

TECHNICAL MEMORANDUM

To: Nevada Environmental Response Trust

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

From: Chris Hayes and Dana Grady

Date: July 21, 2023

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 May 2023 toward successfully implementing the Unit 4 Source Area In-Situ Bioremediation (ISB) Treatability Study.

Task Progress Update: May 2023

Task M21 – Unit 4 Source Area ISB Treatability Study

- Current Status –

Phase 2 of the Unit 4 Source Area ISB Treatability Study is ongoing. Since start-up, a substantial dataset has been generated that indicates successful reduction of total dissolved solids (TDS) concentrations in Area 1 as part of the initial TDS reduction period as well as the occurrence of active in-situ bioremediation (ISB) processes in Area 2. Although the effectiveness monitoring program is ongoing and a detailed analysis of the treatability study results will be provided in the final Unit 4 Source Area In-Situ Bioremediation Treatability Study Results Report, valuable data have been collected thus far to properly evaluate the treatability study objectives and allow for a detailed technology review in the Feasibility Study. A layout map and construction details of all injection, monitoring, and extraction wells are provided on Figure 1 and in Table 1, respectively. Operations, maintenance, and monitoring activities completed during May 2023 are summarized below.

- Operations and Maintenance

- Area 1 –The first phase of the treatability study for Area 1 consisted of a total dissolved solids (TDS) reduction period prior to the injection of a carbon substrate due to the presence of elevated TDS concentrations in groundwater in the Area 1 deep zone. This phase included the injection of clean water (formerly known as stabilized Lake Mead water [SLMW]) in a pulsed manner and continuous groundwater extraction 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 TDS reduction period began on September 8, 2022 in the Area 1 deep zone. Once TDS concentrations were below the TDS goal of 21,000 mg/L

for three consecutive events, a baseline groundwater sampling event was performed and the second phase of the treatability study, which included the start-up of carbon injections into Area 1 intermediate and deep zones, was initiated. The baseline groundwater sampling event was performed in March 2023 and the carbon injections began on April 6, 2023.

The ISB injection process into Area 1 consists of daily-pulsed injections of a carbon substrate solution, followed by daily injections of anaerobic distribution water (clean water amended with Vitamin C). The carbon substrate solution consists of 0.5 percent molasses solution, 0.5 molar sodium bicarbonate solution, trace mineral solution, and vitamin B12. The carbon substrate solution also contains filtered biosolids collected from the on-site fluidized bed reactors. The macronutrient solution consisting of urea and diammonium phosphate is not currently being added to the injectate solution to minimize precipitate formation. The macronutrient solution may be added in the future if required based on effectiveness monitoring results. Summaries of Area 1 extractions and injections are provided in Tables 2 and 3, respectively. Specific details of ongoing operations in May 2023 include the following:

- Area 1 Intermediate Zone – A total of 82,883 gallons of groundwater was extracted from two extraction wells screened within Area 1 intermediate zone while approximately 34,650 gallons of carbon solution and 26,382 gallons of distribution water were injected into two injection wells. A notable decline in extraction rates was observed in May 2023, with extraction rates reducing from an average of 1.6 gallons per minute (gpm) to an average of 0.5 gpm. A slight increase in injection pressure was observed at injection well U4-E-05I, with the maximum injection pressures increasing from 25 pounds per square inch (psi) in early May 2023 to 32 psi in late May 2023.
- Area 1 Deep Zone – Approximately 21,393 gallons of groundwater were extracted from one extraction well screened within the Area 1 deep zone, while approximately 20,065 gallons of carbon solution and 15,319 gallons of distribution water were injected into four Area 1 deep injection wells. A slight increase in injection pressure was also observed at injection well U4-E-05D, with the maximum injection pressures increasing from 24 psi in early May 2023 to 35 psi in late May 2023.
- Filtered biosolids were unable to be collected from May 25 through May 31 due to active equipment repairs being completed by ETI, and as a result, biosolids were not included in the carbon substrate solution during this period.
- Area 2 – Because TDS concentrations in Area 2 were lower than Area 1 and averaged approximately 19,500 mg/L during baseline sampling, ISB injection/extraction activities were implemented without an initial TDS reduction step. Carbon substrate solution/water injection and groundwater extraction operations in both the intermediate and deep zones within Area 2 began on September 13, 2022 and are ongoing. The injection process consists of daily-pulsed injections of a carbon substrate solution, followed by daily injections of anaerobic distribution water (clean water amended with Vitamin C). The carbon substrate solution currently consists of 0.5 percent molasses solution, 0.5 molar sodium bicarbonate solution, trace mineral solution, and vitamin B12. The carbon substrate solution also initially contained filtered biosolids collected from the on-site fluidized bed reactors. The addition of the biosolids in the carbon substrate solution was discontinued on December 15, 2022 following completion of the first 90 days of system operation (in accordance with the NDEP-approved Unit 4 Source Area ISB Treatability

Study Work Plan Addendum). As discussed above, the macronutrient solution consisting of urea and diammonium phosphate is not currently being added to the injectate solution to minimize precipitate formation. This macronutrient solution may be added in the future if required based on effectiveness monitoring results. Summaries of Area 2 extractions and injections are provided in Tables 2 and 4, respectively. Specific details of ongoing operations during May 2023 include the following:

- Area 2 Intermediate Zone – Approximately 5,165 gallons of groundwater were extracted from two extraction wells, while approximately 17,708 gallons of carbon solution and 12,146 gallons of distribution water were injected into two injection wells. The extraction rates at extraction well U4-E-06I continued to reduce in May 2023, with extraction rates decreasing from an average of 0.5 gpm in April 2023 to an average of 0.2 gpm in May 2023. Additionally, no groundwater was able to be extracted on 12 of the 31 days within the month of May. Injection rates of the targeted 1.9 gpm were achieved in both injection wells, with an average injection pressure of 12 psi.
- Area 2 Deep Zone – Approximately 10,705 gallons of groundwater were extracted from one extraction well, while approximately 35,256 gallons of carbon solution and 27,725 gallons of distribution water were injected into four injection wells. Injection rates of the targeted 1.0 gpm were achieved in all four injection wells, with an average injection pressure of 18 psi.
- Effectiveness Monitoring – The effectiveness monitoring program for both Area 1 and Area 2 included a baseline groundwater sampling event completed in April 2022 prior to system start-up. Following start-up in early September 2022, the effectiveness monitoring program was implemented in accordance with the Work Plan Addendum. Available draft groundwater analytical results from the baseline sampling event and subsequent monitoring events performed from September 2022 to March 2023 are presented in Table 5. Final validated data will be provided in the final treatability study results report.

Area 1 Effectiveness Monitoring – A monthly monitoring program was implemented in Area 1 during the TDS-reduction period from September 2022 to February 2023. In March 2023, a second baseline event was performed in Area 1 injection, extraction, and monitoring wells as part of a second baseline groundwater sampling event prior to the startup of carbon injections in Area 1, which began on April 6, 2023. After start-up of Area 1 ISB operations, one biweekly sampling event of Area 1 monitoring wells was conducted in April 2023 followed by monthly sampling thereafter, with the most recent monthly sampling event completed from May 8 to May 19, 2023. The results from the second Area 1 baseline groundwater sampling event in March 2023 prior to the start-up of carbon substrate injections are summarized below. Groundwater analytical results from the biweekly April 2023 and monthly May 2023 events will be provided in future monthly progress reports as data become available from the laboratory.

- Area 1 Intermediate –During the March 2023 sampling event, groundwater samples were collected from four extraction/injection wells and thirteen intermediate zone monitoring wells, including wells located immediately within the Area 1 study area, around the perimeter of the Area 1 study area, and in between Areas 1 and 2 prior to the start-up of carbon substrate injections as part of a second baseline sampling event. In general, groundwater perchlorate and hexavalent chromium concentrations in March 2023 were greater than concentrations during the first April 2022 baseline sampling event. Groundwater samples collected in March 2023 from Area 1 monitoring wells and injection/extraction wells screened in the targeted intermediate treatment interval and

overlying shallow zone indicated that perchlorate concentrations ranged from 0.098 mg/L to 1,880 mg/L. Hexavalent chromium concentrations in groundwater ranged from less than 0.15 µg/L to 69,400 µg/L. Notable results from the groundwater samples collected from the three monitoring wells located immediately within the Area 1 study area are summarized below.

- The groundwater sample collected from U4-MW-02I had a perchlorate concentration of 1,300 mg/L in March 2023, which remains above the original April 2022 baseline concentration of 291 mg/L. Although groundwater samples collected from monitoring well U4-MW-07I have shown consistent reductions in perchlorate concentrations since the September 2022, the perchlorate concentration increased above the baseline concentration of 140 mg/L to a March 2023 concentration of 325 mg/L. Nitrate and chlorate concentrations in groundwater samples collected from monitoring well U4-MW-07I decreased by 52 percent and 45 percent, respectively, when compared to the April 2022 baseline. Migration of treated groundwater from Area 2 into the intermediate zone within Area 1 is likely occurring based on the slightly increased total organic carbon (TOC) concentrations observed in groundwater samples collected from monitoring well U4-MW-02I and U4-MW-07I during recent sampling events. This result was expected because Area 1 is downgradient from Area 2 and groundwater modeling indicated likely incomplete capture of Area 2 injectate based on achievable extraction rates from Area 2 extraction wells.
- The groundwater sample collected in March 2023 from U4-MW-05I had a perchlorate concentration of 1,020 mg/L, which was similar to the April 2022 baseline perchlorate concentration of 1,220 mg/L.
- Lastly, March 2023 hexavalent chromium concentrations ranged from 2,670 µg/L to 69,400 micrograms per liter (µg/L) in samples collected from intermediate monitoring wells located within the Area 1 footprint compared to the April 2022 baseline concentration range of 4,810 µg/L to 42,800 µg/L.
- Area 1 Deep –During March 2023, groundwater samples were collected from all five extraction/injection wells and 14 deep zone monitoring wells, including wells located immediately within the Area 1 study area, around the perimeter of the Area 1 study area, and in between Areas 1 and 2. As mentioned previously, this sampling event was the second baseline sampling event in this area. In general, groundwater perchlorate and hexavalent chromium concentrations in samples collected during the second baseline sampling event in March 2023 were lower than those collected during the first April 2022 baseline sampling event. This was expected due to the injection of clean water into the Area 1 deep zone during the TDS-reduction period. Groundwater samples collected from Area 1 monitoring wells screened in the targeted deep treatment interval and underlying deep zone as part of the March 2023 pre-carbon substrate injection baseline event indicated that perchlorate concentrations ranged from 0.0296 mg/L to 1,140 mg/L. Hexavalent chromium concentrations in groundwater ranged from less than 0.272 µg/L to 106,000 µg/L. Notable results include the following.
 - TDS concentration reductions ranging from 20 percent to 82 percent were observed in groundwater samples collected from the four deep monitoring wells within the Area 1 study area. The average TDS concentration in samples collected from the four monitoring wells located immediately within Area 1 (M251-100, U4-MW-02D, U4-MW-05D, and U4-MW-07D) was reduced from an

average April 2022 baseline concentration of 34,305 mg/L to an average March 2023 concentration of 19,743 mg/L. This result represents the fourth consecutive effectiveness monitoring event with the average TDS concentration below the target TDS goal of 21,000 mg/L.

- Data collected from the March 2023 sampling event also indicated concentration reductions of perchlorate, chlorate and nitrate in groundwater samples collected from all four deep monitoring wells within the Area 1 study area compared to the April 2022 baseline concentrations. These reductions were expected due to the injection of clean water combined with groundwater extraction. In March 2023, perchlorate concentrations in samples collected from the four monitoring wells in the Area 1 deep zone ranged from 400 mg/L to 2,190 mg/L.
- Lastly, the March 2023 hexavalent chromium concentrations ranged from 0.272 µg/L to 44,800 µg/L in samples collected from deep monitoring wells located within the Area 1 footprint compared to the April 2022 baseline concentration range of 23,900 µg/L to 96,900 µg/L. As with the other constituents in groundwater, these reductions were expected due to the injection of clean water combined with groundwater extraction.
- Area 2 Effectiveness Monitoring - During the first month of operations in Area 2, one biweekly sampling event of Area 2 monitoring wells was conducted in September 2022. The monitoring program then shifted to monthly sampling in October 2022 for Area 2 and is ongoing.
 - Area 2 Intermediate – In March 2023, groundwater samples were collected from three intermediate monitoring wells located immediately within Area 2 and two intermediate extraction wells screened in the Area 2 intermediate zone as part of the effectiveness monitoring program. Additionally, groundwater samples were collected from six perimeter monitoring wells screened in the shallow or intermediate zones in Area 2. The results of this effectiveness monitoring sampling event are discussed below.
 - Perchlorate concentrations in groundwater samples collected in March 2023 from monitoring wells located in the Area 2 intermediate zone were the lowest to date, with concentrations ranging from 0.070 to 2.68 mg/L, representing a perchlorate concentration reduction of greater than 99% compared to baseline concentrations. Hexavalent chromium concentrations were reduced by greater than 99 percent in groundwater samples collected from all three Area 2 intermediate monitoring wells compared to baseline concentrations, with concentrations ranging from less than 0.5 µg/L to 1.1 µg/L. As with perchlorate, both chlorate and nitrate concentrations notably reduced in March 2023 with reductions greater than 99 percent compared to baseline concentrations. Groundwater samples collected in March 2023 also exhibited elevated TOC concentrations ranging from 43.9 mg/L to 407 mg/L, which is notably higher than the average baseline TOC concentration of 1.3 mg/L. The combination of contaminant concentration decreases and TOC concentration increases indicate that the injected carbon substrate solution is being successfully distributed throughout Area 2.
 - Perchlorate concentrations in groundwater samples collected from the four intermediate monitoring wells located along the perimeter of Area 2 ranged from less than 0.004 mg/L to 427 mg/L in March 2023. The perchlorate concentrations in groundwater samples collected from U4-MW-10I (located cross-gradient) decreased by 90 percent, while groundwater samples collected

from U4-MW-15I, U4-MW-15S, U4-MW-16I, and U4-MW-16S (located upgradient) reduced by greater than 99 percent when compared to baseline concentrations. Notable increases in TOC above baseline concentrations were also observed in five perimeter monitoring wells (U4-MW-10I, U4-MW-15I, U4-MW-15S, U4-MW-16I, and U4-MW-16S). These results indicate that the influence of the ISB injections is being observed up to 20 feet upgradient and cross-gradient from the Area 2 injection wells, as well as in the overlying shallow zone screened from approximately 55 to 65 feet below ground surface (compared to the intermediate injection interval of 73 to 88 feet).

- Area 2 Deep – Groundwater samples were collected from three deep monitoring wells, one deep extraction well, and six perimeter monitoring wells (screened in either the targeted deep treatment interval or the deep zone beneath the targeted treatment interval) during the March 2023 effectiveness monitoring monthly sampling event. The results are discussed below.
 - When compared to baseline, perchlorate concentration reductions ranging from 23 to 75 percent were observed in groundwater samples collected from the three deep monitoring wells located within Area 2. The perchlorate concentration reduction continued to be the most significant in the groundwater sample collected from U4-MW-13D, which showed a March 2023 concentration of 337 mg/L compared to a baseline concentration of 1,330 mg/L. Perchlorate concentration reductions were also observed in samples collected from U4-MW-12D, with a March 2023 perchlorate concentration of 436 mg/L compared to a baseline concentration of 1,280 mg/L. Concentration reductions for nitrate and chlorate were slightly greater than for perchlorate (reductions of up to 86 percent for nitrate and up to 79 percent for chlorate compared to baseline concentrations). This is not surprising because the biodegradation sequence is often nitrate, chlorate, and then perchlorate. Hexavalent chromium concentration reductions ranging from 38 percent to 75 percent were also observed in groundwater samples collected from the three deep monitoring wells located within Area 2 compared to baseline concentrations.
 - Perchlorate concentrations in groundwater samples collected from perimeter monitoring wells screened in the targeted deep treatment interval or underlying deep zone ranged from 0.014 mg/L to 355 mg/L in March 2023. These concentrations represented reductions ranging from 54 percent to greater than 99 percent in samples collected from five of the six monitoring wells.
- Dye Study Monitoring –The final dye sampling event was conducted in March 2023, with results provided in Table 6. Noteworthy results from the March 2023 sampling event are described below:
 - Area 1 – Fluorescein dye continued to be detected in samples collected from monitoring well U4-MW-07D, which was expected because this well is immediately downgradient from the dye release point of U4-E-04D and U4-E-05D. Fluorescein dye was also detected in samples collected from monitoring well U4-MW-06D, which is cross-gradient from the dye release points. The dye has continued to move downgradient and was detected in extraction well U4-E-03D in March 2023. As expected, fluorescein has also been detected in the samples collected from U4-MW-06I and U4-MW-07I, which are shallower monitoring wells screened in the intermediate zone. This confirms some hydraulic connectivity between the deep and intermediate zones in Area 1.

Additionally, fluorescein was also detected in samples collected from monitoring wells U4-MW-08I/8D/8DD and U4-MW-09D/9DD located between Areas 1 and 2 and in monitoring wells U4-MW-14I/14D and U4-MW-15D located in Area 2.

- Area 2 –Rhodamine has been sporadically detected in a mix of shallow, intermediate, and deep wells that are not spatially related (i.e., not all in the same cluster). Results to date indicate that the intermediate zone may have some very specific preferential flow paths that are relatively fast and cross-connect the various zones. Rhodamine WT has not been detected in monitoring wells in the southern portion of the study area, which may indicate that the monitoring wells in that vicinity are not well-connected to the preferential flow pathways intersected by the two release points. Rhodamine WT was also detected at low concentrations in samples collected from several monitoring wells in Area 1, namely, U4-MW-04D, U4-MW-06D, U4-MW-08DD, M-251-60, and M-252 in March 2023. These results indicate a connection between both the shallow and deeper zones in Area 1 and Area 2.
 - Lastly, although it was only detected at low concentrations in select monitoring wells during baseline sampling, sulforhodamine B has been detected in groundwater samples from several monitoring wells since sampling began. Discussions with the laboratory are on-going about these results.
- Schedule and Progress Updates
 - Area 1 ISB operations are anticipated to continue through April 2024. The 60-day evaluation period for Area 1 ISB operations will end on June 6, 2023. Based on the data collected through May 31, 2023, the following slight system modifications will be made to Area 1 operations.
 - Reduce the duration of groundwater extraction in the intermediate zone within Area 1 from 24 hours to approximately 12 hours per day (i.e., same time period as injection operations) in an effort to improve declining extraction rates in Area 1.
 - Discontinue the addition of the biosolids to the carbon substrate solution (originally planned for 90 days) to minimize potential biomass buildup and further increases in injection pressures.
 - 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 in May 2023.

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

Not Individually, but Solely
as President of the Trustee

Signature: Jay A. Steinberg, President, 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: 7/21/23

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.



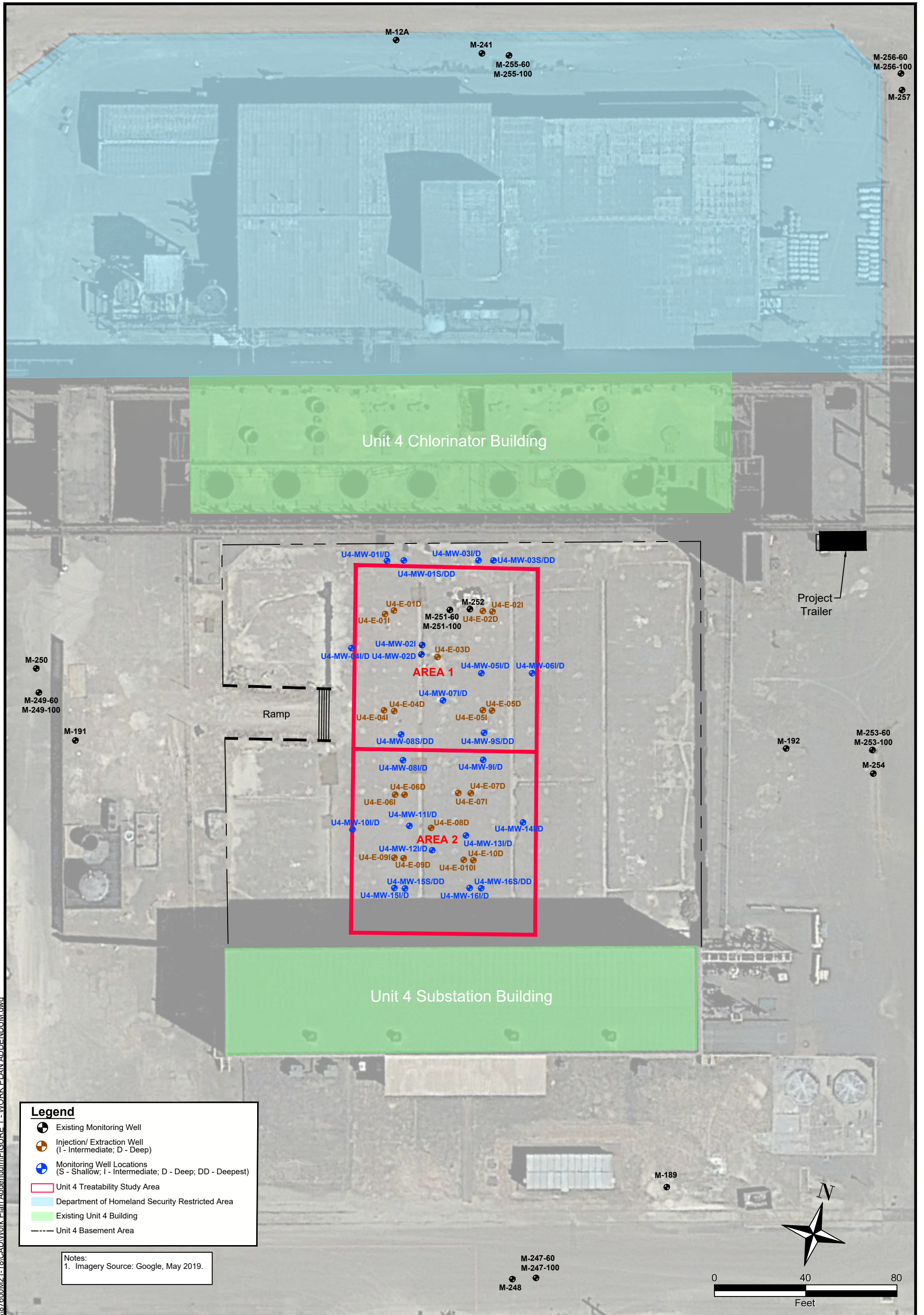
David S. Wilson, CEM
Principal Engineer
Tetra Tech, Inc.

July 21, 2023

Date

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

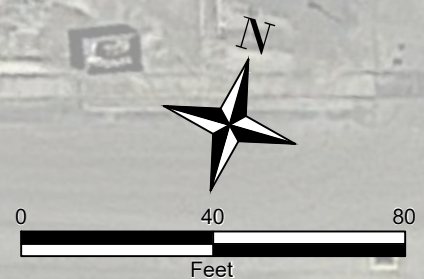
Figures



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.



NEVADA ENVIRONMENTAL RESPONSE TRUST SITE

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

INJECTION/ EXTRACTION AND MONITORING WELL LAYOUT

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

Figure No.
1

TETRA TECH

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

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 - May 2023
Unit 4 Source Area Bioremediation Treatability Study

Study Area		Duration - Area 1	Area 1 Intermediate						Area 1 Deep			Duration - Area 2 Deep	Area 2 Deep			Duration - Area 2 Intermediate	Area 2 Intermediate					
Well ID			U4-E-01I			U4-E-02I			U4-E-03D				U4-E-08D				U4-E-06I			U4-E-07I		
Date	Time		Average Flow Rate	Volume Extracted	Cumulative Total Volume	Average Flow Rate	Volume Extracted	Cumulative Total Volume	Average Flow Rate	Volume Extracted	Cumulative Total Volume		Average Flow Rate	Volume Extracted	Cumulative Total Volume		Average Flow Rate	Volume Extracted	Cumulative Total Volume	Average Flow Rate	Volume Extracted	Cumulative Total Volume
		minutes	gpm	gallons	gallons	gpm	gallons	gallons	gpm	gallons	gallons	minutes	gpm	gallons	gallons	minutes	gpm	gallons	gallons	gpm	gallons	gallons
5/1/2023	15:04	1,434	1.5	2115.95	69,920.67	1.7	2441.00	68,768.29	0.6	828.89	203,248.55	1434	0.3	442.10	106,029.89	595	0.3	188.3	104,106.36	0.2	115.27	53,806.09
5/2/2023	15:11	1,447	1.8	2547.50	72,468.17	1.5	2236.49	71,004.78	0.6	799.26	204,047.81	1447	0.3	432.18	106,462.07	601	0.3	185.6	104,291.96	0.2	115.16	53,921.25
5/3/2023	15:10	1,439	1.6	2373.97	74,842.14	1.5	2120.69	73,125.47	0.5	783.31	204,831.12	1439	0.3	426.78	106,888.85	601	-	0.0	104,291.96	0.2	113.38	54,034.63
5/4/2023	15:03	1,433	1.6	2248.53	77,090.67	1.5	2091.33	75,216.80	0.5	777.99	205,609.11	1433	0.3	424.45	107,313.30	600	0.2	105.0	104,396.96	0.2	112.27	54,146.90
5/5/2023	15:08	1,445	1.5	2187.21	79,277.88	1.5	2112.54	77,329.34	0.5	748.58	206,357.69	1445	0.3	426.76	107,740.06	600	0.2	134.7	104,531.69	0.2	114.16	54,261.06
5/6/2023	15:03	1,435	1.4	2038.79	81,316.67	1.4	2008.64	79,337.98	0.5	685.07	207,042.76	1435	0.3	424.44	108,164.50	595	0.1	48.7	104,580.39	0.2	115.61	54,376.67
5/7/2023	15:10	1,447	1.3	1935.45	83,252.12	1.3	1888.92	81,226.90	0.5	665.59	207,708.35	1447	0.3	426.19	108,590.69	595	0.1	53.7	104,634.05	0.2	118.41	54,495.08
5/8/2023	15:04	1,434	1.3	1819.57	85,071.69	1.3	1859.12	83,086.02	0.4	643.90	208,352.25	1434	0.3	417.54	109,008.23	599	0.0	18.3	104,652.37	0.2	112.02	54,607.10
5/9/2023	15:17	1,453	1.2	1730.75	86,802.44	1.3	1822.46	84,908.48	0.4	646.25	208,998.50	1453	0.3	423.89	109,432.12	599	0.1	45.4	104,697.74	0.2	111.82	54,718.92
5/10/2023	15:04	1,427	1.1	1598.76	88,401.20	1.2	1669.44	86,577.92	0.5	664.77	209,663.27	1427	0.3	407.22	109,839.34	594	-	0.0	104,697.74	0.2	111.95	54,830.87
5/11/2023	15:03	1,439	1.1	1516.60	89,917.80	1.1	1550.04	88,127.96	0.5	667.03	210,330.30	1439	0.2	350.61	110,189.95	594	-	0.0	104,697.74	0.2	111.69	54,942.56
5/12/2023	15:05	1,442	1.0	1431.96	91,349.76	1.0	1451.16	89,579.12	0.5	669.84	211,000.14	1442	0.1	212.43	110,402.38	604	-	0.0	104,697.74	0.2	112.98	55,055.54
5/13/2023	15:07	1,442	1.0	1375.73	92,725.49	1.0	1373.21	90,952.33	0.4	643.14	211,643.28	1442	0.2	224.71	110,627.09	604	-	0.0	104,697.74	0.2	111.12	55,166.66
5/14/2023	15:05	1,438	0.9	1291.13	94,016.62	0.9	1301.83	92,254.16	0.4	613.94	212,257.22	1438	0.2	292.15	110,919.24	595	-	0.0	104,697.74	0.2	109.92	55,276.58
5/15/2023	15:04	1,439	0.9	1287.92	95,304.54	0.9	1229.67	93,483.83	0.4	615.02	212,872.24	1439	0.2	295.19	111,214.43	595	-	0.0	104,697.74	0.2	110.57	55,387.15
5/16/2023	15:08	1,444	0.9	1242.23	96,546.77	0.8	1169.94	94,653.77	0.4	620.74	213,492.98	1444	0.2	293.73	111,508.16	605	0.3	167.0	104,864.75	0.2	120.97	55,508.12
5/17/2023	15:05	1,437	0.8	1198.60	97,745.37	0.8	1109.47	95,763.24	0.4	609.37	214,102.35	1437	0.2	291.95	111,800.11	605	0.3	187.1	105,051.80	0.2	102.97	55,611.09
5/18/2023	15:08	1,443	0.8	1155.56	98,900.93	0.7	1043.14	96,806.38	0.4	598.74	214,701.09	1443	0.2	329.70	112,129.81	596	0.4	239.5	105,291.32	0.2	108.52	55,719.61
5/19/2023	15:04	1,436	0.8	1088.21	99,989.14	0.7	991.83	97,798.21	0.4	586.78	215,287.87	1436	0.2	327.23	112,457.04	596	0.0	26.6	105,317.94	0.2	108.25	55,827.86
5/20/2023	15:04	1,440	0.7	997.75	100,986.89	0.7	938.63	98,736.84	0.4	577.27	215,865.14	1440	0.2	324.69	112,781.73	598	-	0.0	105,317.94	0.2	109.61	55,937.47
5/21/2023	15:07	1,443	0.6	915.32	101,902.21	0.6	892.35	99,629.19	0.5	689.35	216,554.49	1443	0.2	309.36	113,091.09	598	0.1	45.5	105,363.47	0.2	106.78	56,044.25
5/22/2023	15:04	1,437	0.6	908.90	102,811.11	0.6	852.09	100,481.28	0.5	737.53	217,292.02	1437	0.2	311.79	113,402.88	595	-	0.0	105,363.47	0.2	102.66	56,146.91
5/23/2023	15:09	1,445	0.6	840.43	103,651.54	0.6	826.39	101,307.67	0.5	702.22	217,994.24	835	0.2	193.52	113,596.40	595	0.0	17.2	105,380.62	0.2	104.15	56,251.06
5/24/2023	15:11	1,442	0.5	780.40	104,431.94	0.6	805.60	102,113.27	0.5	711.60	218,705.84	2052	0.2	461.46	114,057.86	597	0.1	71.6	105,452.19	0.2	103.04	56,354.10
5/25/2023	15:13	1,442	0.5	782.08	105,214.02	0.5	779.31	102,892.58	0.5	712.83	219,418.67	1442	0.2	322.52	114,380.38	597	0.1	43.1	105,495.28	0.2	102.40	56,456.50
5/26/2023	15:02	1,429	0.5	759.16	105,973.18	0.5	767.14	103,659.72	0.5	757.77	220,176.44	1429	0.2	309.30	114,689.68	598	-	0.0	105,495.28	0.2	99.96	56,556.46
5/27/2023	15:17	1,455	0.5	740.03	106,713.21	0.5	791.11	104,450.83	0.5	756.97	220,933.41	1455	0.2	298.68	114,988.36	598	0.2	106.0	105,601.26	0.2	105.22	56,661.68
5/28/2023	15:03	1,426	0.5	693.73	107,406.94	0.5	774.70	105,225.53	0.5	722.21	221,655.62	1426	0.2	316.97	115,305.33	595	0.1	74.2	105,675.42	0.2	98.95	56,760.63
5/29/2023	15:03	1,440	0.5	680.85	108,087.79	0.5	785.82	106,011.35	0.5	715.82	222,371.44	1440	0.2	329.46	115,634.79	595	-	0.0	105,675.42	0.2	93.73	56,854.36
5/30/2023	15:12	1,449	0.5	678.90	108,766.69	0.5	790.95	106,802.30	0.5	730.98	223,102.42	1449	0.2	331.29	115,966.08	599	0.1	53.6	105,729.00	0.2	94.30	56,948.66
5/31/2023	15:08	1,436	0.4	643.97	109,410.66	0.6	802.35	107,604.65	0.5	710.03	223,812.45	1436	0.2	326.58	116,292.66	599	-	0.0	105,729.00	0.2	96.28	57,044.94
September 2022 Total				--		--				24,421				8,874				30,780			9,315	
October 2022 Total				--		--				25,916				12,872				25,189			9,128	
November 2022 Total				--		--				16,563				13,496				14,899			7,172	
December 2022 Total				--		--				20,564				10,365				20,580			6,926	
January 2023 Total				--		--				30,354				15,544				6,591			6,639	
February 2023 Total				--		--				29,553				14,935				714			4,801	
March 2023 Total				--		--				30,458				16,497				166			4,285	
April 2023 Total					67,805			66,327		24,591				13,005				5,000			5,425	
May 2023 Total					41,606			41,277		21,393				10,705				1,811			3,354	
Cumulative Total					109,411			107,605		223,812				116,293				105,729			53,691	

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. On January 18, 2023, Area 2 intermediate wells were transitioned from 24-hour operation to 12-hour operation in an effort to improve daily extraction rates.
- 2. Extraction well maintenance was performed April 11 to April 13, 2023 on extraction wells U4-E-06I and U4-E-07I. Extraction pump maintenance was performed at U4-E-06I was performed on April 16 to April 20, 2023 and regular operations resumed on April 21, 2023. Despite well maintenance efforts, extraction rates remained low in both Area 1 intermediate extraction wells during the month of May.

Table 3
Summary of Injection Activities
Area 1 - May 2023
 Unit 4 Source Area Bioremediation Treatability Study

Study Area				Area 1 Intermediate								Area 1 Deep								Area 1 Deep																															
Well ID				U4-E-04I				U4-E-05I				U4-E-01D				U4-E-02D				U4-E-04D				U4-E-05D																											
Date	Injection Start Time	Injection Stop Time	Duration ⁽¹⁾ minutes	Volume Carbon Solution Injected ⁽²⁾	Volume Distribution Water Solution Injected ^(3,4)	Average Flow Rate	Maximum Injection Pressure	Volume Carbon Solution Injected ⁽²⁾	Volume Distribution Water Solution Injected ^(3,4)	Average Flow Rate	Maximum Injection Pressure	Volume Carbon Solution Injected ⁽²⁾	Volume Distribution Water Solution Injected ^(3,4)	Average Flow Rate	Maximum Injection Pressure	Volume Carbon Solution Injected ⁽²⁾	Volume Distribution Water Solution Injected ^(3,4)	Average Flow Rate	Maximum Injection Pressure	Volume Carbon Solution Injected ⁽²⁾	Volume Distribution Water Solution Injected ^(3,4)	Average Flow Rate	Maximum Injection Pressure	Volume Carbon Solution Injected ⁽²⁾	Volume Distribution Water Solution Injected ^(3,4)	Average Flow Rate	Maximum Injection Pressure																								
				gallons	gallons	gpm	psi	gallons	gallons	gpm	psi	gallons	gallons	gpm	psi	gallons	gallons	gpm	psi	gallons	gallons	gpm	psi	gallons	gallons	gpm	psi	gallons	gallons	gpm	psi																				
5/1/2023	5:15	10:26	508	547.84	404.78	1.9	12	542.72	426.85	1.9	25	152.03	93.09	0.5	19	90.9	67.62	0.3	18	233.31	168.96	0.8	20	18:14	177.45	0.8	24																								
5/2/2023	5:15	10:24	508	553.53	412.64	1.9	13	535.88	418.50	1.9	25	135.64	111.92	0.5	22	87.0	79.38	0.3	20	216.88	163.62	0.7	20	16:33	172.67	0.8	25																								
5/3/2023	5:15	10:34	518	557.09	411.65	1.9	13	565.30	425.47	1.9	25	132.33	100.02	0.4	23	78.5	66.00	0.3	20	222.21	164.22	0.7	20	20:09	173.53	0.8	24																								
5/4/2023	5:15	10:20	501	544.25	425.41	1.9	16	540.64	437.67	2.0	26	138.30	109.73	0.5	23	92.7	85.79	0.4	22	215.87	155.45	0.7	20	0:28	173.90	0.8	25																								
5/5/2023	5:15	10:26	515	545.94	422.34	1.9	19	551.82	433.33	1.9	25	129.43	103.55	0.5	23	107.0	74.47	0.4	22	222.78	166.06	0.8	20	0:00	166.84	0.8	25																								
5/6/2023	5:15	10:09	499	527.50	427.83	1.9	20	523.11	425.08	1.9	26	120.60	100.92	0.4	24	81.0	77.47	0.3	21	208.08	170.81	0.8	22	10:19	172.58	0.8	26																								
5/7/2023	5:15	10:37	520	574.89	407.86	1.9	18	554.02	418.47	1.9	25	119.46	93.01	0.4	24	88.0	68.14	0.3	20	235.74	160.21	0.8	22	14:38	169.86	0.8	26																								
5/8/2023	5:15	10:36	525	568.31	420.40	1.9	15	558.06	431.81	1.9	26	130.91	104.50	0.4	23	94.3	75.86	0.3	20	232.11	164.57	0.8	21	12:57	173.07	0.8	26																								
5/9/2023	5:15	10:36	526	567.77	433.10	1.9	17	567.97	442.19	1.9	26	121.93	93.75	0.4	23	90.1	80.96	0.3	20	220.38	172.19	0.7	21	6:00	177.65	0.8	27																								
5/10/2023	5:15	10:31	519	571.41	424.14	1.9	15	554.37	432.92	1.9	26	124.62	81.98	0.4	23	98.8	78.43	0.3	21	221.74	167.13	0.7	21	12:43	166.98	0.8	27																								
5/11/2023	5:15	10:30	522	559.10	428.61	1.9	15	566.19	445.14	1.9	27	105.92	78.62	0.4	23	86.6	75.22	0.3	21	226.55	176.26	0.8	21	20:24	172.24	0.8	27																								
5/12/2023	5:15	10:23	512	547.54	420.81	1.9	16	555.26	437.94	1.9	27	126.63	92.06	0.4	23	85.6	85.49	0.3	21	226.31	179.38	0.8	22	19:55	174.55	0.8	28																								
5/13/2023	5:15	10:31	519	556.41	414.31	1.9	15	564.90	436.70	1.9	26	104.15	86.57	0.4	23	91.2	67.53	0.3	20	217.23	172.54	0.8	22	1:12	171.86	0.8	28																								
5/14/2023	5:15	10:31	520	555.91	417.57	1.9	16	569.57	416.76	1.9	27	103.98	80.41	0.4	23	98.9	76.34	0.3	20	216.56	164.05	0.7	22	6:57	174.84	0.8	28																								
5/15/2023	5:15	10:31	523	573.25	410.44	1.9	15	559.43	451.81	1.9	26	102.41	87.54	0.4	23	83.8	75.69	0.3	20	224.43	164.07	0.7	23	19:26	190.96	0.8	28																								
5/16/2023	5:15	10:24	512	545.80	431.87	1.9	15	555.48	421.33	1.9	28	109.65	96.07	0.4	23	96.8	80.55	0.3	21	224.87	172.07	0.8	23	1:55	172.52	0.8	28																								
5/17/2023	5:15	10:26	515	553.01	433.23	1.9	16	559.93	437.53	1.9	27	100.52	77.74	0.3	24	88.9	81.14	0.3	20	231.79	172.19	0.8	23	21:50	166.95	0.7	29																								
5/18/2023	5:15	10:30	517	573.23	415.07	1.9	16	569.57	429.72	1.9	28	104.82	87.33	0.4	26	95.3	68.13	0.3	21	219.90	168.40	0.8	25	5:16	169.14	0.8	29																								
5/19/2023	5:15	10:22	503	551.20	411.17	1.9	16	545.76	435.13	2.0	28	97.66	76.94	0.3	26	91.6	77.45	0.3	21	222.82	173.17	0.8	24	12:14	162.58	0.8	30																								
5/20/2023	5:15	10:21	508	550.78	411.41	1.9	17	545.61	424.65	1.9	30	106.10	88.92	0.4	26	83.0	85.81	0.3	22	218.52	165.15	0.8	24	20:38	168.92	0.8	30																								
5/21/2023	5:15	10:24	507	557.72	421.75	1.9	17	578.08	439.61	2.0	30	91.79	74.01	0.3	28	83.8	77.89	0.3	21	226.60	172.77	0.8	24	8:52	172.01	0.8	30																								
5/22/2023	5:15	10:26	509	568.48	423.11	1.9	17	547.18	423.64	1.9	30	54.07	53.27	0.2	30	84.6	73.98	0.3	23	216.05	169.19	0.8	26	18:00	163.93	0.8	30																								
5/23/2023	5:15	10:25	517	548.77	435.62	1.9	16	556.51	428.10	1.9	30	89.68	111.35	0.4	27	95.0	78.55	0.3	21	224.02	170.81	0.8	26	8:24	163.22	0.7	32																								
5/24/2023	5:15	10:59	538	604.55	402.87	1.9	17	622.78	411.74	1.9	32	140.02	108.17	0.5	25	95.6	84.65	0.3	22	264.42	159.84	0.8	33	9:21	148.46	0.7	33																								
5/25/2023	5:15	10:28	514	557.66	418.62	1.9	17	550.64	435.50	1.9	32	125.95	88.15	0.4	27	86.1	64.71	0.3	22	218.94	166.12	0.7	26	3:21	132.14	0.7	33																								
5/26/2023	5:15	10:28	512	551.85	417.79	1.9	18	550.54	434.50	1.9	31	124.85	91.37	0.4	29	86.6	84.87	0.3	22	220.81	161.25	0.7	32	21:36	119.99	0.6	33																								
5/27/2023	5:15	10:19	506	543.86	422.81	1.9	17	555.56	422.70	1.9	32	143.29	106.54	0.5	28	99.3	85.25	0.4	23	218.09	168.05	0.8	34	14:38	129.39	0.7	33																								
5/28/2023	5:15	10:19	509	538.21	420.88	1.9	17	549.89	450.29	2.0	31	138.51	81.89	0.4	28	84.7	74.43	0.3	23	267.47	152.05	0.8	33	20:52	117.07	0.6	33																								
5/29/2023	5:15	10:23	510	562.52	429.52	1.9	17	564.69	434.87	2.0	32	91.65	76.79	0.3	29	86.7	76.88	0.3	22	216.10	160.59	0.7	27	4:19	119.87	0.6	34																								
5/30/2023	5:15	10:42	530	586.85	427.38	1.9	18	597.91	429.96	1.9	32	84.86	74.91	0.3	28	91.6	70.64	0.3	22	176.00	156.06	0.6	33	23:31	112.93	0.6	33																								
5/31/2023	5:15	10:32	517	566.37	413.71	1.9	18	579.05	423.43	1.9	32	107.67	107.36	0.4	28	88.1	84.38	0.3	23	197.29	162.10	0.7	26	22:48	129.29	0.7	35																								
September 2022 Total												18,524.74								17,036.15								18,474.90								18,327.61															
October 2022 Total												20,999.35								20,565.66								20,499.99								20,495.77															
November 2022 Total												13,189.82								13,023.57								13,008.37								12,999.23															
December 2022 Total												17,897.70								17,859.83								17,761.96								17,821.88															
January 2023 Total												22,185.98								22,301.36								22,076.94								22,214.34															
February 2023 Total												19,998.59								20,204.55								20,020.42								20,129.36															
March 2023 Total												20,757.72								21,136.17								20,769.73								20,408.43															
April 2023 Total				12,039.16				9,007.28				11,950.67				9,102.54				2,861.72				5,067.36				2,068.09				4,483.39				4,739.25				6,458.54				4,972.47				6,599.09			
May 2023 Total				17,311.60				13,018.70				17,338.42				13,363.34				3,559.43				2,818.48				2,791.96				2,383.70				6,903.87				5,159.33				6,809.57				4,957.39			
Cumulative Total				29,350.76				22,025.98				29,289.09				22,465.88				6,421.15				141,439.74				4,860.05				138,994.38				11,643.12				144,230.18				11,782.04				143,953.10			

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. Prior to April 6, 2023 in Area 1 Deep wells consisted of only Stabilized Lake Mead Water as part of the total dissolved solids (TDS)-reduction period of the treatability study water injection.

Table 4
Summary of Injection Activities
Area 2 - May 2023
 Unit 4 Source Area Bioremediation Treatability Study

Study Area			Area 2 Intermediate								
Well ID			Area 2 Intermediate Duration ⁽¹⁾	U4-E-09I				U4-E-10I			
Date	Injection Start Time	Injection Stop Time		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
				gallons	gallons	gpm	psi	gallons	gallons	gpm	psi
5/1/2023	5:27	12:39	255	281.44	202.41	1.9	10	283.85	198.31	1.9	10
5/2/2023	5:27	12:37	255	286.33	196.50	1.9	10	277.30	183.33	1.8	10
5/3/2023	5:27	12:47	255	271.77	197.33	1.8	10	260.00	200.52	1.8	11
5/4/2023	5:27	12:33	255	292.79	186.77	1.9	12	283.98	177.36	1.8	11
5/5/2023	5:27	12:39	255	259.20	196.08	1.8	12	262.21	197.63	1.8	11
5/6/2023	5:27	12:34	305	374.85	206.69	1.9	8	370.09	194.47	1.9	11
5/7/2023	5:28	12:50	255	283.12	189.83	1.9	10	280.87	206.29	1.9	11
5/8/2023	5:27	12:50	255	280.37	193.41	1.9	9	279.28	204.14	1.9	10
5/9/2023	5:28	12:49	255	287.25	184.86	1.9	9	287.03	188.02	1.9	10
5/10/2023	5:27	12:44	255	260.08	189.69	1.8	9	277.92	203.48	1.9	11
5/11/2023	5:27	12:42	254	271.01	203.78	1.9	9	283.29	198.54	1.9	11
5/12/2023	5:27	12:35	255	286.22	196.60	1.9	10	291.55	201.03	1.9	11
5/13/2023	5:28	12:43	255	276.74	199.50	1.9	8	290.64	205.09	1.9	12
5/14/2023	5:27	12:44	256	280.88	197.21	1.9	8	299.32	188.82	1.9	12
5/15/2023	5:27	12:43	255	297.01	190.45	1.9	8	294.56	200.12	1.9	13
5/16/2023	5:28	12:36	255	280.96	204.24	1.9	8	284.95	201.67	1.9	12
5/17/2023	5:28	12:38	255	283.19	200.83	1.9	8	281.82	205.79	1.9	13
5/18/2023	5:26	12:42	255	260.32	196.54	1.8	9	285.58	187.92	1.9	14
5/19/2023	5:26	12:36	255	299.15	201.04	2.0	9	283.62	195.40	1.9	14
5/20/2023	5:27	12:36	255	285.46	204.07	1.9	9	281.55	195.06	1.9	15
5/21/2023	5:27	12:36	255	282.83	196.42	1.9	9	278.83	199.11	1.9	15
5/22/2023	5:27	12:38	255	267.84	205.27	1.9	10	285.91	213.16	2.0	16
5/23/2023	5:27	12:38	255	286.37	194.26	1.9	9	274.83	182.75	1.8	16
5/24/2023	5:27	13:12	255	290.42	203.96	1.9	10	299.65	192.62	1.9	15
5/25/2023	5:26	12:42	254	278.07	201.48	1.9	11	283.26	165.35	1.8	18
5/26/2023	5:26	12:42	255	290.05	194.56	1.9	10	283.71	180.22	1.8	17
5/27/2023	5:25	12:32	255	287.97	196.63	1.9	10	273.99	158.77	1.7	18
5/28/2023	5:27	12:32	255	286.81	195.75	1.9	10	277.35	200.54	1.9	18
5/29/2023	5:27	12:35	255	294.41	203.55	2.0	12	280.88	197.12	1.9	17
5/30/2023	5:27	12:53	255	291.40	206.62	2.0	12	290.47	202.55	1.9	17
5/31/2023	5:27	12:45	255	300.03	193.46	1.9	13	285.22	191.27	1.9	18
May 2023 Total				8,854.34	6,129.79			8,853.51	6,016.45		
Cumulative Total				93,956.07	76,614.63			94,243.77	76,985.52		

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, 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. Operations at U4-E-06D were temporarily suspended on May 23, 2023 and resumed on May 25, 2023 due to maintenance to the injection wellhead.

Table 4
Summary of Injection Activities
Area 2 - May 2023
 Unit 4 Source Area Bioremediation Treatability Study

Study Area			Area 2 Deep																
Well ID			Area 2 Deep Duration ⁽¹⁾	U4-E-06D				U4-E-07D				U4-E-09D				U4-E-010D			
Date	Injection Start Time	Injection Stop Time		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	Volume Carbon Solution Injected ⁽²⁾	Volume Distribution Water Solution Injected ⁽³⁾	Average Flow Rate	Maximum Injection Pressure
				gallons	gallons	gpm	psi	gallons	gallons	gpm	psi	gallons	gallons	gpm	psi	gallons	gallons	gpm	psi
5/1/2023	5:27	14:30	496	272.70	213.85	1.0	28	287.66	220.91	1.0	15	275.22	225.84	1.0	14	267.29	218.29	1.0	12
5/2/2023	5:27	14:29	496	284.75	214.04	1.0	27	293.89	228.83	1.1	16	284.86	222.66	1.0	14	280.61	225.09	1.0	15
5/3/2023	5:27	14:40	506	293.83	224.10	1.0	28	299.27	232.83	1.1	16	298.44	221.09	1.0	14	283.95	228.40	1.0	15
5/4/2023	5:27	14:23	489	290.41	214.51	1.0	27	282.74	220.50	1.0	18	280.16	222.83	1.0	15	281.70	207.25	1.0	14
5/5/2023	5:27	14:36	503	284.51	215.69	1.0	29	289.06	229.37	1.0	19	290.14	234.24	1.0	14	281.79	222.33	1.0	14
5/6/2023	5:27	14:32	487	268.36	223.34	1.0	28	272.31	229.73	1.0	19	257.92	219.64	1.0	13	260.76	223.95	1.0	13
5/7/2023	5:28	14:41	507	294.61	216.01	1.0	29	292.04	227.68	1.0	19	288.49	219.97	1.0	14	276.48	222.07	1.0	15
5/8/2023	5:27	14:49	513	277.00	219.89	1.0	29	296.13	240.83	1.0	17	283.56	222.63	1.0	13	278.90	230.52	1.0	14
5/9/2023	5:28	14:47	513	291.22	225.27	1.0	26	291.16	242.00	1.0	17	302.29	228.28	1.0	14	282.73	229.82	1.0	13
5/10/2023	5:27	14:39	507	303.10	219.68	1.0	29	292.70	239.16	1.0	16	295.65	224.08	1.0	14	280.99	228.10	1.0	14
5/11/2023	5:27	14:44	510	289.44	222.99	1.0	28	294.39	242.95	1.1	16	291.67	225.02	1.0	15	289.61	232.39	1.0	14
5/12/2023	5:27	14:33	500	286.62	231.14	1.0	28	297.97	229.94	1.1	18	291.12	223.87	1.0	14	281.44	225.52	1.0	14
5/13/2023	5:28	14:39	506	290.67	224.72	1.0	27	299.22	239.67	1.1	19	283.41	226.40	1.0	14	285.14	222.61	1.0	14
5/14/2023	5:27	14:41	508	289.11	218.00	1.0	28	193.49	219.80	0.8	17	283.58	221.02	1.0	14	272.83	220.37	1.0	15
5/15/2023	5:27	14:43	511	295.17	226.19	1.0	28	283.80	237.95	1.0	17	286.10	230.40	1.0	14	288.57	217.85	1.0	14
5/16/2023	5:28	14:31	499	290.93	229.91	1.0	28	281.19	248.90	1.1	18	283.85	225.33	1.0	13	301.14	213.11	1.0	14
5/17/2023	5:28	14:35	502	287.30	216.77	1.0	25	301.04	230.89	1.1	17	291.32	226.91	1.0	14	282.19	232.19	1.0	13
5/18/2023	5:26	14:36	506	285.65	227.24	1.0	27	281.34	227.36	1.0	18	292.23	222.25	1.0	13	285.43	220.57	1.0	13
5/19/2023	5:26	14:24	492	285.69	227.84	1.0	26	291.12	225.31	1.0	16	286.98	223.12	1.0	13	278.87	214.68	1.0	14
5/20/2023	5:27	14:31	496	293.07	229.05	1.1	26	281.72	240.11	1.1	16	288.77	222.28	1.0	14	272.50	221.83	1.0	14
5/21/2023	5:27	14:27	495	288.73	226.02	1.0	26	290.01	233.36	1.1	17	272.80	224.33	1.0	14	283.29	225.86	1.0	14
5/22/2023	5:27	14:30	497	288.42	234.14	1.1	27	293.65	242.14	1.1	16	294.92	226.43	1.0	13	269.93	220.67	1.0	15
5/23/2023	5:27	14:38	505	283.61	-- ⁽⁴⁾	1.0	26	299.67	238.32	1.1	17	282.20	227.97	1.0	13	288.08	238.76	1.0	14
5/24/2023	5:27	14:59	526	-- ⁽⁴⁾	-- ⁽⁴⁾	-- ⁽⁴⁾	-- ⁽⁴⁾	319.60	243.65	1.1	16	314.15	224.71	1.0	14	309.72	219.60	1.0	14
5/25/2023	5:26	14:37	503	300.16	229.84	1.1	29	289.87	247.25	1.1	18	279.74	232.38	1.0	14	278.72	190.98	0.9	16
5/26/2023	5:26	14:33	501	294.14	219.80	1.0	28	296.40	244.78	1.1	18	284.76	225.66	1.0	14	297.05	214.37	1.0	16
5/27/2023	5:25	14:27	496	280.13	226.15	1.0	28	286.12	231.55	1.0	19	281.82	228.33	1.0	15	274.13	225.00	1.0	16
5/28/2023	5:27	14:30	497	277.66	240.06	1.0	27	286.97	255.14	1.1	18	282.80	238.75	1.0	15	273.46	231.52	1.0	15
5/29/2023	5:27	14:30	498	275.80	235.78	1.0	27	287.89	242.20	1.1	19	295.31	223.96	1.0	15	297.10	228.52	1.1	15
5/30/2023	5:27	14:48	518	304.44	225.51	1.0	26	310.90	263.54	1.1	20	299.57	218.99	1.0	16	288.00	237.15	1.0	16
5/31/2023	5:27	14:37	505	282.95	226.45	1.0	26	298.76	232.52	1.1	19	291.15	227.04	1.0	15	276.53	215.98	1.0	23
May 2023 Total			8,630.18	6,503.98			8,962.08	7,329.17			8,914.98	6,986.41			8,748.93	6,905.35			
Cumulative Total			57,964.76	39,271.21			58,685.10	38,870.42			57,983.57	39,929.64			57,371.38	39,782.32			

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, 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. Operations at U4-E-06D were temporarily suspended on May 23, 2023 and resumed on May 25, 2023 due to maintenance to the injection wellhead.

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		E350.1	E351.2	E365.1	Anions by E300.0/SW9065A			Alkalinity by SM2320B				Dissolved Metals by SW6010B/SW6020					
						Perchlorate	Chlorate	Chlorite	Ammonia (as N)	Total Kjeldahl Nitrogen (TKN)	Phosphorus	Chloride	Nitrate (as N)	Sulfate	Alkalinity as CaCO3	Bicarbonate Alkalinity as CaCO3	Carbonate Alkalinity as CaCO3	Hydroxide Alkalinity as CaCO3	Aluminum	Antimony	Arsenic	Barium	Beryllium	Cadmium
						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-01D	2/16/2023	N	EM06	UMCf	96.7 - 106.7	647,000	6,010,000	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	
U4-MW-01D	3/20/2023	N	EM07	UMCf	96.7 - 106.7	1,140,000	4,300,000	<24,000	<117	<560	<33.3	955,000	8,720	429,000	126,000	126,000	<8,450	<8,450	<56.1	<1.03	7.27	40.6	<0.330	<0.150
U4-MW-01DD	4/19/2022	N	BLO2	UMCf	119.9 - 129.9	29,800	217,000	<2,400	----	----	----	191,000	230	214,000	----	----	----	----	----	----	----	----	----	
U4-MW-01DD	4/19/2022	FD	BLO2	UMCf	119.9 - 129.9	28,500	202,000	<2,400	----	----	----	191,000	259	214,000	----	----	----	----	----	----	----	----	----	
U4-MW-01DD	3/15/2023	N	EM07	UMCf	119.9 - 129.9	307,000	2,140,000	<24,000	<117	<140	108	539,000	4,730	249,000	62,600	62,600	<8,450	<8,450	<56.1	<1.03	9.69	117	<0.330	<0.150
U4-MW-01I	4/19/2022	N	BLO2	UMCf	76.7 - 86.7	410,000	3,510,000	<24,000	----	----	----	920,000	5,610	590,000	----	----	----	----	----	----	----	----	----	
U4-MW-01I	3/20/2023	N	EM07	UMCf	76.7 - 86.7	679,000	5,140,000	<24,000	<117	<280	<33.3	1,420,000	13,400	458,000 J	339,000	339,000	<8,450	<8,450	61.0 J	1.22 J	8.10	48.9	<0.330	<0.150
U4-MW-01S	4/18/2022	N	BLO2	UMCf	54.7 - 64.7	37,300	312,000	<2,400	----	----	----	289,000	2,730	1,290,000	----	----	----	----	----	----	----	----	----	
U4-MW-01S	3/15/2023	N	EM07	UMCf	54.7 - 64.7	22,600	241,000	3,630 J	<117	<140 UJ	39.4 J	261,000	5,680	1,190,000	142,000	131,000	10,300 J	<8,450	56.8 J	<1.03	57.0	12.1	<0.330	<0.150
U4-MW-02D	4/14/2022	N	BLO2	UMCf	95.0 - 110.0	2,850,000	24,800,000	<240,000	----	----	----	6,150,000	72,300	993,000	----	----	----	----	----	----	----	----	----	
U4-MW-02D	10/11/2022	N	EM02	UMCf	95.0 - 110.0	3,530,000	28,400,000	----	----	----	----	84,600	----	----	----	----	----	----	----	----	----	----	----	
U4-MW-02D	11/1/2022	N	EM03	UMCf	95.0 - 110.0	3,790,000	27,900,000	----	----	----	----	81,900	----	----	----	----	----	----	----	----	----	----	----	
U4-MW-02D	12/7/2022	N	EM04	UMCf	95.0 - 110.0	3,590,000	23,500,000	----	----	----	----	73,900	----	----	----	----	----	----	----	----	----	----	----	
U4-MW-02D	1/10/2023	N	EM05	UMCf	95.0 - 110.0	3,140,000	23,800,000	----	----	----	----	63,000	----	----	----	----	----	----	----	----	----	----	----	
U4-MW-02D	2/13/2023	N	EM06	UMCf	95.0 - 110.0	3,220,000	21,700,000	----	----	----	----	70,200	----	----	----	----	----	----	----	----	----	----	----	
U4-MW-02D	3/17/2023	N	EM07	UMCf	95.0 - 110.0	2,190,000	19,700,000	<240,000	<117	<1,400	<33.3	4,810,000	53,100 J-	943,000	126,000	126,000	<8,450	<8,450	<56.1	<10.3	6.71 J	142	<0.330	<1.50
U4-MW-02I	4/14/2022	N	BLO2	UMCf	75.0 - 90.0	291,000	2,420,000	<24,000	----	----	----	808,000	9,670	1,200,000	----	----	----	----	----	----	----	----	----	
U4-MW-02I	10/11/2022	N	EM02	UMCf	75.0 - 90.0	891,000	5,380,000	----	----	----	----	15,300	----	----	----	----	----	----	----	----	----	----	----	
U4-MW-02I	11/2/2022	N	EM03	UMCf	75.0 - 90.0	1,190,000	7,270,000	----	----	----	----	23,800	----	----	----	----	----	----	----	----	----	----	----	
U4-MW-02I	11/2/2022	FD	EM03	UMCf	75.0 - 90.0	1,200,000	6,610,000	----	----	----	----	20,600	----	----	----	----	----	----	----	----	----	----	----	
U4-MW-02I	12/8/2022	N	EM04	UMCf	75.0 - 90.0	103,000	707,000	----	----	----	----	<4800 R	----	----	----	----	----	----	----	----	----	----	----	
U4-MW-02I	12/8/2022	FD	EM04	UMCf	75.0 - 90.0	105,000	737,000	----	----	----	----	<4800 R	----	----	----	----	----	----	----	----	----	----	----	
U4-MW-02I	1/13/2023	N	EM05	UMCf	75.0 - 90.0	619,000	4,490,000	----	----	----	----	13,300	----	----	----	----	----	----	----	----	----	----	----	
U4-MW-02I	1/13/2023	FD	EM05	UMCf	75.0 - 90.0	620,000	4,410,000	----	----	----	----	13,100	----	----	----	----	----	----	----	----	----	----	----	
U4-MW-02I	2/15/2023	N	EM06	UMCf	75.0 - 90.0	1,490,000 J+	12,600,000	----	----	----	----	35,000	----	----	----	----	----	----	----	----	----	----	----	
U4-MW-02I	2/15/2023	FD	EM06	UMCf	75.0 - 90.0	1,410,000 J+	12,000,000	----	----	----	----	37,500	----	----	----	----	----	----	----	----	----	----	----	
U4-MW-02I	3/17/2023	N	EM07	UMCf	75.0 - 90.0	1,300,000	12,000,000	<240,000	<117	<1,400	<33.3	3,130,000	33,700 J-	981,000	311,000	311,000	<8,450	<8,450	<56.1	<5.15	23.8	96.6	<0.330	<0.750
U4-MW-02I	3/17/2023	FD	EM07	UMCf	75.0 - 90.0	133,000 J	12,300,000	<240,000	<117	<1,400	<33.3	3,120,000	32,300 J-	935,000	306,000	306,000	<8,450	<8,450	<56.1	<5.15	23.3	97.1	<0.330	<0.750
U4-MW-03D	4/20/2022	N	BLO2	UMCf	96.6 - 106.6	1,430,000	9,200,000	<240,000	----	----	----	2,110,000	22,400	534,000	----	----	----	----	----	----	----	----	----	
U4-MW-03D	2/16/2023	N	EM06	UMCf	96.6 - 106.6	997,000	7,490,000	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	
U4-MW-03D	3/16/2023	N	EM07	UMCf	96.6 - 106.6	1,070,000	6,830,000	<24,000	<117	<1,400	<33.3	1,550,000	16,100	363,000	62,000	62,000	<8,450	<8,450	76.8 J	<5.15	7.03 J	138	<0.330	<0.750
U4-MW-03D	3/16/2023	FD	EM07	UMCf	96.6 - 106.6	985,000	7,070,000	<24,000	<117	<1,400	<33.3	1,520,000	15,800	358,000	62,100	62,100	<8,450	<8,450	76.7 J	<5.15	7.05 J	137	<0.330	<0.750
U4-MW-03DD	4/20/2022	N	BLO2	UMCf	119.7 - 129.7	152,000	735,000	<2,400	----	----	----	319,000	1,180	255,000	----	----	----	----	----	----	----	----	----	
U4-MW-03DD	3/15/2023	N	EM07	UMCf	119.7 - 129.7	5,060	24,200	<240	<117	<140	128	140,000	1,290	159,000	88,000	88,000	<8,450	<8,450	<56.1	<1.03	12.6	24.1	<0.330	<0.150
U4-MW-03I	4/19/2022	N	BLO2	UMCf	76.6 - 86.6	207,000	1,200,000	<24,000	----	----	----	391,000	3,990 J	1,080,000	----	----	----	----	----	----	----	----	----	
U4-MW-03I	3/15/2023	N	EM07	UMCf	76.6 - 86.6	930,000	5,940,000	<24,000	<117	<700	<33.3	1,340,000	9,430	335,000	96,300	96,300	<8,450	<8,450	<56.1	<1.03	7.08	121	<0.330	<0.150
U4-MW-03S	4/18/2022	N	BLO2	UMCf	54.5 - 64.5	26,500	262,000	<2,400	----	----	----	222,000	1,750	1,160,000	----	----	----	----	----	----	----	----	----	
U4-MW-03S	4/18/2022	FD	BLO2	UMCf	54.5 - 64.5	26,200	264,000	<2,400	----	----	----	215,000	1,680	1,180,000	----	----	----	----	----	----	----	----	----	
U4-MW-03S	3/15/2023	N	EM07	UMCf	54.5 - 64.5	54,600	389,000	<2,400	<117	<140	72.7 J	241,000	4,110	1,040,000	260,000	152,000	109,000	<8,450	<56.1	<1.03	122	10.8	<0.330	<0.150
U4-MW-04D	4/19/2022	N	BLO2	UMCf	97.0 - 107.0	3,270,000	26,400,000	<240,000	----	----	----	5,690,000	53,500	1,160,000	----	----	----	----	----	----	----	----	----	
U4-MW-04D	2/16/2023	N	EM06	UMCf	97.0 - 107.0	427,000	3,370,000	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	
U4-MW-04D	3/21/2023	N	EM07	UMCf	97.0 - 107.0	42,200	2,770,000	<24,000	<117	<280	<33.3	680,000 J+	10,400	326,000 J	169,000	169,000	<8,450	<8,450	<56.1	<1.03	23.4	10.5	<0.330	<0.150
U4-MW-04I	4/19/2022	N	BLO2	UMCf	76.8 - 86.8	1,100,000	10,700,000	<24,000	----	----	----	2,460,000	23,300	1,150,000	----	----	----	----	----	----	----	----	----	
U4-MW-04I	3/20/2023	N	EM07	UMCf	76.8 - 86.8	1,880,000	7,880,000	<240,000	<117	<1,400	<33.3	2,080,000	25,300	591,000	111,000	111,000	<8,450	<8,450	<56.1	<5.15	15.1	17.4	<0.330	<0.750
U4-MW-05D	4/15/2022	N	BLO2	UMCf	98.2 - 108.2	2,240,000	13,600,000	<240,000	----	----	----	4,020,000	46,500	1,400,000	----	----	----	----	----	----	----	----	----	
U4-MW-05D	10/13/2022	N	EM02	UMCf	98.2 - 108.2	2,930,000	12,500,000	----	----	----	----	42,000	----	----	----	----	----	----	----	----	----	----	----	
U4-MW-05D	11/3/2022	N	EM03	UMCf	98.2 - 108.2	1,780,000	8,150,000	----	----	----	----	24,900	----	----	----	----	----	----	----	----	----	----	----	
U4-MW-05D	12/7/2022	N	EM04	UMCf	98.2 - 108.2	2,000,000 J+	7,730,000	----	----	----	----	27,600	----	----	----	----	----	----	----	----	----	----	----	
U4-MW-05D	1/11/2023	N	EM05	UMCf	98.2 - 108.2	1,720,000	6,020,000	----	----	----	----	27,200 J+	----	----	----	----	----	----	----	----	----	----	----	
U4-MW-05D	2/14/2023	N	EM06	UMCf	98.2 - 108.2	1,210,000	5,810,000	----	----	----	----	22,100	----	----	----	----	----	----	----	----	----	----	----	
U4-MW-05D	3/16/2023	N	EM07	UMCf	98.2 - 108.2	1,070,000	5,680,000	<24,000	<117	<1,400	73.2 J	1,630,000	17,200	558,000	132,000	132,000	<8,450	<8,450	<56.1	<5.15	34.2	60.8	<0.330	<0.750
U4-MW-05I	4/15/2022	N	BLO2	UMCf	76.6 - 86.6	1,220,000	8,940,000	<24,000	----	----	----	2,380,000	26,000	1,300,000	----	----	----	----	----	----	----	----	----	
U4-MW-05I	10/13/2022	N	EM02	UMCf	76.6 - 86.6	2,760,000	12,200,000	----	----	----	----	40,500	----	----	----	----	----	----	----	----	----	----	----	
U4-MW-05I	11/3/2022	N	EM03	UMCf	76.6 - 86.6	2,180,000	10,700,000	----																

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		E350.1	E351.2	E365.1	Anions by E300.0/SW9065A			Alkalinity by SM2320B				Dissolved Metals by SW6010B/SW6020					
						Perchlorate	Chlorate	Chlorite	Ammonia (as N)	Total Kjeldahl Nitrogen (TKN)	Phosphorus	Chloride	Nitrate (as N)	Sulfate	Alkalinity as CaCO3	Bicarbonate Alkalinity as CaCO3	Carbonate Alkalinity as CaCO3	Hydroxide Alkalinity as CaCO3	Aluminum	Antimony	Arsenic	Barium	Beryllium	Cadmium
						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-07D	2/14/2023	N	EM06	UMCF	96.8 - 106.5	43,000	263,000	----	----	----	----	----	1,030	----	----	----	----	----	----	----	----	----	----	
U4-MW-07D	3/16/2023	N	EM07	UMCF	96.8 - 106.5	400,000	278,000	<2,400	<117	<140	39.5 J	167,000	756	230,000	119,000	119,000	<8,450	<8,450	<56.1	<1.03	6.14	26.5	<0.330	<0.150
U4-MW-07I	4/15/2022	N	BLO2	UMCF	76.8 - 86.8	140,000	1,150,000	<24,000	----	----	----	463,000	4,200	1,190,000	----	----	----	----	----	----	----	----	----	
U4-MW-07I	10/12/2022	N	EM02	UMCF	76.8 - 86.8	69,100 J-	426,000	----	----	----	----	----	1,290	----	----	----	----	----	----	----	----	----	----	
U4-MW-07I	11/3/2022	N	EM03	UMCF	76.8 - 86.8	63,700	445,000	----	----	----	----	----	1,280	----	----	----	----	----	----	----	----	----	----	
U4-MW-07I	12/7/2022	N	EM04	UMCF	76.8 - 86.8	66,800	346,000	----	----	----	----	----	1,180	----	----	----	----	----	----	----	----	----	----	
U4-MW-07I	1/11/2023	N	EM05	UMCF	76.8 - 86.8	86,700	428,000	----	----	----	----	----	1,140 J+	----	----	----	----	----	----	----	----	----	----	
U4-MW-07I	2/15/2023	N	EM06	UMCF	76.8 - 86.8	51,000 J+	515,000	----	----	----	----	----	1,440	----	----	----	----	----	----	----	----	----	----	
U4-MW-07I	3/16/2023	N	EM07	UMCF	76.8 - 86.8	325,000	637,000	<2,400	<117	<140	<33.3	249,000	2,010	253,000	130,000	130,000	<8,450	<8,450	<56.1	<1.03	7.70	32.6	<0.330	<0.150
U4-MW-08D	4/13/2022	N	BLO2	UMCF	98.6 - 108.6	1,640,000	2,450,000	<24,000	<117	<2,800	68.2 J	4,960,000	71,400	1,130,000	184,000	184,000	<8,450	<8,450	<280	<10.3	10.8 J	144	<1.65	<1.50
U4-MW-08D	12/7/2022	N	EM04	UMCF	98.6 - 108.6	889,000	10,400,000	<240,000	<117	<1,400	63.8 J	2,730,000	26,500	603,000	219,000	219,000	<8,450	<8,450	<92.5	<5.15	8.66 J	81.9 J+	<0.950	<0.750
U4-MW-08D	3/17/2023	N	EM07	UMCF	98.6 - 108.6	821,000	9,450,000	<240,000	<117	<1,400	<33.3	2,780,000	27,700 J-	421,000 J	919,000	919,000	<8,450	<8,450	<56.1	<5.15	17.0	131	<0.330	<0.750
U4-MW-08DD	4/20/2022	N	BLO2	UMCF	119.8 - 129.8	25,700	281,000	<2,400	<117	<140	146 J+	213,000	1,520	210,000	89,800	89,800	<8,450	<8,450	<56.1	<1.03	10.9	19.0	<0.330	<0.150
U4-MW-08DD	4/20/2022	FD	BLO2	UMCF	119.8 - 129.8	23,800	294,000	<2,400	<117	<140	133 J	227,000	1,610	230,000	84,300	84,300	<8,450	<8,450	<56.1	<1.03	11.1	19.2	<0.330	<0.150
U4-MW-08DD	12/8/2022	N	EM04	UMCF	119.8 - 129.8	8,820	55,300	<12,000	<117	<140	191 J-	175,000	282	179,000	111,000	111,000	<8,450	<8,450	<18.5	1.33 J	10.8	21.3	<0.190	<0.150
U4-MW-08DD	3/15/2023	N	EM07	UMCF	119.8 - 129.8	170,000	966,000	<24,000	<117	<140	162	406,000	1,360	163,000	57,900	57,900	<8,450	<8,450	<56.1	<1.03	6.32	90.8	<0.330	<0.150
U4-MW-08I	4/13/2022	N	BLO2	UMCF	78.0 - 88.0	152,000	2,550,000	<24,000	<117	<700	55.5 J	768,000	7,610	1,160,000	175,000	166,000	9,060 J	<8,450	92.7 J	<1.03	43.1	20.6	<0.330	<0.150
U4-MW-08I	12/7/2022	N	EM04	UMCF	78.0 - 88.0	609,000	5,800,000	<240,000	<117	<700	46.0 J	1,660,000	19,200	941,000	164,000	164,000	<8,450	<8,450	<92.5	<5.15	37.2	51.8 J+	<0.950	<0.750
U4-MW-08I	12/7/2022	FD	EM04	UMCF	78.0 - 88.0	566,000	4,980,000	<240,000	<117	<700	<33.3 UJ	1,530,000	17,000	948,000	----	----	----	----	<92.5	<5.15	37.3	49.4 J+	<0.950	<0.750
U4-MW-08I	3/17/2023	N	EM07	UMCF	78.0 - 88.0	872,000	9,870,000	<240,000	<117	<1400 R	<33.3	2,290,000	26,700 J-	796,000	243,000	243,000	<8,450	<8,450	<56.1	<5.15	28.5	87.0	<0.330	<0.750
U4-MW-08S	4/15/2022	N	BLO2	UMCF	54.9 - 64.9	11,600	154,000	<2,400	<117	<140	<33.3	227,000	3,430	1,280,000	57,500	15,500 J	42,000	<8,450	<56.1	<1.03	14.5	25.0	<0.330	<0.150
U4-MW-08S	12/7/2022	N	EM04	UMCF	54.9 - 64.9	5,150	52,300	<480	<117	755 J	77.4 J	222,000	1,410	1,050,000	417,000 J	417,000 J	<8,450	<8,450	<18.5	<1.03	77.3	20.0	<0.190	<0.150
U4-MW-08S	12/7/2022	FD	EM04	UMCF	54.9 - 64.9	5,740	55,200	<480	<117	226 J	74.1 J	217,000	1,460	1,070,000	299,000 J	299,000 J	<8,450	<8,450	<18.5	<1.03	76.3	19.4	<0.190	<0.150
U4-MW-08S	3/13/2023	N	EM07	UMCF	54.9 - 64.9	98.0 J	2,860 J	<24.0	<117	639	243	192,000	<48.0	297,000	1,150,000	1,150,000	<8,450	<8,450	63.0 J	<1.03	43.0	184	<0.330	<0.150
U4-MW-08S	3/13/2023	FD	EM07	UMCF	54.9 - 64.9	<0.300 UJ	<240 UJ	<240	<117	723	246	187,000	<48.0	250,000	1,370,000	1,370,000	<8,450	<8,450	<56.1	<1.03	42.3	174	<0.330	<0.150
U4-MW-09D	4/14/2022	N	BLO2	UMCF	96.9 - 106.9	1,770,000	14,600,000	<240,000	<117	<1,400	58.0 J	3,270,000	43,200	877,000	179,000	179,000	<8,450	<8,450	<56.1	<10.3	7.44 J	14.2	<0.330	<1.50
U4-MW-09D	12/6/2022	N	EM04	UMCF	96.9 - 106.9	209,000 J+	1,480,000	<24000 UJ	<117 UJ	<280 UJ	<33.3 UJ	439,000	<4800 UJ	274,000 J	136,000	136,000	<8450 UJ	<8450 UJ	<18.5 UJ	<1.03 UJ	33.5	50.7	<0.190 UJ	<0.150 UJ
U4-MW-09D	3/16/2023	N	EM07	UMCF	96.9 - 106.9	189,000	1,240,000	24,900	<117	<140 R	<33.3	909,000	756 J	200,000	905,000	905,000	<8,450	<8,450	59.0 J	<1.03	25.6	152	<0.330	<0.150
U4-MW-09DD	4/14/2022	N	BLO2	UMCF	119.8 - 129.8	25,200	110,000	<2,400	<117	<140	84.5 J	172,000	1,060	178,000	98,100	91,300	<8,450	<8,450	<56.1	<1.03	10.2	27.6	<0.330	<0.150
U4-MW-09DD	12/6/2022	N	EM04	UMCF	119.8 - 129.8	12,200 J+	48,600	<2400 UJ	<117 UJ	<140 UJ	46.8 J	159,000	963	179,000	83,000	83,000	<8450 UJ	<8450 UJ	<18.5 UJ	<1.03 UJ	11.7	28.5	<0.190 UJ	<0.150 UJ
U4-MW-09DD	3/21/2023	N	EM07	UMCF	119.8 - 129.8	88,700	387,000	<2,400	<117	<140	37.1 J	257,000	1,770	151,000	61,000	61,000	<8,450	<8,450	<56.1	<1.03	9.50	65.3	<0.330	<0.150
U4-MW-09I	4/14/2022	N	BLO2	UMCF	76.8 - 86.8	78,700	439,000	<2,400	<117	<140	120 J+	242,000	3,120	1,100,000	109,000	109,000	<8,450	<8,450	<56.1	<1.03	24.8	16.6	<0.330	<0.150
U4-MW-09I	12/6/2022	N	EM04	UMCF	76.8 - 86.8	448,000 J+	2,560,000	<240000 UJ	<117 UJ	<140 UJ	<33.3 UJ	715,000	7,720 J	431,000 J	133,000	133,000	<8450 UJ	<8450 UJ	<92.5 UJ	<5.15 UJ	20.0	44.2	<0.950 UJ	<0.750 UJ
U4-MW-09I	3/16/2023	N	EM07	UMCF	76.8 - 86.8	340,000	2,090,000	<24,000	<117	<140	<33.3	946,000	2,140	292,000	723,000	723,000	<8,450	<8,450	<56.1	<1.03	25.5	89.2	<0.330	<0.150
U4-MW-09S	4/14/2022	N	BLO2	UMCF	55.3 - 65.3	14,800	91,400	<2,400	<117	<140	76.5 J	182,000	2,260	964,000	141,000	123,000	17,900 J	<8,450	<56.1	<1.03	46.2	17.5	<0.330	<0.150
U4-MW-09S	12/6/2022	N	EM04	UMCF	55.3 - 65.3	91,500	503,000	<24000 UJ	<117 UJ	<140 UJ	<33.3 UJ	256,000	3,360	1,020,000	258,000	238,000	20,400	<8450 UJ	<18.5 UJ	<1.03 UJ	56.2	10.2	<0.190 UJ	<0.150 UJ
U4-MW-09S	3/17/2023	N	EM07	UMCF	55.3 - 65.3	84,500	474,000	<2,400	<117	<140	44.7 J	373,000	1,820	822,000	265,000	249,000	15,300 J	<8,450	<56.1	<1.03	46.3	17.1	<0.330	<0.150
U4-MW-10D	4/14/2022	N	BLO2	UMCF	96.9 - 106.9	118,000	2,180,000	<24,000	<117	<700	<33.3	706,000	4,090	340,000	93,000	93,000	<8,450	<8,450	<56.1	<1.03	8.78	58.7	<0.330	<0.150
U4-MW-10D	12/5/2022	N	EM04	UMCF	96.9 - 106.9	82,300	956,000	<24,000	<117	<140	<33.3 UJ	383,000	1,720	180,000	60,800	60,800	<8,450	<8,450	<56.1	<1.03	7.91	106	<0.330	<0.150
U4-MW-10D	3/17/2023	N	EM07	UMCF	96.9 - 106.9	10,600	74,700	101,000	<117 UJ	966 J+	<33.3	478,000	<48.0	74,500	1,200,000	1,200,000	<8,450	<8,450	<56.1	<1.03	33.0	413		

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		E350.1	E351.2	E365.1	Anions by E300.0/SW9065A			Alkalinity by SM2320B				Dissolved Metals by SW6010B/SW6020					
						Perchlorate	Chlorate	Chlorite	Ammonia (as N)	Total Kjeldahl Nitrogen (TKN)	Phosphorus	Chloride	Nitrate (as N)	Sulfate	Alkalinity as CaCO3	Bicarbonate Alkalinity as CaCO3	Carbonate Alkalinity as CaCO3	Hydroxide Alkalinity as CaCO3	Aluminum	Antimony	Arsenic	Barium	Beryllium	Cadmium
						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-12D	11/2/2022	N	EM03	UMCF	97.1 - 107.1	1,030,000	9,430,000	<240,000	<117	<7,000	<33.3	2,060,000	28,700	842,000	----	----	----	----	----	----	----	----	----	
U4-MW-12D	12/7/2022	N	EM04	UMCF	97.1 - 107.1	1,060,000	6,990,000	<240,000	<117	<700	45.3 J	2,010,000	22,700	818,000	218,000	218,000	<8,450	<8,450	<92.5	<5.15	14.8	64.9 J+	<0.950	<0.750
U4-MW-12D	1/12/2023	N	EM05	UMCF	97.1 - 107.1	918,000	8,540,000	<240,000	<117	<2,800	<33.3	1,900,000	21,600	624,000	----	----	----	----	----	----	----	----	----	----
U4-MW-12D	2/15/2023	N	EM06	UMCF	97.1 - 107.1	617,000 J+	8,230,000	<24,000	<117	<1,400	<33.3	1,840,000	21,700	537,000	----	----	----	----	----	----	----	----	----	----
U4-MW-12D	3/14/2023	N	EM07	UMCF	97.1 - 107.1	567,000 J+	6,130,000	<24,000	<117	<700	<33.3	1,610,000	10,100	468,000	302,000	302,000	<8,450	<8,450	<56.1	<5.15	15.0	98.4	<0.330	<0.750
U4-MW-12I	4/14/2022	N	BLO2	UMCF	76.8 - 86.8	424,000	4,000,000	<24,000	<117	<1,400	68.0 J	967,000	7,700	1,230,000	147,000	147,000	<8,450	<8,450	<56.1	3.92 J	14.6	48.2	<0.330	2.51 J
U4-MW-12I	4/14/2022	FD	BLO2	UMCF	76.8 - 86.8	420,000	3,920,000	<24,000	<117	<1,400	104 J+	968,000	8,310	1,220,000	139,000	139,000	<8,450	<8,450	61.1 J	1.29 J	12.6	47.3	<0.330	<0.150 UJ
U4-MW-12I	9/27/2022	N	EM01	UMCF	76.8 - 86.8	51,500	535,000	<2,400	<117	<140	271 J-	278,000	2,190	1,080,000	----	----	----	----	----	----	----	----	----	----
U4-MW-12I	10/12/2022	N	EM02	UMCF	76.8 - 86.8	35,100	475,000 J	<240000 R	<117 UJ	<140 UJ	42.6 J	280,000	535	1,030,000	----	----	----	----	----	----	----	----	----	----
U4-MW-12I	11/2/2022	N	EM03	UMCF	76.8 - 86.8	28,800	170,000	<2400 UJ	<117	<140 UJ	<33.3	283,000	383	989,000	----	----	----	----	----	----	----	----	----	----
U4-MW-12I	12/7/2022	N	EM04	UMCF	76.8 - 86.8	6,800	26,800	<12,000	<117	629 J+	<33.3	----	----	----	592,000	592,000	<8,450	<8,450	<18.5	1.36 J	108	20.7	<0.190	<0.150
U4-MW-12I	12/7/2022	FD	EM04	UMCF	76.8 - 86.8	6,630	28,700	<12,000	<117	739 J+	<33.3	----	----	----	----	----	----	----	21.6 J	1.26 J	108	20.7	<0.190	<0.150
U4-MW-12I	1/13/2023	N	EM05	UMCF	76.8 - 86.8	2,450	24,100	<2,400	<117	579	<33.3	197,000	83.5 J	44,500	----	----	----	----	----	----	----	----	----	----
U4-MW-12I	2/15/2023	N	EM06	UMCF	76.8 - 86.8	1,720 J+	16,900	46,000	<117	878	<33.3	169,000	99.2 J	24,700	----	----	----	----	----	----	----	----	----	----
U4-MW-12I	3/13/2023	N	EM07	UMCF	76.8 - 86.8	269	1,800	31,200	<117	1,220	<33.3	151,000	<48.0 J	3,350 J	1,560,000	1,560,000	<8,450	<8,450	<56.1	<1.03	47.2	439	<0.330	<0.150
U4-MW-13D	4/14/2022	N	BLO2	UMCF	98.2 - 108.2	1,330,000	14,700,000	<240,000	<117	<1,400	115 J+	3,130,000	60,700	662,000	128,000	128,000	<8,450	<8,450	375 J	<10.3	5.43 J	173	<1.65	<1.50
U4-MW-13D	9/28/2022	N	EM01	UMCF	98.2 - 108.2	401,000	5,370,000	<24,000	<117	<280	<33.3 UJ	1,330,000	10,900	336,000 J	----	----	----	----	----	----	----	----	----	----
U4-MW-13D	10/11/2022	N	EM02	UMCF	98.2 - 108.2	413,000	4,100,000	<120,000	<117	<560	<33.3	1,400,000	6,780 J	379,000 J	----	----	----	----	----	----	----	----	----	----
U4-MW-13D	11/3/2022	N	EM03	UMCF	98.2 - 108.2	433,000	4,080,000	<240,000	<117	<280	<33.3	1,300,000	6,960	295,000	----	----	----	----	----	----	----	----	----	----
U4-MW-13D	12/7/2022	N	EM04	UMCF	98.2 - 108.2	411,000	3,380,000	<240,000	257	<700	<33.3	1,190,000	9,910 J	288,000 J	190,000	190,000	<8,450	<8,450	<92.5	<5.15	7.37 J	100	<0.950	<0.750
U4-MW-13D	1/12/2023	N	EM05	UMCF	98.2 - 108.2	383,000	3,950,000	<240,000	<117	<280	<33.3	984,000	10,300	289,000 J	----	----	----	----	----	----	----	----	----	----
U4-MW-13D	2/15/2023	N	EM06	UMCF	98.2 - 108.2	374,000 J+	3,490,000	<24,000	<117	<560	<33.3	820,000	12,000	296,000 J	----	----	----	----	----	----	----	----	----	----
U4-MW-13D	3/17/2023	N	EM07	UMCF	98.2 - 108.2	337,000	3,160,000	<24,000	<117	<280	193	699,000 J+	8,410 J	280,000 J	107,000	107,000	<8,450	<8,450	<56.1	<1.03	5.75	76.8	<0.330	<0.150
U4-MW-13I	4/14/2022	N	BLO2	UMCF	77.1 - 87.1	418,000	4,180,000	<24,000	<117	<1,400	109 J+	943,000	7,030	1,090,000	116,000	116,000	<8,450	<8,450	<56.1	<1.03	12.6	43.5	<0.330	<0.150
U4-MW-13I	9/28/2022	N	EM01	UMCF	77.1 - 87.1	233,000	1,720,000	<12,000	<117	<280	79.5 J	487,000	9,130 J	1,040,000	----	----	----	----	----	----	----	----	----	----
U4-MW-13I	10/10/2022	N	EM02	UMCF	77.1 - 87.1	212,000	1,410,000	<24,000	<117	<140	50.5 J	441,000	5,560	1,060,000	----	----	----	----	----	----	----	----	----	----
U4-MW-13I	11/3/2022	N	EM03	UMCF	77.1 - 87.1	149,000	830,000	<24,000	<117	<140	<33.3	402,000	3,730	932,000	----	----	----	----	----	----	----	----	----	----
U4-MW-13I	12/6/2022	N	EM04	UMCF	77.1 - 87.1	69,200	337,000	<24000 UJ	122 J	<140 UJ	<33.3 UJ	467,000	<48.0 UJ	545,000	599,000	599,000	<8450 UJ	<8450 UJ	<18.5 UJ	2.00 J	79.2	19.6	<0.190 UJ	<0.150 UJ
U4-MW-13I	1/12/2023	N	EM05	UMCF	77.1 - 87.1	59,400	261,000	<24,000	<117	<140	75.6 J	447,000	360	433,000	----	----	----	----	----	----	----	----	----	----
U4-MW-13I	2/14/2023	N	EM06	UMCF	77.1 - 87.1	117,000	790,000	<24,000	183 J	<140	<33.3	521,000	1,780	399,000	----	----	----	----	----	----	----	----	----	----
U4-MW-13I	3/16/2023	N	EM07	UMCF	77.1 - 87.1	2,680 J+	12,500	<240	<117	959 J	66.8 J	341,000	<48.0	55,400	1,100,000	1,100,000	<8,450	<8,450	<56.1	1.14 J	74.9	239	<0.330	0.223 J
U4-MW-14D	4/13/2022	N	BLO2	UMCF	97.3 - 107.3	140,000	462,000	<12,000	<117	<140	33.3 R	349,000	729 J	2,560,000	101,000	101,000	<8,450	<8,450	<56.1	<1.03	21.3	33.5	<0.330	<0.150
U4-MW-14D	12/6/2022	N	EM04	UMCF	97.3 - 107.3	207,000 J+	1,300,000	<24000 UJ	<117 UJ	<140 UJ	<33.3 UJ	432,000	3,700	946,000	71,300	71,300	<8450 UJ	<8450 UJ	20.6 J	<1.03 UJ	14.6	56.2	<0.190 UJ	<0.150 UJ
U4-MW-14D	3/16/2023	N	EM07	UMCF	97.3 - 107.3	159,000	1,260,000	<24,000	<117	<140	38.2 J	316,000	2,420	387,000	85,900	85,900	<8,450	<8,450	<56.1	<1.03	13.2	52.1	<0.330	<0.150
U4-MW-14I	4/14/2022	N	BLO2	UMCF	77.3 - 87.3	181,000	506,000	<2,400	<117	<140	173 J+	274,000	2,490	1,410,000	77,600	70,500	<8,450	<8,450	<56.1	<1.03	16.6	23.1	<0.330	<0.150
U4-MW-14I	12/6/2022	N	EM04	UMCF	77.3 - 87.3	249,000	1,060,000	<24000 UJ	<117 UJ	<140 UJ	<33.3 UJ	401,000	2,700	1,490,000	87,400	87,400	<8450 UJ	<8450 UJ	<18.5 UJ	<1.03 UJ	17.1	49.4	<0.190 UJ	<0.150 UJ
U4-MW-14I	3/16/2023	N	EM07	UMCF	77.3 - 87.3	427,000	1,200,000	<24,000	<117	<140	56.8 J	346,000	2,510	597,000	87,300	87,300	<8,450	<8,450	<56.1	<1.03	14.1	49.1	<0.330	<0.150
U4-MW-15D	4/13/2022	N	BLO2	UMCF	96.0 - 106.0	141,000	2,400,000	<24,000	<117	<700	63.7 J	749,000	3,170	410,000	112,000	112,000	<8,450	<8,450	149 J	<1.03	9.66	56.0	<0.330	<0.150
U4-MW-15D	12/5/2022	N	EM04	UMCF	96.0 - 106.0	75,300	1,220,000	<24,000	<117	<140	<33.3 UJ	458,000	1,220	225,000	108,000	108,000	<8,450	<8,450	<56.1	<1.03	10.6	49.7	<0.330	<0.150
U4-MW-15D	3/20/2023	N	EM07	UMCF	96.0 - 106.0	61,600	1,070,000	<24,000	<117	<140	68.9 J	403,000	2,030	196,000	77,100	77,100	<8,450	<8,450	<56.1	<1.03	8.49	56.3	<0.330	<0.150
U4-MW-15DD	4/13/2022	N	BLO2	UMCF	120.3 - 130.3	1,380	19,700	<2,400	<117	<140	<33.3	152,000	878	214,000	108,000	100,000	<8,450	<8,450	<56.1	<1.03	18.8	21.3	<0.330	<0.150
U4-MW-15DD	12/5/2022	N	EM04	UMCF	120.3 - 130.3	20.1	1,580	<240	142 J	<140	36.9 J	144,000	1,260	177,000	82,600	77,800	<8,450	<8,450	<56.1	<1.03	16.8	25.2	<0.330	<0.150
U4-MW-15DD	3/15/2023	N	EM07	UMCF	120.3 - 130.3	14.5	<240	<240	<117	<140	52.3 J	141,000	1,470	165,000	81,600	79,300	<8,450	<8,450	62.9 J	<1.03	13.4	25.3	<0.330	<0.150
U4-MW-15I	4/12/2022	N	BLO2	UMCF	76.8 - 86.8	86,400	1,190,000	<24,000	<117	<140	85.9 J	420,000	5,590	1,070,000	233,000	----	----	----	<56.1	<1.03	31.1	20.5 J+	<0.330	<0.150
U4-MW-15I	12/5/2022	N	EM04	UMCF	76.8 - 86.8	84,200	862,000	<24,000	<117	<140	45.5 J	500,000	827	875,000	486,000	486,000	<8,450	<8,450	<56.1	1.24 J	44.9	24.9	<0.330	<0.150
U4-MW-15I	3/17/2023	N	EM07	UMCF	76.8 - 86.8	376 J	<240	179,000	<1															

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		E350.1	E351.2	E365.1	Anions by E300.0/SW9065A			Alkalinity by SM2320B				Dissolved Metals by SW6010B/SW6020					
						Perchlorate	Chlorate	Chlorite	Ammonia (as N)	Total Kjeldahl Nitrogen (TKN)	Phosphorus	Chloride	Nitrate (as N)	Sulfate	Alkalinity as CaCO3	Bicarbonate Alkalinity as CaCO3	Carbonate Alkalinity as CaCO3	Hydroxide Alkalinity as CaCO3	Aluminum	Antimony	Arsenic	Barium	Beryllium	Cadmium
						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-T3	2/13/2023	N	EM06		-	877,000	7,800,000	<24,000	----	----	----	1,770,000	----	----	----	----	----	----	----	----	----	----	----	----
U4-T3	3/13/2023	N	EM07		-	815,000	7,400,000	<24,000	----	----	----	1,810,000	14,500	----	----	----	----	----	----	----	----	----	----	----

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 5
Groundwater Analytical Results
 Unit 4 Source Area Bioremediation Treatability Study

Well	Sample Date	QC Type	Event	Screened Lithology	Screened Interval	Dissolved Metals by SW6010B/SW6020																		
						Calcium	Chromium	Cobalt	Copper	Iron	Lead	Magnesium	Manganese	Molybdenum	Nickel	Phosphorus	Potassium	Selenium	Silver	Sodium	Thallium	Uranium	Vanadium	Zinc
						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-01D	2/16/2023	N	EM06	UMCf	96.7 - 106.7	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	
U4-MW-01D	3/20/2023	N	EM07	UMCf	96.7 - 106.7	110,000	4,860	<0.840	6.39	<18.0	<0.849	62,300	<0.934	<1.16	<0.816	----	5,630	3.03	<0.0700	165,000	<0.121	3.18	<4.99	<3.02
U4-MW-01DD	4/19/2022	N	BLO2	UMCf	119.9 - 129.9	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	
U4-MW-01DD	4/19/2022	FD	BLO2	UMCf	119.9 - 129.9	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	
U4-MW-01DD	3/15/2023	N	EM07	UMCf	119.9 - 129.9	276,000	8,120	<0.840	3.13 J	<18.0	<0.849	125,000	11.3 J+	6.64	<0.816	----	21,800	1.92 J	<0.0700	377,000	<0.121	2.59	<4.99	<3.02
U4-MW-01I	4/19/2022	N	BLO2	UMCf	76.7 - 86.7	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	
U4-MW-01I	3/20/2023	N	EM07	UMCf	76.7 - 86.7	156,000	5,440	<0.840	7.21	<18.0	1.06 J	85,700	4.20 J	<1.16	<0.816	----	7,270	3.38	0.146 J	213,000	0.148 J	3.88	<4.99	<3.02
U4-MW-01S	4/18/2022	N	BLO2	UMCf	54.7 - 64.7	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	
U4-MW-01S	3/15/2023	N	EM07	UMCf	54.7 - 64.7	15,200	1,290	<0.840	5.26	66.4 J	<0.849	4,240	<0.934	24.4	<0.816	----	17,500	2.64	<0.0700	859,000	<0.121	2.66	66.7	<3.02
U4-MW-02D	4/14/2022	N	BLO2	UMCf	95.0 - 110.0	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	
U4-MW-02D	10/11/2022	N	EM02	UMCf	95.0 - 110.0	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	
U4-MW-02D	11/1/2022	N	EM03	UMCf	95.0 - 110.0	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	
U4-MW-02D	12/7/2022	N	EM04	UMCf	95.0 - 110.0	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	
U4-MW-02D	1/10/2023	N	EM05	UMCf	95.0 - 110.0	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	
U4-MW-02D	2/13/2023	N	EM06	UMCf	95.0 - 110.0	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	
U4-MW-02D	3/17/2023	N	EM07	UMCf	95.0 - 110.0	1,230,000	94,700	<0.840	<15.1	<18.0	<8.49	636,000	5.23 J	16.0	<8.16	----	94,100	7.47 J	1.64 J	6,650,000	<1.21	3.50 J	<4.99	<30.2
U4-MW-02I	4/14/2022	N	BLO2	UMCf	75.0 - 90.0	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	
U4-MW-02I	10/11/2022	N	EM02	UMCf	75.0 - 90.0	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	
U4-MW-02I	11/2/2022	N	EM03	UMCf	75.0 - 90.0	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	
U4-MW-02I	11/2/2022	FD	EM03	UMCf	75.0 - 90.0	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	
U4-MW-02I	12/8/2022	N	EM04	UMCf	75.0 - 90.0	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	
U4-MW-02I	12/8/2022	FD	EM04	UMCf	75.0 - 90.0	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	
U4-MW-02I	1/13/2023	N	EM05	UMCf	75.0 - 90.0	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	
U4-MW-02I	1/13/2023	FD	EM05	UMCf	75.0 - 90.0	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	
U4-MW-02I	2/15/2023	N	EM06	UMCf	75.0 - 90.0	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	
U4-MW-02I	2/15/2023	FD	EM06	UMCf	75.0 - 90.0	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	
U4-MW-02I	3/17/2023	N	EM07	UMCf	75.0 - 90.0	581,000	61,100	<0.840	<7.55	<18.0	<4.24	294,000	221	23.4	103	----	73,000	6.92 J	<0.350	4,660,000	<0.605	19.3	8.84 J	<15.1
U4-MW-02I	3/17/2023	FD	EM07	UMCf	75.0 - 90.0	555,000	61,000	<0.840	<7.55	<18.0	<4.24	289,000	229	23.8	99.2	----	71,300	4.91 J	<0.350	4,660,000	<0.605	18.7	12.3 J	<15.1
U4-MW-03D	4/20/2022	N	BLO2	UMCf	96.6 - 106.6	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	
U4-MW-03D	2/16/2023	N	EM06	UMCf	96.6 - 106.6	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	
U4-MW-03D	3/16/2023	N	EM07	UMCf	96.6 - 106.6	692,000	28,100	<0.840	<7.55	<18.0	<4.24	369,000	8.20 J	4.49 J	<4.08	----	35,900	1.88 J	<0.350	1,840,000	<0.605	2.41 J	<4.99	<15.1
U4-MW-03D	3/16/2023	FD	EM07	UMCf	96.6 - 106.6	684,000	28,200	<0.840	<7.55	<18.0	4.90 J	369,000	2.65 J	5.12	<4.08	----	35,900	3.11 J	<0.350	1,890,000	<0.605	2.52 J	<4.99	<15.1
U4-MW-03DD	4/20/2022	N	BLO2	UMCf	119.7 - 129.7	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	
U4-MW-03DD	3/15/2023	N	EM07	UMCf	119.7 - 129.7	30,700	64.2	<0.840	<1.51	<18.0	<0.849	16,400	3.34 J	8.98	<0.816	----	6,600	1.83 J	<0.0700	145,000	<0.121	2.55	7.92 J	<3.02
U4-MW-03I	4/19/2022	N	BLO2	UMCf	76.6 - 86.6	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	
U4-MW-03I	3/15/2023	N	EM07	UMCf	76.6 - 86.6	600,000	25,400	<0.840	<1.51	<18.0	<0.849	325,000	5.11 J	5.12	<0.816	----	37,100	2.88 J+	0.0987 J	1,590,000	0.158 J	4.09	<4.99	<3.02
U4-MW-03S	4/18/2022	N	BLO2	UMCf	54.5 - 64.5	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	
U4-MW-03S	4/18/2022	FD	BLO2	UMCf	54.5 - 64.5	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	
U4-MW-03S	3/15/2023	N	EM07	UMCf	54.5 - 64.5	4,160	2,290	<0.840	<1.51	<18.0	<0.849	584 J	3.04 J	20.8	<0.816	----	11,100	3.27 J+	<0.0700	892,000	<0.121	6.81	159	<3.02
U4-MW-04D	4/19/2022	N	BLO2	UMCf	97.0 - 107.0	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	
U4-MW-04D	2/16/2023	N	EM06	UMCf	97.0 - 107.0	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	
U4-MW-04D	3/21/2023	N	EM07	UMCf	97.0 - 107.0	43,100	2,740	<0.840	<1.51	<18.0	<0.849	23,700	1.08 J	<1.16	<0.816	----	2,920	2.08	<0.0700	205,000	<0.121	9.80	<4.99	<3.02
U4-MW-04I	4/19/2022	N	BLO2	UMCf	76.8 - 86.8	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	
U4-MW-04I	3/20/2023	N	EM07	UMCf	76.8 - 86.8	141,000	7,070	<0.840	19.3 J	<18.0	<4.24	71,500	<0.934	1.55 J	<4.08	----	6,810	2.95 J	<0.350	482,000	<0.605	7.91	<4.99	<15.1
U4-MW-05D	4/15/2022	N	BLO2	UMCf	98.2 - 108.2	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	
U4-MW-05D	10/13/2022	N	EM02	UMCf	98.2 - 108.2	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	
U4-MW-05D	11/3/2022	N	EM03	UMCf	98.2 - 108.2	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	
U4-MW-05D	12/7/2022	N	EM04	UMCf	98.2 - 108.2	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	
U4-MW-05D	1/11/2023	N	EM05	UMCf	98.2 - 108.2	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	
U4-MW-05D	2/14/2023	N	EM06	UMCf	98.2 - 108.2	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	
U4-MW-05D	3/16/2023	N	EM07	UMCf	98.2 - 108.2	258,000	28,700	<0.840	<7.55	<18.0	<4.24	129,000	2.45 J	15.8	<4.08	----	34,300	<1.50	<0.350	2,670,000	<0.605	13.1	11.8 J	<15.1
U4-MW-05I	4/15/2022	N	BLO2	UMCf	76.6 - 86.6	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	
U4-MW-05I	10/13/2022	N	EM02	UMCf	76.6 - 86.6	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	
U4-MW-05I	11/3/2022	N	EM03	UMCf	76.6 - 86.6	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	
U4-MW-05I	12/8/2022	N	EM04	UMCf	76.6 - 86.6	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	
U4-MW-05I	1/11/2023	N	EM05	UMCf	76.6 - 86.6	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	
U4-MW-05I	2/14/2023	N	EM06	UMCf	76.6 - 86.6	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	
U4-MW-05I	3/14/2023	N	EM07	UMCf	76.6 - 86.6	234,000	30,300	<0.840	<7.55	490	<4.24	117,000	9.99 J	22.5	<4.08	----	36,600	3.42 J	<0.350	2,700,000	<0.605	16.0	21.8	<15.1
U4-MW-06D	4/19/2022	N	BLO2	UMCf	97.1 - 107.1	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	
U4-MW-06D	2/15/2023	N	EM06	UMCf	97.1 - 107.1	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	
U4-MW-06D	3/21/2023	N	EM07	UMCf	97.1 - 107.1	121,000	7,300	<0.840	<1.51	<18.0	<0.849	62,500	1.26 J	<1.16	<0.816	----	7,760	3.38	0.293 J	530,000	0.144 J	6.77	<4.99	<3.02
U4-MW-06I	4/19/2022	N	BLO2	UMCf	76.5 - 86.5	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	
U4-MW-06I	3/14/2023	N	EM07	UMCf	76.5 -																			

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 SW6010B/SW6020																		
						Calcium	Chromium	Cobalt	Copper	Iron	Lead	Magnesium	Manganese	Molybdenum	Nickel	Phosphorus	Potassium	Selenium	Silver	Sodium	Thallium	Uranium	Vanadium	Zinc
						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-07D	2/14/2023	N	EM06	UMCf	96.8 - 106.5	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
U4-MW-07D	3/16/2023	N	EM07	UMCf	96.8 - 106.5	84,500	931	<0.840	<1.51	86.5 J	<0.849	39,700	1.27 J	3.84 J	<0.816	----	5,290	1.91 J	<0.0700	189,000	<0.121	7.45	<4.99	<3.02
U4-MW-07I	4/15/2022	N	BLO2	UMCf	76.8 - 86.8	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
U4-MW-07I	10/12/2022	N	EM02	UMCf	76.8 - 86.8	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
U4-MW-07I	11/3/2022	N	EM03	UMCf	76.8 - 86.8	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
U4-MW-07I	12/7/2022	N	EM04	UMCf	76.8 - 86.8	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
U4-MW-07I	1/11/2023	N	EM05	UMCf	76.8 - 86.8	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
U4-MW-07I	2/15/2023	N	EM06	UMCf	76.8 - 86.8	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
U4-MW-07I	3/16/2023	N	EM07	UMCf	76.8 - 86.8	93,500	2,670	<0.840	<1.51	29.1 J	<0.849	46,800	0.976 J	3.33 J	0.924 J	----	7,190	1.39 J	<0.0700	314,000	<0.121	8.83	5.92 J	5.20 J
U4-MW-08D	4/13/2022	N	BLO2	UMCf	98.6 - 108.6	1,610,000	112,000	<4.20	<15.1	<90.0	<8.49	707,000	37.2 J	11.9 J	<8.16	<91.5	102,000	7.61 J	<0.700	7,950,000	<1.21	10.1	<25.0	<30.2
U4-MW-08D	12/7/2022	N	EM04	UMCf	98.6 - 108.6	665,000	49,000	<0.298	<7.55	<140	<4.24	330,000	11.7 J	3.10 J	<4.08	----	43,000	4.50 J	<0.350	3,880,000	<0.605	24.7	6.96 J	<15.1
U4-MW-08D	3/17/2023	N	EM07	UMCf	98.6 - 108.6	532,000	40,100	<0.840	<7.55	<18.0	<4.24	378,000	40.2 J+	4.72 J	<4.08	----	49,900	6.98 J	<0.350	3,810,000	<0.605	103	<4.99	<15.1
U4-MW-08DD	4/20/2022	N	BLO2	UMCf	119.8 - 129.8	58,200	764	<0.840	<1.51	<18.0	<0.849	28,400	14.7	9.57	1.49 J	110 J	11,000	2.68	<0.0700	258,000	<0.121	3.24	10.4 J	<3.02
U4-MW-08DD	4/20/2022	FD	BLO2	UMCf	119.8 - 129.8	58,000	780	<0.840	<1.51	<18.0	<0.849	28,400	14.6	9.89	1.44 J	107 J	11,100	2.31	<0.0700	258,000	<0.121	3.20	9.34 J	<3.02
U4-MW-08DD	12/8/2022	N	EM04	UMCf	119.8 - 129.8	45,600	56.7	0.145 J	<1.51	<28.1	<0.849	23,100	31.7	10.9	3.15	----	9,950	2.00	<0.0700	179,000	<0.121	3.17	8.61	23.0 J
U4-MW-08DD	3/15/2023	N	EM07	UMCf	119.8 - 129.8	167,000	1,300	<0.840	2.67 J	<18.0	0.963 J	92,600	2.52 J	4.92 J	1.72 J	----	15,400	2.01	<0.0700	359,000	<0.121	2.28	<4.99	<3.02
U4-MW-08I	4/13/2022	N	BLO2	UMCf	78.0 - 88.0	107,000	8,950	<0.840	1.90 J	<18.0	<0.849	44,400	5.20 J	18.7	0.820 J	25.4 J	23,000	2.69	<0.0700	1,300,000	<0.121	6.55	23.5	3.30 J
U4-MW-08I	12/7/2022	N	EM04	UMCf	78.0 - 88.0	355,000	31,400	1.54 J	<7.55	<140	<4.24	166,000	29.6	12.8 J	113	----	36,600	3.16 J	<0.350	2,570,000	<0.605	23.7	18.2 J	<15.1
U4-MW-08I	12/7/2022	FD	EM04	UMCf	78.0 - 88.0	349,000	31,000	1.41 J	<7.55	<140	<4.24	163,000	28.6	12.7 J	106	----	36,200	3.40 J	<0.350	2,540,000	<0.605	23.2	18.3 J	<15.1
U4-MW-08I	3/17/2023	N	EM07	UMCf	78.0 - 88.0	538,000	48,700	<0.840	<7.55	<18.0	<4.24	288,000	13.6 J+	16.2	29.8	----	55,900	6.53 J	<0.350	3,640,000	<0.605	41.3	11.9 J	<15.1
U4-MW-08S	4/15/2022	N	BLO2	UMCf	54.9 - 64.9	165,000	519	<0.840	<1.51	26.0 J	<0.849	3,570	<0.934	20.1	<0.816	<18.3	20,400	2.19	<0.0700	580,000	<0.121	0.591 J	47.5	<3.02
U4-MW-08S	12/7/2022	N	EM04	UMCf	54.9 - 64.9	68,400	284	0.0886 J	<1.51	31.9 J	<0.849	30,800	10.2	20.4	3.02	----	18,200	1.95 J	<0.0700	624,000	<0.121	13.4	49.2	<3.02
U4-MW-08S	12/7/2022	FD	EM04	UMCf	54.9 - 64.9	67,600	275	0.0711 J	<1.51	39.7 J	<0.849	30,800	10.5	20.0	2.30	----	17,900	1.80 J	<0.0700	612,000	<0.121	13.2	48.5	4.34 J
U4-MW-08S	3/13/2023	N	EM07	UMCf	54.9 - 64.9	73,900	10.3	<0.840	<1.51	38.3 J	<0.849	61,700	428	3.71 J	1.37 J	----	17,800	<0.300	<0.0700	464,000	<0.121	11.8	5.34 J	<3.02
U4-MW-08S	3/13/2023	FD	EM07	UMCf	54.9 - 64.9	68,900	8.64 J	<0.840	<1.51	54.4 J	<0.849	55,500	406	4.57 J	1.59 J	----	16,900	<0.300	<0.0700	467,000	<0.121	13.7	5.55 J	<3.02
U4-MW-09D	4/14/2022	N	BLO2	UMCf	96.9 - 106.9	123,000	5,930	<0.840	<15.1	<18.0	<8.49	532,000	4.62 J	<1.16	<8.16	<18.3	6,610	3.90 J	<0.700	475,000	<1.21	10.2	<4.99	165 J
U4-MW-09D	12/6/2022	N	EM04	UMCf	96.9 - 106.9	145,000	7,460	0.202 J	<1.51 UJ	<28.1 UJ	<0.849 UJ	71,500	5.78	6.30	11.1	----	12,100	1.98 J	<0.0700 UJ	680,000	<0.121 UJ	9.26	23.1	<3.02 UJ
U4-MW-09D	3/16/2023	N	EM07	UMCf	96.9 - 106.9	235,000	3,650	<0.840	1.58 J	30.6 J	<0.849	136,000	71.7	1.39 J	10.6	----	17,400	1.73 J	<0.0700	879,000	<0.121	48.7	8.91 J	<3.02
U4-MW-09DD	4/14/2022	N	BLO2	UMCf	119.8 - 129.8	41,300	154	<0.840	3.53 J	18.0 J	<0.849	20,000	7.39 J	9.61	<0.816	221 J	7,460	1.98 J	<0.0700	181,000	<0.121	2.98	9.16 J	3.03 J
U4-MW-09DD	12/6/2022	N	EM04	UMCf	119.8 - 129.8	39,300	137	<0.0596 UJ	<1.51 UJ	<28.1 UJ	<0.849 UJ	21,100	1.17 J	9.02	<0.816 UJ	----	7,030	1.86 J	<0.0700 UJ	162,000	<0.121 UJ	3.11	10.6	<3.02 UJ
U4-MW-09DD	3/21/2023	N	EM07	UMCf	119.8 - 129.8	76,600	199	<0.840	<1.51	<18.0	<0.849	43,200	2.54 J	5.69	7.63	----	9,310	2.06	<0.0700	199,000	<0.121	2.36	9.68 J	<3.02
U4-MW-09I	4/14/2022	N	BLO2	UMCf	76.8 - 86.8	114,000	2,350	<0.840	2.16 J	<18.0	<0.849	42,300	4.58 J	13.2	0.971 J	172 J	19,300	2.24	<0.0700	588,000	<0.121	5.48	19.1 J	<3.02
U4-MW-09I	12/6/2022	N	EM04	UMCf	76.8 - 86.8	218,000	13,400	0.835 J	8.06 J	<140 UJ	<4.24 UJ	100,000	21.9 J	7.84 J	83.7	----	20,600	2.26 J	<0.350 UJ	1,150,000	<0.605 UJ	10.8	10.7 J	<15.1 UJ
U4-MW-09I	3/16/2023	N	EM07	UMCf	76.8 - 86.8	266,000	8,400	<0.840	<1.51	22.6 J	<0.849	153,000	44.5	3.36 J	105	----	21,400	1.80 J	<0.0700	1,140,000	<0.121	60.5	9.36 J	<3.02
U4-MW-09S	4/14/2022	N	BLO2	UMCf	55.3 - 65.3	72,400	398	<0.840	1.69 J	141	<0.849	30,200	5.72 J	19.0	<0.816	168 J	14,000	2.13	<0.0700	461,000	<0.121	6.57	36.3	<3.02
U4-MW-09S	12/6/2022	N	EM04	UMCf	55.3 - 65.3	17,700	2,780	<0.0596 UJ	<1.51 UJ	<28.1 UJ	<0.849 UJ	7,810	1.21 J	14.0	1.83 J	----	9,350	2.30	<0.0700 UJ	841,000	<0.121 UJ	4.45	67.2	<3.02 UJ
U4-MW-09S	3/17/2023	N	EM07	UMCf	55.3 - 65.3	15,100	2,360	<0.840	<1.51	25.0 J	1.12 J	7,010	4.65 J	27.9	1.63 J	----	9,940	2.10	<0.0700	780,000	<0.121	9.84	61.6	8.34 J
U4-MW-10D	4/14/2022	N	BLO2	UMCf	96.9 - 106.9	275,000	5,290	<0.840	<1.51	<18.0	<0.849	134,000	23.5	8.67	<0.816	32.2 J	24,200	2.14	<0.0700	626,000	<0.121	9.13	8.78 J	3.53 J
U4-MW-10D	12/5/2022	N	EM04	UMCf	96.9 - 106.9	165,000	3,310	<0.840	<1.51	<18.0	<0.849	87,500	2.32 J	3.34 J	<0.816	----	15,500	2.22	<0.0700	----	<0.121	5.41	7.55 J	<3.02
U4-MW-10D	3/17/2023	N	EM07	UMCf	96.9 - 106.9	230,000	196	1.20 J	2.98 J	421	<0.849	184,000	2,160	3.54 J	11.9	----	18,100	0.811 J	<0.0700	303,000	<0.121	95.1	<4.99	7.73 J
U4-MW-10I	4/14/2022	N	BLO2	UMCf	77.1 - 87.1	278,000	5,960	<0.840	2.97 J	27.9 J	<0.849	135,000	25.2	17.8	1.08 J	194 J	31,700	2.88	<0.0700	995,000	0.490 J	6.45	9.70 J	4.88 J
U4-MW-10I	12/5/2022	N	EM04	UMCf	77.1 - 87.1	180,000	490	<0.840	<1.51	<18.0	<0.849	87,800	34.4	16.9	<0.816	----	17,000	2.24	<0.0700	----	<0.121	11.5	16.8 J	<3.02
U4-MW-10I	3/17/2023	N	EM07	UMCf	77.1 - 87.1																			

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 SW6010B/SW6020																		
						Calcium	Chromium	Cobalt	Copper	Iron	Lead	Magnesium	Manganese	Molybdenum	Nickel	Phosphorus	Potassium	Selenium	Silver	Sodium	Thallium	Uranium	Vanadium	Zinc
						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-12D	11/2/2022	N	EM03	UMCf	97.1 - 107.1	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
U4-MW-12D	12/7/2022	N	EM04	UMCf	97.1 - 107.1	662,000	48,500	<0.298	<7.55	<140	<4.24	300,000	23.4 J	8.18 J	<4.08	----	43,100	3.67 J	<0.350	3,260,000	<0.605	23.3	9.35 J	20.1 J
U4-MW-12D	1/12/2023	N	EM05	UMCf	97.1 - 107.1	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
U4-MW-12D	2/15/2023	N	EM06	UMCf	97.1 - 107.1	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
U4-MW-12D	3/14/2023	N	EM07	UMCf	97.1 - 107.1	596,000	32,900	<0.840	<7.55	29.5 J	<4.24	286,000	37.2	7.27	<4.08	----	44,100	4.79 J	<0.350	2,610,000	<0.605	13.7	8.65 J	<15.1
U4-MW-12I	4/14/2022	N	BLO2	UMCf	76.8 - 86.8	317,000	17,200	<0.840	3.24 J	18.3 J	2.29	126,000	44.1	17.6	4.10 J	122 J	35,700	5.65 J	0.454 J	1,720,000	2.39	9.47	9.09 J	<3.02
U4-MW-12I	4/14/2022	FD	BLO2	UMCf	76.8 - 86.8	314,000	16,700	<0.840	2.11 J	41.4 J	<0.849	125,000	44.4	17.7	1.90 J	265 J+	35,500	3.39 J	<0.0700	1,690,000	<0.121	7.29	6.67 J	<3.02
U4-MW-12I	9/27/2022	N	EM01	UMCf	76.8 - 86.8	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
U4-MW-12I	10/12/2022	N	EM02	UMCf	76.8 - 86.8	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
U4-MW-12I	11/2/2022	N	EM03	UMCf	76.8 - 86.8	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
U4-MW-12I	12/7/2022	N	EM04	UMCf	76.8 - 86.8	86,600	63.3	0.171 J	<1.51	<28.1	<0.849	44,500	264	15.7	2.09	----	16,700	0.587 J	<0.0700	490,000	<0.121	41.0	6.05	<3.02
U4-MW-12I	12/7/2022	FD	EM04	UMCf	76.8 - 86.8	86,400	64.8	0.173 J	<1.51	41.2 J	<0.849	44,600	264	16.2	3.19	----	16,800	0.457 J	<0.0700	499,000	<0.121	41.4	6.27	<3.02
U4-MW-12I	1/13/2023	N	EM05	UMCf	76.8 - 86.8	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
U4-MW-12I	2/15/2023	N	EM06	UMCf	76.8 - 86.8	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
U4-MW-12I	3/13/2023	N	EM07	UMCf	76.8 - 86.8	127,000	15.9	1.39 J	<7.55	243	<0.849	89,200	1,200	1.40 J	<4.08	----	23,800	0.309 J	<0.0700	591,000	<0.121	15.5	13.0 J	<15.1
U4-MW-13D	4/14/2022	N	BLO2	UMCf	98.2 - 108.2	1,520,000	55,300	<4.20	<15.1	<90.0	<8.49	664,000	32.9 J	9.95 J	<8.16	140 J	71,200	4.11 J	<0.700	3,990,000	<1.21	10.8	<25.0	<30.2
U4-MW-13D	9/28/2022	N	EM01	UMCf	98.2 - 108.2	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
U4-MW-13D	10/11/2022	N	EM02	UMCf	98.2 - 108.2	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
U4-MW-13D	11/3/2022	N	EM03	UMCf	98.2 - 108.2	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
U4-MW-13D	12/7/2022	N	EM04	UMCf	98.2 - 108.2	494,000	17,900	<0.298	<7.55	<140	<4.24	276,000	92.8	2.40 J	<4.08	----	26,600	2.64 J	<0.350	1,170,000	<0.605	34.4	4.77 J	<15.1
U4-MW-13D	1/12/2023	N	EM05	UMCf	98.2 - 108.2	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
U4-MW-13D	2/15/2023	N	EM06	UMCf	98.2 - 108.2	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
U4-MW-13D	3/17/2023	N	EM07	UMCf	98.2 - 108.2	303,000	12,900	<0.840	<1.51	<18.0	<0.849	150,000	40.4 J+	4.44 J	0.893 J	----	22,300	2.57	0.289 J	849,000	0.310 J	13.2	6.57 J	13.0 J
U4-MW-13I	4/14/2022	N	BLO2	UMCf	77.1 - 87.1	395,000	20,300	<0.840	<1.51	<18.0	<0.849	169,000	28.6	13.8	1.80 J	132 J	33,100	3.62	<0.0700	1,640,000	<0.121	7.29	9.14 J	<3.02
U4-MW-13I	9/28/2022	N	EM01	UMCf	77.1 - 87.1	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
U4-MW-13I	10/10/2022	N	EM02	UMCf	77.1 - 87.1	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
U4-MW-13I	11/3/2022	N	EM03	UMCf	77.1 - 87.1	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
U4-MW-13I	12/6/2022	N	EM04	UMCf	77.1 - 87.1	100,000	892	0.138 J	<1.51 UJ	32.3 J	<0.849 UJ	48,300	161	9.01	2.47	----	16,700	1.08 J	<0.0700 UJ	759,000	<0.121 UJ	38.3	7.72	<3.02 UJ
U4-MW-13I	1/12/2023	N	EM05	UMCf	77.1 - 87.1	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
U4-MW-13I	2/14/2023	N	EM06	UMCf	77.1 - 87.1	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
U4-MW-13I	3/16/2023	N	EM07	UMCf	77.1 - 87.1	66,300	255	<0.840	<1.51	52.5 J	<0.849	44,100	228	5.96	2.33	----	13,800	<0.300	<0.0700	655,000	<0.121	19.8	<4.99	<3.02
U4-MW-14D	4/13/2022	N	BLO2	UMCf	97.3 - 107.3	561,000	308	<0.840	3.44 J	<18.0	<0.849	152,000	79.2	41.2	9.04	<18.3	25,400	3.31	<0.0700	673,000	<0.121	18.5	22.2	<3.02
U4-MW-14D	12/6/2022	N	EM04	UMCf	97.3 - 107.3	395,000	6,790	<0.0596 UJ	<1.51 UJ	40.3 J	1.09 J	128,000	21.5	5.90	<0.816 UJ	----	19,100	2.46	<0.0700 UJ	469,000	0.156 J	8.22	14.1	<3.02 UJ
U4-MW-14D	3/16/2023	N	EM07	UMCf	97.3 - 107.3	181,000	4,500	<0.840	3.77 J	65.8 J	<0.849	71,500	14.2 J+	3.16 J	<0.816	----	14,500	1.69 J	<0.0700	373,000	<0.121	8.52	9.49 J	6.57 J
U4-MW-14I	4/14/2022	N	BLO2	UMCf	77.3 - 87.3	237,000	2,150	<0.840	<1.51	<18.0	<0.849	52,400	19.0	16.2	1.09 J	191 J	25,400	2.53	<0.0700	596,000	<0.121	4.68	13.3 J	<3.02
U4-MW-14I	12/6/2022	N	EM04	UMCf	77.3 - 87.3	524,000	4,710	0.0650 J	<1.51 UJ	<28.1 UJ	<0.849 UJ	139,000	32.4	9.57	1.12 J	----	22,000	2.86	<0.0700 UJ	518,000	0.243 J	15.3	14.3	<3.02 UJ
U4-MW-14I	3/16/2023	N	EM07	UMCf	77.3 - 87.3	250,000	4,510	<0.840	<1.51	<18.0	<0.849	79,600	11.1 J+	5.22	<0.816	----	16,700	1.98 J	<0.0700	413,000	<0.121	11.3	13.6 J	<3.02
U4-MW-15D	4/13/2022	N	BLO2	UMCf	96.0 - 106.0	338,000	4,940	<0.840	<1.51	21.8 J	<0.849	157,000	26.1	9.77	0.944 J	<18.3	25,500	2.38	<0.0700	646,000	0.186 J	13.6	8.06 J	<3.02
U4-MW-15D	12/5/2022	N	EM04	UMCf	96.0 - 106.0	208,000	3,170	<0.840	<1.51	<18.0	<0.849	92,400	10.3	6.33	<0.816	----	18,700	2.23	<0.0700	436,000	<0.121	11.6	7.40 J	<3.02
U4-MW-15D	3/20/2023	N	EM07	UMCf	96.0 - 106.0	156,000	3,210	<0.840	2.97 J	<18.0	<0.849	80,100	5.33 J	6.57	<0.816	----	15,400	2.33	<0.0700	318,000	<0.121	6.45	8.42 J	<3.02
U4-MW-15DD	4/13/2022	N	BLO2	UMCf	120.3 - 130.3	34,000	64.4	<0.840	2.23 J	162	<0.849	15,400	2.57 J	10.4	2.78	<18.3	6,830	2.15	<0.0700	159,000	<0.121	4.23	17.9 J	<3.02
U4-MW-15DD	12/5/2022	N	EM04	UMCf	120.3 - 130.3	32,300	16.3	<0.840	<1.51	<18.0	<0.849	16,800	5.61 J	7.88	31.6	----	6,430	1.91 J	<0.0700	----	<0.121	3.37	12.9 J	<3.02
U4-MW-15DD	3/15/2023	N	EM07	UMCf	120.3 - 130.3	30,600	13.8	<0.840	1.53 J	45.7 J	4.52 J+	17,300	7.24 J	8.41	44.8	----	6,510	1.89 J	<0.0700	137,000	<0.121	3.10	11.8 J	<3.02
U4-MW-15I	4/12/2022	N	BLO2	UMCf	76.8 - 86.8	127,000	5,510	<0.840	<1.51	24.4 J	<0.849	56,500	14.9	17.8	<0.816	25.2 J	22,300	2.64	<0.0700	897,000	<0.121	6.59	18.7 J	<3.02
U4-MW-15I	12/5/2022	N	EM04	UMCf	76.8 - 86.8	163,000	5,040	<0.840	<1.51	<18.0	<0.849	73,800	61.8	11.5	2.11	----	22,500	2.82	0.105 J	976,000	0.663 J	52.3	14.2 J	<3.02
U4-MW-15I	3/17/2023	N	EM07	UMCf	76.8 - 86.8	194,000	108	<0.840	<1.51	7,360	<0.849	137,000	4,380	<1.16	2.63	----	16,200	<0.300	<0.0700	387,000	<0.121	69.9	65.7	6.91 J
U4-MW-15S	4/13/2022	N	BLO2	UMCf	54.8 - 64.8	166,000 J	268 J	<0.840	<1.51	95.9 J	<0.849	50,100 J	2.61 J	19.2	<0.816	50.3 J	15,200 J	2.71	<0.0700	387,000 J	<0.121	4.94	23.5	<3.02
U4-MW-15S	12/5/2022	N	EM04	UMCf	54.8 - 64.8	197,000	16.9	<0.840	<1.51	3,440	<0.849	61,300	465	1.18 J	2.37	----	33,300	0.690 J	<0.0700	277,000	<0.121	6.64	21.0	<3.02
U4-MW-15S	3/13/2023	N	EM07	UMCf	54.8 - 64.8	94,100	9.67 J	1.30 J	<7.55	<18.0	<0.849	56,900	267	<1.16	<4.08	----	18,700	<0.300	<0.0700	299,000	<0.121	1.92	14.4 J	<15.1
U4-MW-16D	4/11/2022	N	BLO2	UMCf	96.8 - 106.8	474,000	12,600	<0.840	<15.1	<18.0	<8.49	240,000	12.4	4.62 J	<8.16	<18.3	30,600	5.89 J	<0.700	1,210,000	<1.21	6.64 J	<4.99	44.4 J
U4-MW-16D	12/5/2022	N	EM04	UMCf	96.8 - 106.8	149,000	27,600	<0.840	<1.51	<18.0	<0.849	318,000	25.7	11.8	<0.816 UJ	----	8,140	0.707 J	<0.07					

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 SW6010B/SW6020																		
						Calcium	Chromium	Cobalt	Copper	Iron	Lead	Magnesium	Manganese	Molybdenum	Nickel	Phosphorus	Potassium	Selenium	Silver	Sodium	Thallium	Uranium	Vanadium	Zinc
						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-T3	2/13/2023	N	EM06		-	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
U4-T3	3/13/2023	N	EM07		-	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----

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 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	SW9060A/SM 5310B	Volatile Organic Compounds by SW8260B			
						Conductivity	Dissolved Oxygen	Ferrous Iron	Oxidation-Reduction Potential	pH	Purge Rate	Sulfide	Temperature	Turbidity	Ethane	Ethene	Methane	Total Dissolved Solids	Chromium, Hexavalent	Total Organic Carbon	1,1,1,2-Tetrachloroethane	1,1,1-Trichloroethane	1,1,2,2-Tetrachloroethane	1,1,2-Trichloroethane
						mS/cm	mg/L	mg/L	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
M-247-100	4/20/2022	N	BLO2	UMCF	100.5 - 110.5	0.956	1.80	0.0 U	22.9	8.02	190	0.0 U	26.9	22.0	----	----	----	712,000	<150	----	----	----	----	
M-249-100	4/20/2022	N	BLO2	UMCF	99.6 - 109.6	34.552	0.56	0.0 U	140.6	6.99	120	0.0 U	27.5	60.6	----	----	----	54,000,000	77,000	----	----	----	----	
M-251-100	4/19/2022	N	BLO2	UMCF	92.5 - 102.5	42.112	1.63	0.0 U	212.1	7.36	100	0.0 U	26.3	17.1	----	----	----	39,900,000	96,900 J-	1,410 J+	<0.147	<0.149	<0.133	<0.158
M-251-100	10/13/2022	N	EM02	UMCF	92.5 - 102.5	16.998	4.13	----	172.0	7.19	280	----	24.9	58.8	----	----	----	25,800,000	57,600	3,660 J+	<0.147	<0.149	<0.133	<0.158
M-251-100	11/2/2022	N	EM03	UMCF	92.5 - 102.5	18.268	4.61	----	118.7	7.71	250	----	24.1	33.2	----	----	----	18,700,000	39,500	1,030 J+	<1.47	<1.49	<1.33	<1.58
M-251-100	12/8/2022	N	EM04	UMCF	92.5 - 102.5	19.870	4.83	----	123.6	7.38	100	----	22.0	17.3	----	----	----	15,000,000 J	32,300	1,720 J+	<0.147	<0.149	<0.133	<0.158
M-251-100	1/11/2023	N	EM05	UMCF	92.5 - 102.5	9.502	5.52	----	132.4	7.49	250	----	23.0	50.5	----	----	----	22,400,000	43,900	1,240 J+	<0.147	<0.149	<0.133	<0.158
M-251-100	2/13/2023	N	EM06	UMCF	92.5 - 102.5	10.973	6.27	----	184.3	8.08	80	----	23.4	21.0	----	----	----	9,740,000	42,700	1,130 J+	<0.147	<0.149	<0.133	<0.158
M-251-100	3/17/2023	N	EM07	UMCF	92.5 - 102.5	12.924	8.09	0.0 U	129.4	7.57	70	0.0 U	23.8	21.3	<4.07	<4.26	<2.91	15,300,000	23,100	1,660 J+	<7.35	<7.45	<6.65	<7.90
M-251-60	4/18/2022	N	BLO2	UMCF	52.3 - 62.3	5.163	5.64	0.0 U	44.4	10.69	100	0.0 U	30.5	18.3	----	----	----	2,330,000 J	1,510 J-	1,590 J+	<0.147	<0.149	<0.133	<0.158
M-251-60	3/15/2023	N	EM07	UMCF	52.3 - 62.3	3.539	2.45	0.0 U	14.4	11.12	0	0.0 U	23.5	10.4	<4.07	<4.26	<2.91	2,490,000	1,590	3,420 J+	<0.147	<0.149	<0.133	<0.158
M-252	4/21/2022	N	BLO2	UMCF	132.3 - 142.3	2.053	5.66	0.0 U	142.6	8.13	100	0.0 U	29.6	9.9	----	----	----	1,410,000	32.5 J	520 J	<0.147	<0.149	<0.133	<0.158
M-252	3/15/2023	N	EM07	UMCF	132.3 - 142.3	1.095	1.94	0.0 U	142.0	8.10	20	0.0 U	21.5	9.8	<4.07	<4.26	<2.91	2,590,000	45.8	1,020 J+	<0.147	<0.149	<0.133	<0.158
M-253-100	4/20/2022	N	BLO2	UMCF	100.8 - 110.8	2.393	3.04	0.0 U	36.4	8.03	60	0.0 U	25.2	21.0	----	----	----	2,130,000	598	----	----	----	----	----
M-255-100	4/20/2022	N	BLO2	UMCF	100.2 - 110.2	2.198	1.87	0.0 U	175.7	7.89	100	0.0 U	25.1	12.0	----	----	----	1,600,000	1,350	----	----	----	----	----
U4-E-01D	4/18/2022	N	BLO2	UMCF	94.7 - 109.7	42.734	0.85	0.0 U	167.3	7.78	100	0.0 U	26.2	8.7	----	----	----	43,600,000	87,000 J-	1,030 J+	<0.735	<0.745	<0.665	<0.790
U4-E-01D	3/14/2023	N	EM07	UMCF	94.7 - 109.7	1.180	7.21	0.0 U	172.0	8.08	100	0.0 U	21.8	9.1	<4.07	<4.26	<2.91	606,000	1.43	36,400	<0.147	<0.149	<0.133	<0.158
U4-E-01I	4/19/2022	N	BLO2	UMCF	74.6 - 89.6	0.072	9.17	0.0 U	120.6	8.70	100	0.0 U	26.5	2.7	----	----	----	4,770,000 J	6,190 J-	2,420 J+	<0.147	<0.149	<0.133	<0.158
U4-E-01I	4/19/2022	FD	BLO2	UMCF	74.6 - 89.6	----	----	----	----	----	----	----	----	----	----	----	----	2,770,000 J	7,860 J-	2,670 J+	<0.147	<0.149	<0.133	<0.158
U4-E-01I	3/14/2023	N	EM07	UMCF	74.6 - 89.6	8.100	8.18	0.0 U	138.0	7.74	100	0.0 U	23.0	14.8	<4.07	<4.26	<2.91	6,170,000	16,300	2,230 J+	<0.147	<0.149	<0.133	<0.158
U4-E-02D	4/20/2022	N	BLO2	UMCF	94.4 - 109.4	9.255	0.62	0.0 U	129.9	7.36	130	0.0 U	27.0	2.0	----	----	----	10,800,000	17,400	1,540 J+	<0.147	<0.149	<0.133	<0.158
U4-E-02D	3/14/2023	N	EM07	UMCF	94.4 - 109.4	1.040	5.47	0.0 U	36.0	7.96	100	0.0 U	21.6	14.7	<4.07	<4.26	<2.91	625,000	7.77	2,720 J+	<0.147	<0.149	<0.133	<0.158
U4-E-02I	4/18/2022	N	BLO2	UMCF	74.4 - 89.4	9.309	4.25	0.0 U	190.6	8.46	105	0.0 U	24.6	9.8	----	----	----	4,130,000	8,910 J-	1,240 J+	<0.147	<0.149	<0.133	<0.158
U4-E-02I	3/14/2023	N	EM07	UMCF	74.4 - 89.4	1.211	5.22	0.0 U	162.8	7.49	50	0.0 U	19.2	7.6	<4.07	<4.26	<2.91	1,340,000	1,980 J-	3,580 J+	<0.147	<0.149	<0.133	<0.158
U4-E-03D	4/19/2022	N	BLO2	UMCF	95.1 - 110.1	36.139	0.68	0.0 U	96.0	7.14	200	0.0 U	28.6	33.2	----	----	----	34,400,000	77,900 J-	1,660 J+	<0.147	<0.149	<0.133	<0.158
U4-E-03D	10/13/2022	N	EM02	UMCF	95.1 - 110.1	----	----	----	----	----	----	----	----	----	----	----	----	18,900,000 J-	48,700	971 J	<29.4	<29.8	<26.6	<31.6
U4-E-03D	11/3/2022	N	EM03	UMCF	95.1 - 110.1	16.802	4.86	----	109.3	7.34	----	----	17.8	225.3	----	----	----	15,400,000	44,000	1,710 J+	<0.147	<0.149	<0.133	<0.158
U4-E-03D	12/6/2022	N	EM04	UMCF	95.1 - 110.1	11.752	6.10	----	198.2	7.40	----	----	22.1	1.8	----	----	----	16,000,000	37,000 J-	1,380 J+	<2.94 UJ	<2.98 UJ	<2.66 UJ	<3.16 UJ
U4-E-03D	1/9/2023	N	EM05	UMCF	95.1 - 110.1	9.776	7.80	----	117.4	7.79	----	----	21.2	0.0	----	----	----	9,860,000	36,100	1,410 J+	<0.147	<0.149	<0.133	<0.158
U4-E-03D	2/13/2023	N	EM06	UMCF	95.1 - 110.1	11.469	7.00	----	83.8	7.44	----	----	22.4	0.1	----	----	----	12,000,000	34,100	1,260 J+	<14.7	<14.9	<13.3	<15.8
U4-E-03D	3/13/2023	N	EM07	UMCF	95.1 - 110.1	----	----	----	----	----	----	----	----	----	----	----	----	11,700,000	35,600	1,920 J+	<14.7	<14.9	<13.3	<15.8
U4-E-03D	3/14/2023	N	EM07	UMCF	95.1 - 110.1	13.740	5.37	0.0 U	76.6	7.30	120	0.0 U	23.7	33.0	<4.07	<4.26	683	12,200,000	35,400	1,520 J+	<29.4	<29.8	<26.6	<31.6
U4-E-04D	4/19/2022	N	BLO2	UMCF	95.0 - 110.0	22.249	1.29	0.0 U	34.2	7.19	70	0.0 U	25.5	15.1	----	----	----	24,000,000	37,500 J-	1,380 J+	<0.147	<0.149	<0.133	<0.158
U4-E-04D	3/14/2023	N	EM07	UMCF	95.0 - 110.0	0.999	6.07	0.0 U	48.3	8.06	100	0.0 U	21.1	13.7	<4.07	<4.26	<2.91	640,000	0.538	3,170 J+	<0.147	<0.149	<0.133	<0.158
U4-E-04I	4/18/2022	N	BLO2	UMCF	75.0 - 90.0	4.524	0.84	0.0 U	-18.2	8.40	70	0.0 U	27.4	28.9	----	----	----	3,430,000	3,380 J-	863 J	<0.147	<0.149	<0.133	<0.158
U4-E-04I	3/14/2023	N	EM07	UMCF	75.0 - 90.0	22.410	4.33	0.0 U	83.0	7.42	0	0.0 U	22.2	15.0	<4.07	<4.26	32.4	20,900,000	60,300	1,580 J+	<7.35	<7.45	<6.65	<7.90
U4-E-05D	4/19/2022	N	BLO2	UMCF	95.0 - 110.0	26.037	3.43	0.0 U	177.7	7.33	100	0.0 U	28.8	45.2	----	----	----	28,400,000	47,900 J-	1,070 J+	<0.147	<0.149	<0.133	<0.158
U4-E-05D	3/16/2023	N	EM07	UMCF	95.0 - 110.0	0.537	1.78	0.0 U	116.2	7.65	30	0.0 U	18.5	56.5	<4.07	<4.26	45.8 J+	641,000	0.272 J	2,450 J+	<0.147	<0.149	<0.133	<0.158
U4-E-05I	4/19/2022	N	BLO2	UMCF	75.0 - 90.0	5.209	0.59	0.0 U	101.8	8.45	100	0.0 U	28.4	10.5	----	----	----	4,070,000	5,710 J-	1,110 J+	<0.147	<0.149	<0.133	<0.158
U4-E-05I	3/15/2023	N	EM07	UMCF	75.0 - 90.0	8.778	7.39	0.0 U	56.3	7.92	90	0.0 U	23.0	31.5	<4.07	<4.26	<2.91	2,690,000	8,200	2,960 J+	<0.147 UJ	<0.149 UJ	<0.133 UJ	<0.158 UJ
U4-E-06D	4/11/2022	N	BLO2	UMCF	95.1 - 110.1	9.911	2.39	0.0 U	138.8	7.24	90	0.0 U	23.5	37.2	<4.07	<4.26	<2.91	9,590,000	10,800	605 J	<0.147	<0.149	<0.133	<0.158
U4-E-06I	4/11/2022	N	BLO2	UMCF	73.2 - 88.2	4.282	2.10	0.0 U	128.1	7.47	90	0.0 U	25.8	11.6	<4.07	<4.26	<2.91	3,220,000	2,420	863 J	<0.147	<0.149	<0.133	<0.158
U4-E-06I	4/11/2022	FD	BLO2	UMCF	73.2 - 88.2	----	----	----	----	----	----	----	----	----	<4.07	<4.26	<2.91	3,150,000	3,210	909 J	<0.147	<0.149	<0.133	<0.158
U4-E-06I	10/12/2022	N	EM02	UMCF	73.2 - 88.2	----	----	----	----	----	----	----	----	----	----	----	----	9,760,000 J-	9,930	221,000	<0.147	<0.149	<0.133	<0.158
U4-E-06I	11/3/2022	N	EM03	UMCF	73.2 - 88.2	----	----	----	----	----	----	----	----	----	----	----	----	5,900,000	3,080	659,000	<0.147	<0.149	<0.133	<0.158
U4-E-06I	12/6/2022	N	EM04	UMCF	73.2 - 88.2	5.809	2.83	----	-204.0	6.62	----	----	23.2	38.3	----	----	----	6,870,000	1,860 J-	69,200	<1.47 UJ	<1.49 UJ	<1.33 UJ	<1.58 UJ
U4-E-06I	1/9/2023	N	EM05	UMCF	73.2 - 88.2	3.965	55.80	----	111.2	6.81	----	----	23.0	4.4	----	----	----	7,540,000	17,700	117,000	<0.147	<0.149	<0.133	<0.158
U4-E-06I	2/13/2023	N	EM06	UMCF	73.2 - 88.2	8.481	6.55	----	-78.1	6.72	----	----	23.0	75.8	----	----	----	7,500,000	158 J-	516,000	<14.7	<14.9	<13.3	<15.8
U4-E-06I	3/13/2023	N	EM07	UMCF	73.2 - 88.2																			

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	SW9060A/SM 5310B	Volatile Organic Compounds by SW8260B			
						Conductivity	Dissolved Oxygen	Ferrous Iron	Oxidation-Reduction Potential	pH	Purge Rate	Sulfide	Temperature	Turbidity	Ethane	Ethene	Methane	Total Dissolved Solids	Chromium, Hexavalent	Total Organic Carbon	1,1,1,2-Tetrachloroethane	1,1,1-Trichloroethane	1,1,2,2-Tetrachloroethane	1,1,2-Trichloroethane
						mS/cm	mg/L	mg/L	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
U4-MW-01D	2/16/2023	N	EM06	UMCF	96.7 - 106.7	7.060	11.76	----	190.0	7.35	60	----	22.9	55.9	----	----	----	----	31,700	----	<1.47	<1.49	<1.33	<1.58
U4-MW-01D	3/20/2023	N	EM07	UMCF	96.7 - 106.7	12.024	5.68	0.0 U	164.9	7.53	80	0.0 U	22.7	543.3	<4.07	<4.26	<2.91	11,300,000	26,300	768 J	<0.147	<0.149	<0.133	<0.158
U4-MW-01DD	4/19/2022	N	BLO2	UMCF	119.9 - 129.9	1.873	0.81	0.0 U	70.8	7.75	100	0.0 U	33.3	27.7	----	----	----	1,040,000	477 J	1,120 J+	<0.147	<0.149	<0.133	<0.158
U4-MW-01DD	4/19/2022	FD	BLO2	UMCF	119.9 - 129.9	----	----	----	----	----	----	----	----	----	----	----	----	1,020,000	458 J	1,080 J+	<0.147	<0.149	<0.133	<0.158
U4-MW-01DD	3/15/2023	N	EM07	UMCF	119.9 - 129.9	6.737	2.84	0.0 U	61.8	7.33	100	0.0 U	24.7	56.4	<4.07	<4.26	<2.91	3,960,000	11,400	1,100 J+	<0.147	<0.149	<0.133	<0.158
U4-MW-01I	4/19/2022	N	BLO2	UMCF	76.7 - 86.7	9.209	0.67	0.0 U	103.3	7.70	220	0.0 U	27.3	60.1	----	----	----	3,790,000	<150 UJ	1,160 J+	<0.147	<0.149	<0.133	<0.158
U4-MW-01I	3/20/2023	N	EM07	UMCF	76.7 - 86.7	16.598	7.69	0.0 U	137.9	7.59	110	0.0 U	23.5	2768.5	<4.07	<4.26	11.4	12,700,000	26,500	751 J	<0.147	<0.149	<0.133	<0.158
U4-MW-01S	4/18/2022	N	BLO2	UMCF	54.7 - 64.7	4.903	4.81	0.0 U	99.5	8.75	220	0.0 U	27.6	1501.7	----	----	----	3,130,000	1,770 J-	972 J	<0.147	<0.149	<0.133	<0.158
U4-MW-01S	3/15/2023	N	EM07	UMCF	54.7 - 64.7	4.199	5.90	0.0 U	-4.5	8.44	100	0.0 U	24.7	147.1	<4.07	<4.26	<2.91	2,670,000	1,330	1,420 J+	<0.147	<0.149	<0.133	<0.158
U4-MW-02D	4/14/2022	N	BLO2	UMCF	95.0 - 110.0	47.936	0.74	0.0 U	206.4	7.25	100	0.0 U	26.4	5.4	----	----	----	63,700,000	95,800	1,570 J	<0.147	<0.149	<0.133	<0.158
U4-MW-02D	10/11/2022	N	EM02	UMCF	95.0 - 110.0	82.713	0.99	----	202.1	7.14	280	----	26.1	2.9	----	----	----	75,100,000 J-	148,000	787 J	<0.147	<0.149	<0.133	<0.158
U4-MW-02D	11/1/2022	N	EM03	UMCF	95.0 - 110.0	61.099	0.93	----	114.9	7.21	150	----	27.6	1.4	----	----	----	53,300,000	139,000	558 J	<7.35	<7.45	<6.65	<7.90
U4-MW-02D	12/7/2022	N	EM04	UMCF	95.0 - 110.0	41.262	1.18	----	139.7	7.32	100	----	23.6	5.1	----	----	----	29,900,000	152,000 J-	924 J	<0.147	<0.149	<0.133	<0.158
U4-MW-02D	1/10/2023	N	EM05	UMCF	95.0 - 110.0	28.405	1.73	----	124.2	7.31	250	----	23.0	3.5	----	----	----	36,600,000	110,000	1,850 J	<0.147	<0.149	<0.133	<0.158
U4-MW-02D	2/13/2023	N	EM06	UMCF	95.0 - 110.0	25.274	2.04	----	199.9	7.39	210	----	23.7	11.6	----	----	----	44,500,000	120,000 J-	869 J	<0.147	<0.149	<0.133	<0.158
U4-MW-02D	3/17/2023	N	EM07	UMCF	95.0 - 110.0	38.385	2.05	0.0 U	178.4	7.26	100	0.0 U	24.8	8.9	<4.07	<4.26	<2.91	51,200,000	106,000	1,830 J+	<14.7	<14.9	<13.3	<15.8
U4-MW-02I	4/14/2022	N	BLO2	UMCF	75.0 - 90.0	8.827	3.75	0.0 U	159.8	8.09	100	0.0 U	28.4	15.2	----	----	----	6,660,000	12,800	1,100 J+	<0.147	<0.149	<0.133	<0.158
U4-MW-02I	10/11/2022	N	EM02	UMCF	75.0 - 90.0	20.389	0.98	----	172.7	7.07	280	----	25.3	56.9	----	----	----	11,000,000	33,900	8,510	<0.147	<0.149	<0.133	<0.158
U4-MW-02I	11/2/2022	N	EM03	UMCF	75.0 - 90.0	17.936	0.44	----	148.7	6.86	200	----	25.0	36.2	----	----	----	15,700,000	48,200	88,500	<1.47	<1.49	<1.33	<1.58
U4-MW-02I	11/2/2022	FD	EM03	UMCF	75.0 - 90.0	----	----	----	----	----	----	----	----	----	----	----	----	20,400,000	46,600	75,900	<1.47	<1.49	<1.33	<1.58
U4-MW-02I	12/8/2022	N	EM04	UMCF	75.0 - 90.0	1.625	1.11	----	168.4	6.91	100	----	14.5	5.0	----	----	----	1,860,000 J	3,720 J-	31,600 J	<0.147	<0.149	<0.133	<0.158
U4-MW-02I	12/8/2022	FD	EM04	UMCF	75.0 - 90.0	----	----	----	----	----	----	----	----	----	----	----	----	3,300,000 J	3,620	161,000 J	<0.147	<0.149	<0.133	<0.158
U4-MW-02I	1/13/2023	N	EM05	UMCF	75.0 - 90.0	----	----	----	----	----	----	----	----	----	----	----	----	8,500,000	21,700	76,100	<1.47	<1.49	<1.33	<1.58
U4-MW-02I	1/13/2023	FD	EM05	UMCF	75.0 - 90.0	----	----	----	----	----	----	----	----	----	----	----	----	8,640,000	21,900	74,900 J-	<1.47	<1.49	<1.33	<1.58
U4-MW-02I	2/15/2023	N	EM06	UMCF	75.0 - 90.0	22.789	1.09	----	232.8	6.61	100	----	23.4	115.7	----	----	----	26,500,000	69,100 J-	10,700	<1.47	<1.49	<1.33	<1.58
U4-MW-02I	2/15/2023	FD	EM06	UMCF	75.0 - 90.0	----	----	----	----	----	----	----	----	----	----	----	----	24,800,000	69,400 J-	13,300	<1.47	<1.49	<1.33	<1.58
U4-MW-02I	3/17/2023	N	EM07	UMCF	75.0 - 90.0	27.205	0.39	0.0 U	129.0	6.43	105	0.0 U	25.4	37.4	<4.07	<4.26	3,560	30,400,000	69,400	12,000	<29.4	<29.8	<26.6	<31.6
U4-MW-02I	3/17/2023	FD	EM07	UMCF	75.0 - 90.0	----	----	----	----	----	----	----	----	----	<4.07	<4.26	3,310	29,100,000	68,600	12,700	<29.4	<29.8	<26.6	<31.6
U4-MW-03D	4/20/2022	N	BLO2	UMCF	96.6 - 106.6	19.006	2.71	0.0 U	209.7	7.29	100	0.0 U	26.7	31.0	----	----	----	23,000,000	42,100	964 J	<0.147	<0.149	<0.133	<0.158
U4-MW-03D	2/16/2023	N	EM06	UMCF	96.6 - 106.6	7.848	5.12	----	168.2	7.47	60	----	22.6	35.4	----	----	----	----	31,800	----	<0.735	<0.745	<0.665	<0.790
U4-MW-03D	3/16/2023	N	EM07	UMCF	96.6 - 106.6	797.196	3.67	0.0 U	76.1	7.37	100	0.0 U	23.8	35.8	<4.07	<4.26	59.1 J	14,400,000	28,100	816 J	<2.94	<2.98	<2.66	<3.16
U4-MW-03D	3/16/2023	FD	EM07	UMCF	96.6 - 106.6	----	----	----	----	----	----	----	----	----	<4.07	<4.26	<2.91 UJ	13,400,000	27,200	831 J	<0.735	<0.745	<0.665	<0.790
U4-MW-03DD	4/20/2022	N	BLO2	UMCF	119.7 - 129.7	2.756	1.07	0.0 U	220.6	7.54	100	0.0 U	26.3	24.2	----	----	----	2,070,000	2,660	999 J	<0.147	<0.149	<0.133	<0.158
U4-MW-03DD	3/15/2023	N	EM07	UMCF	119.7 - 129.7	1.855	2.71	0.0 U	35.0	8.22	110	0.0 U	22.1	-57.2	<4.07	<4.26	<2.91	567,000	60.5	846 J	<0.147	<0.149	<0.133	<0.158
U4-MW-03I	4/19/2022	N	BLO2	UMCF	76.6 - 86.6	6.055	1.28	0.0 U	57.0	8.02	60	0.0 U	30.2	8489.8	----	----	----	2,350,000	<150 UJ	3,300 J+	<0.147	<0.149	<0.133	<0.158
U4-MW-03I	3/15/2023	N	EM07	UMCF	76.6 - 86.6	22.711	4.02	0.0 U	95.9	7.44	100	0.0 U	25.2	159.7	<4.07	<4.26	<2.91	12,000,000	24,500	1,260 J+	<0.147	<0.149	<0.133	<0.158
U4-MW-03S	4/18/2022	N	BLO2	UMCF	54.5 - 64.5	4.716	9.18	0.0 U	105.4	9.74	195	0.0 U	27.3	38.0	----	----	----	2,890,000	1,390 J-	1,200 J+	<0.147	<0.149	<0.133	<0.158
U4-MW-03S	4/18/2022	FD	BLO2	UMCF	54.5 - 64.5	----	----	----	----	----	----	----	----	----	----	----	----	2,190,000 J-	1,390 J-	1,320 J+	<0.147	<0.149	<0.133	<0.158
U4-MW-03S	3/15/2023	N	EM07	UMCF	54.5 - 64.5	7.108	3.63	0.0 U	-0.9	9.48	100	0.0 U	22.1	-21.0	<4.07	<4.26	<2.91	2,440,000 J	2,300	1,480 J+	<0.147	<0.149	<0.133	<0.158
U4-MW-04D	4/19/2022	N	BLO2	UMCF	97.0 - 107.0	50.188	0.90	0.0 U	76.7	7.01	200	0.0 U	30.1	18.0	----	----	----	56,100,000	103,000 J	7,260 J+	<0.147	<0.149	<0.133	<0.158
U4-MW-04D	2/16/2023	N	EM06	UMCF	97.0 - 107.0	5.802	7.81	----	185.1	7.60	60	----	21.5	38.7	----	----	----	----	18,300	----	<7.35	<7.45	<6.65	<7.90
U4-MW-04D	3/21/2023	N	EM07	UMCF	97.0 - 107.0	5.697	7.32	0.0 U	43.3	7.80	120	0.0 U	20.3	420.1	<4.07	<4.26	<2.91	5,570,000 J	14,300	1,210 J+	<0.147	<0.149	<0.133	<0.158
U4-MW-04I	4/19/2022	N	BLO2	UMCF	76.8 - 86.8	22.833	0.68	0.0 U	49.8	7.36	100	0.0 U	27.6	78.2	----	----	----	22,500,000	34,300 J-	1,530 J+	<0.147	<0.149	<0.133	<0.158
U4-MW-04I	3/20/2023	N	EM07	UMCF	76.8 - 86.8	15.330	5.23	0.0 U	144.6	7.43	200	0.0 U	23.3	482.0	<4.07	<4.26	<2.91	19,200,000	38,600	1,200 J+	<0.147	<0.149	<0.133	<0.158
U4-MW-05D	4/15/2022	N	BLO2	UMCF	98.2 - 108.2	39.740	0.77	0.0 U	146.1	7.03	100	0.0 U	28.3	39.5	----	----	----	27,800,000	73,100 J-	1,710 J	<0.147	<0.149	<0.133	<0.158
U4-MW-05D	10/13/2022	N	EM02	UMCF	98.2 - 108.2	24.933	3.56	----	190.6	7.02	280	----	28.3	235.7	----	----	----	30,400,000 J-	69,500	1,300 J	<14.7	<14.9	<13.3	<15.8
U4-MW-05D	11/3/2022	N	EM03	UMCF	98.2 - 108.2	17.012	4.46	----	121.3	7.64	140	----	23.6	92823.7	----	----	----	15,100,000	46,500	1,450 J+	<0.147	<0.149	<0.133	<0.158
U4-MW-05D	12/7/2022	N	EM04	UMCF	98.2 - 108.2	16.306	4.72	----	143.6	7.59	0	----	23.1	106.9	----	----	----	15,100,000	44,900	1,200 J+	<0.147	<0.149	<0.133	<0.158
U4-MW-05D																								

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	SW9060A/SM 5310B	Volatile Organic Compounds by SW8260B			
						Conductivity	Dissolved Oxygen	Ferrous Iron	Oxidation-Reduction Potential	pH	Purge Rate	Sulfide	Temperature	Turbidity	Ethane	Ethene	Methane	Total Dissolved Solids	Chromium, Hexavalent	Total Organic Carbon	1,1,1,2-Tetrachloroethane	1,1,1-Trichloroethane	1,1,2,2-Tetrachloroethane	1,1,2-Trichloroethane
						mS/cm	mg/L	mg/L	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
U4-MW-07D	2/14/2023	N	EM06	UMCF	96.8 - 106.5	1.217	9.30	----	161.8	7.79	90	----	22.3	73.4	----	----	----	1,070,000	1,250 J-	1,320	<0.147	<0.149	<0.133	<0.158
U4-MW-07D	3/16/2023	N	EM07	UMCF	96.8 - 106.5	0.029	7.54	0.0 U	140.8	7.92	105	0.0 U	28.6	39.6	<4.07	<4.26	53.0 J+	1,070,000	922	1,930 J+	<0.147	<0.149	<0.133	<0.158
U4-MW-07I	4/15/2022	N	BLO2	UMCF	76.8 - 86.8	5.556	0.59	0.0 U	158.2	7.86	100	0.0 U	25.6	10.7	----	----	----	1,670,000	4,810 J+	2,760 J+	<0.147	<0.149	<0.133	<0.158
U4-MW-07I	10/12/2022	N	EM02	UMCF	76.8 - 86.8	2.078	6.24	----	135.0	7.86	50	----	26.9	119.0	----	----	----	1,350,000 J	2,720	1,370 J+	<0.147	<0.149	<0.133	<0.158
U4-MW-07I	11/3/2022	N	EM03	UMCF	76.8 - 86.8	1.794	6.05	----	141.5	7.93	180	----	23.9	1667.5	----	----	----	1,340,000	1,650 J-	1,530 J+	<0.147	<0.149	<0.133	<0.158
U4-MW-07I	12/7/2022	N	EM04	UMCF	76.8 - 86.8	1.562	8.32	----	96.7	7.97	100	----	24.0	210.3	----	----	----	1,220,000	1,360 J-	1,630 J+	<0.147	<0.149	<0.133	<0.158
U4-MW-07I	1/11/2023	N	EM05	UMCF	76.8 - 86.8	1.955	9.11	----	104.4	7.82	150	----	24.3	73.4	----	----	----	1,440,000	1,810 J-	1,420 J+	<0.147	<0.149	<0.133	<0.158
U4-MW-07I	2/15/2023	N	EM06	UMCF	76.8 - 86.8	1.786	8.45	----	124.7	7.66	80	----	22.3	134.0	----	----	----	1,520,000	2,640 J-	1,250	<0.147	<0.149	<0.133	<0.158
U4-MW-07I	3/16/2023	N	EM07	UMCF	76.8 - 86.8	6.144	7.27	0.0 U	83.7	7.72	100	0.2	24.3	259.7	<4.07	<4.26	54.8 J+	1,630,000 J	2,670 J-	25,900 J-	<0.735	<0.745	<0.665	<0.790
U4-MW-08D	4/13/2022	N	BLO2	UMCF	98.6 - 108.6	43.677	1.07	0.0 U	166.4	6.92	100	0.0 U	24.7	98.8 E	<4.07	<4.26	<2.91	48,000,000	106,000	3,420 J	<0.147	<0.149	<0.133	<0.158
U4-MW-08D	12/7/2022	N	EM04	UMCF	98.6 - 108.6	15.745	1.70	0.0 U	52.2	6.62	250	0.0 U	22.4	21.7	<4.07	<4.26	166	14,700,000	52,900 J-	6,460	<0.147	<0.149	<0.133	<0.158
U4-MW-08D	3/17/2023	N	EM07	UMCF	98.6 - 108.6	15.242	1.42	0.0 U	174.5	6.38	0	0.0 U	21.6	144.4	<4.07	<4.26	22,600	22,700,000	44,800	10,900 J-	<14.7	<14.9	<13.3	<15.8
U4-MW-08DD	4/20/2022	N	BLO2	UMCF	119.8 - 129.8	1.774	0.95	0.0 U	5.0	7.70	70	0.0 U	24.6	62.4	<4.07	<4.26	<2.91	1,240,000	694	670 J	<0.147	<0.149	<0.133	<0.158
U4-MW-08DD	4/20/2022	FD	BLO2	UMCF	119.8 - 129.8	----	----	----	----	----	----	----	----	----	<4.07	<4.26	<2.91	1,220,000	723	672 J	<0.147	<0.149	<0.133	<0.158
U4-MW-08DD	12/8/2022	N	EM04	UMCF	119.8 - 129.8	1.034	1.20	0.0 U	138.4	7.44	200	0.0 U	21.4	20.3	<4.07	<4.26	<2.91	751,000 J	384	1,170 J+	<0.147	<0.149	<0.133	<0.158
U4-MW-08DD	3/15/2023	N	EM07	UMCF	119.8 - 129.8	7.824	2.01	0.0 U	63.2	7.54	80	0.0 U	24.5	8.5	<4.07	<4.26	<2.91	2,690,000	1,280	935 J	<0.147	<0.149	<0.133	<0.158
U4-MW-08I	4/13/2022	N	BLO2	UMCF	78.0 - 88.0	8.786	1.97	0.0 U	183.3	7.71	100	0.0 U	22.8	-5857914.0 E	<4.07	<4.26	<2.91	3,380,000	7,950	1,740 J	<0.147	<0.149	<0.133	<0.158
U4-MW-08I	12/7/2022	N	EM04	UMCF	78.0 - 88.0	8.950	2.32	0.0 U	137.7	7.48	250	0.0 U	22.7	304.1	<4.07	<4.26	57.2	11,000,000	33,700	1,790 J+	<0.147	<0.149	<0.133	<0.158
U4-MW-08I	12/7/2022	FD	EM04	UMCF	78.0 - 88.0	----	----	----	----	----	----	----	----	----	<4.07	<4.26	55.5	----	34,200 J-	1,310 J+	<0.147	<0.149	<0.133	<0.158
U4-MW-08I	3/17/2023	N	EM07	UMCF	78.0 - 88.0	7.198	2.29	0.0 U	157.8	6.95	35	0.0 U	20.5	641.8	<4.07	<4.26	17,900	22,300,000	54,200	1,640 J+	<7.35	<7.45	<6.65	<7.90
U4-MW-08S	4/15/2022	N	BLO2	UMCF	54.9 - 64.9	3.391	3.42	0.0 U	79.6	9.96	285	0.0 U	27.1	55.4	<4.07	<4.26	<2.91	1,970,000	506 J+	1,190 J+	<0.147	<0.149	<0.133	<0.158
U4-MW-08S	12/7/2022	N	EM04	UMCF	54.9 - 64.9	2.838	2.17	0.0 U	40.0	8.08	250	0.0 U	22.4	182.5	<4.07	<4.26	427	1,600,000	254 J-	3,390 J+	<0.147	<0.149	<0.133	<0.158
U4-MW-08S	12/7/2022	FD	EM04	UMCF	54.9 - 64.9	----	----	----	----	----	----	----	----	----	<4.07	<4.26	472	1,850,000	265 J-	2,830 J+	<0.147	<0.149	<0.133	<0.158
U4-MW-08S	3/13/2023	N	EM07	UMCF	54.9 - 64.9	0.027	7.40	0.0 U	-138.1	7.85	60	0.2	31.0	2.9	<4.07	<4.26	21,300	1,570,000	<0.150	9,910	<0.147	<0.149	<0.133	<0.158
U4-MW-08S	3/13/2023	FD	EM07	UMCF	54.9 - 64.9	----	----	----	----	----	----	----	----	----	<4.07	<4.26	21,300	1,410,000	<0.750 UJ	12,800 J-	<0.147	<0.149	<0.133	<0.158
U4-MW-09D	4/14/2022	N	BLO2	UMCF	96.9 - 106.9	25.834	1.79	0.0 U	36.4	7.03	100	0.0 U	24.3	640.2	<4.07	<4.26	<2.91	30,000,000	67,800	1,590 J	<0.147	<0.149	<0.133	<0.158
U4-MW-09D	12/6/2022	N	EM04	UMCF	96.9 - 106.9	3.375	6.84	0.0 U	104.4	7.69	200	0.0 U	22.1	305.7	<4.07 UJ	<4.26 UJ	291	3,560,000	7,060 J-	751 J	<1.47 UJ	<1.49 UJ	<1.33 UJ	<1.58 UJ
U4-MW-09D	3/16/2023	N	EM07	UMCF	96.9 - 106.9	4.632	1.55	0.0 U	-81.6	6.58	0	0.0 U	22.9	678.2	<4.07	<4.26	13,400	4,200,000	3,520	146,000	<1.47	<1.49	<1.33	<1.58
U4-MW-09DD	4/14/2022	N	BLO2	UMCF	119.8 - 129.8	1.339	1.49	0.0 U	144.1	7.81	100	0.0 U	23.2	25.6	<4.07	<4.26	<2.91	759,000 J	121	493 J	<0.147	<0.149	<0.133	<0.158
U4-MW-09DD	12/6/2022	N	EM04	UMCF	119.8 - 129.8	1.036	1.23	0.0 U	63.9	7.85	250	0.0 U	22.6	11.4	<4.07 UJ	<4.26 UJ	<2.91 UJ	693,000	134	398 J	<0.147 UJ	<0.149 UJ	<0.133 UJ	<0.158 UJ
U4-MW-09DD	3/21/2023	N	EM07	UMCF	119.8 - 129.8	1.698	4.64	0.0 U	146.4	7.90	70	0.0 U	20.1	26.7	<4.07	<4.26	<2.91	1,290,000	215 J-	310 J	<0.147	<0.149	<0.133	<0.158
U4-MW-09I	4/14/2022	N	BLO2	UMCF	76.8 - 86.8	3.354	10.37	0.0 U	8.8	7.57	120	0.0 U	24.5	322.6	<4.07	<4.26	<2.91	2,030,000	2,320	1,090 J+	<0.147	<0.149	<0.133	<0.158
U4-MW-09I	12/6/2022	N	EM04	UMCF	76.8 - 86.8	4.939	5.28	0.0 U	124.5	7.49	250	0.0 U	22.6	1626.2	<4.07 UJ	<4.26 UJ	194	6,780,000	13,500 J-	1,040 J+	<1.47 UJ	<1.49 UJ	<1.33 UJ	<1.58 UJ
U4-MW-09I	3/16/2023	N	EM07	UMCF	76.8 - 86.8	16.829	0.37	0.7	-149.7	6.48	105	0.0 U	24.5	1692.0	<4.07	<4.26	18,200	4,970,000	7,920	43,900	<1.47	<1.49	<1.33	<1.58
U4-MW-09S	4/14/2022	N	BLO2	UMCF	55.3 - 65.3	2.893	4.00	0.0 U	179.7	8.27	160	0.0 U	23.4	33.5	<4.07	<4.26	<2.91	1,900,000	387	892 J	<0.147	<0.149	<0.133	<0.158
U4-MW-09S	12/6/2022	N	EM04	UMCF	55.3 - 65.3	3.158	5.76	0.0 U	73.5	8.69	250	0.0 U	21.6	60.9	<4.07 UJ	<4.26 UJ	<2.91 UJ	3,460,000 J	2,740 J-	999 J	<0.147 UJ	<0.149 UJ	<0.133 UJ	<0.158 UJ
U4-MW-09S	3/17/2023	N	EM07	UMCF	55.3 - 65.3	3.822	1.29	0.0 U	97.1	8.96	200	0.0 U	23.0	99.2	<4.07	<4.26	4,840	2,960,000	2,630	2,440 J+	<0.147	<0.149	<0.133	<0.158
U4-MW-10D	4/14/2022	N	BLO2	UMCF	96.9 - 106.9	5.411	0.91	0.0 U	206.3	7.33	100	0.0 U	22.6	52.9	<4.07	<4.26	<2.91	4,840,000	5,450	1,020 J+	<0.147	<0.149	<0.133	<0.158
U4-MW-10D	12/5/2022	N	EM04	UMCF	96.9 - 106.9	2.690	3.80	0.0 U	70.0	7.73	100	0.0 U	22.9	43.2	<4.07	<4.26	257	2,400,000	3,640 J-	868 J	<0.147	<0.149	<0.133	<0.158
U4-MW-10D	3/17/2023	N	EM07	UMCF	96.9 - 106.9	542.825	0.85	0.5	-107.9	6.38	100	0.0 U	22.4	-399.7	<4.07	<4.26	29,800	3,170,000	1.22	225,000	<0.147	<0.149	<0.133	<0.158
U4-MW-10I	4/14/2022	N	BLO2	UMCF	77.1 - 87.1	7.650	0.90	0.0 U	183.9	7.68	100	0.0 U	23.9	72915.5	<4.07	<4.26	<2.91	5,670,000	6,160	1,200 J+	<0.147	<0.149	<0.133	<0.158
U4-MW-10I	12/																							

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	SW9060A/SM 5310B	Volatile Organic Compounds by SW8260B			
						Conductivity	Dissolved Oxygen	Ferrous Iron	Oxidation-Reduction Potential	pH	Purge Rate	Sulfide	Temperature	Turbidity	Ethane	Ethene	Methane	Total Dissolved Solids	Chromium, Hexavalent	Total Organic Carbon	1,1,1,2-Tetrachloroethane	1,1,1-Trichloroethane	1,1,2,2-Tetrachloroethane	1,1,2-Trichloroethane
						mS/cm	mg/L	mg/L	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
U4-MW-12D	11/2/2022	N	EM03	UMCF	97.1 - 107.1	9.367	1.89	0.0 U	145.9	7.12	250	0.0 U	20.8	84.0	----	----	----	16,600,000	47,900	469 J	<1.47	<1.49	<1.33	<1.58
U4-MW-12D	12/7/2022	N	EM04	UMCF	97.1 - 107.1	15.505	2.44	0.0 U	41.1	7.21	100	0.0 U	17.7	89.2	<4.07	<4.26	410	13,400,000	39,900	2,090 J+	<0.147	<0.149	<0.133	<0.158
U4-MW-12D	1/12/2023	N	EM05	UMCF	97.1 - 107.1	9.215	1.80	0.0 U	94.5	6.98	250	0.0 U	21.3	23.7	----	----	----	14,300,000	39,300	1,970 J+	<14.7	<14.9	<13.3	<15.8
U4-MW-12D	2/15/2023	N	EM06	UMCF	97.1 - 107.1	16.607	1.11	0.0 U	42.6	6.93	210	0.0 U	22.0	44.6	----	----	----	13,800,000	37,000 J-	2,920	<14.7	<14.9	<13.3	<15.8
U4-MW-12D	3/14/2023	N	EM07	UMCF	97.1 - 107.1	12.160	1.14	0.0 U	72.1	7.06	100	0.0 U	20.5	234.2	<4.07	<4.26	26,600	12,700,000	28,700	34,300	<7.35	<7.45	<6.65	<7.90
U4-MW-12I	4/14/2022	N	BLO2	UMCF	76.8 - 86.8	11.234	1.32	----	35.2	7.74	100	----	26.1	988.9	<4.07	<4.26	<2.91	8,680,000	21,200	1,630 J	<0.147	<0.149	<0.133	<0.158
U4-MW-12I	4/14/2022	FD	BLO2	UMCF	76.8 - 86.8	----	----	----	----	----	----	----	----	----	<4.07	<4.26	<2.91	8,670,000	19,400	1,930 J	<0.147	<0.149	<0.133	<0.158
U4-MW-12I	9/27/2022	N	EM01	UMCF	76.8 - 86.8	3.677	0.92	0.0 U	121.6	7.60	140	0.0 U	27.4	70.6	----	----	----	2,360,000	2,880 J-	1,440 J+	<0.147	<0.149	<0.133	<0.158
U4-MW-12I	10/12/2022	N	EM02	UMCF	76.8 - 86.8	2.587	1.25	0.0 U	190.1	7.30	280	0.0 U	23.5	343.0	----	----	----	2,410,000 J-	2,060	4,410 J+	<0.147	<0.149	<0.133	<0.158
U4-MW-12I	11/2/2022	N	EM03	UMCF	76.8 - 86.8	1.684	1.15	0.0 U	95.4	7.23	180	0.0 U	22.6	123.8	----	----	----	4,360,000	1,520	11,100	<0.147	<0.149	<0.133	<0.158
U4-MW-12I	12/7/2022	N	EM04	UMCF	76.8 - 86.8	2.533	1.36	0.0 U	-290.6	7.38	80	0.6	20.5	20.9	<4.07	<4.26	1,070	1,370,000	<0.150 UJ	95,000	<0.147	<0.149	<0.133	<0.158
U4-MW-12I	12/7/2022	FD	EM04	UMCF	76.8 - 86.8	----	----	----	----	----	----	----	----	----	<4.07	<4.26	1,110	----	----	84,500	<0.147	<0.149	<0.133	<0.158
U4-MW-12I	1/13/2023	N	EM05	UMCF	76.8 - 86.8	----	----	0.0 U	----	----	----	0.0 U	----	----	----	----	----	1,580,000	0.446 J	229,000	<0.147	<0.149	<0.133	<0.158
U4-MW-12I	2/15/2023	N	EM06	UMCF	76.8 - 86.8	3.485	0.76	0.0 U	-291.6	6.89	210	0.0 U	20.6	2.3	----	----	----	3,010,000	<7.50 UJ	356,000	<0.147	<0.149	<0.133	<0.158
U4-MW-12I	3/13/2023	N	EM07	UMCF	76.8 - 86.8	2.868	0.28	0.5	-279.2	6.90	100	1.4	21.4	4.0	<4.07	<4.26	35,200	2,270,000	<1.50	407,000 J-	<0.147	<0.149	<0.133	<0.158
U4-MW-13D	4/14/2022	N	BLO2	UMCF	98.2 - 108.2	32.518	0.90	0.0 U	136.1	6.94	100	0.0 U	25.2	85.7	<4.07	<4.26	<2.91	30,300,000	56,200	1,640 J	<0.147	<0.149	<0.133	<0.158
U4-MW-13D	9/28/2022	N	EM01	UMCF	98.2 - 108.2	11.793	0.96	0.0 U	-329.7	6.65	100	0.0 U	28.9	50.9	----	----	----	6,280,000 J+	45,000	58,400	<1.47	<1.49	<1.33	<1.58
U4-MW-13D	10/11/2022	N	EM02	UMCF	98.2 - 108.2	11.124	1.77	0.0 U	-147.3	6.57	50	0.0 U	23.5	22.7	----	----	----	6,140,000	19,800	55,200	<0.147	<0.149	<0.133	<0.158
U4-MW-13D	11/3/2022	N	EM03	UMCF	98.2 - 108.2	5.404	1.67	0.0 U	26.5	6.45	250	0.0 U	21.5	138.4	----	----	----	9,360,000 J	1,860	7,010	<0.147	<0.149	<0.133	<0.158
U4-MW-13D	12/7/2022	N	EM04	UMCF	98.2 - 108.2	7.937	2.99	0.0 U	122.7	6.70	80	0.0 U	16.8	55.9	<4.07	<4.26	7,020	7,430,000	16,100	2,790 J+	<0.147	<0.149	<0.133	<0.158
U4-MW-13D	1/12/2023	N	EM05	UMCF	98.2 - 108.2	4.505	1.39	0.0 U	60.0	6.88	250	0.0 U	21.4	76.1	----	----	----	5,460,000	15,100	2,110 J+	<2.94	<2.98	<2.66	<3.16
U4-MW-13D	2/15/2023	N	EM06	UMCF	98.2 - 108.2	8.150	1.44	0.0 U	65.4	6.90	210	0.0 U	20.6	58.9	----	----	----	6,380,000	15,600 J-	2,000 J+	<0.147	<0.149	<0.133	<0.158
U4-MW-13D	3/17/2023	N	EM07	UMCF	98.2 - 108.2	5.920	2.07	0.0 U	172.0	7.19	100	0.0 U	18.5	202.8	<4.07	<4.26	5,480	7,680,000	14,200	1,730 J+	<2.94	<2.98	<2.66	<3.16
U4-MW-13I	4/14/2022	N	BLO2	UMCF	77.1 - 87.1	11.607	2.38	0.0 U	127.9	7.42	100	0.0 U	23.7	2478.1	<4.07	<4.26	<2.91	8,680,000	21,900	1,080 J+	<0.147	<0.149	<0.133	<0.158
U4-MW-13I	9/28/2022	N	EM01	UMCF	77.1 - 87.1	5.667	2.79	0.0 U	96.9	7.52	100	0.0 U	27.2	70.5	----	----	----	2,540,000 J+	17,000	2,450 J+	<0.147	<0.149	<0.133	<0.158
U4-MW-13I	10/10/2022	N	EM02	UMCF	77.1 - 87.1	6.053	1.93	0.0 U	110.0	7.58	50	0.0 U	27.9	142.6	----	----	----	2,660,000	8,000	1,900 J	<0.147	<0.149	<0.133	<0.158
U4-MW-13I	11/3/2022	N	EM03	UMCF	77.1 - 87.1	2.675	2.64	0.0 U	141.8	7.46	250	0.0 U	20.1	119.3	----	----	----	3,340,000 J	5,840 J-	2,000 J+	<0.147	<0.149	<0.133	<0.158
U4-MW-13I	12/6/2022	N	EM04	UMCF	77.1 - 87.1	3.613	1.73	0.0 U	-292.7	7.58	100	0.1	19.9	94.5	<4.07 UJ	<4.26 UJ	1,300	2,710,000	<0.150 UJ	37,400	<0.735 UJ	<0.745 UJ	<0.665 UJ	<0.790 UJ
U4-MW-13I	1/12/2023	N	EM05	UMCF	77.1 - 87.1	2.079	1.19	0.0 U	-245.9	7.13	250	0.0 U	20.1	118.8	----	----	----	1,960,000	4.48	67,800	<0.147	<0.149	<0.133	<0.158
U4-MW-13I	2/14/2023	N	EM06	UMCF	77.1 - 87.1	3.065	0.61	0.0 U	-309.2	7.19	200	0.0 U	20.7	552.4	----	----	----	3,420,000	0.250 J	43,400	<0.735	<0.745	<0.665	<0.790
U4-MW-13I	3/16/2023	N	EM07	UMCF	77.1 - 87.1	1.654	0.98	0.0 U	-313.7	7.44	0	0.0 U	19.2	114.6	<4.07	<4.26	20,300	1,550,000	1.05 J	43,900	<0.147	<0.149	<0.133	<0.158
U4-MW-14D	4/13/2022	N	BLO2	UMCF	97.3 - 107.3	5.770	0.87	0.0 U	161.5	7.20	100	0.0 U	26.5	50.4	<4.07	<4.26	<2.91	2,550,000	239	1,220 J+	<0.147	<0.149	<0.133	<0.158
U4-MW-14D	12/6/2022	N	EM04	UMCF	97.3 - 107.3	4.415	2.55	0.0 U	75.3	7.39	80	0.0 U	20.7	58.1	<4.07 UJ	<4.26 UJ	<2.91 UJ	4,530,000	5,860	570 J	<0.735 UJ	<0.745 UJ	<0.665 UJ	<0.790 UJ
U4-MW-14D	3/16/2023	N	EM07	UMCF	97.3 - 107.3	181.910	1.08	0.0 U	143.2	7.47	100	0.0 U	21.8	115.4	<4.07	<4.26	15.0 J+	2,650,000	4,450	1,010 J+	<0.735	<0.745	<0.665	<0.790
U4-MW-14I	4/14/2022	N	BLO2	UMCF	77.3 - 87.3	5.720	0.77	0.0 U	110.5	8.07	150	0.0 U	22.8	57.4	<4.07	<4.26	<2.91	3,220,000	2,270	1,090 J+	<0.147	<0.149	<0.133	<0.158
U4-MW-14I	12/6/2022	N	EM04	UMCF	77.3 - 87.3	4.279	2.18	0.0 U	63.8	7.41	80	0.0 U	16.8	23.4	<4.07 UJ	<4.26 UJ	29.8	5,260,000	4,360 J-	786 J	<0.735 UJ	<0.745 UJ	<0.665 UJ	<0.790 UJ
U4-MW-14I	3/16/2023	N	EM07	UMCF	77.3 - 87.3	213.617	0.55	0.0 U	166.5	7.45	130	0.0 U	21.5	-48.0	<4.07	<4.26	123 J+	3,130,000	4,560	1,030 J+	<0.735	<0.745	<0.665	<0.790
U4-MW-15D	4/13/2022	N	BLO2	UMCF	96.0 - 106.0	5.015	1.02	0.0 U	209.2	7.09	100	0.0 U	20.7	76.6	<4.07	<4.26	<2.91	3,490,000	5,240	1,240 J	<0.147	<0.149	<0.133	<0.158
U4-MW-15D	12/5/2022	N	EM04	UMCF	96.0 - 106.0	2.298	15.40	0.0 U	168.4	7.52	200	0.0 U	22.3	435.5	<4.07	<4.26	<2.91	2,880,000	3,380 J-	922 J	<0.147	<0.149	<0.133	<0.158
U4-MW-15D	3/20/2023	N	EM07	UMCF	96.0 - 106.0	2.799	0.93	0.0 U	127.9	7.39	200	0.0 U	20.8	20.3	<4.07	<4.26	324	3,030,000	3,630	362 J	<0.147	<0.149	<0.133	<0.158
U4-MW-15DD	4/13/2022	N	BLO2	UMCF	120.3 - 130.3	0.999	2.14	0.0 U	123.8	8.36	100	0.0 U	18.6	82.3	<4.07	<4.26	<2.91	677,000	67.5	532 J	<0.147	<0.149	<0.133	<0.158
U4-MW-15DD	12/5/2022	N	EM04	UMCF	120.3 - 130.3	0.666	2.14	0.0 U	-139.8	8.59	250	0.0 U	21.5	51.1	<4.07	<4.26	<2.91	553,000	14.5	505 J	<0.147	<0.149	<0.133	<0.158
U4-MW-15DD	3/15/2023	N	EM07	UMCF	120.3 - 130.3	0.888	1.96	0.0 U	104.0	9.13	100	0.0 U	22.2	99.0	<4.07	<4.26	<2.91	548,000	12.5 J-	224 J	<0.147	<0.149	<0.133	<0.158
U4-MW-15I	4/12/2022	N	BLO2	UMCF	76.8 - 86.8	5.348	1.45	0.0 U	125.1	7.95	150	0.0 U	22.6	20895.7 E	<4.07	<4.26	<2.91	4,080,000	5,010	1,440 J	<0.147	<0.149	<0.133	<0.158
U4-MW-15I	12/5/2022	N	EM04	UMCF	76.8 - 86.8	2.972	1.05	0.0 U	161.9	6.87	250	0.0 U	23.0	137.7	<4.07	<4.26	3,490	3,130,000	4,730 J-	60,700	<0.147	<0.149	<0.133	<0.158
U4-MW-15I	3/17/2023	N	EM07	UMCF	76.8 - 86.8	473.418	0.66	0.4	-173.7	6.17	120	6.0	21.6	-223.4	<4.									

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	SW9060A/SM5310B	Volatile Organic Compounds by SW8260B			
						Conductivity	Dissolved Oxygen	Ferrous Iron	Oxidation-Reduction Potential	pH	Purge Rate	Sulfide	Temperature	Turbidity	Ethane	Ethene	Methane	Total Dissolved Solids	Chromium, Hexavalent	Total Organic Carbon	1,1,1,2-Tetrachloroethane	1,1,1-Trichloroethane	1,1,2,2-Tetrachloroethane	1,1,2-Trichloroethane
						mS/cm	mg/L	mg/L	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
U4-T3	2/13/2023	N	EM06		-	13.131	7.12	----	159.2	7.44	----	----	23.6	3.3	----	----	----	13,200,000	36,600	17,700	<14.7	<14.9	<13.3	<15.8
U4-T3	3/13/2023	N	EM07		-	9.552	6.11	----	197.0	7.43	----	----	23.5	1.9	----	----	----	11,700,000	39,800	2,980 J+	<3.68	<3.73	<3.33	<3.95

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 5
Groundwater Analytical Results
Unit 4 Source Area Bioremediation Treatability Study

Table with 26 columns: Well, Sample Date, QC Type, Event, Screened Lithology, Screened Interval, and 20 Volatile Organic Compounds by SW8260B (1,1-Dichloroethane, 1,1-Dichloroethene, 1,1-Dichloropropene, Trichlorobenzene, Trichloropropene, Trichlorobenzene, 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, 2,2-Dichloropropane, 2-Butanone (MEK), 2-Chlorotoluene). Rows include various well identifiers like M-247-100, U4-E-01D, etc., with corresponding analytical data.

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																		
						1,1-Dichloroethane	1,1-Dichloroethene	1,1-Dichloropropane	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-Dichloropropane	1,3,5-Trimethylbenzene (Mesitylene)	1,3-Dichlorobenzene	1,3-Dichloropropane	1,4-Dichlorobenzene	2,2-Dichloropropane	2-Butanone (MEK)	2-Chlorotoluene	
						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-12D	11/2/2022	N	EM03	UMCF	97.1 - 107.1	<1.00	<1.88	<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	<1.61	<11.9	<1.06
U4-MW-12D	12/7/2022	N	EM04	UMCF	97.1 - 107.1	<0.100	0.351 J	0.507 J	<0.230	<0.237	<0.481	<0.322	<0.276	<0.126	<0.107	0.196 J	<0.149	<0.104	<0.110	<0.110	<0.120	<0.161	<1.19	<0.106
U4-MW-12D	1/12/2023	N	EM05	UMCF	97.1 - 107.1	<10.0	<18.8	<14.2	<23.0	<23.7	<48.1	<32.2	<27.6	<12.6	<10.7	<8.19	<14.9	<10.4	<11.0	<11.0	<12.0	<16.1	<119	<10.6
U4-MW-12D	2/15/2023	N	EM06	UMCF	97.1 - 107.1	<10.0	<18.8	<14.2	<23.0	<23.7	<48.1	<32.2	<27.6	<12.6	<10.7	<8.19	<14.9	<10.4	<11.0	<11.0	<12.0	<16.1	<119	<10.6
U4-MW-12D	3/14/2023	N	EM07	UMCF	97.1 - 107.1	<5.00	<9.40	<7.10	<11.5	<11.9	<24.1	<16.1	<13.8	<6.30	<5.35	<4.09	<7.45	<5.20	<5.50	<5.50	<6.00	<8.05	<59.5	<5.30
U4-MW-12I	4/14/2022	N	BLO2	UMCF	76.8 - 86.8	<0.100	0.465 J	<0.142	<0.230	<0.237	<0.481	<0.322	<0.276	<0.126	<0.107	0.144 J	<0.149	<0.104	<0.110	<0.110	<0.120	<0.161	1.87 J	<0.106
U4-MW-12I	4/14/2022	FD	BLO2	UMCF	76.8 - 86.8	<0.100	0.461 J	<0.142	<0.230	<0.237	<0.481	<0.322	<0.276	<0.126	<0.107	0.146 J	<0.149	<0.104	<0.110	<0.110	<0.120	<0.161	2.86 J	<0.106
U4-MW-12I	9/27/2022	N	EM01	UMCF	76.8 - 86.8	<0.100	<0.188	<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	<0.161	<1.19	<0.106
U4-MW-12I	10/12/2022	N	EM02	UMCF	76.8 - 86.8	<0.100	<0.188	<0.142	<0.230	<0.237	<0.481	<0.322	<0.276	<0.126	<0.107	0.0834 J	<0.149	<0.104	<0.110	<0.110	<0.120	<0.161	<1.19	<0.106
U4-MW-12I	11/2/2022	N	EM03	UMCF	76.8 - 86.8	<0.100	<0.188	<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	<0.161	<1.19	<0.106
U4-MW-12I	12/7/2022	N	EM04	UMCF	76.8 - 86.8	<0.100	<0.188	<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	<0.161	10.6 J+	<0.106
U4-MW-12I	12/7/2022	FD	EM04	UMCF	76.8 - 86.8	<0.100	<0.188	<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	<0.161	10.3 J+	<0.106
U4-MW-12I	1/13/2023	N	EM05	UMCF	76.8 - 86.8	<0.100	<0.188	<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	<0.161	9.72 J	<0.106
U4-MW-12I	2/15/2023	N	EM06	UMCF	76.8 - 86.8	<0.100	<0.188	<0.142	<0.230 UJ	<0.237	<0.481	<0.322	<0.276	<0.126	<0.107	<0.0819	<0.149	<0.104	<0.110	<0.110	<0.120	<0.161	24.7 J+	<0.106
U4-MW-12I	3/13/2023	N	EM07	UMCF	76.8 - 86.8	<0.100	<0.188	<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	<0.161	14.6	<0.106
U4-MW-13D	4/14/2022	N	BLO2	UMCF	98.2 - 108.2	<0.100	0.565 J	<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	<0.161	<1.19	<0.106
U4-MW-13D	9/28/2022	N	EM01	UMCF	98.2 - 108.2	<1.00	<1.88	<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	<1.61	<11.9	<1.06
U4-MW-13D	10/11/2022	N	EM02	UMCF	98.2 - 108.2	<0.100	<0.188	<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	<0.161	14.7	<0.106
U4-MW-13D	11/3/2022	N	EM03	UMCF	98.2 - 108.2	<0.100	<0.188	<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	<0.161	2.69 J	<0.106
U4-MW-13D	12/7/2022	N	EM04	UMCF	98.2 - 108.2	<0.100	<0.188	<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	<0.161	<1.19	<0.106
U4-MW-13D	1/12/2023	N	EM05	UMCF	98.2 - 108.2	<2.00	<3.76	<2.84	<4.60	<4.74	<9.62	<6.44	<5.52	<2.52	<2.14	<1.64	<2.98	<2.08	<2.20	<2.20	<2.40	<3.22	<23.8	<2.12
U4-MW-13D	2/15/2023	N	EM06	UMCF	98.2 - 108.2	<0.100	<0.188	<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	<0.161	<1.19	<0.106
U4-MW-13D	3/17/2023	N	EM07	UMCF	98.2 - 108.2	<2.00	<3.76	<2.84	<4.60	<4.74	<9.62	<6.44	<5.52	<2.52	<2.14	<1.64	<2.98	<2.08	<2.20	<2.20	<2.40	<3.22	<23.8	<2.12
U4-MW-13I	4/14/2022	N	BLO2	UMCF	77.1 - 87.1	<0.100	0.403 J	<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	<0.161	<1.19	<0.106
U4-MW-13I	9/28/2022	N	EM01	UMCF	77.1 - 87.1	<0.100	<0.188	<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	<0.161	<1.19	<0.106
U4-MW-13I	10/10/2022	N	EM02	UMCF	77.1 - 87.1	<0.100	<0.188	<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	<0.161	1.81 J	<0.106
U4-MW-13I	11/3/2022	N	EM03	UMCF	77.1 - 87.1	<0.100	<0.188	<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	<0.161	<1.19	<0.106
U4-MW-13I	12/6/2022	N	EM04	UMCF	77.1 - 87.1	<0.500 UJ	<0.940 UJ	<0.710 UJ	<1.15 UJ	<1.19 UJ	<2.41 UJ	<1.61 UJ	<1.38 UJ	<0.630 UJ	<0.535 UJ	<0.409 UJ	<0.745 UJ	<0.520 UJ	<0.550 UJ	<0.550 UJ	<0.600 UJ	<0.805 UJ	19.1 J	<0.530 UJ
U4-MW-13I	1/12/2023	N	EM05	UMCF	77.1 - 87.1	<0.100	<0.188	<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	<0.161	20.5 J+	<0.106
U4-MW-13I	2/14/2023	N	EM06	UMCF	77.1 - 87.1	<0.500	<0.940	<0.710	<1.15	<1.19	<2.41	<1.61	<1.38	<0.630	<0.535	<0.409	<0.745	<0.520	<0.550	<0.550	<0.600	<0.805	17.5 J	<0.530
U4-MW-13I	3/16/2023	N	EM07	UMCF	77.1 - 87.1	<0.100	<0.188	<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	<0.161	25.9	<0.106
U4-MW-14D	4/13/2022	N	BLO2	UMCF	97.3 - 107.3	<0.100	0.409 J	<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	<0.161	<1.19	<0.106
U4-MW-14D	12/6/2022	N	EM04	UMCF	97.3 - 107.3	<0.500 UJ	<0.940 UJ	<0.710 UJ	<1.15 UJ	<1.19 UJ	<2.41 UJ	<1.61 UJ	<1.38 UJ	<0.630 UJ	<0.535 UJ	<0.409 UJ	<0.745 UJ	<0.520 UJ	<0.550 UJ	<0.550 UJ	<0.600 UJ	<0.805 UJ	<5.95 UJ	<0.530 UJ
U4-MW-14D	3/16/2023	N	EM07	UMCF	97.3 - 107.3	<0.500	<0.940	<0.710	<1.15	<1.19	<2.41	<1.61	<1.38	<0.630	<0.535	<0.409	<0.745	<0.520 UJ	<0.550	<0.550	<0.600	<0.805	<5.95	<0.530
U4-MW-14I	4/14/2022	N	BLO2	UMCF	77.3 - 87.3	<0.100	<0.188	<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	<0.161	<1.19	<0.106
U4-MW-14I	12/6/2022	N	EM04	UMCF	77.3 - 87.3	<0.500 UJ	<0.940 UJ	<0.710 UJ	<1.15 UJ	<1.19 UJ	<2.41 UJ	<1.61 UJ	<1.38 UJ	<0.630 UJ	<0.535 UJ	<0.409 UJ	<0.745 UJ	<0.520 UJ	<0.550 UJ	<0.550 UJ	<0.600 UJ	<0.805 UJ	<5.95 UJ	<0.530 UJ
U4-MW-14I	3/16/2023	N	EM07	UMCF	77.3 - 87.3	<0.500	<0.940	<0.710	<1.15	<1.19	<2.41													

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																		
						1,1-Dichloroethane	1,1-Dichloroethene	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	2,2-Dichloropropane	2-Butanone (MEK)	2-Chlorotoluene
						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-T3	2/13/2023	N	EM06		-	<10.0	<18.8	<14.2	<23.0	<23.7	<48.1	<32.2	<27.6	<12.6	<10.7	<8.19	<14.9	<10.4	<11.0	<11.0	<12.0	<16.1	<119	<10.6
U4-T3	3/13/2023	N	EM07		-	<2.50	<4.70	<3.55	<5.75	<5.93	<12.0	<8.05	<6.90	<3.15	<2.68	<2.05	<3.73	<2.60	<2.75	<2.75	<3.00	<4.03	<29.8	<2.65

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 5
Groundwater Analytical Results
Unit 4 Source Area Bioremediation Treatability Study

Table with 24 columns: Well, Sample Date, QC Type, Event, Screened Lithology, Screened Interval, and 18 Volatile Organic Compounds by SW8260B (2-Hexanone, 4-Chlorotoluene, 4-Methyl-2-Pentanone, Acetone, Benzene, Bromobenzene, Bromochloromethane, Bromodichloromethane, Bromoform, Bromomethane, Carbon Tetrachloride, Chlorobenzene, Chloroethane, Chloroform, Chloromethane, cis-1,2-Dichloroethene, cis-1,3-Dichloropropene, Dibromochloromethane). Rows contain detailed analytical data for various wells (e.g., U4-MW-01D, U4-MW-01D, U4-MW-01DD, etc.) across multiple dates.

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-Hexanone	4-Chloroluene	4-Methyl-2-Pentanone	Acetone	Benzene	Bromobenzene	Bromochloro-methane	Bromodichloro-methane	Bromoform	Bromomethane	Carbon Tetrachloride	Chlorobenzene	Chloroethane	Chloroform	Chloromethane	cis-1,2-Dichloroethene	cis-1,3-Dichloropro-pene	Dibromochloro-methane
						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-12D	11/2/2022	N	EM03	UMCF	97.1 - 107.1	<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	3,140	<9.60	<1.26	<1.11	<1.40
U4-MW-12D	12/7/2022	N	EM04	UMCF	97.1 - 107.1	<0.787	<0.114	<0.478	<11.3	<0.0941	<0.118	<0.128	1.96	0.515 J	<0.605	<0.128	<0.116	<0.192	3,560	<0.960	<0.126	<0.111	0.535 J
U4-MW-12D	1/12/2023	N	EM05	UMCF	97.1 - 107.1	<78.7	<11.4	<47.8	<1,130	<9.41	<11.8	<12.8	<13.6	<12.9	<60.5	<12.8	<11.6	<19.2	3,260	<96.0	<12.6	<11.1	<14.0
U4-MW-12D	2/15/2023	N	EM06	UMCF	97.1 - 107.1	<78.7	<11.4	<47.8	<1,130	<9.41	<11.8	<12.8	<13.6	<12.9	<60.5	<12.8	<11.6	<19.2	2,520	<96.0	<12.6	<11.1	<14.0
U4-MW-12D	3/14/2023	N	EM07	UMCF	97.1 - 107.1	<39.4	<5.70	<23.9	<565	<4.71	<5.90	<6.40	<6.80	<6.45	<30.3	10.0 J	<5.80	<9.60	2,740	<48.0	<6.30	<5.55	<7.00
U4-MW-12I	4/14/2022	N	BLO2	UMCF	76.8 - 86.8	<0.787	<0.114	<0.478	<11.3	<0.0941	<0.118	<0.128	1.28	0.688 J	<0.605	0.961 J	<0.116	<0.192	1,670	<0.960	<0.126	<0.111	0.610 J
U4-MW-12I	4/14/2022	FD	BLO2	UMCF	76.8 - 86.8	<0.787	<0.114	<0.478	<11.3	<0.0941	<0.118	<0.128	1.16	0.609 J	<0.605	0.812 J	<0.116	<0.192	1,640	<0.960	<0.126	<0.111	0.573 J
U4-MW-12I	9/27/2022	N	EM01	UMCF	76.8 - 86.8	<0.787	<0.114	<0.478	13.7 J	<0.0941	<0.118	<0.128	0.456 J	<0.129	<0.605	0.351 J	<0.116	<0.192	231	<0.960	<0.126	<0.111	<0.140
U4-MW-12I	10/12/2022	N	EM02	UMCF	76.8 - 86.8	<0.787	<0.114	<0.478	<11.3	<0.0941	<0.118	<0.128	0.344 J	<0.129 UJ	<0.605	0.486 J	<0.116	<0.192	194	<0.960	<0.126	<0.111	<0.140
U4-MW-12I	11/2/2022	N	EM03	UMCF	76.8 - 86.8	<0.787	<0.114	<0.478	<11.3	<0.0941	<0.118	<0.128	0.236 J	<0.129	<0.605	<0.128	<0.116	<0.192	182	<0.960	<0.126	<0.111	<0.140
U4-MW-12I	12/7/2022	N	EM04	UMCF	76.8 - 86.8	<0.787	<0.114	<0.478	16.9 J	<0.0941	<0.118	<0.128	<0.136	<0.129	<0.605	<0.128	<0.116	<0.192	91.3	<0.960	<0.126	<0.111	<0.140
U4-MW-12I	12/7/2022	FD	EM04	UMCF	76.8 - 86.8	<0.787	<0.114	<0.478	16.1 J	<0.0941	<0.118	<0.128	<0.136	<0.129	<0.605	<0.128	<0.116	<0.192	90.0	<0.960	<0.126	<0.111	<0.140
U4-MW-12I	1/13/2023	N	EM05	UMCF	76.8 - 86.8	<0.787	<0.114	<0.478	30.3 J	<0.0941	<0.118	<0.128	<0.136	<0.129	<0.605	<0.128	<0.116	<0.192	36.5	<0.960	<0.126	<0.111	<0.140
U4-MW-12I	2/15/2023	N	EM06	UMCF	76.8 - 86.8	<0.787	<0.114	<0.478	23.4 J	<0.0941	<0.118	<0.128	<0.136	<0.129	<0.605	<0.128	<0.116	<0.192	36.5	<0.960	<0.126	<0.111	<0.140
U4-MW-12I	3/13/2023	N	EM07	UMCF	76.8 - 86.8	<0.787	<0.114	<0.478	19.6 J	<0.0941	<0.118	<0.128	<0.136	<0.129	<0.605	<0.128	<0.116	<0.192	8.18	<0.960	<0.126	<0.111	<0.140
U4-MW-13D	4/14/2022	N	BLO2	UMCF	98.2 - 108.2	<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	3,460	<0.960	<0.126	<0.111	0.639 J
U4-MW-13D	9/28/2022	N	EM01	UMCF	98.2 - 108.2	<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	1,270	<9.60	<1.26	<1.11	<1.40
U4-MW-13D	10/11/2022	N	EM02	UMCF	98.2 - 108.2	<0.787	<0.114	<0.478	66.9	<0.0941	<0.118	<0.128	0.628 J	<0.129	<0.605	<0.128	<0.116	<0.192	983	<0.960	<0.126	<0.111	<0.140
U4-MW-13D	11/3/2022	N	EM03	UMCF	98.2 - 108.2	<0.787	<0.114	<0.478	15.0 J	<0.0941	<0.118	<0.128	1.01 J+	0.198 J	<0.605	0.415 J	<0.116	<0.192	1,060	<0.960	<0.126	<0.111	0.551 J
U4-MW-13D	12/7/2022	N	EM04	UMCF	98.2 - 108.2	<0.787	<0.114	<0.478	<11.3	<0.0941	<0.118	<0.128	1.83	0.233 J	<0.605	<0.128	<0.116	<0.192	874	<0.960	<0.126	<0.111	1.04
U4-MW-13D	1/12/2023	N	EM05	UMCF	98.2 - 108.2	<15.7	<2.28	<9.56	<226	<1.88	<2.36	<2.56	<2.72	<2.58	<12.1	<2.56	<2.32	<3.84	837	<19.2	<2.52	<2.22	<2.80
U4-MW-13D	2/15/2023	N	EM06	UMCF	98.2 - 108.2	<0.787	<0.114	<0.478	<11.3	<0.0941	<0.118	<0.128	2.28	<0.129	<0.605	<0.128	<0.116	<0.192	729	<0.960	<0.126	<0.111	1.12
U4-MW-13D	3/17/2023	N	EM07	UMCF	98.2 - 108.2	<15.7	<2.28	<9.56	<226	<1.88	<2.36	<2.56	<2.72	<2.58	<12.1	<2.56	<2.32	<3.84	687	<19.2	<2.52	<2.22	<2.80
U4-MW-13I	4/14/2022	N	BLO2	UMCF	77.1 - 87.1	<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	1,350	<0.960	<0.126	<0.111	0.618 J
U4-MW-13I	9/28/2022	N	EM01	UMCF	77.1 - 87.1	<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	154 J-	<0.960	<0.126	<0.111	0.164 J
U4-MW-13I	10/10/2022	N	EM02	UMCF	77.1 - 87.1	<0.787	<0.114	<0.478	<11.3	<0.0941	<0.118	<0.128	0.505 J	<0.129	<0.605	0.759 J	<0.116	<0.192	451	<0.960	0.394 J	<0.111	<0.140
U4-MW-13I	11/3/2022	N	EM03	UMCF	77.1 - 87.1	<0.787	<0.114	<0.478	<11.3	<0.0941	<0.118	<0.128	0.580 J	<0.129	<0.605	0.426 J	<0.116	<0.192	441	<0.960	<0.126	<0.111	0.159 J
U4-MW-13I	12/6/2022	N	EM04	UMCF	77.1 - 87.1	<3.94 UJ	<0.570 UJ	<2.39 UJ	<56.5 UJ	<0.471 UJ	<0.590 UJ	<0.640 UJ	<0.680 UJ	<0.645 UJ	<3.03 UJ	<0.640 UJ	<0.580 UJ	<0.960 UJ	305	<4.80 UJ	<0.630 UJ	<0.555 UJ	<0.700 UJ
U4-MW-13I	1/12/2023	N	EM05	UMCF	77.1 - 87.1	<0.787	<0.114	<0.478	16.9 J	<0.0941	<0.118	<0.128	<0.136	<0.129	<0.605	<0.128	<0.116	<0.192	236	<0.960	<0.126	<0.111	<0.140
U4-MW-13I	2/14/2023	N	EM06	UMCF	77.1 - 87.1	<3.94	<0.570	<2.39	<56.5	0.558 J	<0.590	<0.640	<0.680	<0.645	<3.03	<0.640	<0.580	<0.960	373	<4.80	<0.630	<0.555	<0.700
U4-MW-13I	3/16/2023	N	EM07	UMCF	77.1 - 87.1	<0.787	<0.114	<0.478	11.3 J	<0.0941	<0.118	<0.128	<0.136	<0.129	<0.605	<0.128	<0.116	<0.192	133	<0.960	<0.126	<0.111	<0.140
U4-MW-14D	4/13/2022	N	BLO2	UMCF	97.3 - 107.3	<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	110 J	<0.960	<0.126	<0.111	0.561 J
U4-MW-14D	12/6/2022	N	EM04	UMCF	97.3 - 107.3	<3.94 UJ	<0.570 UJ	<2.39 UJ	<56.5 UJ	<0.471 UJ	<0.590 UJ	<0.640 UJ	1.17 J	<0.645 UJ	<3.03 UJ	1.27 J	<0.580 UJ	<0.960 UJ	287	<4.80 UJ	<0.630 UJ	<0.555 UJ	0.751 J
U4-MW-14D	3/16/2023	N	EM07	UMCF	97.3 - 107.3	<3.94	<0.570	<2.39	<56.5	<0.471	<0.590	<0.640	<0.680	<0.645	<3.03	<0.640	<0.580	<0.960	217 J+	<4.80	<0.630	<0.555	<0.700
U4-MW-14I	4/14/2022	N	BLO2	UMCF	77.3 - 87.3	<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	157	<0.960	<0.126	<0.111	0.471 J
U4-MW-14I	12/6/2022	N	EM04	UMCF	77.3 - 87.3	<3.94 UJ	<0.570 UJ	<2.39 UJ	<56.5 UJ	<0.471 UJ	<0.590 UJ	<0.640 UJ	<0.680 UJ	<0.645 UJ	<3.03 UJ	1.27 J	<0.580 UJ	<0.960 UJ	212	<4.80 UJ	<0.630 UJ	<0.555 UJ	<0.700 UJ
U4-MW-14I	3/16/2023	N	EM07	UMCF	77.3 - 87.3	<3.94	<0.570	<2.39	<56.5	<0.471	<0.590	<0.640	<0.680	<0.645	<3.03	<0.640	<0.580	<0.960	229 J+	<4.80	<0.630	<0.555	<0.700
U4-MW-15D	4/13/2022	N	BLO2	UMCF	96.0 - 106.0	<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	407 J+	<0.960	<0.126	<0.111	<0.140
U4-MW-15D	12/5/2022	N	EM04	UMCF	96.0 - 106.0	<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	165	<0.960	<0.126	<0.111	<0.140
U4-MW-15D	3/20/2023	N	EM07	UMCF	96.0 - 106.0	<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	114	<0.960	<0.126	<0.111	<0.140
U4-MW-15DD	4/13/2022	N	BLO2	UMCF	120.3 - 130.3	<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	13.2 J+	<0.960	<0.126	<0.111	<0.140
U4-MW-15DD	12/5/2022	N	EM04	UMCF	120.3 - 130.3	<0.787	<0.114	<0.478	14.4 J	<0.0941	<0.118	<0.128	<0.136	<0.129	<0.605	<0.128	<0.116	<0.192	0.237 J	<0.960	<0.126	<0.111	<0.140
U4-MW-15DD	3/15/2023	N	EM07	UMCF	120.3 - 130.3	<0.787	<0.114	<0.478															

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-Hexanone	4-Chlorotoluene	4-Methyl-2-Pentanone	Acetone	Benzene	Bromobenzene	Bromochloromethane	Bromodichloromethane	Bromoform	Bromomethane	Carbon Tetrachloride	Chlorobenzene	Chloroethane	Chloroform	Chloromethane	cis-1,2-Dichloroethene	cis-1,3-Dichloropropene	Dibromochloromethane
						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-T3	2/13/2023	N	EM06		-	<78.7	<11.4	<47.8	<1,130	<9.41	<11.8	<12.8	<13.6	<12.9	<60.5	<12.8	<11.6	<19.2	3,210	<96.0	<12.6	<11.1	<14.0
U4-T3	3/13/2023	N	EM07		-	<19.7	<2.85	<12.0	<282	<2.35	<2.95	<3.20	<3.40	<3.22	<15.1	<3.20	<2.90	<4.80	1,410	<24.0	<3.15	<2.78	<3.50

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 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																		
						Dibromomet-hane	Dichlorodiflu- oromethane	Diisopropyl Ether (DIPE)	Ethyl Tert- Butyl Ether (ETBE)	Ethylbenzene	Hexachlorob- utadiene	Isopropylben- zene	m,p-Xylene (Sum of Isomers)	Methylene Chloride	Naphthalene	n- Butylbenzene	n- Propylbenzene	o-Xylene	p-Cymene (p- Isopropyltolu- ene)	sec- Butylben- zene	Styrene	tert-Amyl Methyl Ether	tert-Butyl Alcohol	tert-Butyl Methyl Ether (MTBE)
						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-01D	2/16/2023	N	EM06	UMCf	96.7 - 106.7	<1.22	<3.74	<1.05	<1.01	<1.37	<3.37	<1.05	<4.30	<4.30	<10.0	<1.57	<0.993 UJ	<1.74	<1.20	<1.25	<1.18	<1.95	<40.6	<1.01
U4-MW-01D	3/20/2023	N	EM07	UMCf	96.7 - 106.7	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00 UJ	<0.157	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	<4.06	<0.101
U4-MW-01DD	4/19/2022	N	BLO2	UMCf	119.9 - 129.9	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00	<0.157	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	<4.06	<0.101
U4-MW-01DD	4/19/2022	FD	BLO2	UMCf	119.9 - 129.9	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00	<0.157	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	<4.06	<0.101
U4-MW-01DD	3/15/2023	N	EM07	UMCf	119.9 - 129.9	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00	<0.157	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	<4.06	<0.101
U4-MW-01I	4/19/2022	N	BLO2	UMCf	76.7 - 86.7	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00	<0.157	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	<4.06	<0.101
U4-MW-01I	3/20/2023	N	EM07	UMCf	76.7 - 86.7	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00 UJ	<0.157	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	<4.06	<0.101
U4-MW-01S	4/18/2022	N	BLO2	UMCf	54.7 - 64.7	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00	<0.157	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	<4.06	<0.101
U4-MW-01S	3/15/2023	N	EM07	UMCf	54.7 - 64.7	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00	<0.157	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	<4.06	<0.101
U4-MW-02D	4/14/2022	N	BLO2	UMCf	95.0 - 110.0	0.473 J	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	1.47 J	<1.00	<0.157	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	5.42	<0.101
U4-MW-02D	10/11/2022	N	EM02	UMCf	95.0 - 110.0	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	1.47 J	<1.00	<0.157	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	<4.06	<0.101
U4-MW-02D	11/1/2022	N	EM03	UMCf	95.0 - 110.0	<6.10	<18.7	<5.25	<5.05	<6.85	<16.9	<5.25	<21.5	<21.5	<50.0	<7.85	<4.97	<8.70	<6.00	<6.25	<5.90	<9.75	<203	<5.05
U4-MW-02D	12/7/2022	N	EM04	UMCf	95.0 - 110.0	0.149 J	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	1.73 J	<1.00	<0.157	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	14.9	<0.101
U4-MW-02D	1/10/2023	N	EM05	UMCf	95.0 - 110.0	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	1.33 J	<1.00	<0.157	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	5.93	<0.101
U4-MW-02D	2/13/2023	N	EM06	UMCf	95.0 - 110.0	0.157 J	<0.374	<0.105	<0.101	<0.137	<0.337 UJ	<0.105	<0.430	1.36 J	<1.00	<0.157 UJ	<9.93	<0.174	<0.120	<0.125	<0.118	<0.195	<4.06	<0.101
U4-MW-02D	3/17/2023	N	EM07	UMCf	95.0 - 110.0	<12.2	<37.4	<10.5	<10.1	<13.7	<33.7	<10.5	<43.0	<43.0	<100 UJ	<15.7	<9.93	<17.4	<12.0	<12.5	<11.8	<19.5	<406	<10.1
U4-MW-02I	4/14/2022	N	BLO2	UMCf	75.0 - 90.0	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00	<0.157	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	<4.06	<0.101
U4-MW-02I	10/11/2022	N	EM02	UMCf	75.0 - 90.0	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	0.571 J	<1.00	<0.157	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	<4.06	<0.101
U4-MW-02I	11/2/2022	N	EM03	UMCf	75.0 - 90.0	<1.22	<3.74	<1.05	<1.01	<1.37	<3.37	<1.05	<4.30	4.54 J	<10.0	<1.57	<0.993	<1.74	<1.20	<1.25	<1.18	<1.95	<40.6	<1.01
U4-MW-02I	11/2/2022	FD	EM03	UMCf	75.0 - 90.0	<1.22	<3.74	<1.05	<1.01	<1.37	<3.37	<1.05	<4.30	<4.30	<10.0	<1.57	<0.993	<1.74	<1.20	<1.25	<1.18	<1.95	<40.6	<1.01
U4-MW-02I	12/8/2022	N	EM04	UMCf	75.0 - 90.0	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	0.335 J	<0.430	3.23 J	<1.00	<0.157	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	<4.06	<0.101
U4-MW-02I	12/8/2022	FD	EM04	UMCf	75.0 - 90.0	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	12.3 J	<1.00	<0.157	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	<4.06	<0.101
U4-MW-02I	1/13/2023	N	EM05	UMCf	75.0 - 90.0	<1.22	<3.74	<1.05	<1.01	<1.37	<3.37	<1.05	<4.30	<4.30	<10.0	<1.57	<0.993	<1.74	<1.20	<1.25	<1.18	<1.95	<40.6	<1.01
U4-MW-02I	1/13/2023	FD	EM05	UMCf	75.0 - 90.0	<1.22	<3.74	<1.05	<1.01	<1.37	<3.37	<1.05	<4.30	<4.30	<10.0	<1.57	<0.993	<1.74	<1.20	<1.25	<1.18	<1.95	<40.6	<1.01
U4-MW-02I	2/15/2023	N	EM06	UMCf	75.0 - 90.0	<1.22	<3.74	<1.05	<1.01	<1.37	<3.37	<1.05	<4.30	<4.30	<10.0	<1.57	<0.993	<1.74	<1.20	<1.25	<1.18	<1.95	<40.6	<1.01
U4-MW-02I	2/15/2023	FD	EM06	UMCf	75.0 - 90.0	<1.22	<3.74	<1.05	<1.01	<1.37	<3.37	<1.05	<4.30	<4.30	<10.0	<1.57	<0.993	<1.74	<1.20	<1.25	<1.18	<1.95	<40.6	<1.01
U4-MW-02I	3/17/2023	N	EM07	UMCf	75.0 - 90.0	<24.4	<74.8	<21.0	<20.2	<27.4	<67.4	<21.0	<86.0	<86.0	<200 UJ	<31.4	<19.9	<34.8	<24.0	<25.0	<23.6	<39.0	<812	<20.2
U4-MW-02I	3/17/2023	FD	EM07	UMCf	75.0 - 90.0	<24.4	<74.8	<21.0	<20.2	<27.4	<67.4	<21.0	<86.0	<86.0	<200 UJ	<31.4	<19.9	<34.8	<24.0	<25.0	<23.6	<39.0	<812	<20.2
U4-MW-03D	4/20/2022	N	BLO2	UMCf	96.6 - 106.6	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00	<0.157	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	5.74 J	<0.101
U4-MW-03D	2/16/2023	N	EM06	UMCf	96.6 - 106.6	<0.610	<1.87	<0.525	<0.505	<0.685	<1.69	<0.525	<2.15	<2.15	<5.00	<0.785	<0.497 UJ	<0.870	<0.600	<0.625	<0.590	<0.975	<20.3	<0.505
U4-MW-03D	3/16/2023	N	EM07	UMCf	96.6 - 106.6	<2.44	<7.48	<2.10	<2.02	<2.74	<6.74	<2.10	<8.60	<8.60	<20.0	<3.14	<1.99	<3.48	<2.40	<2.50	<2.36	<3.90	<81.2	<2.02
U4-MW-03D	3/16/2023	FD	EM07	UMCf	96.6 - 106.6	<0.610	<1.87	<0.525	<0.505	<0.685	<1.69	<0.525	<2.15	<2.15	<5.00	<0.785	<0.497	<0.870	<0.600	<0.625	<0.590	<0.975	<20.3	<0.505
U4-MW-03DD	4/20/2022	N	BLO2	UMCf	119.7 - 129.7	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00	<0.157	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	<4.06	<0.101
U4-MW-03DD	3/15/2023	N	EM07	UMCf	119.7 - 129.7	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00	<0.157	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	<4.06	<0.101
U4-MW-03I	4/19/2022	N	BLO2	UMCf	76.6 - 86.6	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00	<0.157	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	4.28 J	<0.101
U4-MW-03I	3/15/2023	N	EM07	UMCf	76.6 - 86.6	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00	<0.157	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	<4.06	<0.101
U4-MW-03S	4/18/2022	N	BLO2	UMCf	54.5 - 64.5	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00	<0.157	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	<4.06	<0.101
U4-MW-03S	4/18/2022	FD	BLO2	UMCf	54.5 - 64.5	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00	<0.157	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	<4.06	<0.101
U4-MW-03S	3/15/2023	N	EM07	UMCf	54.5 - 64.5	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00	<0.157	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	<4.06	<0.101
U4-MW-04D	4/19/2022	N	BLO2	UMCf	97.0 - 107.0	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	0.856 J	<1.00	<0.157	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	5.59	<0.101
U4-MW-04D	2/16/2023	N	EM06	UMCf	97.0 - 107																			

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																		
						Dibromomet-hane	Dichlorodiflu- oromethane	Diisopropyl Ether (DIPE)	Ethyl Tert- Butyl Ether (ETBE)	Ethylbenzene	Hexachlorob- utadiene	Isopropylben- zene	m,p-Xylene (Sum of Isomers)	Methylene Chloride	Naphthalene	n- Butylbenzene	n- Propylbenzene	o-Xylene	p-Cymene (p- Isopropyltolu- ene)	sec- Butylben- zene	Styrene	tert-Amyl Methyl Ether	tert-Butyl Alcohol	tert-Butyl Methyl Ether (MTBE)
						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-07D	2/14/2023	N	EM06	UMCf	96.8 - 106.5	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00	<0.157	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	<4.06	<0.101
U4-MW-07D	3/16/2023	N	EM07	UMCf	96.8 - 106.5	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00	<0.157	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	<4.06	<0.101
U4-MW-07I	4/15/2022	N	BLO2	UMCf	76.8 - 86.8	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00 UJ	<0.157	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	<4.06	<0.101
U4-MW-07I	10/12/2022	N	EM02	UMCf	76.8 - 86.8	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	0.478 J	<1.00	<0.157	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	<4.06	<0.101
U4-MW-07I	11/3/2022	N	EM03	UMCf	76.8 - 86.8	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00	<0.157	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	<4.06	<0.101
U4-MW-07I	12/7/2022	N	EM04	UMCf	76.8 - 86.8	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00	<0.157	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	<4.06	<0.101
U4-MW-07I	1/11/2023	N	EM05	UMCf	76.8 - 86.8	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00	<0.157	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	<4.06	<0.101
U4-MW-07I	2/15/2023	N	EM06	UMCf	76.8 - 86.8	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00	<0.157	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	<4.06	<0.101
U4-MW-07I	3/16/2023	N	EM07	UMCf	76.8 - 86.8	<0.610	<1.87	<0.525	<0.505	<0.685	<1.69	<0.525	<2.15	<2.15	<5.00	<0.785	<0.497	<0.870	<0.600	<0.625	<0.590	<0.975	<20.3	<0.505
U4-MW-08D	4/13/2022	N	BLO2	UMCf	98.6 - 108.6	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00	<0.157	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	8.05	<0.101
U4-MW-08D	12/7/2022	N	EM04	UMCf	98.6 - 108.6	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	0.846 J	<1.00	<0.157	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	<4.06	<0.101
U4-MW-08D	3/17/2023	N	EM07	UMCf	98.6 - 108.6	<12.2	<37.4	<10.5	<10.1	<13.7	<33.7	<10.5	<43.0	<43.0	<100 UJ	<15.7	<9.93	<17.4	<12.0	<12.5	<11.8	<19.5	<406	<10.1
U4-MW-08DD	4/20/2022	N	BLO2	UMCf	119.8 - 129.8	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00	<0.157	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	<4.06	<0.101
U4-MW-08DD	4/20/2022	FD	BLO2	UMCf	119.8 - 129.8	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00	<0.157	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	<4.06	<0.101
U4-MW-08DD	12/8/2022	N	EM04	UMCf	119.8 - 129.8	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00	<0.157	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	<4.06	<0.101
U4-MW-08DD	3/15/2023	N	EM07	UMCf	119.8 - 129.8	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00	<0.157	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	<4.06	<0.101
U4-MW-08I	4/13/2022	N	BLO2	UMCf	78.0 - 88.0	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	1.14 J	<1.00	<0.157	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	6.37	<0.101
U4-MW-08I	12/7/2022	N	EM04	UMCf	78.0 - 88.0	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00	<0.157	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	5.48	<0.101
U4-MW-08I	12/7/2022	FD	EM04	UMCf	78.0 - 88.0	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	0.436 J	<1.00	<0.157	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	<4.06	<0.101
U4-MW-08I	3/17/2023	N	EM07	UMCf	78.0 - 88.0	<6.10	<18.7	<5.25	<5.05	<6.85	<16.9	<5.25	<21.5	<21.5	<50.0 UJ	<7.85	<4.97	<8.70	<6.00	<6.25	<5.90	<9.75	<203	<5.05
U4-MW-08S	4/15/2022	N	BLO2	UMCf	54.9 - 64.9	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00 UJ	<0.157	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	<4.06	<0.101
U4-MW-08S	12/7/2022	N	EM04	UMCf	54.9 - 64.9	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00	<0.157	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	<4.06	<0.101
U4-MW-08S	12/7/2022	FD	EM04	UMCf	54.9 - 64.9	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00	<0.157	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	<4.06	<0.101
U4-MW-08S	3/13/2023	N	EM07	UMCf	54.9 - 64.9	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00	<0.157	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	<4.06	<0.101
U4-MW-08S	3/13/2023	FD	EM07	UMCf	54.9 - 64.9	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00	<0.157	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	<4.06	<0.101
U4-MW-09D	4/14/2022	N	BLO2	UMCf	96.9 - 106.9	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	0.520 J	<1.00	<0.157	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	<4.06	<0.101
U4-MW-09D	12/6/2022	N	EM04	UMCf	96.9 - 106.9	<1.22 UJ	<3.74 UJ	<1.05 UJ	<1.01 UJ	<1.37 UJ	<3.37 UJ	<1.05 UJ	<4.30 UJ	<4.30 UJ	<10.0 UJ	<1.57 UJ	<0.993 UJ	<1.74 UJ	<1.20 UJ	<1.25 UJ	<1.18 UJ	<1.95 UJ	<40.6 UJ	<1.01 UJ
U4-MW-09D	3/16/2023	N	EM07	UMCf	96.9 - 106.9	<1.22	<3.74	<1.05	<1.01	<1.37	<3.37	<1.05	<4.30	<4.30	<10.0	<1.57	<0.993	<1.74	<1.20	<1.25	<1.18	<1.95	<40.6	<1.01
U4-MW-09DD	4/14/2022	N	BLO2	UMCf	119.8 - 129.8	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00	<0.157	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	<4.06	<0.101
U4-MW-09DD	12/6/2022	N	EM04	UMCf	119.8 - 129.8	<0.122 UJ	<0.374 UJ	<0.105 UJ	<0.101 UJ	<0.137 UJ	<0.337 UJ	<0.105 UJ	<0.430 UJ	<0.430 UJ	<1.00 UJ	<0.157 UJ	<0.0993 UJ	<0.174 UJ	<0.120 UJ	<0.125 UJ	<0.118 UJ	<0.195 UJ	<4.06 UJ	<0.101 UJ
U4-MW-09DD	3/21/2023	N	EM07	UMCf	119.8 - 129.8	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00 UJ	<0.157	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	<4.06	<0.101
U4-MW-09I	4/14/2022	N	BLO2	UMCf	76.8 - 86.8	<0.122	<0.374	<0.105	<0.101	0.232 J	<0.337	<0.105	<0.430	<0.430	<1.00	<0.157	<0.0993	0.326 J	<0.120	<0.125	<0.118	<0.195	<4.06	<0.101
U4-MW-09I	12/6/2022	N	EM04	UMCf	76.8 - 86.8	<1.22 UJ	<3.74 UJ	<1.05 UJ	<1.01 UJ	<1.37 UJ	<3.37 UJ	<1.05 UJ	<4.30 UJ	<4.30 UJ	<10.0 UJ	<1.57 UJ	<0.993 UJ	<1.74 UJ	<1.20 UJ	<1.25 UJ	<1.18 UJ	<1.95 UJ	<40.6 UJ	<1.01 UJ
U4-MW-09I	3/16/2023	N	EM07	UMCf	76.8 - 86.8	<1.22	<3.74	<1.05	<1.01	<1.37	<3.37	<1.05	<4.30	<4.30	<10.0	<1.57	<0.993	<1.74	<1.20	<1.25	<1.18	<1.95	<40.6	<1.01
U4-MW-09S	4/14/2022	N	BLO2	UMCf	55.3 - 65.3	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00	<0.157	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	<4.06	<0.101
U4-MW-09S	12/6/2022	N	EM04	UMCf	55.3 - 65.3	<0.122 UJ	<0.374 UJ	<0.105 UJ	<0.101 UJ	<0.137 UJ	<0.337 UJ	<0.105 UJ	<0.430 UJ	<0.430 UJ	<1.00 UJ	<0.157 UJ	<0.0993 UJ	<0.174 UJ	<0.120 UJ	<0.125 UJ	<0.118 UJ	<0.195 UJ	<4.06 UJ	<0.101 UJ
U4-MW-09S	3/17/2023	N	EM07	UMCf	55.3 - 65.3	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00 UJ	<0.157	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	<4.06	<0.101
U4-MW-10D	4/14/2022	N	BLO2	UMCf	96.9 - 106.9	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00	<0.157	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	<4.06	<0.101
U4-MW-10D	12/5/2022	N	EM04	UMCf	96.9 - 106.9	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00	<0.157	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	<4.06	<0.101
U4-MW-10D	3/17/2023	N	EM07	UMCf	96.9 - 106.9	<0.122	<																	

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																		
						Dibromomet-hane	Dichlorodiflu- oromethane	Diisopropyl Ether (DIPE)	Ethyl Tert- Butyl Ether (ETBE)	Ethylbenzene	Hexachlorob- utadiene	Isopropylben- zene	m,p-Xylene (Sum of Isomers)	Methylene Chloride	Naphthalene	n- Butylbenzene	n- Propylbenzene	o-Xylene	p-Cymene (p- Isopropyltolu- ene)	sec- Butylben- zene	Styrene	tert-Amyl Methyl Ether	tert-Butyl Alcohol	tert-Butyl Methyl Ether (MTBE)
						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-12D	11/2/2022	N	EM03	UMCf	97.1 - 107.1	<1.22	<3.74	<1.05	<1.01	<1.37	<3.37	<1.05	<4.30	<4.30	<10.0	<1.57	<0.993	<1.74	<1.20	<1.25	<1.18	<1.95	<40.6	<1.01
U4-MW-12D	12/7/2022	N	EM04	UMCf	97.1 - 107.1	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	1.31 J	<1.00	<0.157	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	<4.06	<0.101
U4-MW-12D	1/12/2023	N	EM05	UMCf	97.1 - 107.1	<12.2	<37.4	<10.5	<10.1	<13.7	<33.7	<10.5	<43.0	<43.0	<100	<15.7	<9.93	<17.4	<12.0	<12.5	<11.8	<19.5	<406	<10.1
U4-MW-12D	2/15/2023	N	EM06	UMCf	97.1 - 107.1	<12.2	<37.4	<10.5	<10.1	<13.7	<33.7	<10.5	<43.0	<43.0	<100 UJ	<15.7	<9.93	<17.4	<12.0	<12.5	<11.8	<19.5 UJ	<406	<10.1
U4-MW-12D	3/14/2023	N	EM07	UMCf	97.1 - 107.1	<6.10	<18.7	<5.25	<5.05	<6.85	<16.9	<5.25	<21.5	<21.5	<50.0	<7.85	<4.97	<8.70	<6.00	<6.25	<5.90	<9.75	<203	<5.05
U4-MW-12I	4/14/2022	N	BLO2	UMCf	76.8 - 86.8	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00	<0.157	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	5.31	<0.101
U4-MW-12I	4/14/2022	FD	BLO2	UMCf	76.8 - 86.8	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00	<0.157	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	<4.06	<0.101
U4-MW-12I	9/27/2022	N	EM01	UMCf	76.8 - 86.8	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00	<0.157	<0.0993	<0.174	<0.120	<0.125	<0.118 UJ	<0.195	<4.06	<0.101
U4-MW-12I	10/12/2022	N	EM02	UMCf	76.8 - 86.8	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00	<0.157	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	<4.06	<0.101
U4-MW-12I	11/2/2022	N	EM03	UMCf	76.8 - 86.8	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	1.52 J	<1.00	<0.157	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	<4.06	<0.101
U4-MW-12I	12/7/2022	N	EM04	UMCf	76.8 - 86.8	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	4.69 J	<1.00	<0.157	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	<4.06	<0.101
U4-MW-12I	12/7/2022	FD	EM04	UMCf	76.8 - 86.8	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	4.62 J	<1.00	<0.157	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	<4.06	<0.101
U4-MW-12I	1/13/2023	N	EM05	UMCf	76.8 - 86.8	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	1.37 J	<1.00	<0.157	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	<4.06	<0.101
U4-MW-12I	2/15/2023	N	EM06	UMCf	76.8 - 86.8	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00	<0.157	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	<4.06	<0.101
U4-MW-12I	3/13/2023	N	EM07	UMCf	76.8 - 86.8	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00	<0.157	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	<4.06	<0.101
U4-MW-13D	4/14/2022	N	BLO2	UMCf	98.2 - 108.2	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00	<0.157	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	7.16	<0.101
U4-MW-13D	9/28/2022	N	EM01	UMCf	98.2 - 108.2	<1.22	<3.74	<1.05	<1.01	<1.37	<3.37	<1.05	<4.30	5.02 J	<10.0	<1.57	<0.993	<1.74	<1.20	<1.25	<1.18	<1.95	<40.6	<1.01
U4-MW-13D	10/11/2022	N	EM02	UMCf	98.2 - 108.2	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	0.543 J	<1.00	<0.157	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	<4.06	<0.101
U4-MW-13D	11/3/2022	N	EM03	UMCf	98.2 - 108.2	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	0.508 J	<1.00	<0.157	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	<4.06	<0.101
U4-MW-13D	12/7/2022	N	EM04	UMCf	98.2 - 108.2	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	0.439 J	<1.00	<0.157	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	<4.06	<0.101
U4-MW-13D	1/12/2023	N	EM05	UMCf	98.2 - 108.2	<2.44	<7.48	<2.10	<2.02	<2.74	<6.74	<2.10	<8.60	<8.60	<20.0	<3.14	<1.99	<3.48	<2.40	<2.50	<2.36	<3.90	<81.2	<2.02
U4-MW-13D	2/15/2023	N	EM06	UMCf	98.2 - 108.2	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00 UJ	<0.157	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195 UJ	<4.06	<0.101
U4-MW-13D	3/17/2023	N	EM07	UMCf	98.2 - 108.2	<2.44	<7.48	<2.10	<2.02	<2.74	<6.74	<2.10	<8.60	<8.60	<20.0 UJ	<3.14	<1.99	<3.48	<2.40	<2.50	<2.36	<3.90	<81.2	<2.02
U4-MW-13I	4/14/2022	N	BLO2	UMCf	77.1 - 87.1	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00	<0.157	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	4.13 J	<0.101
U4-MW-13I	9/28/2022	N	EM01	UMCf	77.1 - 87.1	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	2.01 J	<0.157	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	<4.06	<0.101
U4-MW-13I	10/10/2022	N	EM02	UMCf	77.1 - 87.1	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00	<0.157	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	<4.06	<0.101
U4-MW-13I	11/3/2022	N	EM03	UMCf	77.1 - 87.1	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	0.573 J	<1.00	<0.157	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	<4.06	<0.101
U4-MW-13I	12/6/2022	N	EM04	UMCf	77.1 - 87.1	<0.610 UJ	<1.87 UJ	<0.525 UJ	<0.505 UJ	<0.685 UJ	<1.69 UJ	<0.525 UJ	<2.15 UJ	7.70 J	<5.00 UJ	<0.785 UJ	<0.497 UJ	<0.870 UJ	<0.600 UJ	<0.625 UJ	<0.590 UJ	<0.975 UJ	<20.3 UJ	<0.505 UJ
U4-MW-13I	1/12/2023	N	EM05	UMCf	77.1 - 87.1	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	1.03 J	<1.00	<0.157	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	<4.06	<0.101
U4-MW-13I	2/14/2023	N	EM06	UMCf	77.1 - 87.1	<0.610	<1.87	<0.525	<0.505	<0.685	<1.69	<0.525	<2.15	<2.15	<5.00	<0.785	<0.497 UJ	<0.870	<0.600	<0.625	<0.590	<0.975	<20.3	<0.505
U4-MW-13I	3/16/2023	N	EM07	UMCf	77.1 - 87.1	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	0.861 J	<1.00	<0.157	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	<4.06	<0.101
U4-MW-14D	4/13/2022	N	BLO2	UMCf	97.3 - 107.3	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00	<0.157	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	<4.06	<0.101
U4-MW-14D	12/6/2022	N	EM04	UMCf	97.3 - 107.3	<0.610 UJ	<1.87 UJ	<0.525 UJ	<0.505 UJ	<0.685 UJ	<1.69 UJ	<0.525 UJ	<2.15 UJ	<2.15 UJ	<5.00 UJ	<0.785 UJ	<0.497 UJ	<0.870 UJ	<0.600 UJ	<0.625 UJ	<0.590 UJ	<0.975 UJ	<20.3 UJ	<0.505 UJ
U4-MW-14D	3/16/2023	N	EM07	UMCf	97.3 - 107.3	<0.610	<1.87	<0.525	<0.505	<0.685	<1.69	<0.525	<2.15	<2.15	<5.00	<0.785	<0.497	<0.870	<0.600	<0.625	<0.590	<0.975	<20.3	<0.505
U4-MW-14I	4/14/2022	N	BLO2	UMCf	77.3 - 87.3	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00	<0.157	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	6.75	<0.101
U4-MW-14I	12/6/2022	N	EM04	UMCf	77.3 - 87.3	<0.610 UJ	<1.87 UJ	<0.525 UJ	<0.505 UJ	<0.685 UJ	<1.69 UJ	<0.525 UJ	<2.15 UJ	<2.15 UJ	<5.00 UJ	<0.785 UJ	<0.497 UJ	<0.870 UJ	<0.600 UJ	<0.625 UJ	<0.590 UJ	<0.975 UJ	<20.3 UJ	<0.505 UJ
U4-MW-14I	3/16/2023	N	EM07	UMCf	77.3 - 87.3	<0.610	<1.87	<0.525	<0.505	<0.685	<1.69	<0.525	<2.15	<2.15	<5.00	<0.785	<0.497	<0.870	<0.600	<0.625	<0.590	<0.975	<20.3	<0.505
U4-MW-15D	4/13/2022	N	BLO2	UMCf	96.0 - 106.0	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00	<0.157	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	<4.06	<0.101
U4-MW-15D	12/5/2022	N	EM04	UMCf	96.0 - 106.0	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00	<0.157	<0.0993	<0.174	<0.120	<0.125	<0.118	<0.195	<4.06	<0.101
U4-MW-15D	3/20/2023	N	EM07	UMCf	96.0 - 106.0	<0.122	<0.374	<0.105	<0.101	<0.137	<0.337	<0.105	<0.430	<0.430	<1.00 UJ									

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																		
						Dibromomet-hane	Dichlorodiflu- oromethane	Diisopropyl Ether (DIPE)	Ethyl Tert- Butyl Ether (ETBE)	Ethylbenzene	Hexachlorob- utadiene	Isopropylben- zene	m,p-Xylene (Sum of Isomers)	Methylene Chloride	Naphthalene	n- Butylbenzene	n- Propylbenzene	o-Xylene	p-Cymene (p- Isopropyltolu- ene)	sec- Butylben- zene	Styrene	tert-Amyl Methyl Ether	tert-Butyl Alcohol	tert-Butyl Methyl Ether (MTBE)
						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-T3	2/13/2023	N	EM06		-	<12.2	<37.4	<10.5	<10.1	<13.7	<33.7	<10.5	<43.0	<43.0	<100	<15.7	<9.93	<17.4	<12.0	<12.5	<11.8	<19.5	<406	<10.1
U4-T3	3/13/2023	N	EM07		-	<3.05	<9.35	<2.63	<2.53	<3.43	<8.43	<2.63	<10.7	<10.7	<25.0	<3.93	<2.48	<4.35	<3.00	<3.13	<2.95	<4.88	<102	<2.53

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 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 Fatty Acids by AM23G										
						tert-Butylbenzene	Tetrachloroethene (PCE)	Toluene	trans-1,2-Dichloroethene	trans-1,3-Dichloropropene	Trichloroethene (TCE)	Trichlorofluoromethane	Vinyl Chloride	Xylenes, Total	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	µg/L	µg/L	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		
M-247-100	4/20/2022	N	BLO2	UMCF	100.5 - 110.5	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
M-249-100	4/20/2022	N	BLO2	UMCF	99.6 - 109.6	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
M-251-100	4/19/2022	N	BLO2	UMCF	92.5 - 102.5	<0.127	<0.300	<0.278	<0.149	<0.118	0.907 J	<0.160	<0.234	<0.174	----	----	----	----	----	----	----	----	----	----	----	----
M-251-100	10/13/2022	N	EM02	UMCF	92.5 - 102.5	<0.127	<0.300	<0.278	<0.149	<0.118	0.557 J	<0.160	<0.234	<0.174	----	----	----	----	----	----	----	----	----	----	----	----
M-251-100	11/2/2022	N	EM03	UMCF	92.5 - 102.5	<1.27	<3.00	<2.78	<1.49	<1.18	<1.90	<0.160	<2.34	<1.74	----	----	----	----	----	----	----	----	----	----	----	----
M-251-100	12/8/2022	N	EM04	UMCF	92.5 - 102.5	<0.127	<0.300	<0.278	<0.149	<0.118	0.528 J	<0.160	<0.234	<0.174	----	----	----	----	----	----	----	----	----	----	----	----
M-251-100	1/11/2023	N	EM05	UMCF	92.5 - 102.5	<0.127	<0.300	<0.278	<0.149	<0.118	0.462 J	<0.160	<0.234	<0.174	----	----	----	----	----	----	----	----	----	----	----	----
M-251-100	2/13/2023	N	EM06	UMCF	92.5 - 102.5	<0.127	<0.300	<0.278	<0.149	<0.118	0.241 J	<0.160	<0.234	<0.174	----	----	----	----	----	----	----	----	----	----	----	----
M-251-100	3/17/2023	N	EM07	UMCF	92.5 - 102.5	<6.35	<15.0	<13.9	<7.45	<5.90	<9.50	<8.00	<11.7	<8.70	<6.1 UJ	28 J	<5.8 UJ	630 J	<5.8 UJ	<5.6 UJ	<5.3 UJ	<5.6 UJ	5.6 J	<6.0 UJ	----	----
M-251-60	4/18/2022	N	BLO2	UMCF	52.3 - 62.3	<0.127	<0.300	<0.278	<0.149	<0.118	<0.190	<0.160	<0.234	<0.174	----	----	----	----	----	----	----	----	----	----	----	----
M-251-60	3/15/2023	N	EM07	UMCF	52.3 - 62.3	<0.127	<0.300	<0.278	<0.149	<0.118	<0.190	<0.160	<0.234	<0.174	----	----	----	----	----	----	----	----	----	----	----	----
M-252	4/21/2022	N	BLO2	UMCF	132.3 - 142.3	<0.127	<0.300	0.292 J	<0.149	<0.118	<0.190	<0.160	<0.234	<0.174	----	----	----	----	----	----	----	----	----	----	----	----
M-252	3/15/2023	N	EM07	UMCF	132.3 - 142.3	<0.127	<0.300	<0.278	<0.149	<0.118	<0.190	<0.160	<0.234	<0.174	----	----	----	----	----	----	----	----	----	----	----	----
M-253-100	4/20/2022	N	BLO2	UMCF	100.8 - 110.8	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
M-255-100	4/20/2022	N	BLO2	UMCF	100.2 - 110.2	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
U4-E-01D	4/18/2022	N	BLO2	UMCF	94.7 - 109.7	<0.635	<1.50	<1.39	<0.745	<0.590	<0.950	<0.800	<1.17	<0.870	----	----	----	----	----	----	----	----	----	----	----	----
U4-E-01D	3/14/2023	N	EM07	UMCF	94.7 - 109.7	<0.127	<0.300	<0.278	<0.149	<0.118	<0.190	<0.160	<0.234	<0.174	----	----	----	----	----	----	----	----	----	----	----	----
U4-E-01I	4/19/2022	N	BLO2	UMCF	74.6 - 89.6	<0.127	<0.300	0.471 J	<0.149	<0.118	<0.190	<0.160	<0.234	<0.174	----	----	----	----	----	----	----	----	----	----	----	----
U4-E-01I	4/19/2022	FD	BLO2	UMCF	74.6 - 89.6	<0.127	<0.300	0.330 J	<0.149	<0.118	<0.190	<0.160	<0.234	<0.174	----	----	----	----	----	----	----	----	----	----	----	----
U4-E-01I	3/14/2023	N	EM07	UMCF	74.6 - 89.6	<0.127	<0.300	<0.278	<0.149	<0.118	<0.190	<0.160	<0.234	<0.174	----	----	----	----	----	----	----	----	----	----	----	----
U4-E-02D	4/20/2022	N	BLO2	UMCF	94.4 - 109.4	<0.127	<0.300	0.644 J	<0.149	<0.118	<0.190	<0.160	<0.234	<0.174	----	----	----	----	----	----	----	----	----	----	----	----
U4-E-02D	3/14/2023	N	EM07	UMCF	94.4 - 109.4	<0.127	<0.300	<0.278	<0.149	<0.118	<0.190	<0.160	<0.234	<0.174	----	----	----	----	----	----	----	----	----	----	----	----
U4-E-02I	4/18/2022	N	BLO2	UMCF	74.4 - 89.4	<0.127	<0.300	<0.278	<0.149	<0.118	0.260 J	<0.160	<0.234	<0.174	----	----	----	----	----	----	----	----	----	----	----	----
U4-E-02I	3/14/2023	N	EM07	UMCF	74.4 - 89.4	<0.127	<0.300	<0.278	<0.149	<0.118	<0.190	<0.160	<0.234	<0.174	----	----	----	----	----	----	----	----	----	----	----	----
U4-E-03D	4/19/2022	N	BLO2	UMCF	95.1 - 110.1	<0.127	<0.300	0.333 J	<0.149	<0.118	0.609 J	<0.160	<0.234	<0.174	----	----	----	----	----	----	----	----	----	----	----	----
U4-E-03D	10/13/2022	N	EM02	UMCF	95.1 - 110.1	<25.4	<60.0	<55.6	<29.8	<23.6	<38.0	<32.0	<46.8	<34.8	----	----	----	----	----	----	----	----	----	----	----	----
U4-E-03D	11/3/2022	N	EM03	UMCF	95.1 - 110.1	<0.127	0.494 J	<0.278	<0.149	<0.118	0.753 J	<0.160	<0.234	<0.174	----	----	----	----	----	----	----	----	----	----	----	----
U4-E-03D	12/6/2022	N	EM04	UMCF	95.1 - 110.1	<2.54 UJ	<6.00 UJ	<5.56 UJ	<2.98 UJ	<2.36 UJ	<3.80 UJ	<3.20 UJ	<4.68 UJ	<3.48 UJ	----	----	----	----	----	----	----	----	----	----	----	----
U4-E-03D	1/9/2023	N	EM05	UMCF	95.1 - 110.1	<0.127	0.342 J	<0.278	<0.149	<0.118	0.602 J	<0.160	<0.234	<0.174	----	----	----	----	----	----	----	----	----	----	----	----
U4-E-03D	2/13/2023	N	EM06	UMCF	95.1 - 110.1	<12.7	<30.0	<27.8	<14.9	<11.8	<19.0	<16.0	<23.4	<17.4	----	----	----	----	----	----	----	----	----	----	----	----
U4-E-03D	3/13/2023	N	EM07	UMCF	95.1 - 110.1	<12.7	<30.0	<27.8	<14.9	<11.8	<19.0	<16.0	<23.4	<17.4	----	----	----	----	----	----	----	----	----	----	----	----
U4-E-03D	3/14/2023	N	EM07	UMCF	95.1 - 110.1	<25.4	<60.0	<55.6	<29.8	<23.6	<38.0	<32.0	<46.8	<34.8	----	----	----	----	----	----	----	----	----	----	----	----
U4-E-04D	4/19/2022	N	BLO2	UMCF	95.0 - 110.0	<0.127	<0.300	0.341 J	<0.149	<0.118	0.460 J	<0.160	<0.234	<0.174	----	----	----	----	----	----	----	----	----	----	----	----
U4-E-04D	3/14/2023	N	EM07	UMCF	95.0 - 110.0	<0.127	<0.300	<0.278	<0.149	<0.118	<0.190	<0.160	<0.234	<0.174	----	----	----	----	----	----	----	----	----	----	----	----
U4-E-04I	4/18/2022	N	BLO2	UMCF	75.0 - 90.0	<0.127	<0.300	<0.278	<0.149	<0.118	<0.190	<0.160	<0.234	<0.174	----	----	----	----	----	----	----	----	----	----	----	----
U4-E-04I	3/14/2023	N	EM07	UMCF	75.0 - 90.0	<6.35	<15.0	<13.9	<7.45	<5.90	<9.50	<8.00	<11.7	<8.70	----	----	----	----	----	----	----	----	----	----	----	----
U4-E-05D	4/19/2022	N	BLO2	UMCF	95.0 - 110.0	<0.127	<0.300	0.513 J	<0.149	<0.118	0.429 J	<0.160	<0.234	<0.174	----	----	----	----	----	----	----	----	----	----	----	----
U4-E-05D	3/16/2023	N	EM07	UMCF	95.0 - 110.0	<0.127	<0.300	<0.278	<0.149	<0.118	<0.190	<0.160	<0.234	<0.174	----	----	----	----	----	----	----	----	----	----	----	----
U4-E-05I	4/19/2022	N	BLO2	UMCF	75.0 - 90.0	<0.127	<0.300	<0.278	<0.149	<0.118	<0.190	<0.160	<0.234	<0.174	----	----	----	----	----	----	----	----	----	----	----	----
U4-E-05I	3/15/2023	N	EM07	UMCF	75.0 - 90.0	<0.127 UJ	<0.300 UJ	<0.278 UJ	<0.149 UJ	<0.118 UJ	<0.190 UJ	<0.160 UJ	<0.234 UJ	<0.174 UJ	----	----	----	----	----	----	----	----	----	----	----	----
U4-E-06D	4/11/2022	N	BLO2	UMCF	95.1 - 110.1	<0.127	<0.300	<0.278	<0.149	<0.118	<0.190	<0.160	<0.234	<0.174	----	----	----	----	----	----	----	----	----	----	----	----
U4-E-06I	4/11/2022	N	BLO2	UMCF	73.2 - 88.2	<0.127	<0.300	<0.278	<0.149	<0.118	<0.190	<0.160	<0.234	<0.174	----	----	----	----	----	----	----	----	----	----	----	----
U4-E-06I	4/11/2022	FD	BLO2	UMCF	73.2 - 88.2	<0.127	<0.300	<0.278	<0.149	<0.118	<0.190	<0.160	<0.234	<0.174	----	----	----	----	----	----	----	----	----	----	----	----
U4-E-06I	10/12/2022	N	EM02	UMCF	73.2 - 88.2	<0.127	0.450 J	<0.278	<0.149	<0.118	0.514 J	<0.160	<0.234	<0.174	----	----	----	----	----	----	----	----	----	----	----	----
U4-E-06I	11/3/2022	N	EM03	UMCF	73.2 - 88.2	<0.127	0.389 J	<0.278	<0.149	<0.118	0.394 J	<0.160	<0.234	<0.174	----	----	----	----	----	----	----	----	----	----	----	----
U4-E-06I	12/6/2022	N	EM04	UMCF	73.2 - 88.2	<1.27 UJ	<3.00 UJ	<2.78 UJ	<1.49 UJ	<1.18 UJ	<1.90 UJ	<1.60 UJ	<2.34 UJ	<1.74 UJ	----	----	----	----	----	----	----	----	----	----	----	----
U4-E-06I	1/9/2023	N	EM05	UMCF	73.2 - 88.2	<0.127	0.300 J	<0.278	<0.149	<0.118	0.429 J	<0.160	<0.234	<0.174	----	----	----	----	----	----	----	----	----	----	----	----
U4-E-06I	2/13/2023	N	EM06	UMCF	73.2 - 88.2	<12.7	<30.0	<27.8	<14.9	<11.8	<19.0	<16.0	<23.4	<17.4	----	----	----	----	----	----	----	----	----	----	----	----
U4-E-06I	3/13/2023	N	EM07	UMCF	73.2 - 88.2	<2.54	<6.00	<5.56	<2.98	<2.36	<3.80	<3.20	<4.68	<3.48	----	----	----	----	----	----	----	----	----	----	----	----
U4-E-07D	4/12/2022	N	BLO2	UMCF	94.6 - 109.6	<0.127	<0.300	3.53	<0.149	<0.118	0.745 J	<0.160	<0.234	<0.174	----	----	----	----	----	----	----	----	----	----	----	----
U4-E-07I	4/12/2022	N	BLO2	UMCF	74.7 - 89.7	<0.127	<0.300	<0.278	<0.149	<0.118	0.259 J	<0.160	<0.234	<0.174	----	----	----	----	----	----	----	----	----	----	----	----
U4-E-07I	10/11/2022	N																								

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 Fatty Acids by AM23G									
						tert-Butylbenzene	Tetrachloroethene (PCE)	Toluene	trans-1,2-Dichloroethene	trans-1,3-Dichloropropene	Trichloroethene (TCE)	Trichlorofluoromethane	Vinyl Chloride	Xylenes, Total	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	µg/L	µg/L	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-01D	2/16/2023	N	EM06	UMCf	96.7 - 106.7	<1.27	<3.00	<2.78	<1.49	<1.18	<1.90	<1.60	<2.34	<1.74	----	----	----	----	----	----	----	----	----	----	
U4-MW-01D	3/20/2023	N	EM07	UMCf	96.7 - 106.7	<0.127	<0.300	<0.278	<0.149	<0.118	0.204 J	<0.160	<0.234	<0.174	----	----	----	----	----	----	----	----	----	----	
U4-MW-01DD	4/19/2022	N	BLO2	UMCf	119.9 - 129.9	<0.127	<0.300	<0.278	<0.149	<0.118	<0.190	<0.160	<0.234	<0.174	----	----	----	----	----	----	----	----	----	----	
U4-MW-01DD	4/19/2022	FD	BLO2	UMCf	119.9 - 129.9	<0.127	<0.300	<0.278	<0.149	<0.118	<0.190	<0.160	<0.234	<0.174	----	----	----	----	----	----	----	----	----	----	
U4-MW-01DD	3/15/2023	N	EM07	UMCf	119.9 - 129.9	<0.127	<0.300	<0.278	<0.149	<0.118	<0.190	<0.160	<0.234	<0.174	----	----	----	----	----	----	----	----	----	----	
U4-MW-01I	4/19/2022	N	BLO2	UMCf	76.7 - 86.7	<0.127	<0.300	<0.278	<0.149	<0.118	<0.190	<0.160	<0.234	<0.174	----	----	----	----	----	----	----	----	----	----	
U4-MW-01I	3/20/2023	N	EM07	UMCf	76.7 - 86.7	<0.127	<0.300	<0.278	<0.149	<0.118	0.192 J	<0.160	<0.234	<0.174	----	----	----	----	----	----	----	----	----	----	
U4-MW-01S	4/18/2022	N	BLO2	UMCf	54.7 - 64.7	<0.127	<0.300	<0.278	<0.149	<0.118	<0.190	<0.160	<0.234	<0.174	----	----	----	----	----	----	----	----	----	----	
U4-MW-01S	3/15/2023	N	EM07	UMCf	54.7 - 64.7	<0.127	<0.300	<0.278	<0.149	<0.118	<0.190	<0.160	<0.234	<0.174	----	----	----	----	----	----	----	----	----	----	
U4-MW-02D	4/14/2022	N	BLO2	UMCf	95.0 - 110.0	<0.127	<0.300	<0.278	<0.149	<0.118	0.883 J	<0.160	<0.234	<0.174	----	----	----	----	----	----	----	----	----	----	
U4-MW-02D	10/11/2022	N	EM02	UMCf	95.0 - 110.0	<0.127	0.459 J	<0.278	<0.149	<0.118	1.23	<0.160	<0.234	<0.174	----	----	----	----	----	----	----	----	----	----	
U4-MW-02D	11/1/2022	N	EM03	UMCf	95.0 - 110.0	<6.35	<15.0	<13.9	<7.45	<5.90	<95.0	<8.00	<11.7	<8.70	----	----	----	----	----	----	----	----	----	----	
U4-MW-02D	12/7/2022	N	EM04	UMCf	95.0 - 110.0	<0.127	<0.300	<0.278	<0.149	<0.118	1.28	<0.160	<0.234	<0.174	----	----	----	----	----	----	----	----	----	----	
U4-MW-02D	1/10/2023	N	EM05	UMCf	95.0 - 110.0	<0.127	<0.300	<0.278	<0.149	<0.118	1.07	<0.160	<0.234	<0.174	----	----	----	----	----	----	----	----	----	----	
U4-MW-02D	2/13/2023	N	EM06	UMCf	95.0 - 110.0	<0.127	0.320 J	<0.278	<0.149	<0.118	1.30	<0.160	<0.234	<0.174	----	----	----	----	----	----	----	----	----	----	
U4-MW-02D	3/17/2023	N	EM07	UMCf	95.0 - 110.0	<12.7	<30.0	<27.8	<14.9	<11.8	<19.0	<16.0	<23.4	<17.4	<12 UJ	49 J	<12 UJ	1,200 J	<12 UJ	<11 UJ	<11 UJ	<11 UJ	<11 UJ	<12 UJ	
U4-MW-02I	4/14/2022	N	BLO2	UMCf	75.0 - 90.0	<0.127	<0.300	<0.278	<0.149	<0.118	0.222 J	<0.160	<0.234	<0.174	----	----	----	----	----	----	----	----	----	----	
U4-MW-02I	10/11/2022	N	EM02	UMCf	75.0 - 90.0	<0.127	0.429 J	<0.278	<0.149	<0.118	0.414 J	<0.160	<0.234	<0.174	----	----	----	----	----	----	----	----	----	----	
U4-MW-02I	11/2/2022	N	EM03	UMCf	75.0 - 90.0	<1.27	<3.00	<2.78	<1.49	<1.18	<1.90	<1.60	<2.34	<1.74	----	----	----	----	----	----	----	----	----	----	
U4-MW-02I	11/2/2022	FD	EM03	UMCf	75.0 - 90.0	<1.27	<3.00	<2.78	<1.49	<1.18	<1.90	<1.60	<2.34	<1.74	----	----	----	----	----	----	----	----	----	----	
U4-MW-02I	12/8/2022	N	EM04	UMCf	75.0 - 90.0	<0.127	<0.300	<0.278	<0.149	<0.118	<0.190	<0.160	<0.234	<0.174	----	----	----	----	----	----	----	----	----	----	
U4-MW-02I	12/8/2022	FD	EM04	UMCf	75.0 - 90.0	<0.127	<0.300	<0.278	<0.149	<0.118	<0.190	<0.160	<0.234	<0.174	----	----	----	----	----	----	----	----	----	----	
U4-MW-02I	1/13/2023	N	EM05	UMCf	75.0 - 90.0	<1.27	<3.00	<2.78	<1.49	<1.18	<1.90	<1.60	<2.34	<1.74	----	----	----	----	----	----	----	----	----	----	
U4-MW-02I	1/13/2023	FD	EM05	UMCf	75.0 - 90.0	<1.27	<3.00	<2.78	<1.49	<1.18	<1.90	<1.60	<2.34	<1.74	----	----	----	----	----	----	----	----	----	----	
U4-MW-02I	2/15/2023	N	EM06	UMCf	75.0 - 90.0	<1.27	<3.00	<2.78	<1.49	<1.18	<1.90	<1.60	<2.34	<1.74	----	----	----	----	----	----	----	----	----	----	
U4-MW-02I	2/15/2023	FD	EM06	UMCf	75.0 - 90.0	<1.27	<3.00	<2.78	<1.49	<1.18	<1.90	<1.60	<2.34	<1.74	----	----	----	----	----	----	----	----	----	----	
U4-MW-02I	3/17/2023	N	EM07	UMCf	75.0 - 90.0	<25.4	<60.0	<55.6	<29.8	<23.6	<38.0	<32.0	<46.8	<34.8	<12 UJ	60 J	<12 UJ	1,200 J	<12 UJ	<11 UJ	<11 UJ	<11 UJ	18 J	<12 UJ	
U4-MW-02I	3/17/2023	FD	EM07	UMCf	75.0 - 90.0	<25.4	<60.0	<55.6	<29.8	<23.6	<38.0	<32.0	<46.8	<34.8	<12 UJ	61 J	<12 UJ	1,200 J	<12 UJ	<11 UJ	<11 UJ	<11 UJ	17 J	<12 UJ	
U4-MW-03D	4/20/2022	N	BLO2	UMCf	96.6 - 106.6	<0.127	<0.300	<0.278	<0.149	<0.118	0.208 J	<0.160	<0.234	<0.174	----	----	----	----	----	----	----	----	----	----	
U4-MW-03D	2/16/2023	N	EM06	UMCf	96.6 - 106.6	<0.635	<1.50	<13.9	<0.745	<0.590	<0.950	<0.800	<1.17	<0.870	----	----	----	----	----	----	----	----	----	----	
U4-MW-03D	3/16/2023	N	EM07	UMCf	96.6 - 106.6	<2.54	<6.00	<5.56	<2.98	<2.36	<3.80	<3.20	<4.68	<3.48	----	----	----	----	----	----	----	----	----	----	
U4-MW-03D	3/16/2023	FD	EM07	UMCf	96.6 - 106.6	<0.635	<1.50	<1.39	<0.745	<0.590	<0.950	<0.800	<1.17	<0.870	----	----	----	----	----	----	----	----	----	----	
U4-MW-03DD	4/20/2022	N	BLO2	UMCf	119.7 - 129.7	<0.127	<0.300	0.285 J	<0.149	<0.118	<0.190	<0.160	<0.234	<0.174	----	----	----	----	----	----	----	----	----	----	
U4-MW-03DD	3/15/2023	N	EM07	UMCf	119.7 - 129.7	<0.127	<0.300	<0.278	<0.149	<0.118	<0.190	<0.160	<0.234	<0.174	----	----	----	----	----	----	----	----	----	----	
U4-MW-03I	4/19/2022	N	BLO2	UMCf	76.6 - 86.6	<0.127	<0.300	0.798 J	<0.149	<0.118	<0.190	<0.160	<0.234	<0.174	----	----	----	----	----	----	----	----	----	----	
U4-MW-03I	3/15/2023	N	EM07	UMCf	76.6 - 86.6	<0.127	<0.300	<0.278	<0.149	<0.118	<0.190	<0.160	<0.234	<0.174	----	----	----	----	----	----	----	----	----	----	
U4-MW-03S	4/18/2022	N	BLO2	UMCf	54.5 - 64.5	<0.127	<0.300	<0.278	<0.149	<0.118	<0.190	<0.160	<0.234	<0.174	----	----	----	----	----	----	----	----	----	----	
U4-MW-03S	4/18/2022	FD	BLO2	UMCf	54.5 - 64.5	<0.127	<0.300	<0.278	<0.149	<0.118	<0.190	<0.160	<0.234	<0.174	----	----	----	----	----	----	----	----	----	----	
U4-MW-03S	3/15/2023	N	EM07	UMCf	54.5 - 64.5	<0.127	<0.300	<0.278	<0.149	<0.118	<0.190	<0.160	<0.234	<0.174	----	----	----	----	----	----	----	----	----	----	
U4-MW-04D	4/19/2022	N	BLO2	UMCf	97.0 - 107.0	<0.127	<0.300	<0.278	<0.149	<0.118	0.805 J	<0.160	<0.234	<0.174	----	----	----	----	----	----	----	----	----	----	
U4-MW-04D	2/16/2023	N	EM06	UMCf	97.0 - 107.0	<6.35	<15.0	<13.9	<7.45	<5.90	<9.50	<8.00	<11.7	<8.70	----	----	----	----	----	----	----	----	----	----	
U4-MW-04D	3/21/2023	N	EM07	UMCf	97.0 - 107.0	<0.127	<0.300	<0.278	<0.149	<0.118	<0.190	<0.160	<0.234	<0.174	----	----	----	----	----	----	----	----	----	----	
U4-MW-04I	4/19/2022	N	BLO2	UMCf	76.8 - 86.8	<0.127	<0.300	0.375 J	<0.149	<0.118	<0.225 J	<0.160	<0.234	<0.174	----	----	----	----	----	----	----	----	----	----	
U4-MW-04I	3/20/2023	N	EM07	UMCf	76.8 - 86.8	<0.127	<0.300	<0.278	<0.149	<0.118	0.315 J	<0.160	<0.234	<0.174	----	----	----	----	----	----	----	----	----	----	
U4-MW-05D	4/15/2022	N	BLO2	UMCf	98.2 - 108.2	<0.127	<0.300	<0.278	<0.149	<0.118	0.920 J	<0.160	<0.234	<0.174	----	----	----	----	----	----	----	----	----	----	
U4-MW-05D	10/13/2022	N	EM02	UMCf	98.2 - 108.2	<12.7	<30.0	<27.8	<14.9	<11.8	<19.0	<16.0	<23.4	<17.4	----	----	----	----	----	----	----	----	----	----	
U4-MW-05D	11/3/2022	N	EM03	UMCf	98.2 - 108.2	<0.127	<0.300	<0.278	<0.149	<0.118	0.421 J	<0.160	<0.234	<0.174	----	----	----	----	----	----	----	----	----	----	
U4-MW-05D	12/7/2022	N	EM04	UMCf	98.2 - 108.2	<0.127	<0.300	<0.278	<0.149	<0.118	0.543 J	<0.160	0.238 J	<0.174	----	----	----	----	----	----	----	----	----	----	
U4-MW-05D	1/11/2023	N	EM05	UMCf	98.2 - 108.2	<0.127	<0.300	<0.278	<0.149	<0.118	0.492 J	<0.160	<0.234	<0.174	----	----	----	----	----	----	----	----	----	----	
U4-MW-05D	2/14/2023	N	EM06	UMCf	98.2 - 108.2	<12.7	<30.0	<27.8	<14.9	<11.8	<19.0	<16.0	<23.4	<17.4	----	----	----	----	----	----	----	----	----	----	
U4-MW-05D	3/16/2023	N	EM07	UMCf	98.2 - 108.2	<12.7	<30.0	<27.8	<14.9	<11.8	<19.0	<16.0	<23.4	<17.4	<6.1	28 J	<5.8	620 J+	<5.8	<5.6	<5.3	<5.6	5.5 J	<6.0	
U4-MW-05I	4/15/2022	N	BLO2	UMCf	76.6 - 86.6	<0.127	<0.300	<0.278	<0.149	<0.118															

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 Fatty Acids by AM23G									
						tert-Butylbenzene	Tetrachloroethene (PCE)	Toluene	trans-1,2-Dichloroethene	trans-1,3-Dichloropropene	Trichloroethene (TCE)	Trichlorofluoromethane	Vinyl Chloride	Xylenes, Total	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	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
U4-MW-07D	2/14/2023	N	EM06	UMCF	96.8 - 106.5	<0.127	<0.300	<0.278	<0.149	<0.118	<0.190	<0.160	<0.234	<0.174	----	----	----	----	----	----	----	----	----	----
U4-MW-07D	3/16/2023	N	EM07	UMCF	96.8 - 106.5	<0.127	<0.300	<0.278	<0.149	<0.118	<0.190	<0.160	<0.234	<0.174	<0.61	2.8 J	<0.58	61 J+	<0.58	<0.56	<0.53	<0.56	0.54 J	<0.60
U4-MW-07I	4/15/2022	N	BLO2	UMCF	76.8 - 86.8	<0.127	<0.300	<0.278	<0.149	<0.118	<0.190	<0.160	<0.234	<0.174	----	----	----	----	----	----	----	----	----	----
U4-MW-07I	10/12/2022	N	EM02	UMCF	76.8 - 86.8	<0.127	<0.300	0.315 J	<0.149	<0.118	<0.190	<0.160	<0.234	<0.174	----	----	----	----	----	----	----	----	----	----
U4-MW-07I	11/3/2022	N	EM03	UMCF	76.8 - 86.8	<0.127	<0.300	<0.278	<0.149	<0.118	<0.190	<0.160	<0.234	<0.174	----	----	----	----	----	----	----	----	----	----
U4-MW-07I	12/7/2022	N	EM04	UMCF	76.8 - 86.8	<0.127	<0.300	<0.278	<0.149	<0.118	<0.190	<0.160	<0.234	<0.174	----	----	----	----	----	----	----	----	----	----
U4-MW-07I	1/11/2023	N	EM05	UMCF	76.8 - 86.8	<0.127	<0.300	<0.278	<0.149	<0.118	<0.190	<0.160	<0.234	<0.174	----	----	----	----	----	----	----	----	----	----
U4-MW-07I	2/15/2023	N	EM06	UMCF	76.8 - 86.8	<0.127	<0.300	<0.278	<0.149	<0.118	<0.190	<0.160	<0.234	<0.174	----	----	----	----	----	----	----	----	----	----
U4-MW-07I	3/16/2023	N	EM07	UMCF	76.8 - 86.8	<0.635	<1.50	<1.39	<0.745	<0.590	<0.950	<0.800	<1.17	<0.870	<0.61	3.0 J	<0.58	66 J+	<0.58	<0.56	<0.53	<0.56	0.59 J	<0.60
U4-MW-08D	4/13/2022	N	BLO2	UMCF	98.6 - 108.6	<0.127	2.63	<0.278	<0.149	<0.118	<0.190	<0.160	<0.234	<0.174	----	----	----	----	----	----	----	----	----	----
U4-MW-08D	12/7/2022	N	EM04	UMCF	98.6 - 108.6	<0.127	<0.300	<0.278	<0.149	<0.118	0.670 J	<0.160	<0.234	<0.174	----	----	----	----	----	----	----	----	----	----
U4-MW-08D	3/17/2023	N	EM07	UMCF	98.6 - 108.6	<12.7	<30.0	<27.8	<14.9	<11.8	<19.0	<16.0	<23.4	<17.4	----	----	----	----	----	----	----	----	----	----
U4-MW-08DD	4/20/2022	N	BLO2	UMCF	119.8 - 129.8	<0.127	<0.300	0.486 J	<0.149	<0.118	<0.190	<0.160	<0.234	<0.174	----	----	----	----	----	----	----	----	----	----
U4-MW-08DD	4/20/2022	FD	BLO2	UMCF	119.8 - 129.8	<0.127	<0.300	0.531 J	<0.149	<0.118	<0.190	<0.160	<0.234	<0.174	----	----	----	----	----	----	----	----	----	----
U4-MW-08DD	12/8/2022	N	EM04	UMCF	119.8 - 129.8	<0.127	<0.300	<0.278	<0.149	<0.118	<0.190	<0.160	<0.234	<0.174	----	----	----	----	----	----	----	----	----	----
U4-MW-08DD	3/15/2023	N	EM07	UMCF	119.8 - 129.8	<0.127	<0.300	<0.278	<0.149	<0.118	<0.190	<0.160	<0.234	<0.174	----	----	----	----	----	----	----	----	----	----
U4-MW-08I	4/13/2022	N	BLO2	UMCF	78.0 - 88.0	<0.127	<0.300	<0.278	<0.149	<0.118	0.904 J	<0.160	0.413 J	<0.174	----	----	----	----	----	----	----	----	----	----
U4-MW-08I	12/7/2022	N	EM04	UMCF	78.0 - 88.0	<0.127	<0.300	<0.278	<0.149	<0.118	0.466 J	<0.160	<0.234	<0.174	----	----	----	----	----	----	----	----	----	----
U4-MW-08I	12/7/2022	FD	EM04	UMCF	78.0 - 88.0	<0.127	<0.300	<0.278	<0.149	<0.118	0.489 J	<0.160	<0.234	<0.174	----	----	----	----	----	----	----	----	----	----
U4-MW-08I	3/17/2023	N	EM07	UMCF	78.0 - 88.0	<6.35	<15.0	<13.9	<7.45	<5.90	<9.50	<8.00	<11.7	<8.70	----	----	----	----	----	----	----	----	----	----
U4-MW-08S	4/15/2022	N	BLO2	UMCF	54.9 - 64.9	<0.127	<0.300	<0.278	<0.149	<0.118	<0.190	<0.160	<0.234	<0.174	----	----	----	----	----	----	----	----	----	----
U4-MW-08S	12/7/2022	N	EM04	UMCF	54.9 - 64.9	<0.127	<0.300	<0.278	<0.149	<0.118	<0.190	<0.160	<0.234	<0.174	----	----	----	----	----	----	----	----	----	----
U4-MW-08S	12/7/2022	FD	EM04	UMCF	54.9 - 64.9	<0.127	<0.300	<0.278	<0.149	<0.118	<0.190	<0.160	<0.234	<0.174	----	----	----	----	----	----	----	----	----	----
U4-MW-08S	3/13/2023	N	EM07	UMCF	54.9 - 64.9	<0.127	<0.300	<0.278	<0.149	<0.118	<0.190	<0.160	<0.234	<0.174	----	----	----	----	----	----	----	----	----	----
U4-MW-08S	3/13/2023	FD	EM07	UMCF	54.9 - 64.9	<0.127	<0.300	<0.278	<0.149	<0.118	<0.190	<0.160	<0.234	<0.174	----	----	----	----	----	----	----	----	----	----
U4-MW-09D	4/14/2022	N	BLO2	UMCF	96.9 - 106.9	<0.127	<0.300	<0.278	<0.149	<0.118	0.195 J	<0.160	<0.234	<0.174	----	----	----	----	----	----	----	----	----	----
U4-MW-09D	12/6/2022	N	EM04	UMCF	96.9 - 106.9	<1.27 UJ	<3.00 UJ	<2.78 UJ	<1.49 UJ	<1.18 UJ	<1.90 UJ	<1.60 UJ	<2.34 UJ	<1.74 UJ	----	----	----	----	----	----	----	----	----	----
U4-MW-09D	3/16/2023	N	EM07	UMCF	96.9 - 106.9	<1.27	<3.00	<2.78	<1.49	<1.18	<1.90	<1.60	<2.34	<1.74	----	----	----	----	----	----	----	----	----	----
U4-MW-09DD	4/14/2022	N	BLO2	UMCF	119.8 - 129.8	<0.127	<0.300	<0.278	<0.149	<0.118	<0.190	<0.160	<0.234	<0.174	----	----	----	----	----	----	----	----	----	----
U4-MW-09DD	12/6/2022	N	EM04	UMCF	119.8 - 129.8	<0.127 UJ	<0.300 UJ	<0.278 UJ	<0.149 UJ	<0.118 UJ	<0.190 UJ	<0.160 UJ	<0.234 UJ	<0.174 UJ	----	----	----	----	----	----	----	----	----	----
U4-MW-09DD	3/21/2023	N	EM07	UMCF	119.8 - 129.8	<0.127	<0.300	<0.278	<0.149	<0.118	<0.190	<0.160	<0.234	<0.174	----	----	----	----	----	----	----	----	----	----
U4-MW-09I	4/14/2022	N	BLO2	UMCF	76.8 - 86.8	<0.127	<0.300	3.30	<0.149	<0.118	<0.190	<0.160	<0.234	0.326 J	----	----	----	----	----	----	----	----	----	----
U4-MW-09I	12/6/2022	N	EM04	UMCF	76.8 - 86.8	<1.27 UJ	<3.00 UJ	<2.78 UJ	<1.49 UJ	<1.18 UJ	<1.90 UJ	<1.60 UJ	<2.34 UJ	<1.74 UJ	----	----	----	----	----	----	----	----	----	----
U4-MW-09I	3/16/2023	N	EM07	UMCF	76.8 - 86.8	<1.27	<3.00	<2.78	<1.49	<1.18	<1.90	<1.60	<2.34	<1.74	----	----	----	----	----	----	----	----	----	----
U4-MW-09S	4/14/2022	N	BLO2	UMCF	55.3 - 65.3	<0.127	<0.300	<0.278	<0.149	<0.118	<0.190	<0.160	<0.234	<0.174	----	----	----	----	----	----	----	----	----	----
U4-MW-09S	12/6/2022	N	EM04	UMCF	55.3 - 65.3	<0.127 UJ	<0.300 UJ	<0.278 UJ	<0.149 UJ	<0.118 UJ	<0.190 UJ	<0.160 UJ	<0.234 UJ	<0.174 UJ	----	----	----	----	----	----	----	----	----	----
U4-MW-09S	3/17/2023	N	EM07	UMCF	55.3 - 65.3	<0.127	<0.300	<0.278	<0.149	<0.118	<0.190	<0.160	<0.234	<0.174	----	----	----	----	----	----	----	----	----	----
U4-MW-10D	4/14/2022	N	BLO2	UMCF	96.9 - 106.9	<0.127	<0.300	<0.278	<0.149	<0.118	<0.190	<0.160	<0.234	<0.174	----	----	----	----	----	----	----	----	----	----
U4-MW-10D	12/5/2022	N	EM04	UMCF	96.9 - 106.9	<0.127	<0.300	<0.278	<0.149	<0.118	<0.190	<0.160	<0.234	<0.174	----	----	----	----	----	----	----	----	----	----
U4-MW-10D	3/17/2023	N	EM07	UMCF	96.9 - 106.9	<0.127	<0.300	<0.278	<0.149	<0.118	<0.190	<0.160	<0.234	<0.174	----	----	----	----	----	----	----	----	----	----
U4-MW-10I	4/14/2022	N	BLO2	UMCF	77.1 - 87.1	<0.127	<0.300	<0.278	<0.149	<0.118	<0.190	<0.160	<0.234	<0.174	----	----	----	----	----	----	----	----	----	----
U4-MW-10I	12/5/2022	N	EM04	UMCF	77.1 - 87.1	<0.127	<0.300	<0.278	<0.149	<0.118	<0.190	<0.160	<0.234	<0.174	----	----	----	----	----	----	----	----	----	----
U4-MW-10I	3/17/2023	N	EM07	UMCF	77.1 - 87.1	<0.127	<0.300	<0.278	<0.149	<0.118	<0.190	<0.160	<0.234	<0.174	----	----	----	----	----	----	----	----	----	----
U4-MW-11D	4/15/2022	N	BLO2	UMCF	97.4 - 107.4	<0.127	<0.300	<0.278	<0.149	<0.118	0.873 J	<0.160	<0.234	<0.174	<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	<6.35	<15.0	<13.9	<7.45	<5.90	<9.50	<8.00	<11.7	<8.70	----	----	----	----	----	----	----	----	----	----
U4-MW-11D	10/11/2022	N	EM02	UMCF	97.4 - 107.4	<1.27	<3.00	<2.78	<1.49	<1.18	<1.90	<1.60	<2.34	<1.74	----	----	----	----	----	----	----	----	----	----
U4-MW-11D	11/1/2022	N	EM03	UMCF	97.4 - 107.4	<6.35	<15.0	<13.9	<7.45	<5.90	<9.50	<8.00	<11.7	<8.70	----	----	----	----	----	----	----	----	----	----
U4-MW-11D	12/6/2022	N	EM04	UMCF	97.4 - 107.4	<3.18 UJ	<7.50 UJ	<6.95 UJ	<3.73 UJ	<2.95 UJ	<4.75 UJ	<4.00 UJ	<5.85 UJ	<4.35 UJ	<3.0	27 J+	4.1 J	320 J+	<2.9	<2.8	6.7 J	<2.8	3.4 J	<3.0
U4-MW-11D	1/12/2023	N	EM05	UMCF	97.4 - 107.4	<25.4	<60.0	<55.6	<29.8	<23.6	<38.0	<32.0	<46.8	<34.8	----	----	----	----	----	----	----	----	----	----
U4-MW-11D	2/14/2023	N	EM06	UMCF	97.4 - 107.4	<25.4	<60.0	<55.6	<29.8	<23.6	<38.0	<32.0	<46.8	<34.8	----	----	----	----	----	----	----	----	----	----
U4-MW-11D	3/16/2023	N	EM07	UMCF	97.4 - 107.4	<25.4	<60.0	<55.6	<29.8	<23.6	<38.0	<32.0	<46.8	<34.8	<12	<25	<12	670 J+	<12	<11	<11	<11	<11	<12
U4-MW-11I	4/1																							

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 Fatty Acids by AM23G									
						tert-Butylbenzene	Tetrachloroethene (PCE)	Toluene	trans-1,2-Dichloroethene	trans-1,3-Dichloropropene	Trichloroethene (TCE)	Trichlorofluoromethane	Vinyl Chloride	Xylenes, Total	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	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
U4-MW-12D	11/2/2022	N	EM03	UMCF	97.1 - 107.1	<1.27	<3.00	<2.78	<1.49	<1.18	<1.90	<1.60	<2.34	<1.74	----	----	----	----	----	----	----	----	----		
U4-MW-12D	12/7/2022	N	EM04	UMCF	97.1 - 107.1	<0.127	<0.300	<0.278	<0.149	<0.118	0.741 J	<0.160	<0.234	<0.174	<6.1 R	49 J	<5.8 R	<5.5 R	6.9 J	<5.6 R	9.4 J	<5.6 R	1,500 J-	<6.0 R	
U4-MW-12D	1/12/2023	N	EM05	UMCF	97.1 - 107.1	<12.7	<30.0	<27.8	<14.9	<11.8	<19.0	<16.0	<23.4	<17.4	----	----	----	----	----	----	----	----	----	----	
U4-MW-12D	2/15/2023	N	EM06	UMCF	97.1 - 107.1	<12.7	<30.0	<27.8	<14.9	<11.8	<19.0	<16.0	<23.4	<17.4	----	----	----	----	----	----	----	----	----	----	
U4-MW-12D	3/14/2023	N	EM07	UMCF	97.1 - 107.1	<6.35	<15.0	<13.9	<7.45	<5.90	<9.50	<8.00	<11.7	<8.70	<6.1	65	<5.8	260	<5.8	<5.6	<5.3	<5.6	10 J	<6.0	
U4-MW-12I	4/14/2022	N	BLO2	UMCF	76.8 - 86.8	<0.127	<0.300	<0.278	<0.149	<0.118	0.363 J	<0.160	<0.234	<0.174	<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	BLO2	UMCF	76.8 - 86.8	<0.127	<0.300	<0.278	<0.149	<0.118	0.314 J	<0.160	<0.234	<0.174	<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	<0.127	<0.300	<0.278	<0.149	<0.118	<0.190	<0.160	<0.234	<0.174	----	----	----	----	----	----	----	----	----	----	
U4-MW-12I	10/12/2022	N	EM02	UMCF	76.8 - 86.8	<0.127	<0.300	<0.278	<0.149	<0.118	<0.190	<0.160	<0.234	<0.174	----	----	----	----	----	----	----	----	----	----	
U4-MW-12I	11/2/2022	N	EM03	UMCF	76.8 - 86.8	<0.127	<0.300	<0.278	<0.149	<0.118	<0.190	<0.160	<0.234	<0.174	----	----	----	----	----	----	----	----	----	----	
U4-MW-12I	12/7/2022	N	EM04	UMCF	76.8 - 86.8	<0.127	<0.300	<0.278	<0.149	<0.118	<0.190	<0.160	<0.234	<0.174	<1.2 R	170 J-	<1.2 R	110 J-	2.1 J	<1.1 R	6.9 J	<1.1 R	6.1 J	<1.2 R	
U4-MW-12I	12/7/2022	FD	EM04	UMCF	76.8 - 86.8	<0.127	<0.300	<0.278	<0.149	<0.118	<0.190	<0.160	<0.234	<0.174	----	----	----	----	----	----	----	----	----	----	
U4-MW-12I	1/13/2023	N	EM05	UMCF	76.8 - 86.8	<0.127	<0.300	<0.278	<0.149	<0.118	<0.190	<0.160	<0.234	<0.174	----	----	----	----	----	----	----	----	----	----	
U4-MW-12I	2/15/2023	N	EM06	UMCF	76.8 - 86.8	<0.127	<0.300	<0.278	<0.149	<0.118	<0.190	<0.160	<0.234	<0.174	----	----	----	----	----	----	----	----	----	----	
U4-MW-12I	3/13/2023	N	EM07	UMCF	76.8 - 86.8	<0.127	<0.300	<0.278	<0.149	<0.118	<0.190	<0.160	<0.234	<0.174	<6.1	590	26 J	54	<5.8	<5.6	15 J	<5.6	150	<6.0	
U4-MW-13D	4/14/2022	N	BLO2	UMCF	98.2 - 108.2	<0.127	<0.300	<0.278	<0.149	<0.118	0.456 J	<0.160	<0.234	<0.174	<12	27 J	<12	490	<12	<11	<11	<11	<11	<12	
U4-MW-13D	9/28/2022	N	EM01	UMCF	98.2 - 108.2	<1.27	<3.00	<2.78	<1.49	<1.18	<1.90	<1.60	<2.34	<1.74	----	----	----	----	----	----	----	----	----	----	
U4-MW-13D	10/11/2022	N	EM02	UMCF	98.2 - 108.2	<0.127	<0.300	<0.278	<0.149	<0.118	<0.190	<0.160	<0.234	<0.174	----	----	----	----	----	----	----	----	----	----	
U4-MW-13D	11/3/2022	N	EM03	UMCF	98.2 - 108.2	<0.127	<0.300	<0.278	<0.149	<0.118	<0.190	<0.160	<0.234	<0.174	----	----	----	----	----	----	----	----	----	----	
U4-MW-13D	12/7/2022	N	EM04	UMCF	98.2 - 108.2	<0.127	<0.300	<0.278	<0.149	<0.118	<0.190	<0.160	<0.234	<0.174	<3.0 R	18 J	<2.9 R	<2.7 R	<2.9 R	<2.8 R	6.6 J	<2.8 R	300 J-	<3.0 R	
U4-MW-13D	1/12/2023	N	EM05	UMCF	98.2 - 108.2	<2.54	<6.00	<5.56	<2.98	<2.36	<3.80	<3.20	<4.68	<3.48	----	----	----	----	----	----	----	----	----	----	
U4-MW-13D	2/15/2023	N	EM06	UMCF	98.2 - 108.2	<0.127	<0.300	<0.278	<0.149	<0.118	<0.190	<0.160	<0.234	<0.174	----	----	----	----	----	----	----	----	----	----	
U4-MW-13D	3/17/2023	N	EM07	UMCF	98.2 - 108.2	<2.54	<6.00	<5.56	<2.98	<2.36	<3.80	<3.20	<4.68	<3.48	<1.2 UJ	5.2 J	<1.2 UJ	130 J	<1.2 UJ	<1.1 UJ	<1.1 UJ	<1.1 UJ	<1.1 UJ	<1.2 UJ	
U4-MW-13I	4/14/2022	N	BLO2	UMCF	77.1 - 87.1	<0.127	<0.300	<0.278	<0.149	<0.118	0.291 J	<0.160	<0.234	<0.174	<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	<0.127	<0.300	0.395 J	<0.149	<0.118	<0.190	<0.160	<0.234	<0.174	----	----	----	----	----	----	----	----	----	----	
U4-MW-13I	10/10/2022	N	EM02	UMCF	77.1 - 87.1	<0.127	5.02	0.914 J	<0.149	<0.118	1.49	<0.160	<0.234	<0.174	----	----	----	----	----	----	----	----	----	----	
U4-MW-13I	11/3/2022	N	EM03	UMCF	77.1 - 87.1	<0.127	<0.300	<0.278	<0.149	<0.118	<0.190	<0.160	<0.234	<0.174	----	----	----	----	----	----	----	----	----	----	
U4-MW-13I	12/6/2022	N	EM04	UMCF	77.1 - 87.1	<0.635 UJ	<1.50 UJ	<1.39 UJ	<0.745 UJ	<0.590 UJ	<0.950 UJ	<0.800 UJ	<1.17 UJ	<0.870 UJ	<1.2	68	<1.2	130 J+	<1.2	<1.1	7.3 J	<1.1	1.5 J	<1.2	
U4-MW-13I	1/12/2023	N	EM05	UMCF	77.1 - 87.1	<0.127	<0.300	<0.278	<0.149	<0.118	<0.190	<0.160	<0.234	<0.174	----	----	----	----	----	----	----	----	----	----	
U4-MW-13I	2/14/2023	N	EM06	UMCF	77.1 - 87.1	<0.635	<1.50	<1.39	<0.745	<0.590	<0.950	<0.800	<1.17	<0.870	----	----	----	----	----	----	----	----	----	----	
U4-MW-13I	3/16/2023	N	EM07	UMCF	77.1 - 87.1	<0.127	<0.300	<0.278	<0.149	<0.118	<0.190	<0.160	<0.234	<0.174	<0.61	56	<0.58	58 J+	<0.58	<0.56	<0.53	<0.56	4.2 J	<0.60	
U4-MW-14D	4/13/2022	N	BLO2	UMCF	97.3 - 107.3	<0.127	<0.300	<0.278	<0.149	<0.118	0.295 J	<0.160	<0.234	<0.174	----	----	----	----	----	----	----	----	----	----	
U4-MW-14D	12/6/2022	N	EM04	UMCF	97.3 - 107.3	<0.635 UJ	<1.50 UJ	<1.39 UJ	<0.745 UJ	<0.590 UJ	<0.950 UJ	<0.800 UJ	<1.17 UJ	<0.870 UJ	----	----	----	----	----	----	----	----	----	----	
U4-MW-14D	3/16/2023	N	EM07	UMCF	97.3 - 107.3	<0.635	<1.50	<1.39	<0.745	<0.590	<0.950	<0.800	<1.17	<0.870	----	----	----	----	----	----	----	----	----	----	
U4-MW-14I	4/14/2022	N	BLO2	UMCF	77.3 - 87.3	<0.127	<0.300	<0.278	<0.149	<0.118	<0.190	<0.160	<0.234	<0.174	----	----	----	----	----	----	----	----	----	----	
U4-MW-14I	12/6/2022	N	EM04	UMCF	77.3 - 87.3	<0.635 UJ	<1.50 UJ	<1.39 UJ	<0.745 UJ	<0.590 UJ	<0.950 UJ	<0.800 UJ	<1.17 UJ	<0.870 UJ	----	----	----	----	----	----	----	----	----	----	
U4-MW-14I	3/16/2023	N	EM07	UMCF	77.3 - 87.3	<0.635	<1.50	<1.39	<0.745	<0.590	<0.950	<0.800	<1.17	<0.870	----	----	----	----	----	----	----	----	----	----	
U4-MW-15D	4/13/2022	N	BLO2	UMCF	96.0 - 106.0	<0.127	<0.300	<0.278	<0.149	<0.118	<0.190	<0.160	<0.234	<0.174	----	----	----	----	----	----	----	----	----	----	
U4-MW-15D	12/5/2022	N	EM04	UMCF	96.0 - 106.0	<0.127	<0.300	<0.278	<0.149	<0.118	<0.190	<0.160	<0.234	<0.174	----	----	----	----	----	----	----	----	----	----	
U4-MW-15D	3/20/2023	N	EM07	UMCF	96.0 - 106.0	<0.127	<0.300	<0.278	<0.149	<0.118	<0.190	<0.160	<0.234	<0.174	----	----	----	----	----	----	----	----	----	----	
U4-MW-15DD	4/13/2022	N	BLO2	UMCF	120.3 - 130.3	<0.127	<0.300	<0.278	<0.149	<0.118	<0.190	<0.160	<0.234	<0.174	----	----	----	----	----	----	----	----	----	----	
U4-MW-15DD	12/5/2022	N	EM04	UMCF	120.3 - 130.3	<0.127	<0.300	<0.278	<0.149	<0.118	<0.190	<0.160	<0.234	<0.174	----	----	----	----	----	----	----	----	----	----	
U4-MW-15DD	3/15/2023	N	EM07	UMCF	120.3 - 130.3	<0.127	<0.300	<0.278	<0.149	<0.118	<0.190	<0.160	<0.234	<0.174	----	----	----	----	----	----	----	----	----	----	
U4-MW-15I	4/12/2022	N	BLO2	UMCF	76.8 - 86.8	<0.127	<0.300	<0.278	<0.149	<0.118	0.215 J	<0.160	<0.234	<0.174	----	----	----	----	----	----	----	----	----	----	
U4-MW-15I	12/5/2022	N	EM04	UMCF	76.8 - 86.8	<0.127	<0.300	<0.278	<0.149	<0.118	<0.190	<0.160	<0.234	<0.174	----	----	----	----	----	----	----	----	----	----	
U4-MW-15I	3/17/2023	N	EM07	UMCF	76.8 - 86.8	<2.54	<6.00	<5.56	<2.98	<2.36	<3.80	<3.20	<4.68	<3.48	----	----	----	----	----	----	----	----	----	----	
U4-MW-15S	4/13/2022	N	BLO2	UMCF	54.8 - 64.8	<0.127	<0.300	<0.278	<0.149	<0.118	<0.190	<0.160	<0.234	<0.174	----	----	----	----	----	----	----	----	----	----	
U4-MW-15S	12/5/2022	N	EM04	UMCF	54.8 - 64.8	<3.18	<7.50	<6.95	<3.73	<2.95	<4.75	<4.00	<5.85	<4.35	----	----	----	----	----	----	----	----	----	----	
U4-MW-15S	3/13/2023	N	EM07	UMCF	54.8 - 64.8	<0.127	<0.300	<0.278	<0.149	<0.118	<0.190	<0.160	<0.234	<0.174	----	----	----	----	----	----	----	----	----	----	
U4-MW-16D	4/11/2022	N	BLO2	UMCF	96.8 - 106.8	<0.127	<0.300	<0.278	<0.149	<0.118	0.534 J	<0													

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

Location	Sample Date	Sample ID	Event	Eosine				Fluorescein				Rhodamine WT (RWT)				Sulforhodamine B (SRB)			
				Charcoal		Groundwater		Charcoal		Groundwater		Charcoal		Groundwater		Charcoal		Groundwater	
				Peaks(nm)	Conc.(ppb)	Peaks(nm)	Conc.(ppb)	Peaks(nm)	Conc.(ppb)	Peaks(nm)	Conc.(ppb)	Peaks(nm)	Conc.(ppb)	Peaks(nm)	Conc.(ppb)	Peaks(nm)	Conc.(ppb)	Peaks(nm)	Conc.(ppb)
CARBON-SOLN	10/18/2022	CARBON-SOLN-20221018	EM02	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
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-251-100	10/11/2022	M-251-100-EM02	EM02	ND	ND	ND	ND	ND	ND	ND	ND	570.1	1.15	571.2 **	18.7	ND	ND	ND	ND
M-251-100	11/2/2022	M-251-100-EM03	EM03	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
M-251-100	11/2/2022	M-251-100-EM03	EM03	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
M-251-100	12/8/2022	M-251-100-EM04	EM04	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
M-251-100	3/17/2023	M-251-100-EM07	EM07	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-251-60	10/11/2022	M-251-60-EM02	EM02	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
M-251-60	11/3/2022	M-251-60-EM03	EM03	ND	ND	ND	ND	ND	ND	ND	ND	570.2 **	1.32	ND	ND	ND	ND	ND	ND
M-251-60	12/5/2022	M-251-60-EM04	EM04	ND	ND	ND	ND	ND	ND	ND	ND	568.6	1.66	570.8	7.84	ND	ND	ND	ND
M-251-60	3/15/2023	M-251-60-EM07	EM07	ND	ND	ND	ND	ND	ND	ND	ND	565.4 **	ND	572.2	1.69	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
M-252	10/11/2022	M-252-EM02	EM02	ND	ND	ND	ND	ND	ND	ND	ND	567.6	36.2	571.2 **	173	ND	ND	ND	ND
M-252	11/2/2022	M-252-EM03	EM03	ND	ND	ND	ND	ND	ND	ND	ND	567.7	18.00	ND	ND	ND	ND	ND	ND
M-252	12/5/2022	M-252-EM04	EM04	ND	ND	ND	ND	ND	ND	ND	ND	568.1	17.5	571.2	111	ND	ND	ND	ND
M-252	3/15/2023	M-252-EM07	EM07	ND	ND	ND	ND	ND	ND	ND	ND	568.0	ND	571.2 (1)	2.37	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-01D	3/14/2023	U4-E-01D-EM07	EM07	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
U4-E-01I	4/19/2022	U4-E-01I-BL02	BL02	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	581.8	4.97
U4-E-01I	3/14/2023	U4-E-01I-EM07	EM07	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
U4-E-02D	4/20/2022	U4-E-02D-BL02	BL02	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
U4-E-02D	3/14/2023	U4-E-02D-EM07	EM07	---	---	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-02I	3/14/2023	U4-E-02I-EM07	EM07	---	---	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-03D	10/13/2022	U4-E-03D-EM02	EM02	---	---	ND	ND	---	---	507.8	1.24	---	---	ND	ND	---	---	ND	ND
U4-E-03D	11/3/2022	U4-E-03D-EM03	EM03	---	---	ND	ND	---	---	507.6	5.55	---	---	ND	ND	---	---	ND	ND
U4-E-03D	12/6/2022	U4-E-03D-EM04	EM04	---	---	ND	ND	---	---	507.2	3.56	---	---	ND	ND	---	---	ND	ND
U4-E-03D	3/14/2023	U4-E-03D-EM07	EM07	---	---	ND	ND	---	---	507.6	0.491	---	---	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-04D	3/14/2023	U4-E-04D-EM07	EM07	---	---	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-04I	3/14/2023	U4-E-04I-EM07	EM07	---	---	ND	ND	---	---	507.6	0.656	---	---	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-05D	3/16/2023	U4-E-05D-EM07	EM07	---	---	ND	ND	---	---	508.4 *	0.016	---	---	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-05I	3/15/2023	U4-E-05I-EM07	EM07	---	---	ND	ND	---	---	507.2	0.664	---	---	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-06I	10/12/2022	U4-E-06I-EM02	EM02	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
U4-E-06I	11/3/2022	U4-E-06I-EM03	EM03	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
U4-E-06I	12/6/2022	U4-E-06I-EM04	EM04	---	---	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-07I	10/11/2022	U4-E-07I-EM02	EM02	---	---	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)				Sulforhodamine B (SRB)			
				Charcoal		Groundwater		Charcoal		Groundwater		Charcoal		Groundwater		Charcoal		Groundwater	
				Peaks(nm)	Conc.(ppb)	Peaks(nm)	Conc.(ppb)	Peaks(nm)	Conc.(ppb)	Peaks(nm)	Conc.(ppb)	Peaks(nm)	Conc.(ppb)	Peaks(nm)	Conc.(ppb)	Peaks(nm)	Conc.(ppb)	Peaks(nm)	Conc.(ppb)
U4-E-07I	11/3/2022	U4-E-07I-EM03	EM03	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
U4-E-07I	12/6/2022	U4-E-07I-EM04	EM04	---	---	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-08D	10/11/2022	U4-E-08D-EM02	EM02	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
U4-E-08D	11/3/2022	U4-E-08D-EM03	EM03	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
U4-E-08D	12/6/2022	U4-E-08D-EM04	EM04	---	---	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-01D	10/10/2022	U4-MW-01D-EM02	EM02	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	579.5	4.99	584.5 **	12.2
U4-MW-01D	11/2/2022	U4-MW-01D-EM03	EM03	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	578.9	12.9	584.6 **	9.75
U4-MW-01D	12/5/2022	U4-MW-01D-EM04	EM04	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	578.8	3.69	585.4 **	0.488
U4-MW-01D	3/20/2023	U4-MW-01D-EM07	EM07	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	578.7	2.50	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-01DD	10/10/2022	U4-MW-01DD-EM02	EM02	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	579.0	6.23	581.5	0.598
U4-MW-01DD	11/2/2022	U4-MW-01DD-EM03	EM03	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	578.9	4.42	584.0 **	0.573
U4-MW-01DD	12/5/2022	U4-MW-01DD-EM04	EM04	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	580.0	5.10	584.8 *	0.104
U4-MW-01DD	3/15/2023	U4-MW-01DD-EM07	EM07	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	579.2	11.7	ND	ND
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-01I	10/10/2022	U4-MW-01I-EM02	EM02	ND	ND	ND	ND	ND	ND	507.8	0.027	ND	ND	ND	ND	578.5	5.28	580.4	8.83
U4-MW-01I	11/2/2022	U4-MW-01I-EM03	EM03	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	579.5	2.22	584.4 **	7.10
U4-MW-01I	12/5/2022	U4-MW-01I-EM04	EM04	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	578.8	1.90	582.1	5.47
U4-MW-01I	3/20/2023	U4-MW-01I-EM07	EM07	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	579.3	1.90	ND	ND
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-01S	10/10/2022	U4-MW-01S-EM02	EM02	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	577.8	1.67	ND	ND
U4-MW-01S	11/2/2022	U4-MW-01S-EM03	EM03	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
U4-MW-01S	12/5/2022	U4-MW-01S-EM04	EM04	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
U4-MW-01S	3/15/2023	U4-MW-01S-EM07	EM07	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
U4-MW-02D	4/14/2022	U4-MW-02D-BL02	BL02	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
U4-MW-02D	10/11/2022	U4-MW-02D-EM02	EM02	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	585.6 **	0.772
U4-MW-02D	11/1/2022	U4-MW-02D-EM03	EM03	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
U4-MW-02D	12/7/2022	U4-MW-02D-EM04	EM04	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
U4-MW-02D	3/17/2023	U4-MW-02D-EM07	EM07	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	583.4	1.62
U4-MW-02I	4/14/2022	U4-MW-02I-BL02	BL02	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
U4-MW-02I	10/11/2022	U4-MW-02I-EM02	EM02	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	584.6 *	0.059
U4-MW-02I	11/2/2022	U4-MW-02I-EM03	EM03	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	581.8	0.226
U4-MW-02I	12/8/2022	U4-MW-02I-EM04	EM04	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	581.6	85.7
U4-MW-02I	3/17/2023	U4-MW-02I-EM07	EM07	---	---	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-03D	10/10/2022	U4-MW-03D-EM02	EM02	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
U4-MW-03D	11/2/2022	U4-MW-03D-EM03	EM03	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
U4-MW-03D	12/5/2022	U4-MW-03D-EM04	EM04	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)				Sulforhodamine B (SRB)			
				Charcoal		Groundwater		Charcoal		Groundwater		Charcoal		Groundwater		Charcoal		Groundwater	
				Peaks(nm)	Conc.(ppb)	Peaks(nm)	Conc.(ppb)	Peaks(nm)	Conc.(ppb)	Peaks(nm)	Conc.(ppb)	Peaks(nm)	Conc.(ppb)	Peaks(nm)	Conc.(ppb)	Peaks(nm)	Conc.(ppb)	Peaks(nm)	Conc.(ppb)
U4-MW-03D	3/16/2023	U4-MW-03D-EM07	EM07	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-03DD	10/11/2022	U4-MW-03DD-EM02	EM02	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
U4-MW-03DD	11/2/2022	U4-MW-03DD-EM03	EM03	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
U4-MW-03DD	12/5/2022	U4-MW-03DD-EM04	EM04	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
U4-MW-03DD	3/15/2023	U4-MW-03DD-EM07	EM07	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-03I	10/10/2022	U4-MW-03I-EM02	EM02	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
U4-MW-03I	11/2/2022	U4-MW-03I-EM03	EM03	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
U4-MW-03I	12/5/2022	U4-MW-03I-EM04	EM04	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
U4-MW-03I	3/15/2023	U4-MW-03I-EM07	EM07	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-03S	10/11/2022	U4-MW-03S-EM02	EM02	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
U4-MW-03S	11/2/2022	U4-MW-03S-EM03	EM03	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
U4-MW-03S	12/5/2022	U4-MW-03S-EM04	EM04	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
U4-MW-03S	3/15/2023	U4-MW-03S-EM07	EM07	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-04D	10/11/2022	U4-MW-04D-EM02	EM02	ND	ND	ND	ND	ND	ND	ND	ND	567.5	19.4	571.8 **	2.18	ND	ND	ND	ND
U4-MW-04D	11/3/2022	U4-MW-04D-EM03	EM03	ND	ND	ND	ND	ND	ND	ND	ND	568.4	7.03	574.2 *	2.94	ND	ND	ND	ND
U4-MW-04D	12/5/2022	U4-MW-04D-EM04	EM04	ND	ND	ND	ND	ND	ND	ND	ND	569.3	3.78	ND	ND	ND	ND	ND	ND
U4-MW-04D	3/21/2023	U4-MW-04D-EM07	EM07	ND	ND	ND	ND	ND	ND	ND	ND	570.2 **	ND	ND	ND	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-04I	10/11/2022	U4-MW-04I-EM02	EM02	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
U4-MW-04I	11/3/2022	U4-MW-04I-EM03	EM03	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
U4-MW-04I	12/5/2022	U4-MW-04I-EM04	EM04	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
U4-MW-04I	3/20/2023	U4-MW-04I-EM07	EM07	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-05D	10/13/2022	U4-MW-05D-EM02	EM02	---	---	ND	ND	---	---	507.5	4.37	---	---	ND	ND	---	---	586.6 **	2.40
U4-MW-05D	11/3/2022	U4-MW-05D-EM03	EM03	---	---	ND	ND	---	---	507.8	6.73	---	---	ND	ND	---	---	585.4 **	2.24
U4-MW-05D	12/7/2022	U4-MW-05D-EM04	EM04	---	---	ND	ND	---	---	507.4	2.46	---	---	ND	ND	---	---	ND	ND
U4-MW-05D	3/16/2023	U4-MW-05D-EM07	EM07	---	---	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-05I	10/13/2022	U4-MW-05I-EM02	EM02	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	585.2 **	4.11
U4-MW-05I	11/3/2022	U4-MW-05I-EM03	EM03	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	585.6 **	2.64
U4-MW-05I	12/8/2022	U4-MW-05I-EM04	EM04	---	---	ND	ND	---	---	507.7	0.446	---	---	ND	ND	---	---	ND	ND
U4-MW-05I	3/17/2023	U4-MW-05I-EM07	EM07	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	580.2	3.89
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-06D	10/11/2022	U4-MW-06D-EM02	EM02	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
U4-MW-06D	11/3/2022	U4-MW-06D-EM03	EM03	ND	ND	ND	ND	515.9	0.350	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
U4-MW-06D	12/6/2022	U4-MW-06D-EM04	EM04	ND	ND	ND	ND	516.5	1.22	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
U4-MW-06D	3/21/2023	U4-MW-06D-EM07	EM07	ND	ND	ND	ND	515.2	30.9	507.2	0.251	567.0 *	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

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

Location	Sample Date	Sample ID	Event	Eosine				Fluorescein				Rhodamine WT (RWT)				Sulforhodamine B (SRB)			
				Charcoal		Groundwater		Charcoal		Groundwater		Charcoal		Groundwater		Charcoal		Groundwater	
				Peaks(nm)	Conc.(ppb)	Peaks(nm)	Conc.(ppb)	Peaks(nm)	Conc.(ppb)	Peaks(nm)	Conc.(ppb)	Peaks(nm)	Conc.(ppb)	Peaks(nm)	Conc.(ppb)	Peaks(nm)	Conc.(ppb)	Peaks(nm)	Conc.(ppb)
U4-MW-06I	10/11/2022	U4-MW-06I-EM02	EM02	ND	ND	ND	ND	515.0	1.38	ND	ND	568.2	0.953	572.0	11.5	ND	ND	ND	ND
U4-MW-06I	11/3/2022	U4-MW-06I-EM03	EM03	ND	ND	ND	ND	514.8	1.26	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
U4-MW-06I	12/6/2022	U4-MW-06I-EM04	EM04	ND	ND	ND	ND	515.1	5.02	ND	ND	ND	ND	576.8	2.04	ND	ND	ND	ND
U4-MW-06I	3/14/2023	U4-MW-06I-EM07	EM07	ND	ND	ND	ND	515.4	10.4	ND	ND	ND	ND	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-07D	10/12/2022	U4-MW-07D-EM02	EM02	ND	ND	ND	ND	515.6	3,620	507.3	30.7	ND	ND	ND	ND	579.1	27.0	ND	ND
U4-MW-07D	11/3/2022	U4-MW-07D-EM03	EM03	ND	ND	ND	ND	515.6	1,050	507.6	6.81	ND	ND	ND	ND	578.6	11.5	ND	ND
U4-MW-07D	12/7/2022	U4-MW-07D-EM04	EM04	ND	ND	ND	ND	515.9	909	507.0	2.63	ND	ND	ND	ND	578.8	12.0	586.0 *	0.358
U4-MW-07D	3/16/2023	U4-MW-07D-EM07	EM07	---	---	ND	ND	---	---	507.4	0.237	---	---	ND	ND	---	---	ND	ND
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-07I	10/12/2022	U4-MW-07I-EM02	EM02	ND	ND	ND	ND	515.9	2,070	507.4	32.4	ND	ND	ND	ND	579	3.94	ND	ND
U4-MW-07I	11/3/2022	U4-MW-07I-EM03	EM03	ND	ND	ND	ND	516.0	578	507.6	7.07	ND	ND	ND	ND	580.0	3.38	ND	ND
U4-MW-07I	12/7/2022	U4-MW-07I-EM04	EM04	ND	ND	ND	ND	514.9	280	507.2	2.90	ND	ND	ND	ND	580.0	1.99	ND	ND
U4-MW-07I	3/16/2023	U4-MW-07I-EM07	EM07	ND	ND	ND	ND	515.0	109	507.5	0.534	ND	ND	ND	ND	579.8	1.69	ND	ND
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	---	---
U4-MW-08D	10/12/2022	U4-MW-08D-EM02	EM02	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
U4-MW-08D	11/2/2022	U4-MW-08D-EM03	EM03	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
U4-MW-08D	12/7/2022	U4-MW-08D-EM04	EM04	ND	ND	ND	ND	517.5	0.533	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
U4-MW-08D	3/17/2023	U4-MW-08D-EM07	EM07	ND	ND	ND	ND	517.3	1.21	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
U4-MW-08DD	4/20/2022	U4-MW-08DD-BL02	BL02	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
U4-MW-08DD	10/11/2022	U4-MW-08DD-EM02	EM02	ND	ND	ND	ND	ND	ND	ND	ND	569.3	1.67	573.8	10.6	ND	ND	ND	ND
U4-MW-08DD	11/4/2022	U4-MW-08DD-EM03	EM03	ND	ND	ND	ND	ND	ND	ND	ND	567.4	4.02	574.9	6.02	ND	ND	ND	ND
U4-MW-08DD	12/8/2022	U4-MW-08DD-EM04	EM04	ND	ND	ND	ND	514.6	0.413	ND	ND	567.9	2.52	ND	ND	ND	ND	ND	ND
U4-MW-08DD	3/15/2023	U4-MW-08DD-EM07	EM07	ND	ND	ND	ND	514.4	0.413	ND	ND	566.2 **	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-08I	10/12/2022	U4-MW-08I-EM02	EM02	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
U4-MW-08I	11/2/2022	U4-MW-08I-EM03	EM03	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
U4-MW-08I	12/7/2022	U4-MW-08I-EM04	EM04	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
U4-MW-08I	3/17/2023	U4-MW-08I-EM07	EM07	ND	ND	ND	ND	517.2 *	0.262	ND	ND	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-08S	10/11/2022	U4-MW-08S-EM02	EM02	ND	ND	ND	ND	ND	ND	ND	ND	569.0 *	0.839	574.3	5.65	ND	ND	ND	ND
U4-MW-08S	11/1/2022	U4-MW-08S-EM03	EM03	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
U4-MW-08S	12/7/2022	U4-MW-08S-EM04	EM04	537.5 **	0.434	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
U4-MW-08S	3/13/2023	U4-MW-08S-EM07	EM07	ND	ND	---	---	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-09D	10/13/2022	U4-MW-09D-EM02	EM02	---	---	ND	ND	---	---	507.5	6.50	---	---	ND	ND	---	---	581.1	11.2
U4-MW-09D	11/4/2022	U4-MW-09D-EM03	EM03	---	---	ND	ND	---	---	507.5	15.7	---	---	ND	ND	---	---	ND	ND
U4-MW-09D	12/6/2022	U4-MW-09D-EM04	EM04	---	---	ND	ND	---	---	507.2	9.51	---	---	ND	ND	---	---	ND	ND
U4-MW-09D	3/16/2023	U4-MW-09D-EM07	EM07	---	---	ND	ND	---	---	505.6 **	0.327	---	---	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-09DD	10/12/2022	U4-MW-09DD-EM02	EM02	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
U4-MW-09DD	11/3/2022	U4-MW-09DD-EM03	EM03	ND	ND	ND	ND	515.0	40.9	507.2	0.319	ND	ND	ND	ND	ND	ND	ND	ND
U4-MW-09DD	12/6/2022	U4-MW-09DD-EM04	EM04	ND	ND	ND	ND	515.1	23.3	507.7	0.101	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)				Sulforhodamine B (SRB)			
				Charcoal		Groundwater		Charcoal		Groundwater		Charcoal		Groundwater		Charcoal		Groundwater	
				Peaks(nm)	Conc.(ppb)	Peaks(nm)	Conc.(ppb)	Peaks(nm)	Conc.(ppb)	Peaks(nm)	Conc.(ppb)	Peaks(nm)	Conc.(ppb)	Peaks(nm)	Conc.(ppb)	Peaks(nm)	Conc.(ppb)	Peaks(nm)	Conc.(ppb)
U4-MW-09DD	3/21/2023	U4-MW-09DD-EM07	EM07	ND	ND	ND	ND	514.6	79.8	507.4	0.137	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-09I	10/13/2022	U4-MW-09I-EM02	EM02	---	---	ND	ND	---	---	507.3	0.765	---	---	ND	ND	---	---	582.9	16.9
U4-MW-09I	11/4/2022	U4-MW-09I-EM03	EM03	---	---	ND	ND	---	---	507.4	8.50	---	---	ND	ND	---	---	577.4 **	3.26
U4-MW-09I	12/6/2022	U4-MW-09I-EM04	EM04	---	---	ND	ND	---	---	507.2	6.67	---	---	ND	ND	---	---	587.6 *	0.564
U4-MW-09I	3/16/2023	U4-MW-09I-EM07	EM07	---	---	ND	ND	---	---	507.3	0.668	---	---	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-09S	10/12/2022	U4-MW-09S-EM02	EM02	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
U4-MW-09S	11/3/2022	U4-MW-09S-EM03	EM03	ND	ND	ND	ND	514.3	0.332	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
U4-MW-09S	12/6/2022	U4-MW-09S-EM04	EM04	ND	ND	ND	ND	514.1	0.878	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
U4-MW-09S	3/17/2023	U4-MW-09S-EM07	EM07	ND	ND	ND	ND	515.3	29.2	ND	ND	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-10D	10/12/2022	U4-MW-10D-EM02	EM02	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
U4-MW-10D	11/2/2022	U4-MW-10D-EM03	EM03	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
U4-MW-10D	12/5/2022	U4-MW-10D-EM04	EM04	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
U4-MW-10D	3/17/2023	U4-MW-10D-EM07	EM07	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-10I	10/12/2022	U4-MW-10I-EM02	EM02	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
U4-MW-10I	11/2/2022	U4-MW-10I-EM03	EM03	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
U4-MW-10I	12/5/2022	U4-MW-10I-EM04	EM04	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
U4-MW-10I	3/17/2023	U4-MW-10I-EM07	EM07	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-11D	10/11/2022	U4-MW-11D-EM02	EM02	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	585.0 **	6.96
U4-MW-11D	11/1/2022	U4-MW-11D-EM03	EM03	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
U4-MW-11D	12/6/2022	U4-MW-11D-EM04	EM04	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	581.8	3.05
U4-MW-11D	3/16/2023	U4-MW-11D-EM07	EM07	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
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-11I	10/10/2022	U4-MW-11I-EM02	EM02	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
U4-MW-11I	10/31/2022	U4-MW-11I-EM03	EM03	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	583.0	1.35
U4-MW-11I	12/6/2022	U4-MW-11I-EM04	EM04	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
U4-MW-11I	3/16/2023	U4-MW-11I-EM07	EM07	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
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-12D	10/12/2022	U4-MW-12D-EM02	EM02	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	584.9 **	5.99
U4-MW-12D	11/2/2022	U4-MW-12D-EM03	EM03	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	584.6 **	3.70
U4-MW-12D	12/7/2022	U4-MW-12D-EM04	EM04	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	587.0 **	0.322
U4-MW-12D	3/14/2023	U4-MW-12D-EM07	EM07	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	586.4 **	0.313
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-12I	10/12/2022	U4-MW-12I-EM02	EM02	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	586.4 **	3.73
U4-MW-12I	11/2/2022	U4-MW-12I-EM03	EM03	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	585.4 **	1.58
U4-MW-12I	12/7/2022	U4-MW-12I-EM04	EM04	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
U4-MW-12I	3/13/2023	U4-MW-12I-EM07	EM07	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
U4-MW-13D	4/14/2022	U4-MW-13D-BL02	BL02	---	---	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)				Sulforhodamine B (SRB)			
				Charcoal		Groundwater		Charcoal		Groundwater		Charcoal		Groundwater		Charcoal		Groundwater	
				Peaks(nm)	Conc.(ppb)	Peaks(nm)	Conc.(ppb)	Peaks(nm)	Conc.(ppb)	Peaks(nm)	Conc.(ppb)	Peaks(nm)	Conc.(ppb)	Peaks(nm)	Conc.(ppb)	Peaks(nm)	Conc.(ppb)	Peaks(nm)	Conc.(ppb)
U4-MW-13D	9/28/2022	U4-MW-13D-EM01	EM01	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	586.2 **	12.9
U4-MW-13D	10/11/2022	U4-MW-13D-EM02	EM02	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	584.6 **	3.87
U4-MW-13D	11/3/2022	U4-MW-13D-EM03	EM03	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	583.4	0.224
U4-MW-13D	12/7/2022	U4-MW-13D-EM04	EM04	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	586.8 **	0.764
U4-MW-13D	3/17/2023	U4-MW-13D-EM07	EM07	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	585.2 **	1.69
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-13I	10/10/2022	U4-MW-13I-EM02	EM02	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	586.6 **	4.67
U4-MW-13I	11/3/2022	U4-MW-13I-EM03	EM03	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	586.2 **	1.86
U4-MW-13I	12/6/2022	U4-MW-13I-EM04	EM04	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
U4-MW-13I	3/16/2023	U4-MW-13I-EM07	EM07	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
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-14D	10/13/2022	U4-MW-14D-EM02	EM02	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
U4-MW-14D	11/3/2022	U4-MW-14D-EM03	EM03	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
U4-MW-14D	12/6/2022	U4-MW-14D-EM04	EM04	ND	ND	ND	ND	515.4	1.40	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
U4-MW-14D	3/16/2023	U4-MW-14D-EM07	EM07	ND	ND	ND	ND	515.0	60.7	507.8	0.371	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-14I	10/13/2022	U4-MW-14I-EM02	EM02	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
U4-MW-14I	11/3/2022	U4-MW-14I-EM03	EM03	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
U4-MW-14I	12/6/2022	U4-MW-14I-EM02	EM02	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
U4-MW-14I	3/16/2023	U4-MW-14I-EM07	EM07	ND	ND	ND	ND	515.4	21.5	508.5	0.162	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-15D	10/12/2022	U4-MW-15D-EM02	EM02	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
U4-MW-15D	11/3/2022	U4-MW-15D-EM03	EM03	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
U4-MW-15D	12/5/2022	U4-MW-15D-EM04	EM04	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
U4-MW-15D	3/20/2023	U4-MW-15D-EM07	EM07	ND	ND	ND	ND	514.8	0.413	ND	ND	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-15DD	10/13/2022	U4-MW-15DD-EM02	EM02	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
U4-MW-15DD	11/3/2022	U4-MW-15DD-EM03	EM03	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
U4-MW-15DD	12/5/2022	U4-MW-15DD-EM04	EM04	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
U4-MW-15DD	3/15/2023	U4-MW-15DD-EM07	EM07	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-15I	10/12/2022	U4-MW-15I-EM02	EM02	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
U4-MW-15I	11/3/2022	U4-MW-15I-EM03	EM03	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
U4-MW-15I	12/5/2022	U4-MW-15I-EM04	EM04	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
U4-MW-15I	3/17/2023	U4-MW-15I-EM07	EM07	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-15S	10/13/2022	U4-MW-15S-EM02	EM02	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
U4-MW-15S	11/3/2022	U4-MW-15S-EM03	EM03	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
U4-MW-15S	12/5/2022	U4-MW-15S-EM04	EM04	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
U4-MW-15S	3/13/2023	U4-MW-15S-EM07	EM07	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	---	---

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

Location	Sample Date	Sample ID	Event	Eosine				Fluorescein				Rhodamine WT (RWT)				Sulforhodamine B (SRB)			
				Charcoal		Groundwater		Charcoal		Groundwater		Charcoal		Groundwater		Charcoal		Groundwater	
				Peaks(nm)	Conc.(ppb)	Peaks(nm)	Conc.(ppb)	Peaks(nm)	Conc.(ppb)	Peaks(nm)	Conc.(ppb)	Peaks(nm)	Conc.(ppb)	Peaks(nm)	Conc.(ppb)	Peaks(nm)	Conc.(ppb)	Peaks(nm)	Conc.(ppb)
U4-MW-16D	10/13/2022	U4-MW-16D-EM02	EM02	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
U4-MW-16D	11/3/2022	U4-MW-16D-EM03	EM03	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
U4-MW-16D	12/5/2022	U4-MW-16D-EM04	EM04	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
U4-MW-16D	3/14/2023	U4-MW-16D-EM07	EM07	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-16DD	10/13/2022	U4-MW-16DD-EM02	EM02	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
U4-MW-16DD	11/3/2022	U4-MW-16DD-EM03	EM03	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
U4-MW-16DD	12/5/2022	U4-MW-16DD-EM04	EM04	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
U4-MW-16DD	3/15/2023	U4-MW-16DD-EM07	EM07	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-16I	10/13/2022	U4-MW-16I-EM02	EM02	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
U4-MW-16I	11/3/2022	U4-MW-16I-EM03	EM03	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
U4-MW-16I	12/5/2022	U4-MW-16I-EM04	EM04	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
U4-MW-16I	3/13/2023	U4-MW-16I-EM07	EM07	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	---	---
U4-MW-16S	10/13/2022	U4-MW-16S-EM02	EM02	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
U4-MW-16S	11/3/2022	U4-MW-16S-EM03	EM03	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
U4-MW-16S	12/6/2022	U4-MW-16S-EM04	EM04	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
U4-MW-16S	3/15/2023	U4-MW-16S-EM07	EM07	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
U4-SLMW	10/18/2022	SLMW-20221018	EM02	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
U4-T3	12/6/2022	U4-T3-EM04	EM04	---	---	ND	ND	---	---	506.9	1.08	---	---	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.

(1) = 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 because dye is present in the corresponding charcoal sampler.

ppb parts per billion

nm nanometers