ERM

One Beacon Street
5th Floor
Boston, Massachusetts
02108

Telephone: +1 617 646 7800
Fax: +1 617 267 6447

www.erm.com

Memo

To	Jamie Schwartz, USEPA
From	Alice Sandzén
Date	11 April 2023
Reference	Revised OU-3 RI/FS Work Plan Addendum
Subject	Addition of Monitoring Wells

Dear Jamie,

ERM Consulting & Engineering, Inc. (ERM), on behalf of the OU-3 Respondents, has prepared this revised Work Plan Addendum to the *OU-3 Remedial Investigation/ Feasibility Study Work Plan* and associated planning documents to install step-in/step-out wells. Additional details about these changes to the planning documents are described below.

1. STEP-IN/STEP-OUT WELL INSTALLATION

Additional monitoring wells will be installed to support horizontal and vertical delineation of contaminants of potential concern (COPCs) in groundwater. Maps of the proposed new well locations are attached as Figures 1a through 1c. Actual locations will depend upon receipt of access for well installation. Additional information about the current distribution of COPCs in groundwater at concentrations above screening levels, the purpose of each new location, and the status of legal access to the off-Site properties is provided below.

1.1 Off-Site Distribution of COPCs Above Screening Levels

Off-Site monitoring wells MW-402, MW-406, MW-500, MW-501, MW-502, MW-503, and MW-504 were sampled for the first time in third quarter (Q3) 2022. A summary of COPCs that were detected at concentrations exceeding United States Environmental Protection Agency (USEPA) regional screening levels (RSLs) and/or maximum contaminant levels (MCLs) in off-Site wells is provided in attached Table 1[1]. A subset of the COPCs that were detected in groundwater samples from one or more off-Site monitoring wells at concentrations above MCLs are summarized in Table 1-1 below[2], along with 1,4-dioxane, which does not have an MCL, but is compared to the RSL instead.

[1] There are certain constituents where the method detection limit exceeds the RSL, as noted in the USEPA-approved Quality Assurance Project Plan. Attached Table 1 only includes constituents that were detected above the method detection limit at concentrations above RSLs in one or more off-Site monitoring well sample.

[2] Benzo(a)pyrene was detected above the RSL in MW-501-P1, MW-501-P2, and MW-501-P3. Other PAHs were detected at similar concentration levels in the MW-501 samples and other samples that were run in the same laboratory analytical batch. The PAH detections are suspected to be anomalous and were therefore not included in the summary table; see Section 3.7.1 of the 2022 Annual Report for additional details about these detections.

Table 1-1: Summary of COPCs Detected at Concentrations Above MCLs (and the RSL for 1,4-Dioxane) In Off-Site Monitoring Well Samples

Constituent	Screening Level	Number of off-Site monitoring well screen locations with a detection above the screening level	Maximum detected concentration at an off-Site well (well ID)
1,4-dioxane	0.46 µg/L (RSL)	16	235 ug/L (MW-406-P4)
Vinyl Chloride	2 µg/L (MCL)	2	16.1 ug/L (MW-501-P3)
Fluoride	4 µg/L (MCL)	5	8.2 µg/L (MW-502-P5)
Arsenic	10 µg/L (MCL)	2	10.9 ug/L (total) (MW-501-P1), 11.6 ug/L (dissolved) (MW-502-P5)
Radium-226/228	5 pCi/L (MCL)	2	5.54 pCi/L (dissolved) (MW-501-P3), 5.28 pCi/L (total) (MW-502-P4)

Note: The 1,4-dioxane detection limit in the USEPA-approved QAPP exceeds the RSL. Only detections of 1,4-dioxane above the RSL are summarized in the table above.

µg/L = micrograms per liter

pCi/L = picocuries per liter

At every monitoring well where a COPC was detected at a concentration greater than its MCL, 1,4-dioxane was also detected at a concentration greater than its RSL. Because 1,4-dioxane is the most commonly detected COPC in off-Site monitoring well groundwater samples, the distribution of 1,4-dioxane was used to determine the need for additional well locations. The distribution of 1,4-dioxane in off-Site wells sampled in Q3 2022 is shown on attached Figure 1a (Upper Alluvium), Figure 1b (Middle/Lower Alluvium) and Figure 1c (St. Louis/Salem Formations) along with the proposed well locations. Potentiometric surface maps and a discussion of groundwater flow at the Site were provided in the 2022 Annual Report submitted to USEPA on 1 March 2023.

1.2 Single-Screen Bedrock Wells

ERM proposes to install three single-screen bedrock wells adjacent to existing alluvium multi-level wells MW-402, MW-501, and MW-503. The bedrock wells will be screened in the Salem Formation. These additional bedrock wells will support the evaluation of bedrock groundwater flow and will support delineation of COPC impacts in bedrock, as described in Table 1-2 below. Single-screen bedrock wells will be installed following the methods described in the Field Sampling Plan, as amended by various Technical Memoranda.

Table 1-2: Additional Single-Screen Bedrock Wells

Well ID	Purpose
MW-402-P4	Supports horizontal delineation of COPCs detected at concentrations above screening levels in the groundwater sample from MW-406-P4 and evaluation of the potential for other contributing sources.
MW-501-P4	Supports vertical delineation of COPCs detected at concentrations above screening levels in the groundwater sample from MW-501-P3.

MW-503-P4	Supports horizontal delineation of COPCs detected at concentrations above screening levels in the groundwater sample from MW-406-P4

1.3 Multi-Level Alluvium Wells

ERM will install four, multi-level, step-in/step-out monitoring wells that will each have three screens: one screen in each of the Upper, Middle, and Lower Alluvium. In accordance with the RI/FS Work Plan, step-in wells are located between two existing wells, reducing the spacing between wells within a transect, and step-out wells are located beyond an outermost well in a transect. The additional multi-level monitoring wells will support the evaluation of horizontal and vertical hydraulic gradients in alluvium and will support delineation of COPCs in off-Site groundwater. The type and purpose of each location are described in Table 1-3 below.

Step-in and step-out wells will be installed following the methods described in the Field Sampling Plan, as amended. WATERLOO APS™ screening samples will not be collected because the results from the WATERLOO APS™ boring advanced at the off-Site MW-501 location demonstrated that 1,4-dioxane was detected consistently throughout the saturated alluvium (see Attachment A). ERM will interpret the geophysical logging data and will select well screen intervals in accordance with the criteria in the Field Sampling Plan. Well screen intervals will be generally consistent with the well screens installed at the MW-501 location.

Step-in and step-out wells will be constructed as multi-level Water FLUTe™ wells and the well screen IDs will follow the location ID dash “P1” through “P3” nomenclature.

Table 1-3: Step-In and Step-Out Monitoring Wells

Location ID	Well Type	Purpose
MW-506	Step-In Well	Reduces the spacing between MW-500 and MW-501
MW-507	Step-Out Well	Supports horizontal delineation of COPCs detected at concentrations above screening levels in groundwater samples collected from MW-501 and MW-502
MW-508	Step-Out Well	Supports horizontal delineation of COPCs detected at concentrations above screening levels in groundwater samples collected from MW-501 and MW-502
MW-509	Step-Out Well	Supports horizontal delineation of COPCs detected at concentrations above screening levels in groundwater samples collected from MW-501 and MW-502

1.4 Access And Schedule

ERM intends to begin field work associated with this Addendum as soon as practical, following USEPA approval of the scope and acquisition of legal access to the off-Site locations. The access status for each location is described in Table 1-4 below.

Table 1-4: Access Status for Additional Off-Site Monitoring Wells

Location/Well ID	Access Plan
MW-402-P4	Access approved
MW-501-P4	Access approved

MW-503-P4	Access approved
MW-506	Access agreement with property owner for signature
MW-507	Access agreement with property owner for signature, additional access outreach in progress.
MW-508	Access approved
MW-509	Verbal approval; access agreement in progress

Note: Following installation of MW-509, PZ-704 will be properly abandoned; groundwater elevation data from PZ-704 will be replaced by groundwater elevation data from MW-509-P1.

Following USEPA's approval of this Addendum and acquisition of access to off-Site properties, ERM will provide updated FSP Figures 3-2 and 3-3 documenting the final locations of the monitoring wells and an updated field schedule (FSP Figure 8-1). In the interim, ERM, on behalf of the OU-3 Respondents, will continue to provide bi-weekly access status updates to USEPA via email and will engage USEPA where appropriate to support acquisition of off-Site access. If access is not granted to all well locations, the existing well network will be assessed to determine the need for additional wells.

Please contact me at (603) 667-0682 if you have any questions.

Sincerely,

Alice Sandzén

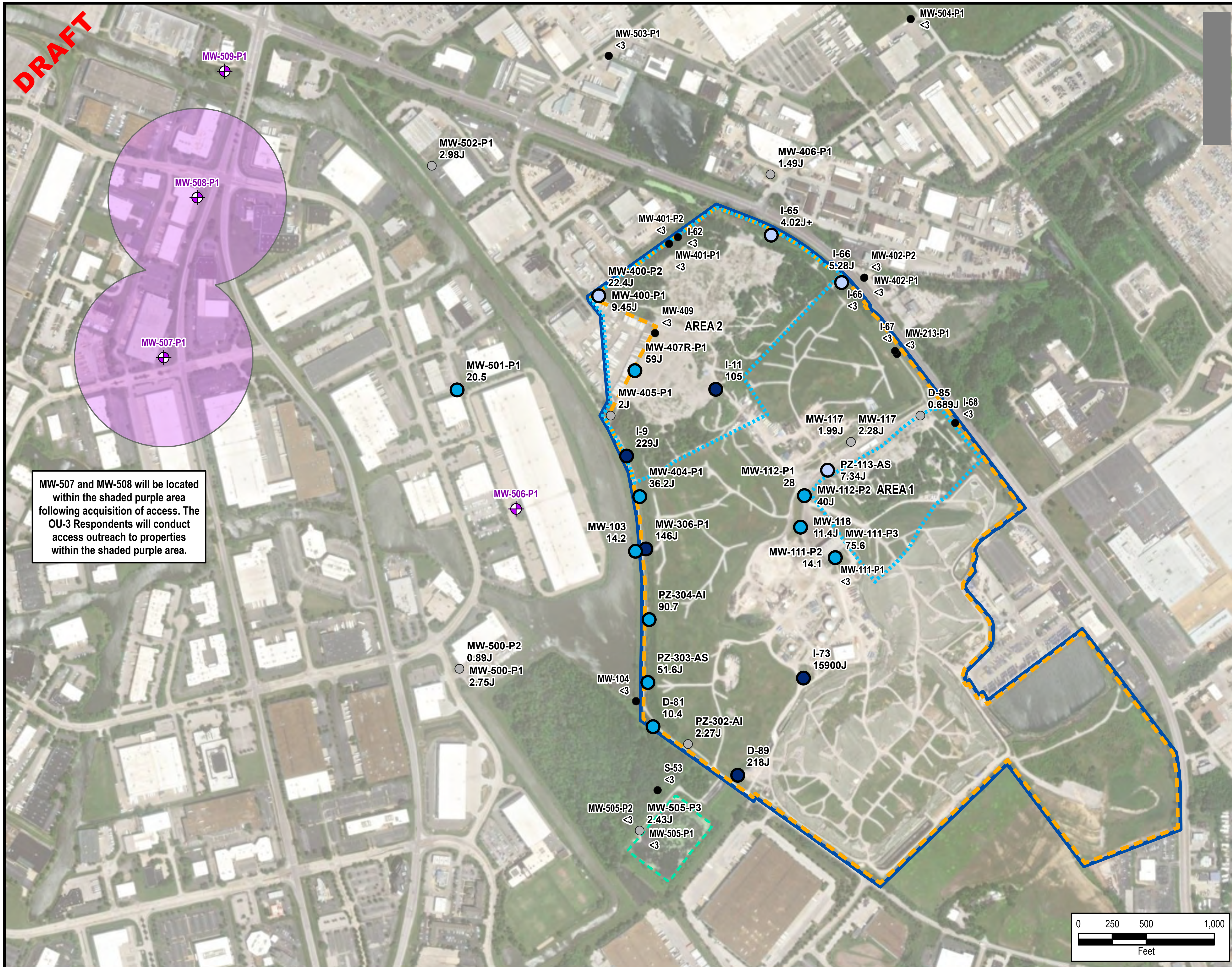
Alice Sandzén
Project Manager

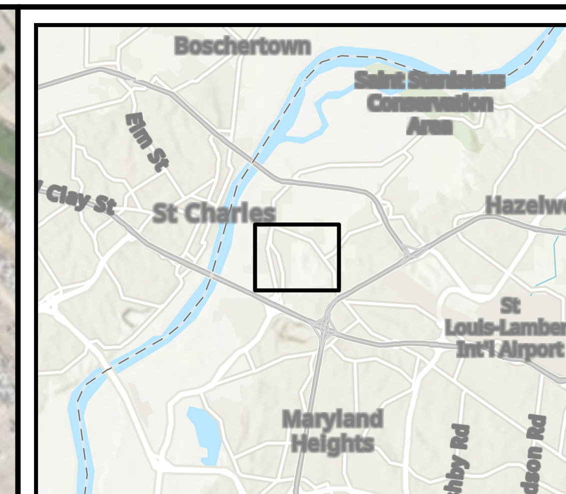
Encl.
Figure 1a—Well Locations and Q3 2022 1,4-Dioxane Results in Groundwater (Upper Alluvium)
Figure 1b—Well Locations and Q3 2022 1,4-Dioxane Results in Groundwater (Middle/Lower Alluvium)
Figure 1c—Well Locations and Q3 2022 1,4-Dioxane Results in Groundwater (St. Louis/Salem Formations)
Table 1—Summary of Screening Level Exceedances in Groundwater from Off-Site Monitoring Well Samples
Attachment A—Combined Log for MW-501

Cc:
TJ Adkins, USEPA Region 7
Chris Jump, USEPA Region 7
Tom Mahler, USEPA Region 7
Alyse Stoy, USEPA Region 7
James Curry, USEPA Region 7
Isabel Villaneda-van Vloten, USEPA Region 7
Ryan Seabaugh, Missouri Department of Natural Resources
Scott Sklenar, Constellation Energy Corporation
Victoria Warren, On behalf of Bridgeton Landfill, LLC
Dana Sincox, Bridgeton Landfill, LLC

Matt Stewart, Bridgeton Landfill, LCC
Darina Castillo, DOE-LM
Ralph Golia, AMO Environmental Decisions
Paul Rosasco, EMSI Denver
Ally Cunningham, Lathrop GPM LLP
Cynthia Teel, Lathrop GPM LLP
Bill Beck, Lathrop GPM LLP
Stephanie Feingold, Morgan, Lewis & Bockius LLP
Steven Jawetz, Beveridge & Diamond PC
Allyn Stern, Beveridge & Diamond PC
John Cruden, Beveridge & Diamond PC
Steven Miller, U.S. Department of Energy
Philip Dupre, U.S. Department of Justice
Dan Feezor, Feezor Engineering
Jonathan Wilkinson, Feezor Engineering

FIGURES 1A, 1B, AND 1C – WELL LOCATIONS AND Q3 2022 1,4-DIOXANE RESULTS IN GROUNDWATER





Legend

- Proposed Step-In/Step-Out Multi-Level Alluvium Well (approximate)

1,4-Dioxane Conentration (ug/L)

- <10
- 10-100
- >100
- Concentration Estimated Below RL
- Not Detected
- OU-1
- Former Leachate Lagoon
- Landfill Property Boundary
- Superfund Site Boundary

NOTES:

1. The USEPA regional screening level (RSL) for 1,4-dioxane is 0.46 ug/L
2. ug/L = Micrograms per Liter
3. RL = Reporting Limit
4. Where locations have multiple ports or symbols overlap, the highest value is shown on top.
5. J = Estimated concentration.
   J+ = The result is an estimated concentration, but may be biased high.

Figure 1a: Well Locations and Q3 2022 1,4 Dioxane Results in Groundwater Upper Alluvium

West Lake Landfill OU-3
Bridgeton, Missouri

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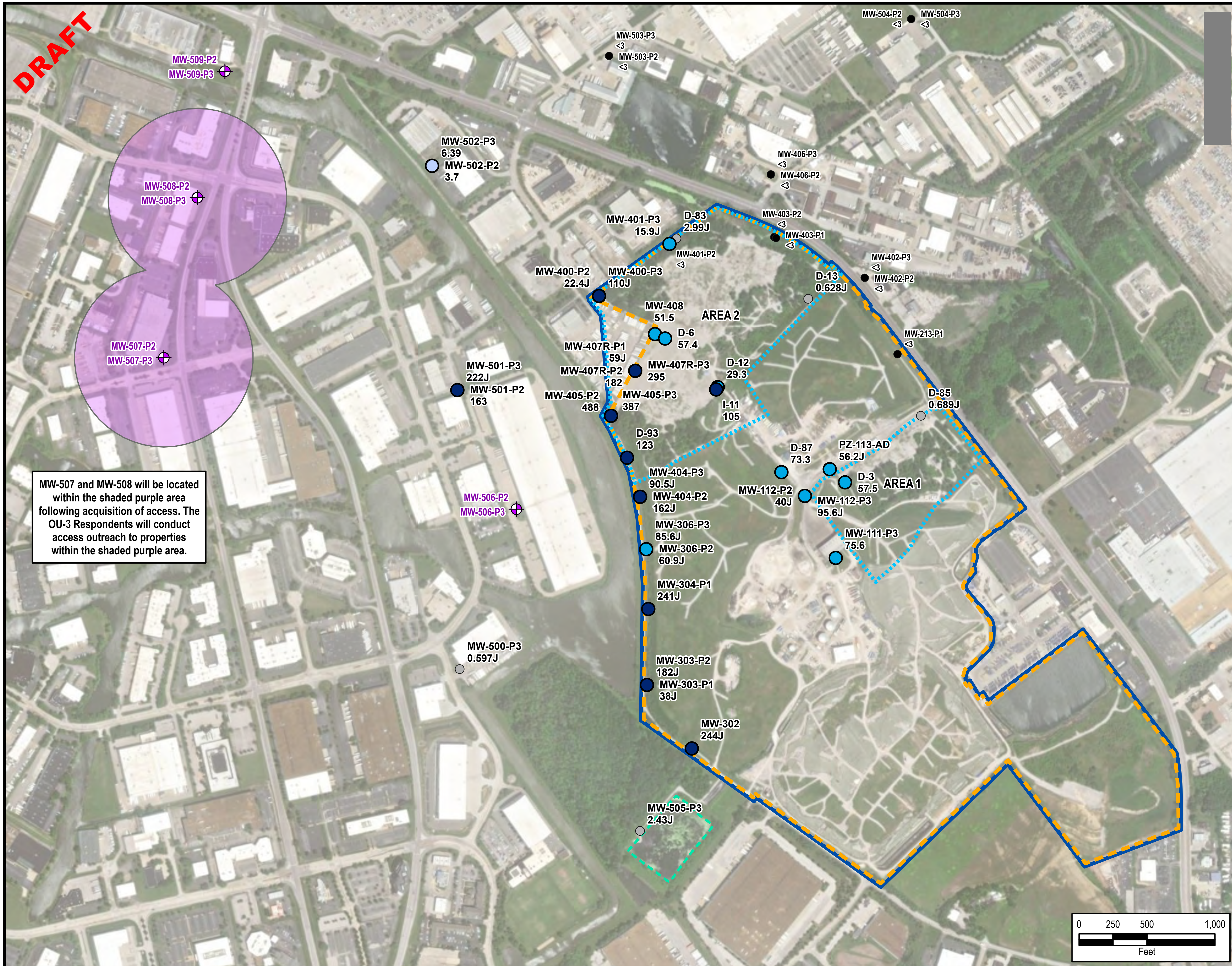

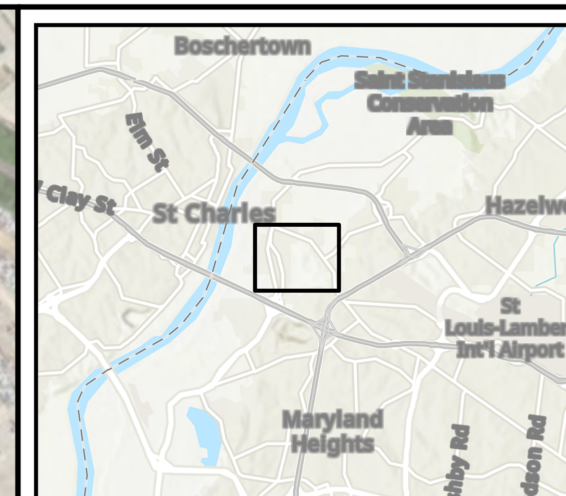

Legend

- Proposed Step-In/Step-Out Multi-Level Alluvium Well (approximate)

1,4-Dioxane Contentration (ug/L)

- <10
- 10-100
- >100
- Concentration Estimated Below RL
- Not Detected
- OU-1
- Former Leachate Lagoon
- Landfill Property Boundary
- Superfund Site Boundary

NOTES:

1. The USEPA regional screening level (RSL) for 1,4-dioxane is 0.46 ug/L
2. ug/L = Micrograms per Liter
3. RL = Reporting Limit
4. Where locations have multiple ports or symbols overlap, the highest value is shown on top.
5. J = Estimated concentration.
   J+ = The result is an estimated concentration, but may be biased high.

Figure 1b: Well Locations and Q3 2022 1,4 Dioxane Results in Groundwater Middle/Lower Alluvium

West Lake Landfill OU-3

Bridgeton, Missouri

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DRAFT

MW-503-P4

MW-502-P5
10
MW-502-P4
11.7

MW-406-P5
27.3J
MW-406-P4
235

MW-400-P5
9.42J
MW-400-P4
24.7J

AREA 2

MW-402-P4

MW-501-P4

PZ-115-SS
17.2

MW-113
5.2

PZ-113-SS
<3

PZ-208-SS
<3

MW-404-P5
72.2
MW-404-P4
84.9J

AREA 1

PZ-100-SS
<3

PZ-100-SD
<3

PZ-111-SS
62.7

PZ-111-SD
<3

PZ-101-SS
53.3

PZ-200-SS
<3

MW-304-P3
34.2
MW-304-P2
152

PZ-206-SS
33.5

PZ-109-SS
<3

PZ-102R-SS
0.84J

PZ-102-SS
3.93J

MW-500-P4
0.731J
MW-500-P5
2.28J

PZ-201A-SS
1.67J

PZ-205-SS
26.3

PZ-103-SS
617

PZ-212-SD
<3

MW-205
7.43

PZ-202-SS
903

PZ-212-SS
<3

PZ-107-SS
178J

PZ-209-SD
1.24J

PZ-104-SD
43

PZ-104-SS
<3

PZ-209-SS
<3

PZ-210-SS
189

PZ-106-SS
18J

PZ-211-SD
20.4

PZ-203-SS
55.4

PZ-106-SD
<3

PZ-106-SD
11.1J

MO-1-SDR
<3

PZ-116-SS
<3

MO-3-SDR
117J

MO-2-SD
<3

PZ-204A-SS
193

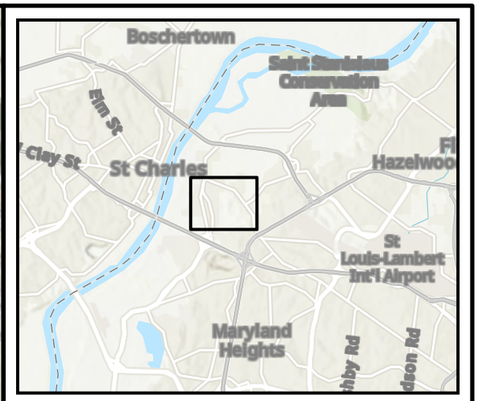
MW-1204
108

PZ-105-SS
54

MW-605-P2
<3

MW-605-P1
1.58J

0 250 500 1,000
Feet



Legend

- Proposed Single-Screen Bedrock Well (approximate)

1,4-Dioxane Conentration (ug/L)

- <10
- 10-100
- >100
- Concentration Estimated Below RL
- Not Detected
- OU-1
- Former Leachate Lagoon
- Landfill Property Boundary
- Superfund Site Boundary

NOTES:

1. The USEPA regional screening level (RSL) for 1,4-dioxane is 0.46 ug/L
2. ug/L = Micrograms per Liter
3. RL = Reporting Limit
4. Where locations have multiple ports or symbols overlap, the highest value is shown on top.
5. J = Estimated concentration.

Figure 1c: Well Locations and Q3 2022 1,4 Dioxane Results in Groundwater St. Louis/Salem Formations

West Lake Landfill OU-3
Bridgeton, Missouri

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TABLE 1 – SUMMARY OF SCREENING LEVEL EXCEEDANCES IN GROUNDWATER FROM OFF-SITE MONITORING WELL SAMPLES

Table 1 - Summary of Screening Level Exceedances in Groundwater from off-Site Monitoring Well Samples
West Lake OU-3

				Sample Location	MW-402-P1	MW-402-P2	MW-402-P3	MW-406-P1	MW-406-P2	MW-406-P3	MW-406-P4	MW-406-P5
				Sample Depth (ft BGS)	20-30	50-60	80-90	38-48	68-78	98-108	143-153	163-173
				Sample Date	08-03-2022	08-03-2022	08-03-2022	08-09-2022	08-09-2022	08-09-2022	08-09-2022	08-09-2022
				Sample Type	N	N	N	N	N	N	N	N
Analyte	**Analytic Method**	**Unit**	**USEPA Primary MCL**	**USEPA RSL TAPWATER THQ0.1**								
General Chemistry Parameters												
Fluoride	SW9056A	mg/L	4	0.08	**0.33**	**0.58**	**0.32**	**0.42**	**0.27**	**0.32**	**5.9**	**1.9**
Metals, Dissolved												
Arsenic	SW6020	ug/L	10	0.052	**5.6**	**0.80 J**	< 1.0 U	**6.0**	**0.21 J**	**0.25 J**	**1.1**	**4.0**
Manganese	SW6020	ug/L	NE	43	**2,850**	**108**	**265**	**488**	**553**	**310**	**1,540**	**101**
Uranium	SW6020	ug/L	30	0.4	**10.9**	**0.28 J**	**0.11 J**	**0.44 J**	**0.079 J**	**0.018 J**	**0.11 J**	**0.12 J**
Barium	SW6010B	ug/L	2,000	380	**335**	**134**	**299**	**478**	**520**	**733**	**147**	**255**
Boron	SW6010B	ug/L	NE	400	**239**	**65.9 J**	**66.6 J**	**153**	**209**	**162**	**328**	**160**
Cobalt	SW6010B	ug/L	NE	0.6	**1.9 J**	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U
Iron	SW6010B	ug/L	NE	1,400	**11,400**	**540**	**3,550**	**3,290**	**11,000**	**8,290**	**19,800**	**1,110**
Lithium	SW6010B	ug/L	NE	4	**73.5**	**25.8**	**13.1 J**	**39.6**	**33.2**	**21.8**	**89.1**	**76.6**
Molybdenum	SW6010B	ug/L	NE	10	**16.6**	**19.9**	**4.6 J**	**3.4 J**	**2.8 J**	< 10.0 U	< 10.0 U	< 10.0 U
Strontium	SW6010B	ug/L	NE	1,200	**728**	**260**	**280**	**657**	**539**	**339**	**2,440**	**1,360**
Metals, Total												
Arsenic	SW6020	ug/L	10	0.052	**5.3**	**0.81 J**	< 1.0 U	**6.2**	**0.23 J**	**0.24 J**	**1.6**	**4.7**
Manganese	SW6020	ug/L	NE	43	**2,920**	**104**	**264**	**469**	**563**	**285**	**1,210**	**102**
Uranium	SW6020	ug/L	30	0.4	**11.7**	**0.28 J**	**0.12 J**	**0.49 J**	**0.074 J**	**0.020 J**	**0.10 J**	**0.12 J**
Barium	SW6010B	ug/L	2,000	380	**340**	**128**	**285**	**444**	**508**	**714**	**162**	**243**
Boron	SW6010B	ug/L	NE	400	**232**	**63.2 J**	**64.2 J**	**149**	**212**	**176**	**287**	**156**
Cobalt	SW6010B	ug/L	NE	0.6	**1.6 J**	< 5.0 U	**0.51 J**	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U
Iron	SW6010B	ug/L	NE	1,400	**11,800**	**533**	**3,350**	**2,950**	**11,300**	**7,330**	**15,400**	**1,300**
Lithium	SW6010B	ug/L	NE	4	**70.2**	**25.7**	**13.5 J**	**43.0**	**38.3**	**26.6**	**85.5**	**74.9**
Molybdenum	SW6010B	ug/L	NE	10	**16.0**	**19.0**	**3.8 J**	< 10.0 U	< 10.0 U	< 10.0 U	< 10.0 U	< 10.0 U
Strontium	SW6010B	ug/L	NE	1,200	**745**	**244**	**265**	**623**	**539**	**373**	**2,140**	**1,280**
Radiochemistry, Dissolved												
Radium-226	E903.1	pCi/L	5	NE	**0.658 ± 0.489 (0.644)**	**0.237 ± 0.272 (0.161)**	**0.866 ± 0.529 (0.650)**	**0.849 ± 0.472 (0.177)**	**0.636 ± 0.472 (0.591)**	0.188 ± 0.506 (0.940) U	**2.03 ± 0.749 (0.540)**	**0.864 ± 0.523 (0.573)**
Radium-228	E904.0	pCi/L	5	NE	**0.919 ± 0.370 (0.530) J+**	0.224 ± 0.359 (0.778) U	0.517 ± 0.336 (0.631) U	0.575 ± 0.394 (0.748) UJ	**1.05 ± 0.440 (0.670) J-**	**1.12 ± 0.486 (0.783) J-**	**1.13 ± 0.504 (0.831) J-**	0.489 ± 0.377 (0.737) UJ
Radium-226/228	TOTRADIUMCALCULATION	pCi/L	5	NE	**1.58 ± 0.859 (1.17) J+**	0.461 ± 0.631 (0.939) U	**1.38 ± 0.865 (1.28)**	**1.42 ± 0.866 (0.925) J-**	**1.69 ± 0.912 (1.26) J-**	1.31 ± 0.992 (1.72) UJ	**3.16 ± 1.25 (1.37) J-**	**1.35 ± 0.900 (1.31) J-**
Radiochemistry, Total												
Radium-226	E903.1	pCi/L	5	NE	**1.49 ± 0.770 (0.853)**	0.0542 ± 0.383 (0.764) U	0.553 ± 0.557 (0.878) U	**0.946 ± 0.588 (0.580)**	**0.788 ± 0.543 (0.580)**	**1.04 ± 0.580 (0.217)**	**1.30 ± 0.694 (0.792)**	**1.94 ± 0.765 (0.676)**
Radium-228	E904.0	pCi/L	5	NE	0.644 ± 0.396 (0.718) U	**0.748 ± 0.383 (0.632) J+**	0.367 ± 0.475 (1.01) U	0.384 ± 0.535 (1.14) UJ	**1.25 ± 0.600 (1.00) J**	0.833 ± 0.621 (1.21) UJ	0.541 ± 0.599 (1.25) UJ	**1.55 ± 0.721 (1.22) J**
Radium-226/228	TOTRADIUMCALCULATION	pCi/L	5	NE	**2.13 ± 1.17 (1.57)**	0.802 ± 0.766 (1.40) U	0.920 ± 1.03 (1.89) U	1.33 ± 1.12 (1.72) UJ	**2.04 ± 1.14 (1.58) J**	**1.87 ± 1.20 (1.43) J-**	1.84 ± 1.29 (2.04) UJ	**3.49 ± 1.49 (1.90) J**
Semivolatile Organic Compounds – PAHs, Total												
Benzo(a)anthracene	SW8270C-SIM	ug/L	NE	0.03	< 0.10 U	< 0.10 U	< 0.10 U	< 0.10 U	< 0.10 U	< 0.10 U	< 0.10 U	< 0.10 U
Benzo(a)pyrene	SW8270C-SIM	ug/L	0.2	0.025	< 0.10 U	< 0.10 U	< 0.10 U	< 0.10 U	< 0.10 U	< 0.10 U	< 0.10 U	< 0.10 U
Benzo(b)fluoranthene	SW8270C-SIM	ug/L	NE	0.25	< 0.10 U	< 0.10 U	< 0.10 U	< 0.10 U	< 0.10 U	< 0.10 U	< 0.10 U	< 0.10 U
Dibenzo(a,h)anthracene	SW8270C-SIM	ug/L	NE	0.025	< 0.10 U	< 0.10 U	< 0.10 U	< 0.10 U	< 0.10 U	< 0.10 U	< 0.10 U	< 0.10 U
Volatile Organic Compounds, Total												
1,4-Dioxane	SW8260B_SIM	ug/L	NE	0.46	< 3.00 UJ	< 3.00 UJ	< 3.00 UJ	**1.49 J**	< 3.00 UJ	< 3.00 UJ	**235**	**27.3 J**
cis-1,2-Dichloroethene	SW8260C	ug/L	70	3.6	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Vinyl chloride	SW8260C	ug/L	2	0.019	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U

Notes:
ft BGS = feet below ground surface
ug/L = micrograms per liter
mg/L = milligrams per liter
pCi/L = picoCuries per liter
USEPA Primary MCL = USEPA National Primary Drinking Water Regulation (May 2009).
MCLs are for combined radium-
226-228 (5 pCi/L) and gross alpha
excluding uranium (15 pCi/L).
USEPA RSL TAPWATER THQ0.1 = RSL TAPWATER (TR=1E-06, THQ=0.1) Nov 2021, adapted for West Lake QAPP
Radiochemistry data is shown in the following format: activity ± total uncertainty (minimum detectable concentration) qualifiers
Bold = Detected
Blue Font = Exceeds USEPA Primary MCL
Orange Shaded = Detected value exceeds USEPA RSL TAPWATER THQ0.1
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NE = Not Established
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Qualifier Definition
J = Estimated concentration.
J+ = The result is an estimated concentration, but may be biased high.
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U = The analyte was analyzed for but was not detected at or above the referenced reporting limit.
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Table 1 - Summary of Screening Level Exceedances in Groundwater from off-Site Monitoring Well Samples
West Lake OU-3

Analyte	Analytic Method	Unit	USEPA Primary MCL	USEPA RSL TAPWATER THQ0.1	Sample Location / Sample Depth (ft BGS) / Sample Date / Sample Type: MW-500-P1 20.3-30.3 08-08-2022 N	MW-500-P2 60.3-70.3 08-08-2022 N	MW-500-P3 100.3-110.3 08-08-2022 N	MW-500-P4 135.3-145.3 08-08-2022 N	MW-500-P5 160.3-170.3 08-09-2022 N	MW-500-P5 160.3-170.3 08-10-2022 N	MW-501-P1 20.17-30.17 08-02-2022 N	MW-501-P2 75.17-85.17 08-02-2022 N	MW-501-P2 75.17-85.17 08-23-2022 N
General Chemistry Parameters													
Fluoride	SW9056A	mg/L	4	0.08	**0.54**	**0.27**	**0.23**	**0.40**	NA	**4.6**	**0.34**	**0.17**	NA
Metals, Dissolved													
Arsenic	SW6020	ug/L	10	0.052	**4.2**	**0.36 J**	**1.0**	**0.66 J**	**0.88 J**	NA	**11.5**	NA	**1.5**
Manganese	SW6020	ug/L	NE	43	**1,190**	**363**	**290**	**185**	**31.6**	NA	**4,570**	NA	**2,160**
Uranium	SW6020	ug/L	30	0.4	**5.3**	**0.25 J**	**0.11 J**	**0.29 J**	**0.41 J**	NA	**0.46 J**	NA	**0.36 J**
Barium	SW6010B	ug/L	2,000	380	**438**	**972**	**839**	**860**	**170**	NA	**617**	NA	**1,550**
Boron	SW6010B	ug/L	NE	400	**76.6 J**	**67.3 J**	**73.2 J**	**78.1 J**	**986**	NA	**113**	NA	**155**
Cobalt	SW6010B	ug/L	NE	0.6	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	NA	< 5.0 U	NA	**0.91 J**
Iron	SW6010B	ug/L	NE	1,400	**8,100**	**11,900**	**15,000**	**13,500**	**420**	NA	**45,700**	NA	**28,400**
Lithium	SW6010B	ug/L	NE	4	**49.0**	**38.7**	**25.0**	**33.1**	**147**	NA	**53.2**	NA	**33.4**
Molybdenum	SW6010B	ug/L	NE	10	**20.0**	< 10.0 U	< 10.0 U	< 10.0 U	< 10.0 U	NA	**8.5 J**	NA	< 10.0 U
Strontium	SW6010B	ug/L	NE	1,200	**858**	**905**	**799**	**940**	**4,780**	NA	**1,640**	NA	**1,480**
Metals, Total													
Arsenic	SW6020	ug/L	10	0.052	**3.1**	**0.38 J**	**0.82 J**	**0.67 J**	**0.85 J**	NA	**10.9**	NA	**1.4**
Manganese	SW6020	ug/L	NE	43	**1,170**	**358**	**301**	**175**	**31.7**	NA	**4,590**	NA	**2,110**
Uranium	SW6020	ug/L	30	0.4	**5.1**	**0.29 J**	**0.14 J**	**0.31 J**	**0.40 J**	NA	**0.51 J**	NA	**0.35 J**
Barium	SW6010B	ug/L	2,000	380	**458**	**1,110**	**827**	**824**	**166**	NA	**644**	NA	**1,520**
Boron	SW6010B	ug/L	NE	400	**73.2 J**	**62.7 J**	**61.9 J**	**78.9 J**	**968**	NA	**119**	NA	**134**
Cobalt	SW6010B	ug/L	NE	0.6	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	NA	**0.88 J**	NA	**0.84 J**
Iron	SW6010B	ug/L	NE	1,400	**8,700**	**12,900**	**15,100**	**13,900**	**520**	NA	**47,100**	NA	**28,600**
Lithium	SW6010B	ug/L	NE	4	**43.9**	**34.2**	**21.8**	**27.5**	**154**	NA	**56.8**	NA	**32.6**
Molybdenum	SW6010B	ug/L	NE	10	**22.0**	**2.8 J**	< 10.0 U	< 10.0 U	< 10.0 U	NA	**8.2 J**	NA	< 10.0 U
Strontium	SW6010B	ug/L	NE	1,200	**880**	**945**	**764**	**969**	**4,760**	NA	**1,640**	NA	**1,410**
Radiochemistry, Dissolved													
Radium-226	E903.1	pCi/L	5	NE	0.900 ± 0.686 (0.976) U	**0.641 ± 0.477 (0.628)**	0.899 ± 0.737 (1.10) U	**2.03 ± 0.923 (0.938)**	NA	**2.50 ± 1.07 (1.09)**	**1.06 ± 0.731 (0.998)**	**1.17 ± 0.545 (0.168)**	NA
Radium-228	E904.0	pCi/L	5	NE	**1.62 ± 0.606 (0.892)**	**1.08 ± 0.458 (0.690)**	**2.64 ± 0.730 (0.802)**	**2.52 ± 0.710 (0.777)**	NA	**0.881 ± 0.487 (0.875) J-**	**1.67 ± 0.574 (0.817)**	**2.79 ± 0.695 (0.605)**	NA
Radium-226/228	TOTRADIUMCALCULATION	pCi/L	5	NE	**2.52 ± 1.29 (1.87)**	**1.72 ± 0.935 (1.32)**	**3.54 ± 1.47 (1.90)**	**4.55 ± 1.63 (1.72)**	NA	**3.38 ± 1.56 (1.97) J-**	**2.73 ± 1.31 (1.82)**	**3.96 ± 1.24 (0.773)**	NA
Radiochemistry, Total													
Radium-226	E903.1	pCi/L	5	NE	0.524 ± 0.533 (0.806) U	**0.723 ± 0.430 (0.409) J-**	**1.15 ± 0.769 (0.989)**	0.925 ± 0.684 (0.926) U	NA	**2.72 ± 0.910 (0.618)**	**0.857 ± 0.380 (0.111)**	**1.49 ± 0.684 (0.770)**	NA
Radium-228	E904.0	pCi/L	5	NE	0.919 ± 0.539 (0.951) U	**1.67 ± 0.700 (1.10) J-**	**2.86 ± 0.922 (1.18)**	**2.58 ± 0.985 (1.50)**	NA	1.10 ± 0.631 (1.12) U	**0.848 ± 0.391 (0.651)**	**2.19 ± 0.581 (0.538)**	NA
Radium-226/228	TOTRADIUMCALCULATION	pCi/L	5	NE	1.44 ± 1.07 (1.76) U	**2.39 ± 1.13 (1.51) J-**	**4.01 ± 1.69 (2.17)**	**3.51 ± 1.67 (2.43)**	NA	**3.82 ± 1.54 (1.74)**	**1.71 ± 0.771 (0.762)**	**3.68 ± 1.27 (1.31)**	NA
Semivolatile Organic Compounds – PAHs, Total													
Benzo(a)anthracene	SW8270C-SIM	ug/L	NE	0.03	< 0.10 U	< 0.10 U	< 0.10 U	< 0.10 U	< 0.10 U	NA	**0.34**	**0.47**	NA
Benzo(a)pyrene	SW8270C-SIM	ug/L	0.2	0.025	< 0.10 U	< 0.10 U	< 0.10 U	< 0.10 U	< 0.10 U	NA	**0.48**	**0.68**	NA
Benzo(b)fluoranthene	SW8270C-SIM	ug/L	NE	0.25	< 0.10 U	< 0.10 U	< 0.10 U	< 0.10 U	< 0.10 U	NA	**0.24**	**0.35**	NA
Dibenzo(a,h)anthracene	SW8270C-SIM	ug/L	NE	0.025	< 0.10 U	< 0.10 U	< 0.10 U	< 0.10 U	< 0.10 U	NA	**0.14**	**0.20**	NA
Volatile Organic Compounds, Total													
1,4-Dioxane	SW8260B_SIM	ug/L	NE	0.46	**2.75 J**	**0.890 J**	**0.597 J**	**0.731 J**	**2.28 J**	NA	**20.5**	**163**	NA
cis-1,2-Dichloroethene	SW8260C	ug/L	70	3.6	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	NA	< 1.0 U	< 1.0 U	NA
Vinyl chloride	SW8260C	ug/L	2	0.019	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	NA	**0.57 J**	**2.6**	NA

Notes:
ft BGS = feet below ground surface
ug/L = micrograms per liter
mg/L = milligrams per liter
pCi/L = picoCuries per liter
USEPA Primary MCL = USEPA National Primary Drinking Water Regulation (May 2009).
MCLs are for combined radium-
226-228 (5 pCi/L) and gross alpha
excluding uranium (15 pCi/L).
USEPA RSL TAPWATER THQ0.1 = RSL TAPWATER (TR=1E-06, THQ=0.1) Nov 2021, adapted for West Lake QAPP
Radiochemistry data is shown in the following format: activity ± total uncertainty (minimum detectable concentration) qualifiers
Bold = Detected
Blue Font = Exceeds USEPA Primary MCL
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Table 1 - Summary of Screening Level Exceedances in Groundwater from off-Site Monitoring Well Samples
West Lake OU-3

Analyte	Analytic Method	Unit	USEPA Primary MCL	USEPA RSL TAPWATER THQ0.1	Sample Location: MW-501-P3 Sample Depth (ft BGS): 95.17-105.17 Sample Date: 08-02-2022 Sample Type: N	Sample Location: MW-502-P1 Sample Depth (ft BGS): 30-40 Sample Date: 08-10-2022 Sample Type: N	Sample Location: MW-502-P2 Sample Depth (ft BGS): 70-80 Sample Date: 08-10-2022 Sample Type: N	Sample Location: MW-502-P3 Sample Depth (ft BGS): 90-100 Sample Date: 08-10-2022 Sample Type: N	Sample Location: MW-502-P4 Sample Depth (ft BGS): 135-145 Sample Date: 08-10-2022 Sample Type: N	Sample Location: MW-502-P5 Sample Depth (ft BGS): 200-210 Sample Date: 08-17-2022 Sample Type: N	Sample Location: MW-502-P5 Sample Depth (ft BGS): 200-210 Sample Date: 08-18-2022 Sample Type: N	Sample Location: MW-502-P5 Sample Depth (ft BGS): 200-210 Sample Date: 08-19-2022 Sample Type: N
General Chemistry Parameters												
Fluoride	SW9056A	mg/L	4	0.08	**3.5**	**0.33**	**1.4**	**4.4**	**4.4**	NA	**8.2**	NA
Metals, Dissolved												
Arsenic	SW6020	ug/L	10	0.052	**2.3**	**6.7**	**0.83 J**	**0.77 J**	**5.2**	NA	NA	**11.6**
Manganese	SW6020	ug/L	NE	43	**607**	**819**	**395**	**192**	**136**	NA	NA	**44.5**
Uranium	SW6020	ug/L	30	0.4	**0.61 J**	**6.0**	**0.14 J**	**0.38 J**	**0.52 J**	NA	NA	**0.52 J**
Barium	SW6010B	ug/L	2,000	380	**399**	**463**	**808**	**623**	**246**	NA	NA	**105**
Boron	SW6010B	ug/L	NE	400	**589**	**85.2 J**	**287**	**354**	**386**	NA	NA	**1,910**
Cobalt	SW6010B	ug/L	NE	0.6	**1.7 J**	**0.52 J**	< 5.0 U	**0.54 J**	**0.57 J**	NA	NA	< 5.0 U
Iron	SW6010B	ug/L	NE	1,400	**20,600**	**5,590**	**9,660**	**10,300**	**5,110**	NA	NA	**818**
Lithium	SW6010B	ug/L	NE	4	**41.4**	**27.9**	**28.7**	**31.9**	**46.0**	NA	NA	**275**
Molybdenum	SW6010B	ug/L	NE	10	< 10.0 U	**6.5 J**	< 10.0 U	< 10.0 U	< 10.0 U	NA	NA	**8.2 J**
Strontium	SW6010B	ug/L	NE	1,200	**855**	**536**	**445**	**566**	**9,090**	NA	NA	**3,150**
Metals, Total												
Arsenic	SW6020	ug/L	10	0.052	**2.2**	**7.0**	**0.80 J**	**0.70 J**	**4.8**	NA	**10.1**	NA
Manganese	SW6020	ug/L	NE	43	**598**	**837**	**398**	**198**	**140**	NA	**59.6**	NA
Uranium	SW6020	ug/L	30	0.4	**0.62 J**	**6.3**	**0.13 J**	**0.35 J**	**0.56 J**	NA	**0.51 J**	NA
Barium	SW6010B	ug/L	2,000	380	**408**	**444**	**759**	**599**	**242**	NA	**165**	NA
Boron	SW6010B	ug/L	NE	400	**582**	**83.5 J**	**281**	**357**	**386**	NA	**1,740**	NA
Cobalt	SW6010B	ug/L	NE	0.6	**2.0 J**	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	NA	< 5.0 U	NA
Iron	SW6010B	ug/L	NE	1,400	**20,800**	**5,590**	**9,340**	**11,200**	**5,280**	NA	**2,410**	NA
Lithium	SW6010B	ug/L	NE	4	**44.5**	**27.2**	**25.8**	**28.2**	**40.7**	NA	**269**	NA
Molybdenum	SW6010B	ug/L	NE	10	< 10.0 U	**6.1 J**	< 10.0 U	< 10.0 U	**2.4 J**	NA	**7.9 J**	NA
Strontium	SW6010B	ug/L	NE	1,200	**852**	**511**	**422**	**528**	**8,580**	NA	**3,230**	NA
Radiochemistry, Dissolved												
Radium-226	E903.1	pCi/L	5	NE	**1.76 ± 0.835 (0.648)**	0.229 ± 0.581 (1.08) U	0.463 ± 0.483 (0.682) U	**1.71 ± 0.972 (1.18)**	**3.14 ± 1.07 (0.593)**	NA	NA	**1.28 ± 0.592 (0.182)**
Radium-228	E904.0	pCi/L	5	NE	**3.78 ± 0.894 (0.735)**	0.388 ± 0.448 (0.940) UJ	**1.31 ± 0.639 (1.10) J-**	**0.778 ± 0.435 (0.775) J-**	0.979 ± 0.550 (0.988) UJ	NA	NA	0.792 ± 0.657 (1.32) U
Radium-226/228	TOTRADIUMCALCULATION	pCi/L	5	NE	**5.54 ± 1.73 (1.38)**	0.617 ± 1.03 (2.02) UJ	1.77 ± 1.12 (1.78) UJ	**2.49 ± 1.41 (1.96) J-**	**4.12 ± 1.62 (1.58) J-**	NA	NA	**2.07 ± 1.25 (1.50)**
Radiochemistry, Total												
Radium-226	E903.1	pCi/L	5	NE	**1.61 ± 0.528 (0.107)**	**0.782 ± 0.511 (0.627)**	**0.897 ± 0.625 (0.815)**	**1.18 ± 0.621 (0.669)**	**3.26 ± 1.00 (0.828)**	**0.843 ± 0.627 (0.825) J-**	NA	NA
Radium-228	E904.0	pCi/L	5	NE	**3.63 ± 0.863 (0.723)**	1.01 ± 0.661 (1.26) U	0.927 ± 0.604 (1.14) U	0.976 ± 0.610 (1.14) U	**2.02 ± 0.808 (1.19)**	0.467 ± 0.422 (0.857) U	NA	NA
Radium-226/228	TOTRADIUMCALCULATION	pCi/L	5	NE	**5.24 ± 1.39 (0.830)**	1.79 ± 1.17 (1.89) U	1.82 ± 1.23 (1.96) U	**2.16 ± 1.23 (1.81)**	**5.28 ± 1.81 (2.02)**	1.31 ± 1.05 (1.68) UJ	NA	NA
Semivolatile Organic Compounds – PAHs, Total												
Benzo(a)anthracene	SW8270C-SIM	ug/L	NE	0.03	**0.53**	< 0.10 U	< 0.10 U	< 0.10 U	< 0.10 U	NA	< 0.10 U	NA
Benzo(a)pyrene	SW8270C-SIM	ug/L	0.2	0.025	**0.81**	< 0.10 U	< 0.10 U	< 0.10 U	< 0.10 U	NA	< 0.10 U	NA
Benzo(b)fluoranthene	SW8270C-SIM	ug/L	NE	0.25	**0.40**	< 0.10 U	< 0.10 U	< 0.10 U	< 0.10 U	NA	< 0.10 U	NA
Dibenzo(a,h)anthracene	SW8270C-SIM	ug/L	NE	0.025	**0.22**	< 0.10 U	< 0.10 U	< 0.10 U	< 0.10 U	NA	< 0.10 U	NA
Volatile Organic Compounds, Total												
1,4-Dioxane	SW8260B_SIM	ug/L	NE	0.46	**222 J**	**2.98 J**	**3.70**	**6.39**	**11.7**	**10.0**	NA	NA
cis-1,2-Dichloroethene	SW8260C	ug/L	70	3.6	**4.7**	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	NA	NA
Vinyl chloride	SW8260C	ug/L	2	0.019	**16.1**	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	NA	NA

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MCLs are for combined radium-
226-228 (5 pCi/L) and gross alpha
excluding uranium (15 pCi/L).
USEPA RSL TAPWATER THQ0.1 = RSL TAPWATER (TR=1E-06, THQ=0.1) Nov 2021, adapted for West Lake QAPP
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West Lake OU-3

Analyte	Analytic Method	Unit	USEPA Primary MCL	USEPA RSL TAPWATER THQ0.1	MW-503-P1 20-30 08-03-2022 N	MW-503-P2 55-65 08-03-2022 N	MW-503-P3 100-110 08-03-2022 N	MW-504-P1 25-35 08-05-2022 N	MW-504-P2 55-65 08-05-2022 N	MW-504-P3 85-95 08-05-2022 N
General Chemistry Parameters										
Fluoride	SW9056A	mg/L	4	0.08	**0.26**	**0.16**	**0.45**	**0.31**	**0.30**	**0.22**
Metals, Dissolved										
Arsenic	SW6020	ug/L	10	0.052	**1.3**	< 1.0 U	< 1.0 U	**4.2**	**0.70 J**	**0.21 J**
Manganese	SW6020	ug/L	NE	43	**732**	**168**	**270**	**461**	**264**	**464**
Uranium	SW6020	ug/L	30	0.4	**1.6**	< 1.0 U	**0.027 J**	**0.22 J**	**0.025 J**	**0.081 J**
Barium	SW6010B	ug/L	2,000	380	**339**	**323**	**385**	**320**	**390**	**468**
Boron	SW6010B	ug/L	NE	400	**107**	**42.0 J**	**89.4 J**	**59.0 J**	**75.0 J**	**90.6 J**
Cobalt	SW6010B	ug/L	NE	0.6	**1.3 J**	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U
Iron	SW6010B	ug/L	NE	1,400	**9,100**	**1,700**	**4,080**	**4,460**	**6,840**	**8,680**
Lithium	SW6010B	ug/L	NE	4	**31.5**	**7.5 J**	**13.8 J**	**26.0**	**16.4 J**	**14.2 J**
Molybdenum	SW6010B	ug/L	NE	10	**3.8 J**	< 10.0 U	< 10.0 U	**11.6**	< 10.0 U	< 10.0 U
Strontium	SW6010B	ug/L	NE	1,200	**420**	**282**	**229**	**281**	**260**	**241**
Metals, Total										
Arsenic	SW6020	ug/L	10	0.052	**1.2**	< 1.0 U	**0.18 J**	**4.0**	**0.74 J**	**0.22 J**
Manganese	SW6020	ug/L	NE	43	**760**	**170**	**268**	**431**	**265**	**471**
Uranium	SW6020	ug/L	30	0.4	**1.6**	**0.0090 J**	**0.033 J**	**0.20 J**	**0.030 J**	**0.087 J**
Barium	SW6010B	ug/L	2,000	380	**331**	**314**	**359**	**310**	**389**	**463**
Boron	SW6010B	ug/L	NE	400	**104**	**40.8 J**	**83.4 J**	**58.0 J**	**75.3 J**	**90.1 J**
Cobalt	SW6010B	ug/L	NE	0.6	**1.2 J**	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U
Iron	SW6010B	ug/L	NE	1,400	**8,850**	**1,660**	**3,950**	**4,500**	**6,960**	**8,470**
Lithium	SW6010B	ug/L	NE	4	**27.2**	**7.8 J**	**13.8 J**	**28.5**	**20.8**	**15.7 J**
Molybdenum	SW6010B	ug/L	NE	10	< 10.0 U	< 10.0 U	< 10.0 U	**12.0**	< 10.0 U	< 10.0 U
Strontium	SW6010B	ug/L	NE	1,200	**410**	**274**	**215**	**268**	**258**	**238**
Radiochemistry, Dissolved										
Radium-226	E903.1	pCi/L	5	NE	0.0637 ± 0.330 (0.685) U	0.186 ± 0.501 (0.930) U	0.0516 ± 0.417 (0.819) U	**0.841 ± 0.560 (0.721) J-**	0.586 ± 0.465 (0.631) UJ	**0.613 ± 0.429 (0.517) J-**
Radium-228	E904.0	pCi/L	5	NE	0.634 ± 0.436 (0.850) U	0.721 ± 0.428 (0.796) U	0.567 ± 0.844 (1.82) U	0.655 ± 0.434 (0.825) U	0.111 ± 0.268 (0.598) U	**1.04 ± 0.412 (0.629)**
Radium-226/228	TOTRADIUMCALCULATION	pCi/L	5	NE	0.698 ± 0.766 (1.54) U	0.907 ± 0.929 (1.73) U	0.619 ± 1.26 (2.64) U	1.50 ± 0.994 (1.55) UJ	0.697 ± 0.733 (1.23) UJ	**1.65 ± 0.841 (1.15) J-**
Radiochemistry, Total										
Radium-226	E903.1	pCi/L	5	NE	**0.406 ± 0.286 (0.138)**	0.154 ± 0.363 (0.673) U	**0.518 ± 0.379 (0.424)**	0.0758 ± 0.493 (0.994) U	-0.163 ± 0.451 (1.07) U	0.0784 ± 0.596 (1.18) U
Radium-228	E904.0	pCi/L	5	NE	0.778 ± 0.615 (1.23) U	1.06 ± 0.687 (1.32) U	0.862 ± 0.496 (0.911) U	0.319 ± 0.352 (0.730) U	0.309 ± 0.390 (0.826) U	**0.814 ± 0.430 (0.748)**
Radium-226/228	TOTRADIUMCALCULATION	pCi/L	5	NE	1.18 ± 0.901 (1.37) U	1.21 ± 1.05 (1.99) U	**1.38 ± 0.875 (1.34)**	0.395 ± 0.845 (1.72) U	0.309 ± 0.841 (1.90) U	0.892 ± 1.03 (1.93) U
Semivolatile Organic Compounds – PAHs, Total										
Benzo(a)anthracene	SW8270C-SIM	ug/L	NE	0.03	< 0.10 U	< 0.10 U	< 0.10 U	< 0.10 U	< 0.10 U	< 0.10 U
Benzo(a)pyrene	SW8270C-SIM	ug/L	0.2	0.025	< 0.10 U	< 0.10 U	< 0.10 U	< 0.10 U	< 0.10 U	< 0.10 U
Benzo(b)fluoranthene	SW8270C-SIM	ug/L	NE	0.25	< 0.10 U	< 0.10 U	< 0.10 U	< 0.10 U	< 0.10 U	< 0.10 U
Dibenzo(a,h)anthracene	SW8270C-SIM	ug/L	NE	0.025	< 0.10 U	< 0.10 U	< 0.10 U	< 0.10 U	< 0.10 U	< 0.10 U
Volatile Organic Compounds, Total										
1,4-Dioxane	SW8260B_SIM	ug/L	NE	0.46	< 3.00 UJ	< 3.00 UJ	< 3.00 UJ	< 3.00 U	< 3.00 U	< 3.00 U
cis-1,2-Dichloroethene	SW8260C	ug/L	70	3.6	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Vinyl chloride	SW8260C	ug/L	2	0.019	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U

Notes:
ft BGS = feet below ground surface
ug/L = micrograms per liter
mg/L = milligrams per liter
pCi/L = picoCuries per liter
USEPA Primary MCL = USEPA National Primary Drinking Water Regulation (May 2009).
MCLs are for combined radium-226-228 (5 pCi/L) and gross alpha excluding uranium (15 pCi/L).
USEPA RSL TAPWATER THQ0.1 = RSL TAPWATER (TR=1E-06, THQ=0.1) Nov 2021, adapted for West Lake QAPP
Radiochemistry data is shown in the following format: activity ± total uncertainty (minimum detectable concentration) qualifiers
Bold = Detected
Blue Font = Exceeds USEPA Primary MCL
Orange Shaded = Detected value exceeds USEPA RSL TAPWATER THQ0.1
Gray Shaded = Compound not detected above the reporting detection limit but reporting detection limit exceeds USEPA RSL TAPWATER THQ0.1
NE = Not Established
NA = Not Available

Qualifier Definition
J = Estimated concentration.
J+ = The result is an estimated concentration, but may be biased high.
J- = The result is an estimated concentration, but may be biased low.
U = The analyte was analyzed for but was not detected at or above the referenced reporting limit.
UJ = The analyte was analyzed for, but was not detected. The reporting limit is approximate and may be inaccurate or imprecise.

ATTACHMENT A – COMBINED LOG FOR MW-501

Elevation (ft amsl)

APS 1,4-Dioxane (ug/L)

0 200 400

<100

Water Content (%)

0% 10% 20% 30% 40% 50%

Water Content (%)

Mobile

Capillary

Clay

Hydraulic Conductivity (ft/day, SOE)

10 100 1,000

Natural Gamma (CPS)

0 50 100 150

Conductivity (mS/m)

0 200 400 600

Conductivity

Short-Spacing

Long-Spacing

Q3 2022 1,4-Dioxane (ug/L)

0 200 400

Well Construction

MW-501

440

430

420

410

400

390

380

370

360

350

340

330

320

Upper Alluvium

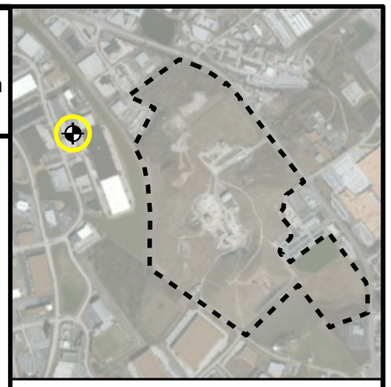
Upper TSM

Middle Alluvium

Lower TSM

Lower Alluvium

Bedrock



Well Construction

Top of Casing Elevation

Screen

Borehole

MW-501/APS-015
Combined Log
West Lake Landfill
Bridgeton,
Missouri

ERM

M:\US\Projects\D-H-Exelon\WestLakeLandfill_MO\MXD\2022_12_CSM_Report\fnlineSection4Figs\NMR_Log_MW501_Simplified_20230201.mxd - Joseph.Hakam - 2/2/2023