<0.128	<0.116	<0.192
U4-MW-16DD	4/12/2022	N	BL02	UMCf	120.8 - 130.8	<0.161	<1.19	<0.106	<0.787	<0.114	<0.478	<11.3	<0.0941	<0.118	<0.128	<0.136	<0.129	<0.605	0.369 J	<0.116	<0.192
U4-MW-16I	4/11/2022	N	BL02	UMCf	77.0 - 87.0	<0.161	<1.19	<0.106	<0.787	<0.114	<0.478	<11.3	0.186 J	<0.118	<0.128	0.794 J	0.154 J	<0.605	<0.128	<0.116	<0.192
U4-MW-16S	4/12/2022	N	BL02	UMCf	54.8 - 64.8	<0.161	1.22 J	<0.106	<0.787	<0.114	<0.478	<11.3	<0.0941	<0.118	<0.128	0.323 J	<0.129	<0.605	0.365 J	<0.116	<0.192
U4-MW-16S	4/12/2022	FD	BL02	UMCf	54.8 - 64.8	<0.161	<1.19	<0.106	<0.787	<0.114	<0.478	<11.3	<0.0941	<0.118	<0.128	0.308 J	<0.129	<0.605	0.346 J	<0.116	<0.192

Table 5
Groundwater Analytical Results
 Unit 4 Source Area Bioremediation Treatability Study

Well	Sample Date	QC Type	Event	Screened Lithology	Screened Interval	Volatile Organic Compounds by SW8260B															
						Chloroform	Chloromethane	cis-1,2-Dichloroethene	cis-1,3-Dichloropropene	Dibromochloromethane	Dibromomethane	Dichlorodifluoromethane	Diisopropyl Ether (DIPE)	Ethyl Tert-Butyl Ether (ETBE)	Ethylbenzene	Hexachlorobutadiene	Isopropylbenzene	m,p-Xylene (Sum of Isomers)	Methylene Chloride	Naphthalene	
						µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
M-247-100	4/20/2022	N	BL02	UMCf	100.5 - 110.5	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
M-249-100	4/20/2022	N	BL02	UMCf	99.6 - 109.6	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
M-251-100	4/19/2022	N	BL02	UMCf	92.5 - 102.5	8,010	<0.960	<0.126	<0.111	6.51	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	1.11 J	<1.00	
M-251-60	4/18/2022	N	BL02	UMCf	52.3 - 62.3	13.5	<0.960	<0.126	<0.111	<0.140	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00	
M-252	4/21/2022	N	BL02	UMCf	132.3 - 142.3	0.192 J	<0.960	<0.126	<0.111	<0.140	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00	
M-253-100	4/20/2022	N	BL02	UMCf	100.8 - 110.8	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	
M-255-100	4/20/2022	N	BL02	UMCf	100.2 - 110.2	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	
U4-E-01D	4/18/2022	N	BL02	UMCf	94.7 - 109.7	6,650	<4.80	<0.630	<0.555	4.26 J	<0.610	<1.87	<0.525	<0.505	<0.685	<1.69	<0.525	<2.15	<2.15	<5.00	
U4-E-01I	4/19/2022	N	BL02	UMCf	74.6 - 89.6	186 J	<0.960	<0.126	<0.111	0.328 J	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00	
U4-E-01I	4/19/2022	FD	BL02	UMCf	74.6 - 89.6	280 J	<0.960	<0.126	<0.111	<0.140	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00	
U4-E-02D	4/20/2022	N	BL02	UMCf	94.4 - 109.4	1,660	<0.960	<0.126	<0.111	1.39	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	0.478 J	<1.00	
U4-E-02I	4/18/2022	N	BL02	UMCf	74.4 - 89.4	727	<0.960	<0.126	<0.111	0.956 J	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430 UJ	<0.430	<1.00 UJ	
U4-E-03D	4/19/2022	N	BL02	UMCf	95.1 - 110.1	6,390	<0.960	<0.126	<0.111	4.96	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	0.797 J	<1.00	
U4-E-04D	4/19/2022	N	BL02	UMCf	95.0 - 110.0	2,980	<0.960	<0.126	<0.111	0.812 J	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00	
U4-E-04I	4/18/2022	N	BL02	UMCf	75.0 - 90.0	433	<0.960	<0.126	<0.111	0.141 J	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00	
U4-E-05D	4/19/2022	N	BL02	UMCf	95.0 - 110.0	3,780	<0.960	<0.126	<0.111	2.06	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00	
U4-E-05I	4/19/2022	N	BL02	UMCf	75.0 - 90.0	516	<0.960	<0.126	<0.111	0.948 J	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00	
U4-E-06D	4/11/2022	N	BL02	UMCf	95.1 - 110.1	819	<0.960	<0.126	<0.111	<0.140	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00	
U4-E-06I	4/11/2022	N	BL02	UMCf	73.2 - 88.2	218	<0.960	<0.126	<0.111	<0.140	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00	
U4-E-06I	4/11/2022	FD	BL02	UMCf	73.2 - 88.2	215	<0.960	<0.126	<0.111	<0.140	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00	
U4-E-07D	4/12/2022	N	BL02	UMCf	94.6 - 109.6	5,980	<0.960	<0.126	<0.111	1.08	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	0.637 J	<1.00	
U4-E-07I	4/12/2022	N	BL02	UMCf	74.7 - 89.7	1,140	<0.960	<0.126	<0.111	0.715 J	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00	
U4-E-08D	4/12/2022	N	BL02	UMCf	94.6 - 109.6	7,120	<0.960	<0.126	<0.111	1.00 J	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	0.819 J	<1.00	
U4-E-09D	4/15/2022	N	BL02	UMCf	94.5 - 109.5	1,450	<0.960	<0.126	<0.111	0.209 J	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00 UJ	
U4-E-09I	4/14/2022	N	BL02	UMCf	74.9 - 89.9	1,240	<0.960	<0.126	<0.111	0.576 J	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00	
U4-E-10D	4/13/2022	N	BL02	UMCf	94.5 - 109.5	704 J+	<0.960	<0.126	<0.111	0.612 J	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00	
U4-E-10I	4/13/2022	N	BL02	UMCf	74.2 - 89.2	1,330	<0.960	<0.126	<0.111	0.441 J	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00	
U4-MW-01D	4/19/2022	N	BL02	UMCf	96.7 - 106.7	608	<0.960	<0.126	<0.111	0.274 J	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00	
U4-MW-01DD	4/19/2022	N	BL02	UMCf	119.9 - 129.9	21.2	<0.960	<0.126	<0.111	0.190 J	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00	
U4-MW-01DD	4/19/2022	FD	BL02	UMCf	119.9 - 129.9	20.3	<0.960	<0.126	<0.111	<0.140	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00	
U4-MW-01I	4/19/2022	N	BL02	UMCf	76.7 - 86.7	395	<0.960	<0.126	<0.111	0.259 J	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00	
U4-MW-01S	4/18/2022	N	BL02	UMCf	54.7 - 64.7	56.8	<0.960	<0.126	<0.111	<0.140	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00	
U4-MW-02D	4/14/2022	N	BL02	UMCf	95.0 - 110.0	8,990	<0.960	<0.126	<0.111	3.00	0.473 J	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	1.47 J	<1.00	
U4-MW-02I	4/14/2022	N	BL02	UMCf	75.0 - 90.0	1,380	<0.960	<0.126	<0.111	1.22	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00	
U4-MW-03D	4/20/2022	N	BL02	UMCf	96.6 - 106.6	2,270	<0.960	<0.126	<0.111	0.605 J	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00	
U4-MW-03DD	4/20/2022	N	BL02	UMCf	119.7 - 129.7	173	<0.960	<0.126	<0.111	<0.140	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00	
U4-MW-03I	4/19/2022	N	BL02	UMCf	76.6 - 86.6	277	<0.960	<0.126	<0.111	0.457 J	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00	
U4-MW-03S	4/18/2022	N	BL02	UMCf	54.5 - 64.5	45.1	<0.960	<0.126	<0.111	<0.140	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00	
U4-MW-03S	4/18/2022	FD	BL02	UMCf	54.5 - 64.5	44.1	<0.960	<0.126	<0.111	<0.140	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00	
U4-MW-04D	4/19/2022	N	BL02	UMCf	97.0 - 107.0	6,140	<0.960	<0.126	<0.111	1.42	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	0.856 J	<1.00	
U4-MW-04I	4/19/2022	N	BL02	UMCf	76.8 - 86.8	1,830	<0.960	<0.126	<0.111	0.749 J	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00	
U4-MW-05D	4/15/2022	N	BL02	UMCf	98.2 - 108.2	6,320	<0.960	<0.126	<0.111	7.16	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00 UJ	
U4-MW-05I	4/15/2022	N	BL02	UMCf	76.6 - 86.6	3,530	<0.960	<0.126	<0.111	4.75	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00 UJ	
U4-MW-06D	4/19/2022	N	BL02	UMCf	97.1 - 107.1	4,840	<0.960	<0.126	<0.111	3.82	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	1.58 J	<1.00	
U4-MW-06I	4/19/2022	N	BL02	UMCf	76.5 - 86.5	217	<0.960	<0.126	<0.111	0.273 J	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00	
U4-MW-07D	4/15/2022	N	BL02	UMCf	86.8 - 106.5	1,330	<0.960	<0.126	<0.111	0.410 J	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00 UJ	
U4-MW-07I	4/15/2022	N	BL02	UMCf	76.8 - 86.8	373	<0.960	<0.126	<0.111	0.189 J	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00 UJ	
U4-MW-08D	4/13/2022	N	BL02	UMCf	98.6 - 108.6	10,300 J+	<0.960	<0.126	<0.111	0.370 J	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00	
U4-MW-08DD	4/20/2022	N	BL02	UMCf	119.8 - 129.8	90.2	<0.960	<0.126	<0.111	<0.140	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00	
U4-MW-08DD	4/20/2022	FD	BL02	UMCf	119.8 - 129.8	85.4	<0.960	<0.126	<0.111	<0.140	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00	
U4																					

Table 5
Groundwater Analytical Results
 Unit 4 Source Area Bioremediation Treatability Study

Well	Sample Date	QC Type	Event	Screened Lithology	Screened Interval	Volatile Organic Compounds by SW8260B														
						Chloroform	Chloromethane	cis-1,2-Dichloroethene	cis-1,3-Dichloropropene	Dibromochloromethane	Dibromomethane	Dichlorodifluoromethane	Diisopropyl Ether (DIPE)	Ethyl Tert-Butyl Ether (ETBE)	Ethylbenzene	Hexachlorobutadiene	Isopropylbenzene	m,p-Xylene (Sum of Isomers)	Methylene Chloride	Naphthalene
						µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
U4-MW-13D	4/14/2022	N	BL02	UMCf	98.2 - 108.2	3,460	<0.960	<0.126	<0.111	0.639 J	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00
U4-MW-13D	9/28/2022	N	EM01	UMCf	98.2 - 108.2	1,270	<9.60	<1.26	<1.11	<1.40	<1.22	<3.74	<1.05	<1.01	<1.37	<3.37	<1.05	<4.30	5.02 J	<10.0
U4-MW-13I	4/14/2022	N	BL02	UMCf	77.1 - 87.1	1,350	<0.960	<0.126	<0.111	0.618 J	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00
U4-MW-13I	9/28/2022	N	EM01	UMCf	77.1 - 87.1	154 J-	<0.960	<0.126	<0.111	0.164 J	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	2.01 J
U4-MW-14D	4/13/2022	N	BL02	UMCf	97.3 - 107.3	110 J	<0.960	<0.126	<0.111	0.561 J	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00
U4-MW-14I	4/14/2022	N	BL02	UMCf	77.3 - 87.3	157	<0.960	<0.126	<0.111	0.471 J	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00
U4-MW-15D	4/13/2022	N	BL02	UMCf	96.0 - 106.0	407 J+	<0.960	<0.126	<0.111	<0.140	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00
U4-MW-15DD	4/13/2022	N	BL02	UMCf	120.3 - 130.3	13.2 J+	<0.960	<0.126	<0.111	<0.140	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00
U4-MW-15I	4/12/2022	N	BL02	UMCf	76.8 - 86.8	705	<0.960	<0.126	<0.111	0.447 J	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00
U4-MW-15S	4/13/2022	N	BL02	UMCf	54.8 - 64.8	9.07 J+	<0.960	<0.126	<0.111	<0.140	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00
U4-MW-16D	4/11/2022	N	BL02	UMCf	96.8 - 106.8	3,310	<0.960	<0.126	<0.111	0.533 J	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00
U4-MW-16DD	4/12/2022	N	BL02	UMCf	120.8 - 130.8	121	<0.960	<0.126	<0.111	<0.140	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00
U4-MW-16I	4/11/2022	N	BL02	UMCf	77.0 - 87.0	424	<0.960	<0.126	<0.111	0.256 J	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00
U4-MW-16S	4/12/2022	N	BL02	UMCf	54.8 - 64.8	12.8	<0.960	<0.126	<0.111	0.363 J	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00
U4-MW-16S	4/12/2022	FD	BL02	UMCf	54.8 - 64.8	12.3	<0.960	<0.126	<0.111	<0.140	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00

Table 5
Groundwater Analytical Results
 Unit 4 Source Area Bioremediation Treatability Study

Well	Sample Date	QC Type	Event	Screened Lithology	Screened Interval	Volatile Organic Compounds by SW8260B														
						n-Butylbenzene	n-Propylbenzene	o-Xylene	p-Cymene (p-Isopropyltoluene)	sec-Butylbenzene	Styrene	tert-Amyl Methyl Ether	tert-Butyl Alcohol	tert-Butyl Methyl Ether (MTBE)	tert-Butylbenzene	Tetrachloroethene (PCE)	Toluene	trans-1,2-Dichloroethene	trans-1,3-Dichloropropene	Trichloroethene (TCE)
						µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
M-247-100	4/20/2022	N	BL02	UMCf	100.5 - 110.5	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
M-249-100	4/20/2022	N	BL02	UMCf	99.6 - 109.6	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
M-251-100	4/19/2022	N	BL02	UMCf	92.5 - 102.5	<0.157	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	<4.06	<0.101	<0.127	<0.300	<0.278	<0.149	<0.118	0.907 J
M-251-60	4/18/2022	N	BL02	UMCf	52.3 - 62.3	<0.157	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	<4.06	<0.101	<0.127	<0.300	<0.278	<0.149	<0.118	<0.190
M-252	4/21/2022	N	BL02	UMCf	132.3 - 142.3	<0.157	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	<4.06	<0.101	<0.127	<0.300	0.292 J	<0.149	<0.118	<0.190
M-253-100	4/20/2022	N	BL02	UMCf	100.8 - 110.8	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
M-255-100	4/20/2022	N	BL02	UMCf	100.2 - 110.2	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
U4-E-01D	4/18/2022	N	BL02	UMCf	94.7 - 109.7	<0.785 UJ	<0.497	<0.870	<0.600	<0.625	<0.590 UJ	<0.975	<20.3 UJ	<0.505	<0.635	<1.50	<1.39	<0.745	<0.590	<0.950
U4-E-01I	4/19/2022	N	BL02	UMCf	74.6 - 89.6	<0.157	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	6.58	<0.101	<0.127	<0.300	0.471 J	<0.149	<0.118	<0.190
U4-E-01I	4/19/2022	FD	BL02	UMCf	74.6 - 89.6	<0.157	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	5.05	<0.101	<0.127	<0.300	0.330 J	<0.149	<0.118	<0.190
U4-E-02D	4/20/2022	N	BL02	UMCf	94.4 - 109.4	<0.157	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	<4.06	<0.101	<0.127	<0.300	0.644 J	<0.149	<0.118	<0.190
U4-E-02I	4/18/2022	N	BL02	UMCf	74.4 - 89.4	<0.157 UJ	<0.0993 UJ	<0.174 UJ	<0.120	<0.125 UJ	<0.118 R	<0.195	<4.06	<0.101	<0.127	<0.300	<0.278	<0.149	<0.118	0.260 J
U4-E-03D	4/19/2022	N	BL02	UMCf	95.1 - 110.1	<0.157	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	6.74	<0.101	<0.127	<0.300	0.333 J	<0.149	<0.118	0.609 J
U4-E-04D	4/19/2022	N	BL02	UMCf	95.0 - 110.0	<0.157	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	5.71	<0.101	<0.127	<0.300	0.341 J	<0.149	<0.118	0.460 J
U4-E-04I	4/18/2022	N	BL02	UMCf	75.0 - 90.0	<0.157	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	4.31 J	<0.101	<0.127	<0.300	<0.278	<0.149	<0.118	<0.190
U4-E-05D	4/19/2022	N	BL02	UMCf	95.0 - 110.0	<0.157	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	<4.06	<0.101	<0.127	<0.300	0.513 J	<0.149	<0.118	0.429 J
U4-E-05I	4/19/2022	N	BL02	UMCf	75.0 - 90.0	<0.157	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	<4.06	<0.101	<0.127	<0.300	<0.278	<0.149	<0.118	<0.190
U4-E-06D	4/11/2022	N	BL02	UMCf	95.1 - 110.1	<0.157	<0.0993	<0.174	<0.120	<0.125	<0.118 R	<0.195	<4.06	<0.101	<0.127	<0.300	<0.278	<0.149	<0.118	<0.190
U4-E-06I	4/11/2022	N	BL02	UMCf	73.2 - 88.2	<0.157	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	<4.06	<0.101	<0.127	<0.300	<0.278	<0.149	<0.118	<0.190
U4-E-06I	4/11/2022	FD	BL02	UMCf	73.2 - 88.2	<0.157	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	<4.06	<0.101	<0.127	<0.300	<0.278	<0.149	<0.118	<0.190
U4-E-07D	4/12/2022	N	BL02	UMCf	94.6 - 109.6	<0.157	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	4.41 J	<0.101	<0.127	<0.300	3.53	<0.149	<0.118	0.745 J
U4-E-07I	4/12/2022	N	BL02	UMCf	74.7 - 89.7	<0.157	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	13.0	<0.101	<0.127	<0.300	<0.278	<0.149	<0.118	0.259 J
U4-E-08D	4/12/2022	N	BL02	UMCf	94.6 - 109.6	<0.157	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	5.12	<0.101	<0.127	<0.300	1.49	<0.149	<0.118	0.807 J
U4-E-09D	4/15/2022	N	BL02	UMCf	94.5 - 109.5	<0.157	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	<4.06	<0.101	<0.127	<0.300	0.672 J	<0.149	<0.118	0.211 J
U4-E-09I	4/14/2022	N	BL02	UMCf	74.9 - 89.9	<0.157	<0.0993	0.220 J	<0.120	<0.125	<0.118	<0.195	12.7	<0.101	<0.127	<0.300	0.454 J	<0.149	<0.118	0.223 J
U4-E-10D	4/13/2022	N	BL02	UMCf	94.5 - 109.5	<0.157	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	<4.06	<0.101	<0.127	<0.300	<0.278	<0.149	<0.118	0.235 J
U4-E-10I	4/13/2022	N	BL02	UMCf	74.2 - 89.2	<0.157	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	<4.06	<0.101	<0.127	<0.300	<0.278	<0.149	<0.118	<0.190
U4-MW-01D	4/19/2022	N	BL02	UMCf	96.7 - 106.7	<0.157	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	7.15	<0.101	<0.127	<0.300	<0.278	<0.149	<0.118	<0.190
U4-MW-01DD	4/19/2022	N	BL02	UMCf	119.9 - 129.9	<0.157	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	<4.06	<0.101	<0.127	<0.300	<0.278	<0.149	<0.118	<0.190
U4-MW-01DD	4/19/2022	FD	BL02	UMCf	119.9 - 129.9	<0.157	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	<4.06	<0.101	<0.127	<0.300	<0.278	<0.149	<0.118	<0.190
U4-MW-01I	4/19/2022	N	BL02	UMCf	76.7 - 86.7	<0.157	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	<4.06	<0.101	<0.127	<0.300	<0.278	<0.149	<0.118	<0.190
U4-MW-01S	4/18/2022	N	BL02	UMCf	54.7 - 64.7	<0.157	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	<4.06	<0.101	<0.127	<0.300	<0.278	<0.149	<0.118	<0.190
U4-MW-02D	4/14/2022	N	BL02	UMCf	95.0 - 110.0	<0.157	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	5.42	<0.101	<0.127	<0.300	<0.278	<0.149	<0.118	0.883 J
U4-MW-02I	4/14/2022	N	BL02	UMCf	75.0 - 90.0	<0.157	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	<4.06	<0.101	<0.127	<0.300	<0.278	<0.149	<0.118	0.222 J
U4-MW-03D	4/20/2022	N	BL02	UMCf	96.6 - 106.6	<0.157	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	5.74 J	<0.101	<0.127	<0.300	<0.278	<0.149	<0.118	0.208 J
U4-MW-03DD	4/20/2022	N	BL02	UMCf	119.7 - 129.7	<0.157	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	<4.06	<0.101	<0.127	<0.300	0.285 J	<0.149	<0.118	<0.190
U4-MW-03I	4/19/2022	N	BL02	UMCf	76.6 - 86.6	<0.157	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	4.28 J	<0.101	<0.127	<0.300	0.798 J	<0.149	<0.118	<0.190
U4-MW-03S	4/18/2022	N	BL02	UMCf	54.5 - 64.5	<0.157	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	<4.06	<0.101	<0.127	<0.300	<0.278	<0.149	<0.118	<0.190
U4-MW-03S	4/18/2022	FD	BL02	UMCf	54.5 - 64.5	<0.157	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	<4.06	<0.101	<0.127	<0.300	<0.278	<0.149	<0.118	<0.190
U4-MW-04D	4/19/2022	N	BL02	UMCf	97.0 - 107.0	<0.157	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	5.59	<0.101	<0.127	<0.300	<0.278	<0.149	<0.118	0.805 J
U4-MW-04I	4/19/2022	N	BL02	UMCf	76.8 - 86.8	<0.157	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	10.8	<0.101	<0.127	<0.300	0.375 J	<0.149	<0.118	0.225 J
U4-MW-05D	4/15/2022	N	BL02	UMCf	98.2 - 108.2	<0.157	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	<4.06	<0.101	<0.127	<0.300	<0.278	<0.149	<0.118	0.920 J
U4-MW-05I	4/15/2022	N	BL02	UMCf	76.6 - 86.6	<0.157	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	<4.06	<0.101	<0.127	<0.300	<0.278	<0.149	<0.118	0.500 J
U4-MW-06D	4/19/2022	N	BL02	UMCf	97.1 - 107.1	<0.157	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	<4.06	<0.101	<0.127	<0.300	<0.278	<0.149	<0.118	0.524 J
U4-MW-06I	4/19/2022	N	BL02	UMCf	76.5 - 86.5	<0.157	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	<4.06	<0.101	<0.127	<0.300	0.332 J	<0.149	<0.118	<0.190
U4-MW-07D	4/15/2022	N	BL02	UMCf	86.8 - 106.8	<0.157	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	5.04 J	<0.101	<0.127	<0.300	<0.278	<0.149	<0.118	0.191 J
U4-MW-07I	4/15/2022	N	BL02	UMCf	76.8 - 86.8	<0.157	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	<4.06	<0.101	<0.127	<0.300	<0.278	<0.149	<0.118	<0.190
U4-MW-08D	4/13/2022	N	BL02	UMCf	98.6 - 108.6	<0.157	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	8.05	<0.101	<0.127	2.63	<0.278	<0.149	<0.118	<0.190
U4-MW-08DD	4/20/2022	N	BL02	UMCf	119.8 - 129.8	<0.157	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	<4.06	<0.101	<0.127	<0.300	0.486 J	<0.149	<0.118	<0.190
U4-MW-08DD	4/20/2022	FD	BL02	UMCf	119.8 - 129.8	<0.157	<0.0993													

Table 5
Groundwater Analytical Results
 Unit 4 Source Area Bioremediation Treatability Study

Well	Sample Date	QC Type	Event	Screened Lithology	Screened Interval	Volatile Organic Compounds by SW8260B														
						n-Butylbenzene	n-Propylbenzene	o-Xylene	p-Cymene (p-Isopropyltoluene)	sec-Butylbenzene	Styrene	tert-Amyl Methyl Ether	tert-Butyl Alcohol	tert-Butyl Methyl Ether (MTBE)	tert-Butylbenzene	Tetrachloroethene (PCE)	Toluene	trans-1,2-Dichloroethene	trans-1,3-Dichloropropene	Trichloroethene (TCE)
						µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
U4-MW-13D	4/14/2022	N	BL02	UMCf	98.2 - 108.2	<0.157	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	7.16	<0.101	<0.127	<0.300	<0.278	<0.149	<0.118	0.456 J
U4-MW-13D	9/28/2022	N	EM01	UMCf	98.2 - 108.2	<1.57	<0.993	<1.74	<1.20	<1.25	<1.18	<1.95	<40.6	<1.01	<1.27	<3.00	<2.78	<1.49	<1.18	<1.90
U4-MW-13I	4/14/2022	N	BL02	UMCf	77.1 - 87.1	<0.157	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	4.13 J	<0.101	<0.127	<0.300	<0.278	<0.149	<0.118	0.291 J
U4-MW-13I	9/28/2022	N	EM01	UMCf	77.1 - 87.1	<0.157	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	<4.06	<0.101	<0.127	<0.300	0.395 J	<0.149	<0.118	<0.190
U4-MW-14D	4/13/2022	N	BL02	UMCf	97.3 - 107.3	<0.157	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	<4.06	<0.101	<0.127	<0.300	<0.278	<0.149	<0.118	0.295 J
U4-MW-14I	4/14/2022	N	BL02	UMCf	77.3 - 87.3	<0.157	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	6.75	<0.101	<0.127	<0.300	<0.278	<0.149	<0.118	<0.190
U4-MW-15D	4/13/2022	N	BL02	UMCf	96.0 - 106.0	<0.157	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	<4.06	<0.101	<0.127	<0.300	<0.278	<0.149	<0.118	<0.190
U4-MW-15DD	4/13/2022	N	BL02	UMCf	120.3 - 130.3	<0.157	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	4.48 J	<0.101	<0.127	<0.300	<0.278	<0.149	<0.118	<0.190
U4-MW-15I	4/12/2022	N	BL02	UMCf	76.8 - 86.8	<0.157	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	<4.06	<0.101	<0.127	<0.300	<0.278	<0.149	<0.118	0.215 J
U4-MW-15S	4/13/2022	N	BL02	UMCf	54.8 - 64.8	<0.157	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	<4.06	<0.101	<0.127	<0.300	<0.278	<0.149	<0.118	<0.190
U4-MW-16D	4/11/2022	N	BL02	UMCf	96.8 - 106.8	<0.157	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	<4.06	<0.101	<0.127	<0.300	<0.278	<0.149	<0.118	0.534 J
U4-MW-16DD	4/12/2022	N	BL02	UMCf	120.8 - 130.8	<0.157	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	<4.06	<0.101	<0.127	<0.300	<0.278	<0.149	<0.118	<0.190
U4-MW-16I	4/11/2022	N	BL02	UMCf	77.0 - 87.0	<0.157	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	<4.06	<0.101	<0.127	<0.300	<0.278	<0.149	<0.118	<0.190
U4-MW-16S	4/12/2022	N	BL02	UMCf	54.8 - 64.8	<0.157	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	<4.06	<0.101	<0.127	<0.300	<0.278	<0.149	<0.118	<0.190
U4-MW-16S	4/12/2022	FD	BL02	UMCf	54.8 - 64.8	<0.157	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	<4.06	<0.101	<0.127	<0.300	<0.278	<0.149	<0.118	<0.190

Table 5
Groundwater Analytical Results
 Unit 4 Source Area Bioremediation Treatability Study

Well	Sample Date	QC Type	Event	Screened Lithology	Screened Interval	Volatile Organic Compounds by SW8260B			SW9060A/ SM5310B	Volatile Fatty Acids by AM23G										
						Trichlorofluoromethane	Vinyl Chloride	Xylenes, Total		Total Organic Carbon	3-Methylbutanoic Acid	Acetic Acid	Butyric Acid	Formic Acid	Hexanoic Acid	i-Hexanoic Acid	Lactic Acid	Pentanoic Acid	Propionic Acid	Pyruvic Acid
						µg/L	µg/L	µg/L		µg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
M-247-100	4/20/2022	N	BL02	UMCf	100.5 - 110.5	----	----	----	----	----	----	----	----	----	----	----	----	----	----	
M-249-100	4/20/2022	N	BL02	UMCf	99.6 - 109.6	----	----	----	----	----	----	----	----	----	----	----	----	----	----	
M-251-100	4/19/2022	N	BL02	UMCf	92.5 - 102.5	<0.160	<0.234	<0.174	1,410 J+	----	----	----	----	----	----	----	----	----	----	
M-251-60	4/18/2022	N	BL02	UMCf	52.3 - 62.3	<0.160	<0.234	<0.174	1,590 J+	----	----	----	----	----	----	----	----	----	----	
M-252	4/21/2022	N	BL02	UMCf	132.3 - 142.3	<0.160	<0.234	<0.174	520 J	----	----	----	----	----	----	----	----	----	----	
M-253-100	4/20/2022	N	BL02	UMCf	100.8 - 110.8	----	----	----	----	----	----	----	----	----	----	----	----	----	----	
M-255-100	4/20/2022	N	BL02	UMCf	100.2 - 110.2	----	----	----	----	----	----	----	----	----	----	----	----	----	----	
U4-E-01D	4/18/2022	N	BL02	UMCf	94.7 - 109.7	<0.800	<1.17	<0.870	1,030 J+	----	----	----	----	----	----	----	----	----	----	
U4-E-01I	4/19/2022	N	BL02	UMCf	74.6 - 89.6	<0.160	<0.234	<0.174	2,420 J+	----	----	----	----	----	----	----	----	----	----	
U4-E-01I	4/19/2022	FD	BL02	UMCf	74.6 - 89.6	<0.160	<0.234	<0.174	2,670 J+	----	----	----	----	----	----	----	----	----	----	
U4-E-02D	4/20/2022	N	BL02	UMCf	94.4 - 109.4	<0.160	<0.234	<0.174	1,540 J+	----	----	----	----	----	----	----	----	----	----	
U4-E-02I	4/18/2022	N	BL02	UMCf	74.4 - 89.4	<0.160	<0.234	<0.174	1,240 J+	----	----	----	----	----	----	----	----	----	----	
U4-E-03D	4/19/2022	N	BL02	UMCf	95.1 - 110.1	<0.160	<0.234	<0.174	1,660 J+	----	----	----	----	----	----	----	----	----	----	
U4-E-04D	4/19/2022	N	BL02	UMCf	95.0 - 110.0	<0.160	<0.234	<0.174	1,380 J+	----	----	----	----	----	----	----	----	----	----	
U4-E-04I	4/18/2022	N	BL02	UMCf	75.0 - 90.0	<0.160	<0.234	<0.174	863 J	----	----	----	----	----	----	----	----	----	----	
U4-E-05D	4/19/2022	N	BL02	UMCf	95.0 - 110.0	<0.160	<0.234	<0.174	1,070 J+	----	----	----	----	----	----	----	----	----	----	
U4-E-05I	4/19/2022	N	BL02	UMCf	75.0 - 90.0	<0.160	<0.234	<0.174	1,110 J+	----	----	----	----	----	----	----	----	----	----	
U4-E-06D	4/11/2022	N	BL02	UMCf	95.1 - 110.1	<0.160	<0.234	<0.174	605 J	----	----	----	----	----	----	----	----	----	----	
U4-E-06I	4/11/2022	N	BL02	UMCf	73.2 - 88.2	<0.160	<0.234	<0.174	863 J	----	----	----	----	----	----	----	----	----	----	
U4-E-06I	4/11/2022	FD	BL02	UMCf	73.2 - 88.2	<0.160	<0.234	<0.174	909 J	----	----	----	----	----	----	----	----	----	----	
U4-E-07D	4/12/2022	N	BL02	UMCf	94.6 - 109.6	<0.160	<0.234	<0.174	3,200 J	----	----	----	----	----	----	----	----	----	----	
U4-E-07I	4/12/2022	N	BL02	UMCf	74.7 - 89.7	<0.160	<0.234	<0.174	2,760 J	----	----	----	----	----	----	----	----	----	----	
U4-E-08D	4/12/2022	N	BL02	UMCf	94.6 - 109.6	<0.160	<0.234	<0.174	3,170 J	----	----	----	----	----	----	----	----	----	----	
U4-E-09D	4/15/2022	N	BL02	UMCf	94.5 - 109.5	<0.160	<0.234	<0.174	875 J	----	----	----	----	----	----	----	----	----	----	
U4-E-09I	4/14/2022	N	BL02	UMCf	74.9 - 89.9	<0.160	<0.234	0.220 J	1,280 J	----	----	----	----	----	----	----	----	----	----	
U4-E-10D	4/13/2022	N	BL02	UMCf	94.5 - 109.5	<0.160	<0.234	<0.174	766 J	----	----	----	----	----	----	----	----	----	----	
U4-E-10I	4/13/2022	N	BL02	UMCf	74.2 - 89.2	<0.160	<0.234	<0.174	1,790 J	----	----	----	----	----	----	----	----	----	----	
U4-MW-01D	4/19/2022	N	BL02	UMCf	96.7 - 106.7	<0.160	<0.234	<0.174	952 J	----	----	----	----	----	----	----	----	----	----	
U4-MW-01DD	4/19/2022	N	BL02	UMCf	119.9 - 129.9	<0.160	<0.234	<0.174	1,120 J+	----	----	----	----	----	----	----	----	----	----	
U4-MW-01DD	4/19/2022	FD	BL02	UMCf	119.9 - 129.9	<0.160	<0.234	<0.174	1,080 J+	----	----	----	----	----	----	----	----	----	----	
U4-MW-01I	4/19/2022	N	BL02	UMCf	76.7 - 86.7	<0.160	<0.234	<0.174	1,160 J+	----	----	----	----	----	----	----	----	----	----	
U4-MW-01S	4/18/2022	N	BL02	UMCf	54.7 - 64.7	<0.160	<0.234	<0.174	972 J	----	----	----	----	----	----	----	----	----	----	
U4-MW-02D	4/14/2022	N	BL02	UMCf	95.0 - 110.0	<0.160	<0.234	<0.174	1,570 J	----	----	----	----	----	----	----	----	----	----	
U4-MW-02I	4/14/2022	N	BL02	UMCf	75.0 - 90.0	<0.160	<0.234	<0.174	1,100 J+	----	----	----	----	----	----	----	----	----	----	
U4-MW-03D	4/20/2022	N	BL02	UMCf	96.6 - 106.6	<0.160	<0.234	<0.174	964 J	----	----	----	----	----	----	----	----	----	----	
U4-MW-03DD	4/20/2022	N	BL02	UMCf	119.7 - 129.7	<0.160	<0.234	<0.174	999 J	----	----	----	----	----	----	----	----	----	----	
U4-MW-03I	4/19/2022	N	BL02	UMCf	76.6 - 86.6	<0.160	<0.234	<0.174	3,300 J+	----	----	----	----	----	----	----	----	----	----	
U4-MW-03S	4/18/2022	N	BL02	UMCf	54.5 - 64.5	<0.160	<0.234	<0.174	1,200 J+	----	----	----	----	----	----	----	----	----	----	
U4-MW-03S	4/18/2022	FD	BL02	UMCf	54.5 - 64.5	<0.160	<0.234	<0.174	1,320 J+	----	----	----	----	----	----	----	----	----	----	
U4-MW-04D	4/19/2022	N	BL02	UMCf	97.0 - 107.0	<0.160	<0.234	<0.174	7,260 J+	----	----	----	----	----	----	----	----	----	----	
U4-MW-04I	4/19/2022	N	BL02	UMCf	76.8 - 86.8	<0.160	<0.234	<0.174	1,530 J+	----	----	----	----	----	----	----	----	----	----	
U4-MW-05D	4/15/2022	N	BL02	UMCf	98.2 - 108.2	<0.160	<0.234	<0.174	1,710 J	----	----	----	----	----	----	----	----	----	----	
U4-MW-05I	4/15/2022	N	BL02	UMCf	76.6 - 86.6	<0.160	<0.234	<0.174	1,460 J+	----	----	----	----	----	----	----	----	----	----	
U4-MW-06D	4/19/2022	N	BL02	UMCf	97.1 - 107.1	<0.160	<0.234	<0.174	1,350 J+	----	----	----	----	----	----	----	----	----	----	
U4-MW-06I	4/19/2022	N	BL02	UMCf	76.5 - 86.5	<0.160	<0.234	<0.174	1,190 J+	----	----	----	----	----	----	----	----	----	----	
U4-MW-07D	4/15/2022	N	BL02	UMCf	86.8 - 106.8	<0.160	<0.234	<0.174	631 J	----	----	----	----	----	----	----	----	----	----	
U4-MW-07I	4/15/2022	N	BL02	UMCf	76.8 - 86.8	<0.160	<0.234	<0.174	2,760 J+	----	----	----	----	----	----	----	----	----	----	
U4-MW-08D	4/13/2022	N	BL02	UMCf	98.6 - 108.6	<0.160	<0.234	<0.174	3,420 J	----	----	----	----	----	----	----	----	----	----	
U4-MW-08DD	4/20/2022	N	BL02	UMCf	119.8 - 129.8	<0.160	<0.234	<0.174	670 J	----	----	----	----	----	----	----	----	----	----	
U4-MW-08DD	4/20/2022	FD	BL02	UMCf	119.8 - 129.8	<0.160	<0.234	<0.174	672 J	----	----	----	----	----	----	----	----	----	----	
U4-MW-08I	4/13/2022	N	BL02	UMCf	78.0 - 88.0	<0.160	0.413 J	<0.174	1,740 J	----	----	----	----	----	----	----	----	----	----	
U4-MW-08S	4/15/2022	N	BL02	UMCf	54.9 - 64.9	<0.160	<0.234	<0.174	1,190 J+	----	----	----	----	----	----	----	----	----	----	
U4-MW-09D	4/14/2022	N	BL02	UMCf	96.9 - 106.9	<0.160	<0.234	<0.174	1,590 J	----	----	----	----	----	----	----	----	----	----	
U4-MW-09DD	4/14/2022	N	BL02	UMCf	119.8 - 129.8	<0.160	<0.234	<0.174	493 J	----	----	----	----	----	----	----	----	----	----	
U4-MW-09I	4/14/2022	N	BL02	UMCf	76.8 - 86.8	<0.160	<0.234	0.326 J	1,090 J+	----	----	----	----	----	----	----	----	----	----	
U4-MW-09S	4/14/2022	N	BL02	UMCf	55.3 - 65.3	<0.160	<0.234	<0.174	892 J	----	----	----	----	----	----	----	----	----	----	
U4-MW-10D	4/14/2022	N	BL02	UMCf	96.9 - 106.9	<0.160	<0.234	<0.174	1,020 J+	----	----	----	----	----	----	----	----	----	----	
U4-MW-10I	4/14/2022	N	BL02	UMCf	77.1 - 87.1	<0.160	<0.234	<0.174	1,200 J+	----	----	----	----	----	----	----	----	----	----	
U4-MW-11D	4/15/2022	N	BL02	UMCf	97.4 - 107.4	<0.160	<0.234	<0.174	3,440 J+	<6.1	25 J	<5.8	460	<5.8	<5.6	<5.3	<5.6	<5.3	<6.0	
U4-MW-11D	9/26/2022	N	EM01	UMCf	97.4 - 107.4	<8.00	<11.7	<8.70	20,200 J+	----	----	----	----	----	----	----	----	----	----	
U4-MW-11I	4/14/2022	N	BL02	UMCf	77.0 - 87.0	<0.160	<0.234	<0.174	1,040 J+	<1.2	3.6 J	<1.2	91	<1.2	<1.1	<1.1	<1.1	<1.1	<1.2	
U4-MW-11I	9/26/2022	N	EM01	UMCf	77.0 - 87.0	<0.160	<0.234	<0.174	208,000	----	----	----	----	----	----	----	----	----	----	
U4-MW-11I	9/26/2022	FD	EM01	UMCf	77.0 - 87.0	<0.160	<0.234	<0.174	201,000	----	----	----	----	----	----	----	----	----	----	
U4-MW-12D	4/15/2022	N	BL02	UMCf	97.1 - 107.1	<0.160	<0.234	<0.174	1,440 J+	<6.1	26 J	<5.8	460	<5.8	43 J	<5.3	<5.6	<5.3	<6.0	
U4-MW-12D	9/27/2022	N	EM01	UMCf	97.1 - 107.1	<3.20	<4.68	<3.48	903 J	----	----	----	----	----	----	----	----	----	----	
U4-MW-12I	4/14/2022	N	BL02	UMCf	76.8 - 86.8	<0.160	<0.234	<0.174	1,630 J	<6.1	<12	<5.8	240	<5.8	<5.6	<5.3	<5.6	<5.3	<6.0	
U4-MW-12I	4/14/2022	FD	BL02	UMCf	76.8 - 86.8	<0.160	<0.234	<0.174	1,930 J	<6.1	<12	<5.8	220	<5.8	<5.6	<5.3	<5.6	<5.3	<6.0	
U4-MW-12I	9/27/2022	N	EM01	UMCf	76.8 - 86.8	<0.160	<0.234	<0.174	1,440 J+	----	----	----	----	----	----	----	----	----	----	

Table 5
Groundwater Analytical Results
 Unit 4 Source Area Bioremediation Treatability Study

Well	Sample Date	QC Type	Event	Screened Lithology	Screened Interval	Volatile Organic Compounds by SW8260B			SW9060A/ SM5310B	Volatile Fatty Acids by AM23G										
						Trichlorofluoromethane	Vinyl Chloride	Xylenes, Total		Total Organic Carbon	3-Methylbutanoic Acid	Acetic Acid	Butyric Acid	Formic Acid	Hexanoic Acid	i-Hexanoic Acid	Lactic Acid	Pentanoic Acid	Propionic Acid	Pyruvic Acid
						µg/L	µg/L	µg/L		µg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
U4-MW-13D	4/14/2022	N	BL02	UMCf	98.2 - 108.2	<0.160	<0.234	<0.174	1,640 J	<12	27 J	<12	490	<12	<11	<11	<11	<11	<12	
U4-MW-13D	9/28/2022	N	EM01	UMCf	98.2 - 108.2	<1.60	<2.34	<1.74	58,400	----	----	----	----	----	----	----	----	----	----	
U4-MW-13I	4/14/2022	N	BL02	UMCf	77.1 - 87.1	<0.160	<0.234	<0.174	1,080 J+	<3.0	17 J	<2.9	240	<2.9	<2.8	21 J	<2.8	<2.6	<3.0	
U4-MW-13I	9/28/2022	N	EM01	UMCf	77.1 - 87.1	<0.160	<0.234	<0.174	2,450 J+	----	----	----	----	----	----	----	----	----	----	
U4-MW-14D	4/13/2022	N	BL02	UMCf	97.3 - 107.3	<0.160	<0.234	<0.174	1,220 J+	----	----	----	----	----	----	----	----	----	----	
U4-MW-14I	4/14/2022	N	BL02	UMCf	77.3 - 87.3	<0.160	<0.234	<0.174	1,090 J+	----	----	----	----	----	----	----	----	----	----	
U4-MW-15D	4/13/2022	N	BL02	UMCf	96.0 - 106.0	<0.160	<0.234	<0.174	1,240 J	----	----	----	----	----	----	----	----	----	----	
U4-MW-15DD	4/13/2022	N	BL02	UMCf	120.3 - 130.3	<0.160	<0.234	<0.174	532 J	----	----	----	----	----	----	----	----	----	----	
U4-MW-15I	4/12/2022	N	BL02	UMCf	76.8 - 86.8	<0.160	<0.234	<0.174	1,440 J	----	----	----	----	----	----	----	----	----	----	
U4-MW-15S	4/13/2022	N	BL02	UMCf	54.8 - 64.8	<0.160	<0.234	<0.174	848 J	----	----	----	----	----	----	----	----	----	----	
U4-MW-16D	4/11/2022	N	BL02	UMCf	96.8 - 106.8	<0.160	<0.234	<0.174	1,340 J	----	----	----	----	----	----	----	----	----	----	
U4-MW-16DD	4/12/2022	N	BL02	UMCf	120.8 - 130.8	<0.160	<0.234	<0.174	827 J	----	----	----	----	----	----	----	----	----	----	
U4-MW-16I	4/11/2022	N	BL02	UMCf	77.0 - 87.0	<0.160	<0.234	<0.174	950 J	----	----	----	----	----	----	----	----	----	----	
U4-MW-16S	4/12/2022	N	BL02	UMCf	54.8 - 64.8	<0.160	<0.234	<0.174	1,070 J+	----	----	----	----	----	----	----	----	----	----	
U4-MW-16S	4/12/2022	FD	BL02	UMCf	54.8 - 64.8	<0.160	<0.234	<0.174	931 J	----	----	----	----	----	----	----	----	----	----	

Notes:

FD - Field duplicate

E - Field instrument error.

J - The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

J- - The result is an estimated quantity, but the result may be biased low.

J+ - The result is an estimated quantity, but the result may be biased high.

mg/L - milligrams per liter

µg/L - micrograms per liter

N - Normal field sample

R - The data are unusable. The sample results are rejected due to serious deficiencies in meeting QC criteria. The analyte may or may not be present in the sample.

UMCf- Upper Muddy Creek Formation

< - The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.

-- Not tested.

Table 6
Tracer Dye Analytical Results
 Unit 4 Source Area Bioremediation Treatability Study

Location	Sample Date	Sample ID	Event	Eosine				Fluorescein				Rhodamine WT (RWT)		Rhodamine WT (RWT)		Sulforhodamine B (SRB)		Sulforhodamine B (SRB)	
				Charcoal		Groundwater		Charcoal		Groundwater		Charcoal		Groundwater		Charcoal		Groundwater	
				Peak(nm)	Conc.(ppb)	Peak(nm)	Conc.(ppb)	Peak(nm)	Conc.(ppb)	Peak(nm)	Conc.(ppb)	Peak(nm)	Conc.(ppb)	Peak(nm)	Conc.(ppb)	Peak(nm)	Conc.(ppb)	Peak(nm)	Conc.(ppb)
M-251-100	4/19/2022	M-251-100-BL02	BL02	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
M-251-100	9/20/2022	M-251-100-INJ	INJ	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
M-251-60	4/18/2022	M-251-60-BL02	BL02	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
M-251-60	9/20/2022	M-251-60-INJ	INJ	ND	ND	ND	ND	ND	ND	ND	ND	566.5	3.70	ND	ND	ND	ND	ND	ND
M-252	4/21/2022	M-252-BL02	BL02	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
M-252	9/20/2022	M-252-INJ	INJ	ND	ND	ND	ND	ND	ND	ND	ND	567.7	9.28	571.8 **	72.4	ND	ND	ND	ND
U4-E-01D	4/18/2022	U4-E-01D-BL02	BL02	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	583.8 **	2.31
U4-E-01I	4/19/2022	U4-E-01I-BL02	BL02	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	581.8	4.97
U4-E-02D	4/20/2022	U4-E-02D-BL02	BL02	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
U4-E-02I	4/18/2022	U4-E-02I-BL02	BL02	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
U4-E-03D	4/19/2022	U4-E-03D-BL02	BL02	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
U4-E-04D	4/19/2022	U4-E-04D-BL02	BL02	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
U4-E-04I	4/18/2022	U4-E-04I-BL02	BL02	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
U4-E-05D	4/19/2022	U4-E-05D-BL02	BL02	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
U4-E-05I	4/19/2022	U4-E-05I-BL02	BL02	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
U4-E-06D	4/11/2022	U4-E-06D-BL02	BL02	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
U4-E-06I	4/11/2022	U4-E-06I-BL02	BL02	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
U4-E-07D	4/12/2022	U4-E-07D-BL02	BL02	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
U4-E-07I	4/12/2022	U4-E-07I-BL02	BL02	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
U4-E-08D	4/12/2022	U4-E-08D-BL02	BL02	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
U4-E-09D	4/15/2022	U4-E-09D-BL02	BL02	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
U4-E-09I	4/14/2022	U4-E-09I-BL02	BL02	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
U4-E-10D	4/13/2022	U4-E-10D-BL02	BL02	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
U4-E-10I	4/13/2022	U4-E-10I-BL02	BL02	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
U4-MW-01D	4/19/2022	U4-MW-01D-BL02	BL02	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
U4-MW-01D	9/24/2022	U4-MW-01D-INJ	INJ	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	577.2	1.71	ND	ND
U4-MW-01DD	4/19/2022	U4-MW-01DD-BL02	BL02	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	586.2 **	5.88
U4-MW-01DD	9/20/2022	U4-MW-01DD-INJ	INJ	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	579.1	5.65	581.9	0.897
U4-MW-01I	4/19/2022	U4-MW-01I-BL02	BL02	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
U4-MW-01I	9/24/2022	U4-MW-01I-INJ	INJ	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	578.3	7.13	585.5 **	10.7
U4-MW-01S	4/18/2022	U4-MW-01S-BL02	BL02	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	583.6	1.33
U4-MW-01S	9/20/2022	U4-MW-01S-INJ	INJ	ND	ND	ND	ND	ND	ND	ND	15.1	ND	ND	ND	ND	576.2	1.34	ND	ND
U4-MW-02D	4/14/2022	U4-MW-02D-BL02	BL02	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
U4-MW-02I	4/14/2022	U4-MW-02I-BL02	BL02	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
U4-MW-03D	4/20/2022	U4-MW-03D-BL02	BL02	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
U4-MW-03D	9/22/2022	U4-MW-03D-INJ	INJ	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
U4-MW-03DD	4/20/2022	U4-MW-03DD-BL02	BL02	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
U4-MW-03DD	9/22/2022	U4-MW-03DD-INJ	INJ	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
U4-MW-03I	4/19/2022	U4-MW-03I-BL02	BL02	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
U4-MW-03I	9/22/2022	U4-MW-03I-INJ	INJ	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
U4-MW-03S	4/18/2022	U4-MW-03S-BL02	BL02	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
U4-MW-03S	9/22/2022	U4-MW-03S-INJ	INJ	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
U4-MW-04D	4/19/2022	U4-MW-04D-BL02	BL02	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
U4-MW-04D	9/22/2022	U4-MW-04D-INJ	INJ	ND	ND	ND	ND	ND	ND	ND	ND	565.8 **	2.81	574.6	24.2	ND	ND	ND	ND
U4-MW-04I	4/19/2022	U4-MW-04I-BL02	BL02	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
U4-MW-04I	9/22/2022	U4-MW-04I-INJ	INJ	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
U4-MW-05D	4/15/2022	U4-MW-05D-BL02	BL02	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
U4-MW-05I	4/15/2022	U4-MW-05I-BL02	BL02	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
U4-MW-06D	4/19/2022	U4-MW-06D-BL02	BL02	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
U4-MW-06D	9/21/2022	U4-MW-06D-INJ	INJ	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
U4-MW-06I	4/19/2022	U4-MW-06I-BL02	BL02	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
U4-MW-06I	9/21/2022	U4-MW-06I-INJ	INJ	ND	ND	ND	ND	514.6	0.834	ND	ND	568.8 *	1.43	ND	ND	ND	ND	ND	ND
U4-MW-07D	4/15/2022	U4-MW-07D-BL02	BL02	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
U4-MW-07D	9/21/2022	U4-MW-07D-INJ	INJ	ND	ND	ND	ND	516	2590	507.2	ND	ND	ND	ND	ND	578	464	581.6	2.92
U4-MW-07I	4/15/2022	U4-MW-07I-BL02	BL02	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
U4-MW-07I	9/21/2022	U4-MW-07I-INJ	INJ	ND	ND	ND	ND	515.2	162	507.1	36.9	ND	ND	ND	ND	579.1	104	586.1 **	5.54
U4-MW-08D	4/13/2022	U4-MW-08D-BL02	BL02	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
U4-MW-08D	9/20/2022	U4-MW-08D-INJ	INJ	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---

Table 6
Tracer Dye Analytical Results
 Unit 4 Source Area Bioremediation Treatability Study

Location	Sample Date	Sample ID	Event	Eosine				Fluorescein				Rhodamine WT (RWT)		Rhodamine WT (RWT)		Sulforhodamine B (SRB)		Sulforhodamine B (SRB)	
				Charcoal		Groundwater		Charcoal		Groundwater		Charcoal		Groundwater		Charcoal		Groundwater	
				Peask(nm)	Conc.(ppb)	Peask(nm)	Conc.(ppb)	Peask(nm)	Conc.(ppb)	Peask(nm)	Conc.(ppb)	Peask(nm)	Conc.(ppb)	Peask(nm)	Conc.(ppb)	Peask(nm)	Conc.(ppb)	Peask(nm)	Conc.(ppb)
U4-MW-08DD	4/20/2022	U4-MW-08DD-BL02	BL02	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
U4-MW-08I	4/13/2022	U4-MW-08I-BL02	BL02	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
U4-MW-08I	9/20/2022	U4-MW-08I-INJ	INJ	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
U4-MW-08S	4/15/2022	U4-MW-08S-BL02	BL02	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
U4-MW-08S	9/20/2022	U4-MW-08S-INJ	INJ	ND	ND	ND	ND	ND	ND	ND	ND	566.2 *	0.924	ND	ND	ND	ND	ND	ND
U4-MW-09D	4/14/2022	U4-MW-09D-BL02	BL02	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
U4-MW-09DD	4/14/2022	U4-MW-09DD-BL02	BL02	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
U4-MW-09DD	9/20/2022	U4-MW-09DD-INJ	INJ	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
U4-MW-09I	4/14/2022	U4-MW-09I-BL02	BL02	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
U4-MW-09S	4/14/2022	U4-MW-09S-BL02	BL02	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
U4-MW-09S	9/20/2022	U4-MW-09S-INJ	INJ	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
U4-MW-10D	4/14/2022	U4-MW-10D-BL02	BL02	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
U4-MW-10D	9/20/2022	U4-MW-10D-INJ	INJ	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
U4-MW-10I	4/14/2022	U4-MW-10I-BL02	BL02	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
U4-MW-10I	9/20/2022	U4-MW-10I-INJ	INJ	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
U4-MW-11D	4/15/2022	U4-MW-11D-BL02	BL02	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	586.7 **	24.5
U4-MW-11D	9/26/2022	U4-MW-11D-EM01	EM01	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	584.2 **	7.58
U4-MW-11I	4/14/2022	U4-MW-11I-BL02	BL02	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
U4-MW-11I	9/26/2022	U4-MW-11I-EM01	EM01	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	586.6 **	21.1
U4-MW-12D	4/15/2022	U4-MW-12D-BL02	BL02	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
U4-MW-12D	9/27/2022	U4-MW-12D-EM01	EM01	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	585.3 **	39.9
U4-MW-12I	4/14/2022	U4-MW-12I-BL02	BL02	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
U4-MW-12I	9/27/2022	U4-MW-12I-EM01	EM01	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	587.0 **	4.07
U4-MW-13D	4/14/2022	U4-MW-13D-BL02	BL02	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
U4-MW-13D	9/28/2022	U4-MW-13D-EM01	EM01	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	586.2 **	12.9
U4-MW-13I	4/14/2022	U4-MW-13I-BL02	BL02	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
U4-MW-13I	9/28/2022	U4-MW-13I-EM01	EM01	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	586.2 **	7.80
U4-MW-14D	4/13/2022	U4-MW-14D-BL02	BL02	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
U4-MW-14D	9/20/2022	U4-MW-14D-INJ	INJ	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
U4-MW-14I	4/14/2022	U4-MW-14I-BL02	BL02	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
U4-MW-14I	9/20/2022	U4-MW-14I-INJ	INJ	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
U4-MW-15D	4/13/2022	U4-MW-15D-BL02	BL02	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
U4-MW-15D	9/19/2022	U4-MW-15D-INJ	INJ	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
U4-MW-15DD	4/13/2022	U4-MW-15DD-BL02	BL02	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
U4-MW-15DD	9/19/2022	U4-MW-15DD-INJ	INJ	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
U4-MW-15I	4/12/2022	U4-MW-15I-BL02	BL02	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
U4-MW-15I	9/19/2022	U4-MW-15I-INJ	INJ	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
U4-MW-15S	4/13/2022	U4-MW-15S-BL02	BL02	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
U4-MW-15S	9/19/2022	U4-MW-15S-INJ	INJ	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
U4-MW-16D	4/11/2022	U4-MW-16D-BL02	BL02	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
U4-MW-16D	9/19/2022	U4-MW-16D-INJ	INJ	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
U4-MW-16DD	4/12/2022	U4-MW-16DD-BL02	BL02	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
U4-MW-16DD	9/19/2022	U4-MW-16DD-INJ	INJ	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
U4-MW-16I	4/11/2022	U4-MW-16I-BL02	BL02	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
U4-MW-16I	9/19/2022	U4-MW-16I-INJ	INJ	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
U4-MW-16S	4/12/2022	U4-MW-16S-BL02	BL02	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
U4-MW-16S	9/19/2022	U4-MW-16S-INJ	INJ	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---

Notes:
 ND No dye detected
 * A fluorescence peak is present that does not meet all the criteria for a positive dye result. However, it has been calculated as though it was the tracer dye.
 ** A fluorescence peak is present that does not meet all the criteria for this dye. However, it has been calculated as a positive dye result.
 --- Not tested
 ppb parts per billion
 nm nanometers