WCI Austin Landfill, LLC.

2021 Coal Combustion Residuals Annual Monitoring Report

SKB Lansing Landfill
52563 243rd Street
Austin, Minnesota 55912
Permit SW-514-001

January 31, 2022

2021 Coal Combustion Residuals Annual Monitoring Report

SKB Lansing Landfill
52563 243rd Street
Austin, Minnesota 55912
Permit SW-514-001

Prepared for:
WCI Austin Landfill, LLC.
251 Starkey Street
St. Paul, MN 55107

Prepared by:
Groundwater & Environmental Services, Inc.
1301 Corporate Center Drive, Suite 190
Eagan, MN 55121
TEL: 800-735-1077
www.gesonline.com

GES Project:
3502129

Date:
January 31, 2022

James F. Simonet, P.G.
Senior Project Hydrogeologist

Bonnie Janowiak, Ph. D.
Project Chemist

Kevin Michael Lienau, P.E.
Corporate Engineering Manager

Professional Engineer
I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the state of Minnesota.
Signature:
Typed or Printed Name: Kevin Michael Lienau
Date: 01/30/2022 License Number: 25086

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Acronyms

BTV	Background Threshold Value
CCR	Coal Combustion Residuals (CCR)
CFR	Code of Federal Regulations
COC	Chemicals of Concern
Eurofins TA	Eurofins Test America, Inc.
GES	Groundwater & Environmental Services, Inc.
GPS	Groundwater Protection Standards
MCL	Maximum Contaminant Level
mg/L	milligrams per liter
MPCA	Minnesota Pollution Control Agency
NGVD	National Geodetic Vertical Datum
pci/L	picoCuries per liter
QA/QC	Quality Assurance/Quality Control
Report	2021 Coal Combustion Residuals Annual Monitoring Report
SSI	statistically significant increase
US EPA	United States Environmental Protection Agency
USL	Upper Simultaneous Limit

1 Introduction

The *2021 Combustion Coal Residuals Annual Monitoring Report* (Report) was prepared to summarize the results of the 2021 groundwater monitoring events and associated analysis for Appendix III (detection monitoring) and Appendix IV (assessment monitoring), per 40 Code of Federal Regulations (CFR) §§ 257.90 – 257.98, at the SKB Lansing Landfill. The SKB Lansing Landfill operates under Minnesota Pollution Control Agency (MPCA) Site Permit Number SW-514-001. The SKB Lansing Landfill is located at 52563 243rd Street in Austin, Mower County, Minnesota (**Figure 1**).

Two groundwater sampling events were conducted at the SKB Lansing Landfill in the spring and fall of 2021. Groundwater samples were analyzed for parameters included in Appendix III (detection monitoring) and Appendix IV (assessment monitoring). Analytical results from the groundwater monitoring events were compared and evaluated to Background Threshold Values (BTVs) and Groundwater Protection Standards (GPS) established for the SKB Lansing Landfill.

1.1 Scope of Work

The following scope of work was conducted for the 2021 CCR groundwater monitoring events:

- Conduct 2 gauging and sampling events of the site's monitoring wells and piezometers.
- Measure static water elevations for each monitoring well to the nearest 0.01 feet from surveyed reference point.
- Record the volume of water removed from each monitoring well (in gallons) and total well volumes removed before sampling.
- Record field parameter stabilization results from each monitoring well.
- Conduct a statistical evaluation of groundwater sampling analytical data using ProUCL 5.0.00 (Singh, 2013) to determine BTVs for each analyte.
- Select tolerance or prediction interval procedure for future statistical analysis of groundwater monitoring data.
- Prepare a Coal Combustion Residuals (CCR) Annual Monitoring Report summarizing the groundwater sampling and statistical evaluation.

2 Site Background

2.1 Site Location and Description

The WCI Austin Landfill permit (Permit SW-542), was combined with the SKB Lansing Landfill permit (Permit SW-514). The combined permit is identified as SW-514-001. The site is located within a 115-acre parcel of land in Section 21, Township 103 North, Range 18 West, Lansing Township, Mower County, Minnesota. With reference to roadways, the facility is located west of State Highway 218 along Lansing Township Road T-378 (243rd Street). The facility entrance is off Lansing Township Road T-378 (243rd Street). The facility location is depicted in **Figure 1** and the existing site conditions are presented in **Figure 2**.

Located in the Cedar River watershed, the site has rolling topography ranging in elevation from 1,218 feet above the National Geodetic Vertical Datum of 1929 (NGVD 29) in the southwest corner to 1,314 feet above NGVD 29 in the central portion of the site. Storm water flows either to natural depressions scattered about the site or to storm water retention areas in the south and southwest parts of the property. Storm water ultimately goes to a judicial ditch. The nearest open water body is the Cedar River, located approximately 3 miles east of the site.

3 Monitoring Network Systems and Sampling Schedule

The CCR sampling groundwater monitoring network at the SKB Lansing Landfill was designed based on the analysis of local and regional hydrologic conditions. Currently, the groundwater monitoring network system consists of 8 monitoring wells (one well set to monitor the shallow till layer and one well set to monitor the deeper sand layer) (**Figure 2**). Groundwater elevations are also collected from an additional 19 monitoring wells and 7 piezometers. The monitoring wells and piezometers used as data collection points have been divided into 2 groups for the purpose of this report:

Gauging and Sampling

- Upgradient Monitoring Points. The upgradient monitoring points consist of monitoring wells located upgradient of the compliance boundary and include MW-1 and MW-1RD.
- Downgradient Monitoring Points. The downgradient monitoring points consist of monitoring wells located downgradient of the compliance boundary and include MW-2R, MW-2RD, MW-3, MW-3R, MW-3RD, and MW-4.

Gauging Only

- Downgradient Monitoring Points. The downgradient monitoring points consist of monitoring wells located downgradient of the compliance boundary and include MW-5S, MW-5D, MW-6S, MW-7S, MW-7D, MW-8S and MW-8D.
- Piezometer Monitoring Points. The piezometer monitoring points consist of shallow monitoring points used exclusively for the collection of groundwater elevations across the site. These locations include PIEZ-1, PIEZ-2, PIEZ-3, PIEZ-4, PIEZ-5, P-10 and P-11.
- Upgradient/Sidegradient Monitoring Points. Upgradient/sidegradient monitoring points consist of monitoring wells east of the compliance boundary and include wells located at the former Austin or Vonco IV Landfill (MW-1A, MW-2A, MW-3A, MW-4A, MW-101A, MW-102A, MW-103A, MW-104A, MW-105A, MW-106A, MW-107A, and MW-108A).

For the CCR evaluation, a total of 2 groundwater monitoring events were conducted in 2021 on the following dates:

- May 12-13, 2021
- September 8, 2021

4 Groundwater Sampling Methodology

During the SKB Lansing Landfill CCR sampling events, static groundwater elevations were measured to the nearest 0.01 feet in each monitoring well with a water interface probe prior to groundwater sample collection. Using a location-dedicated, pneumatic low-flow bladder pump, each well was purged and field stabilization parameters including temperature, pH, and specific conductance were recorded.

Groundwater samples were placed in laboratory-prepared containers and labeled with the following information:

- Unique sample number
- Site name
- Name of sampler
- Time and date

Immediately following collection, samples were placed on ice in a field cooler and shipped with a chain of custody form to a Eurofins Test America, Inc. (Eurofins TA) of Amherst, New York.

Groundwater samples obtained during the 2021 sampling events were analyzed for parameters specified in Appendix III (spring and fall) and Appendix IV (spring (full analyte list) and fall (analytes detected in spring event)) per §§ 257.93 – 257.95 and are noted below:

Appendix III

General Chemistry

- Chloride (Method 300.0)
- Fluoride (Method 300.0)
- Sulfate as SO_4 (Method 300.0)
- pH (Standard Method 4500 H+ B)
- Total Dissolved Solids (Standard Method 2540C)

Metals

- Boron (Method 6010D)
- Calcium (Method 6010D)

Appendix IV

Metals

- Antimony
- Arsenic
- Barium
- Beryllium
- Cadmium

- Chromium
- Cobalt
- Lead
- Lithium
- Mercury
- Molybdenum
- Radium 226
- Radium 228
- Selenium
- Thallium

General Chemistry

- Fluoride (Method 300.0)

The above metals were analyzed by Methods 6010D, 6020B, and 7470A. Radium was analyzed by Methods 903.0 and 904.0.

Quality assurance/quality control (QA/QC) samples including duplicate, field, and equipment samples were collected during each sampling event.

5 Groundwater Monitoring Results

5.1 Groundwater Elevation Data

Groundwater elevations recorded during the monitoring events are presented in **Table 1**. Groundwater contours maps were generated for the April 12 and September 8, 2021 gauging events. Based on the shallow well groundwater elevation data, water table contours indicate that the shallow groundwater flows to the southwest (**Figures 3** and **5**). Six monitoring well locations are used to monitor a deeper water-bearing unit beneath the site. Based on the deeper well groundwater elevation data, potentiometric surface contours indicate a southwest flow direction in the lower aquifer (**Figures 4** and **6**). The groundwater flow directions are consistent with historically recorded flow directions.

5.2 Groundwater Analytical Data

Groundwater analytical results for the CCR monitoring events are presented in **Tables 2** and **3**. QA/QC duplicate samples were collected for precision evaluation, but were not included in **Tables 2** and **3**. A summary of the stabilization parameter tests performed for each well prior to sampling are provided in **Table 4** and copies of field sampling data sheets are in **Appendix A**. Laboratory analytical reports are included in **Appendix B**.

The calculated BTVs for the SKB Lansing Landfill are provided in **Table 5**. Comparing the 2021 sampling results to the BTVs are summarized below.

Appendix III Analytes - Result Summary of BTV Exceedances

Boron (BTV = 2.49 milligrams per liter (mg/L))

- Downgradient monitoring well
  - MW-2R (3.4 mg/L) (5/13/2021) – Exceedance confirmed. Statistically significant
  - MW-2R (4.2 mg/L) (9/8/2021) – Exceedance confirmed. Statistically significant

Chloride (BTV = 125 mg/L)

- Upgradient monitoring well
  - MW-1 (267 mg/L) (5/13/2021) – Had exceedance in the spring of 2021 but sampling results in the fall of 2021 (92.4 mg/L) indicate the exceedance was not statistically significant.

Appendix IV Analytes - Result Summary of BTV Exceedances

Arsenic (BTV = 0.015 mg/L)

- Downgradient monitoring well
  - MW-3 (0.0019 mg/L) (5/13/2021) – Had exceedance in the fall of 2020 but sampling results in the spring 2021 (0.0019 mg/L) indicate the exceedance was not statistically significant.

6 Statistical Evaluation Data

This groundwater statistical evaluation for landfill monitoring is conducted in accordance with § 257.93(f)(3). Specifically, current concentrations were compared to the interwell upper simultaneous limits (USLs) in order to determine if a potential statistically significant increase (SSI) exists at downgradient wells.

The background dataset was determined for each well using analytical results ranging from spring 2017 to the most recent sampling event in September 2021.

Statistical evaluation of the 2017 - 2021 CCR groundwater monitoring data determined background concentrations and included:

1) Establishing final background datasets for each chemical of concern (COC) including outlier testing.

2) Deriving statistical, upper bound estimates of the background population for each COC using the final background datasets.

To establish final background datasets for each COC, descriptive statistics, outlier analysis and comparative statistical analysis performed on the background datasets confirmed the data in the background dataset for a given COC as representative of the 'true' background population. Descriptive statistics include the number of samples, the number of detections, the detection frequency, the maximum and minimum detected concentrations, the mean, and the standard deviation of the background data, all of which provide a preliminary examination of data.

Outlier analyses identified potential outliers not representative of the true background population. Including real outliers in a dataset can potentially lead to Type I or Type II errors (USEPA, 2009). Rosner's Outlier Test was performed on background datasets containing four (4) detected values or more (USEPA, 2009). Based on an alpha of 0.05, statistically significant outliers were removed from the background dataset in order to improve the power of the prediction limit (USEPA, 2009). The resulting background dataset for each well and COC is tabulated in **Attachment C**.

For the final background datasets after outlier analyses, summary statistics calculated the number of samples, number of detections, detection frequency, maximum and minimum detected concentrations, mean concentration, and the standard deviation. The final datasets calculations of the underlying distributions employing Shapiro-Wilks (e.g., normal, lognormal, gamma) using ProUCL 5.0.00 (Singh, 2013) before statistical limits were estimated allowed determination of the appropriate estimates that best describe the background datasets.

The following statistical limits for potential use as a background level (Background Threshold Values (BTVs)) were calculated using ProUCL 5.0.00 (Singh, 2013) for each COC when five or more detections were present:

- 95% upper simultaneous limit (USL)

The 95% USL was selected as the proposed BTVs as:

1) Many of the background datasets contain limited sample sizes and, therefore, are unlikely to represent the full range of natural ambient concentrations in the vicinity of the site.

2) This statistic should result in lower Type I error rates (i.e., false positives) and can be used to compare many observations.

If there were no detected results, the highest detection limit was proposed as the BTV. The calculated BTVs are included in **Table 5**. The statistical evaluation data is included in **Appendix C**.

6.1 Statistically Significant Increase Determination

The detected concentrations for the first and second half 2021 sampling event with the respective USL are listed below. Compliance is determined by comparing the current concentration to the calculated USL. Boron concentrations at monitoring well MW-2R were confirmed as SSI.

Comparison of 2021 Confirmed COC Concentrations to USLs

Monitoring Well	Analyte	First Half 2021 Conc (mg/L unless noted)	USL Conc (mg/L unless noted)	Second Half 2021 Conc (mg/L unless noted)	USL Notes
MW-2R	Boron	**3.4**	2.49	**4.2**	Exceedance confirmed
MW-3	Arsenic	0.0019	0.015	0.0043	Exceedance in fall of 2020 but not statistically significant
MW-1	Chloride	**267**	125	92.4	Exceedance but not statistically significant

Notes:
Conc – Concentration
KM – Kaplan Meier method for non-detect substitution
Bolded concentration exceeds the respective USL.
ND – Not Detected

7 Groundwater Protection Standards

Per § 257.95(d)(2), Groundwater Protection Standards (GPS) were established for each Appendix IV constituent detected in the groundwater. GPS were established using United States Environmental Protection Agency (EPA) Maximum Contaminant Levels (MCLs) for detected Appendix IV constituents. For constituents for which the background level is higher than the MCL, the background value will be the GPS. GPS values are shown in **Table 6**.

No Appendix IV constituent was recorded above established GPS values during the 2021 sampling events. Arsenic (0.0221 mg/L) was detected above the GPS at MW-3 during the fall 2020 sampling event. However, MW-3 sampling results from the spring 2021 event indicate that the Arsenic concentration (0.0019 mg/L) was below the GPS value, and therefore, not significantly significant (**Table 7**).

8 Report Summary and Conclusions

Per 40 CFR §§ 40.257.93 – 257.95, 2 monitoring events (spring and fall) were conducted in 2021 at the SKB Lansing Landfill. Groundwater samples were collected from the monitoring network's 8 monitoring wells (MW-1, MW-1RD, MW-2R, MW-2RD, MW-3, MW-3R, MW-3RD, and MW-4) located at the SKB Lansing Landfill during the 2021 monitoring events. Groundwater samples

were analyzed for parameters specified in Appendix III (detection monitoring) and Appendix IV (assessment monitoring).

The groundwater data collected in the 2017 – 2021 sampling events were statistically tested following the concepts outlined in this report to form a background data set. Interwell USLs were developed for Appendix III and Appendix IV in 8 monitoring wells. Upper and lower threshold values were developed for pH using USL and box plot statistics. The resulting USLs were compared to the current concentrations for each COC and well pair.

The following analytes were reported above the calculated BTVs in 2021:

Appendix III Analytes

- Boron groundwater concentrations reported above the BTV at downgradient monitoring well MW-2R during the spring and fall 2021 sampling events. These concentrations were confirmed exceedances.

- Chloride groundwater concentration reported above the BTV at upgradient monitoring well MW-1 during the spring 2021 sampling event. Subsequent confirmation sampling of the exceedance during the fall 2021 sampling event determined this exceedance was not statistically significant.

Appendix IV Analytes

- An Arsenic groundwater concentration was reported above the BTV at downgradient monitoring well MW-3 during the fall 2020 sampling event. Subsequent confirmation sampling of the exceedance during the spring 2021 sampling event determined this exceedance was not statistically significant.

Groundwater concentrations from the 2021 monitoring events were compared to established GPS values. Arsenic was reported above the GPS value in the fall 2020, but subsequent confirmation sampling of the exceedance during the spring 2021 sampling event determined the exceedance not to be statistically significant.

Groundwater elevation information from the monitoring data indicates a southwesterly groundwater flow direction beneath the landfill.

9 Recommendations

CCR groundwater monitoring events will be conducted in 2022 by the following schedule:

Spring 2022

Conduct a groundwater monitoring event of the site's monitoring well network and analyze groundwater samples for constituents listed in Appendix III and Appendix IV (full list).

Late Summer/Early Fall 2022

Conduct a groundwater monitoring event of the site's monitoring well network and analyzed samples for constituents listed in Appendix III and Appendix IV (only analytes detected in spring 2022 event).

An evaluation of groundwater analytical results after each monitoring event will be completed to determine if a significant increase over BTVs for one or more constituents sampled in Appendix III and Appendix IV has occurred at any monitoring well. The evaluation will be performed using a tolerance or prediction interval procedure (§ 257.93(f)(3)). The level of each constituent in the monitoring well will be compared to an established BTV generated as the USL. Any single constituent that exceeds the BTV is considered to be an exceedance. Confirmation sampling will determine whether the BTV exceedance is statistically significant. Additionally, groundwater concentrations of constituents listed in Appendix IV will be compared to the established GPS values.

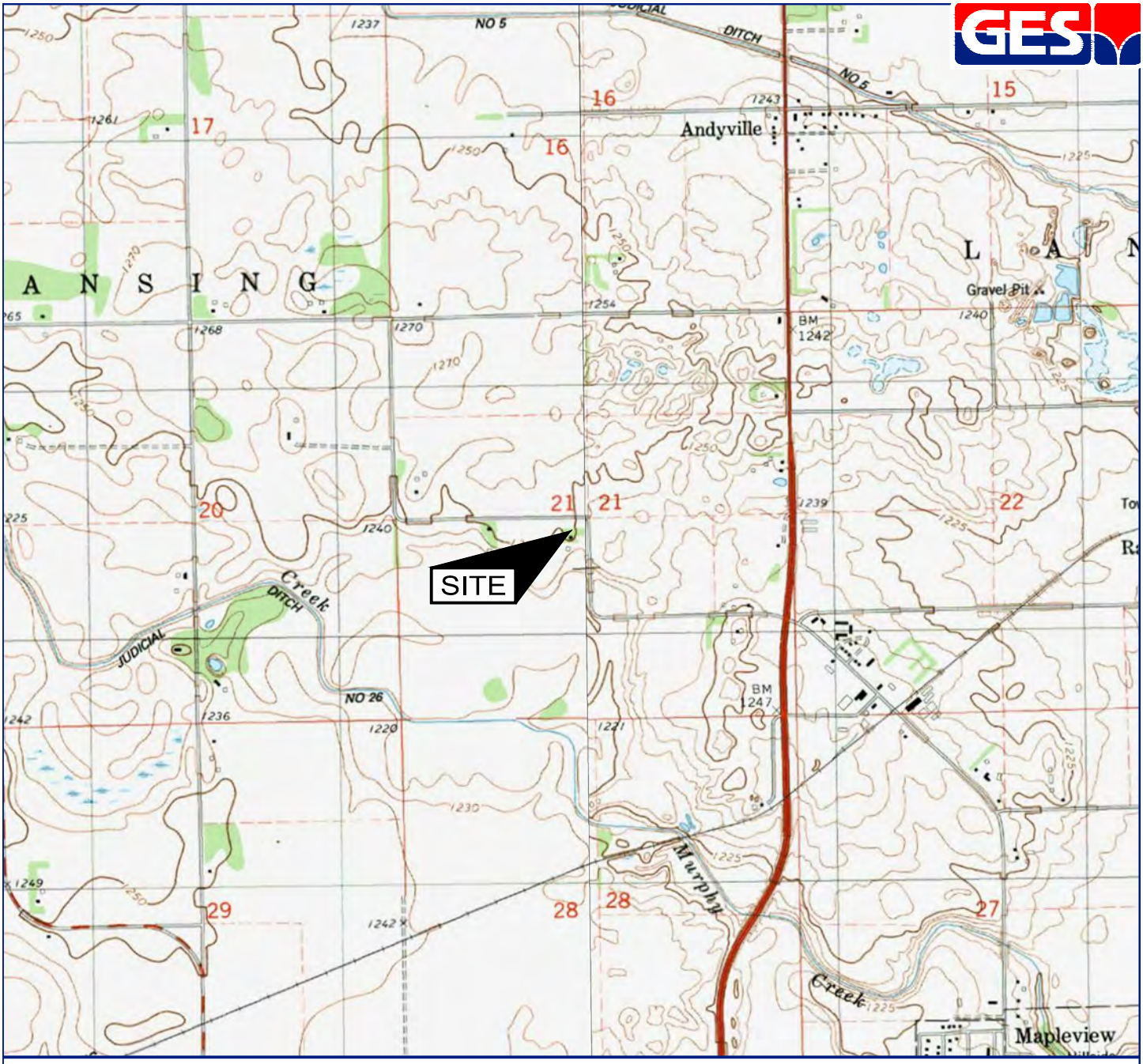
A 2022 Annual Monitoring Report will be prepared and include sampling results from the 2022 CCR groundwater monitoring events and an evaluation of the analytical results as they pertained to BTV and GPS values.

References

Singh and Singh, 2013. *ProUCL Version 5.0.00 Statistical Software for Environmental Applications for Data Sets with and without Nondetect Observations,* United States Environmental Protection Agency

United States Environmental Protection Agency, 2009. *Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities Unified Guidance.* Office of Resource Conservation and Recovery Program Implementation and Information Division, EPA 530/R-09-007, March 2009.

Figures

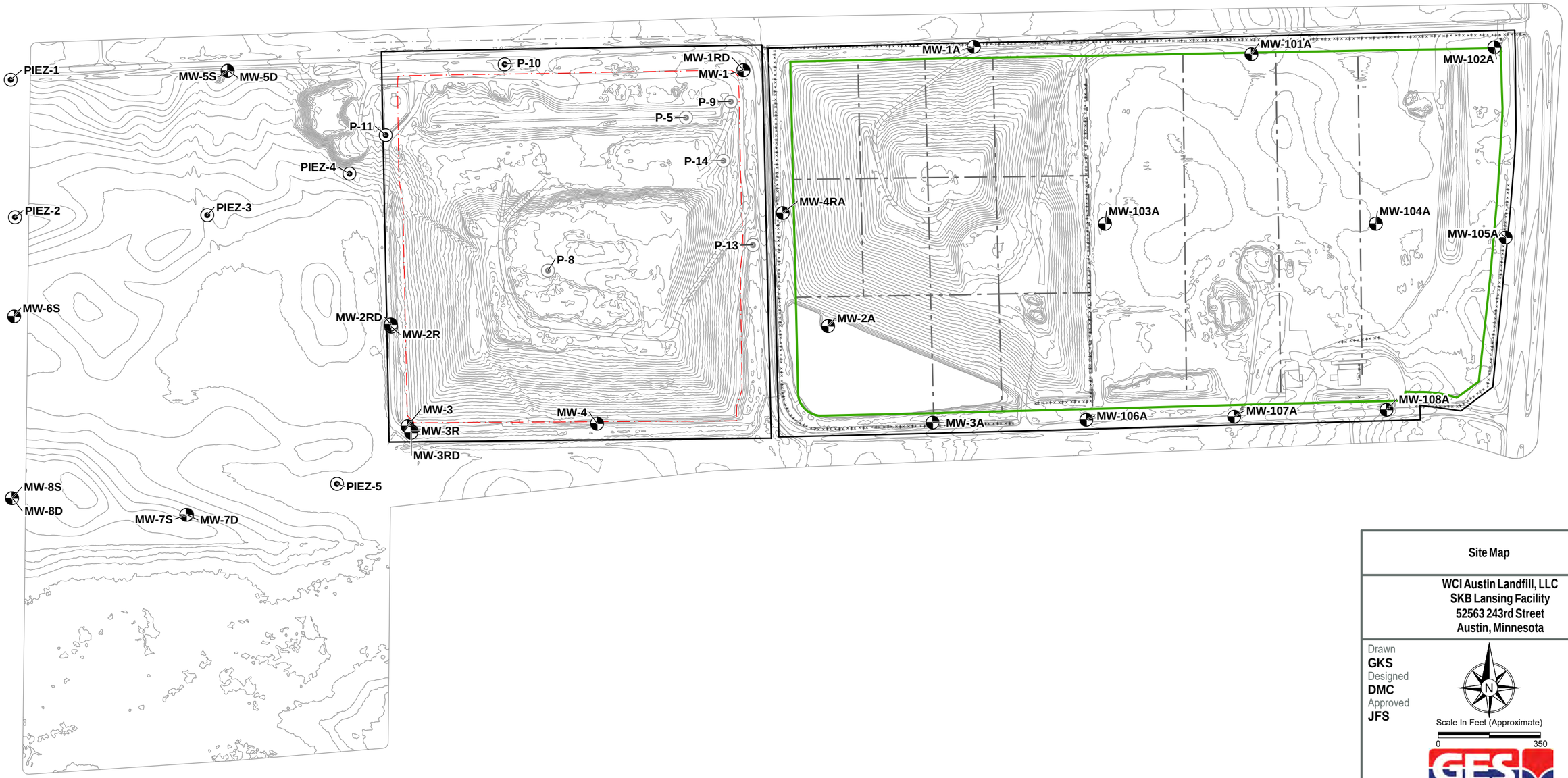


SOURCE: USGS 7.5 MINUTE SERIES
TOPOGRAPHIC QUADRANGLE 1982
AUSTIN EAST, MINNESOTA
CONTOUR INTERVAL = 5'

QUADRANGLE LOCATION

DRAFTED BY: W.G.S. (N.J.)	SITE LOCATION MAP
CHECKED BY: JFS	WCI AUSTIN LANDFILL LLC SKB LANSING LANDFILL 52563 243rd STREET AUSTIN, MINNESOTA
REVIEWED BY: JFS	Groundwater & Environmental Services, Inc. 1301 CORPORATE CENTER DRIVE, SUITE 120, EAGAN, MN 55121
NORTH	SCALE IN FEET: 0 — 2000 / DATE: 12-15-21 / FIGURE: 1

M:\Graphics\3500-Minnesota\SKB Environmental\Austin-Lansing facility(243rd st)\Austin SLM(243rd st).dwg, Layout1, WShea



Legend

- Monitoring Well
- Piezometer
- Destroyed Piezometer
- Property Boundary
- Fence
- Phase Boundary
- Approximate Limit of Waste
- Right of Way
- Compliance Boundary

Site Map

WCI Austin Landfill, LLC
SKB Lansing Facility
52563 243rd Street
Austin, Minnesota

Drawn **GKS**
Designed **DMC**
Approved **JFS**

Date **9/9/21**
Figure **2**

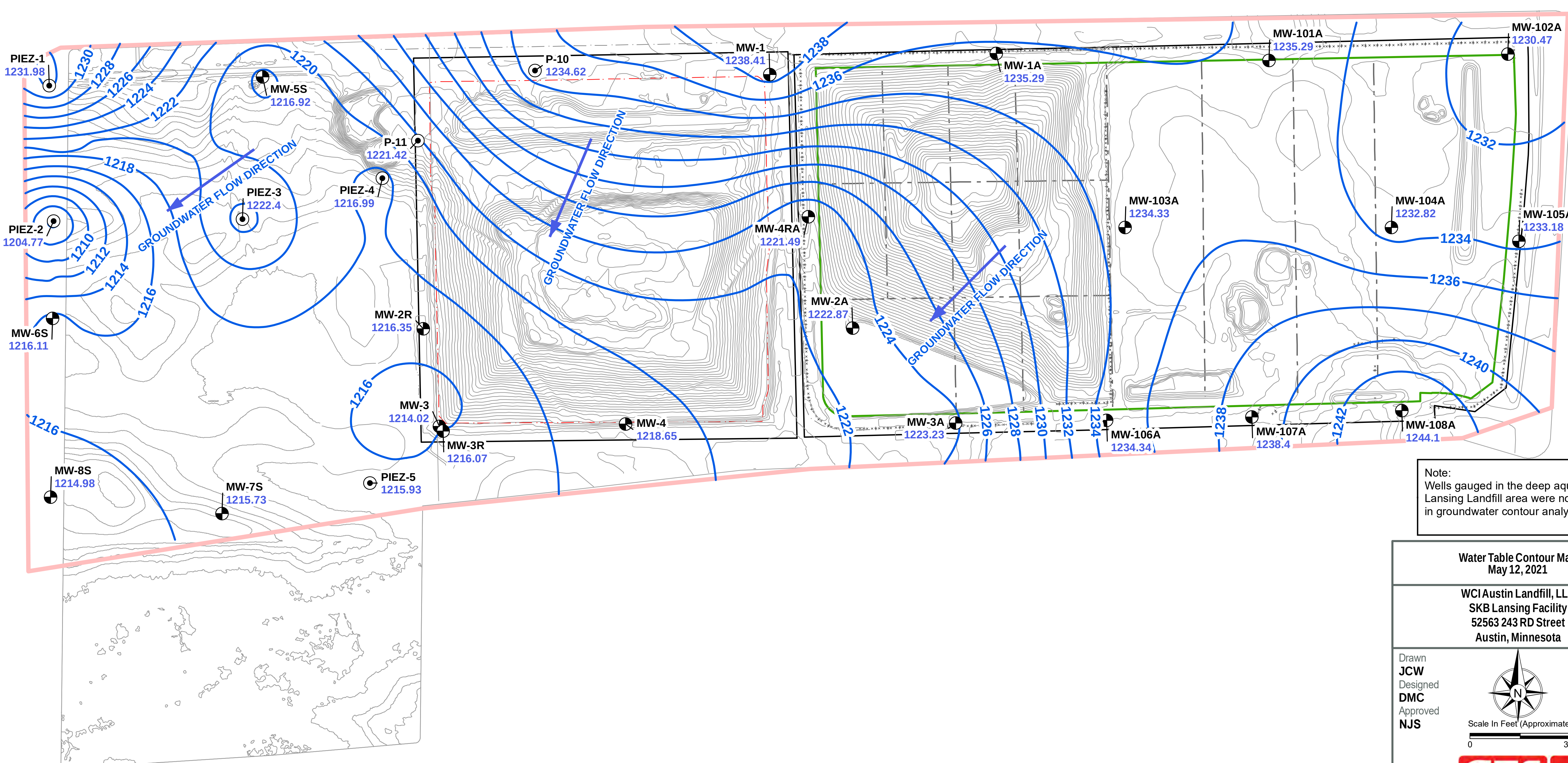
N

Scale In Feet (Approximate)

0 350

GES
Groundwater & Environmental Services, Inc.

L:\Projects\SKB Environmental\Combined Austin Landfills\GIS\SKB_Combined_Austin_Landfills_SM.mxd - Scale 1:4,200 - 1/9/2020 11:43:26 AM - GStewart - NAD 1983 StatePlane Minnesota South FIPS 2203 Feet



Legend

- Monitoring Well
- Piezometer
- Removed Piezometer
- Property Boundary
- Fence
- Phase Boundary
- Approximate Limit of Waste
- Right of Way
- Compliance Boundary

Note:
Wells gauged in the deep aquifer in the Lansing Landfill area were not included in groundwater contour analysis.

Water Table Contour Map
May 12, 2021

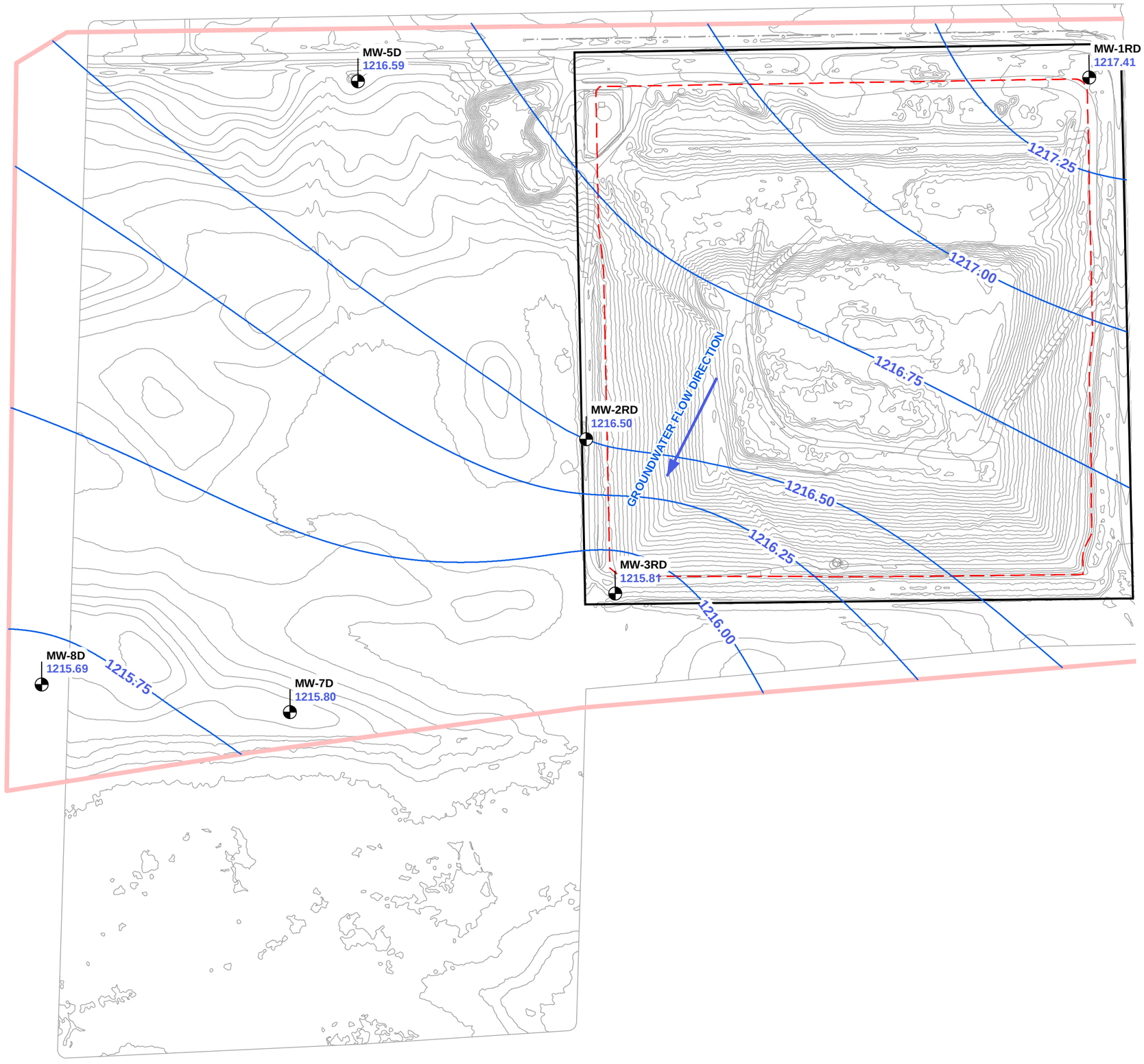
WCI Austin Landfill, LLC
SKB Lansing Facility
52563 243 RD Street
Austin, Minnesota

Drawn JCW	Date 5/24/21
Designed DMC	Figure 3
Approved NJS	

Scale In Feet (Approximate)
0 350

GES
Groundwater & Environmental Services, Inc.

L:\Projects\SKB Environmental\Lansing Facility\GIS\SKB_Combined_Austin_Landfills_WaterTable_20212Q.mxd - Scale 1:4,200 - 5/24/2021 8:55:03 AM - jwiggert - NAD 1983 StatePlane Minnesota South FIPS 2203 Feet



LEGEND

- GROUNDWATER ELEVATION ISOCONTOUR (ft MSL)
- PROPERTY BOUNDARY
- RIGHT OF WAY
- APPROXIMATE LIMITS OF WASTE
- FENCE
- 1219.48 MEASURED GROUNDWATER ELEVATION (ft MSL)
- MONITORING WELL
- PIEZOMETER
- REMOVED PIEZOMETER

Potentiometric Surface Contour Map
Deep Zone - May 12, 2021

WCI Austin Landfill, LLC
SKB Lansing Facility
52563 243 RD Street
Austin, Minnesota

Drawn **JCW**
Designed **DMC**
Approved **NJS**

Date **5/21/21**
Figure **4**

N

Scale In Feet (Approximate)
0 300

Groundwater & Environmental Services, Inc.

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Legend

- Monitoring Well
- Piezometer
- Removed Piezometer
- Property Boundary
- Fence
- Phase Boundary
- Approximate Limit of Waste
- Right of Way
- Compliance Boundary
- Approximate Flow Direction
- Groundwater Elevation Isocontour (ft MSL)

PIEZ-1 1222.64
MW-5S 1219.03
P-10 1236.85
MW-1 1239.57
MW-1A 1235.74
MW-101A 1237.34
MW-102A 1231.87
P-11 1221.49
P-9
P-5
P-14
PIEZ-2 1206.03
PIEZ-3 1223.25
PIEZ-4 1218.73
MW-103A 1235.33
MW-104A 1235.31
MW-105A 1233.26
P-13
MW-4RA 1220.62
P-8
MW-2A 1223.36
MW-6S 1217.46
MW-2R 1217.55
MW-3 1215.25
MW-4 1220.68
MW-3A 1224.10
MW-106A 1236.92
MW-107A 1239.58
MW-108A 1244.95
MW-3R 1217.14
PIEZ-5 1217.06
MW-7S 1216.85
MW-8S 1215.95

1238 1236 1234 1232 1230 1228 1226 1224 1222 1220 1218 1216 1214 1212 1210 1208

Note:
Wells gauged in the deep aquifer in the Lansing Landfill area were not included in groundwater contour analysis.

Water Table Contour Map
September 8, 2021

WCI Austin Landfill, LLC
SKB Lansing Landfill
52563 243rd Street
Austin, Minnesota

Drawn **GKS**
Designed **DMC**
Approved **JFS**
Date **12/20/21**
Figure **5**

Scale In Feet (Approximate)
0 350

Groundwater & Environmental Services, Inc.

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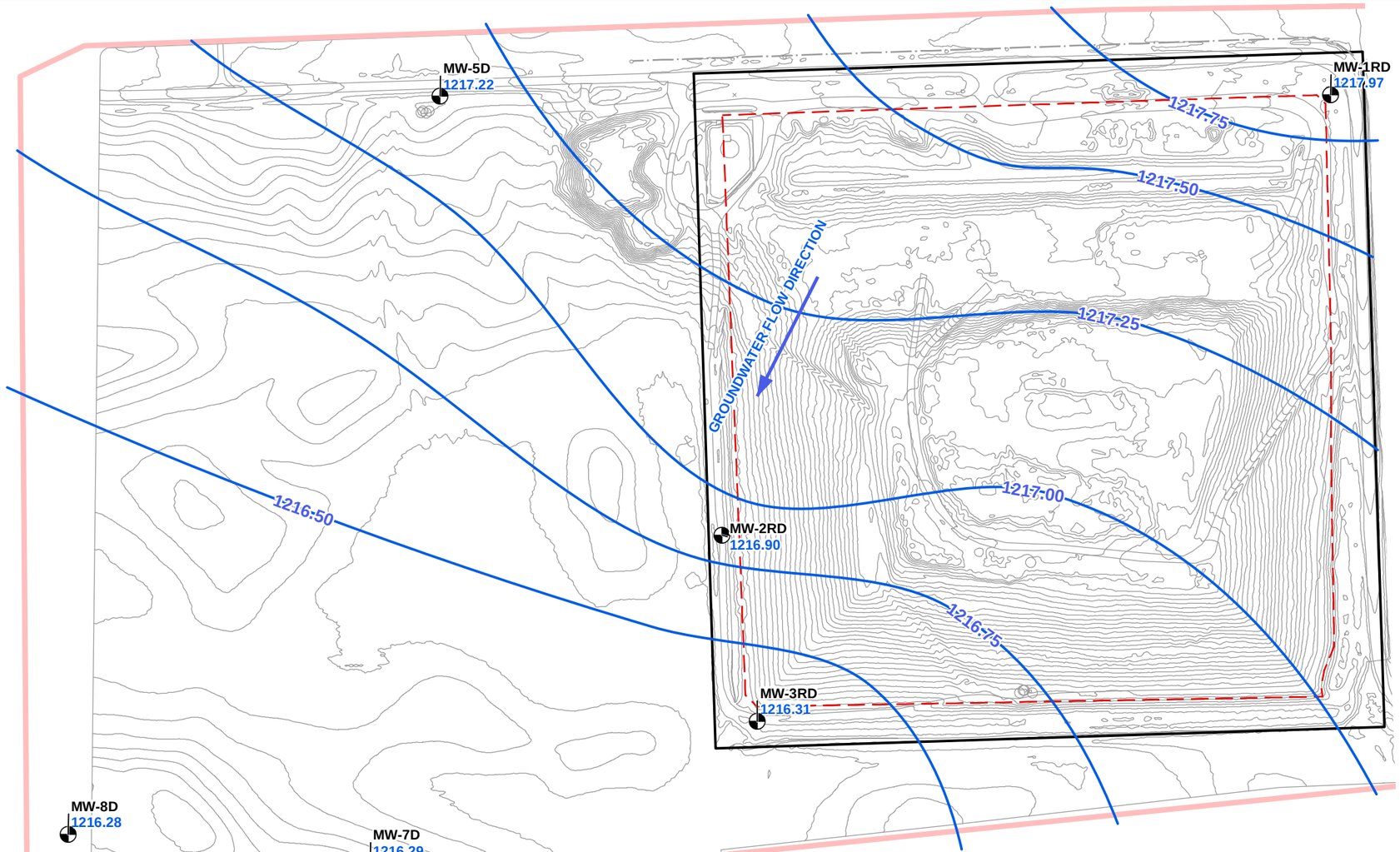

LEGEND

- GROUNDWATER ELEVATION ISOCONTOUR (ft MSL)
- PROPERTY BOUNDARY
- RIGHT OF WAY
- APPROXIMATE LIMITS OF WASTE
- FENCE
- 1219.48 MEASURED GROUNDWATER ELEVATION (ft MSL)
- MONITORING WELL
- PIEZOMETER
- REMOVED PIEZOMETER

Potentiometric Surface Contour Map
Deep Zone - September 8, 2021

WCI Austin Landfill, LLC
SKB Lansing Landfill
52563 243rd Street
Austin, Minnesota

Drawn **GKS**
Designed **DMC**
Approved **JFS**

Date **10/21/21**
Figure **6**

N

Scale In Feet (Approximate)
0 250

Groundwater & Environmental Services, Inc.

L:\Projects\SKB Environmental\Lansing Facility\GIS\Lansing_GWE_Pot_Surface_Sept2021.mxd - Scale 1:3,000 - 10/21/2021 4:07:29 PM - GStewart -

Tables

2021 CCR Annual Monitoring Report
SKB Lansing Landfill
52563 243rd Street
Austin, Minnesota

Table 1

Groundwater Elevations

Date	MW-1	MW-1RD	MW-2R	MW-2RD	MW-3	MW-3R	MW-3RD	MW-4
05/12/2021	1238.41	1217.41	1216.35	1216.5	1214.02	1216.07	1215.81	1218.65
09/08/2021	1239.57	1217.97	1217.55	1216.9	1215.25	1217.14	1216.31	1220.68

Date	MW-5D	MW-5S	MW-6S	MW-7D	MW-7S	MW-8D	MW-8S	PIEZ-1
05/12/2021	1216.59	1216.92	1216.11	1215.8	1215.73	1215.69	1214.98	1231.98
09/08/2021	1217.22	1219.03	1217.46	1216.29	1216.85	1216.28	1215.95	1222.64

Date	PIEZ-2	PIEZ-3	PIEZ-4	PIEZ-5	MW-1A	MW-2A	MW-3A	MW-4RA
05/12/2021	1204.77	1222.4	1216.99	1215.93	1235.29	1222.87	1223.23	1221.49
09/08/2021	1206.03	1223.25	1218.73	1217.06	1235.74	1223.36	1224.1	1220.62

Date	MW-101A	MW-102A	MW-103A	MW-104A	MW-105A	MW-106A	MW-107A	MW-108A
05/12/2021	1235.29	1230.47	1234.33	1232.82	1233.18	1234.34	1238.4	1244.1
09/08/2021	1237.34	1231.87	1235.33	1235.31	1233.26	1236.92	1239.58	1244.95

Table 2

Groundwater Analytical Data
Appendix III

Location	Date	Parameter	Result	Background Threshold Value (BTV)	Units	CAS #
MW-1	05/13/2021	Boron	0.25	2.49	mg/l	7440-42-8
MW-1	09/08/2021	Boron	0.1	2.49	mg/l	7440-42-8
MW-1	05/13/2021	Calcium	182	271	mg/l	7440-70-2
MW-1	09/08/2021	Calcium	125	271	mg/l	7440-70-2
MW-1	05/13/2021	Chloride	**267**	125	mg/l	16887-00-6
MW-1	09/08/2021	Chloride	92.4	125	mg/l	16887-00-6
MW-1	05/13/2021	Fluoride	0.16	0.33	mg/l	16984-48-8
MW-1	09/08/2021	Fluoride	<0.50	0.33	mg/l	16984-48-8
MW-1	05/13/2021	pH	7.2	6.4 - 7.7	pH UNITS	PH
MW-1	09/08/2021	pH	7.0	6.4 - 7.7	pH UNITS	PH
MW-1	05/13/2021	Sulfate as SO4	80.8	630	mg/l	14808-79-8
MW-1	09/08/2021	Sulfate as SO4	80.6	630	mg/l	14808-79-8
MW-1	05/13/2021	Total Dissolved Solids	1190	1846	mg/l	TDS
MW-1	09/08/2021	Total Dissolved Solids	575	1846	mg/l	TDS
MW-1RD	05/13/2021	Boron	0.025	2.49	mg/l	7440-42-8
MW-1RD	09/08/2021	Boron	<0.20	2.49	mg/l	7440-42-8
MW-1RD	05/13/2021	Calcium	77.6	271	mg/l	7440-70-2
MW-1RD	09/08/2021	Calcium	83.5	271	mg/l	7440-70-2
MW-1RD	05/13/2021	Chloride	24.2	125	mg/l	16887-00-6
MW-1RD	09/08/2021	Chloride	24.5	125	mg/l	16887-00-6
MW-1RD	05/13/2021	Fluoride	0.26	0.33	mg/l	16984-48-8
MW-1RD	09/08/2021	Fluoride	0.19	0.33	mg/l	16984-48-8
MW-1RD	05/13/2021	pH	7.3	6.4 - 7.7	pH UNITS	PH
MW-1RD	09/08/2021	pH	7.4	6.4 - 7.7	pH UNITS	PH
MW-1RD	05/13/2021	Sulfate as SO4	51.3	630	mg/l	14808-79-8
MW-1RD	09/08/2021	Sulfate as SO4	53.9	630	mg/l	14808-79-8
MW-1RD	05/13/2021	Total Dissolved Solids	345	1846	mg/l	TDS
MW-1RD	09/08/2021	Total Dissolved Solids	346	1846	mg/l	TDS
MW-2R	05/13/2021	Boron	**3.4**	2.49	mg/l	7440-42-8
MW-2R	09/08/2021	Boron	**4.2**	2.49	mg/l	7440-42-8
MW-2R	05/13/2021	Calcium	218	271	mg/l	7440-70-2
MW-2R	09/08/2021	Calcium	241	271	mg/l	7440-70-2
MW-2R	05/13/2021	Chloride	106	125	mg/l	16887-00-6
MW-2R	09/08/2021	Chloride	104	125	mg/l	16887-00-6
MW-2R	05/13/2021	Fluoride	0.21	0.33	mg/l	16984-48-8
MW-2R	05/13/2021	pH	7.2	6.4 - 7.7	pH UNITS	PH
MW-2R	09/08/2021	pH	6.6	6.4 - 7.7	pH UNITS	PH
MW-2R	05/13/2021	Sulfate as SO4	170	630	mg/l	14808-79-8
MW-2R	09/08/2021	Sulfate as SO4	225	630	mg/l	14808-79-8
MW-2R	05/13/2021	Total Dissolved Solids	1240	1846	mg/l	TDS
MW-2R	09/08/2021	Total Dissolved Solids	1380	1846	mg/l	TDS
MW-2RD	05/13/2021	Boron	0.1	2.49	mg/l	7440-42-8
MW-2RD	09/08/2021	Boron	0.11	2.49	mg/l	7440-42-8
MW-2RD	05/13/2021	Calcium	140	271	mg/l	7440-70-2
MW-2RD	09/08/2021	Calcium	142	271	mg/l	7440-70-2
MW-2RD	05/13/2021	Chloride	37.5	125	mg/l	16887-00-6
MW-2RD	09/08/2021	Chloride	40.4	125	mg/l	16887-00-6
MW-2RD	05/13/2021	Fluoride	0.23	0.33	mg/l	16984-48-8
MW-2RD	09/08/2021	Fluoride	0.16	0.33	mg/l	16984-48-8
MW-2RD	05/13/2021	pH	7.0	6.4 - 7.7	pH UNITS	PH
MW-2RD	09/08/2021	pH	7.0	6.4 - 7.7	pH UNITS	PH
MW-2RD	05/13/2021	Sulfate as SO4	72.2	630	mg/l	14808-79-8
MW-2RD	09/08/2021	Sulfate as SO4	78.8	630	mg/l	14808-79-8
MW-2RD	05/13/2021	Total Dissolved Solids	571	1846	mg/l	TDS
MW-2RD	09/08/2021	Total Dissolved Solids	590	1846	mg/l	TDS
MW-3	05/13/2021	Boron	0.68	2.49	mg/l	7440-42-8
MW-3	09/08/2021	Boron	1.1	2.49	mg/l	7440-42-8
MW-3	05/13/2021	Calcium	222	271	mg/l	7440-70-2
MW-3	09/08/2021	Calcium	194	271	mg/l	7440-70-2

Table 2

Groundwater Analytical Data
Appendix III

Location	Date	Parameter	Result	Background Threshold Value (BTV)	Units	CAS #
MW-3	05/13/2021	Chloride	51.6	125	mg/l	16887-00-6
MW-3	09/08/2021	Chloride	44.8	125	mg/l	16887-00-6
MW-3	05/13/2021	Fluoride	0.21	0.33	mg/l	16984-48-8
MW-3	09/08/2021	Fluoride	0.17	0.33	mg/l	16984-48-8
MW-3	05/13/2021	pH	6.8	6.4 - 7.7	pH UNITS	PH
MW-3	09/08/2021	pH	6.5	6.4 - 7.7	pH UNITS	PH
MW-3	05/13/2021	Sulfate as SO4	19.9	630	mg/l	14808-79-8
MW-3	09/08/2021	Sulfate as SO4	37.4	630	mg/l	14808-79-8
MW-3	05/13/2021	Total Dissolved Solids	1020	1846	mg/l	TDS
MW-3	09/08/2021	Total Dissolved Solids	811	1846	mg/l	TDS
MW-3R	05/13/2021	Boron	0.06	2.5	mg/l	7440-42-8
MW-3R	09/08/2021	Boron	0.05	2.5	mg/l	7440-42-8
MW-3R	05/13/2021	Calcium	226	271	mg/l	7440-70-2
MW-3R	09/08/2021	Calcium	230	271	mg/l	7440-70-2
MW-3R	05/13/2021	Chloride	21.4	125	mg/l	16887-00-6
MW-3R	09/08/2021	Chloride	21.6	125	mg/l	16887-00-6
MW-3R	05/13/2021	Fluoride	0.096	0.33	mg/l	16984-48-8
MW-3R	09/08/2021	Fluoride	0.087	0.33	mg/l	16984-48-8
MW-3R	05/13/2021	pH	6.7	6.4 - 7.7	pH UNITS	PH
MW-3R	09/08/2021	pH	6.5	6.4 - 7.7	pH UNITS	PH
MW-3R	05/13/2021	Sulfate as SO4	4.8	630	mg/l	14808-79-8
MW-3R	09/08/2021	Sulfate as SO4	4.6	630	mg/l	14808-79-8
MW-3R	05/13/2021	Total Dissolved Solids	847	1846	mg/l	TDS
MW-3R	09/08/2021	Total Dissolved Solids	847	1846	mg/l	TDS
MW-3RD	05/13/2021	Boron	0.04	2.49	mg/l	7440-42-8
MW-3RD	09/08/2021	Boron	0.032	2.49	mg/l	7440-42-8
MW-3RD	05/13/2021	Calcium	123	271	mg/l	7440-70-2
MW-3RD	09/08/2021	Calcium	122	271	mg/l	7440-70-2
MW-3RD	05/13/2021	Chloride	28.2	125	mg/l	16887-00-6
MW-3RD	09/08/2021	Chloride	27.6	125	mg/l	16887-00-6
MW-3RD	05/13/2021	Fluoride	0.28	0.33	mg/l	16984-48-8
MW-3RD	09/08/2021	Fluoride	0.2	0.33	mg/l	16984-48-8
MW-3RD	05/13/2021	pH	7.1	6.4 - 7.7	pH UNITS	PH
MW-3RD	09/08/2021	pH	7.0	6.4 - 7.7	pH UNITS	PH
MW-3RD	05/13/2021	Sulfate as SO4	84.2	630	mg/l	14808-79-8
MW-3RD	09/08/2021	Sulfate as SO4	86.9	630	mg/l	14808-79-8
MW-3RD	05/13/2021	Total Dissolved Solids	583	1846	mg/l	TDS
MW-3RD	09/08/2021	Total Dissolved Solids	534	1846	mg/l	TDS
MW-4	05/13/2021	Boron	0.33	2.49	mg/l	7440-42-8
MW-4	09/08/2021	Boron	0.42	2.49	mg/l	7440-42-8
MW-4	05/13/2021	Calcium	192	271	mg/l	7440-70-2
MW-4	09/08/2021	Calcium	187	271	mg/l	7440-70-2
MW-4	05/13/2021	Chloride	37.1	125	mg/l	16887-00-6
MW-4	09/08/2021	Chloride	27.3	125	mg/l	16887-00-6
MW-4	05/13/2021	Fluoride	0.23	0.33	mg/l	16984-48-8
MW-4	09/08/2021	Fluoride	0.28	0.33	mg/l	16984-48-8
MW-4	05/13/2021	pH	7.1	6.4 - 7.7	pH UNITS	PH
MW-4	09/08/2021	pH	7.0	6.4 - 7.7	pH UNITS	PH
MW-4	05/13/2021	Sulfate as SO4	233	630	mg/l	14808-79-8
MW-4	09/08/2021	Sulfate as SO4	207	630	mg/l	14808-79-8
MW-4	05/13/2021	Total Dissolved Solids	833	1846	mg/l	TDS
MW-4	09/08/2021	Total Dissolved Solids	827	1846	mg/l	TDS

Results in milligrams per liter (mg/l)

Bold = Indicates concentration above Background Threshold Value

2021 CCR Annual Monitoring Report
SKB Lansing Landfill
52563 243rd Street
Austin, Minnesota

Table 3

Groundwater Analytical Data
Appendix IV

Location	Date	Parameter	Result	Background Threshold Value (BTV)	Units	CAS #
MW-1	05/13/2021	Antimony	<0.001	0.001	mg/l	7440-36-0
MW-1	05/13/2021	Arsenic	<0.001	0.015	mg/l	7440-38-2
MW-1	09/08/2021	Arsenic	<0.001	0.015	mg/l	7440-38-2
MW-1	05/13/2021	Barium	0.16	0.6	mg/l	7440-39-3
MW-1	09/08/2021	Barium	0.12	0.6	mg/l	7440-39-3
MW-1	05/13/2021	Beryllium	<0.0007	0.002	mg/l	7440-41-7
MW-1	05/13/2021	Cadmium	<0.0005	0.002	mg/l	7440-43-9
MW-1	05/13/2021	Chromium	< 0.0040	0.0053	mg/l	7440-47-3
MW-1	09/08/2021	Chromium	< 0.0040	0.0053	mg/l	7440-47-3
MW-1	05/13/2021	Cobalt	<0.0003	0.0076	mg/l	7440-48-4
MW-1	09/08/2021	Cobalt	<0.0003	0.0076	mg/l	7440-48-4
MW-1	05/13/2021	Fluoride	0.16	0.33	mg/l	16984-48-8
MW-1	09/08/2021	Fluoride	< 0.50	0.33	mg/l	16984-48-8
MW-1	05/13/2021	Lead	< 0.010	0.016	mg/l	7439-92-1
MW-1	05/13/2021	Lithium	0.041	0.041	mg/l	7439-93-2
MW-1	09/08/2021	Lithium	< 0.030	0.041	mg/l	7439-93-2
MW-1	05/13/2021	Mercury	<0.0002	0.0002	mg/l	7439-97-6
MW-1	09/08/2021	Mercury	<0.0002	0.0002	mg/l	7439-97-6
MW-1	05/13/2021	MOLYBDENUM	<0.001	0.0234	mg/l	7439-98-7
MW-1	09/08/2021	MOLYBDENUM	<0.001	0.0234	mg/l	7439-98-7
MW-1	05/13/2021	Radium 226	< 0.261	1.442	pci/l	13982-63-3
MW-1	09/08/2021	Radium 226	<0.319	1.442	pci/l	13982-63-3
MW-1	05/13/2021	Radium 228	< 0.415	1.771	pci/l	15262-20-1
MW-1	09/08/2021	Radium 228	0.556	1.771	pci/l	15262-20-1
MW-1	05/13/2021	Radium 226/228	< 0.415	3.213	pci/l	EDF-206
MW-1	09/08/2021	Radium 226/228	0.556	3.213	pci/l	EDF-206
MW-1	05/13/2021	Selenium	<0.001	0.025	mg/l	7782-49-2
MW-1	09/08/2021	Selenium	<0.001	0.025	mg/l	7782-49-2
MW-1	05/13/2021	Thallium	<0.0002	0.002	mg/l	7440-28-0
MW-1RD	05/13/2021	Antimony	<0.001	0.001	mg/l	7440-36-0
MW-1RD	05/13/2021	Arsenic	<0.001	0.015	mg/l	7440-38-2
MW-1RD	09/08/2021	Arsenic	<0.001	0.015	mg/l	7440-38-2
MW-1RD	05/13/2021	Barium	0.16	0.6	mg/l	7440-39-3
MW-1RD	09/08/2021	Barium	0.16	0.6	mg/l	7440-39-3
MW-1RD	05/13/2021	Beryllium	<0.0007	0.002	mg/l	7440-41-7
MW-1RD	05/13/2021	Cadmium	<0.0005	0.002	mg/l	7440-43-9
MW-1RD	05/13/2021	Chromium	< 0.0040	0.0053	mg/l	7440-47-3
MW-1RD	09/08/2021	Chromium	< 0.0040	0.0053	mg/l	7440-47-3
MW-1RD	05/13/2021	Cobalt	0.00072	0.0076	mg/l	7440-48-4
MW-1RD	09/08/2021	Cobalt	0.00073	0.0076	mg/l	7440-48-4
MW-1RD	05/13/2021	Fluoride	0.26	0.33	mg/l	16984-48-8
MW-1RD	09/08/2021	Fluoride	0.19	0.33	mg/l	16984-48-8
MW-1RD	05/13/2021	Lead	< 0.010	0.016	mg/l	7439-92-1
MW-1RD	05/13/2021	Lithium	< 0.030	0.041	mg/l	7439-93-2
MW-1RD	09/08/2021	Lithium	< 0.030	0.041	mg/l	7439-93-2
MW-1RD	05/13/2021	Mercury	<0.0002	0.0002	mg/l	7439-97-6
MW-1RD	09/08/2021	Mercury	<0.0002	0.0002	mg/l	7439-97-6
MW-1RD	05/13/2021	MOLYBDENUM	0.003	0.0234	mg/l	7439-98-7
MW-1RD	09/08/2021	MOLYBDENUM	0.003	0.0234	mg/l	7439-98-7
MW-1RD	05/13/2021	Radium 226	< 0.289	1.442	pci/l	13982-63-3
MW-1RD	09/08/2021	Radium 226	0.78	1.442	pci/l	13982-63-3
MW-1RD	05/13/2021	Radium 228	0.838	1.771	pci/l	15262-20-1
MW-1RD	09/08/2021	Radium 228	0.607	1.771	pci/l	15262-20-1

Table 3

Groundwater Analytical Data
Appendix IV

Location	Date	Parameter	Result	Background Threshold Value (BTV)	Units	CAS #
MW-1RD	05/13/2021	Radium 226/228	0.838	3.213	pci/l	EDF-206
MW-1RD	09/08/2021	Radium 226/228	1.387	3.213	pci/l	EDF-206
MW-1RD	05/13/2021	Selenium	<0.001	0.025	mg/l	7782-49-2
MW-1RD	09/08/2021	Selenium	<0.001	0.025	mg/l	7782-49-2
MW-1RD	05/13/2021	Thallium	<0.0002	0.002	mg/l	7440-28-0
MW-2R	05/13/2021	Antimony	<0.001	0.001	mg/l	7440-36-0
MW-2R	05/13/2021	Arsenic	<0.001	0.015	mg/l	7440-38-2
MW-2R	09/08/2021	Arsenic	<0.001	0.015	mg/l	7440-38-2
MW-2R	05/13/2021	Barium	0.24	0.6	mg/l	7440-39-3
MW-2R	09/08/2021	Barium	0.3	0.6	mg/l	7440-39-3
MW-2R	05/13/2021	Beryllium	<0.0007	0.002	mg/l	7440-41-7
MW-2R	05/13/2021	Cadmium	<0.0005	0.002	mg/l	7440-43-9
MW-2R	05/13/2021	Chromium	0.004	0.0053	mg/l	7440-47-3
MW-2R	09/08/2021	Chromium	< 0.0040	0.0053	mg/l	7440-47-3
MW-2R	05/13/2021	Cobalt	0.0019	0.0076	mg/l	7440-48-4
MW-2R	09/08/2021	Cobalt	0.0027	0.0076	mg/l	7440-48-4
MW-2R	05/13/2021	Fluoride	0.21	0.33	mg/l	16984-48-8
MW-2R	09/08/2021	Fluoride	< 0.25	0.33	mg/l	16984-48-8
MW-2R	05/13/2021	Lead	< 0.010	0.016	mg/l	7439-92-1
MW-2R	05/13/2021	Lithium	< 0.030	0.041	mg/l	7439-93-2
MW-2R	09/08/2021	Lithium	< 0.030	0.041	mg/l	7439-93-2
MW-2R	05/13/2021	Mercury	<0.0002	0.0002	mg/l	7439-97-6
MW-2R	09/08/2021	Mercury	<0.0002	0.0002	mg/l	7439-97-6
MW-2R	05/13/2021	MOLYBDENUM	0.0021	0.0234	mg/l	7439-98-7
MW-2R	09/08/2021	MOLYBDENUM	0.0024	0.0234	mg/l	7439-98-7
MW-2R	05/13/2021	Radium 226	< 0.355	1.442	pci/l	13982-63-3
MW-2R	09/08/2021	Radium 226	<0.436	1.442	pci/l	13982-63-3
MW-2R	05/13/2021	Radium 228	0.934	1.771	pci/l	15262-20-1
MW-2R	09/08/2021	Radium 228	1.18	1.771	pci/l	15262-20-1
MW-2R	05/13/2021	Radium 226/228	0.934	3.213	pci/l	EDF-206
MW-2R	09/08/2021	Radium 226/228	1.18	3.213	pci/l	EDF-206
MW-2R	05/13/2021	Selenium	<0.001	0.025	mg/l	7782-49-2
MW-2R	09/08/2021	Selenium	<0.001	0.025	mg/l	7782-49-2
MW-2R	05/13/2021	Thallium	<0.0002	0.002	mg/l	7440-28-0
MW-2RD	05/13/2021	Antimony	<0.001	0.001	mg/l	7440-36-0
MW-2RD	05/13/2021	Arsenic	0.002	0.015	mg/l	7440-38-2
MW-2RD	09/08/2021	Arsenic	0.0016	0.015	mg/l	7440-38-2
MW-2RD	05/13/2021	Barium	0.2	0.6	mg/l	7440-39-3
MW-2RD	09/08/2021	Barium	0.19	0.6	mg/l	7440-39-3
MW-2RD	05/13/2021	Beryllium	<0.0007	0.002	mg/l	7440-41-7
MW-2RD	05/13/2021	Cadmium	<0.0005	0.002	mg/l	7440-43-9
MW-2RD	05/13/2021	Chromium	< 0.0040	0.0053	mg/l	7440-47-3
MW-2RD	09/08/2021	Chromium	< 0.0040	0.0053	mg/l	7440-47-3
MW-2RD	05/13/2021	Cobalt	0.0026	0.0076	mg/l	7440-48-4
MW-2RD	09/08/2021	Cobalt	0.0021	0.0076	mg/l	7440-48-4
MW-2RD	05/13/2021	Fluoride	0.23	0.33	mg/l	16984-48-8
MW-2RD	09/08/2021	Fluoride	0.16	0.33	mg/l	16984-48-8
MW-2RD	05/13/2021	Lead	< 0.010	0.016	mg/l	7439-92-1
MW-2RD	05/13/2021	Lithium	< 0.030	0.041	mg/l	7439-93-2
MW-2RD	09/08/2021	Lithium	< 0.030	0.041	mg/l	7439-93-2
MW-2RD	05/13/2021	Mercury	<0.0002	0.0002	mg/l	7439-97-6
MW-2RD	09/08/2021	Mercury	<0.0002	0.0002	mg/l	7439-97-6

Table 3

Groundwater Analytical Data
Appendix IV

Location	Date	Parameter	Result	Background Threshold Value (BTV)	Units	CAS #
MW-2RD	05/13/2021	MOLYBDENUM	0.0022	0.0234	mg/l	7439-98-7
MW-2RD	09/08/2021	MOLYBDENUM	0.0021	0.0234	mg/l	7439-98-7
MW-2RD	05/13/2021	Radium 226	0.45	1.442	pci/l	13982-63-3
MW-2RD	09/08/2021	Radium 226	0.602	1.442	pci/l	13982-63-3
MW-2RD	05/13/2021	Radium 228	0.591	1.771	pci/l	15262-20-1
MW-2RD	09/08/2021	Radium 228	0.93	1.771	pci/l	15262-20-1
MW-2RD	05/13/2021	Radium 226/228	1.041	3.213	pci/l	EDF-206
MW-2RD	09/08/2021	Radium 226/228	1.532	3.213	pci/l	EDF-206
MW-2RD	05/13/2021	Selenium	0.0148	0.025	mg/l	7782-49-2
MW-2RD	09/08/2021	Selenium	0.0146	0.025	mg/l	7782-49-2
MW-2RD	05/13/2021	Thallium	<0.0002	0.002	mg/l	7440-28-0
MW-3	05/13/2021	Antimony	<0.001	0.001	mg/l	7440-36-0
MW-3	05/13/2021	Arsenic	0.0019	0.015	mg/l	7440-38-2
MW-3	09/08/2021	Arsenic	0.0043	0.015	mg/l	7440-38-2
MW-3	05/13/2021	Barium	0.3	0.6	mg/l	7440-39-3
MW-3	09/08/2021	Barium	0.29	0.6	mg/l	7440-39-3
MW-3	05/13/2021	Beryllium	<0.0007	0.002	mg/l	7440-41-7
MW-3	05/13/2021	Cadmium	<0.0005	0.002	mg/l	7440-43-9
MW-3	05/13/2021	Chromium	< 0.0040	0.0053	mg/l	7440-47-3
MW-3	09/08/2021	Chromium	< 0.0040	0.0053	mg/l	7440-47-3
MW-3	05/13/2021	Cobalt	0.0076	0.0076	mg/l	7440-48-4
MW-3	09/08/2021	Cobalt	0.0055	0.0076	mg/l	7440-48-4
MW-3	05/13/2021	Fluoride	0.21	0.33	mg/l	16984-48-8
MW-3	09/08/2021	Fluoride	0.17	0.33	mg/l	16984-48-8
MW-3	05/13/2021	Lead	< 0.010	0.016	mg/l	7439-92-1
MW-3	05/13/2021	Lithium	< 0.030	0.041	mg/l	7439-93-2
MW-3	09/08/2021	Lithium	< 0.030	0.041	mg/l	7439-93-2
MW-3	05/13/2021	Mercury	<0.0002	0.0002	mg/l	7439-97-6
MW-3	09/08/2021	Mercury	<0.0002	0.0002	mg/l	7439-97-6
MW-3	05/13/2021	MOLYBDENUM	0.007	0.0234	mg/l	7439-98-7
MW-3	09/08/2021	MOLYBDENUM	0.0061	0.0234	mg/l	7439-98-7
MW-3	05/13/2021	Radium 226	0.414	1.442	pci/l	13982-63-3
MW-3	09/08/2021	Radium 226	<0.461	1.442	pci/l	13982-63-3
MW-3	05/13/2021	Radium 228	< 0.558	1.771	pci/l	15262-20-1
MW-3	09/08/2021	Radium 228	0.654	1.771	pci/l	15262-20-1
MW-3	05/13/2021	Radium 226/228	0.414	3.213	pci/l	EDF-206
MW-3	09/08/2021	Radium 226/228	0.654	3.213	pci/l	EDF-206
MW-3	05/13/2021	Selenium	<0.001	0.025	mg/l	7782-49-2
MW-3	09/08/2021	Selenium	<0.001	0.025	mg/l	7782-49-2
MW-3	05/13/2021	Thallium	<0.0002	0.002	mg/l	7440-28-0
MW-3R	05/13/2021	Antimony	<0.001	0.001	mg/l	7440-36-0
MW-3R	05/13/2021	Arsenic	0.0022	0.015	mg/l	7440-38-2
MW-3R	09/08/2021	Arsenic	0.0023	0.015	mg/l	7440-38-2
MW-3R	05/13/2021	Barium	0.6	0.6	mg/l	7440-39-3
MW-3R	09/08/2021	Barium	0.57	0.6	mg/l	7440-39-3
MW-3R	05/13/2021	Beryllium	<0.0007	0.002	mg/l	7440-41-7
MW-3R	05/13/2021	Cadmium	<0.0005	0.002	mg/l	7440-43-9
MW-3R	05/13/2021	Chromium	< 0.0040	0.0053	mg/l	7440-47-3
MW-3R	09/08/2021	Chromium	< 0.0040	0.0053	mg/l	7440-47-3
MW-3R	05/13/2021	Cobalt	0.00058	0.0076	mg/l	7440-48-4
MW-3R	09/08/2021	Cobalt	0.00072	0.0076	mg/l	7440-48-4
MW-3R	05/13/2021	Fluoride	0.096	0.33	mg/l	16984-48-8
MW-3R	09/08/2021	Fluoride	0.087	0.33	mg/l	16984-48-8

Table 3

Groundwater Analytical Data
Appendix IV

Location	Date	Parameter	Result	Background Threshold Value (BTV)	Units	CAS #
MW-3R	05/13/2021	Lead	< 0.010	0.016	mg/l	7439-92-1
MW-3R	05/13/2021	Lithium	< 0.030	0.041	mg/l	7439-93-2
MW-3R	09/08/2021	Lithium	< 0.030	0.041	mg/l	7439-93-2
MW-3R	05/13/2021	Mercury	<0.0002	0.0002	mg/l	7439-97-6
MW-3R	09/08/2021	Mercury	<0.0002	0.0002	mg/l	7439-97-6
MW-3R	05/13/2021	MOLYBDENUM	0.0011	0.0234	mg/l	7439-98-7
MW-3R	09/08/2021	MOLYBDENUM	0.0011	0.0234	mg/l	7439-98-7
MW-3R	05/13/2021	Radium 226	0.295	1.442	pci/l	13982-63-3
MW-3R	09/08/2021	Radium 226	0.774	1.442	pci/l	13982-63-3
MW-3R	05/13/2021	Radium 228	0.559	1.771	pci/l	15262-20-1
MW-3R	09/08/2021	Radium 228	1.58	1.771	pci/l	15262-20-1
MW-3R	05/13/2021	Radium 226/228	0.854	3.213	pci/l	EDF-206
MW-3R	09/08/2021	Radium 226/228	2.324	3.213	pci/l	EDF-206
MW-3R	05/13/2021	Selenium	<0.001	0.025	mg/l	7782-49-2
MW-3R	09/08/2021	Selenium	<0.001	0.025	mg/l	7782-49-2
MW-3R	05/13/2021	Thallium	<0.0002	0.002	mg/l	7440-28-0
MW-3RD	05/13/2021	Antimony	<0.001	0.001	mg/l	7440-36-0
MW-3RD	05/13/2021	Arsenic	0.004	0.015	mg/l	7440-38-2
MW-3RD	09/08/2021	Arsenic	0.0032	0.015	mg/l	7440-38-2
MW-3RD	05/13/2021	Barium	0.22	0.6	mg/l	7440-39-3
MW-3RD	09/08/2021	Barium	0.2	0.6	mg/l	7440-39-3
MW-3RD	05/13/2021	Beryllium	<0.0007	0.002	mg/l	7440-41-7
MW-3RD	05/13/2021	Cadmium	<0.0005	0.002	mg/l	7440-43-9
MW-3RD	05/13/2021	Chromium	< 0.0040	0.0053	mg/l	7440-47-3
MW-3RD	09/08/2021	Chromium	< 0.0040	0.0053	mg/l	7440-47-3
MW-3RD	05/13/2021	Cobalt	0.00059	0.0076	mg/l	7440-48-4
MW-3RD	09/08/2021	Cobalt	0.00034	0.0076	mg/l	7440-48-4
MW-3RD	05/13/2021	Fluoride	0.28	0.33	mg/l	16984-48-8
MW-3RD	09/08/2021	Fluoride	0.2	0.33	mg/l	16984-48-8
MW-3RD	05/13/2021	Lead	< 0.010	0.016	mg/l	7439-92-1
MW-3RD	05/13/2021	Lithium	< 0.030	0.041	mg/l	7439-93-2
MW-3RD	09/08/2021	Lithium	< 0.030	0.041	mg/l	7439-93-2
MW-3RD	05/13/2021	Mercury	<0.0002	0.0002	mg/l	7439-97-6
MW-3RD	09/08/2021	Mercury	<0.0002	0.0002	mg/l	7439-97-6
MW-3RD	05/13/2021	MOLYBDENUM	0.0045	0.0234	mg/l	7439-98-7
MW-3RD	09/08/2021	MOLYBDENUM	0.0042	0.0234	mg/l	7439-98-7
MW-3RD	05/13/2021	Radium 226	0.416	1.442	pci/l	13982-63-3
MW-3RD	09/08/2021	Radium 226	0.736	1.442	pci/l	13982-63-3
MW-3RD	05/13/2021	Radium 228	< 0.550	1.771	pci/l	15262-20-1
MW-3RD	09/08/2021	Radium 228	0.661	1.771	pci/l	15262-20-1
MW-3RD	05/13/2021	Radium 226/228	0.416	3.213	pci/l	EDF-206
MW-3RD	09/08/2021	Radium 226/228	1.397	3.213	pci/l	EDF-206
MW-3RD	05/13/2021	Selenium	<0.001	0.025	mg/l	7782-49-2
MW-3RD	09/08/2021	Selenium	<0.001	0.025	mg/l	7782-49-2
MW-3RD	05/13/2021	Thallium	<0.0002	0.002	mg/l	7440-28-0
MW-4	05/13/2021	Antimony	<0.001	0.001	mg/l	7440-36-0
MW-4	05/13/2021	Arsenic	0.0012	0.015	mg/l	7440-38-2
MW-4	09/08/2021	Arsenic	0.0014	0.015	mg/l	7440-38-2
MW-4	05/13/2021	Barium	0.23	0.6	mg/l	7440-39-3
MW-4	09/08/2021	Barium	0.23	0.6	mg/l	7440-39-3
MW-4	05/13/2021	Beryllium	<0.0007	0.002	mg/l	7440-41-7
MW-4	05/13/2021	Cadmium	<0.0005	0.002	mg/l	7440-43-9
MW-4	05/13/2021	Chromium	< 0.0040	0.0053	mg/l	7440-47-3

Table 3

Groundwater Analytical Data
Appendix IV

Location	Date	Parameter	Result	Background Threshold Value (BTV)	Units	CAS #
MW-4	09/08/2021	Chromium	< 0.0040	0.0053	mg/l	7440-47-3
MW-4	05/13/2021	Cobalt	0.00039	0.0076	mg/l	7440-48-4
MW-4	09/08/2021	Cobalt	0.00044	0.0076	mg/l	7440-48-4
MW-4	05/13/2021	Fluoride	0.23	0.33	mg/l	16984-48-8
MW-4	09/08/2021	Fluoride	0.28	0.33	mg/l	16984-48-8
MW-4	05/13/2021	Lead	< 0.010	0.016	mg/l	7439-92-1
MW-4	05/13/2021	Lithium	< 0.030	0.041	mg/l	7439-93-2
MW-4	09/08/2021	Lithium	< 0.030	0.041	mg/l	7439-93-2
MW-4	05/13/2021	Mercury	<0.0002	0.0002	mg/l	7439-97-6
MW-4	09/08/2021	Mercury	<0.0002	0.0002	mg/l	7439-97-6
MW-4	05/13/2021	MOLYBDENUM	0.0015	0.0234	mg/l	7439-98-7
MW-4	09/08/2021	MOLYBDENUM	0.0018	0.0234	mg/l	7439-98-7
MW-4	05/13/2021	Radium 226	< 0.372	1.442	pci/l	13982-63-3
MW-4	09/08/2021	Radium 226	<0.340	1.442	pci/l	13982-63-3
MW-4	05/13/2021	Radium 228	< 0.560	1.771	pci/l	15262-20-1
MW-4	09/08/2021	Radium 228	0.646	1.771	pci/l	15262-20-1
MW-4	05/13/2021	Radium 226/228	< 0.560	3.213	pci/l	EDF-206
MW-4	09/08/2021	Radium 226/228	0.646	3.213	pci/l	EDF-206
MW-4	05/13/2021	Selenium	<0.001	0.025	mg/l	7782-49-2
MW-4	09/08/2021	Selenium	<0.001	0.025	mg/l	7782-49-2
MW-4	05/13/2021	Thallium	<0.0002	0.002	mg/l	7440-28-0

Results in milligrams per liter (mg/l) or picocuries per liter (pci/l)
Bold = Indicates concentration above Background Threshold Value

2021 CCR Annual Monitoring Report
SKB Lansing Landfill
52563 243rd Street
Austin, Minnesota

Table 4

Well Stabilization Data

Well ID	Sample Date	Purge Rate ml/min	Purge Volume gal	Field pH pH	Field Specific Conductivity umhos/cm	Field Temp deg c	Dissolved Oxygen mg/l	Turbidity NTU	Eh mV
MW-1	5/12/2021	1000	0.1	7.11	1360	9.07	3.35	49.5	-19
MW-1	5/12/2021	1000	3	6.97	1520	7.80	3.56	39.4	122
MW-1	5/12/2021	1000	6	6.97	1530	7.80	3.52	40	122
MW-1	5/12/2021	1000	9.5	6.97	1530	7.80	3.53	39.4	123
MW-1	5/12/2021			6.97	1570	7.73	3.53	39	125
MW-1	9/8/2021	1000	0.1	7.15	946	12.16	2.09	25.8	37
MW-1	9/8/2021	1000	1	6.85	930	12.17	4.45	1.4	60
MW-1	9/8/2021	1000	2	6.79	889	13.21	4.32	0	87
MW-1	9/8/2021	1000	3.5	6.76	909	13.67	4.56	0.7	100
MW-1	9/8/2021			6.80	913	13.71	4.59	0.6	100
MW-1RD	5/12/2021	1000	0.1	7.77	609	10.13	4.01	50.1	129
MW-1RD	5/12/2021	1000	8	7.58	642	9.47	0.00	41.8	-76
MW-1RD	5/12/2021	1000	16	7.39	646	9.37	0.00	43.7	-61
MW-1RD	5/12/2021	1000	23.5	7.30	647	9.35	0.00	41.3	-54
MW-1RD	5/12/2021			7.29	647	9.33	0.00	40.8	-53
MW-1RD	9/8/2021	1000	0.1	6.92	597	9.52	6.31	0.8	34
MW-1RD	9/8/2021	1000	3	7.07	598	9.30	4.93	1.5	-6
MW-1RD	9/8/2021	1000	6	7.14	598	9.32	4.90	1.6	-20
MW-1RD	9/8/2021	1000	8	7.11	598	9.35	4.58	0.7	-18
MW-1RD	9/8/2021			7.06	598	9.29	3.69	1.8	-21
MW-2R	5/12/2021	1000	0.1	6.96	1690	10.19	7.02	267	57
MW-2R	5/12/2021	1000	0.5	6.94	1600	11.19	3.35	81.4	-35
MW-2R	5/12/2021	1000	1	7.19	1510	12.35	4.05	47.6	-14
MW-2R	5/12/2021	1000	1.5	7.19	1510	12.45	4.05	45.6	-13
MW-2R	5/13/2021			7.16	1520	12.58	4.01	44.2	-12
MW-2R	9/8/2021	1000	0.1	6.47	1660	13.57	1.04	44.7	12
MW-2R	9/8/2021	1000	0.5	6.46	1650	14.46	0.74	25.9	17
MW-2R	9/8/2021	1000	1	6.48	1650	14.53	1.00	26.4	19
MW-2R	9/8/2021	1000	1.5	6.49	1640	14.60	1.22	26.1	22
MW-2R	9/8/2021			6.47	1620	14.67	1.51	25.5	24
MW-2RD	5/12/2021	1000	0.1	7.50	1000	10.07	1.27	78.2	-24
MW-2RD	5/12/2021	1000	4	7.05	1030	9.95	0.00	63.8	8
MW-2RD	5/12/2021	1000	8	7.05	1030	9.95	0.00	64.8	7
MW-2RD	5/12/2021	1000	12.5	7.05	1030	9.95	0.00	66	7
MW-2RD	5/12/2021			7.10	1030	9.95	0.00	62.3	3
MW-2RD	9/8/2021	1000	0.1	6.67	940	10.16	1.73	10	47
MW-2RD	9/8/2021	1000	1.5	6.79	939	10.15	1.08	8.2	49
MW-2RD	9/8/2021	1000	3	6.89	939	10.18	1.02	8.5	49
MW-2RD	9/8/2021	1000	5	6.89	9.35	10.20	1.05	8.7	48
MW-2RD	9/8/2021			6.85	935	10.20	1.05	8.7	48
MW-3	5/13/2021	1000	0.1	6.97	1500	8.35	0.00	57.3	-112
MW-3	5/13/2021	1000	2	6.94	1520	8.04	0.00	55.9	-82
MW-3	5/13/2021	1000	4	6.84	1530	7.97	0.00	48.4	-51
MW-3	5/13/2021	1000	5.5	6.83	1530	7.96	0.00	48.2	-50
MW-3	5/13/2021			6.81	1530	7.97	0.00	46.5	-48
MW-3	9/8/2021	1000	0.1	6.52	1310	13.22	5.76	46	-6
MW-3	9/8/2021	1000	0.75	6.40	1220	13.16	4.03	11.5	-40
MW-3	9/8/2021	1000	1.5	6.41	1200	13.61	2.10	4.5	-33
MW-3	9/8/2021	1000	2	6.41	1210	13.62	1.77	3.7	-33
MW-3	9/8/2021			6.40	1220	13.61	1.45	2.9	-34

Table 4

Well Stabilization Data

Well ID	Sample Date	Purge Rate ml/min	Purge Volume gal	Field pH pH	Field Specific Conductivity umhos/cm	Field Temp deg c	Dissolved Oxygen mg/l	Turbidity NTU	Eh mV
MW-3R	5/13/2021	1000	3	7.01	1350	8.37	1.84	215	-89
MW-3R	5/13/2021	1000	6	6.99	1430	8.58	1.68	160	-114
MW-3R	5/13/2021	1000	9	6.91	1460	8.67	3.72	72.9	-113
MW-3R	5/13/2021			6.87	1460	8.67	2.51	69.3	-113
MW-3R	9/8/2021	1000	0.1	6.35	1320	10.43	7.13	3	-33
MW-3R	9/8/2021	1000	1	6.39	1340	9.93	4.50	1.7	-92
MW-3R	9/8/2021	1000	2	6.33	1340	9.99	3.21	2.5	-88
MW-3R	9/8/2021	1000	3.5	6.31	1330	9.96	4.45	3.2	-87
MW-3R	9/8/2021			6.28	1310	9.92	0.79	2.8	-89
MW-3RD	5/13/2021	1000	0.1	7.10	917	9.38	0.00	160	-73
MW-3RD	5/13/2021	1000	6	7.12	917	9.47	0.00	104	-89
MW-3RD	5/13/2021	1000	12	7.16	917	9.47	0.00	94.2	-92
MW-3RD	5/13/2021	1000	18.5	7.30	918	9.48	0.00	86.9	-100
MW-3RD	5/13/2021			7.28	919	9.48	0.00	82.4	-100
MW-3RD	9/8/2021	1000	0.1	6.70	829	9.82	0.07	10.4	-89
MW-3RD	9/8/2021	1000	2	6.68	833	9.70	0.00	6.9	-87
MW-3RD	9/8/2021	1000	4	6.70	834	9.87	0.00	6.4	-87
MW-3RD	9/8/2021	1000	7	6.69	833	9.89	0.00	5.9	-86
MW-3RD	9/8/2021			6.70	832	9.82	0.00	5.9	-87
MW-4	5/13/2021	1000	0.1	7.42	1280	9.92	1.95	36.1	86
MW-4	5/13/2021	1000	2	7.20	1300	7.94	0.00	20	86
MW-4	5/13/2021	1000	4	7.13	1320	7.75	0.00	21	88
MW-4	5/13/2021	1000	5.5	7.15	1320	7.64	0.00	23	84
MW-4	5/13/2021			7.15	1320	7.62	0.00	23.9	84
MW-4	9/8/2021	1000	0.1	6.52	1160	14.31	1.80	1	3
MW-4	9/8/2021	1000	1	6.45	1180	14.57	0.00	0	8
MW-4	9/8/2021	1000	2	6.43	1188	14.61	0.00	0	9
MW-4	9/8/2021	1000	2.5	6.44	1180	14.59	0.00	0	9
MW-4	9/8/2021			6.46	1180	14.71	0.00	0	9

Table 5

Background Threshold Values

Appendix III to Part 257

Parameter	Background Threshold Value (BTV)	Units	CAS #
Boron	2.49	mg/l	7440-42-8
Calcium	271	mg/l	7440-70-2
Chloride	125	mg/l	16887-00-6
Fluoride	0.33	mg/l	15984-48-8
pH	lower 6.4 higher 7.7	pH UNITS	PH
Sulfate as SO4	630	mg/l	14808-79-8
Total Dissolved Solids	1846	mg/l	TDS

Appendix IV to Part 257

Parameter	Background Threshold Value (BTV)	Units	CAS #
Antimony	0.001	mg/l	7440-36-0
Arsenic	0.015	mg/l	7440-38-2
Barium	0.6	mg/l	7440-39-3
Beryllium	0.002	mg/l	7440-41-7
Cadmium	0.002	mg/l	7440-43-9
Chromium	0.0053	mg/l	7440-47-3
Cobalt	0.0076	mg/l	7440-48-4
Fluoride	0.33	mg/l	15984-48-8
Lead	0.016	mg/l	7439-92-1
Lithium	0.041	mg/l	7439-93-2
Mercury	0.0002	mg/l	7439-97-6
Molybdenum	0.0234	mg/l	7439-98-7
Radium 226	1.442	pci/l	13982-63-3
Radium 228	1.771	pci/l	15262-20-1
Radium 226/228	3.213	pci/l	EDF-206
Selenium	0.025	mg/l	7782-49-2
Thallium	0.002	mg/l	7440-28-0

Results in milligrams per liter (mg/l) or picocuries per liter (pci/l)

2021 CCR Annual Monitoring Report
SKB Lansing Landfill
52563 243rd Street
Austin, Minnesota

Table 6

2021 Groundwater Protection Standards

Appendix IV to Part 257

Parameter	Background Threshold Value (BTV)	EPA Maximum Contaminate Level (MCL)	Groundwater Protection Standard (GPS)	Units	CAS #
Antimony	0.001	0.006	0.006	mg/l	7440-36-0
Arsenic	0.015	0.010	0.015	mg/l	7440-38-2
Barium	0.6	2	2	mg/l	7440-39-3
Beryllium	0.002	0.004	0.004	mg/l	7440-41-7
Cadmium	0.002	0.005	0.005	mg/l	7440-43-9
Chromium	0.0053	0.1	0.1	mg/l	7440-47-3
Cobalt	0.0076	0.006	0.0076	mg/l	7440-48-4
Fluoride	0.33	4	4	mg/l	15984-48-8
Lead	0.016	0.015	0.016	mg/l	7439-92-1
Lithium	0.041	0.04	0.041	mg/l	7439-93-2
Mercury	0.0002	0.002	0.002	mg/l	7439-97-6
Molybdenum	0.0234	0.1	0.1	mg/l	7439-98-7
Radium 226	1.442	--	--	pci/l	13982-63-3
Radium 228	1.771	--	--	pci/l	15262-20-1
Radium 226/228	3.213	5	5	pci/l	EDF-206
Selenium	0.025	0.05	0.05	mg/l	7782-49-2
Thallium	0.002	0.002	0.002	mg/l	7440-28-0

Results in milligrams per liter (mg/l) or picocuries per liter (pci/l)

Table 7

Groundwater Analytical Data vs Groundwater Protection Standards

Location	Date	Parameter	Result	Groundwater Protection Standard (GPS)	Units	CAS #
MW-1	05/13/2021	Antimony	<0.001	0.006	mg/l	7440-36-0
MW-1	05/13/2021	Arsenic	<0.001	0.015	mg/l	7440-38-2
MW-1	09/08/2021	Arsenic	<0.001	0.015	mg/l	7440-38-2
MW-1	05/13/2021	Barium	0.16	2	mg/l	7440-39-3
MW-1	09/08/2021	Barium	0.12	2	mg/l	7440-39-3
MW-1	05/13/2021	Beryllium	<0.0007	0.004	mg/l	7440-41-7
MW-1	05/13/2021	Cadmium	<0.0005	0.005	mg/l	7440-43-9
MW-1	05/13/2021	Chromium	< 0.0040	0.1	mg/l	7440-47-3
MW-1	09/08/2021	Chromium	< 0.0040	0.1	mg/l	7440-47-3
MW-1	05/13/2021	Cobalt	<0.0003	0.0076	mg/l	7440-48-4
MW-1	09/08/2021	Cobalt	<0.0003	0.0076	mg/l	7440-48-4
MW-1	05/13/2021	Fluoride	0.16	4	mg/l	16984-48-8
MW-1	09/08/2021	Fluoride	< 0.50	4	mg/l	16984-48-8
MW-1	05/13/2021	Lead	< 0.010	0.016	mg/l	7439-92-1
MW-1	05/13/2021	Lithium	0.041	0.041	mg/l	7439-93-2
MW-1	09/08/2021	Lithium	< 0.030	0.041	mg/l	7439-93-2
MW-1	05/13/2021	Mercury	<0.0002	0.002	mg/l	7439-97-6
MW-1	09/08/2021	Mercury	<0.0002	0.002	mg/l	7439-97-6
MW-1	05/13/2021	MOLYBDENUM	<0.001	0.1	mg/l	7439-98-7
MW-1	09/08/2021	MOLYBDENUM	<0.001	0.1	mg/l	7439-98-7
MW-1	05/13/2021	Radium 226	< 0.261	--	pci/l	13982-63-3
MW-1	09/08/2021	Radium 226	<0.319	--	pci/l	13982-63-3
MW-1	05/13/2021	Radium 228	< 0.415	--	pci/l	15262-20-1
MW-1	09/08/2021	Radium 228	0.556	--	pci/l	15262-20-1
MW-1	05/13/2021	Radium 226/228	< 0.415	5	pci/l	EDF-206
MW-1	09/08/2021	Radium 226/228	0.556	5	pci/l	EDF-206
MW-1	05/13/2021	Selenium	<0.001	0.05	mg/l	7782-49-2
MW-1	09/08/2021	Selenium	<0.001	0.05	mg/l	7782-49-2
MW-1	05/13/2021	Thallium	<0.0002	0.002	mg/l	7440-28-0
MW-1RD	05/13/2021	Antimony	<0.001	0.006	mg/l	7440-36-0
MW-1RD	05/13/2021	Arsenic	<0.001	0.015	mg/l	7440-38-2
MW-1RD	09/08/2021	Arsenic	<0.001	0.015	mg/l	7440-38-2
MW-1RD	05/13/2021	Barium	0.16	2	mg/l	7440-39-3
MW-1RD	09/08/2021	Barium	0.16	2	mg/l	7440-39-3
MW-1RD	05/13/2021	Beryllium	<0.0007	0.004	mg/l	7440-41-7
MW-1RD	05/13/2021	Cadmium	<0.0005	0.005	mg/l	7440-43-9
MW-1RD	05/13/2021	Chromium	< 0.0040	0.1	mg/l	7440-47-3
MW-1RD	09/08/2021	Chromium	< 0.0040	0.1	mg/l	7440-47-3
MW-1RD	05/13/2021	Cobalt	0.00072	0.0076	mg/l	7440-48-4
MW-1RD	09/08/2021	Cobalt	0.00073	0.0076	mg/l	7440-48-4
MW-1RD	05/13/2021	Fluoride	0.26	4	mg/l	16984-48-8

Table 7

Groundwater Analytical Data vs Groundwater Protection Standards

Location	Date	Parameter	Result	Groundwater Protection Standard (GPS)	Units	CAS #
MW-1RD	09/08/2021	Fluoride	0.19	4	mg/l	16984-48-8
MW-1RD	05/13/2021	Lead	< 0.010	0.016	mg/l	7439-92-1
MW-1RD	05/13/2021	Lithium	< 0.030	0.041	mg/l	7439-93-2
MW-1RD	09/08/2021	Lithium	< 0.030	0.041	mg/l	7439-93-2
MW-1RD	05/13/2021	Mercury	<0.0002	0.002	mg/l	7439-97-6
MW-1RD	09/08/2021	Mercury	<0.0002	0.002	mg/l	7439-97-6
MW-1RD	05/13/2021	MOLYBDENUM	0.003	0.1	mg/l	7439-98-7
MW-1RD	09/08/2021	MOLYBDENUM	0.003	0.1	mg/l	7439-98-7
MW-1RD	05/13/2021	Radium 226	< 0.289	--	pci/l	13982-63-3
MW-1RD	09/08/2021	Radium 226	0.780	--	pci/l	13982-63-3
MW-1RD	05/13/2021	Radium 228	0.838	--	pci/l	15262-20-1
MW-1RD	09/08/2021	Radium 228	0.607	--	pci/l	15262-20-1
MW-1RD	05/13/2021	Radium 226/228	0.838	5	pci/l	EDF-206
MW-1RD	09/08/2021	Radium 226/228	1.387	5	pci/l	EDF-206
MW-1RD	05/13/2021	Selenium	<0.001	0.05	mg/l	7782-49-2
MW-1RD	09/08/2021	Selenium	<0.001	0.05	mg/l	7782-49-2
MW-1RD	05/13/2021	Thallium	<0.0002	0.002	mg/l	7440-28-0
MW-2R	05/13/2021	Antimony	<0.001	0.006	mg/l	7440-36-0
MW-2R	05/13/2021	Arsenic	<0.001	0.015	mg/l	7440-38-2
MW-2R	09/08/2021	Arsenic	<0.001	0.015	mg/l	7440-38-2
MW-2R	05/13/2021	Barium	0.24	2	mg/l	7440-39-3
MW-2R	09/08/2021	Barium	0.30	2	mg/l	7440-39-3
MW-2R	05/13/2021	Beryllium	<0.0007	0.004	mg/l	7440-41-7
MW-2R	05/13/2021	Cadmium	<0.0005	0.005	mg/l	7440-43-9
MW-2R	05/13/2021	Chromium	0.0040	0.1	mg/l	7440-47-3
MW-2R	09/08/2021	Chromium	< 0.0040	0.1	mg/l	7440-47-3
MW-2R	05/13/2021	Cobalt	0.0019	0.0076	mg/l	7440-48-4
MW-2R	09/08/2021	Cobalt	0.0027	0.0076	mg/l	7440-48-4
MW-2R	05/13/2021	Fluoride	0.21	4	mg/l	16984-48-8
MW-2R	09/08/2021	Fluoride	< 0.25	4	mg/l	16984-48-8
MW-2R	05/13/2021	Lead	< 0.010	0.016	mg/l	7439-92-1
MW-2R	05/13/2021	Lithium	< 0.030	0.041	mg/l	7439-93-2
MW-2R	09/08/2021	Lithium	< 0.030	0.041	mg/l	7439-93-2
MW-2R	05/13/2021	Mercury	<0.0002	0.002	mg/l	7439-97-6
MW-2R	09/08/2021	Mercury	<0.0002	0.002	mg/l	7439-97-6
MW-2R	05/13/2021	MOLYBDENUM	0.0021	0.1	mg/l	7439-98-7
MW-2R	09/08/2021	MOLYBDENUM	0.0024	0.1	mg/l	7439-98-7
MW-2R	05/13/2021	Radium 226	< 0.355	--	pci/l	13982-63-3
MW-2R	09/08/2021	Radium 226	<0.436	--	pci/l	13982-63-3
MW-2R	05/13/2021	Radium 228	0.934	--	pci/l	15262-20-1
MW-2R	09/08/2021	Radium 228	1.18	--	pci/l	15262-20-1
MW-2R	05/13/2021	Radium 226/228	0.934	5	pci/l	EDF-206
MW-2R	09/08/2021	Radium 226/228	1.18	5	pci/l	EDF-206

Table 7

Groundwater Analytical Data vs Groundwater Protection Standards

Location	Date	Parameter	Result	Groundwater Protection Standard (GPS)	Units	CAS #
MW-2R	05/13/2021	Selenium	<0.001	0.05	mg/l	7782-49-2
MW-2R	09/08/2021	Selenium	<0.001	0.05	mg/l	7782-49-2
MW-2R	05/13/2021	Thallium	<0.0002	0.002	mg/l	7440-28-0
MW-2RD	05/13/2021	Antimony	<0.001	0.006	mg/l	7440-36-0
MW-2RD	05/13/2021	Arsenic	0.002	0.015	mg/l	7440-38-2
MW-2RD	09/08/2021	Arsenic	0.0016	0.015	mg/l	7440-38-2
MW-2RD	05/13/2021	Barium	0.20	2	mg/l	7440-39-3
MW-2RD	09/08/2021	Barium	0.19	2	mg/l	7440-39-3
MW-2RD	05/13/2021	Beryllium	<0.0007	0.004	mg/l	7440-41-7
MW-2RD	05/13/2021	Cadmium	<0.0005	0.005	mg/l	7440-43-9
MW-2RD	05/13/2021	Chromium	< 0.0040	0.1	mg/l	7440-47-3
MW-2RD	09/08/2021	Chromium	< 0.0040	0.1	mg/l	7440-47-3
MW-2RD	05/13/2021	Cobalt	0.0026	0.0076	mg/l	7440-48-4
MW-2RD	09/08/2021	Cobalt	0.0021	0.0076	mg/l	7440-48-4
MW-2RD	05/13/2021	Fluoride	0.23	4	mg/l	16984-48-8
MW-2RD	09/08/2021	Fluoride	0.16	4	mg/l	16984-48-8
MW-2RD	05/13/2021	Lead	< 0.010	0.016	mg/l	7439-92-1
MW-2RD	05/13/2021	Lithium	< 0.030	0.041	mg/l	7439-93-2
MW-2RD	09/08/2021	Lithium	< 0.030	0.041	mg/l	7439-93-2
MW-2RD	05/13/2021	Mercury	<0.0002	0.002	mg/l	7439-97-6
MW-2RD	09/08/2021	Mercury	<0.0002	0.002	mg/l	7439-97-6
MW-2RD	05/13/2021	MOLYBDENUM	0.0022	0.1	mg/l	7439-98-7
MW-2RD	09/08/2021	MOLYBDENUM	0.0021	0.1	mg/l	7439-98-7
MW-2RD	05/13/2021	Radium 226	0.450	--	pci/l	13982-63-3
MW-2RD	09/08/2021	Radium 226	0.602	--	pci/l	13982-63-3
MW-2RD	05/13/2021	Radium 228	0.591	--	pci/l	15262-20-1
MW-2RD	09/08/2021	Radium 228	0.930	--	pci/l	15262-20-1
MW-2RD	05/13/2021	Radium 226/228	1.041	5	pci/l	EDF-206
MW-2RD	09/08/2021	Radium 226/228	1.532	5	pci/l	EDF-206
MW-2RD	05/13/2021	Selenium	0.0148	0.05	mg/l	7782-49-2
MW-2RD	09/08/2021	Selenium	0.0146	0.05	mg/l	7782-49-2
MW-2RD	05/13/2021	Thallium	<0.0002	0.002	mg/l	7440-28-0
MW-3	05/13/2021	Antimony	<0.001	0.006	mg/l	7440-36-0
MW-3	05/13/2021	Arsenic	0.0019	0.015	mg/l	7440-38-2
MW-3	09/08/2021	Arsenic	0.0043	0.015	mg/l	7440-38-2
MW-3	05/13/2021	Barium	0.30	2	mg/l	7440-39-3
MW-3	09/08/2021	Barium	0.29	2	mg/l	7440-39-3
MW-3	05/13/2021	Beryllium	<0.0007	0.004	mg/l	7440-41-7
MW-3	05/13/2021	Cadmium	<0.0005	0.005	mg/l	7440-43-9
MW-3	05/13/2021	Chromium	< 0.0040	0.1	mg/l	7440-47-3
MW-3	09/08/2021	Chromium	< 0.0040	0.1	mg/l	7440-47-3

Table 7

Groundwater Analytical Data vs Groundwater Protection Standards

Location	Date	Parameter	Result	Groundwater Protection Standard (GPS)	Units	CAS #
MW-3	05/13/2021	Cobalt	0.0076	0.0076	mg/l	7440-48-4
MW-3	09/08/2021	Cobalt	0.0055	0.0076	mg/l	7440-48-4
MW-3	05/13/2021	Fluoride	0.21	4	mg/l	16984-48-8
MW-3	09/08/2021	Fluoride	0.17	4	mg/l	16984-48-8
MW-3	05/13/2021	Lead	< 0.010	0.016	mg/l	7439-92-1
MW-3	05/13/2021	Lithium	< 0.030	0.041	mg/l	7439-93-2
MW-3	09/08/2021	Lithium	< 0.030	0.041	mg/l	7439-93-2
MW-3	05/13/2021	Mercury	<0.0002	0.002	mg/l	7439-97-6
MW-3	09/08/2021	Mercury	<0.0002	0.002	mg/l	7439-97-6
MW-3	05/13/2021	MOLYBDENUM	0.007	0.1	mg/l	7439-98-7
MW-3	09/08/2021	MOLYBDENUM	0.0061	0.1	mg/l	7439-98-7
MW-3	05/13/2021	Radium 226	0.414	--	pci/l	13982-63-3
MW-3	09/08/2021	Radium 226	<0.461	--	pci/l	13982-63-3
MW-3	05/13/2021	Radium 228	< 0.558	--	pci/l	15262-20-1
MW-3	09/08/2021	Radium 228	0.654	--	pci/l	15262-20-1
MW-3	05/13/2021	Radium 226/228	0.414	5	pci/l	EDF-206
MW-3	09/08/2021	Radium 226/228	0.654	5	pci/l	EDF-206
MW-3	05/13/2021	Selenium	<0.001	0.05	mg/l	7782-49-2
MW-3	09/08/2021	Selenium	<0.001	0.05	mg/l	7782-49-2
MW-3	05/13/2021	Thallium	<0.0002	0.002	mg/l	7440-28-0
MW-3R	05/13/2021	Antimony	<0.001	0.006	mg/l	7440-36-0
MW-3R	05/13/2021	Arsenic	0.0022	0.015	mg/l	7440-38-2
MW-3R	09/08/2021	Arsenic	0.0023	0.015	mg/l	7440-38-2
MW-3R	05/13/2021	Barium	0.60	2	mg/l	7440-39-3
MW-3R	09/08/2021	Barium	0.57	2	mg/l	7440-39-3
MW-3R	05/13/2021	Beryllium	<0.0007	0.004	mg/l	7440-41-7
MW-3R	05/13/2021	Cadmium	<0.0005	0.005	mg/l	7440-43-9
MW-3R	05/13/2021	Chromium	< 0.0040	0.1	mg/l	7440-47-3
MW-3R	09/08/2021	Chromium	< 0.0040	0.1	mg/l	7440-47-3
MW-3R	05/13/2021	Cobalt	0.00058	0.0076	mg/l	7440-48-4
MW-3R	09/08/2021	Cobalt	0.00072	0.0076	mg/l	7440-48-4
MW-3R	05/13/2021	Fluoride	0.096	4	mg/l	16984-48-8
MW-3R	09/08/2021	Fluoride	0.087	4	mg/l	16984-48-8
MW-3R	05/13/2021	Lead	< 0.010	0.016	mg/l	7439-92-1
MW-3R	05/13/2021	Lithium	< 0.030	0.041	mg/l	7439-93-2
MW-3R	09/08/2021	Lithium	< 0.030	0.041	mg/l	7439-93-2
MW-3R	05/13/2021	Mercury	<0.0002	0.002	mg/l	7439-97-6
MW-3R	09/08/2021	Mercury	<0.0002	0.002	mg/l	7439-97-6
MW-3R	05/13/2021	MOLYBDENUM	0.0011	0.1	mg/l	7439-98-7
MW-3R	09/08/2021	MOLYBDENUM	0.0011	0.1	mg/l	7439-98-7
MW-3R	05/13/2021	Radium 226	0.295	--	pci/l	13982-63-3
MW-3R	09/08/2021	Radium 226	0.774	--	pci/l	13982-63-3
MW-3R	05/13/2021	Radium 228	0.559	--	pci/l	15262-20-1
MW-3R	09/08/2021	Radium 228	1.58	--	pci/l	15262-20-1

Table 7

Groundwater Analytical Data vs Groundwater Protection Standards

Location	Date	Parameter	Result	Groundwater Protection Standard (GPS)	Units	CAS #
MW-3R	05/13/2021	Radium 226/228	0.854	5	pci/l	EDF-206
MW-3R	09/08/2021	Radium 226/228	2.324	5	pci/l	EDF-206
MW-3R	05/13/2021	Selenium	<0.001	0.05	mg/l	7782-49-2
MW-3R	09/08/2021	Selenium	<0.001	0.05	mg/l	7782-49-2
MW-3R	05/13/2021	Thallium	<0.0002	0.002	mg/l	7440-28-0
MW-3RD	05/13/2021	Antimony	<0.001	0.006	mg/l	7440-36-0
MW-3RD	05/13/2021	Arsenic	0.004	0.015	mg/l	7440-38-2
MW-3RD	09/08/2021	Arsenic	0.0032	0.015	mg/l	7440-38-2
MW-3RD	05/13/2021	Barium	0.22	2	mg/l	7440-39-3
MW-3RD	09/08/2021	Barium	0.20	2	mg/l	7440-39-3
MW-3RD	05/13/2021	Beryllium	<0.0007	0.004	mg/l	7440-41-7
MW-3RD	05/13/2021	Cadmium	<0.0005	0.005	mg/l	7440-43-9
MW-3RD	05/13/2021	Chromium	< 0.0040	0.1	mg/l	7440-47-3
MW-3RD	09/08/2021	Chromium	< 0.0040	0.1	mg/l	7440-47-3
MW-3RD	05/13/2021	Cobalt	0.00059	0.0076	mg/l	7440-48-4
MW-3RD	09/08/2021	Cobalt	0.00034	0.0076	mg/l	7440-48-4
MW-3RD	05/13/2021	Fluoride	0.28	4	mg/l	16984-48-8
MW-3RD	09/08/2021	Fluoride	0.20	4	mg/l	16984-48-8
MW-3RD	05/13/2021	Lead	< 0.010	0.016	mg/l	7439-92-1
MW-3RD	05/13/2021	Lithium	< 0.030	0.041	mg/l	7439-93-2
MW-3RD	09/08/2021	Lithium	< 0.030	0.041	mg/l	7439-93-2
MW-3RD	05/13/2021	Mercury	<0.0002	0.002	mg/l	7439-97-6
MW-3RD	09/08/2021	Mercury	<0.0002	0.002	mg/l	7439-97-6
MW-3RD	05/13/2021	MOLYBDENUM	0.0045	0.1	mg/l	7439-98-7
MW-3RD	09/08/2021	MOLYBDENUM	0.0042	0.1	mg/l	7439-98-7
MW-3RD	05/13/2021	Radium 226	0.416	--	pci/l	13982-63-3
MW-3RD	09/08/2021	Radium 226	0.736	--	pci/l	13982-63-3
MW-3RD	05/13/2021	Radium 228	< 0.550	--	pci/l	15262-20-1
MW-3RD	09/08/2021	Radium 228	0.661	--	pci/l	15262-20-1
MW-3RD	05/13/2021	Radium 226/228	0.416	5	pci/l	EDF-206
MW-3RD	09/08/2021	Radium 226/228	1.397	5	pci/l	EDF-206
MW-3RD	05/13/2021	Selenium	<0.001	0.05	mg/l	7782-49-2
MW-3RD	09/08/2021	Selenium	<0.001	0.05	mg/l	7782-49-2
MW-3RD	05/13/2021	Thallium	<0.0002	0.002	mg/l	7440-28-0
MW-4	05/13/2021	Antimony	<0.001	0.006	mg/l	7440-36-0
MW-4	05/13/2021	Arsenic	0.0012	0.015	mg/l	7440-38-2
MW-4	09/08/2021	Arsenic	0.0014	0.015	mg/l	7440-38-2
MW-4	05/13/2021	Barium	0.23	2	mg/l	7440-39-3
MW-4	09/08/2021	Barium	0.23	2	mg/l	7440-39-3
MW-4	05/13/2021	Beryllium	<0.0007	0.004	mg/l	7440-41-7
MW-4	05/13/2021	Cadmium	<0.0005	0.005	mg/l	7440-43-9
MW-4	05/13/2021	Chromium	< 0.0040	0.1	mg/l	7440-47-3
MW-4	09/08/2021	Chromium	< 0.0040	0.1	mg/l	7440-47-3

Table 7

Groundwater Analytical Data vs Groundwater Protection Standards

Location	Date	Parameter	Result	Groundwater Protection Standard (GPS)	Units	CAS #
MW-4	05/13/2021	Cobalt	0.00039	0.0076	mg/l	7440-48-4
MW-4	09/08/2021	Cobalt	0.00044	0.0076	mg/l	7440-48-4
MW-4	05/13/2021	Fluoride	0.23	4	mg/l	16984-48-8
MW-4	09/08/2021	Fluoride	0.28	4	mg/l	16984-48-8
MW-4	05/13/2021	Lead	< 0.010	0.016	mg/l	7439-92-1
MW-4	05/13/2021	Lithium	< 0.030	0.041	mg/l	7439-93-2
MW-4	09/08/2021	Lithium	< 0.030	0.041	mg/l	7439-93-2
MW-4	05/13/2021	Mercury	<0.0002	0.002	mg/l	7439-97-6
MW-4	09/08/2021	Mercury	<0.0002	0.002	mg/l	7439-97-6
MW-4	05/13/2021	MOLYBDENUM	0.0015	0.1	mg/l	7439-98-7
MW-4	09/08/2021	MOLYBDENUM	0.0018	0.1	mg/l	7439-98-7
MW-4	05/13/2021	Radium 226	< 0.372	--	pci/l	13982-63-3
MW-4	09/08/2021	Radium 226	<0.340	--	pci/l	13982-63-3
MW-4	05/13/2021	Radium 228	< 0.560	--	pci/l	15262-20-1
MW-4	09/08/2021	Radium 228	0.646	--	pci/l	15262-20-1
MW-4	05/13/2021	Radium 226/228	< 0.560	5	pci/l	EDF-206
MW-4	09/08/2021	Radium 226/228	0.646	5	pci/l	EDF-206
MW-4	05/13/2021	Selenium	<0.001	0.05	mg/l	7782-49-2
MW-4	09/08/2021	Selenium	<0.001	0.05	mg/l	7782-49-2
MW-4	05/13/2021	Thallium	<0.0002	0.002	mg/l	7440-28-0

Results in milligrams per liter (mg/l) or picocuries per liter (pci/l)
Bold = Indicates concentration above Background Threshold Value

Appendix A – Field Data Sheets

Groundwater Elevation Measurements
SKB Landfill (Lansing)

Site: SKB Lansing
Personnel: N-Schlegel

Well ID	Date	Time	Depth To Water:	Notes:
MW-101A	5/12/21	9:44	7.91	
MW-102A		9:46	7.37	
MW-103A		9:41	8.08'	
MW-104A		9:38	7.34'	
MW-105A		9:49	8.76'	
MW-106A		9:36	8.08'	
MW-107A		9:54	5.90'	
MW-108A		9:52	10.20'	
MW-1A		12:15	~~10.80~~	← 10.80'
MW-2A		12:40	6.85'	
MW-3A		10:15	13.10'	
MW-4RA		12:00	22.38'	
MW-1		13:49	6.43'	
MW-1RD		13:50	28.11	
MW-2R		15:26	9.88'	
MW-2RD		15:27	9.87	
MW-3		16:17	9.13'	
MW-3R		16:19	9.12'	
MW-3RD		16:21	9.20'	
MW-4		16:28	7.32'	
PIEZ-4		16:38	9.02'	
MW-5S		16:41	28.59'	
MW-5D		16:43	28.73'	
PIEZ-3		16:46	6.05'	
PIEZ-1		16:49	8.91'	
PIEZ-2		16:52	18.94'	
MW-6S		16:54	5.06'	
MW-8S		16:57	17.68'	
MW-8D		16:58	16.58'	
MW-7S		17:01	17.54'	
MW-7D		17:02	17.37	
PIEZ-5		16:24	4.95'	
P-11		16:33	25.79'	
P-10		16:35	20.89	

INSTRUMENT CALIBRATION DATA:

Start of day: (Date/Time)	5/12/21
End of day: (Date/Time)	5/13/21
YSI Model Number	V-52
YSI Serial Number	WCMF6R91
Sonde Model Number	V-5000
Sonde Serial Number	R13H91CR2

Sampling Event

Time:	Value:		
9:00	—	NTU std =	DI Water
~~14:00~~	100	NTU std =	100
	1409	uS std =	1409
	4.00	pH std =	4
	7.00	pH std =	7
	10.00	pH std =	10

Calibration Notes:

FIELD INFORMATION LOG Part 1

Facility: SKB Landfill (Lansing)

Sample Location: MW-1

Duplicate Collected: No

Location: Austin, MN

Sampler(s): N. Schlagel

Sample Matrix: Groundwater

PURGE INFORMATION

Casing Length (ft): 25.6

Method of Well Purge: Dedicated Bladder Pump

Dedicated Equipment: Yes

Date/Time Initiated: 5/12/21 13:50

Casing Diameter (inches): 2

Initial Water Level (feet): 6.43' ~~7.3~~

One Casing Volume (gal): 3.12 ~~3.1~~

Ground Water Elevation (ft, msl): ~~1237.54~~

Total Volume Purged (gal): 9.5

Top of Casing (ft, msl) 1244.84

Purged Dry?: Yes (No) (circle)

PID (Background) 0.0 (PPM)

Water Level After Purge (ft): 6.43'

PID (Headspace) 0.0 (PPM)

Date/Time Completed: 5/12/21 14:~~38~~

PURGE DATA

Time	Purge Rate (mL/min)	Cumulative Volume (gal)	Temp (°C)	pH (std units)	Specific Conductance (uS - umhos/cm)	Turbidity (NTU)	Disolved Oxygen (mg/L)	ORP (mV)
13:50	1000	0.1	9.07	7.11	1,360	49.5	3.33	-19
14:00	1000	3.0	7.80	6.97	1,520	39.4	3.56	122
14:10	1000	6.0	7.90	6.97	1,530	40.0	3.52	122
14:30	1000	9.5	7.90	6.97	1,530	39.4	3.53	123

FIELD INFORMATION LOG Part 2

SAMPLING INFORMATION: Sample Point ID: MW-1

Water Lever @ Sampling (ft): 6.43 Well Collection Sequence 6 of 12

Parameters: Annual _____ Semiannual: _____ Quarterly: X Monthly: _____ Other: _____

SAMPLE DATA:

Time & Date	Sample Rate	Temp (°C)	pH (std units)	Specific Conductance (uS - umhos/cm)	Turbidity (NTU)	Dissolved O_2 (mg/L)	O_2 Reduction Potential (mV)
14:25 5/12/21	VOCs: 100 Other: 1000	7.73	6.97	1,570	39.0	3.53	125

YSI Serial Number: _____

YSI Sonde Serial Number: _____

GENERAL INFORMATION:

Weather Conditions @ sampling: 65°F, Partly Cloudy, 0-5 mph SW

Sampling Characteristics: _____

COMMENTS AND OBSERVATIONS:

Full Bottle Set Collected: Yes No (circle) # of Bottles Collected: 15

Well Closed and Locked: Yes No (circle

Notes: _____

Minnesota Unique Well ID: 664911

Date: 5/12/21 By: M. Sullivan Title: Staff env scientist

Company: Groundwater and Environmental Services, Inc.

FIELD INFORMATION LOG Part 1

Facility: SKB Landfill (Lansing)

Location: Austin, MN

Sample Matrix: Groundwater

Sample Location: MW-1RD

Duplicate Collected: NO

Sampler(s): N. Schlegel

PURGE INFORMATION

Method of Well Purge: Dedicated Bladder Pump

Date/Time Initiated: 5/12/21 13:50

Initial Water Level (feet): 28.11 ~~28.61~~

Ground Water Elevation (ft, msl): 1216.91

Top of Casing (ft, msl) 1245.52

PID (Background) 0.0 (PPM)

PID (Headspace) 0.0 (PPM)

Casing Length (ft) 75.5

Dedicated Equipment: Yes

Casing Diameter (inches): 2

One Casing Volume (gal): 7.72 ~~7.9~~

Total Volume Purged (gal): 23.5

Purged Dry?: Yes (No) (circle)

Water Level After Purge (ft): 28.11'

Date/Time Completed: 5/12/21 14:40

PURGE DATA

Time	Purge Rate (mL/min)	Cumulative Volume (gal)	Temp (°C)	pH (std units)	Specific Conductance (uS - umhos/cm)	Turbidity (NTU)	Disolved Oxygen (mg/L)	ORP (mV)
13:50	1000	0.1	10.13	7.73	609	50.1	4.01	129
14:05	1000	8.0	9.47	7.58	642	41.8	0.00	-76
14:20	1000	16.0	9.37	7.39	646	48.3	0.00	-81
14:38	1000	23.5	9.36	7.30	647	41.3	0.00	-54

FIELD INFORMATION LOG Part 2

SAMPLING INFORMATION:

Sample Point ID: MW-1RD

Water Lever @ Sampling (ft): 28.11'

Well Collection Sequence: 5 of 12

Parameters: Annual _____ Semiannual: _____ Quarterly: 4 Monthly: _____ Other: _____

SAMPLE DATA:

Time & Date	Sample Rate	Temp (°C)	pH (std units)	Specific Conductance (uS - umhos/cm)	Turbidity (NTU)	Dissolved O_2 (mg/L)	O_2 Reduction Potential (mV)
14:40	VOCs: 100 Other: 1000	9.53	7.29	647	40.8	0.00	-53

YSI Serial Number: _____

YSI Sonde Serial Number: _____

GENERAL INFORMATION:

Weather Conditions @ sampling: 65°F, partly cloudy, 0-5 mph SW

Sampling Characteristics: clear

COMMENTS AND OBSERVATIONS:

Full Bottle Set Collected: Yes No (circle) # of Bottles Collected: 17

Well Closed and Locked: Yes No (circle)

Notes: _____

Minnesota Unique Well ID: 785097

Date: 5/12/21 By: K Schlagel Title: staff env scientist

Company: Groundwater and Environmental Services, Inc.

FIELD INFORMATION LOG Part 1

Facility: SKB Landfill (Lansing)

Sample Location: MW-2R

Duplicate Collected: No

Location: Austin, MN

Sampler(s): M-Schnell

Sample Matrix: Groundwater

PURGE INFORMATION

Casing Length (ft) 18.35

Method of Well Purge: Dedicated Bladder Pump

Dedicated Equipment: Yes

Date/Time Initiated: 5/12/21 15:30

Casing Diameter (inches): 2

Initial Water Level (feet): 9.88 ~~10.2~~

One Casing Volume (gal): 1.38 ~~1.4~~

Ground Water Elevation (ft, msl): ~~1216.03~~

Total Volume Purged (gal): 1.5 slow recharge

Top of Casing (ft, msl) 1226.23

Purged Dry?: (Yes) No (circle)

PID (Background) 0.0 (PPM)

Water Level After Purge (ft): 16.71

PID (Headspace) 0.0 (PPM)

Date/Time Completed: 5/13/21 7:25

PURGE DATA

Time	Purge Rate (mL/min)	Cumulative Volume (gal)	Temp (°C)	pH (std units)	Specific Conductance (uS - umhos/cm)	Turbidity (NTU)	Disolved Oxygen (mg/L)	ORP (mV)
15:30	1000	0-1	10.19	6.96	1,690	267	7.02	57
15:35	1000	0.5	11.19	6.94	1,600	81.4	3.35	-35
15:40	1000	1.0	12-35	7.19	1,510	426	4.05	-14
15:45	1000	1.5	12-45	7.19	1,510	456	4.09	-13

FIELD INFORMATION LOG Part 2

SAMPLING INFORMATION: Sample Point ID: MW-2R

Water Lever @ Sampling (ft): 16.71 Well Collection Sequence 8 of 12

Parameters: Annual _____ Semiannual: _____ Quarterly: X Monthly: _____ Other: _____

SAMPLE DATA:

Time & Date	Sample Rate	Temp (°C)	pH (std units)	Specific Conductance (uS - umhos/cm)	Turbidity (NTU)	Dissolved O_2 (mg/L)	O_2 Reduction Potential (mV)
7:25 5/13/21	VOCs: 100 Other: 1000	12.58	7.16	1,520	44.2	4.01	-12

YSI Serial Number: _____

YSI Sonde Serial Number: _____

GENERAL INFORMATION:

Weather Conditions @ sampling: 44°F, sunny, ~~5 mph~~ calm

Sampling Characteristics: clear

COMMENTS AND OBSERVATIONS:

Full Bottle Set Collected: Yes No (circle) # of Bottles Collected: 13

Well Closed and Locked: Yes No (circle)

Notes: _____

Minnesota Unique Well ID: > 850 91

Date: 5/13/21 By: M. Schlagel Title: staff env scientist

Company: Groundwater and Environmental Services, Inc.

FIELD INFORMATION LOG Part 1

Facility: SKB Landfill (Lansing)

Sample Location: MW-2RD

Duplicate Collected: No

Location: Austin, MN

Sampler(s): N. Schlegel

Sample Matrix: Groundwater

PURGE INFORMATION

Casing Length (ft) 35

Method of Well Purge: Dedicated Bladder Pump

Dedicated Equipment: Yes

Date/Time Initiated: 5/12/21 15:30

Casing Diameter (inches): 2

Initial Water Level (feet): 9.87 ~~10.32~~

One Casing Volume (gal): 4.1 ~~4.1~~

Ground Water Elevation (ft, msl): ~~1216.05~~

Total Volume Purged (gal): 12.5

Top of Casing (ft, msl) 1226.37

Purged Dry?: Yes (No) (circle)

PID (Background) 0.0 (PPM)

Water Level After Purge (ft): 9.87'

PID (Headspace) 0.0 (PPM)

Date/Time Completed: 5/12/21 15:50

PURGE DATA

Time	Purge Rate (mL/min)	Cumulative Volume (gal)	Temp (°C)	pH (std units)	Specific Conductance (uS - umhos/cm)	Turbidity (NTU)	Disolved Oxygen (mg/L)	ORP (mV)
15:30	1000	0.1	10.07	7.50	1,000	78.2	1.27	-24
15:35	1000	4.0	9.95	7.05	1,030	63.9	0.00	8
15:40	1000	8.0	9.95	7.05	1,030	64.9	0.00	7
15:45	1000	12.5	9.95	7.04	1,030	66.0	0.00	7

FIELD INFORMATION LOG Part 2

SAMPLING INFORMATION:

Sample Point ID: MW-2RD

Water Lever @ Sampling (ft): 9.87

Well Collection Sequence 7 of 12

Parameters: Annual _____ Semiannual: _____ Quarterly: X Monthly: _____ Other: _____

SAMPLE DATA:

Time & Date	Sample Rate	Temp (°C)	pH (std units)	Specific Conductance (uS - umhos/cm)	Turbidity (NTU)	Dissolved O_2 (mg/L)	O_2 Reduction Potential (mV)
15:50 5/12/21	VOCs: 100 Other: 1000	9.95	7.10	1,030	62.3	0.00	3

YSI Serial Number: _____

YSI Sonde Serial Number: _____

GENERAL INFORMATION:

Weather Conditions @ sampling: 66°F, partly cloudy, 0-5 mph SW

Sampling Characteristics: clear

COMMENTS AND OBSERVATIONS:

Full Bottle Set Collected: Yes No (circle)

# of Bottles Collected: 15

Well Closed and Locked: Yes No (circle)

Notes: _____

Minnesota Unique Well ID: 785095

Date: 5/12/21 By: M. Schlagel Title: staff env scientist

Company: Groundwater and Environmental Services, Inc.

FIELD INFORMATION LOG Part 1

Facility: SKB Landfill (Lansing)

Sample Location: MW-3

Duplicate Collected: NO

Location: Austin, MN

Sampler(s): N. Schlagel

Sample Matrix: Groundwater

PURGE INFORMATION

Casing Length (ft): 19.7

Method of Well Purge: Dedicated Bladder Pump

Dedicated Equipment: Yes

Date/Time Initiated: 5/13/21 7:50

Casing Diameter (inches): 2

Initial Water Level (feet): 9.13' ~~9.3~~

One Casing Volume (gal): 1.72 ~~1.7~~

Ground Water Elevation (ft, msl): ~~1213.85~~

Total Volume Purged (gal): 5.5

Top of Casing (ft, msl) 1223.15

Purged Dry?: Yes (No) (circle)

PID (Background) 0.0 (PPM)

Water Level After Purge (ft): 9.13'

PID (Headspace) 0.0 (PPM)

Date/Time Completed: 5/13/21 8:75

PURGE DATA

Time	Purge Rate (mL/min)	Cumulative Volume (gal)	Temp (°C)	pH (std units)	Specific Conductance (uS - umhos/cm)	Turbidity (NTU)	Disolved Oxygen (mg/L)	ORP (mV)
7:50	1000	0.1	8.35	6.97	1,500	57.3	0.00	-112
7:55	1000	2.0	8.04	6.94	1,520	55.9	0.00	-92
8:00	1000	4.0	7.97	6.84	1,530	49.4	0.00	-51
8:10	1000	5.5	7.96	6.83	1,530	48.2	0.00	-50

FIELD INFORMATION LOG Part 2

SAMPLING INFORMATION:

Sample Point ID: MW-3

Water Lever @ Sampling (ft): 9.13'

Well Collection Sequence 9 of 12

Parameters: Annual _____ Semiannual: _____ Quarterly: X Monthly: _____ Other: _____

SAMPLE DATA:

Time & Date	Sample Rate	Temp (°C)	pH (std units)	Specific Conductance (uS - umhos/cm)	Turbidity (NTU)	Dissolved O_2 (mg/L)	O_2 Reduction Potential (mV)
8:15 5/13/21	VOCs: 100 Other: 1000	7.97	6.81	1,530	46.5	0.00	-48

YSI Serial Number: _____

YSI Sonde Serial Number: _____

GENERAL INFORMATION:

Weather Conditions @ sampling: 50 °F, sunny, calm mph

Sampling Characteristics: clear

COMMENTS AND OBSERVATIONS:

Full Bottle Set Collected: (Yes) No (circle) # of Bottles Collected: 12

Well Closed and Locked: (Yes) No (circle)

Notes: _____

Minnesota Unique Well ID: 664913

Date: 5/13/21 By: V. Sublage Title: Staff env. scientist

Company: Groundwater and Environmental Services, Inc.

FIELD INFORMATION LOG Part 1

Facility: SKB Landfill (Lansing)

Sample Location: MW-3R

Duplicate Collected: No

Location: Austin, MN

Sampler(s): N. Schlagel

Sample Matrix: Groundwater

PURGE INFORMATION

Casing Length (ft): 27.5

Method of Well Purge: Dedicated Bladder Pump

Dedicated Equipment: Yes

Date/Time Initiated: 5/13/21 7:50

Casing Diameter (inches): 2

Initial Water Level (feet): 9.12 ~~9.35~~

One Casing Volume (gal): 3.00 ~~3.0~~

Ground Water Elevation (ft, msl): ~~1215.84~~

Total Volume Purged (gal): 9.0

Top of Casing (ft, msl) 1225.19

Purged Dry?: Yes (No) (circle)

PID (Background) 0.0 (PPM)

Water Level After Purge (ft): 9.12

PID (Headspace) 0.0 (PPM)

Date/Time Completed: 5/13/21 8:10

PURGE DATA

Time	Purge Rate (mL/min)	Cumulative Volume (gal)	Temp (°C)	pH (std units)	Specific Conductance (uS - umhos/cm)	Turbidity (NTU)	Disolved Oxygen (mg/L)	ORP (mV)
7:50	1000	0.1	9.08	7.29	1,410	1000+	2.56	-92
7:55	1000	3.0	8.37	7.01	1,350	215	1.84	-89
8:00	1000	6.0	8.58	6.99	1,430	160	1.68	-114
8:05	1000	9.0	8.67	6.91	1,460	72.4	3.72	-113

FIELD INFORMATION LOG Part 2

SAMPLING INFORMATION: Sample Point ID: MW-3R

Water Lever @ Sampling (ft): 9.12' Well Collection Sequence 10 of 12

Parameters: Annual _____ Semiannual: _____ Quarterly: X Monthly: _____ Other: _____

SAMPLE DATA:

Time & Date	Sample Rate	Temp (°C)	pH (std units)	Specific Conductance (uS - umhos/cm)	Turbidity (NTU)	Dissolved O_2 (mg/L)	O_2 Reduction Potential (mV)
5/13/21	VOCs: 100 Other: 1000	8.67	6.87	1,460	69.3	2.51	-113

YSI Serial Number: _____

YSI Sonde Serial Number: _____

GENERAL INFORMATION:

Weather Conditions @ sampling: 48 °F, sunny, calm

Sampling Characteristics: clear

COMMENTS AND OBSERVATIONS:

Full Bottle Set Collected: Yes No (circle) # of Bottles Collected: 12

Well Closed and Locked: Yes No (circle)

Notes: _____

Minnesota Unique Well ID: 705082

Date: 5/13/21 By: N. Schlegel Title: Staff Env. Scientist

Company: Groundwater and Environmental Services, Inc.

FIELD INFORMATION LOG Part 1

Facility: SKB Landfill (Lansing)

Location: Austin, MN

Sample Matrix: Groundwater

Sample Location: MW-3RD

Duplicate Collected: Yes - DUP 2 @ MS/MSD

Sampler(s): M. Schlegel

PURGE INFORMATION

Method of Well Purge: Dedicated Bladder Pump

Date/Time Initiated: 5/13/21 8:30

Initial Water Level (feet): 9.20' ~~9.47~~

Ground Water Elevation (ft, msl): ~~1215.54~~

Top of Casing (ft, msl) 1225.01

PID (Background) 0.0 (PPM)

PID (Headspace) 0.0 (PPM)

Casing Length (ft) 46.25

Dedicated Equipment: Yes

Casing Diameter (inches): 2

One Casing Volume (gal): 6.04 ~~6.2~~

Total Volume Purged (gal): 18.5

Purged Dry?: Yes (No) (circle)

Water Level After Purge (ft): 9.20'

Date/Time Completed: 5/13/21 9:05

PURGE DATA

Time	Purge Rate (mL/min)	Cumulative Volume (gal)	Temp (°C)	pH (std units)	Specific Conductance (uS - umhos/cm)	Turbidity (NTU)	Disolved Oxygen (mg/L)	ORP (mV)
8:30	1000	0.1	9.38	7.10	917	160	0.00	-73
8:40	1000	6.0	9.47	7.12	917	104	0.00	-89
8:50	1000	12.0	9.47	7.16	917	94.2	0.00	-92
9:00	1000	18.5	9:48	7.30	918	86.9	0.00	-100

FIELD INFORMATION LOG Part 2

SAMPLING INFORMATION: Sample Point ID: MW-3RD

Water Lever @ Sampling (ft): 9.20' Well Collection Sequence 11 of 12

Parameters: Annual _____ Semiannual: _____ Quarterly: X Monthly: _____ Other: _____

SAMPLE DATA:

Time & Date	Sample Rate	Temp (°C)	pH (std units)	Specific Conductance (uS - umhos/cm)	Turbidity (NTU)	Dissolved O_2 (mg/L)	O_2 Reduction Potential (mV)
9:05 5/13/21	VOCs: 100 Other: 1000	9.48	7.20	919	82.4	0.00	-100

YSI Serial Number: _____

YSI Sonde Serial Number: _____

GENERAL INFORMATION:

Weather Conditions @ sampling: 52°F, sunny, 0-5 mph SW

Sampling Characteristics: Clear

COMMENTS AND OBSERVATIONS:

Full Bottle Set Collected: (Yes) No (circle) # of Bottles Collected: 12

Well Closed and Locked: (Yes) No (circle)

Notes: _____

Minnesota Unique Well ID: 785084

Date: 5/13/21 By: N. Schlagel Title: staff env. scientist

Company: Groundwater and Environmental Services, Inc.

FIELD INFORMATION LOG Part 1

Facility: SKB Landfill (Lansing)

Sample Location: MW-4

Duplicate Collected: No

Location: Austin, MN

Sampler(s): N. Schlegel

Sample Matrix: Groundwater

PURGE INFORMATION

Casing Length (ft) 18.3

Method of Well Purge: Dedicated Bladder Pump

Dedicated Equipment: Yes

Date/Time Initiated: 5/13/21 10:00

Casing Diameter (inches): 2

Initial Water Level (feet): 7.32' ~~8.63~~

One Casing Volume (gal): 1.8 ~~1.6~~

Ground Water Elevation (ft, msl): ~~1217.34~~

Total Volume Purged (gal): 5.5

Top of Casing (ft, msl) 1225.97

Purged Dry?: Yes (No) (circle)

PID (Background) 0.0 (PPM)

Water Level After Purge (ft): 7.32'

PID (Headspace) 0.0 (PPM)

Date/Time Completed: 5/13/21 10:25

PURGE DATA

Time	Purge Rate (mL/min)	Cumulative Volume (gal)	Temp (°C)	pH (std units)	Specific Conductance (uS - umhos/cm)	Turbidity (NTU)	Disolved Oxygen (mg/L)	ORP (mV)
10:00	1000	0.1	9.92	7.42	1,280	38.1	1.95	86
10:07	1000	2.0	7.94	7.20	1,300	20.0	0.00	86
10:15	1000	4.0	7.75	7.13	1,320	21.0	0.00	88
10:22	1000	5.5	7.64	7.15	1,320	23.0	0.00	84

FIELD INFORMATION LOG Part 2

SAMPLING INFORMATION: Sample Point ID: MW-4

Water Lever @ Sampling (ft): 7.32' Well Collection Sequence 12 of 12

Parameters: Annual _____ Semiannual: _____ Quarterly: X Monthly: _____ Other: _____

SAMPLE DATA:

Time & Date	Sample Rate	Temp (°C)	pH (std units)	Specific Conductance (uS - umhos/cm)	Turbidity (NTU)	Dissolved O_2 (mg/L)	O_2 Reduction Potential (mV)
10:25 5/13/21	VOCs: 100 Other: 1000	7.62	7.15	1,320	23.9	0.00	84

YSI Serial Number: _____

YSI Sonde Serial Number: _____

GENERAL INFORMATION:

Weather Conditions @ sampling: 62°F, sunny, 5-10 mph SW

Sampling Characteristics: clear

COMMENTS AND OBSERVATIONS:

Full Bottle Set Collected: (Yes) No (circle) # of Bottles Collected: 12

Well Closed and Locked: (Yes) No (circle)

Notes: _____

Minnesota Unique Well ID: 664914

Date: 5/13/21 By: M. Schlagel Title: staff env. scientist

Company: Groundwater and Environmental Services, Inc.

Groundwater Elevation Measurements
SKB Landfill (Lansing)

Site: SKB Lansing
Personnel: K. Sunlagel

Well ID	Date	Time	Depth To Water:	Notes:
MW-101A	9/8/21	7:56	5.86	
MW-102A		7:58	5.97	
MW-103A		7:39	7.08	
MW-104A		7:36	4.85	
MW-105A		8:03	8.68	
MW-106A		8:08	5.50	
MW-107A		8:06	4.72	
MW-108A		7:32	9.35'	
MW-1A		7:43	10.35	
MW-2A		7:50	6.36	
MW-3A		8:11	12.31	
MW-4RA		7:47	23.25	
MW-1		8:16	5.27	
MW-1RD		8:18	27.55	
MW-2R		9:07	8.68	
MW-2RD		9:09	9.47	
MW-3		9:57	7.90	
MW-3R		9:56	8.05	
MW-3RD		9:55	8.70	
MW-4		11:13	5.29	
PIEZ-4		12:03	7.28	
MW-5S		12:09	26.48	
MW-5D		12:11	28.10'	
PIEZ-3		12:14	5.20'	
PIEZ-1		12:18	18.25	
PIEZ-2		12:21	17.68	
MW-6S		12:26	3.71	
MW-8S		12:31	16.71'	
MW-8D		12:33	15.99'	
MW-7S		12:38	16.42'	
MW-7D		12:40	16.88'	
PIEZ-5		12:45	3.72'	
P-11		9:03	24.72	
P-10		9:00	18.66	

FIELD INFORMATION LOG Part 1

Facility: SKB Landfill (Lansing)

Sample Location: MW-1

Duplicate Collected: No

Location: Austin, MN

Sampler(s): N. Schlegel

Sample Matrix: Groundwater

PURGE INFORMATION

Casing Length (ft) 25.6

Method of Well Purge: Dedicated Bladder Pump

Dedicated Equipment: Yes

Date/Time Initiated: 9/8/21 8:20

Casing Diameter (inches): 2

Initial Water Level (feet): 5.27 ~~7.3~~

One Casing Volume (gal): 3.1

Ground Water Elevation (ft, msl): ~~1237.54~~

Total Volume Purged (gal): 3.5

Top of Casing (ft, msl) ~~1244.84~~

Purged Dry?: Yes (No) (circle)

PID (Background) 0.00 (PPM)

Water Level After Purge (ft): 5.30

PID (Headspace) 0.0 (PPM)

Date/Time Completed: 9/8/21 9:40

PURGE DATA

Time	Purge Rate (mL/min)	Cumulative Volume (gal)	Temp (°C)	pH (std units)	Specific Conductance (uS - umhos/cm)	Turbidity (NTU)	Disolved Oxygen (mg/L)	ORP (mV)
8:20	1000	0.1	12.16	7.15	946	25.8	5.09	37
8:25	1000	1.0	12.17	6.85	930	1.4	4.45	60
8:30	1000	2.0	13.21	6.79	884	0.00	4.32	87
8:35	1000	3.5	13.67	6.76	909	0.7	4.56	100

FIELD INFORMATION LOG Part 2

SAMPLING INFORMATION: Sample Point ID: MW-1

Water Lever @ Sampling (ft): 5.30 Well Collection Sequence 1 of 8

Parameters: Annual _____ Semiannual: _____ Quarterly: X Monthly: _____ Other: _____

SAMPLE DATA:

Time & Date	Sample Rate	Temp (°C)	pH (std units)	Specific Conductance (uS - umhos/cm)	Turbidity (NTU)	Dissolved O_2 (mg/L)	O_2 Reduction Potential (mV)
9:40 9/8/21	VOCs: 3 Other: 100	8.71	6.80	913	0.6	4.59	100

YSI Serial Number: _____

YSI Sonde Serial Number: _____

GENERAL INFORMATION:

Weather Conditions @ sampling: 58°F sunny, 5-10 mph NW

Sampling Characteristics: clear

COMMENTS AND OBSERVATIONS:

Full Bottle Set Collected: (Yes) No (circle) # of Bottles Collected: 6

Well Closed and Locked: (Yes) No (circle)

Notes: _____

Minnesota Unique Well ID: 664911

Date: 9/8/21 By: N. Sundquist Title: staff env scientist

Company: Groundwater and Environmental Services, Inc.

FIELD INFORMATION LOG Part 1

Facility: SKB Landfill (Lansing)

Sample Location: MW-1RD

Duplicate Collected: No

Location: Austin, MN

Sampler(s): N-Schlagel

Sample Matrix: Groundwater

PURGE INFORMATION

Casing Length (ft) 75.5

Method of Well Purge: Dedicated Bladder Pump

Dedicated Equipment: Yes

Date/Time Initiated: 9/8/21 8:20

Casing Diameter (inches): 2

Initial Water Level (feet): 27.55 ~~28.61~~

One Casing Volume (gal): 7.8 ~~7.9~~

Ground Water Elevation (ft, msl): ~~1216.91~~

Total Volume Purged (gal): 8.0

Top of Casing (ft, msl) ~~1245.52~~

Purged Dry?: Yes (No) (circle)

PID (Background) 0.0 (PPM)

Water Level After Purge (ft): 27.57

PID (Headspace) 0.0 (PPM)

Date/Time Completed: 9/8/21 8:45

PURGE DATA

Time	Purge Rate (mL/min)	Cumulative Volume (gal)	Temp (°C)	pH (std units)	Specific Conductance (uS - umhos/cm)	Turbidity (NTU)	Disolved Oxygen (mg/L)	ORP (mV)
8:20	1000	0.1	9.52	6.92	597	0.8	6.31	34
8:25	1000	4.0	9.30	7.07	598	1.5	4.93	-6
8:30	1000	6.0	9.32	7.14	598	1.6	4.90	-20
8:35	1000	8.0	9.33	7.11	598	0.7	4.58	-18

FIELD INFORMATION LOG Part 2

SAMPLING INFORMATION: Sample Point ID: MW-1RD

Water Lever @ Sampling (ft): 27.54 Well Collection Sequence 2 of 8

Parameters: Annual _____ Semiannual: _____ Quarterly: X Monthly: _____ Other: _____

SAMPLE DATA:

Time & Date	Sample Rate	Temp (°C)	pH (std units)	Specific Conductance (uS - umhos/cm)	Turbidity (NTU)	Dissolved O_2 (mg/L)	O_2 Reduction Potential (mV)
8:45 9/8/21	VOCs: — Other: none	9.29	7.06	598	1.0	3.89	-21

YSI Serial Number: _____

YSI Sonde Serial Number: _____

GENERAL INFORMATION:

Weather Conditions @ sampling: 58°F, sunny, 5-10 mph NW

Sampling Characteristics: clear

COMMENTS AND OBSERVATIONS:

Full Bottle Set Collected: Yes No (circle) # of Bottles Collected: 6

Well Closed and Locked: Yes No (circle

Notes: _____

Minnesota Unique Well ID: 785087

Date: 9/8/21 By: M. Sullivan Title: staff client scientist

Company: Groundwater and Environmental Services, Inc.

FIELD INFORMATION LOG Part 1

Facility: SKB Landfill (Lansing)

Sample Location: MW-2R

Duplicate Collected: No

Location: Austin, MN

Sampler(s): N. Sundlagel

Sample Matrix: Groundwater

PURGE INFORMATION

Casing Length (ft) 18.35

Method of Well Purge: Dedicated Bladder Pump

Dedicated Equipment: Yes

Date/Time Initiated: 9/8/21 9:10

Casing Diameter (inches): 2

Initial Water Level (feet): 8.68 ~~10.2~~

One Casing Volume (gal): 1.5 ~~1.4~~

Ground Water Elevation (ft, msl): 1216.03

Total Volume Purged (gal): 1.5

Top of Casing (ft, msl) 1226.23

Purged Dry?: Yes (No) (circle)

PID (Background) 0.0 (PPM)

Water Level After Purge (ft): 16.27

PID (Headspace) 0.0 (PPM)

Date/Time Completed: 9/8/21 9:30

PURGE DATA

Time	Purge Rate (mL/min)	Cumulative Volume (gal)	Temp (°C)	pH (std units)	Specific Conductance (uS - umhos/cm)	Turbidity (NTU)	Disolved Oxygen (mg/L)	ORP (mV)
9:10	1000	0.1	13.57	6.47	1,660	44.7	1.04	12
9:15	1000	0.5	14.46	6.46	1,650	25.9	0.74	17
9:20	1000	1.0	14.53	6.40	1,650	28.4	1.00	19
9:28	1000	1.5	14.60	6.49	1,640	26.1	1.22	22

FIELD INFORMATION LOG Part 2

SAMPLING INFORMATION: Sample Point ID: MW-2R

Water Lever @ Sampling (ft): 16.47 Well Collection Sequence 3 of 9

Parameters: Annual _____ Semiannual: _____ Quarterly: X Monthly: _____ Other: _____

SAMPLE DATA:

Time & Date	Sample Rate	Temp (°C)	pH (std units)	Specific Conductance (uS - umhos/cm)	Turbidity (NTU)	Dissolved O_2 (mg/L)	O_2 Reduction Potential (mV)
9-30 9/8/21	VOCs: — Other: 1000	14.67	6.47	1,620	25.5	1.51	-24

YSI Serial Number: _____

YSI Sonde Serial Number: _____

GENERAL INFORMATION:

Weather Conditions @ sampling: 60°F, sunny, 5-10 mph NW

Sampling Characteristics: clear

COMMENTS AND OBSERVATIONS:

Full Bottle Set Collected: Yes No (circle) # of Bottles Collected: 6

Well Closed and Locked: Yes No (circle

Notes: _____

Minnesota Unique Well ID: 785081

Date: 9/8/21 By: N-Schlagel Title: staff env scientist

Company: Groundwater and Environmental Services, Inc.

FIELD INFORMATION LOG Part 1

Facility:	SKB Landfill (Lansing)	Sample Location:	MW-2RD
		Duplicate Collected:	No
Location:	Austin, MN	Sampler(s):	N. Sunlaguit
Sample Matrix:	Groundwater		

PURGE INFORMATION		Casing Length (ft)	35
Method of Well Purge:	Dedicated Bladder Pump	Dedicated Equipment:	Yes
Date/Time Initiated:	9/8/21 9:10	Casing Diameter (inches):	2
Initial Water Level (feet):	9.47 10.32	One Casing Volume (gal):	4.1 ~~4.1~~
Ground Water Elevation (ft, msl):	~~1216.05~~	Total Volume Purged (gal):	5.0
Top of Casing (ft, msl)	~~1226.37~~	Purged Dry?:	Yes (No) (circle)
PID (Background)	0.0 (PPM)	Water Level After Purge (ft):	9.50
PID (Headspace)	0.0 (PPM)	Date/Time Completed:	9/8/2 9:30

PURGE DATA

Time	Purge Rate (mL/min)	~~Cumulative Volume (gal)~~ Temp	~~Temp (°C)~~ pH	~~pH (std units)~~ vol gal	Specific Conductance (uS - umhos/cm)	Turbidity (NTU)	Disolved Oxygen (mg/L)	ORP (mV)
9:10	1000	10.16	6.67	[illegible]	940	10.0	1.73	45
9:15	1000	10.16	6.79	1.5	939	8.2	1.08	49
9:20	1000	10.18	6.89	3.0	934	8.5	1.020	49
9:25	1000	10.20	6.84	5.0	935	8.7	1.05	48

FIELD INFORMATION LOG Part 2

SAMPLING INFORMATION: Sample Point ID: MW-2RD

Water Lever @ Sampling (ft): 9.5 Well Collection Sequence 4 of 8

Parameters: Annual _____ Semiannual: _____ Quarterly: X Monthly: _____ Other: _____

SAMPLE DATA:

Time & Date	Sample Rate	Temp (°C)	pH (std units)	Specific Conductance (uS - umhos/cm)	Turbidity (NTU)	Dissolved O_2 (mg/L)	O_2 Reduction Potential (mV)
9/8/21 1:35	VOCs: — Other: 1000	10.20	6.25	935	87	1.05	48

YSI Serial Number: _____

YSI Sonde Serial Number: _____

GENERAL INFORMATION:

Weather Conditions @ sampling: 60°F, sunny, 5-10 mph NW

Sampling Characteristics: clear

COMMENTS AND OBSERVATIONS:

Full Bottle Set Collected: Yes No (circle) # of Bottles Collected: 6

Well Closed and Locked: Yes No (circle

Notes: _____

Minnesota Unique Well ID: 785083

Date: 9/8/21 By: [signature] Title: Staff Env. Scientist

Company: Groundwater and Environmental Services, Inc.

FIELD INFORMATION LOG Part 1

Facility: SKB Landfill (Lansing)

Sample Location: MW-3

Duplicate Collected: No

Location: Austin, MN

Sampler(s): K. Schlegel

Sample Matrix: Groundwater

PURGE INFORMATION

Casing Length (ft): 19.7

Method of Well Purge: Dedicated Bladder Pump

Dedicated Equipment: Yes

Date/Time Initiated: 9/8/21 10:00

Casing Diameter (inches): 2

Initial Water Level (feet): 7.90 ~~9.3~~

One Casing Volume (gal): 1.9 ~~1.7~~

Ground Water Elevation (ft, msl): ~~1213.85~~

Total Volume Purged (gal): 2.0

Top of Casing (ft, msl): 1223.15

Purged Dry?: Yes (No) (circle)

PID (Background): 0.0 (PPM)

Water Level After Purge (ft): 7.92

PID (Headspace): 0.0 (PPM)

Date/Time Completed: 9/8/21 10:20

PURGE DATA

Time	Purge Rate (mL/min)	Cumulative Volume (gal)	Temp (°C)	pH (std units)	Specific Conductance (uS - umhos/cm)	Turbidity (NTU)	Disolved Oxygen (mg/L)	ORP (mV)
10:00	1000	0.1	13.22	6.52	1,310	48.0	5.76	-6
10:05	1000	0.75	13.16	6.40	1,220	11.5	4.03	-40
10:10	1000	1.5	13.61	6.41	1,200	4.5	2.10	-33
10:15	1000	2.0	13.62	6.41	1,210	3.7	1.77	-33

FIELD INFORMATION LOG Part 2

SAMPLING INFORMATION: Sample Point ID: MW-3

Water Lever @ Sampling (ft): 9.72 Well Collection Sequence 5 of 8

Parameters: Annual _____ Semiannual: _____ Quarterly: X Monthly: _____ Other: _____

SAMPLE DATA:

Time & Date	Sample Rate	Temp (°C)	pH (std units)	Specific Conductance (uS - umhos/cm)	Turbidity (NTU)	Dissolved O_2 (mg/L)	O_2 Reduction Potential (mV)
10:20 9/8/21	VOCs: — Other: 500	13.61	6.40	1,220	2.9	1.45	-34

YSI Serial Number: _____

YSI Sonde Serial Number: _____

GENERAL INFORMATION:

Weather Conditions @ sampling: 62°F, sunny, 10-15 mph NW

Sampling Characteristics: clear

COMMENTS AND OBSERVATIONS:

Full Bottle Set Collected: (Yes) No (circle) # of Bottles Collected: 6

Well Closed and Locked: (Yes) No (circle)

Notes: _____

Minnesota Unique Well ID: 684913

Date: 9/8/21 By: N. Schlegel Title: Staff env. scientist

Company: Groundwater and Environmental Services, Inc.

FIELD INFORMATION LOG Part 1

Facility: SKB Landfill (Lansing)

Location: Austin, MN

Sample Matrix: Groundwater

Sample Location: MW-3R

Duplicate Collected: No

Sampler(s): M. Schlagel

PURGE INFORMATION

Method of Well Purge: Dedicated Bladder Pump

Date/Time Initiated: 9/8/21 10:00

Initial Water Level (feet): 8.05 ~~9.35~~

Ground Water Elevation (ft, msl): ~~1215.84~~

Top of Casing (ft, msl) ~~1225.19~~

PID (Background) 0.0 (PPM)

PID (Headspace) 0.0 (PPM)

Casing Length (ft) 27.5

Dedicated Equipment: Yes

Casing Diameter (inches): 2

One Casing Volume (gal): 3.2 ~~3.0~~

Total Volume Purged (gal): 3.5

Purged Dry?: Yes (No) (circle)

Water Level After Purge (ft): 8.07

Date/Time Completed: 9/8/21 10:25

PURGE DATA

Time	Purge Rate (mL/min)	Cumulative Volume (gal)	Temp (°C)	pH (std units)	Specific Conductance (uS - umhos/cm)	Turbidity (NTU)	Disolved Oxygen (mg/L)	ORP (mV)
10:00	1000	0.1	10.73	6.35	1,320	2.0	7.13	-73
10:05	1000	1.0	9.93	6.35	1,340	1.7	4.50	-92
10:10	1000	2.0	9.99	6.33	1,340	2.5	3.21	-98
10:15	1000	3.5	9.96	6.33	1,330	3.2	2.44	-97

FIELD INFORMATION LOG Part 2

SAMPLING INFORMATION:

Sample Point ID: MW-3R

Water Lever @ Sampling (ft): ~~10.78~~ 9.07

Well Collection Sequence 6 of 8

Parameters: Annual _____ Semiannual: _____

Quarterly: X Monthly: _____ Other: _____

SAMPLE DATA:

Time & Date	Sample Rate	Temp (°C)	pH (std units)	Specific Conductance (uS - umhos/cm)	Turbidity (NTU)	Dissolved O_2 (mg/L)	O_2 Reduction Potential (mV)
10:25 9/8/21	VOCs: — Other: 10°C	9.92	6.28	1,310	2.8	0.79	-84

YSI Serial Number: _____

YSI Sonde Serial Number: _____

GENERAL INFORMATION:

Weather Conditions @ sampling: 62°F, sunny, 10-15 mph NW

Sampling Characteristics: clear

COMMENTS AND OBSERVATIONS:

Full Bottle Set Collected: Yes No (circle) # of Bottles Collected: 6

Well Closed and Locked: Yes No (circle

Notes: _____

Minnesota Unique Well ID: 745082

Date: 9/8/21 By: M. Schlegel Title: staff env. scientist

Company: Groundwater and Environmental Services, Inc.

FIELD INFORMATION LOG Part 1

Facility: SKB Landfill (Lansing)

Sample Location: MW-3RD

Duplicate Collected: Yes + MS/MSD

Location: Austin, MN

Sampler(s): M. Sublette

Sample Matrix: Groundwater

PURGE INFORMATION

Casing Length (ft) 46.25

Method of Well Purge: Dedicated Bladder Pump

Dedicated Equipment: Yes

Date/Time Initiated: 10:20 9/8/12

Casing Diameter (inches): 2

Initial Water Level (feet): 8.70' ~~9.47~~

One Casing Volume (gal): 6.1 ~~6.2~~

Ground Water Elevation (ft, msl): ~~1215~~.54

Total Volume Purged (gal): 7.1

Top of Casing (ft, msl) ~~1225~~.01

Purged Dry?: Yes (No) (circle)

PID (Background) 0.0 (PPM)

Water Level After Purge (ft): 8.72'

PID (Headspace) 0.6 (PPM)

Date/Time Completed: 9/8/12 10:40

PURGE DATA

Time	Purge Rate (mL/min)	Cumulative Volume (gal)	Temp (°C)	pH (std units)	Specific Conductance (uS - umhos/cm)	Turbidity (NTU)	Disolved Oxygen (mg/L)	ORP (mV)
10:20	1000	0.1	9.82	6.70	829	10.4	0.87	-89
10:25	1000	2.0	9.70	6.68	833	6.9	0.00	-87
10:30	1000	4.0	9.87	6.70	834	6.4	0.00	-87
10:35	1000	7.0	9.89	6.69	~~833~~	5.9	0.00	-86

FIELD INFORMATION LOG Part 2

SAMPLING INFORMATION: Sample Point ID: MW-3RD

Water Lever @ Sampling (ft): 8.72' Well Collection Sequence 7 of 9

Parameters: Annual _____ Semiannual: _____ Quarterly: X Monthly: _____ Other: _____

SAMPLE DATA:

Time & Date	Sample Rate	Temp (°C)	pH (std units)	Specific Conductance (uS - umhos/cm)	Turbidity (NTU)	Dissolved O_2 (mg/L)	O_2 Reduction Potential (mV)
10:40 9/8/21	VOCs: - Other: 1000	9.82	6.70	932	5.9	0.00	-87

YSI Serial Number: _____

YSI Sonde Serial Number: _____

GENERAL INFORMATION:

Weather Conditions @ sampling: 62°F, cloudy, 10-15 mph NW

Sampling Characteristics: clear

COMMENTS AND OBSERVATIONS:

Full Bottle Set Collected: (Yes) No (circle) # of Bottles Collected: 6

Well Closed and Locked: (Yes) No (circle

Notes: _____

Minnesota Unique Well ID: 785084

Date: 9/8/21 By: N. Schlegel Title: Staff env scientist

Company: Groundwater and Environmental Services, Inc.

FIELD INFORMATION LOG Part 1

Facility: SKB Landfill (Lansing)

Location: Austin, MN

Sample Matrix: Groundwater

Sample Location: MW-4

Duplicate Collected: No

Sampler(s): M-SCL/bgw

PURGE INFORMATION

Method of Well Purge: Dedicated Bladder Pump

Date/Time Initiated:

Initial Water Level (feet): 8.63

Ground Water Elevation (ft, msl): 1217.34

Top of Casing (ft, msl) 1225.97

PID (Background) (PPM)

PID (Headspace) (PPM)

Casing Length (ft) 18.3

Dedicated Equipment: Yes

Casing Diameter (inches): 2

One Casing Volume (gal): 2.1 1.6

Total Volume Purged (gal): 2.8

Purged Dry?: Yes (No) (circle)

Water Level After Purge (ft): 5.31

Date/Time Completed: 9/8/21 11:35

PURGE DATA

Time	Purge Rate (mL/min)	Cumulative Volume (gal)	Temp (°C)	pH (std units)	Specific Conductance (uS - umhos/cm)	Turbidity (NTU)	Disolved Oxygen (mg/L)	ORP (mV)
11:15	1000	0.5	14.31	6.52	1,160	2.0	1.80	3
11:20	1000	1.0	14.57	6.45	1,190	0.0	0.00	8
11:25	1000	2.0	14.61	6.43	1,180	0.6	0.00	9
11:30	1000	2.5	14.59	6.44	1,180	0.0	0.00	9

FIELD INFORMATION LOG Part 2

SAMPLING INFORMATION:

Sample Point ID: MW-4

Water Lever @ Sampling (ft): 5.35

Well Collection Sequence 6 of 8

Parameters: Annual _____ Semiannual: _____ Quarterly: X Monthly: _____ Other: _____

SAMPLE DATA:

Time & Date	Sample Rate	Temp (°C)	pH (std units)	Specific Conductance (uS - umhos/cm)	Turbidity (NTU)	Dissolved O_2 (mg/L)	O_2 Reduction Potential (mV)
11:35 9/8/21	VOCs: – Other: 1000	14.71	6.46	1180	0.0	0.00	9

YSI Serial Number: _____

YSI Sonde Serial Number: _____

GENERAL INFORMATION:

Weather Conditions @ sampling: 64F, sunny, 10-15 mph NW

Sampling Characteristics: clear

COMMENTS AND OBSERVATIONS:

Full Bottle Set Collected: (Yes) No (circle) # of Bottles Collected: 6

Well Closed and Locked: (Yes) No (circle)

Notes: _____

Minnesota Unique Well ID: 66414

Date: 9/8/21 By: [signature] Title: Staff env scientist

Company: Groundwater and Environmental Services, Inc.

INSTRUMENT CALIBRATION DATA:

Start of day: (Date/Time) 9/8/21 7:00

End of day: (Date/Time) 9/9/21 16:00

YSI Model Number U-5000

YSI Serial Number

Sonde Model Number U-52

Sonde Serial Number

Sampling Event

Time:	Value:		
7:00	—	NTU std =	DI Water
7	100	NTU std =	100
	1409	uS std =	1409
	4.00	pH std =	4
	7.00	pH std =	7
	10.00	pH std =	10

Calibration Notes:

Appendix B – Laboratory Analytical Reports

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins TestAmerica, Buffalo
10 Hazelwood Drive
Amherst, NY 14228-2298
Tel: (716)691-2600

Laboratory Job ID: 480-184717-1
Laboratory Sample Delivery Group: 184717
Client Project/Site: SKB Lansing - CCR Groundwater
Sampling Event: CCR Groundwater

For:
Waste Connections, Inc.
13425 Courthouse Blvd
Rosemount, Minnesota 55068

Attn: Heath Yearling

Authorized for release by:
6/17/2021 4:31:36 PM
Joshua Velez, Project Management Assistant I
joshua.velez@eurofinset.com

Designee for

Ryan VanDette, Project Manager II
(716)504-9830
Ryan.VanDette@Eurofinset.com

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Qualifiers

Metals

Qualifier	Qualifier Description
^1+	Initial Calibration Verification (ICV) is outside acceptance limits, high biased.
^6+	Interference Check Standard (ICSA and/or ICSAB) is outside acceptance limits, high biased.
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.

General Chemistry

Qualifier	Qualifier Description
E	Result exceeded calibration range.
H	Sample was prepped or analyzed beyond the specified holding time
HF	Field parameter with a holding time of 15 minutes. Test performed by laboratory at client's request.

Rad

Qualifier	Qualifier Description
U	Result is less than the sample detection limit.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 480-184717-1

Laboratory: Eurofins TestAmerica, Buffalo

Narrative

Job Narrative
480-184717-1

Comments
No additional comments.

Receipt
The samples were received on 5/14/2021 10:00 AM and 5/17/2021 10:00 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperatures of the 4 coolers at receipt time were 3.4º C, 3.6º C, 4.2º C and 4.3º C.

Receipt Exceptions
Cooler recieved late due to FedEx delay. Only the samples recieved were entered into login. MW-4-CCR (480-184817-1), FIELD BLANK-CCR (480-184817-2) and Equipment Blank-CCR (480-184817-3)

HPLC/IC
Method 300.0: The following samples were diluted to bring the concentration of target analytes within the calibration range: MW-1-CCR (480-184717-1) and MW-2R-CCR (480-184717-3). Elevated reporting limits (RLs) are provided.

Method 300.0: The following sample was diluted to bring the concentration of target analytes within the calibration range: MW-4-CCR (480-184817-1). Elevated reporting limits (RLs) are provided.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Metals
Method 6020B: The interference check standard solution (ICSA) associated with the following samples showed results for Total Cobalt at a level greater than 2X the reporting limit. The solution contains trace impurities of this element, and the results are not due to any matrix interference. These results are consistent with those found by the manufacturer of the ICSA solution. MW-1-CCR (480-184717-1), MW-1RD-CCR (480-184717-2), MW-2R-CCR (480-184717-3), MW-2RD-CCR (480-184717-4), MW-3-CCR (480-184717-5), MW-3R-CCR (480-184717-6), MW-3RD-CCR (480-184717-7), MW-3RD-CCR (480-184717-7[MS]), MW-3RD-CCR (480-184717-7[MSD]), DUPLICATE-CCR (480-184717-9), MW-4-CCR (480-184817-1), FIELD BLANK-CCR (480-184817-2), Equipment Blank-CCR (480-184817-3), (LCS 480-583092/2-A), (MB 480-583092/1-A), (480-184717-D-7-G PDS) and (480-184717-D-7-G SD ^5)

Method 6020B: The Low Level Initial Calibration Verification, (ICVL 480-583568/7) associated with batch 480-583568, contained Total Antimony above the upper quality control limit. The associated samples were either ND for the affected analyte or contained this analyte at a concentration greater than 10X the value found in the ICVL; therefore, re-analysis of samples MW-1-CCR (480-184717-1), MW-1RD-CCR (480-184717-2), MW-2R-CCR (480-184717-3), MW-2RD-CCR (480-184717-4), MW-3-CCR (480-184717-5), MW-3R-CCR (480-184717-6), MW-3RD-CCR (480-184717-7), MW-3RD-CCR (480-184717-7[MS]), MW-3RD-CCR (480-184717-7[MSD]), DUPLICATE-CCR (480-184717-9), MW-4-CCR (480-184817-1), FIELD BLANK-CCR (480-184817-2), Equipment Blank-CCR (480-184817-3), (LCS 480-583092/2-A), (MB 480-583092/1-A), (480-184717-D-7-G PDS) and (480-184717-D-7-G SD ^5) was not performed.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

General Chemistry
Method SM 2540C: Reanalysis of the following sample was performed outside of the analytical holding time due to inconsistent results in initial analysis : MW-4-CCR (480-184817-1).

Methods 9040C, SM 4500 H+ B: This analysis is normally performed in the field and has a method-defined holding time of 15 minutes. The following samples has been qualified with the "HF" flag to indicate analysis was performed in the laboratory outside the 15 minute timeframe: MW-1-CCR (480-184717-1), MW-1RD-CCR (480-184717-2), MW-2R-CCR (480-184717-3), MW-2RD-CCR (480-184717-4), MW-3-CCR (480-184717-5), MW-3R-CCR (480-184717-6), MW-3RD-CCR (480-184717-7) and DUPLICATE-CCR (480-184717-9).

Methods 9040C, SM 4500 H+ B: This analysis is normally performed in the field and has a method-defined holding time of 15 minutes. The following samples has been qualified with the "HF" flag to indicate analysis was performed in the laboratory outside the 15 minute

Job ID: 480-184717-1 (Continued)

Laboratory: Eurofins TestAmerica, Buffalo (Continued)

timeframe: MW-4-CCR (480-184817-1), FIELD BLANK-CCR (480-184817-2) and Equipment Blank-CCR (480-184817-3).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Narrative

Job Narrative
480-184717-2

Comments
No additional comments.

Receipt
The samples were received on 5/14/2021 10:00 AM and 5/17/2021 10:00 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperatures of the 4 coolers at receipt time were 3.4º C, 3.6º C, 4.2º C and 4.3º C.

Receipt Exceptions
Cooler recieved late due to FedEx delay. Only the samples recieved were entered into login. MW-4-CCR (480-184817-1), FIELD BLANK-CCR (480-184817-2) and Equipment Blank-CCR (480-184817-3)

RAD
Methods 903.0, 9315: Radium-226 Batch 510988 Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative. Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date. MW-1-CCR (480-184717-1), MW-1RD-CCR (480-184717-2), MW-2R-CCR (480-184717-3), MW-2RD-CCR (480-184717-4), MW-3-CCR (480-184717-5), MW-3R-CCR (480-184717-6), MW-3RD-CCR (480-184717-7), MW-3RD-CCR (480-184717-7[MS]), MW-3RD-CCR (480-184717-7[MSD]), DUPLICATE-CCR (480-184717-9), (LCS 160-510988/1-A) and (MB 160-510988/24-A)

Method 903.0: Radium 226 prep batch 160-511004 Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative. Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date. MW-4-CCR (480-184817-1), FIELD BLANK-CCR (480-184817-2), Equipment Blank-CCR (480-184817-3), (LCS 160-511004/1-A), (LCSD 160-511004/2-A) and (MB 160-511004/23-A)

Methods 904.0, 9320: Radium-228 prep batch 160-510997: Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative. Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date. MW-1-CCR (480-184717-1), MW-1RD-CCR (480-184717-2), MW-2R-CCR (480-184717-3), MW-2RD-CCR (480-184717-4), MW-3-CCR (480-184717-5), MW-3R-CCR (480-184717-6), MW-3RD-CCR (480-184717-7), MW-3RD-CCR (480-184717-7[MS]), MW-3RD-CCR (480-184717-7[MSD]), DUPLICATE-CCR (480-184717-9), (LCS 160-510997/1-A) and (MB 160-510997/24-A)

Method 904.0: Radium 228 prep batch 160-511013 Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative. Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date. MW-4-CCR (480-184817-1), FIELD BLANK-CCR (480-184817-2), Equipment Blank-CCR (480-184817-3), (LCS 160-511013/1-A), (LCSD 160-511013/2-A) and (MB 160-511013/23-A)

Method PrecSep_0: Ra-228 Batch 160-511013 Insufficient sample volume was available to perform a sample duplicate (DUP) for the following samples: FIELD BLANK-CCR (480-184817-2) and Equipment Blank-CCR (480-184817-3). A laboratory control sample/ laboratory control sample duplicate (LCS/LCSD) were prepared instead to demonstrate batch precision.

Method PrecSep_0: Ra-228 Batch 160-511013 The following samples were prepared at a reduced aliquot due to Matrix: MW-4-CCR (480-184817-1). A laboratory control sample/ laboratory control sample duplicate (LCS/LCSD) were prepared instead of a sample duplicate (DUP) to demonstrate batch precision.

Method PrecSep-21: Ra-226 Batch 160-511004: Insufficient sample volume was available to perform a sample duplicate (DUP) for the following samples: FIELD BLANK-CCR (480-184817-2) and Equipment Blank-CCR (480-184817-3). A laboratory control sample/ laboratory control sample duplicate (LCS/LCSD) were prepared instead to demonstrate batch precision.

Job ID: 480-184717-1 (Continued)

Laboratory: Eurofins TestAmerica, Buffalo (Continued)

Method PrecSep-21: Ra-226 Batch 160-511004: The following samples were prepared at a reduced aliquot due to Matrix: MW-4-CCR (480-184817-1). A laboratory control sample/ laboratory control sample duplicate (LCS/LCSD) were prepared instead of a sample duplicate (DUP) to demonstrate batch precision.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Detection Summary

Client: Waste Connections, Inc.
Project/Site: SKB Lansing - CCR Groundwater

Job ID: 480-184717-1
SDG: 184717

Client Sample ID: MW-1-CCR — Lab Sample ID: 480-184717-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.16		0.0020		mg/L	1		6010D	Total/NA
Boron	0.25		0.020		mg/L	1		6010D	Total/NA
Calcium	182		0.50		mg/L	1		6010D	Total/NA
Lithium	0.041		0.030		mg/L	1		6010D	Total/NA
Chloride	267		5.0		mg/L	10		300.0	Total/NA
Fluoride	0.16		0.050		mg/L	1		300.0	Total/NA
Sulfate	80.8		2.0		mg/L	1		300.0	Total/NA
Total Dissolved Solids	1190		10.0		mg/L	1		SM 2540C	Total/NA
pH	7.2	HF	0.1		SU	1		SM 4500 H+ B	Total/NA
Temperature	21.2	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

Client Sample ID: MW-1RD-CCR — Lab Sample ID: 480-184717-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.16		0.0020		mg/L	1		6010D	Total/NA
Boron	0.025		0.020		mg/L	1		6010D	Total/NA
Calcium	77.6		0.50		mg/L	1		6010D	Total/NA
Cobalt	0.72	^6+	0.30		ug/L	1		6020B	Total/NA
Molybdenum	3.0		1.0		ug/L	1		6020B	Total/NA
Chloride	24.2		0.50		mg/L	1		300.0	Total/NA
Fluoride	0.26		0.050		mg/L	1		300.0	Total/NA
Sulfate	51.3		2.0		mg/L	1		300.0	Total/NA
Total Dissolved Solids	345		10.0		mg/L	1		SM 2540C	Total/NA
pH	7.3	HF	0.1		SU	1		SM 4500 H+ B	Total/NA
Temperature	21.1	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

Client Sample ID: MW-2R-CCR — Lab Sample ID: 480-184717-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.24		0.0020		mg/L	1		6010D	Total/NA
Boron	3.4		0.020		mg/L	1		6010D	Total/NA
Calcium	218		0.50		mg/L	1		6010D	Total/NA
Chromium	0.0040		0.0040		mg/L	1		6010D	Total/NA
Cobalt	1.9	^6+	0.30		ug/L	1		6020B	Total/NA
Molybdenum	2.1		1.0		ug/L	1		6020B	Total/NA
Chloride	106		2.5		mg/L	5		300.0	Total/NA
Fluoride	0.21		0.050		mg/L	1		300.0	Total/NA
Sulfate	170		10.0		mg/L	5		300.0	Total/NA
Total Dissolved Solids	1240		10.0		mg/L	1		SM 2540C	Total/NA
pH	7.2	HF	0.1		SU	1		SM 4500 H+ B	Total/NA
Temperature	21.2	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

Client Sample ID: MW-2RD-CCR — Lab Sample ID: 480-184717-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.20		0.0020		mg/L	1		6010D	Total/NA
Boron	0.10		0.020		mg/L	1		6010D	Total/NA
Calcium	140		0.50		mg/L	1		6010D	Total/NA
Arsenic	2.0		1.0		ug/L	1		6020B	Total/NA
Cobalt	2.6	^6+	0.30		ug/L	1		6020B	Total/NA
Molybdenum	2.2		1.0		ug/L	1		6020B	Total/NA
Selenium	14.8		1.0		ug/L	1		6020B	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Buffalo

Client Sample ID: MW-2RD-CCR (Continued) — Lab Sample ID: 480-184717-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	37.5		0.50		mg/L	1		300.0	Total/NA
Fluoride	0.23		0.050		mg/L	1		300.0	Total/NA
Sulfate	72.2		2.0		mg/L	1		300.0	Total/NA
Total Dissolved Solids	571		10.0		mg/L	1		SM 2540C	Total/NA
pH	7.0	HF	0.1		SU	1		SM 4500 H+ B	Total/NA
Temperature	21.6	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

Client Sample ID: MW-3-CCR — Lab Sample ID: 480-184717-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.30		0.0020		mg/L	1		6010D	Total/NA
Boron	0.68		0.020		mg/L	1		6010D	Total/NA
Calcium	222		0.50		mg/L	1		6010D	Total/NA
Arsenic	1.9		1.0		ug/L	1		6020B	Total/NA
Cobalt	7.6	^6+	0.30		ug/L	1		6020B	Total/NA
Molybdenum	7.0		1.0		ug/L	1		6020B	Total/NA
Chloride	51.6		0.50		mg/L	1		300.0	Total/NA
Fluoride	0.21		0.050		mg/L	1		300.0	Total/NA
Sulfate	19.9		2.0		mg/L	1		300.0	Total/NA
Total Dissolved Solids	1020		10.0		mg/L	1		SM 2540C	Total/NA
pH	6.8	HF	0.1		SU	1		SM 4500 H+ B	Total/NA
Temperature	21.6	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

Client Sample ID: MW-3R-CCR — Lab Sample ID: 480-184717-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.60		0.0020		mg/L	1		6010D	Total/NA
Boron	0.060		0.020		mg/L	1		6010D	Total/NA
Calcium	226		0.50		mg/L	1		6010D	Total/NA
Arsenic	2.2		1.0		ug/L	1		6020B	Total/NA
Cobalt	0.58	^6+	0.30		ug/L	1		6020B	Total/NA
Molybdenum	1.1		1.0		ug/L	1		6020B	Total/NA
Chloride	21.4		0.50		mg/L	1		300.0	Total/NA
Fluoride	0.096		0.050		mg/L	1		300.0	Total/NA
Sulfate	4.8		2.0		mg/L	1		300.0	Total/NA
Total Dissolved Solids	847		10.0		mg/L	1		SM 2540C	Total/NA
pH	6.7	HF	0.1		SU	1		SM 4500 H+ B	Total/NA
Temperature	21.5	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

Client Sample ID: MW-3RD-CCR — Lab Sample ID: 480-184717-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.22		0.0020		mg/L	1		6010D	Total/NA
Boron	0.040		0.020		mg/L	1		6010D	Total/NA
Calcium	123		0.50		mg/L	1		6010D	Total/NA
Arsenic	4.0		1.0		ug/L	1		6020B	Total/NA
Cobalt	0.59	^6+	0.30		ug/L	1		6020B	Total/NA
Molybdenum	4.5		1.0		ug/L	1		6020B	Total/NA
Chloride	28.2		0.50		mg/L	1		300.0	Total/NA
Fluoride	0.28		0.050		mg/L	1		300.0	Total/NA
Sulfate	84.2		2.0		mg/L	1		300.0	Total/NA
Total Dissolved Solids	583		10.0		mg/L	1		SM 2540C	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: MW-3RD-CCR (Continued) — Lab Sample ID: 480-184717-7

Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
pH	7.1	HF	0.1		SU	1		SM 4500 H+ B	Total/NA
Temperature	21.5	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

Client Sample ID: DUPLICATE-CCR — Lab Sample ID: 480-184717-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.22		0.0020		mg/L	1		6010D	Total/NA
Boron	0.036		0.020		mg/L	1		6010D	Total/NA
Calcium	120		0.50		mg/L	1		6010D	Total/NA
Arsenic	4.2		1.0		ug/L	1		6020B	Total/NA
Cobalt	0.65	^6+	0.30		ug/L	1		6020B	Total/NA
Molybdenum	4.7		1.0		ug/L	1		6020B	Total/NA
Chloride	27.7		0.50		mg/L	1		300.0	Total/NA
Fluoride	0.28		0.050		mg/L	1		300.0	Total/NA
Sulfate	84.3		2.0		mg/L	1		300.0	Total/NA
Total Dissolved Solids	558		10.0		mg/L	1		SM 2540C	Total/NA
pH	7.1	HF	0.1		SU	1		SM 4500 H+ B	Total/NA
Temperature	21.6	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

Client Sample ID: MW-4-CCR — Lab Sample ID: 480-184817-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.23		0.0020		mg/L	1		6010D	Total/NA
Boron	0.33		0.020		mg/L	1		6010D	Total/NA
Calcium	192		0.50		mg/L	1		6010D	Total/NA
Arsenic	1.2		1.0		ug/L	1		6020B	Total/NA
Cobalt	0.39	^6+	0.30		ug/L	1		6020B	Total/NA
Molybdenum	1.5		1.0		ug/L	1		6020B	Total/NA
Chloride	37.1		0.50		mg/L	1		300.0	Total/NA
Fluoride	0.23		0.050		mg/L	1		300.0	Total/NA
Sulfate	233		10.0		mg/L	5		300.0	Total/NA
Total Dissolved Solids	833	H	10.0		mg/L	1		SM 2540C	Total/NA
pH	7.1	HF	0.1		SU	1		SM 4500 H+ B	Total/NA
Temperature	24.1	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

Client Sample ID: FIELD BLANK-CCR — Lab Sample ID: 480-184817-2

Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
pH	6.2	HF	0.1		SU	1		SM 4500 H+ B	Total/NA
Temperature	23.9	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

Client Sample ID: Equipment Blank-CCR — Lab Sample ID: 480-184817-3

Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
pH	5.8	HF	0.1		SU	1		SM 4500 H+ B	Total/NA
Temperature	23.8	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: MW-1-CCR

Date Collected: 05/13/21 14:25
Date Received: 05/14/21 10:00

Lab Sample ID: 480-184717-1

Matrix: Water

Method: 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	**0.16**		0.0020		mg/L		05/28/21 10:34	05/29/21 01:00	1
Boron	**0.25**		0.020		mg/L		05/28/21 10:34	05/29/21 01:00	1
Calcium	**182**		0.50		mg/L		05/28/21 10:34	05/29/21 01:00	1
Chromium	ND		0.0040		mg/L		05/28/21 10:34	05/29/21 01:00	1
Lead	ND		0.010		mg/L		05/28/21 10:34	05/29/21 01:00	1
Lithium	**0.041**		0.030		mg/L		05/28/21 10:34	05/29/21 01:00	1

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND	^1+	1.0		ug/L		05/28/21 10:18	06/01/21 15:17	1
Arsenic	ND		1.0		ug/L		05/28/21 10:18	06/01/21 15:17	1
Beryllium	ND		0.70		ug/L		05/28/21 10:18	06/01/21 15:17	1
Cadmium	ND		0.50		ug/L		05/28/21 10:18	06/01/21 15:17	1
Cobalt	ND	^6+	0.30		ug/L		05/28/21 10:18	06/01/21 15:17	1
Molybdenum	ND		1.0		ug/L		05/28/21 10:18	06/01/21 15:17	1
Selenium	ND		1.0		ug/L		05/28/21 10:18	06/01/21 15:17	1
Thallium	ND		0.20		ug/L		05/28/21 10:18	06/01/21 15:17	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20		ug/L		05/21/21 13:55	05/21/21 18:03	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**267**		5.0		mg/L			05/22/21 07:19	10
Fluoride	**0.16**		0.050		mg/L			05/20/21 17:39	1
Sulfate	**80.8**		2.0		mg/L			05/20/21 17:39	1
Total Dissolved Solids	**1190**		10.0		mg/L			05/20/21 09:25	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	**7.2**	**HF**	0.1		SU			05/18/21 17:54	1
Temperature	**21.2**	**HF**	0.001		Degrees C			05/18/21 17:54	1

Method: 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	-0.0326	U	0.123	0.123	1.00	0.261	pCi/L	05/21/21 12:30	06/15/21 15:56	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*94.0*		*40 - 110*	*05/21/21 12:30*	*06/15/21 15:56*	*1*

Method: 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.0931	U	0.241	0.241	1.00	0.415	pCi/L	05/21/21 13:50	06/14/21 14:12	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*94.0*		*40 - 110*	*05/21/21 13:50*	*06/14/21 14:12*	*1*
Y Carrier	*90.1*		*40 - 110*	*05/21/21 13:50*	*06/14/21 14:12*	*1*

Client Sample ID: MW-1RD-CCR

Date Collected: 05/13/21 14:40
Date Received: 05/14/21 10:00

Lab Sample ID: 480-184717-2

Matrix: Water

Method: 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	**0.16**		0.0020		mg/L		05/28/21 10:34	05/29/21 01:03	1
Boron	**0.025**		0.020		mg/L		05/28/21 10:34	05/29/21 01:03	1
Calcium	**77.6**		0.50		mg/L		05/28/21 10:34	05/29/21 01:03	1
Chromium	ND		0.0040		mg/L		05/28/21 10:34	05/29/21 01:03	1
Lead	ND		0.010		mg/L		05/28/21 10:34	05/29/21 01:03	1
Lithium	ND		0.030		mg/L		05/28/21 10:34	05/29/21 01:03	1

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND	^1+	1.0		ug/L		05/28/21 10:18	06/01/21 15:19	1
Arsenic	ND		1.0		ug/L		05/28/21 10:18	06/01/21 15:19	1
Beryllium	ND		0.70		ug/L		05/28/21 10:18	06/01/21 15:19	1
Cadmium	ND		0.50		ug/L		05/28/21 10:18	06/01/21 15:19	1
Cobalt	**0.72**	**^6+**	0.30		ug/L		05/28/21 10:18	06/01/21 15:19	1
Molybdenum	**3.0**		1.0		ug/L		05/28/21 10:18	06/01/21 15:19	1
Selenium	ND		1.0		ug/L		05/28/21 10:18	06/01/21 15:19	1
Thallium	ND		0.20		ug/L		05/28/21 10:18	06/01/21 15:19	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20		ug/L		05/21/21 13:55	05/21/21 18:05	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**24.2**		0.50		mg/L			05/20/21 17:54	1
Fluoride	**0.26**		0.050		mg/L			05/20/21 17:54	1
Sulfate	**51.3**		2.0		mg/L			05/20/21 17:54	1
Total Dissolved Solids	**345**		10.0		mg/L			05/20/21 09:25	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	**7.3**	**HF**	0.1		SU			05/18/21 17:57	1
Temperature	**21.1**	**HF**	0.001		Degrees C			05/18/21 17:57	1

Method: 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.239	U	0.191	0.192	1.00	0.289	pCi/L	05/21/21 12:30	06/15/21 16:34	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*96.7*		*40 - 110*	*05/21/21 12:30*	*06/15/21 16:34*	*1*

Method: 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	**0.838**		0.277	0.287	1.00	0.359	pCi/L	05/21/21 13:50	06/14/21 14:12	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*96.7*		*40 - 110*	*05/21/21 13:50*	*06/14/21 14:12*	*1*
Y Carrier	*87.5*		*40 - 110*	*05/21/21 13:50*	*06/14/21 14:12*	*1*

Client Sample ID: MW-2R-CCR

Date Collected: 05/13/21 07:25
Date Received: 05/14/21 10:00

Lab Sample ID: 480-184717-3

Matrix: Water

Method: 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	**0.24**		0.0020		mg/L		05/28/21 10:34	05/29/21 01:07	1
Boron	**3.4**		0.020		mg/L		05/28/21 10:34	05/29/21 01:07	1
Calcium	**218**		0.50		mg/L		05/28/21 10:34	05/29/21 01:07	1
Chromium	**0.0040**		0.0040		mg/L		05/28/21 10:34	05/29/21 01:07	1
Lead	ND		0.010		mg/L		05/28/21 10:34	05/29/21 01:07	1
Lithium	ND		0.030		mg/L		05/28/21 10:34	05/29/21 01:07	1

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND	^1+	1.0		ug/L		05/28/21 10:18	06/01/21 15:28	1
Arsenic	ND		1.0		ug/L		05/28/21 10:18	06/01/21 15:28	1
Beryllium	ND		0.70		ug/L		05/28/21 10:18	06/01/21 15:28	1
Cadmium	ND		0.50		ug/L		05/28/21 10:18	06/01/21 15:28	1
Cobalt	**1.9**	**^6+**	0.30		ug/L		05/28/21 10:18	06/01/21 15:28	1
Molybdenum	**2.1**		1.0		ug/L		05/28/21 10:18	06/01/21 15:28	1
Selenium	ND		1.0		ug/L		05/28/21 10:18	06/01/21 15:28	1
Thallium	ND		0.20		ug/L		05/28/21 10:18	06/01/21 15:28	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20		ug/L		05/21/21 13:55	05/21/21 18:06	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**106**		2.5		mg/L			05/22/21 07:37	5
Fluoride	**0.21**		0.050		mg/L			05/20/21 18:08	1
Sulfate	**170**		10.0		mg/L			05/22/21 07:37	5
Total Dissolved Solids	**1240**		10.0		mg/L			05/19/21 15:41	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	**7.2**	**HF**	0.1		SU			05/18/21 18:00	1
Temperature	**21.2**	**HF**	0.001		Degrees C			05/18/21 18:00	1

Method: 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0702	U	0.195	0.195	1.00	0.355	pCi/L	05/21/21 12:30	06/15/21 16:34	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*95.2*		*40 - 110*	*05/21/21 12:30*	*06/15/21 16:34*	*1*

Method: 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	**0.934**		0.349	0.359	1.00	0.474	pCi/L	05/21/21 13:50	06/14/21 14:12	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*95.2*		*40 - 110*	*05/21/21 13:50*	*06/14/21 14:12*	*1*
Y Carrier	*92.7*		*40 - 110*	*05/21/21 13:50*	*06/14/21 14:12*	*1*

Client Sample Results

Client: Waste Connections, Inc.
Project/Site: SKB Lansing - CCR Groundwater

Job ID: 480-184717-1
SDG: 184717

Client Sample ID: MW-2RD-CCR

Date Collected: 05/13/21 15:50
Date Received: 05/14/21 10:00

Lab Sample ID: 480-184717-4

Matrix: Water

Method: 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	**0.20**		0.0020		mg/L		05/28/21 10:34	05/29/21 01:11	1
Boron	**0.10**		0.020		mg/L		05/28/21 10:34	05/29/21 01:11	1
Calcium	**140**		0.50		mg/L		05/28/21 10:34	05/29/21 01:11	1
Chromium	ND		0.0040		mg/L		05/28/21 10:34	05/29/21 01:11	1
Lead	ND		0.010		mg/L		05/28/21 10:34	05/29/21 01:11	1
Lithium	ND		0.030		mg/L		05/28/21 10:34	05/29/21 01:11	1

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND	^1+	1.0		ug/L		05/28/21 10:18	06/01/21 15:30	1
Arsenic	**2.0**		1.0		ug/L		05/28/21 10:18	06/01/21 15:30	1
Beryllium	ND		0.70		ug/L		05/28/21 10:18	06/01/21 15:30	1
Cadmium	ND		0.50		ug/L		05/28/21 10:18	06/01/21 15:30	1
Cobalt	**2.6**	**^6+**	0.30		ug/L		05/28/21 10:18	06/01/21 15:30	1
Molybdenum	**2.2**		1.0		ug/L		05/28/21 10:18	06/01/21 15:30	1
Selenium	**14.8**		1.0		ug/L		05/28/21 10:18	06/01/21 15:30	1
Thallium	ND		0.20		ug/L		05/28/21 10:18	06/01/21 15:30	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20		ug/L		05/21/21 13:55	05/21/21 18:07	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**37.5**		0.50		mg/L			05/20/21 19:33	1
Fluoride	**0.23**		0.050		mg/L			05/20/21 19:33	1
Sulfate	**72.2**		2.0		mg/L			05/20/21 19:33	1
Total Dissolved Solids	**571**		10.0		mg/L			05/20/21 09:25	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	**7.0**	**HF**	0.1		SU			05/18/21 18:07	1
Temperature	**21.6**	**HF**	0.001		Degrees C			05/18/21 18:07	1

Method: 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	**0.450**		0.207	0.211	1.00	0.256	pCi/L	05/21/21 12:30	06/15/21 16:34	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*97.9*		*40 - 110*	*05/21/21 12:30*	*06/15/21 16:34*	*1*

Method: 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	**0.591**		0.263	0.269	1.00	0.381	pCi/L	05/21/21 13:50	06/14/21 14:13	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*97.9*		*40 - 110*	*05/21/21 13:50*	*06/14/21 14:13*	*1*
Y Carrier	*92.0*		*40 - 110*	*05/21/21 13:50*	*06/14/21 14:13*	*1*

Client Sample ID: MW-3-CCR

Date Collected: 05/13/21 08:15
Date Received: 05/14/21 10:00

Lab Sample ID: 480-184717-5

Matrix: Water

Method: 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	**0.30**		0.0020		mg/L		05/28/21 10:34	05/29/21 01:15	1
Boron	**0.68**		0.020		mg/L		05/28/21 10:34	05/29/21 01:15	1
Calcium	**222**		0.50		mg/L		05/28/21 10:34	05/29/21 01:15	1
Chromium	ND		0.0040		mg/L		05/28/21 10:34	05/29/21 01:15	1
Lead	ND		0.010		mg/L		05/28/21 10:34	05/29/21 01:15	1
Lithium	ND		0.030		mg/L		05/28/21 10:34	05/29/21 01:15	1

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND	^1+	1.0		ug/L		05/28/21 10:18	06/01/21 15:33	1
Arsenic	**1.9**		1.0		ug/L		05/28/21 10:18	06/01/21 15:33	1
Beryllium	ND		0.70		ug/L		05/28/21 10:18	06/01/21 15:33	1
Cadmium	ND		0.50		ug/L		05/28/21 10:18	06/01/21 15:33	1
Cobalt	**7.6**	**^6+**	0.30		ug/L		05/28/21 10:18	06/01/21 15:33	1
Molybdenum	**7.0**		1.0		ug/L		05/28/21 10:18	06/01/21 15:33	1
Selenium	ND		1.0		ug/L		05/28/21 10:18	06/01/21 15:33	1
Thallium	ND		0.20		ug/L		05/28/21 10:18	06/01/21 15:33	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20		ug/L		05/21/21 13:55	05/21/21 18:09	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**51.6**		0.50		mg/L			05/20/21 19:47	1
Fluoride	**0.21**		0.050		mg/L			05/20/21 19:47	1
Sulfate	**19.9**		2.0		mg/L			05/20/21 19:47	1
Total Dissolved Solids	**1020**		10.0		mg/L			05/19/21 15:41	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	**6.8**	**HF**	0.1		SU			05/18/21 18:13	1
Temperature	**21.6**	**HF**	0.001		Degrees C			05/18/21 18:13	1

Method: 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	**0.414**		0.250	0.252	1.00	0.342	pCi/L	05/21/21 12:30	06/15/21 16:34	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*94.9*		*40 - 110*	*05/21/21 12:30*	*06/15/21 16:34*	*1*

Method: 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.423	U	0.350	0.352	1.00	0.558	pCi/L	05/21/21 13:50	06/14/21 14:14	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*94.9*		*40 - 110*	*05/21/21 13:50*	*06/14/21 14:14*	*1*
Y Carrier	*87.5*		*40 - 110*	*05/21/21 13:50*	*06/14/21 14:14*	*1*

Client Sample ID: MW-3R-CCR

Date Collected: 05/13/21 08:10
Date Received: 05/14/21 10:00

Lab Sample ID: 480-184717-6

Matrix: Water

Method: 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	**0.60**		0.0020		mg/L		05/28/21 10:34	05/29/21 01:19	1
Boron	**0.060**		0.020		mg/L		05/28/21 10:34	05/29/21 01:19	1
Calcium	**226**		0.50		mg/L		05/28/21 10:34	05/29/21 01:19	1
Chromium	ND		0.0040		mg/L		05/28/21 10:34	05/29/21 01:19	1
Lead	ND		0.010		mg/L		05/28/21 10:34	05/29/21 01:19	1
Lithium	ND		0.030		mg/L		05/28/21 10:34	05/29/21 01:19	1

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND	^1+	1.0		ug/L		05/28/21 10:18	06/01/21 15:35	1
Arsenic	**2.2**		1.0		ug/L		05/28/21 10:18	06/01/21 15:35	1
Beryllium	ND		0.70		ug/L		05/28/21 10:18	06/01/21 15:35	1
Cadmium	ND		0.50		ug/L		05/28/21 10:18	06/01/21 15:35	1
Cobalt	**0.58**	**^6+**	0.30		ug/L		05/28/21 10:18	06/01/21 15:35	1
Molybdenum	**1.1**		1.0		ug/L		05/28/21 10:18	06/01/21 15:35	1
Selenium	ND		1.0		ug/L		05/28/21 10:18	06/01/21 15:35	1
Thallium	ND		0.20		ug/L		05/28/21 10:18	06/01/21 15:35	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20		ug/L		05/21/21 13:55	05/21/21 18:10	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**21.4**		0.50		mg/L			05/20/21 20:01	1
Fluoride	**0.096**		0.050		mg/L			05/20/21 20:01	1
Sulfate	**4.8**		2.0		mg/L			05/20/21 20:01	1
Total Dissolved Solids	**847**		10.0		mg/L			05/19/21 15:41	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	**6.7**	**HF**	0.1		SU			05/18/21 18:16	1
Temperature	**21.5**	**HF**	0.001		Degrees C			05/18/21 18:16	1

Method: 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	**0.295**		0.204	0.205	1.00	0.282	pCi/L	05/21/21 12:30	06/15/21 16:34	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*97.6*		*40 - 110*	*05/21/21 12:30*	*06/15/21 16:34*	*1*

Method: 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	**0.559**		0.334	0.338	1.00	0.507	pCi/L	05/21/21 13:50	06/14/21 14:14	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*97.6*		*40 - 110*	*05/21/21 13:50*	*06/14/21 14:14*	*1*
Y Carrier	*88.6*		*40 - 110*	*05/21/21 13:50*	*06/14/21 14:14*	*1*

Client Sample ID: MW-3RD-CCR

Date Collected: 05/13/21 09:05
Date Received: 05/14/21 10:00

Lab Sample ID: 480-184717-7

Matrix: Water

Method: 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	**0.22**		0.0020		mg/L		05/28/21 10:34	05/29/21 01:22	1
Boron	**0.040**		0.020		mg/L		05/28/21 10:34	05/29/21 01:22	1
Calcium	**123**		0.50		mg/L		05/28/21 10:34	05/29/21 01:22	1
Chromium	ND		0.0040		mg/L		05/28/21 10:34	05/29/21 01:22	1
Lead	ND		0.010		mg/L		05/28/21 10:34	05/29/21 01:22	1
Lithium	ND		0.030		mg/L		05/28/21 10:34	05/29/21 01:22	1

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND	^1+	1.0		ug/L		05/28/21 10:18	06/01/21 15:37	1
Arsenic	**4.0**		1.0		ug/L		05/28/21 10:18	06/01/21 15:37	1
Beryllium	ND		0.70		ug/L		05/28/21 10:18	06/01/21 15:37	1
Cadmium	ND		0.50		ug/L		05/28/21 10:18	06/01/21 15:37	1
Cobalt	**0.59**	**^6+**	0.30		ug/L		05/28/21 10:18	06/01/21 15:37	1
Molybdenum	**4.5**		1.0		ug/L		05/28/21 10:18	06/01/21 15:37	1
Selenium	ND		1.0		ug/L		05/28/21 10:18	06/01/21 15:37	1
Thallium	ND		0.20		ug/L		05/28/21 10:18	06/01/21 15:37	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20		ug/L		05/21/21 13:55	05/21/21 18:11	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**28.2**		0.50		mg/L			05/20/21 18:22	1
Fluoride	**0.28**		0.050		mg/L			05/20/21 18:22	1
Sulfate	**84.2**		2.0		mg/L			05/20/21 18:22	1
Total Dissolved Solids	**583**		10.0		mg/L			05/19/21 15:41	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	**7.1**	**HF**	0.1		SU			05/18/21 18:19	1
Temperature	**21.5**	**HF**	0.001		Degrees C			05/18/21 18:19	1

Method: 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	**0.416**		0.238	0.241	1.00	0.308	pCi/L	05/21/21 12:30	06/15/21 18:16	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*90.4*		*40 - 110*	*05/21/21 12:30*	*06/15/21 18:16*	*1*

Method: 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.119	U	0.318	0.318	1.00	0.550	pCi/L	05/21/21 13:50	06/14/21 14:14	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*90.4*		*40 - 110*	*05/21/21 13:50*	*06/14/21 14:14*	*1*
Y Carrier	*90.1*		*40 - 110*	*05/21/21 13:50*	*06/14/21 14:14*	*1*

Client Sample ID: DUPLICATE-CCR

Date Collected: 05/13/21 00:00
Date Received: 05/14/21 10:00

Lab Sample ID: 480-184717-9

Matrix: Water

Method: 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	**0.22**		0.0020		mg/L		05/28/21 10:34	05/29/21 01:52	1
Boron	**0.036**		0.020		mg/L		05/28/21 10:34	05/29/21 01:52	1
Calcium	**120**		0.50		mg/L		05/28/21 10:34	05/29/21 01:52	1
Chromium	ND		0.0040		mg/L		05/28/21 10:34	05/29/21 01:52	1
Lead	ND		0.010		mg/L		05/28/21 10:34	05/29/21 01:52	1
Lithium	ND		0.030		mg/L		05/28/21 10:34	05/29/21 01:52	1

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND	^1+	1.0		ug/L		05/28/21 10:18	06/01/21 15:48	1
Arsenic	**4.2**		1.0		ug/L		05/28/21 10:18	06/01/21 15:48	1
Beryllium	ND		0.70		ug/L		05/28/21 10:18	06/01/21 15:48	1
Cadmium	ND		0.50		ug/L		05/28/21 10:18	06/01/21 15:48	1
Cobalt	**0.65**	**^6+**	0.30		ug/L		05/28/21 10:18	06/01/21 15:48	1
Molybdenum	**4.7**		1.0		ug/L		05/28/21 10:18	06/01/21 15:48	1
Selenium	ND		1.0		ug/L		05/28/21 10:18	06/01/21 15:48	1
Thallium	ND		0.20		ug/L		05/28/21 10:18	06/01/21 15:48	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20		ug/L		05/21/21 13:55	05/21/21 18:19	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**27.7**		0.50		mg/L			05/20/21 20:15	1
Fluoride	**0.28**		0.050		mg/L			05/20/21 20:15	1
Sulfate	**84.3**		2.0		mg/L			05/20/21 20:15	1
Total Dissolved Solids	**558**		10.0		mg/L			05/20/21 09:25	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	**7.1**	**HF**	0.1		SU			05/18/21 18:22	1
Temperature	**21.6**	**HF**	0.001		Degrees C			05/18/21 18:22	1

Method: 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	**0.527**		0.263	0.267	1.00	0.327	pCi/L	05/21/21 12:30	06/15/21 18:16	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*96.1*		*40 - 110*	*05/21/21 12:30*	*06/15/21 18:16*	*1*

Method: 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.411	U	0.364	0.366	1.00	0.586	pCi/L	05/21/21 13:50	06/14/21 14:15	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*96.1*		*40 - 110*	*05/21/21 13:50*	*06/14/21 14:15*	*1*
Y Carrier	*89.7*		*40 - 110*	*05/21/21 13:50*	*06/14/21 14:15*	*1*

Client Sample ID: MW-4-CCR

Date Collected: 05/13/21 10:25
Date Received: 05/17/21 10:00

Lab Sample ID: 480-184817-1

Matrix: Water

Method: 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	**0.23**		0.0020		mg/L		05/28/21 10:34	05/29/21 00:33	1
Boron	**0.33**		0.020		mg/L		05/28/21 10:34	05/29/21 00:33	1
Calcium	**192**		0.50		mg/L		05/28/21 10:34	05/29/21 00:33	1
Chromium	ND		0.0040		mg/L		05/28/21 10:34	05/29/21 00:33	1
Lead	ND		0.010		mg/L		05/28/21 10:34	05/29/21 00:33	1
Lithium	ND		0.030		mg/L		05/28/21 10:34	05/29/21 00:33	1

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND	^1+	1.0		ug/L		05/28/21 10:18	06/01/21 15:07	1
Arsenic	**1.2**		1.0		ug/L		05/28/21 10:18	06/01/21 15:07	1
Beryllium	ND		0.70		ug/L		05/28/21 10:18	06/01/21 15:07	1
Cadmium	ND		0.50		ug/L		05/28/21 10:18	06/01/21 15:07	1
Cobalt	**0.39**	**^6+**	0.30		ug/L		05/28/21 10:18	06/01/21 15:07	1
Molybdenum	**1.5**		1.0		ug/L		05/28/21 10:18	06/01/21 15:07	1
Selenium	ND		1.0		ug/L		05/28/21 10:18	06/01/21 15:07	1
Thallium	ND		0.20		ug/L		05/28/21 10:18	06/01/21 15:07	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20		ug/L		05/28/21 13:32	05/28/21 17:53	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**37.1**		0.50		mg/L			05/22/21 03:09	1
Fluoride	**0.23**		0.050		mg/L			05/22/21 03:09	1
Sulfate	**233**		10.0		mg/L			05/24/21 18:40	5
Total Dissolved Solids	**833**	**H**	10.0		mg/L			05/25/21 10:10	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	**7.1**	**HF**	0.1		SU			05/25/21 15:23	1
Temperature	**24.1**	**HF**	0.001		Degrees C			05/25/21 15:23	1

Method: 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.298	U	0.248	0.249	1.00	0.372	pCi/L	05/21/21 15:11	06/16/21 20:29	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*79.0*		*40 - 110*	*05/21/21 15:11*	*06/16/21 20:29*	*1*

Method: 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.316	U	0.343	0.344	1.00	0.560	pCi/L	05/21/21 16:56	06/15/21 13:27	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*79.0*		*40 - 110*	*05/21/21 16:56*	*06/15/21 13:27*	*1*
Y Carrier	*85.2*		*40 - 110*	*05/21/21 16:56*	*06/15/21 13:27*	*1*

Client Sample ID: FIELD BLANK-CCR

Date Collected: 05/13/21 10:40
Date Received: 05/17/21 10:00

Lab Sample ID: 480-184817-2

Matrix: Water

Method: 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	ND		0.0020		mg/L		05/28/21 10:34	05/29/21 00:37	1
Boron	ND		0.020		mg/L		05/28/21 10:34	05/29/21 00:37	1
Calcium	ND		0.50		mg/L		05/28/21 10:34	05/29/21 00:37	1
Chromium	ND		0.0040		mg/L		05/28/21 10:34	05/29/21 00:37	1
Lead	ND		0.010		mg/L		05/28/21 10:34	05/29/21 00:37	1
Lithium	ND		0.030		mg/L		05/28/21 10:34	05/29/21 00:37	1

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND	^1+	1.0		ug/L		05/28/21 10:18	06/01/21 15:10	1
Arsenic	ND		1.0		ug/L		05/28/21 10:18	06/01/21 15:10	1
Beryllium	ND		0.70		ug/L		05/28/21 10:18	06/01/21 15:10	1
Cadmium	ND		0.50		ug/L		05/28/21 10:18	06/01/21 15:10	1
Cobalt	ND	^6+	0.30		ug/L		05/28/21 10:18	06/01/21 15:10	1
Molybdenum	ND		1.0		ug/L		05/28/21 10:18	06/01/21 15:10	1
Selenium	ND		1.0		ug/L		05/28/21 10:18	06/01/21 15:10	1
Thallium	ND		0.20		ug/L		05/28/21 10:18	06/01/21 15:10	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20		ug/L		05/28/21 13:32	05/28/21 17:54	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		0.50		mg/L			05/22/21 03:23	1
Fluoride	ND		0.050		mg/L			05/22/21 03:23	1
Sulfate	ND		2.0		mg/L			05/22/21 03:23	1
Total Dissolved Solids	ND		10.0		mg/L			05/20/21 09:37	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	**6.2**	**HF**	0.1		SU			05/25/21 15:25	1
Temperature	**23.9**	**HF**	0.001		Degrees C			05/25/21 15:25	1

Method: 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	-0.0941	U	0.128	0.128	1.00	0.308	pCi/L	05/21/21 15:11	06/16/21 20:30	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*71.2*		*40 - 110*	*05/21/21 15:11*	*06/16/21 20:30*	*1*

Method: 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.194	U	0.344	0.344	1.00	0.581	pCi/L	05/21/21 16:56	06/15/21 13:26	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*71.2*		*40 - 110*	*05/21/21 16:56*	*06/15/21 13:26*	*1*
Y Carrier	*86.4*		*40 - 110*	*05/21/21 16:56*	*06/15/21 13:26*	*1*

Client Sample ID: Equipment Blank-CCR

Date Collected: 05/13/21 10:45
Date Received: 05/17/21 10:00

Lab Sample ID: 480-184817-3

Matrix: Water

Method: 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	ND		0.0020		mg/L		05/28/21 10:34	05/29/21 00:41	1
Boron	ND		0.020		mg/L		05/28/21 10:34	05/29/21 00:41	1
Calcium	ND		0.50		mg/L		05/28/21 10:34	05/29/21 00:41	1
Chromium	ND		0.0040		mg/L		05/28/21 10:34	05/29/21 00:41	1
Lead	ND		0.010		mg/L		05/28/21 10:34	05/29/21 00:41	1
Lithium	ND		0.030		mg/L		05/28/21 10:34	05/29/21 00:41	1

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND	^1+	1.0		ug/L		05/28/21 10:18	06/01/21 15:12	1
Arsenic	ND		1.0		ug/L		05/28/21 10:18	06/01/21 15:12	1
Beryllium	ND		0.70		ug/L		05/28/21 10:18	06/01/21 15:12	1
Cadmium	ND		0.50		ug/L		05/28/21 10:18	06/01/21 15:12	1
Cobalt	ND	^6+	0.30		ug/L		05/28/21 10:18	06/01/21 15:12	1
Molybdenum	ND		1.0		ug/L		05/28/21 10:18	06/01/21 15:12	1
Selenium	ND		1.0		ug/L		05/28/21 10:18	06/01/21 15:12	1
Thallium	ND		0.20		ug/L		05/28/21 10:18	06/01/21 15:12	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20		ug/L		05/28/21 13:32	05/28/21 17:56	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		0.50		mg/L			05/22/21 03:37	1
Fluoride	ND		0.050		mg/L			05/22/21 03:37	1
Sulfate	ND		2.0		mg/L			05/22/21 03:37	1
Total Dissolved Solids	ND		10.0		mg/L			05/20/21 09:37	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	**5.8**	**HF**	0.1		SU			05/25/21 15:28	1
Temperature	**23.8**	**HF**	0.001		Degrees C			05/25/21 15:28	1

Method: 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	-0.0809	U	0.153	0.153	1.00	0.341	pCi/L	05/21/21 15:11	06/16/21 20:31	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*68.5*		*40 - 110*	*05/21/21 15:11*	*06/16/21 20:31*	*1*

Method: 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.211	U	0.303	0.303	1.00	0.507	pCi/L	05/21/21 16:56	06/15/21 13:27	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*68.5*		*40 - 110*	*05/21/21 16:56*	*06/15/21 13:27*	*1*
Y Carrier	*85.2*		*40 - 110*	*05/21/21 16:56*	*06/15/21 13:27*	*1*

Tracer/Carrier Summary

Client: Waste Connections, Inc.
Project/Site: SKB Lansing - CCR Groundwater

Job ID: 480-184717-1
SDG: 184717

Method: 903.0 - Radium-226 (GFPC)

Matrix: Water

Prep Type: Total/NA

		Percent Yield (Acceptance Limits)
		Ba
Lab Sample ID	Client Sample ID	(40-110)
480-184717-1	MW-1-CCR	94.0
480-184717-2	MW-1RD-CCR	96.7
480-184717-3	MW-2R-CCR	95.2
480-184717-4	MW-2RD-CCR	97.9
480-184717-5	MW-3-CCR	94.9
480-184717-6	MW-3R-CCR	97.6
480-184717-7	MW-3RD-CCR	90.4
480-184717-9	DUPLICATE-CCR	96.1
480-184817-1	MW-4-CCR	79.0
480-184817-2	FIELD BLANK-CCR	71.2
480-184817-3	Equipment Blank-CCR	68.5
LCS 160-510988/1-A	Lab Control Sample	90.4
LCS 160-511004/1-A	Lab Control Sample	72.4
LCSD 160-511004/2-A	Lab Control Sample Dup	81.1
MB 160-510988/24-A	Method Blank	94.3
MB 160-511004/23-A	Method Blank	84.1

Tracer/Carrier Legend

Ba = Ba Carrier

Method: 904.0 - Radium-228 (GFPC)

Matrix: Water

Prep Type: Total/NA

		Percent Yield (Acceptance Limits)	
		Ba	Y
Lab Sample ID	Client Sample ID	(40-110)	(40-110)
480-184717-1	MW-1-CCR	94.0	90.1
480-184717-2	MW-1RD-CCR	96.7	87.5
480-184717-3	MW-2R-CCR	95.2	92.7
480-184717-4	MW-2RD-CCR	97.9	92.0
480-184717-5	MW-3-CCR	94.9	87.5
480-184717-6	MW-3R-CCR	97.6	88.6
480-184717-7	MW-3RD-CCR	90.4	90.1
480-184717-9	DUPLICATE-CCR	96.1	89.7
480-184817-1	MW-4-CCR	79.0	85.2
480-184817-2	FIELD BLANK-CCR	71.2	86.4
480-184817-3	Equipment Blank-CCR	68.5	85.2
LCS 160-510997/1-A	Lab Control Sample	90.4	87.1
LCS 160-511013/1-A	Lab Control Sample	72.4	83.4
LCSD 160-511013/2-A	Lab Control Sample Dup	81.1	86.7
MB 160-510997/24-A	Method Blank	94.3	89.7
MB 160-511013/23-A	Method Blank	84.1	90.1

Tracer/Carrier Legend

Ba = Ba Carrier
Y = Y Carrier

Method: 6010D - Metals (ICP)

Lab Sample ID: MB 480-583086/1-A
Matrix: Water
Analysis Batch: 583423

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 583086

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	ND		0.0020		mg/L		05/28/21 10:34	05/28/21 23:43	1
Boron	ND		0.020		mg/L		05/28/21 10:34	05/28/21 23:43	1
Calcium	ND		0.50		mg/L		05/28/21 10:34	05/28/21 23:43	1
Chromium	ND		0.0040		mg/L		05/28/21 10:34	05/28/21 23:43	1
Lead	ND		0.010		mg/L		05/28/21 10:34	05/28/21 23:43	1
Lithium	ND		0.030		mg/L		05/28/21 10:34	05/28/21 23:43	1

Lab Sample ID: LCS 480-583086/2-A
Matrix: Water
Analysis Batch: 583423

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 583086

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Barium	0.200	0.221		mg/L		110	80 - 120
Boron	0.200	0.205		mg/L		102	80 - 120
Calcium	10.0	10.05		mg/L		100	80 - 120
Chromium	0.200	0.198		mg/L		99	80 - 120
Lead	0.200	0.195		mg/L		98	80 - 120

Lab Sample ID: 480-184717-7 MS
Matrix: Water
Analysis Batch: 583423

Client Sample ID: MW-3RD-CCR
Prep Type: Total/NA
Prep Batch: 583086

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Barium	0.22		0.200	0.435		mg/L		106	75 - 125
Boron	0.040		0.200	0.247		mg/L		104	75 - 125
Calcium	123		10.0	130.3	4	mg/L		72	75 - 125
Chromium	ND		0.200	0.200		mg/L		99	75 - 125
Lead	ND		0.200	0.200		mg/L		100	75 - 125

Lab Sample ID: 480-184717-7 MSD
Matrix: Water
Analysis Batch: 583423

Client Sample ID: MW-3RD-CCR
Prep Type: Total/NA
Prep Batch: 583086

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Barium	0.22		0.200	0.431		mg/L		104	75 - 125	1	20
Boron	0.040		0.200	0.248		mg/L		104	75 - 125	0	20
Calcium	123		10.0	130.2	4	mg/L		71	75 - 125	0	20
Chromium	ND		0.200	0.199		mg/L		98	75 - 125	1	20
Lead	ND		0.200	0.198		mg/L		99	75 - 125	1	20

Method: 6020B - Metals (ICP/MS)

Lab Sample ID: MB 480-583092/1-A
Matrix: Water
Analysis Batch: 583568

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 583092

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND	^1+	1.0		ug/L		05/28/21 10:18	06/01/21 14:38	1
Arsenic	ND		1.0		ug/L		05/28/21 10:18	06/01/21 14:38	1
Beryllium	ND		0.70		ug/L		05/28/21 10:18	06/01/21 14:38	1

Method: 6020B - Metals (ICP/MS) (Continued)

Lab Sample ID: MB 480-583092/1-A
Matrix: Water
Analysis Batch: 583568

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 583092

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND		0.50		ug/L		05/28/21 10:18	06/01/21 14:38	1
Cobalt	ND	^6+	0.30		ug/L		05/28/21 10:18	06/01/21 14:38	1
Molybdenum	ND		1.0		ug/L		05/28/21 10:18	06/01/21 14:38	1
Selenium	ND		1.0		ug/L		05/28/21 10:18	06/01/21 14:38	1
Thallium	ND		0.20		ug/L		05/28/21 10:18	06/01/21 14:38	1

Lab Sample ID: LCS 480-583092/2-A
Matrix: Water
Analysis Batch: 583568

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 583092

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Antimony	20.0	21.05	^1+	ug/L		105	80 - 120
Arsenic	20.0	20.21		ug/L		101	80 - 120
Beryllium	20.0	20.49		ug/L		102	80 - 120
Cadmium	20.0	20.69		ug/L		103	80 - 120
Cobalt	20.0	20.39	^6+	ug/L		102	80 - 120
Molybdenum	20.0	21.51		ug/L		108	80 - 120
Selenium	20.0	20.02		ug/L		100	80 - 120
Thallium	20.0	21.51		ug/L		108	80 - 120

Lab Sample ID: 480-184717-7 MS
Matrix: Water
Analysis Batch: 583568

Client Sample ID: MW-3RD-CCR
Prep Type: Total/NA
Prep Batch: 583092

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Antimony	ND	^1+	20.0	20.54	^1+	ug/L		103	75 - 125
Arsenic	4.0		20.0	25.30		ug/L		106	75 - 125
Beryllium	ND		20.0	19.89		ug/L		99	75 - 125
Cadmium	ND		20.0	19.73		ug/L		99	75 - 125
Cobalt	0.59	^6+	20.0	19.87	^6+	ug/L		96	75 - 125
Molybdenum	4.5		20.0	25.83		ug/L		107	75 - 125
Selenium	ND		20.0	20.36		ug/L		102	75 - 125
Thallium	ND		20.0	20.26		ug/L		101	75 - 125

Lab Sample ID: 480-184717-7 MSD
Matrix: Water
Analysis Batch: 583568

Client Sample ID: MW-3RD-CCR
Prep Type: Total/NA
Prep Batch: 583092

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Antimony	ND	^1+	20.0	21.45	^1+	ug/L		107	75 - 125	4	20
Arsenic	4.0		20.0	25.66		ug/L		108	75 - 125	1	20
Beryllium	ND		20.0	20.50		ug/L		102	75 - 125	3	20
Cadmium	ND		20.0	20.34		ug/L		102	75 - 125	3	20
Cobalt	0.59	^6+	20.0	20.02	^6+	ug/L		97	75 - 125	1	20
Molybdenum	4.5		20.0	26.55		ug/L		110	75 - 125	3	20
Selenium	ND		20.0	21.00		ug/L		105	75 - 125	3	20
Thallium	ND		20.0	20.80		ug/L		104	75 - 125	3	20

Method: 7470A - Mercury (CVAA)

Lab Sample ID: MB 480-582064/1-A
Matrix: Water
Analysis Batch: 582119

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 582064

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20		ug/L		05/21/21 13:55	05/21/21 17:59	1

Lab Sample ID: LCS 480-582064/2-A
Matrix: Water
Analysis Batch: 582119

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 582064

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	6.67	6.68		ug/L		100	80 - 120

Lab Sample ID: 480-184717-7 MS
Matrix: Water
Analysis Batch: 582119

Client Sample ID: MW-3RD-CCR
Prep Type: Total/NA
Prep Batch: 582064

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	ND		6.67	6.78		ug/L		102	80 - 120

Lab Sample ID: 480-184717-7 MSD
Matrix: Water
Analysis Batch: 582119

Client Sample ID: MW-3RD-CCR
Prep Type: Total/NA
Prep Batch: 582064

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Mercury	ND		6.67	6.52		ug/L		98	80 - 120	4	20

Lab Sample ID: MB 480-583225/1-A
Matrix: Water
Analysis Batch: 583294

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 583225

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20		ug/L		05/28/21 13:32	05/28/21 17:39	1

Lab Sample ID: LCS 480-583225/2-A
Matrix: Water
Analysis Batch: 583294

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 583225

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	6.67	6.43		ug/L		96	80 - 120

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 480-581911/4
Matrix: Water
Analysis Batch: 581911

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		0.50		mg/L			05/20/21 16:57	1
Fluoride	ND		0.050		mg/L			05/20/21 16:57	1
Sulfate	ND		2.0		mg/L			05/20/21 16:57	1

Method: 300.0 - Anions, Ion Chromatography (Continued)

Lab Sample ID: LCS 480-581911/3
Matrix: Water
Analysis Batch: 581911

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Chloride			50.0	48.99		mg/L		98	90 - 110		
Fluoride			5.00	4.93		mg/L		99	90 - 110		
Sulfate			50.0	48.41		mg/L		97	90 - 110		

Lab Sample ID: 480-184717-7 MS
Matrix: Water
Analysis Batch: 581911

Client Sample ID: MW-3RD-CCR
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Chloride	28.2		50.0	74.03		mg/L		92	81 - 120		
Fluoride	0.28		5.00	4.90		mg/L		92	82 - 120		
Sulfate	84.2		50.0	124.4	E	mg/L		80	80 - 120		

Lab Sample ID: 480-184717-7 MSD
Matrix: Water
Analysis Batch: 581911

Client Sample ID: MW-3RD-CCR
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	28.2		50.0	74.02		mg/L		92	81 - 120	0	15
Fluoride	0.28		5.00	4.89		mg/L		92	82 - 120	0	15
Sulfate	84.2		50.0	125.5	E	mg/L		83	80 - 120	1	15

Lab Sample ID: MB 480-582083/4
Matrix: Water
Analysis Batch: 582083

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		0.50		mg/L			05/22/21 06:08	1
Fluoride	ND		0.050		mg/L			05/22/21 06:08	1
Sulfate	ND		2.0		mg/L			05/22/21 06:08	1

Lab Sample ID: LCS 480-582083/3
Matrix: Water
Analysis Batch: 582083

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Chloride			50.0	49.46		mg/L		99	90 - 110		
Fluoride			5.00	5.00		mg/L		100	90 - 110		
Sulfate			50.0	49.57		mg/L		99	90 - 110		

Lab Sample ID: MB 480-582094/4
Matrix: Water
Analysis Batch: 582094

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		0.50		mg/L			05/22/21 00:05	1
Fluoride	ND		0.050		mg/L			05/22/21 00:05	1
Sulfate	ND		2.0		mg/L			05/22/21 00:05	1

Method: 300.0 - Anions, Ion Chromatography (Continued)

Lab Sample ID: LCS 480-582094/3
Matrix: Water
Analysis Batch: 582094

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	50.0	49.32		mg/L		99	90 - 110
Fluoride	5.00	4.92		mg/L		98	90 - 110
Sulfate	50.0	48.79		mg/L		98	90 - 110

Lab Sample ID: MB 480-582403/4
Matrix: Water
Analysis Batch: 582403

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		0.50		mg/L			05/24/21 17:44	1
Fluoride	ND		0.050		mg/L			05/24/21 17:44	1
Sulfate	ND		2.0		mg/L			05/24/21 17:44	1

Lab Sample ID: LCS 480-582403/3
Matrix: Water
Analysis Batch: 582403

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	50.0	46.25		mg/L		93	90 - 110
Fluoride	5.00	4.68		mg/L		94	90 - 110
Sulfate	50.0	46.31		mg/L		93	90 - 110

Method: SM 2540C - Solids, Total Dissolved (TDS)

Lab Sample ID: MB 480-581715/1
Matrix: Water
Analysis Batch: 581715

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	ND		10.0		mg/L			05/19/21 15:41	1

Lab Sample ID: LCS 480-581715/2
Matrix: Water
Analysis Batch: 581715

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Dissolved Solids	512	487.0		mg/L		95	85 - 115

Lab Sample ID: MB 480-581784/1
Matrix: Water
Analysis Batch: 581784

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	ND		10.0		mg/L			05/20/21 09:25	1

Method: SM 2540C - Solids, Total Dissolved (TDS) (Continued)

Lab Sample ID: LCS 480-581784/2
Matrix: Water
Analysis Batch: 581784

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Dissolved Solids	508	495.0		mg/L		97	85 - 115

Lab Sample ID: MB 480-581786/1
Matrix: Water
Analysis Batch: 581786

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	ND		10.0		mg/L			05/20/21 09:37	1

Lab Sample ID: LCS 480-581786/2
Matrix: Water
Analysis Batch: 581786

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Dissolved Solids	503	497.0		mg/L		99	85 - 115

Lab Sample ID: MB 480-582537/1
Matrix: Water
Analysis Batch: 582537

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	ND		10.0		mg/L			05/25/21 10:10	1

Lab Sample ID: LCS 480-582537/2
Matrix: Water
Analysis Batch: 582537

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Dissolved Solids	508	480.0		mg/L		95	85 - 115

Method: SM 4500 H+ B - pH

Lab Sample ID: LCS 480-581665/1
Matrix: Water
Analysis Batch: 581665

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
pH	7.00	7.0		SU		100	99 - 101

Lab Sample ID: LCS 480-581665/23
Matrix: Water
Analysis Batch: 581665

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
pH	7.00	7.1		SU		101	99 - 101

Method: SM 4500 H+ B - pH (Continued)

Lab Sample ID: 480-184717-4 DU
Matrix: Water
Analysis Batch: 581665

Client Sample ID: MW-2RD-CCR
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
pH	7.0	HF	7.1		SU		1	5
Temperature	21.6	HF	21.8		Degrees C		1	10

Lab Sample ID: LCS 480-582607/23
Matrix: Water
Analysis Batch: 582607

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
pH	7.00	7.1		SU		101	99 - 101

Method: 903.0 - Radium-226 (GFPC)

Lab Sample ID: MB 160-510988/24-A
Matrix: Water
Analysis Batch: 514296

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 510988

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.03081	U	0.133	0.133	1.00	0.252	pCi/L	05/21/21 12:30	06/15/21 18:17	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*94.3*		*40 - 110*	*05/21/21 12:30*	*06/15/21 18:17*	*1*

Lab Sample ID: LCS 160-510988/1-A
Matrix: Water
Analysis Batch: 514366

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 510988

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-226	11.3	11.61		1.37	1.00	0.312	pCi/L	102	75 - 125

Carrier	*LCS %Yield*	*LCS Qualifier*	*Limits*
Ba Carrier	*90.4*		*40 - 110*

Lab Sample ID: MB 160-511004/23-A
Matrix: Water
Analysis Batch: 514499

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 511004

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	-0.01592	U	0.125	0.125	1.00	0.261	pCi/L	05/21/21 15:11	06/16/21 23:08	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*84.1*		*40 - 110*	*05/21/21 15:11*	*06/16/21 23:08*	*1*

Method: 903.0 - Radium-226 (GFPC) (Continued)

Lab Sample ID: LCS 160-511004/1-A
Matrix: Water
Analysis Batch: 514499

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 511004

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Radium-226			11.3	10.80		1.33	1.00	0.295	pCi/L	95	75 - 125		

Carrier	*LCS %Yield*	*LCS Qualifier*	*Limits*
Ba Carrier	*72.4*		*40 - 110*

Lab Sample ID: LCSD 160-511004/2-A
Matrix: Water
Analysis Batch: 514499

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 511004

Analyte			Spike Added	LCSD Result	LCSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-226			11.3	10.87		1.30	1.00	0.263	pCi/L	96	75 - 125	0.03	1

Carrier	*LCSD %Yield*	*LCSD Qualifier*	*Limits*
Ba Carrier	*81.1*		*40 - 110*

Method: 904.0 - Radium-228 (GFPC)

Lab Sample ID: MB 160-510997/24-A
Matrix: Water
Analysis Batch: 514232

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 510997

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.02962	U	0.211	0.211	1.00	0.376	pCi/L	05/21/21 13:50	06/14/21 14:15	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*94.3*		*40 - 110*	*05/21/21 13:50*	*06/14/21 14:15*	*1*
Y Carrier	*89.7*		*40 - 110*	*05/21/21 13:50*	*06/14/21 14:15*	*1*

Lab Sample ID: LCS 160-510997/1-A
Matrix: Water
Analysis Batch: 514248

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 510997

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Radium-228			9.63	10.13		1.18	1.00	0.429	pCi/L	105	75 - 125		

Carrier	*LCS %Yield*	*LCS Qualifier*	*Limits*
Ba Carrier	*90.4*		*40 - 110*
Y Carrier	*87.1*		*40 - 110*

Method: 904.0 - Radium-228 (GFPC) (Continued)

Lab Sample ID: MB 160-511013/23-A
Matrix: Water
Analysis Batch: 514476

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 511013

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	-0.2439	U	0.224	0.225	1.00	0.447	pCi/L	05/21/21 16:56	06/15/21 13:51	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*84.1*		*40 - 110*	*05/21/21 16:56*	*06/15/21 13:51*	*1*
Y Carrier	*90.1*		*40 - 110*	*05/21/21 16:56*	*06/15/21 13:51*	*1*

Lab Sample ID: LCS 160-511013/1-A
Matrix: Water
Analysis Batch: 514291

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 511013

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Radium-228			9.62	9.610		1.19	1.00	0.500	pCi/L	100	75 - 125		

Carrier	*LCS %Yield*	*LCS Qualifier*	*Limits*
Ba Carrier	*72.4*		*40 - 110*
Y Carrier	*83.4*		*40 - 110*

Lab Sample ID: LCSD 160-511013/2-A
Matrix: Water
Analysis Batch: 514291

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 511013

Analyte			Spike Added	LCSD Result	LCSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-228			9.62	9.822		1.16	1.00	0.382	pCi/L	102	75 - 125	0.09	1

Carrier	*LCSD %Yield*	*LCSD Qualifier*	*Limits*
Ba Carrier	*81.1*		*40 - 110*
Y Carrier	*86.7*		*40 - 110*

Metals

Prep Batch: 582064

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-184717-1	MW-1-CCR	Total/NA	Water	7470A	
480-184717-2	MW-1RD-CCR	Total/NA	Water	7470A	
480-184717-3	MW-2R-CCR	Total/NA	Water	7470A	
480-184717-4	MW-2RD-CCR	Total/NA	Water	7470A	
480-184717-5	MW-3-CCR	Total/NA	Water	7470A	
480-184717-6	MW-3R-CCR	Total/NA	Water	7470A	
480-184717-7	MW-3RD-CCR	Total/NA	Water	7470A	
480-184717-9	DUPLICATE-CCR	Total/NA	Water	7470A	
MB 480-582064/1-A	Method Blank	Total/NA	Water	7470A	
LCS 480-582064/2-A	Lab Control Sample	Total/NA	Water	7470A	
480-184717-7 MS	MW-3RD-CCR	Total/NA	Water	7470A	
480-184717-7 MSD	MW-3RD-CCR	Total/NA	Water	7470A	

Analysis Batch: 582119

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-184717-1	MW-1-CCR	Total/NA	Water	7470A	582064
480-184717-2	MW-1RD-CCR	Total/NA	Water	7470A	582064
480-184717-3	MW-2R-CCR	Total/NA	Water	7470A	582064
480-184717-4	MW-2RD-CCR	Total/NA	Water	7470A	582064
480-184717-5	MW-3-CCR	Total/NA	Water	7470A	582064
480-184717-6	MW-3R-CCR	Total/NA	Water	7470A	582064
480-184717-7	MW-3RD-CCR	Total/NA	Water	7470A	582064
480-184717-9	DUPLICATE-CCR	Total/NA	Water	7470A	582064
MB 480-582064/1-A	Method Blank	Total/NA	Water	7470A	582064
LCS 480-582064/2-A	Lab Control Sample	Total/NA	Water	7470A	582064
480-184717-7 MS	MW-3RD-CCR	Total/NA	Water	7470A	582064
480-184717-7 MSD	MW-3RD-CCR	Total/NA	Water	7470A	582064

Prep Batch: 583086

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-184717-1	MW-1-CCR	Total/NA	Water	3005A	
480-184717-2	MW-1RD-CCR	Total/NA	Water	3005A	
480-184717-3	MW-2R-CCR	Total/NA	Water	3005A	
480-184717-4	MW-2RD-CCR	Total/NA	Water	3005A	
480-184717-5	MW-3-CCR	Total/NA	Water	3005A	
480-184717-6	MW-3R-CCR	Total/NA	Water	3005A	
480-184717-7	MW-3RD-CCR	Total/NA	Water	3005A	
480-184717-9	DUPLICATE-CCR	Total/NA	Water	3005A	
480-184817-1	MW-4-CCR	Total/NA	Water	3005A	
480-184817-2	FIELD BLANK-CCR	Total/NA	Water	3005A	
480-184817-3	Equipment Blank-CCR	Total/NA	Water	3005A	
MB 480-583086/1-A	Method Blank	Total/NA	Water	3005A	
LCS 480-583086/2-A	Lab Control Sample	Total/NA	Water	3005A	
480-184717-7 MS	MW-3RD-CCR	Total/NA	Water	3005A	
480-184717-7 MSD	MW-3RD-CCR	Total/NA	Water	3005A	

Prep Batch: 583092

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-184717-1	MW-1-CCR	Total/NA	Water	3020A	
480-184717-2	MW-1RD-CCR	Total/NA	Water	3020A	
480-184717-3	MW-2R-CCR	Total/NA	Water	3020A	

Metals (Continued)

Prep Batch: 583092 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-184717-4	MW-2RD-CCR	Total/NA	Water	3020A	
480-184717-5	MW-3-CCR	Total/NA	Water	3020A	
480-184717-6	MW-3R-CCR	Total/NA	Water	3020A	
480-184717-7	MW-3RD-CCR	Total/NA	Water	3020A	
480-184717-9	DUPLICATE-CCR	Total/NA	Water	3020A	
480-184817-1	MW-4-CCR	Total/NA	Water	3020A	
480-184817-2	FIELD BLANK-CCR	Total/NA	Water	3020A	
480-184817-3	Equipment Blank-CCR	Total/NA	Water	3020A	
MB 480-583092/1-A	Method Blank	Total/NA	Water	3020A	
LCS 480-583092/2-A	Lab Control Sample	Total/NA	Water	3020A	
480-184717-7 MS	MW-3RD-CCR	Total/NA	Water	3020A	
480-184717-7 MSD	MW-3RD-CCR	Total/NA	Water	3020A	

Prep Batch: 583225

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-184817-1	MW-4-CCR	Total/NA	Water	7470A	
480-184817-2	FIELD BLANK-CCR	Total/NA	Water	7470A	
480-184817-3	Equipment Blank-CCR	Total/NA	Water	7470A	
MB 480-583225/1-A	Method Blank	Total/NA	Water	7470A	
LCS 480-583225/2-A	Lab Control Sample	Total/NA	Water	7470A	

Analysis Batch: 583294

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-184817-1	MW-4-CCR	Total/NA	Water	7470A	583225
480-184817-2	FIELD BLANK-CCR	Total/NA	Water	7470A	583225
480-184817-3	Equipment Blank-CCR	Total/NA	Water	7470A	583225
MB 480-583225/1-A	Method Blank	Total/NA	Water	7470A	583225
LCS 480-583225/2-A	Lab Control Sample	Total/NA	Water	7470A	583225

Analysis Batch: 583423

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-184717-1	MW-1-CCR	Total/NA	Water	6010D	583086
480-184717-2	MW-1RD-CCR	Total/NA	Water	6010D	583086
480-184717-3	MW-2R-CCR	Total/NA	Water	6010D	583086
480-184717-4	MW-2RD-CCR	Total/NA	Water	6010D	583086
480-184717-5	MW-3-CCR	Total/NA	Water	6010D	583086
480-184717-6	MW-3R-CCR	Total/NA	Water	6010D	583086
480-184717-7	MW-3RD-CCR	Total/NA	Water	6010D	583086
480-184717-9	DUPLICATE-CCR	Total/NA	Water	6010D	583086
480-184817-1	MW-4-CCR	Total/NA	Water	6010D	583086
480-184817-2	FIELD BLANK-CCR	Total/NA	Water	6010D	583086
480-184817-3	Equipment Blank-CCR	Total/NA	Water	6010D	583086
MB 480-583086/1-A	Method Blank	Total/NA	Water	6010D	583086
LCS 480-583086/2-A	Lab Control Sample	Total/NA	Water	6010D	583086
480-184717-7 MS	MW-3RD-CCR	Total/NA	Water	6010D	583086
480-184717-7 MSD	MW-3RD-CCR	Total/NA	Water	6010D	583086

Analysis Batch: 583568

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-184717-1	MW-1-CCR	Total/NA	Water	6020B	583092
480-184717-2	MW-1RD-CCR	Total/NA	Water	6020B	583092

Metals (Continued)

Analysis Batch: 583568 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-184717-3	MW-2R-CCR	Total/NA	Water	6020B	583092
480-184717-4	MW-2RD-CCR	Total/NA	Water	6020B	583092
480-184717-5	MW-3-CCR	Total/NA	Water	6020B	583092
480-184717-6	MW-3R-CCR	Total/NA	Water	6020B	583092
480-184717-7	MW-3RD-CCR	Total/NA	Water	6020B	583092
480-184717-9	DUPLICATE-CCR	Total/NA	Water	6020B	583092
480-184817-1	MW-4-CCR	Total/NA	Water	6020B	583092
480-184817-2	FIELD BLANK-CCR	Total/NA	Water	6020B	583092
480-184817-3	Equipment Blank-CCR	Total/NA	Water	6020B	583092
MB 480-583092/1-A	Method Blank	Total/NA	Water	6020B	583092
LCS 480-583092/2-A	Lab Control Sample	Total/NA	Water	6020B	583092
480-184717-7 MS	MW-3RD-CCR	Total/NA	Water	6020B	583092
480-184717-7 MSD	MW-3RD-CCR	Total/NA	Water	6020B	583092

General Chemistry

Analysis Batch: 581665

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-184717-1	MW-1-CCR	Total/NA	Water	SM 4500 H+ B	
480-184717-2	MW-1RD-CCR	Total/NA	Water	SM 4500 H+ B	
480-184717-3	MW-2R-CCR	Total/NA	Water	SM 4500 H+ B	
480-184717-4	MW-2RD-CCR	Total/NA	Water	SM 4500 H+ B	
480-184717-5	MW-3-CCR	Total/NA	Water	SM 4500 H+ B	
480-184717-6	MW-3R-CCR	Total/NA	Water	SM 4500 H+ B	
480-184717-7	MW-3RD-CCR	Total/NA	Water	SM 4500 H+ B	
480-184717-9	DUPLICATE-CCR	Total/NA	Water	SM 4500 H+ B	
LCS 480-581665/1	Lab Control Sample	Total/NA	Water	SM 4500 H+ B	
LCS 480-581665/23	Lab Control Sample	Total/NA	Water	SM 4500 H+ B	
480-184717-4 DU	MW-2RD-CCR	Total/NA	Water	SM 4500 H+ B	

Analysis Batch: 581715

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-184717-3	MW-2R-CCR	Total/NA	Water	SM 2540C	
480-184717-5	MW-3-CCR	Total/NA	Water	SM 2540C	
480-184717-6	MW-3R-CCR	Total/NA	Water	SM 2540C	
480-184717-7	MW-3RD-CCR	Total/NA	Water	SM 2540C	
MB 480-581715/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 480-581715/2	Lab Control Sample	Total/NA	Water	SM 2540C	
480-184717-7 MS	MW-3RD-CCR	Total/NA	Water	SM 2540C	
480-184717-7 MSD	MW-3RD-CCR	Total/NA	Water	SM 2540C	

Analysis Batch: 581784

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-184717-1	MW-1-CCR	Total/NA	Water	SM 2540C	
480-184717-2	MW-1RD-CCR	Total/NA	Water	SM 2540C	
480-184717-4	MW-2RD-CCR	Total/NA	Water	SM 2540C	
480-184717-9	DUPLICATE-CCR	Total/NA	Water	SM 2540C	
MB 480-581784/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 480-581784/2	Lab Control Sample	Total/NA	Water	SM 2540C	

General Chemistry

Analysis Batch: 581786

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-184817-2	FIELD BLANK-CCR	Total/NA	Water	SM 2540C	
480-184817-3	Equipment Blank-CCR	Total/NA	Water	SM 2540C	
MB 480-581786/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 480-581786/2	Lab Control Sample	Total/NA	Water	SM 2540C	

Analysis Batch: 581911

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-184717-1	MW-1-CCR	Total/NA	Water	300.0	
480-184717-2	MW-1RD-CCR	Total/NA	Water	300.0	
480-184717-3	MW-2R-CCR	Total/NA	Water	300.0	
480-184717-4	MW-2RD-CCR	Total/NA	Water	300.0	
480-184717-5	MW-3-CCR	Total/NA	Water	300.0	
480-184717-6	MW-3R-CCR	Total/NA	Water	300.0	
480-184717-7	MW-3RD-CCR	Total/NA	Water	300.0	
480-184717-9	DUPLICATE-CCR	Total/NA	Water	300.0	
MB 480-581911/4	Method Blank	Total/NA	Water	300.0	
LCS 480-581911/3	Lab Control Sample	Total/NA	Water	300.0	
480-184717-7 MS	MW-3RD-CCR	Total/NA	Water	300.0	
480-184717-7 MSD	MW-3RD-CCR	Total/NA	Water	300.0	

Analysis Batch: 582083

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-184717-1	MW-1-CCR	Total/NA	Water	300.0	
480-184717-3	MW-2R-CCR	Total/NA	Water	300.0	
MB 480-582083/4	Method Blank	Total/NA	Water	300.0	
LCS 480-582083/3	Lab Control Sample	Total/NA	Water	300.0	

Analysis Batch: 582094

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-184817-1	MW-4-CCR	Total/NA	Water	300.0	
480-184817-2	FIELD BLANK-CCR	Total/NA	Water	300.0	
480-184817-3	Equipment Blank-CCR	Total/NA	Water	300.0	
MB 480-582094/4	Method Blank	Total/NA	Water	300.0	
LCS 480-582094/3	Lab Control Sample	Total/NA	Water	300.0	

Analysis Batch: 582403

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-184817-1	MW-4-CCR	Total/NA	Water	300.0	
MB 480-582403/4	Method Blank	Total/NA	Water	300.0	
LCS 480-582403/3	Lab Control Sample	Total/NA	Water	300.0	

Analysis Batch: 582537

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-184817-1	MW-4-CCR	Total/NA	Water	SM 2540C	
MB 480-582537/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 480-582537/2	Lab Control Sample	Total/NA	Water	SM 2540C	

Analysis Batch: 582607

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-184817-1	MW-4-CCR	Total/NA	Water	SM 4500 H+ B	
480-184817-2	FIELD BLANK-CCR	Total/NA	Water	SM 4500 H+ B	

General Chemistry (Continued)

Analysis Batch: 582607 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-184817-3	Equipment Blank-CCR	Total/NA	Water	SM 4500 H+ B	
LCS 480-582607/23	Lab Control Sample	Total/NA	Water	SM 4500 H+ B	

Rad

Prep Batch: 510988

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-184717-1	MW-1-CCR	Total/NA	Water	PrecSep-21	
480-184717-2	MW-1RD-CCR	Total/NA	Water	PrecSep-21	
480-184717-3	MW-2R-CCR	Total/NA	Water	PrecSep-21	
480-184717-4	MW-2RD-CCR	Total/NA	Water	PrecSep-21	
480-184717-5	MW-3-CCR	Total/NA	Water	PrecSep-21	
480-184717-6	MW-3R-CCR	Total/NA	Water	PrecSep-21	
480-184717-7	MW-3RD-CCR	Total/NA	Water	PrecSep-21	
480-184717-9	DUPLICATE-CCR	Total/NA	Water	PrecSep-21	
MB 160-510988/24-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-510988/1-A	Lab Control Sample	Total/NA	Water	PrecSep-21	

Prep Batch: 510997

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-184717-1	MW-1-CCR	Total/NA	Water	PrecSep_0	
480-184717-2	MW-1RD-CCR	Total/NA	Water	PrecSep_0	
480-184717-3	MW-2R-CCR	Total/NA	Water	PrecSep_0	
480-184717-4	MW-2RD-CCR	Total/NA	Water	PrecSep_0	
480-184717-5	MW-3-CCR	Total/NA	Water	PrecSep_0	
480-184717-6	MW-3R-CCR	Total/NA	Water	PrecSep_0	
480-184717-7	MW-3RD-CCR	Total/NA	Water	PrecSep_0	
480-184717-9	DUPLICATE-CCR	Total/NA	Water	PrecSep_0	
MB 160-510997/24-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-510997/1-A	Lab Control Sample	Total/NA	Water	PrecSep_0	

Prep Batch: 511004

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-184817-1	MW-4-CCR	Total/NA	Water	PrecSep-21	
480-184817-2	FIELD BLANK-CCR	Total/NA	Water	PrecSep-21	
480-184817-3	Equipment Blank-CCR	Total/NA	Water	PrecSep-21	
MB 160-511004/23-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-511004/1-A	Lab Control Sample	Total/NA	Water	PrecSep-21	
LCSD 160-511004/2-A	Lab Control Sample Dup	Total/NA	Water	PrecSep-21	

Prep Batch: 511013

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-184817-1	MW-4-CCR	Total/NA	Water	PrecSep_0	
480-184817-2	FIELD BLANK-CCR	Total/NA	Water	PrecSep_0	
480-184817-3	Equipment Blank-CCR	Total/NA	Water	PrecSep_0	
MB 160-511013/23-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-511013/1-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
LCSD 160-511013/2-A	Lab Control Sample Dup	Total/NA	Water	PrecSep_0	

Client Sample ID: MW-1-CCR

Lab Sample ID: 480-184717-1

Date Collected: 05/13/21 14:25

Matrix: Water

Date Received: 05/14/21 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3005A			583086	05/28/21 10:34	ADM	TAL BUF
Total/NA	Analysis	6010D		1	583423	05/29/21 01:00	LMH	TAL BUF
Total/NA	Prep	3020A			583092	05/28/21 10:18	ADM	TAL BUF
Total/NA	Analysis	6020B		1	583568	06/01/21 15:17	KMP	TAL BUF
Total/NA	Prep	7470A			582064	05/21/21 13:55	BMB	TAL BUF
Total/NA	Analysis	7470A		1	582119	05/21/21 18:03	BMB	TAL BUF
Total/NA	Analysis	300.0		1	581911	05/20/21 17:39	IMZ	TAL BUF
Total/NA	Analysis	300.0		10	582083	05/22/21 07:19	IMZ	TAL BUF
Total/NA	Analysis	SM 2540C		1	581784	05/20/21 09:25	JGO	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	581665	05/18/21 17:54	KEB	TAL BUF
Total/NA	Prep	PrecSep-21			510988	05/21/21 12:30	MJ	TAL SL
Total/NA	Analysis	903.0		1	514296	06/15/21 15:56	FLC	TAL SL
Total/NA	Prep	PrecSep_0			510997	05/21/21 13:50	MJ	TAL SL
Total/NA	Analysis	904.0		1	514248	06/14/21 14:12	SCB	TAL SL

Client Sample ID: MW-1RD-CCR

Lab Sample ID: 480-184717-2

Date Collected: 05/13/21 14:40

Matrix: Water

Date Received: 05/14/21 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3005A			583086	05/28/21 10:34	ADM	TAL BUF
Total/NA	Analysis	6010D		1	583423	05/29/21 01:03	LMH	TAL BUF
Total/NA	Prep	3020A			583092	05/28/21 10:18	ADM	TAL BUF
Total/NA	Analysis	6020B		1	583568	06/01/21 15:19	KMP	TAL BUF
Total/NA	Prep	7470A			582064	05/21/21 13:55	BMB	TAL BUF
Total/NA	Analysis	7470A		1	582119	05/21/21 18:05	BMB	TAL BUF
Total/NA	Analysis	300.0		1	581911	05/20/21 17:54	IMZ	TAL BUF
Total/NA	Analysis	SM 2540C		1	581784	05/20/21 09:25	JGO	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	581665	05/18/21 17:57	KEB	TAL BUF
Total/NA	Prep	PrecSep-21			510988	05/21/21 12:30	MJ	TAL SL
Total/NA	Analysis	903.0		1	514366	06/15/21 16:34	JCB	TAL SL
Total/NA	Prep	PrecSep_0			510997	05/21/21 13:50	MJ	TAL SL
Total/NA	Analysis	904.0		1	514248	06/14/21 14:12	SCB	TAL SL

Client Sample ID: MW-2R-CCR

Lab Sample ID: 480-184717-3

Date Collected: 05/13/21 07:25

Matrix: Water

Date Received: 05/14/21 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3005A			583086	05/28/21 10:34	ADM	TAL BUF
Total/NA	Analysis	6010D		1	583423	05/29/21 01:07	LMH	TAL BUF
Total/NA	Prep	3020A			583092	05/28/21 10:18	ADM	TAL BUF
Total/NA	Analysis	6020B		1	583568	06/01/21 15:28	KMP	TAL BUF

Client Sample ID: MW-2R-CCR

Lab Sample ID: 480-184717-3

Date Collected: 05/13/21 07:25

Matrix: Water

Date Received: 05/14/21 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	7470A			582064	05/21/21 13:55	BMB	TAL BUF
Total/NA	Analysis	7470A		1	582119	05/21/21 18:06	BMB	TAL BUF
Total/NA	Analysis	300.0		1	581911	05/20/21 18:08	IMZ	TAL BUF
Total/NA	Analysis	300.0		5	582083	05/22/21 07:37	IMZ	TAL BUF
Total/NA	Analysis	SM 2540C		1	581715	05/19/21 15:41	JGO	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	581665	05/18/21 18:00	KEB	TAL BUF
Total/NA	Prep	PrecSep-21			510988	05/21/21 12:30	MJ	TAL SL
Total/NA	Analysis	903.0		1	514366	06/15/21 16:34	JCB	TAL SL
Total/NA	Prep	PrecSep_0			510997	05/21/21 13:50	MJ	TAL SL
Total/NA	Analysis	904.0		1	514248	06/14/21 14:12	SCB	TAL SL

Client Sample ID: MW-2RD-CCR

Lab Sample ID: 480-184717-4

Date Collected: 05/13/21 15:50

Matrix: Water

Date Received: 05/14/21 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3005A			583086	05/28/21 10:34	ADM	TAL BUF
Total/NA	Analysis	6010D		1	583423	05/29/21 01:11	LMH	TAL BUF
Total/NA	Prep	3020A			583092	05/28/21 10:18	ADM	TAL BUF
Total/NA	Analysis	6020B		1	583568	06/01/21 15:30	KMP	TAL BUF
Total/NA	Prep	7470A			582064	05/21/21 13:55	BMB	TAL BUF
Total/NA	Analysis	7470A		1	582119	05/21/21 18:07	BMB	TAL BUF
Total/NA	Analysis	300.0		1	581911	05/20/21 19:33	IMZ	TAL BUF
Total/NA	Analysis	SM 2540C		1	581784	05/20/21 09:25	JGO	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	581665	05/18/21 18:07	KEB	TAL BUF
Total/NA	Prep	PrecSep-21			510988	05/21/21 12:30	MJ	TAL SL
Total/NA	Analysis	903.0		1	514366	06/15/21 16:34	JCB	TAL SL
Total/NA	Prep	PrecSep_0			510997	05/21/21 13:50	MJ	TAL SL
Total/NA	Analysis	904.0		1	514232	06/14/21 14:13	SCB	TAL SL

Client Sample ID: MW-3-CCR

Lab Sample ID: 480-184717-5

Date Collected: 05/13/21 08:15

Matrix: Water

Date Received: 05/14/21 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3005A			583086	05/28/21 10:34	ADM	TAL BUF
Total/NA	Analysis	6010D		1	583423	05/29/21 01:15	LMH	TAL BUF
Total/NA	Prep	3020A			583092	05/28/21 10:18	ADM	TAL BUF
Total/NA	Analysis	6020B		1	583568	06/01/21 15:33	KMP	TAL BUF
Total/NA	Prep	7470A			582064	05/21/21 13:55	BMB	TAL BUF
Total/NA	Analysis	7470A		1	582119	05/21/21 18:09	BMB	TAL BUF
Total/NA	Analysis	300.0		1	581911	05/20/21 19:47	IMZ	TAL BUF
Total/NA	Analysis	SM 2540C		1	581715	05/19/21 15:41	JGO	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	581665	05/18/21 18:13	KEB	TAL BUF

Client Sample ID: MW-3-CCR

Lab Sample ID: 480-184717-5

Date Collected: 05/13/21 08:15

Matrix: Water

Date Received: 05/14/21 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			510988	05/21/21 12:30	MJ	TAL SL
Total/NA	Analysis	903.0		1	514366	06/15/21 16:34	JCB	TAL SL
Total/NA	Prep	PrecSep_0			510997	05/21/21 13:50	MJ	TAL SL
Total/NA	Analysis	904.0		1	514232	06/14/21 14:14	SCB	TAL SL

Client Sample ID: MW-3R-CCR

Lab Sample ID: 480-184717-6

Date Collected: 05/13/21 08:10

Matrix: Water

Date Received: 05/14/21 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3005A			583086	05/28/21 10:34	ADM	TAL BUF
Total/NA	Analysis	6010D		1	583423	05/29/21 01:19	LMH	TAL BUF
Total/NA	Prep	3020A			583092	05/28/21 10:18	ADM	TAL BUF
Total/NA	Analysis	6020B		1	583568	06/01/21 15:35	KMP	TAL BUF
Total/NA	Prep	7470A			582064	05/21/21 13:55	BMB	TAL BUF
Total/NA	Analysis	7470A		1	582119	05/21/21 18:10	BMB	TAL BUF
Total/NA	Analysis	300.0		1	581911	05/20/21 20:01	IMZ	TAL BUF
Total/NA	Analysis	SM 2540C		1	581715	05/19/21 15:41	JGO	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	581665	05/18/21 18:16	KEB	TAL BUF
Total/NA	Prep	PrecSep-21			510988	05/21/21 12:30	MJ	TAL SL
Total/NA	Analysis	903.0		1	514366	06/15/21 16:34	JCB	TAL SL
Total/NA	Prep	PrecSep_0			510997	05/21/21 13:50	MJ	TAL SL
Total/NA	Analysis	904.0		1	514232	06/14/21 14:14	SCB	TAL SL

Client Sample ID: MW-3RD-CCR

Lab Sample ID: 480-184717-7

Date Collected: 05/13/21 09:05

Matrix: Water

Date Received: 05/14/21 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3005A			583086	05/28/21 10:34	ADM	TAL BUF
Total/NA	Analysis	6010D		1	583423	05/29/21 01:22	LMH	TAL BUF
Total/NA	Prep	3020A			583092	05/28/21 10:18	ADM	TAL BUF
Total/NA	Analysis	6020B		1	583568	06/01/21 15:37	KMP	TAL BUF
Total/NA	Prep	7470A			582064	05/21/21 13:55	BMB	TAL BUF
Total/NA	Analysis	7470A		1	582119	05/21/21 18:11	BMB	TAL BUF
Total/NA	Analysis	300.0		1	581911	05/20/21 18:22	IMZ	TAL BUF
Total/NA	Analysis	SM 2540C		1	581715	05/19/21 15:41	JGO	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	581665	05/18/21 18:19	KEB	TAL BUF
Total/NA	Prep	PrecSep-21			510988	05/21/21 12:30	MJ	TAL SL
Total/NA	Analysis	903.0		1	514296	06/15/21 18:16	FLC	TAL SL
Total/NA	Prep	PrecSep_0			510997	05/21/21 13:50	MJ	TAL SL
Total/NA	Analysis	904.0		1	514232	06/14/21 14:14	SCB	TAL SL

Lab Chronicle

Client: Waste Connections, Inc.
Project/Site: SKB Lansing - CCR Groundwater

Job ID: 480-184717-1
SDG: 184717

Client Sample ID: DUPLICATE-CCR
Date Collected: 05/13/21 00:00
Date Received: 05/14/21 10:00

Lab Sample ID: 480-184717-9
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3005A			583086	05/28/21 10:34	ADM	TAL BUF
Total/NA	Analysis	6010D		1	583423	05/29/21 01:52	LMH	TAL BUF
Total/NA	Prep	3020A			583092	05/28/21 10:18	ADM	TAL BUF
Total/NA	Analysis	6020B		1	583568	06/01/21 15:48	KMP	TAL BUF
Total/NA	Prep	7470A			582064	05/21/21 13:55	BMB	TAL BUF
Total/NA	Analysis	7470A		1	582119	05/21/21 18:19	BMB	TAL BUF
Total/NA	Analysis	300.0		1	581911	05/20/21 20:15	IMZ	TAL BUF
Total/NA	Analysis	SM 2540C		1	581784	05/20/21 09:25	JGO	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	581665	05/18/21 18:22	KEB	TAL BUF
Total/NA	Prep	PrecSep-21			510988	05/21/21 12:30	MJ	TAL SL
Total/NA	Analysis	903.0		1	514296	06/15/21 18:16	FLC	TAL SL
Total/NA	Prep	PrecSep_0			510997	05/21/21 13:50	MJ	TAL SL
Total/NA	Analysis	904.0		1	514232	06/14/21 14:15	SCB	TAL SL

Client Sample ID: MW-4-CCR
Date Collected: 05/13/21 10:25
Date Received: 05/17/21 10:00

Lab Sample ID: 480-184817-1
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3005A			583086	05/28/21 10:34	ADM	TAL BUF
Total/NA	Analysis	6010D		1	583423	05/29/21 00:33	LMH	TAL BUF
Total/NA	Prep	3020A			583092	05/28/21 10:18	ADM	TAL BUF
Total/NA	Analysis	6020B		1	583568	06/01/21 15:07	KMP	TAL BUF
Total/NA	Prep	7470A			583225	05/28/21 13:32	BMB	TAL BUF
Total/NA	Analysis	7470A		1	583294	05/28/21 17:53	BMB	TAL BUF
Total/NA	Analysis	300.0		1	582094	05/22/21 03:09	IMZ	TAL BUF
Total/NA	Analysis	300.0		5	582403	05/24/21 18:40	IMZ	TAL BUF
Total/NA	Analysis	SM 2540C		1	582537	05/25/21 10:10	JGO	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	582607	05/25/21 15:23	KEB	TAL BUF
Total/NA	Prep	PrecSep-21			511004	05/21/21 15:11	MJ	TAL SL
Total/NA	Analysis	903.0		1	514499	06/16/21 20:29	ANW	TAL SL
Total/NA	Prep	PrecSep_0			511013	05/21/21 16:56	MJ	TAL SL
Total/NA	Analysis	904.0		1	514291	06/15/21 13:27	AK	TAL SL

Client Sample ID: FIELD BLANK-CCR
Date Collected: 05/13/21 10:40
Date Received: 05/17/21 10:00

Lab Sample ID: 480-184817-2
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3005A			583086	05/28/21 10:34	ADM	TAL BUF
Total/NA	Analysis	6010D		1	583423	05/29/21 00:37	LMH	TAL BUF
Total/NA	Prep	3020A			583092	05/28/21 10:18	ADM	TAL BUF
Total/NA	Analysis	6020B		1	583568	06/01/21 15:10	KMP	TAL BUF

Lab Chronicle

Client: Waste Connections, Inc.
Project/Site: SKB Lansing - CCR Groundwater

Job ID: 480-184717-1
SDG: 184717

Client Sample ID: FIELD BLANK-CCR

Lab Sample ID: 480-184817-2

Date Collected: 05/13/21 10:40
Matrix: Water
Date Received: 05/17/21 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	7470A			583225	05/28/21 13:32	BMB	TAL BUF
Total/NA	Analysis	7470A		1	583294	05/28/21 17:54	BMB	TAL BUF
Total/NA	Analysis	300.0		1	582094	05/22/21 03:23	IMZ	TAL BUF
Total/NA	Analysis	SM 2540C		1	581786	05/20/21 09:37	JGO	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	582607	05/25/21 15:25	KEB	TAL BUF
Total/NA	Prep	PrecSep-21			511004	05/21/21 15:11	MJ	TAL SL
Total/NA	Analysis	903.0		1	514499	06/16/21 20:30	ANW	TAL SL
Total/NA	Prep	PrecSep_0			511013	05/21/21 16:56	MJ	TAL SL
Total/NA	Analysis	904.0		1	514291	06/15/21 13:26	AK	TAL SL

Client Sample ID: Equipment Blank-CCR

Lab Sample ID: 480-184817-3

Date Collected: 05/13/21 10:45
Matrix: Water
Date Received: 05/17/21 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3005A			583086	05/28/21 10:34	ADM	TAL BUF
Total/NA	Analysis	6010D		1	583423	05/29/21 00:41	LMH	TAL BUF
Total/NA	Prep	3020A			583092	05/28/21 10:18	ADM	TAL BUF
Total/NA	Analysis	6020B		1	583568	06/01/21 15:12	KMP	TAL BUF
Total/NA	Prep	7470A			583225	05/28/21 13:32	BMB	TAL BUF
Total/NA	Analysis	7470A		1	583294	05/28/21 17:56	BMB	TAL BUF
Total/NA	Analysis	300.0		1	582094	05/22/21 03:37	IMZ	TAL BUF
Total/NA	Analysis	SM 2540C		1	581786	05/20/21 09:37	JGO	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	582607	05/25/21 15:28	KEB	TAL BUF
Total/NA	Prep	PrecSep-21			511004	05/21/21 15:11	MJ	TAL SL
Total/NA	Analysis	903.0		1	514499	06/16/21 20:31	ANW	TAL SL
Total/NA	Prep	PrecSep_0			511013	05/21/21 16:56	MJ	TAL SL
Total/NA	Analysis	904.0		1	514291	06/15/21 13:27	AK	TAL SL

Laboratory References:

TAL BUF = Eurofins TestAmerica, Buffalo, 10 Hazelwood Drive, Amherst, NY 14228-2298, TEL (716)691-2600

Accreditation/Certification Summary

Client: Waste Connections, Inc.
Project/Site: SKB Lansing - CCR Groundwater

Job ID: 480-184717-1
SDG: 184717

Laboratory: Eurofins TestAmerica, Buffalo

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
Minnesota	NELAP	1524384	01-01-22

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
6010D	3005A	Water	Lithium
SM 4500 H+ B		Water	pH
SM 4500 H+ B		Water	Temperature

Laboratory: Eurofins TestAmerica, St. Louis

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Alaska (UST)	State	20-001	05-06-22
ANAB	Dept. of Defense ELAP	L2305	04-06-22
ANAB	Dept. of Energy	L2305.01	04-06-22
ANAB	ISO/IEC 17025	L2305	04-06-22
Arizona	State	AZ0813	12-08-21
California	Los Angeles County Sanitation Districts	10259	06-30-21
California	State	2886	06-30-21
Connecticut	State	PH-0241	03-31-23
Florida	NELAP	E87689	06-30-21
HI - RadChem Recognition	State	n/a	06-30-21
Illinois	NELAP	004553	11-30-21
Iowa	State	373	12-01-22
Kansas	NELAP	E-10236	10-31-21
Kentucky (DW)	State	KY90125	01-01-22
Kentucky (WW)	State	KY90125 (Permit KY0004049)	12-31-21
Louisiana	NELAP	04080	06-30-21
Louisiana (DW)	State	LA011	12-31-21
Maryland	State	310	09-30-21
MI - RadChem Recognition	State	9005	06-30-21
Missouri	State	780	06-30-22
Nevada	State	MO000542020-1	07-31-21
New Jersey	NELAP	MO002	06-30-21
New York	NELAP	11616	04-01-22
North Dakota	State	R-207	06-30-21
NRC	NRC	24-24817-01	12-31-22
Oklahoma	State	9997	08-31-21
Oregon	NELAP	4157	09-01-21
Pennsylvania	NELAP	68-00540	03-01-22
South Carolina	State	85002001	06-30-21
Texas	NELAP	T104704193	07-31-21
US Fish & Wildlife	US Federal Programs	058448	07-31-21
USDA	US Federal Programs	P330-17-00028	03-11-23
Utah	NELAP	MO000542019-11	07-31-21
Virginia	NELAP	10310	06-14-22
Washington	State	C592	08-30-21
West Virginia DEP	State	381	10-31-21

Method Summary

Client: Waste Connections, Inc.
Project/Site: SKB Lansing - CCR Groundwater

Job ID: 480-184717-1
SDG: 184717

Method	Method Description	Protocol	Laboratory
6010D	Metals (ICP)	SW846	TAL BUF
6020B	Metals (ICP/MS)	SW846	TAL BUF
7470A	Mercury (CVAA)	SW846	TAL BUF
300.0	Anions, Ion Chromatography	MCAWW	TAL BUF
SM 2540C	Solids, Total Dissolved (TDS)	SM	TAL BUF
SM 4500 H+ B	pH	SM	TAL BUF
3005A	Preparation, Total Metals	SW846	TAL BUF
3020A	Preparation, Total Metals	SW846	TAL BUF
7470A	Preparation, Mercury	SW846	TAL BUF

Protocol References:

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.

SM = "Standard Methods For The Examination Of Water And Wastewater"

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL BUF = Eurofins TestAmerica, Buffalo, 10 Hazelwood Drive, Amherst, NY 14228-2298, TEL (716)691-2600

Sample Summary

Client: Waste Connections, Inc.
Project/Site: SKB Lansing - CCR Groundwater

Job ID: 480-184717-1
SDG: 184717

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
480-184717-1	MW-1-CCR	Water	05/13/21 14:25	05/14/21 10:00	
480-184717-2	MW-1RD-CCR	Water	05/13/21 14:40	05/14/21 10:00	
480-184717-3	MW-2R-CCR	Water	05/13/21 07:25	05/14/21 10:00	
480-184717-4	MW-2RD-CCR	Water	05/13/21 15:50	05/14/21 10:00	
480-184717-5	MW-3-CCR	Water	05/13/21 08:15	05/14/21 10:00	
480-184717-6	MW-3R-CCR	Water	05/13/21 08:10	05/14/21 10:00	
480-184717-7	MW-3RD-CCR	Water	05/13/21 09:05	05/14/21 10:00	
480-184717-9	DUPLICATE-CCR	Water	05/13/21 00:00	05/14/21 10:00	
480-184817-1	MW-4-CCR	Water	05/13/21 10:25	05/17/21 10:00	
480-184817-2	FIELD BLANK-CCR	Water	05/13/21 10:40	05/17/21 10:00	
480-184817-3	Equipment Blank-CCR	Water	05/13/21 10:45	05/17/21 10:00	

CR16

Eurofins TestAmerica, Buffalo
10 Hazelwood Drive
Amherst, NY 14228-2298
Phone: 716-691-2600 Fax: 716-691-7991

Chain of Custody Record

eurofins | Environment Testing America

Client Information	Sampler: N. Schlagel	Lab PM: VanDette, Ryan T	Carrier Tracking No(s):	COC No: 480-157918-22509.1
Client Contact: Nathaniel Beinemann	Phone: 651-792-6015	E-Mail: Ryan.VanDette@Eurofinset.com	State of Origin:	Page: Page 1 of 2
Company: Waste Connections, Inc.	PWSID:			
Address: 13425 Courthouse Blvd	Due Date Requested:			
City: Rosemount	TAT Requested (days): Standard			
State, Zip: MN, 55068	Compliance Project: Δ Yes Δ No			
Phone:	PO #: Purchase Order Requested			
Email: nathanielb@wcnx.org	WO #:			
Project Name: SKB Lansing/ Event Desc: CCR Groundwater	Project #: 48013603			
Site: Minnesota	SSOW#:			

480-184717 Chain of Custody

Analysis Requ

R - Na2S2O3
S - H2SO4
T - TSP Dodecahydrate
U - Acetone
V - MCAA
W - pH 4-5
Z - other (specify)
G - Amchlor
H - Ascorbic Acid
I - Ice
J - DI Water
K - EDTA
L - EDA
Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	300.0_28D - ClIF/SO4	6010D, 6020B, 7470A	2540C_Calcd - Total Dissolved Solids	SM4500_H+ - pH	904.0 - Standard Target List	903.0 - Standard Target List	Total Number of containers	Special Instructions/Note:
			Preservation Code:				N	D	N	N	D	D		
MW-1 CCR	5/12/21	14:[illegible]	6	Water			X	X	X	X	X	X		
MW-3 CCR	5/13/21	8:15	6	Water			X	X	X	X	X	X		
Duplicate CCR	5/13/21	-	6	Water			X	X	X	X	X	X		
MS CCR	5/13/21	9:05	6	Water			X	X	X	X	X	X		collected from MW-3RD
MSD CCR	5/13/21	9:05	6	Water			X	X	X	X	X	X		collected from MW-3RD
MW-1RD CCR	5/12/21	14:40	6	Water			X	X	X	X	X	X		
MW-2RD CCR	5/12/21	15:50	6	Water			X	X	X	X	X	X		
MW-2R CCR	5/13/21	7:25	6	Water			X	X	X	X	X	X		
MW-3RD CCR	5/13/21	9:05	6	Water		Y	X	X	X	X	X	X		
MW-3R CCR	5/13/21	8:10	6	Water			X	X	X	X	X	X		
MW-4 CCR	5/13/21	10:25	6	Water			X	X	X	X	X	X		

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Relinquished by	Date/Time	Company	Received by	Date/Time	Company
1	[signature]	5/13/21	ES	Thomas G. Lois	5-13-21 12:45	EUROFINS
2	Thomas G. Lois	5-13-21 1700	EUROFINS			
3				[signature]	5/14/21 1000	TAB

Custody Seals Intact: Δ Yes Δ No | Custody Seal No.:

Cooler Temperature(s) °C and Other Remarks: 4.2 3.4 3.6 #1 ICE

Ver: 11/01/2020

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6/17/2021

Eurofins TestAmerica, Buffalo
10 Hazelwood Drive
Amherst, NY 14228-2298
Phone: 716-691-2600 Fax: 716-691-7991

Chain of Custody Record

eurofins | Environment Testing America

Client Information	Sampler: N. Schlegel	Lab PM: VanDette, Ryan T	Carrier Tracking No(s):	COC No: 480-157918-22509.2
Client Contact: Nathaniel Beinemann	Phone: 651-792-6065	E-Mail: Ryan.VanDette@Eurofinset.com	State of Origin:	Page: Page 2 of 2
Company: Waste Connections, Inc.	PWSID:			Job #:
Address: 13425 Courthouse Blvd	Due Date Requested:			
City: Rosemount	TAT Requested (days): Standard			
State, Zip: MN, 55068	Compliance Project: ☐ Yes ☐ No			
Phone:	PO #: Purchase Order Requested			
Email: nathanielb@wcnx.org	WO #:			
Project Name: SKB Lansing/ Event Desc: CCR Groundwater	Project #: 48013603			
Site: Minnesota	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2O3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - pH 4-5
L - EDA	Z - other (specify)

Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	300.0_28D - ClIF/SO4	6010D, 6020B, 7470A	2540C_Calcd - Total Dissolved Solids	SM4500_H+ - pH	904.0 - Standard Target List	903.0 - Standard Target List	Total Number of containers	Special Instructions/Note:
			Preservation Code:				N	D	N	N	D	D		
Field Blank CLR	5/13/21	10:40	6	Water			X	X	X	X	X	X		
Equipment Blank CLR	5/13/21	10:45	6	Water			X	X	X	X	X	X		

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
1	[signature]	5/13/21	BES	Thomas J. Lei	5-13-21 12:45	EUROFINS
2	Thomas J. Lei	5-13-21 17:00	EUROFINS			
3						

Custody Seals Intact: ☐ Yes ☐ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

Ver: 11/01/2020

Eurofins TestAmerica, Buffalo
10 Hazelwood Drive
Amherst, NY 14228-2298
Phone: 716-691-2600 Fax: 716-691-7991

Chain of Custody Record

eurofins | Environment Testing America

Client Information	Sampler: N. Schlogel	Lab PM: VanDette, Ryan T	Carrier Tracking No(s):
Client Contact: Nathaniel Beinemann	Phone: 651-792-6065	E-Mail: Ryan.VanDette@Eurofinset.com	State of Origin:
Company: Waste Connections, Inc.	PWSID:		COC No: 480-157918-22509.1
Address: 13425 Courthouse Blvd	Due Date Requested:		Page: Page 1 of 2
City: Rosemount	TAT Requested (days): Standard		Job #:
State, Zip: MN, 55068	Compliance Project: Δ Yes Δ No		
Phone:	PO #: Purchase Order Requested		
Email: nathanielb@wcnx.org	WO #:		
Project Name: SKB Lansing/ Event Desc: CCR Groundwater	Project #: 48013603		
Site: Minnesota	SSOW#:		

Preservation Codes:
A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA
M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)
Other:

Analysis Requested

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	300.0_28D - Cl/F/SO4	6010D, 6020B, 7470A	2540C_Calcd - Total Dissolved Solids	SM4500_H+ - pH	904.0 - Standard Target List	903.0 - Standard Target List	Total Number of containers	Special Instructions/Note:
			Preservation Code:				N	D	N	N	D	D		
MW-1 CCR	5/12/21	14:35	6	Water			X	X	X	X	X	X		
MW-3 CCR	5/13/21	8:15	6	Water			X	X	X	X	X	X		
Duplicate CCR	5/13/21	-	6	Water			X	X	X	X	X	X		
MS CCR	5/13/21	9:05	6	Water			X	X	X	X	X	X		collected from MW-3RD
MSD CCR	5/13/21	9:05	6	Water			X	X	X	X	X	X		collected from MW-3RD
MW-1RD CCR	5/12/21	14:40	6	Water			X	X	X	X	X	X		
MW-2RD CCR	5/12/21	15:50	6	Water			X	X	X	X	X	X		
MW-2R CCR	5/13/21	7:25	6	Water			X	X	X	X	X	X		
MW-3RD CCR	5/13/21	9:05	6	Water		Y	X	X	X	X	X	X		
MW-3R CCR	5/13/21	8:10	6	Water			X	X	X	X	X	X		
MW-4 CCR	5/13/21	10:25	6	Water			X	X	X	X	X	X		

480-184817 Chain of Custody

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For ______ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by: Date: Time: Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
[signature]	5/13/21	GES	Thomas G. Rois	5-13-21 12:45	EUROFINS
Thomas G. Rois	5-13-21 1700	EUROFINS	UnknownWhoIo	5/17/21 1000	TA

Custody Seals Intact: Δ Yes Δ No | Custody Seal No.: | Cooler Temperature(s) °C and Other Remarks: 4.3 #1 ICE

Ver: 11/01/2020

Eurofins TestAmerica, Buffalo
10 Hazelwood Drive
Amherst, NY 14228-2298
Phone: 716-691-2600 Fax: 716-691-7991

Chain of Custody Record

eurofins | Environment Testing America

Client Information	Sampler: N. Schlegel	Lab PM: VanDette, Ryan T	Carrier Tracking No(s):	COC No: 480-157918-22509.2
Client Contact: Nathaniel Beinemann	Phone: 651-792-6068	E-Mail: Ryan.VanDette@Eurofinset.com	State of Origin:	Page: Page 2 of 2
Company: Waste Connections, Inc.	PWSID:			Job #:
Address: 13425 Courthouse Blvd	Due Date Requested:			
City: Rosemount	TAT Requested (days): Standard			
State, Zip: MN, 55068	Compliance Project: Δ Yes Δ No			
Phone:	PO #: Purchase Order Requested			
Email: nathanielb@wcnx.org	WO #:			
Project Name: SKB Lansing/ Event Desc: CCR Groundwater	Project #: 48013603			
Site: Minnesota	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2O3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - pH 4-5
L - EDA	Z - other (specify)

Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	300.0_28D - Cl/F/SO4	6010D, 6020B, 7470A	2540C_Calcd - Total Dissolved Solids	SM4500_H+ - pH	904.0 - Standard Target List	903.0 - Standard Target List	Total Number of containers	Special Instructions/Note:
			Preservation Code:		X	X	N	D	N	N	D	D	X	
Field Blank CLR	5/13/21	10:40	6	Water			X	X	X	X	X	X		
Equipment Blank CLR	5/13/21	10:45	6	Water			X	X	X	X	X	X		

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:		Date:	Time:	Method of Shipment:		
Relinquished by:	Date/Time: 5/13/21	Company ECS	Received by: Thomas J. Lei	Date/Time: 5-13-21 12:45	Company EUROFINS	
Relinquished by: Thomas J. Lei	Date/Time: 5-13-21 17:00	Company EUROFINS	Received by: PS	Date/Time:	Company	
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company	

Custody Seals Intact: Δ Yes Δ No | Custody Seal No.:

Cooler Temperature(s) °C and Other Remarks:

Ver: 11/01/2020

Login Sample Receipt Checklist

Client: Waste Connections, Inc.

Job Number: 480-184717-1
SDG Number: 184717

Login Number: 184717
List Number: 1
Creator: Stopa, Erik S

List Source: Eurofins TestAmerica, Buffalo

Question	Answer	Comment
Radioactivity either was not measured or, if measured, is at or below background	True	
The cooler's custody seal, if present, is intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the sample IDs on the containers and the COC.	True	
Samples are received within Holding Time (Excluding tests with immediate HTs)..	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	True	
If necessary, staff have been informed of any short hold time or quick TAT needs	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Sampling Company provided.	True	GES
Samples received within 48 hours of sampling.	True	
Samples requiring field filtration have been filtered in the field.	N/A	
Chlorine Residual checked.	N/A	

Login Sample Receipt Checklist

Client: Waste Connections, Inc.

Job Number: 480-184717-1
SDG Number: 184717

Login Number: 184817
List Number: 1
Creator: Sabuda, Brendan D

List Source: Eurofins TestAmerica, Buffalo

Question	Answer	Comment
Radioactivity either was not measured or, if measured, is at or below background	True	
The cooler's custody seal, if present, is intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	4.3 #1 ICE
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the sample IDs on the containers and the COC.	False	refer to NCM
Samples are received within Holding Time (Excluding tests with immediate HTs)..	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	True	
If necessary, staff have been informed of any short hold time or quick TAT needs	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Sampling Company provided.	True	
Samples received within 48 hours of sampling.	False	
Samples requiring field filtration have been filtered in the field.	True	
Chlorine Residual checked.	True	

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins TestAmerica, Buffalo
10 Hazelwood Drive
Amherst, NY 14228-2298
Tel: (716)691-2600

Laboratory Job ID: 480-189324-2
Client Project/Site: SKB Lansing - CCR Groundwater
Sampling Event: CCR Groundwater
Revision: 1

For:
Waste Connections, Inc.
13425 Courthouse Blvd
Rosemount, Minnesota 55068

Attn: Megan Lindstrom

Authorized for release by:
10/28/2021 5:09:02 PM
Joshua Velez, Project Management Assistant I
joshua.velez@eurofinset.com

Designee for

Ryan VanDette, Project Manager II
(716)504-9830
Ryan.VanDette@Eurofinset.com

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Definitions/Glossary

Client: Waste Connections, Inc.
Job ID: 480-189324-2
Project/Site: SKB Lansing - CCR Groundwater

Qualifiers

Metals

Qualifier	Qualifier Description
^6+	Interference Check Standard (ICSA and/or ICSAB) is outside acceptance limits, high biased.
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.

General Chemistry

Qualifier	Qualifier Description
HF	Field parameter with a holding time of 15 minutes. Test performed by laboratory at client's request.

Rad

Qualifier	Qualifier Description
U	Result is less than the sample detection limit.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 480-189324-1

Laboratory: Eurofins TestAmerica, Buffalo

Narrative

Job Narrative
480-189324-1

Comments
No additional comments.

Receipt
The samples were received on 9/9/2021 10:00 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperatures of the 4 coolers at receipt time were 2.4º C, 2.6º C, 2.8º C and 3.1º C.

HPLC/IC
Method 300.0: The following sample was diluted due to the nature of the sample matrix: MW-1-CCR (480-189324-1). Elevated reporting limits (RLs) are provided.

Method 300.0: The following samples were diluted to bring the concentration of target analytes within the calibration range: MW-2R-CCR (480-189324-3) and MW-4-CCR (480-189324-8). Elevated reporting limits (RLs) are provided.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Metals
Method 6020B: The interference check standard solution (ICSA) associated with the following samples showed results for Total Cobalt at a level greater than 2X the reporting limit. The solution contains trace impurities of this element, and the results are not due to any matrix interference. These results are consistent with those found by the manufacturer of the ICSA solution. MW-1-CCR (480-189324-1), MW-1RD-CCR (480-189324-2), MW-2R-CCR (480-189324-3), MW-2RD-CCR (480-189324-4), MW-3-CCR (480-189324-5), MW-3R-CCR (480-189324-6), MW-3RD-CCR (480-189324-7), MS (480-189324-7[MS]), MSD (480-189324-7[MSD]), MW-4-CCR (480-189324-8), Duplicate-CCR (480-189324-9), FIELD BLANK-CCR (480-189324-10), Equipment Blank-CCR (480-189324-11), (LCS 480-596162/2-A), (MB 480-596162/1-A), (480-189324-D-7-D PDS) and (480-189324-D-7-D SD ^5)

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

General Chemistry
Methods 9040C, SM 4500 H+ B: This analysis is normally performed in the field and has a method-defined holding time of 15 minutes. The following samples has been qualified with the "HF" flag to indicate analysis was performed in the laboratory outside the 15 minute timeframe: MW-1-CCR (480-189324-1), MW-1RD-CCR (480-189324-2), MW-2R-CCR (480-189324-3), MW-2RD-CCR (480-189324-4), MW-3-CCR (480-189324-5), MW-3R-CCR (480-189324-6), MW-3RD-CCR (480-189324-7), MW-4-CCR (480-189324-8), Duplicate-CCR (480-189324-9), FIELD BLANK-CCR (480-189324-10) and Equipment Blank-CCR (480-189324-11).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Job ID: 480-189324-2

Laboratory: Eurofins TestAmerica, Buffalo

Narrative

Job Narrative
480-189324-2

Comments
No additional comments.

Receipt
The samples were received on 9/9/2021 10:00 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperatures of the 4 coolers at receipt time were 2.4º C, 2.6º C, 2.8º C and 3.1º C.

Job ID: 480-189324-2 (Continued)

Laboratory: Eurofins TestAmerica, Buffalo (Continued)

RAD

Methods 903.0, 9315: Radium-226 Batch 526912. The method blank (MB) z-score associated with Prep Batch 526912 is within limits and is stored in the level IV raw data. (MB 160-526912/24-A)

Methods 903.0, 9315: Radium-226 Batch 526912. Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative. Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date. MW-1-CCR (480-189324-1), MW-1RD-CCR (480-189324-2), MW-2R-CCR (480-189324-3), MW-2RD-CCR (480-189324-4), MW-3-CCR (480-189324-5), MW-3R-CCR (480-189324-6), MW-3RD-CCR (480-189324-7), MS (480-189324-7[MS]), MSD (480-189324-7[MSD]), MW-4-CCR (480-189324-8), Duplicate-CCR (480-189324-9), FIELD BLANK-CCR (480-189324-10), Equipment Blank-CCR (480-189324-11), (LCS 160-526912/1-A) and (MB 160-526912/24-A)

Methods 904.0, 9320: Radium-228 prep batch 160-526923: Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative. Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date. MW-1-CCR (480-189324-1), MW-1RD-CCR (480-189324-2), MW-2R-CCR (480-189324-3), MW-2RD-CCR (480-189324-4), MW-3-CCR (480-189324-5), MW-3R-CCR (480-189324-6), MW-3RD-CCR (480-189324-7), MS (480-189324-7[MS]), MSD (480-189324-7[MSD]), MW-4-CCR (480-189324-8), Duplicate-CCR (480-189324-9), FIELD BLANK-CCR (480-189324-10), Equipment Blank-CCR (480-189324-11), (LCS 160-526923/1-A) and (MB 160-526923/24-A)

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Detection Summary

Client: Waste Connections, Inc.
Project/Site: SKB Lansing - CCR Groundwater

Job ID: 480-189324-2

Client Sample ID: MW-1-CCR — Lab Sample ID: 480-189324-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.12		0.0020		mg/L	1		6010D	Total/NA
Boron	0.10		0.020		mg/L	1		6010D	Total/NA
Calcium	125		0.50		mg/L	1		6010D	Total/NA
Chloride	92.4		5.0		mg/L	10		300.0	Total/NA
Sulfate	80.6		20.0		mg/L	10		300.0	Total/NA
Total Dissolved Solids	575		10.0		mg/L	1		SM 2540C	Total/NA
pH	7.0	HF	0.1		SU	1		SM 4500 H+ B	Total/NA
Temperature	18.3	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

Client Sample ID: MW-1RD-CCR — Lab Sample ID: 480-189324-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.16		0.0020		mg/L	1		6010D	Total/NA
Calcium	83.5		0.50		mg/L	1		6010D	Total/NA
Cobalt	0.73	^6+	0.30		ug/L	1		6020B	Total/NA
Molybdenum	3.0		1.0		ug/L	1		6020B	Total/NA
Chloride	24.5		0.50		mg/L	1		300.0	Total/NA
Fluoride	0.19		0.050		mg/L	1		300.0	Total/NA
Sulfate	53.9		2.0		mg/L	1		300.0	Total/NA
Total Dissolved Solids	346		10.0		mg/L	1		SM 2540C	Total/NA
pH	7.4	HF	0.1		SU	1		SM 4500 H+ B	Total/NA
Temperature	18.3	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

Client Sample ID: MW-2R-CCR — Lab Sample ID: 480-189324-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.30		0.0020		mg/L	1		6010D	Total/NA
Boron	4.2		0.020		mg/L	1		6010D	Total/NA
Calcium	241		0.50		mg/L	1		6010D	Total/NA
Cobalt	2.7	^6+	0.30		ug/L	1		6020B	Total/NA
Molybdenum	2.4		1.0		ug/L	1		6020B	Total/NA
Chloride	104		2.5		mg/L	5		300.0	Total/NA
Sulfate	225		10.0		mg/L	5		300.0	Total/NA
Total Dissolved Solids	1380		10.0		mg/L	1		SM 2540C	Total/NA
pH	6.6	HF	0.1		SU	1		SM 4500 H+ B	Total/NA
Temperature	18.4	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

Client Sample ID: MW-2RD-CCR — Lab Sample ID: 480-189324-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.19		0.0020		mg/L	1		6010D	Total/NA
Boron	0.11		0.020		mg/L	1		6010D	Total/NA
Calcium	142		0.50		mg/L	1		6010D	Total/NA
Arsenic	1.6		1.0		ug/L	1		6020B	Total/NA
Cobalt	2.1	^6+	0.30		ug/L	1		6020B	Total/NA
Molybdenum	2.1		1.0		ug/L	1		6020B	Total/NA
Selenium	14.6		1.0		ug/L	1		6020B	Total/NA
Chloride	40.4		0.50		mg/L	1		300.0	Total/NA
Fluoride	0.16		0.050		mg/L	1		300.0	Total/NA
Sulfate	78.8		2.0		mg/L	1		300.0	Total/NA
Total Dissolved Solids	590		10.0		mg/L	1		SM 2540C	Total/NA
pH	7.0	HF	0.1		SU	1		SM 4500 H+ B	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: MW-2RD-CCR (Continued) — Lab Sample ID: 480-189324-4

Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
Temperature	18.7	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

Client Sample ID: MW-3-CCR — Lab Sample ID: 480-189324-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.29		0.0020		mg/L	1		6010D	Total/NA
Boron	1.1		0.020		mg/L	1		6010D	Total/NA
Calcium	194		0.50		mg/L	1		6010D	Total/NA
Arsenic	4.3		1.0		ug/L	1		6020B	Total/NA
Cobalt	5.5	^6+	0.30		ug/L	1		6020B	Total/NA
Molybdenum	6.1		1.0		ug/L	1		6020B	Total/NA
Chloride	44.8		0.50		mg/L	1		300.0	Total/NA
Fluoride	0.17		0.050		mg/L	1		300.0	Total/NA
Sulfate	37.4		2.0		mg/L	1		300.0	Total/NA
Total Dissolved Solids	811		10.0		mg/L	1		SM 2540C	Total/NA
pH	6.5	HF	0.1		SU	1		SM 4500 H+ B	Total/NA
Temperature	18.8	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

Client Sample ID: MW-3R-CCR — Lab Sample ID: 480-189324-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.57		0.0020		mg/L	1		6010D	Total/NA
Boron	0.050		0.020		mg/L	1		6010D	Total/NA
Calcium	230		0.50		mg/L	1		6010D	Total/NA
Arsenic	2.3		1.0		ug/L	1		6020B	Total/NA
Cobalt	0.72	^6+	0.30		ug/L	1		6020B	Total/NA
Molybdenum	1.1		1.0		ug/L	1		6020B	Total/NA
Chloride	21.6		0.50		mg/L	1		300.0	Total/NA
Fluoride	0.087		0.050		mg/L	1		300.0	Total/NA
Sulfate	4.6		2.0		mg/L	1		300.0	Total/NA
Total Dissolved Solids	847		10.0		mg/L	1		SM 2540C	Total/NA
pH	6.5	HF	0.1		SU	1		SM 4500 H+ B	Total/NA
Temperature	18.9	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

Client Sample ID: MW-3RD-CCR — Lab Sample ID: 480-189324-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.20		0.0020		mg/L	1		6010D	Total/NA
Boron	0.032		0.020		mg/L	1		6010D	Total/NA
Calcium	122		0.50		mg/L	1		6010D	Total/NA
Arsenic	3.2		1.0		ug/L	1		6020B	Total/NA
Cobalt	0.34	^6+	0.30		ug/L	1		6020B	Total/NA
Molybdenum	4.2		1.0		ug/L	1		6020B	Total/NA
Chloride	27.6		0.50		mg/L	1		300.0	Total/NA
Fluoride	0.20		0.050		mg/L	1		300.0	Total/NA
Sulfate	86.9		2.0		mg/L	1		300.0	Total/NA
Total Dissolved Solids	534		10.0		mg/L	1		SM 2540C	Total/NA
pH	7.0	HF	0.1		SU	1		SM 4500 H+ B	Total/NA
Temperature	19.0	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

This Detection Summary does not include radiochemical test results.

Detection Summary

Client: Waste Connections, Inc.
Project/Site: SKB Lansing - CCR Groundwater

Job ID: 480-189324-2

Client Sample ID: MW-4-CCR — Lab Sample ID: 480-189324-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.23		0.0020		mg/L	1		6010D	Total/NA
Boron	0.42		0.020		mg/L	1		6010D	Total/NA
Calcium	187		0.50		mg/L	1		6010D	Total/NA
Arsenic	1.4		1.0		ug/L	1		6020B	Total/NA
Cobalt	0.44	^6+	0.30		ug/L	1		6020B	Total/NA
Molybdenum	1.8		1.0		ug/L	1		6020B	Total/NA
Chloride	27.3		2.5		mg/L	5		300.0	Total/NA
Fluoride	0.28		0.25		mg/L	5		300.0	Total/NA
Sulfate	207		10.0		mg/L	5		300.0	Total/NA
Total Dissolved Solids	827		10.0		mg/L	1		SM 2540C	Total/NA
pH	7.0	HF	0.1		SU	1		SM 4500 H+ B	Total/NA
Temperature	19.1	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

Client Sample ID: Duplicate-CCR — Lab Sample ID: 480-189324-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.20		0.0020		mg/L	1		6010D	Total/NA
Boron	0.032		0.020		mg/L	1		6010D	Total/NA
Calcium	123		0.50		mg/L	1		6010D	Total/NA
Arsenic	3.5		1.0		ug/L	1		6020B	Total/NA
Cobalt	0.35	^6+	0.30		ug/L	1		6020B	Total/NA
Molybdenum	4.2		1.0		ug/L	1		6020B	Total/NA
Chloride	26.9		0.50		mg/L	1		300.0	Total/NA
Fluoride	0.20		0.050		mg/L	1		300.0	Total/NA
Sulfate	86.2		2.0		mg/L	1		300.0	Total/NA
Total Dissolved Solids	452		10.0		mg/L	1		SM 2540C	Total/NA
pH	7.0	HF	0.1		SU	1		SM 4500 H+ B	Total/NA
Temperature	19.3	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

Client Sample ID: FIELD BLANK-CCR — Lab Sample ID: 480-189324-10

Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
pH	6.5	HF	0.1		SU	1		SM 4500 H+ B	Total/NA
Temperature	19.2	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

Client Sample ID: Equipment Blank-CCR — Lab Sample ID: 480-189324-11

Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
pH	6.5	HF	0.1		SU	1		SM 4500 H+ B	Total/NA
Temperature	19.3	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: MW-1-CCR

Date Collected: 09/08/21 08:40
Date Received: 09/09/21 10:00

Lab Sample ID: 480-189324-1

Matrix: Water

Method: 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	**0.12**		0.0020		mg/L		09/15/21 11:07	09/16/21 00:25	1
Boron	**0.10**		0.020		mg/L		09/15/21 11:07	09/16/21 00:25	1
Calcium	**125**		0.50		mg/L		09/15/21 11:07	09/16/21 00:25	1
Chromium	ND		0.0040		mg/L		09/15/21 11:07	09/16/21 00:25	1
Lithium	ND		0.030		mg/L		09/15/21 11:07	09/16/21 00:25	1

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		1.0		ug/L		09/14/21 08:50	09/14/21 19:26	1
Cobalt	ND	^6+	0.30		ug/L		09/14/21 08:50	09/14/21 19:26	1
Molybdenum	ND		1.0		ug/L		09/14/21 08:50	09/14/21 19:26	1
Selenium	ND		1.0		ug/L		09/14/21 08:50	09/14/21 19:26	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20		ug/L		09/13/21 13:51	09/13/21 17:01	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**92.4**		5.0		mg/L			09/13/21 21:45	10
Fluoride	ND		0.50		mg/L			09/13/21 21:45	10
Sulfate	**80.6**		20.0		mg/L			09/13/21 21:45	10
Total Dissolved Solids	**575**		10.0		mg/L			09/13/21 11:37	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	**7.0**	**HF**	0.1		SU			09/10/21 12:19	1
Temperature	**18.3**	**HF**	0.001		Degrees C			09/10/21 12:19	1

Method: 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.280	U	0.213	0.215	1.00	0.319	pCi/L	09/14/21 09:45	10/15/21 09:27	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*85.4*		*40 - 110*	*09/14/21 09:45*	*10/15/21 09:27*	*1*

Method: 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	**0.556**		0.342	0.346	1.00	0.525	pCi/L	09/14/21 11:15	10/14/21 12:53	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*85.4*		*40 - 110*	*09/14/21 11:15*	*10/14/21 12:53*	*1*
Y Carrier	*80.4*		*40 - 110*	*09/14/21 11:15*	*10/14/21 12:53*	*1*

Client Sample ID: MW-1RD-CCR

Date Collected: 09/08/21 08:45
Date Received: 09/09/21 10:00

Lab Sample ID: 480-189324-2

Matrix: Water

Method: 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	**0.16**		0.0020		mg/L		09/15/21 11:07	09/16/21 00:28	1
Boron	ND		0.020		mg/L		09/15/21 11:07	09/16/21 00:28	1
Calcium	**83.5**		0.50		mg/L		09/15/21 11:07	09/16/21 00:28	1
Chromium	ND		0.0040		mg/L		09/15/21 11:07	09/16/21 00:28	1
Lithium	ND		0.030		mg/L		09/15/21 11:07	09/16/21 00:28	1

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		1.0		ug/L		09/14/21 08:50	09/14/21 19:28	1
Cobalt	**0.73**	**^6+**	0.30		ug/L		09/14/21 08:50	09/14/21 19:28	1
Molybdenum	**3.0**		1.0		ug/L		09/14/21 08:50	09/14/21 19:28	1
Selenium	ND		1.0		ug/L		09/14/21 08:50	09/14/21 19:28	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20		ug/L		09/13/21 13:51	09/13/21 17:03	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**24.5**		0.50		mg/L			09/13/21 23:36	1
Fluoride	**0.19**		0.050		mg/L			09/13/21 23:36	1
Sulfate	**53.9**		2.0		mg/L			09/13/21 23:36	1
Total Dissolved Solids	**346**		10.0		mg/L			09/13/21 11:37	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	**7.4**	**HF**	0.1		SU			09/10/21 12:20	1
Temperature	**18.3**	**HF**	0.001		Degrees C			09/10/21 12:20	1

Method: 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	**0.780**		0.296	0.304	1.00	0.341	pCi/L	09/14/21 09:45	10/15/21 09:27	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*83.1*		*40 - 110*	*09/14/21 09:45*	*10/15/21 09:27*	*1*

Method: 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	**0.607**		0.352	0.356	1.00	0.535	pCi/L	09/14/21 11:15	10/14/21 12:53	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*83.1*		*40 - 110*	*09/14/21 11:15*	*10/14/21 12:53*	*1*
Y Carrier	*81.5*		*40 - 110*	*09/14/21 11:15*	*10/14/21 12:53*	*1*

Client Sample ID: MW-2R-CCR

Date Collected: 09/08/21 09:30
Date Received: 09/09/21 10:00

Lab Sample ID: 480-189324-3

Matrix: Water

Method: 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	**0.30**		0.0020		mg/L		09/15/21 11:07	09/16/21 00:32	1
Boron	**4.2**		0.020		mg/L		09/15/21 11:07	09/16/21 00:32	1
Calcium	**241**		0.50		mg/L		09/15/21 11:07	09/16/21 00:32	1
Chromium	ND		0.0040		mg/L		09/15/21 11:07	09/16/21 00:32	1
Lithium	ND		0.030		mg/L		09/15/21 11:07	09/16/21 00:32	1

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		1.0		ug/L		09/14/21 08:50	09/14/21 19:40	1
Cobalt	**2.7**	**^6+**	0.30		ug/L		09/14/21 08:50	09/14/21 19:40	1
Molybdenum	**2.4**		1.0		ug/L		09/14/21 08:50	09/14/21 19:40	1
Selenium	ND		1.0		ug/L		09/14/21 08:50	09/14/21 19:40	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20		ug/L		09/13/21 13:51	09/13/21 17:04	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**104**		2.5		mg/L			09/13/21 23:55	5
Fluoride	ND		0.25		mg/L			09/13/21 23:55	5
Sulfate	**225**		10.0		mg/L			09/13/21 23:55	5
Total Dissolved Solids	**1380**		10.0		mg/L			09/13/21 11:37	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	**6.6**	**HF**	0.1		SU			09/10/21 12:22	1
Temperature	**18.4**	**HF**	0.001		Degrees C			09/10/21 12:22	1

Method: 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.351	U	0.287	0.289	1.00	0.436	pCi/L	09/14/21 09:45	10/15/21 09:28	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*90.0*		*40 - 110*	*09/14/21 09:45*	*10/15/21 09:28*	*1*

Method: 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	**1.18**		0.421	0.435	1.00	0.566	pCi/L	09/14/21 11:15	10/14/21 12:53	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*90.0*		*40 - 110*	*09/14/21 11:15*	*10/14/21 12:53*	*1*
Y Carrier	*83.7*		*40 - 110*	*09/14/21 11:15*	*10/14/21 12:53*	*1*

Client Sample ID: MW-2RD-CCR

Date Collected: 09/08/21 09:35
Date Received: 09/09/21 10:00

Lab Sample ID: 480-189324-4

Matrix: Water

Method: 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	0.19		0.0020		mg/L		09/15/21 11:07	09/16/21 00:47	1
Boron	0.11		0.020		mg/L		09/15/21 11:07	09/16/21 00:47	1
Calcium	142		0.50		mg/L		09/15/21 11:07	09/16/21 00:47	1
Chromium	ND		0.0040		mg/L		09/15/21 11:07	09/16/21 00:47	1
Lithium	ND		0.030		mg/L		09/15/21 11:07	09/16/21 00:47	1

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	1.6		1.0		ug/L		09/14/21 08:50	09/14/21 19:43	1
Cobalt	2.1	^6+	0.30		ug/L		09/14/21 08:50	09/14/21 19:43	1
Molybdenum	2.1		1.0		ug/L		09/14/21 08:50	09/14/21 19:43	1
Selenium	14.6		1.0		ug/L		09/14/21 08:50	09/14/21 19:43	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20		ug/L		09/13/21 13:51	09/13/21 17:05	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	40.4		0.50		mg/L			09/14/21 00:13	1
Fluoride	0.16		0.050		mg/L			09/14/21 00:13	1
Sulfate	78.8		2.0		mg/L			09/14/21 00:13	1
Total Dissolved Solids	590		10.0		mg/L			09/13/21 11:37	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	7.0	HF	0.1		SU			09/10/21 12:23	1
Temperature	18.7	HF	0.001		Degrees C			09/10/21 12:23	1

Method: 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.602		0.292	0.297	1.00	0.378	pCi/L	09/14/21 09:45	10/15/21 09:28	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*76.2*		*40 - 110*	*09/14/21 09:45*	*10/15/21 09:28*	*1*

Method: 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.930		0.392	0.401	1.00	0.557	pCi/L	09/14/21 11:15	10/14/21 12:54	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*76.2*		*40 - 110*	*09/14/21 11:15*	*10/14/21 12:54*	*1*
Y Carrier	*80.7*		*40 - 110*	*09/14/21 11:15*	*10/14/21 12:54*	*1*

Client Sample ID: MW-3-CCR

Date Collected: 09/08/21 10:20
Date Received: 09/09/21 10:00

Lab Sample ID: 480-189324-5

Matrix: Water

Method: 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	**0.29**		0.0020		mg/L		09/15/21 11:07	09/16/21 00:50	1
Boron	**1.1**		0.020		mg/L		09/15/21 11:07	09/16/21 00:50	1
Calcium	**194**		0.50		mg/L		09/15/21 11:07	09/16/21 00:50	1
Chromium	ND		0.0040		mg/L		09/15/21 11:07	09/16/21 00:50	1
Lithium	ND		0.030		mg/L		09/15/21 11:07	09/16/21 00:50	1

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**4.3**		1.0		ug/L		09/14/21 08:50	09/14/21 19:46	1
Cobalt	**5.5**	**^6+**	0.30		ug/L		09/14/21 08:50	09/14/21 19:46	1
Molybdenum	**6.1**		1.0		ug/L		09/14/21 08:50	09/14/21 19:46	1
Selenium	ND		1.0		ug/L		09/14/21 08:50	09/14/21 19:46	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20		ug/L		09/13/21 13:51	09/13/21 17:07	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**44.8**		0.50		mg/L			09/14/21 00:32	1
Fluoride	**0.17**		0.050		mg/L			09/14/21 00:32	1
Sulfate	**37.4**		2.0		mg/L			09/14/21 00:32	1
Total Dissolved Solids	**811**		10.0		mg/L			09/13/21 11:37	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	**6.5**	**HF**	0.1		SU			09/10/21 12:26	1
Temperature	**18.8**	**HF**	0.001		Degrees C			09/10/21 12:26	1

Method: 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.333	U	0.296	0.298	1.00	0.461	pCi/L	09/14/21 09:45	10/15/21 09:28	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*92.8*		*40 - 110*	*09/14/21 09:45*	*10/15/21 09:28*	*1*

Method: 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	**0.654**		0.390	0.394	1.00	0.591	pCi/L	09/14/21 11:15	10/14/21 12:54	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*92.8*		*40 - 110*	*09/14/21 11:15*	*10/14/21 12:54*	*1*
Y Carrier	*81.5*		*40 - 110*	*09/14/21 11:15*	*10/14/21 12:54*	*1*

Client: Waste Connections, Inc.
Project/Site: SKB Lansing - CCR Groundwater

Job ID: 480-189324-2

Client Sample ID: MW-3R-CCR

Date Collected: 09/08/21 10:25
Date Received: 09/09/21 10:00

Lab Sample ID: 480-189324-6

Matrix: Water

Method: 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	0.57		0.0020		mg/L		09/15/21 11:07	09/16/21 00:54	1
Boron	0.050		0.020		mg/L		09/15/21 11:07	09/16/21 00:54	1
Calcium	230		0.50		mg/L		09/15/21 11:07	09/16/21 00:54	1
Chromium	ND		0.0040		mg/L		09/15/21 11:07	09/16/21 00:54	1
Lithium	ND		0.030		mg/L		09/15/21 11:07	09/16/21 00:54	1

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	2.3		1.0		ug/L		09/14/21 08:50	09/14/21 19:49	1
Cobalt	0.72	^6+	0.30		ug/L		09/14/21 08:50	09/14/21 19:49	1
Molybdenum	1.1		1.0		ug/L		09/14/21 08:50	09/14/21 19:49	1
Selenium	ND		1.0		ug/L		09/14/21 08:50	09/14/21 19:49	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20		ug/L		09/13/21 13:51	09/13/21 17:08	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	21.6		0.50		mg/L			09/14/21 00:50	1
Fluoride	0.087		0.050		mg/L			09/14/21 00:50	1
Sulfate	4.6		2.0		mg/L			09/14/21 00:50	1
Total Dissolved Solids	847		10.0		mg/L			09/13/21 11:37	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	6.5	HF	0.1		SU			09/10/21 12:28	1
Temperature	18.9	HF	0.001		Degrees C			09/10/21 12:28	1

Method: 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.774		0.377	0.383	1.00	0.484	pCi/L	09/14/21 09:45	10/15/21 09:40	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*81.8*		*40 - 110*	*09/14/21 09:45*	*10/15/21 09:40*	*1*

Method: 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	1.58		0.490	0.511	1.00	0.633	pCi/L	09/14/21 11:15	10/14/21 12:54	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*81.8*		*40 - 110*	*09/14/21 11:15*	*10/14/21 12:54*	*1*
Y Carrier	*81.9*		*40 - 110*	*09/14/21 11:15*	*10/14/21 12:54*	*1*

Client Sample ID: MW-3RD-CCR

Date Collected: 09/08/21 10:40
Date Received: 09/09/21 10:00

Lab Sample ID: 480-189324-7

Matrix: Water

Method: 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	**0.20**		0.0020		mg/L		09/15/21 11:07	09/16/21 00:58	1
Boron	**0.032**		0.020		mg/L		09/15/21 11:07	09/16/21 00:58	1
Calcium	**122**		0.50		mg/L		09/15/21 11:07	09/16/21 00:58	1
Chromium	ND		0.0040		mg/L		09/15/21 11:07	09/16/21 00:58	1
Lithium	ND		0.030		mg/L		09/15/21 11:07	09/16/21 00:58	1

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**3.2**		1.0		ug/L		09/14/21 08:50	09/14/21 19:51	1
Cobalt	**0.34**	**^6+**	0.30		ug/L		09/14/21 08:50	09/14/21 19:51	1
Molybdenum	**4.2**		1.0		ug/L		09/14/21 08:50	09/14/21 19:51	1
Selenium	ND		1.0		ug/L		09/14/21 08:50	09/14/21 19:51	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20		ug/L		09/13/21 13:51	09/13/21 17:09	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**27.6**		0.50		mg/L			09/14/21 01:09	1
Fluoride	**0.20**		0.050		mg/L			09/14/21 01:09	1
Sulfate	**86.9**		2.0		mg/L			09/14/21 01:09	1
Total Dissolved Solids	**534**		10.0		mg/L			09/10/21 10:14	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	**7.0**	**HF**	0.1		SU			09/10/21 12:30	1
Temperature	**19.0**	**HF**	0.001		Degrees C			09/10/21 12:30	1

Method: 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	**0.736**		0.260	0.269	1.00	0.262	pCi/L	09/14/21 09:45	10/15/21 09:51	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*91.0*		*40 - 110*	*09/14/21 09:45*	*10/15/21 09:51*	*1*

Method: 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	**0.661**		0.333	0.338	1.00	0.494	pCi/L	09/14/21 11:15	10/14/21 12:54	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*91.0*		*40 - 110*	*09/14/21 11:15*	*10/14/21 12:54*	*1*
Y Carrier	*80.4*		*40 - 110*	*09/14/21 11:15*	*10/14/21 12:54*	*1*

Client Sample ID: MW-4-CCR

Date Collected: 09/08/21 11:35
Date Received: 09/09/21 10:00

Lab Sample ID: 480-189324-8

Matrix: Water

Method: 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	**0.23**		0.0020		mg/L		09/15/21 11:07	09/16/21 01:16	1
Boron	**0.42**		0.020		mg/L		09/15/21 11:07	09/16/21 01:16	1
Calcium	**187**		0.50		mg/L		09/15/21 11:07	09/16/21 01:16	1
Chromium	ND		0.0040		mg/L		09/15/21 11:07	09/16/21 01:16	1
Lithium	ND		0.030		mg/L		09/15/21 11:07	09/16/21 01:16	1

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**1.4**		1.0		ug/L		09/14/21 08:50	09/14/21 20:06	1
Cobalt	**0.44**	**^6+**	0.30		ug/L		09/14/21 08:50	09/14/21 20:06	1
Molybdenum	**1.8**		1.0		ug/L		09/14/21 08:50	09/14/21 20:06	1
Selenium	ND		1.0		ug/L		09/14/21 08:50	09/14/21 20:06	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20		ug/L		09/13/21 13:51	09/13/21 17:17	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**27.3**		2.5		mg/L			09/14/21 02:41	5
Fluoride	**0.28**		0.25		mg/L			09/14/21 02:41	5
Sulfate	**207**		10.0		mg/L			09/14/21 02:41	5
Total Dissolved Solids	**827**		10.0		mg/L			09/10/21 10:14	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	**7.0**	**HF**	0.1		SU			09/10/21 12:31	1
Temperature	**19.1**	**HF**	0.001		Degrees C			09/10/21 12:31	1

Method: 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.276	U	0.226	0.228	1.00	0.340	pCi/L	09/14/21 09:45	10/15/21 09:39	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*75.2*		*40 - 110*	*09/14/21 09:45*	*10/15/21 09:39*	*1*

Method: 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	**0.646**		0.365	0.369	1.00	0.546	pCi/L	09/14/21 11:15	10/14/21 13:00	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*75.2*		*40 - 110*	*09/14/21 11:15*	*10/14/21 13:00*	*1*
Y Carrier	*78.5*		*40 - 110*	*09/14/21 11:15*	*10/14/21 13:00*	*1*

Client Sample ID: Duplicate-CCR

Date Collected: 09/08/21 00:00
Date Received: 09/09/21 10:00

Lab Sample ID: 480-189324-9

Matrix: Water

Method: 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	**0.20**		0.0020		mg/L		09/15/21 11:07	09/16/21 01:31	1
Boron	**0.032**		0.020		mg/L		09/15/21 11:07	09/16/21 01:31	1
Calcium	**123**		0.50		mg/L		09/15/21 11:07	09/16/21 01:31	1
Chromium	ND		0.0040		mg/L		09/15/21 11:07	09/16/21 01:31	1
Lithium	ND		0.030		mg/L		09/15/21 11:07	09/16/21 01:31	1

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**3.5**		1.0		ug/L		09/14/21 08:50	09/14/21 20:17	1
Cobalt	**0.35**	**^6+**	0.30		ug/L		09/14/21 08:50	09/14/21 20:17	1
Molybdenum	**4.2**		1.0		ug/L		09/14/21 08:50	09/14/21 20:17	1
Selenium	ND		1.0		ug/L		09/14/21 08:50	09/14/21 20:17	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20		ug/L		09/13/21 13:51	09/13/21 17:18	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**26.9**		0.50		mg/L			09/14/21 03:00	1
Fluoride	**0.20**		0.050		mg/L			09/14/21 03:00	1
Sulfate	**86.2**		2.0		mg/L			09/14/21 03:00	1
Total Dissolved Solids	**452**		10.0		mg/L			09/10/21 10:14	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	**7.0**	**HF**	0.1		SU			09/10/21 12:34	1
Temperature	**19.3**	**HF**	0.001		Degrees C			09/10/21 12:34	1

Method: 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	**1.03**		0.335	0.348	1.00	0.357	pCi/L	09/14/21 09:45	10/15/21 09:39	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*82.1*		*40 - 110*	*09/14/21 09:45*	*10/15/21 09:39*	*1*

Method: 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	**1.12**		0.367	0.382	1.00	0.481	pCi/L	09/14/21 11:15	10/14/21 13:00	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*82.1*		*40 - 110*	*09/14/21 11:15*	*10/14/21 13:00*	*1*
Y Carrier	*80.4*		*40 - 110*	*09/14/21 11:15*	*10/14/21 13:00*	*1*

Client: Waste Connections, Inc.
Project/Site: SKB Lansing - CCR Groundwater

Job ID: 480-189324-2

Client Sample ID: FIELD BLANK-CCR

Date Collected: 09/08/21 11:40
Date Received: 09/09/21 10:00

Lab Sample ID: 480-189324-10

Matrix: Water

Method: 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	ND		0.0020		mg/L		09/15/21 11:07	09/16/21 01:35	1
Boron	ND		0.020		mg/L		09/15/21 11:07	09/16/21 01:35	1
Calcium	ND		0.50		mg/L		09/15/21 11:07	09/16/21 01:35	1
Chromium	ND		0.0040		mg/L		09/15/21 11:07	09/16/21 01:35	1
Lithium	ND		0.030		mg/L		09/15/21 11:07	09/16/21 01:35	1

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		1.0		ug/L		09/14/21 08:50	09/14/21 20:20	1
Cobalt	ND	^6+	0.30		ug/L		09/14/21 08:50	09/14/21 20:20	1
Molybdenum	ND		1.0		ug/L		09/14/21 08:50	09/14/21 20:20	1
Selenium	ND		1.0		ug/L		09/14/21 08:50	09/14/21 20:20	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20		ug/L		09/13/21 13:51	09/13/21 17:20	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		0.50		mg/L			09/14/21 03:18	1
Fluoride	ND		0.050		mg/L			09/14/21 03:18	1
Sulfate	ND		2.0		mg/L			09/14/21 03:18	1
Total Dissolved Solids	ND		10.0		mg/L			09/10/21 10:14	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	**6.5**	**HF**	0.1		SU			09/10/21 12:35	1
Temperature	**19.2**	**HF**	0.001		Degrees C			09/10/21 12:35	1

Method: 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.113	U	0.180	0.181	1.00	0.311	pCi/L	09/14/21 09:45	10/15/21 09:40	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*88.2*		*40 - 110*	*09/14/21 09:45*	*10/15/21 09:40*	*1*

Method: 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.295	U	0.272	0.273	1.00	0.437	pCi/L	09/14/21 11:15	10/14/21 13:00	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*88.2*		*40 - 110*	*09/14/21 11:15*	*10/14/21 13:00*	*1*
Y Carrier	*81.5*		*40 - 110*	*09/14/21 11:15*	*10/14/21 13:00*	*1*

Client Sample ID: Equipment Blank-CCR

Lab Sample ID: 480-189324-11

Date Collected: 09/08/21 11:45

Matrix: Water

Date Received: 09/09/21 10:00

Method: 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	ND		0.0020		mg/L		09/15/21 11:07	09/16/21 01:38	1
Boron	ND		0.020		mg/L		09/15/21 11:07	09/16/21 01:38	1
Calcium	ND		0.50		mg/L		09/15/21 11:07	09/16/21 01:38	1
Chromium	ND		0.0040		mg/L		09/15/21 11:07	09/16/21 01:38	1
Lithium	ND		0.030		mg/L		09/15/21 11:07	09/16/21 01:38	1

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		1.0		ug/L		09/14/21 08:50	09/14/21 20:23	1
Cobalt	ND	^6+	0.30		ug/L		09/14/21 08:50	09/14/21 20:23	1
Molybdenum	ND		1.0		ug/L		09/14/21 08:50	09/14/21 20:23	1
Selenium	ND		1.0		ug/L		09/14/21 08:50	09/14/21 20:23	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20		ug/L		09/13/21 13:51	09/13/21 17:21	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		0.50		mg/L			09/14/21 03:37	1
Fluoride	ND		0.050		mg/L			09/14/21 03:37	1
Sulfate	ND		2.0		mg/L			09/14/21 03:37	1
Total Dissolved Solids	ND		10.0		mg/L			09/10/21 10:14	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	**6.5**	**HF**	0.1		SU			09/10/21 12:36	1
Temperature	**19.3**	**HF**	0.001		Degrees C			09/10/21 12:36	1

Method: 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0529	U	0.161	0.162	1.00	0.297	pCi/L	09/14/21 09:45	10/15/21 09:40	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*99.0*		*40 - 110*	*09/14/21 09:45*	*10/15/21 09:40*	*1*

Method: 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.204	U	0.273	0.274	1.00	0.454	pCi/L	09/14/21 11:15	10/14/21 13:00	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*99.0*		*40 - 110*	*09/14/21 11:15*	*10/14/21 13:00*	*1*
Y Carrier	*83.7*		*40 - 110*	*09/14/21 11:15*	*10/14/21 13:00*	*1*

Tracer/Carrier Summary

Client: Waste Connections, Inc.
Project/Site: SKB Lansing - CCR Groundwater

Job ID: 480-189324-2

Method: 903.0 - Radium-226 (GFPC)

Matrix: Water

Prep Type: Total/NA

		Percent Yield (Acceptance Limits)
		Ba
Lab Sample ID	Client Sample ID	(40-110)
480-189324-1	MW-1-CCR	85.4
480-189324-2	MW-1RD-CCR	83.1
480-189324-3	MW-2R-CCR	90.0
480-189324-4	MW-2RD-CCR	76.2
480-189324-5	MW-3-CCR	92.8
480-189324-6	MW-3R-CCR	81.8
480-189324-7	MW-3RD-CCR	91.0
480-189324-7 MS	MS	87.5
480-189324-7 MSD	MSD	81.8
480-189324-8	MW-4-CCR	75.2
480-189324-9	Duplicate-CCR	82.1
480-189324-10	FIELD BLANK-CCR	88.2
480-189324-11	Equipment Blank-CCR	99.0
LCS 160-526912/1-A	Lab Control Sample	93.1
MB 160-526912/24-A	Method Blank	74.4

Tracer/Carrier Legend

Ba = Ba Carrier

Method: 904.0 - Radium-228 (GFPC)

Matrix: Water

Prep Type: Total/NA

		Percent Yield (Acceptance Limits)	
		Ba	Y
Lab Sample ID	Client Sample ID	(40-110)	(40-110)
480-189324-1	MW-1-CCR	85.4	80.4
480-189324-2	MW-1RD-CCR	83.1	81.5
480-189324-3	MW-2R-CCR	90.0	83.7
480-189324-4	MW-2RD-CCR	76.2	80.7
480-189324-5	MW-3-CCR	92.8	81.5
480-189324-6	MW-3R-CCR	81.8	81.9
480-189324-7	MW-3RD-CCR	91.0	80.4
480-189324-7 MS	MS	87.5	79.3
480-189324-7 MSD	MSD	81.8	82.2
480-189324-8	MW-4-CCR	75.2	78.5
480-189324-9	Duplicate-CCR	82.1	80.4
480-189324-10	FIELD BLANK-CCR	88.2	81.5
480-189324-11	Equipment Blank-CCR	99.0	83.7
LCS 160-526923/1-A	Lab Control Sample	93.1	83.7
MB 160-526923/24-A	Method Blank	74.4	83.7

Tracer/Carrier Legend

Ba = Ba Carrier
Y = Y Carrier

Method: 6010D - Metals (ICP)

Lab Sample ID: MB 480-596372/1-A
Matrix: Water
Analysis Batch: 596582

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 596372

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	ND		0.0020		mg/L		09/15/21 11:07	09/16/21 00:14	1
Boron	ND		0.020		mg/L		09/15/21 11:07	09/16/21 00:14	1
Calcium	ND		0.50		mg/L		09/15/21 11:07	09/16/21 00:14	1
Chromium	ND		0.0040		mg/L		09/15/21 11:07	09/16/21 00:14	1
Lithium	ND		0.030		mg/L		09/15/21 11:07	09/16/21 00:14	1

Lab Sample ID: LCS 480-596372/2-A
Matrix: Water
Analysis Batch: 596582

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 596372

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Barium			0.200	0.218		mg/L		109	80 - 120		
Boron			0.200	0.195		mg/L		97	80 - 120		
Calcium			10.0	10.23		mg/L		102	80 - 120		
Chromium			0.200	0.195		mg/L		98	80 - 120		
Lithium			0.200	0.205		mg/L		102	80 - 120		

Lab Sample ID: LCSD 480-596372/3-A
Matrix: Water
Analysis Batch: 596582

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 596372

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Barium			0.200	0.218		mg/L		109	80 - 120	0	20
Boron			0.200	0.196		mg/L		98	80 - 120	1	20
Calcium			10.0	10.28		mg/L		103	80 - 120	1	20
Chromium			0.200	0.195		mg/L		97	80 - 120	0	20
Lithium			0.200	0.206		mg/L		103	80 - 120	0	20

Lab Sample ID: 480-189324-7 MS
Matrix: Water
Analysis Batch: 596582

Client Sample ID: MS
Prep Type: Total/NA
Prep Batch: 596372

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Barium	0.20		0.200	0.416		mg/L		106	75 - 125		
Boron	0.032		0.200	0.229		mg/L		99	75 - 125		
Calcium	122		10.0	131.0	4	mg/L		86	75 - 125		
Chromium	ND		0.200	0.198		mg/L		99	75 - 125		
Lithium	ND		0.200	0.216		mg/L		102	75 - 125		

Lab Sample ID: 480-189324-7 MSD
Matrix: Water
Analysis Batch: 596582

Client Sample ID: MSD
Prep Type: Total/NA
Prep Batch: 596372

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Barium	0.20		0.200	0.419		mg/L		108	75 - 125	1	20
Boron	0.032		0.200	0.231		mg/L		100	75 - 125	1	20
Calcium	122		10.0	131.0	4	mg/L		86	75 - 125	0	20
Chromium	ND		0.200	0.198		mg/L		99	75 - 125	0	20
Lithium	ND		0.200	0.219		mg/L		103	75 - 125	1	20

Method: 6020B - Metals (ICP/MS)

Lab Sample ID: MB 480-596162/1-A
Matrix: Water
Analysis Batch: 596436

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 596162

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		1.0		ug/L		09/14/21 08:50	09/14/21 19:20	1
Cobalt	ND	^6+	0.30		ug/L		09/14/21 08:50	09/14/21 19:20	1
Molybdenum	ND		1.0		ug/L		09/14/21 08:50	09/14/21 19:20	1
Selenium	ND		1.0		ug/L		09/14/21 08:50	09/14/21 19:20	1

Lab Sample ID: LCS 480-596162/2-A
Matrix: Water
Analysis Batch: 596436

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 596162

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	20.0	18.97		ug/L		95	80 - 120
Cobalt	20.0	19.57	^6+	ug/L		98	80 - 120
Molybdenum	20.0	20.62		ug/L		103	80 - 120
Selenium	20.0	22.57		ug/L		113	80 - 120

Lab Sample ID: 480-189324-7 MS
Matrix: Water
Analysis Batch: 596436

Client Sample ID: MS
Prep Type: Total/NA
Prep Batch: 596162

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	3.2		20.0	23.92		ug/L		103	75 - 125
Cobalt	0.34	^6+	20.0	19.03	^6+	ug/L		93	75 - 125
Molybdenum	4.2		20.0	26.09		ug/L		110	75 - 125
Selenium	ND		20.0	20.87		ug/L		104	75 - 125

Lab Sample ID: 480-189324-7 MSD
Matrix: Water
Analysis Batch: 596436

Client Sample ID: MSD
Prep Type: Total/NA
Prep Batch: 596162

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Arsenic	3.2		20.0	24.08		ug/L		104	75 - 125	1	20
Cobalt	0.34	^6+	20.0	19.06	^6+	ug/L		94	75 - 125	0	20
Molybdenum	4.2		20.0	26.96		ug/L		114	75 - 125	3	20
Selenium	ND		20.0	19.58		ug/L		98	75 - 125	6	20

Method: 7470A - Mercury (CVAA)

Lab Sample ID: MB 480-596108/1-A
Matrix: Water
Analysis Batch: 596164

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 596108

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20		ug/L		09/13/21 13:51	09/13/21 16:59	1

Lab Sample ID: LCS 480-596108/2-A
Matrix: Water
Analysis Batch: 596164

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 596108

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	6.67	6.92		ug/L		104	80 - 120

Method: 7470A - Mercury (CVAA)

Lab Sample ID: 480-189324-7 MS
Matrix: Water
Analysis Batch: 596164

Client Sample ID: MS
Prep Type: Total/NA
Prep Batch: 596108

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	ND		6.67	6.93		ug/L		104	80 - 120

Lab Sample ID: 480-189324-7 MSD
Matrix: Water
Analysis Batch: 596164

Client Sample ID: MSD
Prep Type: Total/NA
Prep Batch: 596108

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Mercury	ND		6.67	6.88		ug/L		103	80 - 120	1	20

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 480-596103/28
Matrix: Water
Analysis Batch: 596103

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		0.50		mg/L			09/13/21 23:17	1
Fluoride	ND		0.050		mg/L			09/13/21 23:17	1
Sulfate	ND		2.0		mg/L			09/13/21 23:17	1

Lab Sample ID: MB 480-596103/4
Matrix: Water
Analysis Batch: 596103

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		0.50		mg/L			09/13/21 15:53	1
Fluoride	ND		0.050		mg/L			09/13/21 15:53	1
Sulfate	ND		2.0		mg/L			09/13/21 15:53	1

Lab Sample ID: LCS 480-596103/27
Matrix: Water
Analysis Batch: 596103

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	50.0	49.38		mg/L		99	90 - 110
Fluoride	5.00	5.14		mg/L		103	90 - 110
Sulfate	50.0	49.34		mg/L		99	90 - 110

Lab Sample ID: LCS 480-596103/3
Matrix: Water
Analysis Batch: 596103

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	50.0	49.26		mg/L		99	90 - 110
Fluoride	5.00	5.11		mg/L		102	90 - 110
Sulfate	50.0	49.38		mg/L		99	90 - 110

Method: 300.0 - Anions, Ion Chromatography (Continued)

Lab Sample ID: 480-189324-1 MS
Matrix: Water
Analysis Batch: 596103

Client Sample ID: MW-1-CCR
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	92.4		500	562.2		mg/L		94	81 - 120
Fluoride	ND		50.0	49.08		mg/L		97	82 - 120
Sulfate	80.6		500	551.3		mg/L		94	80 - 120

Lab Sample ID: 480-189324-7 MS
Matrix: Water
Analysis Batch: 596103

Client Sample ID: MS
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	27.6		50.0	75.05		mg/L		95	81 - 120
Fluoride	0.20		5.00	5.14		mg/L		99	82 - 120
Sulfate	86.9		50.0	129.9		mg/L		86	80 - 120

Lab Sample ID: 480-189324-7 MSD
Matrix: Water
Analysis Batch: 596103

Client Sample ID: MSD
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	27.6		50.0	74.16		mg/L		93	81 - 120	1	15
Fluoride	0.20		5.00	5.06		mg/L		97	82 - 120	2	15
Sulfate	86.9		50.0	129.2		mg/L		85	80 - 120	1	15

Method: SM 2540C - Solids, Total Dissolved (TDS)

Lab Sample ID: MB 480-595865/1
Matrix: Water
Analysis Batch: 595865

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	ND		10.0		mg/L			09/10/21 10:14	1

Lab Sample ID: LCS 480-595865/2
Matrix: Water
Analysis Batch: 595865

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Dissolved Solids	504	497.0		mg/L		99	85 - 115

Lab Sample ID: MB 480-596089/1
Matrix: Water
Analysis Batch: 596089

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	ND		10.0		mg/L			09/13/21 11:37	1

Method: SM 2540C - Solids, Total Dissolved (TDS) (Continued)

Lab Sample ID: LCS 480-596089/2
Matrix: Water
Analysis Batch: 596089

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Dissolved Solids	504	453.0		mg/L		90	85 - 115

Method: SM 4500 H+ B - pH

Lab Sample ID: LCS 480-595924/23
Matrix: Water
Analysis Batch: 595924

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
pH	7.00	7.1		SU		101	99 - 101

Lab Sample ID: LCS 480-595924/45
Matrix: Water
Analysis Batch: 595924

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
pH	7.00	7.1		SU		101	99 - 101

Lab Sample ID: 480-189324-5 DU
Matrix: Water
Analysis Batch: 595924

Client Sample ID: MW-3-CCR
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
pH	6.5	HF	6.6		SU		0.8	5
Temperature	18.8	HF	18.8		Degrees C		0	10

Method: 903.0 - Radium-226 (GFPC)

Lab Sample ID: MB 160-526912/24-A
Matrix: Water
Analysis Batch: 531971

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 526912

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.1969	U	0.267	0.268	1.00	0.449	pCi/L	09/14/21 09:45	10/15/21 09:43	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*74.4*		*40 - 110*	*09/14/21 09:45*	*10/15/21 09:43*	*1*

Lab Sample ID: LCS 160-526912/1-A
Matrix: Water
Analysis Batch: 531983

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 526912

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-226	11.3	10.71		1.30	1.00	0.331	pCi/L	94	75 - 125

Carrier	*LCS %Yield*	*LCS Qualifier*	*Limits*
Ba Carrier	*93.1*		*40 - 110*

Method: 903.0 - Radium-226 (GFPC) (Continued)

Lab Sample ID: 480-189324-7 MS
Matrix: Water
Analysis Batch: 531971

Client Sample ID: MS
Prep Type: Total/NA
Prep Batch: 526912

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Radium-226	0.736		11.3	10.55		1.30	1.00	0.332	pCi/L	87	75 - 138		

Carrier	*MS %Yield*	*MS Qualifier*	*Limits*
Ba Carrier	*87.5*		*40 - 110*

Lab Sample ID: 480-189324-7 MSD
Matrix: Water
Analysis Batch: 531971

Client Sample ID: MSD
Prep Type: Total/NA
Prep Batch: 526912

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-226	0.736		11.3	13.32		1.61	1.00	0.404	pCi/L	111	75 - 138	0.95	1

Carrier	*MSD %Yield*	*MSD Qualifier*	*Limits*
Ba Carrier	*81.8*		*40 - 110*

Method: 904.0 - Radium-228 (GFPC)

Lab Sample ID: MB 160-526923/24-A
Matrix: Water
Analysis Batch: 531911

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 526923

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.1335	U	0.317	0.318	1.00	0.546	pCi/L	09/14/21 11:15	10/14/21 13:04	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*74.4*		*40 - 110*	*09/14/21 11:15*	*10/14/21 13:04*	*1*
Y Carrier	*83.7*		*40 - 110*	*09/14/21 11:15*	*10/14/21 13:04*	*1*

Lab Sample ID: LCS 160-526923/1-A
Matrix: Water
Analysis Batch: 531958

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 526923

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Radium-228			9.24	10.26		1.20	1.00	0.445	pCi/L	111	75 - 125		

Carrier	*LCS %Yield*	*LCS Qualifier*	*Limits*
Ba Carrier	*93.1*		*40 - 110*
Y Carrier	*83.7*		*40 - 110*

Method: 904.0 - Radium-228 (GFPC) (Continued)

Lab Sample ID: 480-189324-7 MS
Matrix: Water
Analysis Batch: 531911

Client Sample ID: MS
Prep Type: Total/NA
Prep Batch: 526923

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Radium-228	0.661		9.24	10.13		1.22	1.00	0.491	pCi/L	102	45 - 150		

Carrier	*MS %Yield*	*MS Qualifier*	*Limits*
Ba Carrier	*87.5*		*40 - 110*
Y Carrier	*79.3*		*40 - 110*

Lab Sample ID: 480-189324-7 MSD
Matrix: Water
Analysis Batch: 531911

Client Sample ID: MSD
Prep Type: Total/NA
Prep Batch: 526923

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-228	0.661		9.25	9.779		1.20	1.00	0.521	pCi/L	99	45 - 150	0.15	1

Carrier	*MSD %Yield*	*MSD Qualifier*	*Limits*
Ba Carrier	*81.8*		*40 - 110*
Y Carrier	*82.2*		*40 - 110*

Metals

Prep Batch: 596108

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-189324-1	MW-1-CCR	Total/NA	Water	7470A	
480-189324-2	MW-1RD-CCR	Total/NA	Water	7470A	
480-189324-3	MW-2R-CCR	Total/NA	Water	7470A	
480-189324-4	MW-2RD-CCR	Total/NA	Water	7470A	
480-189324-5	MW-3-CCR	Total/NA	Water	7470A	
480-189324-6	MW-3R-CCR	Total/NA	Water	7470A	
480-189324-7	MW-3RD-CCR	Total/NA	Water	7470A	
480-189324-8	MW-4-CCR	Total/NA	Water	7470A	
480-189324-9	Duplicate-CCR	Total/NA	Water	7470A	
480-189324-10	FIELD BLANK-CCR	Total/NA	Water	7470A	
480-189324-11	Equipment Blank-CCR	Total/NA	Water	7470A	
MB 480-596108/1-A	Method Blank	Total/NA	Water	7470A	
LCS 480-596108/2-A	Lab Control Sample	Total/NA	Water	7470A	
480-189324-7 MS	MS	Total/NA	Water	7470A	
480-189324-7 MSD	MSD	Total/NA	Water	7470A	

Prep Batch: 596162

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-189324-1	MW-1-CCR	Total/NA	Water	3020A	
480-189324-2	MW-1RD-CCR	Total/NA	Water	3020A	
480-189324-3	MW-2R-CCR	Total/NA	Water	3020A	
480-189324-4	MW-2RD-CCR	Total/NA	Water	3020A	
480-189324-5	MW-3-CCR	Total/NA	Water	3020A	
480-189324-6	MW-3R-CCR	Total/NA	Water	3020A	
480-189324-7	MW-3RD-CCR	Total/NA	Water	3020A	
480-189324-8	MW-4-CCR	Total/NA	Water	3020A	
480-189324-9	Duplicate-CCR	Total/NA	Water	3020A	
480-189324-10	FIELD BLANK-CCR	Total/NA	Water	3020A	
480-189324-11	Equipment Blank-CCR	Total/NA	Water	3020A	
MB 480-596162/1-A	Method Blank	Total/NA	Water	3020A	
LCS 480-596162/2-A	Lab Control Sample	Total/NA	Water	3020A	
480-189324-7 MS	MS	Total/NA	Water	3020A	
480-189324-7 MSD	MSD	Total/NA	Water	3020A	

Analysis Batch: 596164

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-189324-1	MW-1-CCR	Total/NA	Water	7470A	596108
480-189324-2	MW-1RD-CCR	Total/NA	Water	7470A	596108
480-189324-3	MW-2R-CCR	Total/NA	Water	7470A	596108
480-189324-4	MW-2RD-CCR	Total/NA	Water	7470A	596108
480-189324-5	MW-3-CCR	Total/NA	Water	7470A	596108
480-189324-6	MW-3R-CCR	Total/NA	Water	7470A	596108
480-189324-7	MW-3RD-CCR	Total/NA	Water	7470A	596108
480-189324-8	MW-4-CCR	Total/NA	Water	7470A	596108
480-189324-9	Duplicate-CCR	Total/NA	Water	7470A	596108
480-189324-10	FIELD BLANK-CCR	Total/NA	Water	7470A	596108
480-189324-11	Equipment Blank-CCR	Total/NA	Water	7470A	596108
MB 480-596108/1-A	Method Blank	Total/NA	Water	7470A	596108
LCS 480-596108/2-A	Lab Control Sample	Total/NA	Water	7470A	596108
480-189324-7 MS	MS	Total/NA	Water	7470A	596108
480-189324-7 MSD	MSD	Total/NA	Water	7470A	596108

Metals

Prep Batch: 596372

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-189324-1	MW-1-CCR	Total/NA	Water	3005A	
480-189324-2	MW-1RD-CCR	Total/NA	Water	3005A	
480-189324-3	MW-2R-CCR	Total/NA	Water	3005A	
480-189324-4	MW-2RD-CCR	Total/NA	Water	3005A	
480-189324-5	MW-3-CCR	Total/NA	Water	3005A	
480-189324-6	MW-3R-CCR	Total/NA	Water	3005A	
480-189324-7	MW-3RD-CCR	Total/NA	Water	3005A	
480-189324-8	MW-4-CCR	Total/NA	Water	3005A	
480-189324-9	Duplicate-CCR	Total/NA	Water	3005A	
480-189324-10	FIELD BLANK-CCR	Total/NA	Water	3005A	
480-189324-11	Equipment Blank-CCR	Total/NA	Water	3005A	
MB 480-596372/1-A	Method Blank	Total/NA	Water	3005A	
LCS 480-596372/2-A	Lab Control Sample	Total/NA	Water	3005A	
LCSD 480-596372/3-A	Lab Control Sample Dup	Total/NA	Water	3005A	
480-189324-7 MS	MS	Total/NA	Water	3005A	
480-189324-7 MSD	MSD	Total/NA	Water	3005A	

Analysis Batch: 596436

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-189324-1	MW-1-CCR	Total/NA	Water	6020B	596162
480-189324-2	MW-1RD-CCR	Total/NA	Water	6020B	596162
480-189324-3	MW-2R-CCR	Total/NA	Water	6020B	596162
480-189324-4	MW-2RD-CCR	Total/NA	Water	6020B	596162
480-189324-5	MW-3-CCR	Total/NA	Water	6020B	596162
480-189324-6	MW-3R-CCR	Total/NA	Water	6020B	596162
480-189324-7	MW-3RD-CCR	Total/NA	Water	6020B	596162
480-189324-8	MW-4-CCR	Total/NA	Water	6020B	596162
480-189324-9	Duplicate-CCR	Total/NA	Water	6020B	596162
480-189324-10	FIELD BLANK-CCR	Total/NA	Water	6020B	596162
480-189324-11	Equipment Blank-CCR	Total/NA	Water	6020B	596162
MB 480-596162/1-A	Method Blank	Total/NA	Water	6020B	596162
LCS 480-596162/2-A	Lab Control Sample	Total/NA	Water	6020B	596162
480-189324-7 MS	MS	Total/NA	Water	6020B	596162
480-189324-7 MSD	MSD	Total/NA	Water	6020B	596162

Analysis Batch: 596582

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-189324-1	MW-1-CCR	Total/NA	Water	6010D	596372
480-189324-2	MW-1RD-CCR	Total/NA	Water	6010D	596372
480-189324-3	MW-2R-CCR	Total/NA	Water	6010D	596372
480-189324-4	MW-2RD-CCR	Total/NA	Water	6010D	596372
480-189324-5	MW-3-CCR	Total/NA	Water	6010D	596372
480-189324-6	MW-3R-CCR	Total/NA	Water	6010D	596372
480-189324-7	MW-3RD-CCR	Total/NA	Water	6010D	596372
480-189324-8	MW-4-CCR	Total/NA	Water	6010D	596372
480-189324-9	Duplicate-CCR	Total/NA	Water	6010D	596372
480-189324-10	FIELD BLANK-CCR	Total/NA	Water	6010D	596372
480-189324-11	Equipment Blank-CCR	Total/NA	Water	6010D	596372
MB 480-596372/1-A	Method Blank	Total/NA	Water	6010D	596372
LCS 480-596372/2-A	Lab Control Sample	Total/NA	Water	6010D	596372
LCSD 480-596372/3-A	Lab Control Sample Dup	Total/NA	Water	6010D	596372

Metals (Continued)

Analysis Batch: 596582 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-189324-7 MS	MS	Total/NA	Water	6010D	596372
480-189324-7 MSD	MSD	Total/NA	Water	6010D	596372

General Chemistry

Analysis Batch: 595865

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-189324-7	MW-3RD-CCR	Total/NA	Water	SM 2540C	
480-189324-8	MW-4-CCR	Total/NA	Water	SM 2540C	
480-189324-9	Duplicate-CCR	Total/NA	Water	SM 2540C	
480-189324-10	FIELD BLANK-CCR	Total/NA	Water	SM 2540C	
480-189324-11	Equipment Blank-CCR	Total/NA	Water	SM 2540C	
MB 480-595865/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 480-595865/2	Lab Control Sample	Total/NA	Water	SM 2540C	
480-189324-7 MS	MS	Total/NA	Water	SM 2540C	
480-189324-7 MSD	MSD	Total/NA	Water	SM 2540C	

Analysis Batch: 595924

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-189324-1	MW-1-CCR	Total/NA	Water	SM 4500 H+ B	
480-189324-2	MW-1RD-CCR	Total/NA	Water	SM 4500 H+ B	
480-189324-3	MW-2R-CCR	Total/NA	Water	SM 4500 H+ B	
480-189324-4	MW-2RD-CCR	Total/NA	Water	SM 4500 H+ B	
480-189324-5	MW-3-CCR	Total/NA	Water	SM 4500 H+ B	
480-189324-6	MW-3R-CCR	Total/NA	Water	SM 4500 H+ B	
480-189324-7	MW-3RD-CCR	Total/NA	Water	SM 4500 H+ B	
480-189324-8	MW-4-CCR	Total/NA	Water	SM 4500 H+ B	
480-189324-9	Duplicate-CCR	Total/NA	Water	SM 4500 H+ B	
480-189324-10	FIELD BLANK-CCR	Total/NA	Water	SM 4500 H+ B	
480-189324-11	Equipment Blank-CCR	Total/NA	Water	SM 4500 H+ B	
LCS 480-595924/23	Lab Control Sample	Total/NA	Water	SM 4500 H+ B	
LCS 480-595924/45	Lab Control Sample	Total/NA	Water	SM 4500 H+ B	
480-189324-5 DU	MW-3-CCR	Total/NA	Water	SM 4500 H+ B	

Analysis Batch: 596089

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-189324-1	MW-1-CCR	Total/NA	Water	SM 2540C	
480-189324-2	MW-1RD-CCR	Total/NA	Water	SM 2540C	
480-189324-3	MW-2R-CCR	Total/NA	Water	SM 2540C	
480-189324-4	MW-2RD-CCR	Total/NA	Water	SM 2540C	
480-189324-5	MW-3-CCR	Total/NA	Water	SM 2540C	
480-189324-6	MW-3R-CCR	Total/NA	Water	SM 2540C	
MB 480-596089/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 480-596089/2	Lab Control Sample	Total/NA	Water	SM 2540C	

Analysis Batch: 596103

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-189324-1	MW-1-CCR	Total/NA	Water	300.0	
480-189324-2	MW-1RD-CCR	Total/NA	Water	300.0	
480-189324-3	MW-2R-CCR	Total/NA	Water	300.0	
480-189324-4	MW-2RD-CCR	Total/NA	Water	300.0	

General Chemistry (Continued)

Analysis Batch: 596103 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-189324-5	MW-3-CCR	Total/NA	Water	300.0	
480-189324-6	MW-3R-CCR	Total/NA	Water	300.0	
480-189324-7	MW-3RD-CCR	Total/NA	Water	300.0	
480-189324-8	MW-4-CCR	Total/NA	Water	300.0	
480-189324-9	Duplicate-CCR	Total/NA	Water	300.0	
480-189324-10	FIELD BLANK-CCR	Total/NA	Water	300.0	
480-189324-11	Equipment Blank-CCR	Total/NA	Water	300.0	
MB 480-596103/28	Method Blank	Total/NA	Water	300.0	
MB 480-596103/4	Method Blank	Total/NA	Water	300.0	
LCS 480-596103/27	Lab Control Sample	Total/NA	Water	300.0	
LCS 480-596103/3	Lab Control Sample	Total/NA	Water	300.0	
480-189324-1 MS	MW-1-CCR	Total/NA	Water	300.0	
480-189324-7 MS	MS	Total/NA	Water	300.0	
480-189324-7 MSD	MSD	Total/NA	Water	300.0	

Rad

Prep Batch: 526912

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-189324-1	MW-1-CCR	Total/NA	Water	PrecSep-21	
480-189324-2	MW-1RD-CCR	Total/NA	Water	PrecSep-21	
480-189324-3	MW-2R-CCR	Total/NA	Water	PrecSep-21	
480-189324-4	MW-2RD-CCR	Total/NA	Water	PrecSep-21	
480-189324-5	MW-3-CCR	Total/NA	Water	PrecSep-21	
480-189324-6	MW-3R-CCR	Total/NA	Water	PrecSep-21	
480-189324-7	MW-3RD-CCR	Total/NA	Water	PrecSep-21	
480-189324-8	MW-4-CCR	Total/NA	Water	PrecSep-21	
480-189324-9	Duplicate-CCR	Total/NA	Water	PrecSep-21	
480-189324-10	FIELD BLANK-CCR	Total/NA	Water	PrecSep-21	
480-189324-11	Equipment Blank-CCR	Total/NA	Water	PrecSep-21	
MB 160-526912/24-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-526912/1-A	Lab Control Sample	Total/NA	Water	PrecSep-21	
480-189324-7 MS	MS	Total/NA	Water	PrecSep-21	
480-189324-7 MSD	MSD	Total/NA	Water	PrecSep-21	

Prep Batch: 526923

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-189324-1	MW-1-CCR	Total/NA	Water	PrecSep_0	
480-189324-2	MW-1RD-CCR	Total/NA	Water	PrecSep_0	
480-189324-3	MW-2R-CCR	Total/NA	Water	PrecSep_0	
480-189324-4	MW-2RD-CCR	Total/NA	Water	PrecSep_0	
480-189324-5	MW-3-CCR	Total/NA	Water	PrecSep_0	
480-189324-6	MW-3R-CCR	Total/NA	Water	PrecSep_0	
480-189324-7	MW-3RD-CCR	Total/NA	Water	PrecSep_0	
480-189324-8	MW-4-CCR	Total/NA	Water	PrecSep_0	
480-189324-9	Duplicate-CCR	Total/NA	Water	PrecSep_0	
480-189324-10	FIELD BLANK-CCR	Total/NA	Water	PrecSep_0	
480-189324-11	Equipment Blank-CCR	Total/NA	Water	PrecSep_0	
MB 160-526923/24-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-526923/1-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
480-189324-7 MS	MS	Total/NA	Water	PrecSep_0	

Rad (Continued)

Prep Batch: 526923 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-189324-7 MSD	MSD	Total/NA	Water	PrecSep_0	

Lab Chronicle

Client: Waste Connections, Inc.
Job ID: 480-189324-2
Project/Site: SKB Lansing - CCR Groundwater

Client Sample ID: MW-1-CCR
Lab Sample ID: 480-189324-1
Date Collected: 09/08/21 08:40
Matrix: Water
Date Received: 09/09/21 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3005A			596372	09/15/21 11:07	ADM	TAL BUF
Total/NA	Analysis	6010D		1	596582	09/16/21 00:25	LMH	TAL BUF
Total/NA	Prep	3020A			596162	09/14/21 08:50	ADM	TAL BUF
Total/NA	Analysis	6020B		1	596436	09/14/21 19:26	KMP	TAL BUF
Total/NA	Prep	7470A			596108	09/13/21 13:51	BMB	TAL BUF
Total/NA	Analysis	7470A		1	596164	09/13/21 17:01	BMB	TAL BUF
Total/NA	Analysis	300.0		10	596103	09/13/21 21:45	IMZ	TAL BUF
Total/NA	Analysis	SM 2540C		1	596089	09/13/21 11:37	JGO	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	595924	09/10/21 12:19	JPS	TAL BUF
Total/NA	Prep	PrecSep-21			526912	09/14/21 09:45	MJ	TAL SL
Total/NA	Analysis	903.0		1	531983	10/15/21 09:27	ANW	TAL SL
Total/NA	Prep	PrecSep_0			526923	09/14/21 11:15	MJ	TAL SL
Total/NA	Analysis	904.0		1	531958	10/14/21 12:53	FLC	TAL SL

Client Sample ID: MW-1RD-CCR
Lab Sample ID: 480-189324-2
Date Collected: 09/08/21 08:45
Matrix: Water
Date Received: 09/09/21 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3005A			596372	09/15/21 11:07	ADM	TAL BUF
Total/NA	Analysis	6010D		1	596582	09/16/21 00:28	LMH	TAL BUF
Total/NA	Prep	3020A			596162	09/14/21 08:50	ADM	TAL BUF
Total/NA	Analysis	6020B		1	596436	09/14/21 19:28	KMP	TAL BUF
Total/NA	Prep	7470A			596108	09/13/21 13:51	BMB	TAL BUF
Total/NA	Analysis	7470A		1	596164	09/13/21 17:03	BMB	TAL BUF
Total/NA	Analysis	300.0		1	596103	09/13/21 23:36	IMZ	TAL BUF
Total/NA	Analysis	SM 2540C		1	596089	09/13/21 11:37	JGO	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	595924	09/10/21 12:20	JPS	TAL BUF
Total/NA	Prep	PrecSep-21			526912	09/14/21 09:45	MJ	TAL SL
Total/NA	Analysis	903.0		1	531983	10/15/21 09:27	ANW	TAL SL
Total/NA	Prep	PrecSep_0			526923	09/14/21 11:15	MJ	TAL SL
Total/NA	Analysis	904.0		1	531958	10/14/21 12:53	FLC	TAL SL

Client Sample ID: MW-2R-CCR
Lab Sample ID: 480-189324-3
Date Collected: 09/08/21 09:30
Matrix: Water
Date Received: 09/09/21 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3005A			596372	09/15/21 11:07	ADM	TAL BUF
Total/NA	Analysis	6010D		1	596582	09/16/21 00:32	LMH	TAL BUF
Total/NA	Prep	3020A			596162	09/14/21 08:50	ADM	TAL BUF
Total/NA	Analysis	6020B		1	596436	09/14/21 19:40	KMP	TAL BUF
Total/NA	Prep	7470A			596108	09/13/21 13:51	BMB	TAL BUF
Total/NA	Analysis	7470A		1	596164	09/13/21 17:04	BMB	TAL BUF

Lab Chronicle

Client: Waste Connections, Inc.
Job ID: 480-189324-2
Project/Site: SKB Lansing - CCR Groundwater

Client Sample ID: MW-2R-CCR
Lab Sample ID: 480-189324-3
Date Collected: 09/08/21 09:30
Matrix: Water
Date Received: 09/09/21 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	300.0		5	596103	09/13/21 23:55	IMZ	TAL BUF
Total/NA	Analysis	SM 2540C		1	596089	09/13/21 11:37	JGO	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	595924	09/10/21 12:22	JPS	TAL BUF
Total/NA	Prep	PrecSep-21			526912	09/14/21 09:45	MJ	TAL SL
Total/NA	Analysis	903.0		1	531983	10/15/21 09:28	ANW	TAL SL
Total/NA	Prep	PrecSep_0			526923	09/14/21 11:15	MJ	TAL SL
Total/NA	Analysis	904.0		1	531958	10/14/21 12:53	FLC	TAL SL

Client Sample ID: MW-2RD-CCR
Lab Sample ID: 480-189324-4
Date Collected: 09/08/21 09:35
Matrix: Water
Date Received: 09/09/21 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3005A			596372	09/15/21 11:07	ADM	TAL BUF
Total/NA	Analysis	6010D		1	596582	09/16/21 00:47	LMH	TAL BUF
Total/NA	Prep	3020A			596162	09/14/21 08:50	ADM	TAL BUF
Total/NA	Analysis	6020B		1	596436	09/14/21 19:43	KMP	TAL BUF
Total/NA	Prep	7470A			596108	09/13/21 13:51	BMB	TAL BUF
Total/NA	Analysis	7470A		1	596164	09/13/21 17:05	BMB	TAL BUF
Total/NA	Analysis	300.0		1	596103	09/14/21 00:13	IMZ	TAL BUF
Total/NA	Analysis	SM 2540C		1	596089	09/13/21 11:37	JGO	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	595924	09/10/21 12:23	JPS	TAL BUF
Total/NA	Prep	PrecSep-21			526912	09/14/21 09:45	MJ	TAL SL
Total/NA	Analysis	903.0		1	531983	10/15/21 09:28	ANW	TAL SL
Total/NA	Prep	PrecSep_0			526923	09/14/21 11:15	MJ	TAL SL
Total/NA	Analysis	904.0		1	531958	10/14/21 12:54	FLC	TAL SL

Client Sample ID: MW-3-CCR
Lab Sample ID: 480-189324-5
Date Collected: 09/08/21 10:20
Matrix: Water
Date Received: 09/09/21 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3005A			596372	09/15/21 11:07	ADM	TAL BUF
Total/NA	Analysis	6010D		1	596582	09/16/21 00:50	LMH	TAL BUF
Total/NA	Prep	3020A			596162	09/14/21 08:50	ADM	TAL BUF
Total/NA	Analysis	6020B		1	596436	09/14/21 19:46	KMP	TAL BUF
Total/NA	Prep	7470A			596108	09/13/21 13:51	BMB	TAL BUF
Total/NA	Analysis	7470A		1	596164	09/13/21 17:07	BMB	TAL BUF
Total/NA	Analysis	300.0		1	596103	09/14/21 00:32	IMZ	TAL BUF
Total/NA	Analysis	SM 2540C		1	596089	09/13/21 11:37	JGO	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	595924	09/10/21 12:26	JPS	TAL BUF
Total/NA	Prep	PrecSep-21			526912	09/14/21 09:45	MJ	TAL SL
Total/NA	Analysis	903.0		1	531983	10/15/21 09:28	ANW	TAL SL

Lab Chronicle

Client: Waste Connections, Inc.
Project/Site: SKB Lansing - CCR Groundwater

Job ID: 480-189324-2

Client Sample ID: MW-3-CCR

Lab Sample ID: 480-189324-5

Date Collected: 09/08/21 10:20

Matrix: Water

Date Received: 09/09/21 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep_0			526923	09/14/21 11:15	MJ	TAL SL
Total/NA	Analysis	904.0		1	531958	10/14/21 12:54	FLC	TAL SL

Client Sample ID: MW-3R-CCR

Lab Sample ID: 480-189324-6

Date Collected: 09/08/21 10:25

Matrix: Water

Date Received: 09/09/21 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3005A			596372	09/15/21 11:07	ADM	TAL BUF
Total/NA	Analysis	6010D		1	596582	09/16/21 00:54	LMH	TAL BUF
Total/NA	Prep	3020A			596162	09/14/21 08:50	ADM	TAL BUF
Total/NA	Analysis	6020B		1	596436	09/14/21 19:49	KMP	TAL BUF
Total/NA	Prep	7470A			596108	09/13/21 13:51	BMB	TAL BUF
Total/NA	Analysis	7470A		1	596164	09/13/21 17:08	BMB	TAL BUF
Total/NA	Analysis	300.0		1	596103	09/14/21 00:50	IMZ	TAL BUF
Total/NA	Analysis	SM 2540C		1	596089	09/13/21 11:37	JGO	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	595924	09/10/21 12:28	JPS	TAL BUF
Total/NA	Prep	PrecSep-21			526912	09/14/21 09:45	MJ	TAL SL
Total/NA	Analysis	903.0		1	531971	10/15/21 09:40	ANW	TAL SL
Total/NA	Prep	PrecSep_0			526923	09/14/21 11:15	MJ	TAL SL
Total/NA	Analysis	904.0		1	531958	10/14/21 12:54	FLC	TAL SL

Client Sample ID: MW-3RD-CCR

Lab Sample ID: 480-189324-7

Date Collected: 09/08/21 10:40

Matrix: Water

Date Received: 09/09/21 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3005A			596372	09/15/21 11:07	ADM	TAL BUF
Total/NA	Analysis	6010D		1	596582	09/16/21 00:58	LMH	TAL BUF
Total/NA	Prep	3020A			596162	09/14/21 08:50	ADM	TAL BUF
Total/NA	Analysis	6020B		1	596436	09/14/21 19:51	KMP	TAL BUF
Total/NA	Prep	7470A			596108	09/13/21 13:51	BMB	TAL BUF
Total/NA	Analysis	7470A		1	596164	09/13/21 17:09	BMB	TAL BUF
Total/NA	Analysis	300.0		1	596103	09/14/21 01:09	IMZ	TAL BUF
Total/NA	Analysis	SM 2540C		1	595865	09/10/21 10:14	JGO	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	595924	09/10/21 12:30	JPS	TAL BUF
Total/NA	Prep	PrecSep-21			526912	09/14/21 09:45	MJ	TAL SL
Total/NA	Analysis	903.0		1	531971	10/15/21 09:51	ANW	TAL SL
Total/NA	Prep	PrecSep_0			526923	09/14/21 11:15	MJ	TAL SL
Total/NA	Analysis	904.0		1	531958	10/14/21 12:54	FLC	TAL SL

Lab Chronicle

Client: Waste Connections, Inc.
Job ID: 480-189324-2
Project/Site: SKB Lansing - CCR Groundwater

Client Sample ID: MW-4-CCR
Lab Sample ID: 480-189324-8
Date Collected: 09/08/21 11:35
Matrix: Water
Date Received: 09/09/21 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3005A			596372	09/15/21 11:07	ADM	TAL BUF
Total/NA	Analysis	6010D		1	596582	09/16/21 01:16	LMH	TAL BUF
Total/NA	Prep	3020A			596162	09/14/21 08:50	ADM	TAL BUF
Total/NA	Analysis	6020B		1	596436	09/14/21 20:06	KMP	TAL BUF
Total/NA	Prep	7470A			596108	09/13/21 13:51	BMB	TAL BUF
Total/NA	Analysis	7470A		1	596164	09/13/21 17:17	BMB	TAL BUF
Total/NA	Analysis	300.0		5	596103	09/14/21 02:41	IMZ	TAL BUF
Total/NA	Analysis	SM 2540C		1	595865	09/10/21 10:14	JGO	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	595924	09/10/21 12:31	JPS	TAL BUF
Total/NA	Prep	PrecSep-21			526912	09/14/21 09:45	MJ	TAL SL
Total/NA	Analysis	903.0		1	531971	10/15/21 09:39	ANW	TAL SL
Total/NA	Prep	PrecSep_0			526923	09/14/21 11:15	MJ	TAL SL
Total/NA	Analysis	904.0		1	531911	10/14/21 13:00	FLC	TAL SL

Client Sample ID: Duplicate-CCR
Lab Sample ID: 480-189324-9
Date Collected: 09/08/21 00:00
Matrix: Water
Date Received: 09/09/21 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3005A			596372	09/15/21 11:07	ADM	TAL BUF
Total/NA	Analysis	6010D		1	596582	09/16/21 01:31	LMH	TAL BUF
Total/NA	Prep	3020A			596162	09/14/21 08:50	ADM	TAL BUF
Total/NA	Analysis	6020B		1	596436	09/14/21 20:17	KMP	TAL BUF
Total/NA	Prep	7470A			596108	09/13/21 13:51	BMB	TAL BUF
Total/NA	Analysis	7470A		1	596164	09/13/21 17:18	BMB	TAL BUF
Total/NA	Analysis	300.0		1	596103	09/14/21 03:00	IMZ	TAL BUF
Total/NA	Analysis	SM 2540C		1	595865	09/10/21 10:14	JGO	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	595924	09/10/21 12:34	JPS	TAL BUF
Total/NA	Prep	PrecSep-21			526912	09/14/21 09:45	MJ	TAL SL
Total/NA	Analysis	903.0		1	531971	10/15/21 09:39	ANW	TAL SL
Total/NA	Prep	PrecSep_0			526923	09/14/21 11:15	MJ	TAL SL
Total/NA	Analysis	904.0		1	531911	10/14/21 13:00	FLC	TAL SL

Client Sample ID: FIELD BLANK-CCR
Lab Sample ID: 480-189324-10
Date Collected: 09/08/21 11:40
Matrix: Water
Date Received: 09/09/21 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3005A			596372	09/15/21 11:07	ADM	TAL BUF
Total/NA	Analysis	6010D		1	596582	09/16/21 01:35	LMH	TAL BUF
Total/NA	Prep	3020A			596162	09/14/21 08:50	ADM	TAL BUF
Total/NA	Analysis	6020B		1	596436	09/14/21 20:20	KMP	TAL BUF
Total/NA	Prep	7470A			596108	09/13/21 13:51	BMB	TAL BUF
Total/NA	Analysis	7470A		1	596164	09/13/21 17:20	BMB	TAL BUF

Lab Chronicle

Client: Waste Connections, Inc.
Job ID: 480-189324-2
Project/Site: SKB Lansing - CCR Groundwater

Client Sample ID: FIELD BLANK-CCR
Lab Sample ID: 480-189324-10
Date Collected: 09/08/21 11:40
Matrix: Water
Date Received: 09/09/21 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	300.0		1	596103	09/14/21 03:18	IMZ	TAL BUF
Total/NA	Analysis	SM 2540C		1	595865	09/10/21 10:14	JGO	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	595924	09/10/21 12:35	JPS	TAL BUF
Total/NA	Prep	PrecSep-21			526912	09/14/21 09:45	MJ	TAL SL
Total/NA	Analysis	903.0		1	531971	10/15/21 09:40	ANW	TAL SL
Total/NA	Prep	PrecSep_0			526923	09/14/21 11:15	MJ	TAL SL
Total/NA	Analysis	904.0		1	531911	10/14/21 13:00	FLC	TAL SL

Client Sample ID: Equipment Blank-CCR
Lab Sample ID: 480-189324-11
Date Collected: 09/08/21 11:45
Matrix: Water
Date Received: 09/09/21 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3005A			596372	09/15/21 11:07	ADM	TAL BUF
Total/NA	Analysis	6010D		1	596582	09/16/21 01:38	LMH	TAL BUF
Total/NA	Prep	3020A			596162	09/14/21 08:50	ADM	TAL BUF
Total/NA	Analysis	6020B		1	596436	09/14/21 20:23	KMP	TAL BUF
Total/NA	Prep	7470A			596108	09/13/21 13:51	BMB	TAL BUF
Total/NA	Analysis	7470A		1	596164	09/13/21 17:21	BMB	TAL BUF
Total/NA	Analysis	300.0		1	596103	09/14/21 03:37	IMZ	TAL BUF
Total/NA	Analysis	SM 2540C		1	595865	09/10/21 10:14	JGO	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	595924	09/10/21 12:36	JPS	TAL BUF
Total/NA	Prep	PrecSep-21			526912	09/14/21 09:45	MJ	TAL SL
Total/NA	Analysis	903.0		1	531971	10/15/21 09:40	ANW	TAL SL
Total/NA	Prep	PrecSep_0			526923	09/14/21 11:15	MJ	TAL SL
Total/NA	Analysis	904.0		1	531911	10/14/21 13:00	FLC	TAL SL

Laboratory References:

TAL BUF = Eurofins TestAmerica, Buffalo, 10 Hazelwood Drive, Amherst, NY 14228-2298, TEL (716)691-2600

TAL SL = Eurofins TestAmerica, St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

Accreditation/Certification Summary

Client: Waste Connections, Inc.
Job ID: 480-189324-2
Project/Site: SKB Lansing - CCR Groundwater

Laboratory: Eurofins TestAmerica, Buffalo

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Arkansas DEQ	State	88-0686	07-06-22
Connecticut	State	PH-0568	09-30-22
Florida	NELAP	E87672	06-30-22
Georgia	State	10026 (NY)	03-31-22
Georgia	State Program	N/A	03-31-09 *
Georgia (DW)	State	956	03-31-22
Illinois	NELAP	200003	10-01-21
Iowa	State	374	03-01-23
Iowa	State Program	374	03-01-09 *
Kansas	NELAP	E-10187	02-02-22
Kentucky (DW)	State	90029	12-31-21
Kentucky (UST)	State	30	04-01-22
Kentucky (WW)	State	KY90029	01-01-22
Louisiana	NELAP	02031	06-30-22
Maine	State	NY00044	12-05-22
Maryland	State	294	04-02-22
Massachusetts	State	M-NY044	06-30-22
Michigan	State	9937	04-01-22
Michigan	State Program	9937	04-01-09 *
Minnesota	NELAP	1524384	01-01-22
New Hampshire	NELAP	2973	09-11-19 *
New Hampshire	NELAP	2337	11-19-21
New Jersey	NELAP	NY455	10-06-21
New York	NELAP	10026	04-01-22
Oregon	NELAP	NY200003	06-12-22
Pennsylvania	NELAP	68-00281	07-31-22
Rhode Island	State	LAO00328	12-31-21
Tennessee	State	02970	03-31-22
Texas	NELAP	T104704412-18-10	07-31-22
USDA	US Federal Programs	P330-18-00039	03-25-24
Virginia	NELAP	460185	09-14-22
Washington	State	C784	02-10-22
Wisconsin	State	998310390	08-31-22

Laboratory: Eurofins TestAmerica, St. Louis

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Alaska (UST)	State	20-001	05-06-22
ANAB	Dept. of Defense ELAP	L2305	04-06-22
ANAB	Dept. of Energy	L2305.01	04-06-22
ANAB	ISO/IEC 17025	L2305	04-06-22
Arizona	State	AZ0813	12-08-21
California	Los Angeles County Sanitation Districts	10259	06-30-22
California	State	2886	06-30-21 *
Connecticut	State	PH-0241	03-31-23
Florida	NELAP	E87689	06-30-22
HI - RadChem Recognition	State	n/a	06-30-22
Illinois	NELAP	200023	10-19-21
Iowa	State	373	12-01-22

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Accreditation/Certification Summary

Client: Waste Connections, Inc.
Job ID: 480-189324-2
Project/Site: SKB Lansing - CCR Groundwater

Laboratory: Eurofins TestAmerica, St. Louis (Continued)

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Kansas	NELAP	E-10236	10-31-21
Kentucky (DW)	State	KY90125	01-01-22
Kentucky (WW)	State	KY90125 (Permit KY0004049)	12-31-21
Louisiana	NELAP	04080	06-30-22
Louisiana (DW)	State	LA011	12-31-21
Maryland	State	310	09-30-22
MI - RadChem Recognition	State	9005	06-30-22
Missouri	State	780	06-30-22
Nevada	State	MO000542020-1	07-31-22
New Jersey	NELAP	MO002	06-30-22
New York	NELAP	11616	04-01-22
North Dakota	State	R-207	06-30-22
NRC	NRC	24-24817-01	12-31-22
Oklahoma	State	9997	08-31-22
Oregon	NELAP	4157	09-01-22
Pennsylvania	NELAP	68-00540	03-01-22
South Carolina	State	85002001	06-30-22
Texas	NELAP	T104704193	07-31-22
US Fish & Wildlife	US Federal Programs	058448	07-31-22
USDA	US Federal Programs	P330-17-00028	03-11-23
Utah	NELAP	MO000542021-14	08-01-22
Virginia	NELAP	10310	06-14-22
Washington	State	C592	08-30-22
West Virginia DEP	State	381	10-31-22

Method Summary

Client: Waste Connections, Inc.
Project/Site: SKB Lansing - CCR Groundwater

Job ID: 480-189324-2

Method	Method Description	Protocol	Laboratory
6010D	Metals (ICP)	SW846	TAL BUF
6020B	Metals (ICP/MS)	SW846	TAL BUF
7470A	Mercury (CVAA)	SW846	TAL BUF
300.0	Anions, Ion Chromatography	MCAWW	TAL BUF
SM 2540C	Solids, Total Dissolved (TDS)	SM	TAL BUF
SM 4500 H+ B	pH	SM	TAL BUF
903.0	Radium-226 (GFPC)	EPA	TAL SL
904.0	Radium-228 (GFPC)	EPA	TAL SL
3005A	Preparation, Total Metals	SW846	TAL BUF
3020A	Preparation, Total Metals	SW846	TAL BUF
7470A	Preparation, Mercury	SW846	TAL BUF
PrecSep_0	Preparation, Precipitate Separation	None	TAL SL
PrecSep-21	Preparation, Precipitate Separation (21-Day In-Growth)	None	TAL SL

Protocol References:

EPA = US Environmental Protection Agency

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.

None = None

SM = "Standard Methods For The Examination Of Water And Wastewater"

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL BUF = Eurofins TestAmerica, Buffalo, 10 Hazelwood Drive, Amherst, NY 14228-2298, TEL (716)691-2600

TAL SL = Eurofins TestAmerica, St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

Sample Summary

Client: Waste Connections, Inc.
Project/Site: SKB Lansing - CCR Groundwater

Job ID: 480-189324-2

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
480-189324-1	MW-1-CCR	Water	09/08/21 08:40	09/09/21 10:00
480-189324-2	MW-1RD-CCR	Water	09/08/21 08:45	09/09/21 10:00
480-189324-3	MW-2R-CCR	Water	09/08/21 09:30	09/09/21 10:00
480-189324-4	MW-2RD-CCR	Water	09/08/21 09:35	09/09/21 10:00
480-189324-5	MW-3-CCR	Water	09/08/21 10:20	09/09/21 10:00
480-189324-6	MW-3R-CCR	Water	09/08/21 10:25	09/09/21 10:00
480-189324-7	MW-3RD-CCR	Water	09/08/21 10:40	09/09/21 10:00
480-189324-8	MW-4-CCR	Water	09/08/21 11:35	09/09/21 10:00
480-189324-9	Duplicate-CCR	Water	09/08/21 00:00	09/09/21 10:00
480-189324-10	FIELD BLANK-CCR	Water	09/08/21 11:40	09/09/21 10:00
480-189324-11	Equipment Blank-CCR	Water	09/08/21 11:45	09/09/21 10:00

Eurofins TestAmerica, Buffalo
10 Hazelwood Drive
Amherst, NY 14228-2298
Phone: 716-691-2600 Fax: 716-691-7991

Chain of Custody Record

eurofins | Environment Testing America

Client Information	Sampler: N. Schlegel	Lab PM: VanDette, Ryan T	Carrier Tracking No(s):	COC No: 480-164137-22509.1
Client Contact: Heath Yearling	Phone: 651-792-1061	E-Mail: Ryan.VanDette@Eurofinset.com	State of Origin: MN	Page: Page 1 of 2
Company: Waste Connections, Inc.	PWSID:			Job #:
Address: 13425 Courthouse Blvd	Due Date Requested:			
City: Rosemount	TAT Requested (days): Standard			
State, Zip: MN, 55068	Compliance Project: Δ Yes Δ No			
Phone:	PO #: Purchase Order Requested			
Email: heathy@wasteconnections.com	WO #:			
Project Name: SKB Lansing/ Event Desc: CCR Groundwater	Project #: 48013603			
Site: Minnesota	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2O3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - pH 4-5
L - EDA	Z - other (specify)

Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	300.0_28D - Cl/F/SO4	6010D, 6020B, 7470A	2540C_Calcd - Total Dissolved Solids	SM4500_H+ - pH	904.0 - Standard Target List	903.0 - Standard Target List	Total Number of containers	Special Instructions/Note:
			Preservation Code:				N	D	N	N	D	D		
MW-1-CCR	9/8/21	8:40	6	Water			X	X	X	X	X	X		
MW-3-CCR		10:20		Water										
Duplicate-CCR		—		Water										
MS -CCR		10:45		Water										
MSD -CCR		10:50		Wate										
MW-1RD-CCR		9:45		Wate										
MW-2RD-CCR		9:35		Wate										
MW-2R-CCR		9:30		Wate										
MW-3RD-CCR		10:40		Water										
MW-3R-CCR		10:25		Water										
MW-4-CCR		11:35		Water										

Appendix III
- all analytes
Appendix III
- arsenic
- barium
- chromium
- cobalt
- lithium, molybdenum, selenium
- Rad 226/228

480-189324 Chain of Custody

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
1		9/8/21 1400	GES		9-8-21 1400	Eurofins
2		9-8-21 1742400	Eurofins		9/9/21 1000	TAB
3	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:
		#1 2.8, 3.1, 2.4, 2.6

Ver: 06/08/2021

Eurofins TestAmerica, Buffalo
10 Hazelwood Drive
Amherst, NY 14228-2298
Phone: 716-691-2600 Fax: 716-691-7991

Chain of Custody Record

TestAmerica Minneapolis SC
213

eurofins | Environment Testing America

Client Information	Sampler: M Schlegel	Lab PM: VanDette, Ryan T	Carrier Tracking No(s):	COC No: 480-164137-22509.2
Client Contact: Heath Yearling	Phone: 651-792-6055	E-Mail: Ryan.VanDette@Eurofinset.com	State of Origin: MN	Page: Page 2 of 2
Company: Waste Connections, Inc.	PWSID:			Job #:
Address: 13425 Courthouse Blvd	Due Date Requested:			
City: Rosemount	TAT Requested (days): standard			
State, Zip: MN, 55068	Compliance Project: Δ Yes Δ No			
Phone:	PO #: Purchase Order Requested			
Email: heathy@wasteconnections.com	WO #:			
Project Name: SKB Lansing/ Event Desc: CCR Groundwater	Project #: 48013603			
Site: Minnesota	SSOW#:			

Analysis Requested

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	300.0_28D - Cl/F/SO4	6010D, 6020B, 7470A	2540C_Calcd - Total Dissolved Solids	SM4500_H+ - pH	904.0 - Standard Target List	903.0 - Standard Target List	Total Number of containers	Special Instructions/Note:
			Preservation Code:				N	D	N	N	D	D		
Field Blank - CCR	9/8/21	11:40	G	Water			X	X	X	X	X	X		Appendix III - all analytes; Appendix IV - arsenic, barium, chromium, cobalt, lithium, molybdenum, selenium
Equipment Blank - CCR	↓	11:45	↓	Water			↓	↓	↓	↓	↓	↓		

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2O3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - pH 4-5
L - EDA	Z - other (specify)

Other:

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
[signature]	9/8/21 1400	ES	[signature]	9-8-21 1400	[signature]
Relinquished by: [signature]	Date/Time: 9-8-21 1700	Company [signature]	Received by: [signature]	Date/Time: 9/9/21 1000	Company TAB
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

Ver: 06/08/2021

Login Sample Receipt Checklist

Client: Waste Connections, Inc.

Job Number: 480-189324-1

Login Number: 189324
List Number: 1
Creator: Sabuda, Brendan D

List Source: Eurofins TestAmerica, Buffalo

Question	Answer	Comment
Radioactivity either was not measured or, if measured, is at or below background	True	
The cooler's custody seal, if present, is intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	2.8 3.1 2.4 2.6 #1 ICE
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the sample IDs on the containers and the COC.	True	
Samples are received within Holding Time (Excluding tests with immediate HTs)..	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	True	
If necessary, staff have been informed of any short hold time or quick TAT needs	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Sampling Company provided.	True	
Samples received within 48 hours of sampling.	True	
Samples requiring field filtration have been filtered in the field.	True	
Chlorine Residual checked.	True	

Appendix C – Statistical Evaluation Data

1			Background Statistics for Uncensored Full Data Sets								
2	User Selected Options										
3	Date/Time of Computation		ProUCL 5.111/24/2021 3:29:16 PM								
4	From File		\\svrrmt101-vm2\Minn-01\Projects\SKB Environmental\Lansing Facility\Statistics\Working\Fall 2021 repor								
5	Full Precision		OFF								
6	Confidence Coefficient		95%								
7	Coverage		95%								
8	New or Future K Observations		1								
9	Number of Bootstrap Operations		2000								
10											
11	|Arsenic|T^										
12											
13	General Statistics										
14				Total Number of Observations	90			Number of Distinct Observations	29		
15				Minimum	8.6000E-4			First Quartile	0.001		
16				Second Largest	0.015			Median	0.0019		
17				Maximum	0.015			Third Quartile	0.003		
18				Mean	0.00319			SD	0.00386		
19				Coefficient of Variation	1.211			Skewness	2.563		
20				Mean of logged Data	-6.145			SD of logged Data	0.788		
21											
22				Critical Values for Background Threshold Values (BTVs)							
23				Tolerance Factor K (For UTL)	1.94			d2max (for USL)	3.173		
24											
25				Normal GOF Test							
26				Shapiro Wilk Test Statistic	0.548			Normal GOF Test			
27				5% Shapiro Wilk P Value	0			Data Not Normal at 5% Significance Level			
28				Lilliefors Test Statistic	0.277			Lilliefors GOF Test			
29				5% Lilliefors Critical Value	0.0936			Data Not Normal at 5% Significance Level			
30				Data Not Normal at 5% Significance Level							
31											
32				Background Statistics Assuming Normal Distribution							
33			95% UTL with	95% Coverage	0.0107			90% Percentile (z)	0.00813		
34				95% UPL (t)	0.00964			95% Percentile (z)	0.00953		
35				95% USL	0.0154			99% Percentile (z)	0.0122		
36											
37				Gamma GOF Test							
38				A-D Test Statistic	7.071			Anderson-Darling Gamma GOF Test			
39				5% A-D Critical Value	0.774			Data Not Gamma Distributed at 5% Significance Level			
40				K-S Test Statistic	0.187			Kolmogorov-Smirnov Gamma GOF Test			
41				5% K-S Critical Value	0.0961			Data Not Gamma Distributed at 5% Significance Level			
42				Data Not Gamma Distributed at 5% Significance Level							
43											
44				Gamma Statistics							
45				k hat (MLE)	1.404			k star (bias corrected MLE)	1.365		
46				Theta hat (MLE)	0.00227			Theta star (bias corrected MLE)	0.00234		
47				nu hat (MLE)	252.8			nu star (bias corrected)	245.7		
48				MLE Mean (bias corrected)	0.00319			MLE Sd (bias corrected)	0.00273		
49											
50				Background Statistics Assuming Gamma Distribution							
51			95% Wilson Hilferty (WH) Approx. Gamma UPL		0.00831			90% Percentile	0.0068		
52			95% Hawkins Wixley (HW) Approx. Gamma UPL		0.0082			95% Percentile	0.00857		
53			95% WH Approx. Gamma UTL with	95% Coverage	0.00975			99% Percentile	0.0126		

54				95% HW Approx. Gamma UTL with	95% Coverage	0.00972					
55					95% WH USL	0.0185				95% HW USL	0.0195
56											
57					Lognormal GOF Test						
58					Shapiro Wilk Test Statistic	0.83	Shapiro Wilk Lognormal GOF Test				
59					5% Shapiro Wilk P Value	5.107E-15	Data Not Lognormal at 5% Significance Level				
60					Lilliefors Test Statistic	0.155	Lilliefors Lognormal GOF Test				
61					5% Lilliefors Critical Value	0.0936	Data Not Lognormal at 5% Significance Level				
62					Data Not Lognormal at 5% Significance Level						
63											
64					Background Statistics assuming Lognormal Distribution						
65				95% UTL with	95% Coverage	0.00989				90% Percentile (z)	0.00588
66					95% UPL (t)	0.008				95% Percentile (z)	0.00783
67					95% USL	0.0261				99% Percentile (z)	0.0134
68											
69					Nonparametric Distribution Free Background Statistics						
70					Data do not follow a Discernible Distribution (0.05)						
71											
72					Nonparametric Upper Limits for Background Threshold Values						
73					Order of Statistic, r	88				95% UTL with 95% Coverage	0.015
74					Approx, f used to compute achieved CC	1.544	pproximate Actual Confidence Coefficient achieved by UTL				0.834
75							Approximate Sample Size needed to achieve specified CC				124
76				95% Percentile Bootstrap UTL with	95% Coverage	0.015				95% BCA Bootstrap UTL with 95% Coverage	0.015
77					95% UPL	0.015				90% Percentile	0.00445
78					90% Chebyshev UPL	0.0148				95% Percentile	0.015
79					95% Chebyshev UPL	0.0201				99% Percentile	0.015
80					95% USL	0.015					
81											
82					Note: The use of USL tends to yield a conservative estimate of BTV, especially when the sample size starts exceeding 20.						
83					Therefore, one may use USL to estimate a BTV only when the data set represents a background data set free of outliers						
84					and consists of observations collected from clean unimpacted locations.						
85					The use of USL tends to provide a balance between false positives and false negatives provided the data						
86					represents a background data set and when many onsite observations need to be compared with the BTV.						
87											
88	|Barium|T^										
89											
90	General Statistics										
91					Total Number of Observations	90				Number of Distinct Observations	31
92					Minimum	0.002				First Quartile	0.163
93					Second Largest	0.6				Median	0.2
94					Maximum	0.6				Third Quartile	0.25
95					Mean	0.239				SD	0.136
96					Coefficient of Variation	0.57				Skewness	1.611
97					Mean of logged Data	-1.594				SD of logged Data	0.688
98											
99					Critical Values for Background Threshold Values (BTVs)						
100					Tolerance Factor K (For UTL)	1.94				d2max (for USL)	3.173
101											
102					Normal GOF Test						
103					Shapiro Wilk Test Statistic	0.769	Normal GOF Test				
104					5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level				
105					Lilliefors Test Statistic	0.232	Lilliefors GOF Test				
106					5% Lilliefors Critical Value	0.0936	Data Not Normal at 5% Significance Level				

	A	B	C	D	E	F	G	H	I	J	K	L
107	Data Not Normal at 5% Significance Level											
108												
109	Background Statistics Assuming Normal Distribution											
110				95% UTL with	95% Coverage	0.504				90% Percentile (z)		0.414
111					95% UPL (t)	0.467				95% Percentile (z)		0.463
112					95% USL	0.672				99% Percentile (z)		0.556
113												
114	Gamma GOF Test											
115					A-D Test Statistic	4.121	Anderson-Darling Gamma GOF Test					
116					5% A-D Critical Value	0.758	Data Not Gamma Distributed at 5% Significance Level					
117					K-S Test Statistic	0.164	Kolmogorov-Smirnov Gamma GOF Test					
118					5% K-S Critical Value	0.0948	Data Not Gamma Distributed at 5% Significance Level					
119	Data Not Gamma Distributed at 5% Significance Level											
120												
121	Gamma Statistics											
122					k hat (MLE)	3.225				k star (bias corrected MLE)		3.125
123					Theta hat (MLE)	0.0741				Theta star (bias corrected MLE)		0.0765
124					nu hat (MLE)	580.4				nu star (bias corrected)		562.4
125					MLE Mean (bias corrected)	0.239				MLE Sd (bias corrected)		0.135
126												
127	Background Statistics Assuming Gamma Distribution											
128				95% Wilson Hilferty (WH) Approx. Gamma UPL		0.49				90% Percentile		0.42
129				95% Hawkins Wixley (HW) Approx. Gamma UPL		0.506				95% Percentile		0.496
130				95% WH Approx. Gamma UTL with	95% Coverage	0.549				99% Percentile		0.659
131				95% HW Approx. Gamma UTL with	95% Coverage	0.573						
132					95% WH USL	0.878				95% HW USL		0.963
133												
134	Lognormal GOF Test											
135					Shapiro Wilk Test Statistic	0.744	Shapiro Wilk Lognormal GOF Test					
136					5% Shapiro Wilk P Value	0	Data Not Lognormal at 5% Significance Level					
137					Lilliefors Test Statistic	0.209	Lilliefors Lognormal GOF Test					
138					5% Lilliefors Critical Value	0.0936	Data Not Lognormal at 5% Significance Level					
139	Data Not Lognormal at 5% Significance Level											
140												
141	Background Statistics assuming Lognormal Distribution											
142				95% UTL with	95% Coverage	0.771				90% Percentile (z)		0.49
143					95% UPL (t)	0.641				95% Percentile (z)		0.629
144					95% USL	1.8				99% Percentile (z)		1.006
145												
146	Nonparametric Distribution Free Background Statistics											
147	Data do not follow a Discernible Distribution (0.05)											
148												
149	Nonparametric Upper Limits for Background Threshold Values											
150					Order of Statistic, r	88				95% UTL with	95% Coverage	0.6
151					Approx, f used to compute achieved CC	1.544				pproximate Actual Confidence Coefficient achieved by UTL		0.834
152										Approximate Sample Size needed to achieve specified CC		124
153				95% Percentile Bootstrap UTL with	95% Coverage	0.6				95% BCA Bootstrap UTL with	95% Coverage	0.596
154					95% UPL	0.585				90% Percentile		0.54
155					90% Chebyshev UPL	0.65				95% Percentile		0.576
156					95% Chebyshev UPL	0.836				99% Percentile		0.6
157					95% USL	0.6						
158												
159	Note: The use of USL tends to yield a conservative estimate of BTV, especially when the sample size starts exceeding 20.											

Therefore, one may use USL to estimate a BTV only when the data set represents a background data set free of outliers and consists of observations collected from clean unimpacted locations.

The use of USL tends to provide a balance between false positives and false negatives provided the data represents a background data set and when many onsite observations need to be compared with the BTV.

|Boron|T^

General Statistics

Total Number of Observations	98	Number of Distinct Observations	63
Minimum	0.012	First Quartile	0.0303
Second Largest	2.7	Median	0.051
Maximum	3.2	Third Quartile	0.28
Mean	0.247	SD	0.512
Coefficient of Variation	2.072	Skewness	4.096
Mean of logged Data	-2.474	SD of logged Data	1.359

Critical Values for Background Threshold Values (BTVs)

Tolerance Factor K (For UTL)	1.927	d2max (for USL)	3.203

Normal GOF Test

Shapiro Wilk Test Statistic	0.485	Normal GOF Test	
5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.323	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0897	Data Not Normal at 5% Significance Level	

Data Not Normal at 5% Significance Level

Background Statistics Assuming Normal Distribution

95% UTL with 95% Coverage	1.233	90% Percentile (z)	0.903
95% UPL (t)	1.101	95% Percentile (z)	1.089
95% USL	1.886	99% Percentile (z)	1.438

Gamma GOF Test

A-D Test Statistic	6.544	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.811	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.218	Kolmogorov-Smirnov Gamma GOF Test	
5% K-S Critical Value	0.0951	Data Not Gamma Distributed at 5% Significance Level	

Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	0.578	k star (bias corrected MLE)	0.567
Theta hat (MLE)	0.428	Theta star (bias corrected MLE)	0.436
nu hat (MLE)	113.2	nu star (bias corrected)	111.1
MLE Mean (bias corrected)	0.247	MLE Sd (bias corrected)	0.328

Background Statistics Assuming Gamma Distribution

95% Wilson Hilferty (WH) Approx. Gamma UPL	0.799	90% Percentile	0.651
95% Hawkins Wixley (HW) Approx. Gamma UPL	0.786	95% Percentile	0.908
95% WH Approx. Gamma UTL with 95% Coverage	0.986	99% Percentile	1.532
95% HW Approx. Gamma UTL with 95% Coverage	0.993		
95% WH USL	2.352	95% HW USL	2.684

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.887	Shapiro Wilk Lognormal GOF Test	

213				5% Shapiro Wilk P Value	3.661E-10	Data Not Lognormal at 5% Significance Level					
214				Lilliefors Test Statistic	0.169	Lilliefors Lognormal GOF Test					
215				5% Lilliefors Critical Value	0.0897	Data Not Lognormal at 5% Significance Level					
216				Data Not Lognormal at 5% Significance Level							
217											
218				Background Statistics assuming Lognormal Distribution							
219				95% UTL with 95% Coverage	1.155	90% Percentile (z)	0.481				
220				95% UPL (t)	0.814	95% Percentile (z)	0.788				
221				95% USL	6.544	99% Percentile (z)	1.989				
222											
223				Nonparametric Distribution Free Background Statistics							
224				Data do not follow a Discernible Distribution (0.05)							
225											
226				Nonparametric Upper Limits for Background Threshold Values							
227				Order of Statistic, r	96	95% UTL with 95% Coverage	2.4				
228				Approx, f used to compute achieved CC	1.684	pproximate Actual Confidence Coefficient achieved by UTL	0.873				
229						Approximate Sample Size needed to achieve specified CC	124				
230				95% Percentile Bootstrap UTL with 95% Coverage	2.4	95% BCA Bootstrap UTL with 95% Coverage	2.4				
231				95% UPL	1.105	90% Percentile	0.54				
232				90% Chebyshev UPL	1.791	95% Percentile	0.947				
233				95% Chebyshev UPL	2.49	99% Percentile	2.715				
234				95% USL	3.2						
235											
236				Note: The use of USL tends to yield a conservative estimate of BTV, especially when the sample size starts exceeding 20.							
237				Therefore, one may use USL to estimate a BTV only when the data set represents a background data set free of outliers							
238				and consists of observations collected from clean unimpacted locations.							
239				The use of USL tends to provide a balance between false positives and false negatives provided the data							
240				represents a background data set and when many onsite observations need to be compared with the BTV.							
241											
242	|Calcium|T^										
243											
244	General Statistics										
245				Total Number of Observations	100	Number of Distinct Observations	73				
246				Minimum	0.5	First Quartile	122				
247				Second Largest	265	Median	140.5				
248				Maximum	271	Third Quartile	207				
249				Mean	154	SD	61.25				
250				Coefficient of Variation	0.398	Skewness	-0.315				
251				Mean of logged Data	4.827	SD of logged Data	1.049				
252											
253				Critical Values for Background Threshold Values (BTVs)							
254				Tolerance Factor K (For UTL)	1.923	d2max (for USL)	3.21				
255											
256				Normal GOF Test							
257				Shapiro Wilk Test Statistic	0.944	Normal GOF Test					
258				5% Shapiro Wilk P Value	7.2158E-4	Data Not Normal at 5% Significance Level					
259				Lilliefors Test Statistic	0.1	Lilliefors GOF Test					
260				5% Lilliefors Critical Value	0.0889	Data Not Normal at 5% Significance Level					
261				Data Not Normal at 5% Significance Level							
262											
263				Background Statistics Assuming Normal Distribution							
264				95% UTL with 95% Coverage	271.8	90% Percentile (z)	232.5				
265				95% UPL (t)	256.2	95% Percentile (z)	254.8				

266				95% USL	350.6				99% Percentile (z)	296.5
267											
268					Gamma GOF Test						
269				A-D Test Statistic	6.468	Anderson-Darling Gamma GOF Test					
270				5% A-D Critical Value	0.762	Data Not Gamma Distributed at 5% Significance Level					
271				K-S Test Statistic	0.219	Kolmogorov-Smirnov Gamma GOF Test					
272				5% K-S Critical Value	0.0903	Data Not Gamma Distributed at 5% Significance Level					
273					Data Not Gamma Distributed at 5% Significance Level						
274											
275					Gamma Statistics						
276				k hat (MLE)	2.53				k star (bias corrected MLE)	2.461	
277				Theta hat (MLE)	60.88				Theta star (bias corrected MLE)	62.6	
278				nu hat (MLE)	506				nu star (bias corrected)	492.2	
279				MLE Mean (bias corrected)	154				MLE Sd (bias corrected)	98.2	
280											
281					Background Statistics Assuming Gamma Distribution						
282				95% Wilson Hilferty (WH) Approx. Gamma UPL	328.9				90% Percentile	285.6	
283				95% Hawkins Wixley (HW) Approx. Gamma UPL	362.7				95% Percentile	342.7	
284				95% WH Approx. Gamma UTL with 95% Coverage	367.5				99% Percentile	467.9	
285				95% HW Approx. Gamma UTL with 95% Coverage	412.7						
286				95% WH USL	609.1				95% HW USL	748.9	
287											
288					Lognormal GOF Test						
289				Shapiro Wilk Test Statistic	0.494	Shapiro Wilk Lognormal GOF Test					
290				5% Shapiro Wilk P Value	0	Data Not Lognormal at 5% Significance Level					
291				Lilliefors Test Statistic	0.272	Lilliefors Lognormal GOF Test					
292				5% Lilliefors Critical Value	0.0889	Data Not Lognormal at 5% Significance Level					
293					Data Not Lognormal at 5% Significance Level						
294											
295					Background Statistics assuming Lognormal Distribution						
296				95% UTL with 95% Coverage	939.1				90% Percentile (z)	478.9	
297				95% UPL (t)	718.8				95% Percentile (z)	701.1	
298				95% USL	3620				99% Percentile (z)	1433	
299											
300					Nonparametric Distribution Free Background Statistics						
301					Data do not follow a Discernible Distribution (0.05)						
302											
303					Nonparametric Upper Limits for Background Threshold Values						
304				Order of Statistic, r	98				95% UTL with 95% Coverage	258	
305				Approx, f used to compute achieved CC	1.719	pproximate Actual Confidence Coefficient achieved by UTL				0.882	
306						Approximate Sample Size needed to achieve specified CC				124	
307				95% Percentile Bootstrap UTL with 95% Coverage	258				95% BCA Bootstrap UTL with 95% Coverage	258	
308				95% UPL	240.9				90% Percentile	226	
309				90% Chebyshev UPL	338.7				95% Percentile	239.1	
310				95% Chebyshev UPL	422.3				99% Percentile	265.1	
311				95% USL	271						
312											
313					Note: The use of USL tends to yield a conservative estimate of BTV, especially when the sample size starts exceeding 20.						
314					Therefore, one may use USL to estimate a BTV only when the data set represents a background data set free of outliers						
315					and consists of observations collected from clean unimpacted locations.						
316					The use of USL tends to provide a balance between false positives and false negatives provided the data						
317					represents a background data set and when many onsite observations need to be compared with the BTV.						
318											

|Chloride|T^

General Statistics

Total Number of Observations	132	Number of Distinct Observations	113
Minimum	0.5	First Quartile	20
Second Largest	120	Median	28.4
Maximum	125	Third Quartile	39.65
Mean	37.59	SD	26.83
Coefficient of Variation	0.714	Skewness	1.581
Mean of logged Data	3.375	SD of logged Data	0.839

Critical Values for Background Threshold Values (BTVs)

Tolerance Factor K (For UTL)	1.884	d2max (for USL)	3.302

Normal GOF Test

Shapiro Wilk Test Statistic	0.789	Normal GOF Test	
5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.231	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0775	Data Not Normal at 5% Significance Level	

Data Not Normal at 5% Significance Level

Background Statistics Assuming Normal Distribution

95% UTL with 95% Coverage	88.13	90% Percentile (z)	71.97
95% UPL (t)	82.19	95% Percentile (z)	81.71
95% USL	126.2	99% Percentile (z)	100

Gamma GOF Test

A-D Test Statistic	4.44	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.765	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.141	Kolmogorov-Smirnov Gamma GOF Test	
5% K-S Critical Value	0.0822	Data Not Gamma Distributed at 5% Significance Level	

Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	2.138	k star (bias corrected MLE)	2.094
Theta hat (MLE)	17.58	Theta star (bias corrected MLE)	17.95
nu hat (MLE)	564.3	nu star (bias corrected)	552.8
MLE Mean (bias corrected)	37.59	MLE Sd (bias corrected)	25.97

Background Statistics Assuming Gamma Distribution

95% Wilson Hilferty (WH) Approx. Gamma UPL	86.63	90% Percentile	72.32
95% Hawkins Wixley (HW) Approx. Gamma UPL	89.87	95% Percentile	87.87
95% WH Approx. Gamma UTL with 95% Coverage	96.69	99% Percentile	122.3
95% HW Approx. Gamma UTL with 95% Coverage	101.4		
95% WH USL	180.2	95% HW USL	203.7

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.78	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk P Value	0	Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.173	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.0775	Data Not Lognormal at 5% Significance Level	

Data Not Lognormal at 5% Significance Level

372	Background Statistics assuming Lognormal Distribution										
373			95% UTL with	95% Coverage	142			90% Percentile (z)	85.66		
374				95% UPL (t)	118			95% Percentile (z)	116.2		
375				95% USL	466.8			99% Percentile (z)	205.9		
376											
377	Nonparametric Distribution Free Background Statistics										
378	Data do not follow a Discernible Distribution (0.05)										
379											
380	Nonparametric Upper Limits for Background Threshold Values										
381				Order of Statistic, r	129			95% UTL with	95% Coverage	106	
382			Approx, f used to compute achieved CC		1.697			pproximate Actual Confidence Coefficient achieved by UTL		0.901	
383								Approximate Sample Size needed to achieve specified CC		153	
384			95% Percentile Bootstrap UTL with	95% Coverage	106			95% BCA Bootstrap UTL with	95% Coverage	106	
385				95% UPL	101.4			90% Percentile		85.71	
386				90% Chebyshev UPL	118.4			95% Percentile		100.5	
387				95% Chebyshev UPL	155			99% Percentile		118.5	
388				95% USL	125						
389											
390	Note: The use of USL tends to yield a conservative estimate of BTV, especially when the sample size starts exceeding 20.										
391	Therefore, one may use USL to estimate a BTV only when the data set represents a background data set free of outliers										
392	and consists of observations collected from clean unimpacted locations.										
393	The use of USL tends to provide a balance between false positives and false negatives provided the data										
394	represents a background data set and when many onsite observations need to be compared with the BTV.										
395											
396	|Chromium|T^										
397											
398	General Statistics										
399				Total Number of Observations	87			Number of Distinct Observations		2	
400								Number of Missing Observations		3	
401				Minimum	0.004			First Quartile		0.004	
402				Second Largest	0.004			Median		0.004	
403				Maximum	0.0066			Third Quartile		0.004	
404				Mean	0.00403			SD		2.7875E-4	
405				Coefficient of Variation	0.0692			Skewness		9.327	
406				Mean of logged Data	-5.516			SD of logged Data		0.0537	
407											
408	Critical Values for Background Threshold Values (BTVs)										
409				Tolerance Factor K (For UTL)	1.946			d2max (for USL)		3.161	
410											
411	Normal GOF Test										
412				Shapiro Wilk Test Statistic	0.108			Normal GOF Test			
413				5% Shapiro Wilk P Value	0			Data Not Normal at 5% Significance Level			
414				Lilliefors Test Statistic	0.531			Lilliefors GOF Test			
415				5% Lilliefors Critical Value	0.0951			Data Not Normal at 5% Significance Level			
416	Data Not Normal at 5% Significance Level										
417											
418	Background Statistics Assuming Normal Distribution										
419			95% UTL with	95% Coverage	0.00457			90% Percentile (z)		0.00439	
420				95% UPL (t)	0.0045			95% Percentile (z)		0.00449	
421				95% USL	0.00491			99% Percentile (z)		0.00468	
422											
423	Gamma GOF Test										
424				A-D Test Statistic	1.149E+29			Anderson-Darling Gamma GOF Test			

425				5% A-D Critical Value	0.75	Data Not Gamma Distributed at 5% Significance Level					
426				K-S Test Statistic	0.532	Kolmogorov-Smirnov Gamma GOF Test					
427				5% K-S Critical Value	0.0955	Data Not Gamma Distributed at 5% Significance Level					
428				Data Not Gamma Distributed at 5% Significance Level							
429											
430				Gamma Statistics							
431				k hat (MLE)	296.5	k star (bias corrected MLE)	286.3				
432				Theta hat (MLE)	1.3593E-5	Theta star (bias corrected MLE)	1.4078E-5				
433				nu hat (MLE)	51586	nu star (bias corrected)	49808				
434				MLE Mean (bias corrected)	0.00403	MLE Sd (bias corrected)	2.3819E-4				
435											
436				Background Statistics Assuming Gamma Distribution							
437				95% Wilson Hilferty (WH) Approx. Gamma UPL	0.00443	90% Percentile	0.00434				
438				95% Hawkins Wixley (HW) Approx. Gamma UPL	0.00442	95% Percentile	0.00443				
439				95% WH Approx. Gamma UTL with 95% Coverage	0.0045	99% Percentile	0.0046				
440				95% HW Approx. Gamma UTL with 95% Coverage	0.00449						
441				95% WH USL	0.00481	95% HW USL	0.0048				
442											
443				Lognormal GOF Test							
444				Shapiro Wilk Test Statistic	0.108	Shapiro Wilk Lognormal GOF Test					
445				5% Shapiro Wilk P Value	0	Data Not Lognormal at 5% Significance Level					
446				Lilliefors Test Statistic	0.531	Lilliefors Lognormal GOF Test					
447				5% Lilliefors Critical Value	0.0951	Data Not Lognormal at 5% Significance Level					
448				Data Not Lognormal at 5% Significance Level							
449											
450				Background Statistics assuming Lognormal Distribution							
451				95% UTL with 95% Coverage	0.00447	90% Percentile (z)	0.00431				
452				95% UPL (t)	0.0044	95% Percentile (z)	0.00439				
453				95% USL	0.00477	99% Percentile (z)	0.00456				
454											
455				Nonparametric Distribution Free Background Statistics							
456				Data do not follow a Discernible Distribution (0.05)							
457											
458				Nonparametric Upper Limits for Background Threshold Values							
459				Order of Statistic, r	85	95% UTL with 95% Coverage	0.004				
460				Approx, f used to compute achieved CC	1.491	pproximate Actual Confidence Coefficient achieved by UTL	0.816				
461						Approximate Sample Size needed to achieve specified CC	124				
462				95% Percentile Bootstrap UTL with 95% Coverage	N/A	95% BCA Bootstrap UTL with 95% Coverage	N/A				
463				95% UPL	0.004	90% Percentile	0.004				
464				90% Chebyshev UPL	0.00487	95% Percentile	0.004				
465				95% Chebyshev UPL	0.00525	99% Percentile	0.00436				
466				95% USL	0.0066						
467											
468				Note: The use of USL tends to yield a conservative estimate of BTV, especially when the sample size starts exceeding 20.							
469				Therefore, one may use USL to estimate a BTV only when the data set represents a background data set free of outliers							
470				and consists of observations collected from clean unimpacted locations.							
471				The use of USL tends to provide a balance between false positives and false negatives provided the data							
472				represents a background data set and when many onsite observations need to be compared with the BTV.							
473											
474	|Cobalt|T^										
475											
476	General Statistics										
477				Total Number of Observations	90	Number of Distinct Observations	57				

478				Minimum	3.0000E-4			First Quartile	5.8000E-4		
479				Second Largest	0.0069			Median	9.7000E-4		
480				Maximum	0.0076			Third Quartile	0.0025		
481				Mean	0.00184			SD	0.00178		
482				Coefficient of Variation	0.965			Skewness	1.336		
483				Mean of logged Data	-6.742			SD of logged Data	0.956		
484											
485				Critical Values for Background Threshold Values (BTVs)							
486				Tolerance Factor K (For UTL)	1.94			d2max (for USL)	3.173		
487											
488				Normal GOF Test							
489				Shapiro Wilk Test Statistic	0.794			Normal GOF Test			
490				5% Shapiro Wilk P Value	0			Data Not Normal at 5% Significance Level			
491				Lilliefors Test Statistic	0.208			Lilliefors GOF Test			
492				5% Lilliefors Critical Value	0.0936			Data Not Normal at 5% Significance Level			
493				Data Not Normal at 5% Significance Level							
494											
495				Background Statistics Assuming Normal Distribution							
496			95% UTL with	95% Coverage	0.00529			90% Percentile (z)	0.00412		
497				95% UPL (t)	0.00481			95% Percentile (z)	0.00476		
498				95% USL	0.00748			99% Percentile (z)	0.00597		
499											
500				Gamma GOF Test							
501				A-D Test Statistic	2.556			Anderson-Darling Gamma GOF Test			
502				5% A-D Critical Value	0.777			Data Not Gamma Distributed at 5% Significance Level			
503				K-S Test Statistic	0.145			Kolmogorov-Smirnov Gamma GOF Test			
504				5% K-S Critical Value	0.0964			Data Not Gamma Distributed at 5% Significance Level			
505				Data Not Gamma Distributed at 5% Significance Level							
506											
507				Gamma Statistics							
508				k hat (MLE)	1.266			k star (bias corrected MLE)	1.231		
509				Theta hat (MLE)	0.00145			Theta star (bias corrected MLE)	0.0015		
510				nu hat (MLE)	227.9			nu star (bias corrected)	221.6		
511				MLE Mean (bias corrected)	0.00184			MLE Sd (bias corrected)	0.00166		
512											
513				Background Statistics Assuming Gamma Distribution							
514			95% Wilson Hilferty (WH) Approx. Gamma UPL		0.00509			90% Percentile	0.00403		
515			95% Hawkins Wixley (HW) Approx. Gamma UPL		0.00521			95% Percentile	0.00513		
516			95% WH Approx. Gamma UTL with	95% Coverage	0.00601			99% Percentile	0.00765		
517			95% HW Approx. Gamma UTL with	95% Coverage	0.00625						
518				95% WH USL	0.0116			95% HW USL	0.0131		
519											
520				Lognormal GOF Test							
521				Shapiro Wilk Test Statistic	0.918			Shapiro Wilk Lognormal GOF Test			
522				5% Shapiro Wilk P Value	5.1337E-6			Data Not Lognormal at 5% Significance Level			
523				Lilliefors Test Statistic	0.0991			Lilliefors Lognormal GOF Test			
524				5% Lilliefors Critical Value	0.0936			Data Not Lognormal at 5% Significance Level			
525				Data Not Lognormal at 5% Significance Level							
526											
527				Background Statistics assuming Lognormal Distribution							
528			95% UTL with	95% Coverage	0.00755			90% Percentile (z)	0.00402		
529				95% UPL (t)	0.00584			95% Percentile (z)	0.00569		
530				95% USL	0.0245			99% Percentile (z)	0.0109		

531											
532	Nonparametric Distribution Free Background Statistics										
533	Data do not follow a Discernible Distribution (0.05)										
534											
535	Nonparametric Upper Limits for Background Threshold Values										
536				Order of Statistic, r	88			95% UTL with	95% Coverage	0.0056	
537				Approx, f used to compute achieved CC	1.544			pproximate Actual Confidence Coefficient achieved by UTL		0.834	
538								Approximate Sample Size needed to achieve specified CC		124	
539			95% Percentile Bootstrap UTL with	95% Coverage	0.0056			95% BCA Bootstrap UTL with	95% Coverage	0.00556	
540				95% UPL	0.0055				90% Percentile	0.00474	
541				90% Chebyshev UPL	0.0072				95% Percentile	0.00546	
542				95% Chebyshev UPL	0.00963				99% Percentile	0.00698	
543				95% USL	0.0076						
544											
545	Note: The use of USL tends to yield a conservative estimate of BTV, especially when the sample size starts exceeding 20.										
546	Therefore, one may use USL to estimate a BTV only when the data set represents a background data set free of outliers										
547	and consists of observations collected from clean unimpacted locations.										
548	The use of USL tends to provide a balance between false positives and false negatives provided the data										
549	represents a background data set and when many onsite observations need to be compared with the BTV.										
550											
551	|Fluoride|T^										
552											
553	General Statistics										
554				Total Number of Observations	96				Number of Distinct Observations	16	
555									Number of Missing Observations	3	
556				Minimum	0.087				First Quartile	0.25	
557				Second Largest	0.3				Median	0.25	
558				Maximum	0.33				Third Quartile	0.25	
559				Mean	0.239				SD	0.0358	
560				Coefficient of Variation	0.15				Skewness	-2.075	
561				Mean of logged Data	-1.448				SD of logged Data	0.193	
562											
563	Critical Values for Background Threshold Values (BTVs)										
564				Tolerance Factor K (For UTL)	1.93				d2max (for USL)	3.196	
565											
566	Normal GOF Test										
567				Shapiro Wilk Test Statistic	0.66			Normal GOF Test			
568				5% Shapiro Wilk P Value	0			Data Not Normal at 5% Significance Level			
569				Lilliefors Test Statistic	0.416			Lilliefors GOF Test			
570				5% Lilliefors Critical Value	0.0907			Data Not Normal at 5% Significance Level			
571	Data Not Normal at 5% Significance Level										
572											
573	Background Statistics Assuming Normal Distribution										
574			95% UTL with	95% Coverage	0.308				90% Percentile (z)	0.285	
575				95% UPL (t)	0.299				95% Percentile (z)	0.298	
576				95% USL	0.353				99% Percentile (z)	0.322	
577											
578	Gamma GOF Test										
579				A-D Test Statistic	17.05			Anderson-Darling Gamma GOF Test			
580				5% A-D Critical Value	0.75			Data Not Gamma Distributed at 5% Significance Level			
581				K-S Test Statistic	0.419			Kolmogorov-Smirnov Gamma GOF Test			
582				5% K-S Critical Value	0.0911			Data Not Gamma Distributed at 5% Significance Level			
583	Data Not Gamma Distributed at 5% Significance Level										

584											
585					Gamma Statistics						
586					k hat (MLE)	32.63			k star (bias corrected MLE)	31.62	
587					Theta hat (MLE)	0.00731			Theta star (bias corrected MLE)	0.00755	
588					nu hat (MLE)	6265			nu star (bias corrected)	6070	
589					MLE Mean (bias corrected)	0.239			MLE Sd (bias corrected)	0.0424	
590											
591					Background Statistics Assuming Gamma Distribution						
592				95% Wilson Hilferty (WH) Approx. Gamma UPL		0.313			90% Percentile	0.294	
593				95% Hawkins Wixley (HW) Approx. Gamma UPL		0.315			95% Percentile	0.313	
594				95% WH Approx. Gamma UTL with 95% Coverage		0.326			99% Percentile	0.348	
595				95% HW Approx. Gamma UTL with 95% Coverage		0.329					
596					95% WH USL	0.396			95% HW USL	0.404	
597											
598					Lognormal GOF Test						
599					Shapiro Wilk Test Statistic	0.579			Shapiro Wilk Lognormal GOF Test		
600					5% Shapiro Wilk P Value	0			Data Not Lognormal at 5% Significance Level		
601					Lilliefors Test Statistic	0.417			Lilliefors Lognormal GOF Test		
602					5% Lilliefors Critical Value	0.0907			Data Not Lognormal at 5% Significance Level		
603					Data Not Lognormal at 5% Significance Level						
604											
605					Background Statistics assuming Lognormal Distribution						
606				95% UTL with 95% Coverage		0.341			90% Percentile (z)	0.301	
607					95% UPL (t)	0.324			95% Percentile (z)	0.323	
608					95% USL	0.436			99% Percentile (z)	0.368	
609											
610					Nonparametric Distribution Free Background Statistics						
611					Data do not follow a Discernible Distribution (0.05)						
612											
613					Nonparametric Upper Limits for Background Threshold Values						
614					Order of Statistic, r	94			95% UTL with 95% Coverage	0.28	
615					Approx, f used to compute achieved CC	1.649			pproximate Actual Confidence Coefficient achieved by UTL	0.864	
616									Approximate Sample Size needed to achieve specified CC	124	
617				95% Percentile Bootstrap UTL with 95% Coverage		0.28			95% BCA Bootstrap UTL with 95% Coverage	0.28	
618					95% UPL	0.272			90% Percentile	0.25	
619					90% Chebyshev UPL	0.347			95% Percentile	0.263	
620					95% Chebyshev UPL	0.396			99% Percentile	0.302	
621					95% USL	0.33					
622											
623				Note: The use of USL tends to yield a conservative estimate of BTV, especially when the sample size starts exceeding 20.							
624				Therefore, one may use USL to estimate a BTV only when the data set represents a background data set free of outliers							
625				and consists of observations collected from clean unimpacted locations.							
626				The use of USL tends to provide a balance between false positives and false negatives provided the data							
627				represents a background data set and when many onsite observations need to be compared with the BTV.							
628											
629		Lithium	T^								
630											
631	General Statistics										
632					Total Number of Observations	88			Number of Distinct Observations	3	
633									Number of Missing Observations	2	
634					Minimum	0.022			First Quartile	0.03	
635					Second Largest	0.03			Median	0.03	
636					Maximum	0.041			Third Quartile	0.03	

	A	B	C	D	E	F	G	H	I	J	K	L
637					Mean	0.03				SD		0.00146
638					Coefficient of Variation	0.0485				Skewness		3.037
639					Mean of logged Data	-3.507				SD of logged Data		0.0472
640												
641					Critical Values for Background Threshold Values (BTVs)							
642					Tolerance Factor K (For UTL)	1.944				d2max (for USL)		3.165
643												
644					Normal GOF Test							
645					Shapiro Wilk Test Statistic	0.208			Normal GOF Test			
646					5% Shapiro Wilk P Value	0			Data Not Normal at 5% Significance Level			
647					Lilliefors Test Statistic	0.498			Lilliefors GOF Test			
648					5% Lilliefors Critical Value	0.0946			Data Not Normal at 5% Significance Level			
649					Data Not Normal at 5% Significance Level							
650												
651					Background Statistics Assuming Normal Distribution							
652				95% UTL with	95% Coverage	0.0329				90% Percentile (z)		0.0319
653					95% UPL (t)	0.0325				95% Percentile (z)		0.0324
654					95% USL	0.0346				99% Percentile (z)		0.0334
655												
656					Gamma GOF Test							
657					A-D Test Statistic	31.79			Anderson-Darling Gamma GOF Test			
658					5% A-D Critical Value	0.75			Data Not Gamma Distributed at 5% Significance Level			
659					K-S Test Statistic	0.492			Kolmogorov-Smirnov Gamma GOF Test			
660					5% K-S Critical Value	0.0949			Data Not Gamma Distributed at 5% Significance Level			
661					Data Not Gamma Distributed at 5% Significance Level							
662												
663					Gamma Statistics							
664					k hat (MLE)	450.4				k star (bias corrected MLE)		435.1
665					Theta hat (MLE)	6.6681E-5				Theta star (bias corrected MLE)		6.9033E-5
666					nu hat (MLE)	79273				nu star (bias corrected)		76572
667					MLE Mean (bias corrected)	0.03				MLE Sd (bias corrected)		0.00144
668												
669					Background Statistics Assuming Gamma Distribution							
670					95% Wilson Hilferty (WH) Approx. Gamma UPL	0.0325				90% Percentile		0.0319
671					95% Hawkins Wixley (HW) Approx. Gamma UPL	0.0325				95% Percentile		0.0324
672				95% WH Approx. Gamma UTL with	95% Coverage	0.0329				99% Percentile		0.0335
673				95% HW Approx. Gamma UTL with	95% Coverage	0.0329						
674					95% WH USL	0.0347				95% HW USL		0.0348
675												
676					Lognormal GOF Test							
677					Shapiro Wilk Test Statistic	0.213			Shapiro Wilk Lognormal GOF Test			
678					5% Shapiro Wilk P Value	0			Data Not Lognormal at 5% Significance Level			
679					Lilliefors Test Statistic	0.489			Lilliefors Lognormal GOF Test			
680					5% Lilliefors Critical Value	0.0946			Data Not Lognormal at 5% Significance Level			
681					Data Not Lognormal at 5% Significance Level							
682												
683					Background Statistics assuming Lognormal Distribution							
684				95% UTL with	95% Coverage	0.0329				90% Percentile (z)		0.0319
685					95% UPL (t)	0.0325				95% Percentile (z)		0.0324
686					95% USL	0.0348				99% Percentile (z)		0.0335
687												
688					Nonparametric Distribution Free Background Statistics							
689					Data do not follow a Discernible Distribution (0.05)							

	A	B	C	D	E	F	G	H	I	J	K	L
690												
691	Nonparametric Upper Limits for Background Threshold Values											
692					Order of Statistic, r	86			95% UTL with	95% Coverage		0.03
693					Approx, f used to compute achieved CC	1.509			pproximate Actual Confidence Coefficient achieved by UTL			0.822
694									Approximate Sample Size needed to achieve specified CC			124
695					95% Percentile Bootstrap UTL with	95% Coverage	N/A		95% BCA Bootstrap UTL with	95% Coverage		N/A
696					95% UPL		0.03		90% Percentile			0.03
697					90% Chebyshev UPL		0.0344		95% Percentile			0.03
698					95% Chebyshev UPL		0.0364		99% Percentile			0.0314
699					95% USL		0.041					
700												
701	Note: The use of USL tends to yield a conservative estimate of BTV, especially when the sample size starts exceeding 20.											
702	Therefore, one may use USL to estimate a BTV only when the data set represents a background data set free of outliers											
703	and consists of observations collected from clean unimpacted locations.											
704	The use of USL tends to provide a balance between false positives and false negatives provided the data											
705	represents a background data set and when many onsite observations need to be compared with the BTV.											
706												
707	|Mercury|T^											
708												
709	General Statistics											
710					Total Number of Observations	82			Number of Distinct Observations			1
711									Number of Missing Observations			8
712					Minimum	2.0000E-4			First Quartile			2.0000E-4
713					Second Largest	2.0000E-4			Median			2.0000E-4
714					Maximum	2.0000E-4			Third Quartile			2.0000E-4
715					Mean	2.0000E-4			SD			1.364E-19
716					Coefficient of Variation	6.818E-16			Skewness			-1.019
717												
718	Warning: There is only one distinct observation value in this data set - resulting in '0' variance!											
719	ProUCL (or any other software) should not be used on such a data set!											
720	The data set for variable |Mercury|T^ was not processed!											
721												
722	If possible, compute and collect Data Quality Objectives (DQOs) based sample size and analytical results.											
723	The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).											
724												
725												
726	|MOLYBDENUM|T^											
727												
728	General Statistics											
729					Total Number of Observations	90			Number of Distinct Observations			36
730					Minimum	0.001			First Quartile			0.0018
731					Second Largest	0.01			Median			0.00245
732					Maximum	0.01			Third Quartile			0.0041
733					Mean	0.00344			SD			0.00262
734					Coefficient of Variation	0.762			Skewness			1.469
735					Mean of logged Data	-5.912			SD of logged Data			0.68
736												
737	Critical Values for Background Threshold Values (BTVs)											
738					Tolerance Factor K (For UTL)	1.94			d2max (for USL)			3.173
739												
740	Normal GOF Test											
741					Shapiro Wilk Test Statistic	0.773			Normal GOF Test			
742					5% Shapiro Wilk P Value	0			Data Not Normal at 5% Significance Level			

	A	B	C	D	E	F	G	H	I	J	K	L
743					Lilliefors Test Statistic	0.219	Lilliefors GOF Test					
744					5% Lilliefors Critical Value	0.0936	Data Not Normal at 5% Significance Level					
745	Data Not Normal at 5% Significance Level											
746												
747	Background Statistics Assuming Normal Distribution											
748				95% UTL with	95% Coverage	0.00853			90% Percentile (z)	0.00681		
749					95% UPL (t)	0.00783			95% Percentile (z)	0.00776		
750					95% USL	0.0118			99% Percentile (z)	0.00955		
751												
752	Gamma GOF Test											
753					A-D Test Statistic	2.429	Anderson-Darling Gamma GOF Test					
754					5% A-D Critical Value	0.764	Data Not Gamma Distributed at 5% Significance Level					
755					K-S Test Statistic	0.138	Kolmogorov-Smirnov Gamma GOF Test					
756					5% K-S Critical Value	0.0953	Data Not Gamma Distributed at 5% Significance Level					
757	Data Not Gamma Distributed at 5% Significance Level											
758												
759	Gamma Statistics											
760					k hat (MLE)	2.232			k star (bias corrected MLE)	2.165		
761					Theta hat (MLE)	0.00154			Theta star (bias corrected MLE)	0.00159		
762					nu hat (MLE)	401.7			nu star (bias corrected)	389.6		
763					MLE Mean (bias corrected)	0.00344			MLE Sd (bias corrected)	0.00234		
764												
765	Background Statistics Assuming Gamma Distribution											
766			95% Wilson Hilferty (WH) Approx. Gamma UPL			0.00795			90% Percentile	0.00657		
767			95% Hawkins Wixley (HW) Approx. Gamma UPL			0.00803			95% Percentile	0.00796		
768			95% WH Approx. Gamma UTL with	95% Coverage		0.00909			99% Percentile	0.011		
769			95% HW Approx. Gamma UTL with	95% Coverage		0.00927						
770					95% WH USL	0.0157			95% HW USL	0.0169		
771												
772	Lognormal GOF Test											
773					Shapiro Wilk Test Statistic	0.922	Shapiro Wilk Lognormal GOF Test					
774					5% Shapiro Wilk P Value	1.0868E-5	Data Not Lognormal at 5% Significance Level					
775					Lilliefors Test Statistic	0.0875	Lilliefors Lognormal GOF Test					
776					5% Lilliefors Critical Value	0.0936	Data appear Lognormal at 5% Significance Level					
777	Data appear Approximate Lognormal at 5% Significance Level											
778												
779	Background Statistics assuming Lognormal Distribution											
780				95% UTL with	95% Coverage	0.0101			90% Percentile (z)	0.00647		
781					95% UPL (t)	0.00843			95% Percentile (z)	0.00828		
782					95% USL	0.0234			99% Percentile (z)	0.0132		
783												
784	Nonparametric Distribution Free Background Statistics											
785	Data appear Approximate Lognormal at 5% Significance Level											
786												
787	Nonparametric Upper Limits for Background Threshold Values											
788					Order of Statistic, r	88			95% UTL with	95% Coverage	0.01	
789					Approx, f used to compute achieved CC	1.544			pproximate Actual Confidence Coefficient achieved by UTL		0.834	
790									Approximate Sample Size needed to achieve specified CC		124	
791			95% Percentile Bootstrap UTL with	95% Coverage		0.01			95% BCA Bootstrap UTL with	95% Coverage	0.01	
792					95% UPL	0.01			90% Percentile	0.00758		
793					90% Chebyshev UPL	0.0114			95% Percentile	0.01		
794					95% Chebyshev UPL	0.0149			99% Percentile	0.01		
795					95% USL	0.01						

796											
797	Note: The use of USL tends to yield a conservative estimate of BTV, especially when the sample size starts exceeding 20.										
798	Therefore, one may use USL to estimate a BTV only when the data set represents a background data set free of outliers										
799	and consists of observations collected from clean unimpacted locations.										
800	The use of USL tends to provide a balance between false positives and false negatives provided the data										
801	represents a background data set and when many onsite observations need to be compared with the BTV.										
802											
803	pH| T										
804											
805	General Statistics										
806					Total Number of Observations	138			Number of Distinct Observations	15	
807									Number of Missing Observations	1	
808					Minimum	6			First Quartile	6.9	
809					Second Largest	7.7			Median	7.1	
810					Maximum	7.7			Third Quartile	7.4	
811					Mean	7.119			SD	0.314	
812					Coefficient of Variation	0.0441			Skewness	-0.255	
813					Mean of logged Data	1.962			SD of logged Data	0.0445	
814											
815	Critical Values for Background Threshold Values (BTVs)										
816					Tolerance Factor K (For UTL)	1.878			d2max (for USL)	3.316	
817											
818	Normal GOF Test										
819					Shapiro Wilk Test Statistic	0.966			Normal GOF Test		
820					5% Shapiro Wilk P Value	0.027			Data Not Normal at 5% Significance Level		
821					Lilliefors Test Statistic	0.111			Lilliefors GOF Test		
822					5% Lilliefors Critical Value	0.0758			Data Not Normal at 5% Significance Level		
823	Data Not Normal at 5% Significance Level										
824											
825	Background Statistics Assuming Normal Distribution										
826					95% UTL with 95% Coverage	7.709			90% Percentile (z)	7.522	
827					95% UPL (t)	7.641			95% Percentile (z)	7.636	
828					95% USL	8.161			99% Percentile (z)	7.85	
829											
830	Gamma GOF Test										
831					A-D Test Statistic	1.082			Anderson-Darling Gamma GOF Test		
832					5% A-D Critical Value	0.75			Data Not Gamma Distributed at 5% Significance Level		
833					K-S Test Statistic	0.105			Kolmogorov-Smirnov Gamma GOF Test		
834					5% K-S Critical Value	0.0794			Data Not Gamma Distributed at 5% Significance Level		
835	Data Not Gamma Distributed at 5% Significance Level										
836											
837	Gamma Statistics										
838					k hat (MLE)	511.6			k star (bias corrected MLE)	500.5	
839					Theta hat (MLE)	0.0139			Theta star (bias corrected MLE)	0.0142	
840					nu hat (MLE)	141195			nu star (bias corrected)	138127	
841					MLE Mean (bias corrected)	7.119			MLE Sd (bias corrected)	0.318	
842											
843	Background Statistics Assuming Gamma Distribution										
844					95% Wilson Hilferty (WH) Approx. Gamma UPL	7.652			90% Percentile	7.53	
845					95% Hawkins Wixley (HW) Approx. Gamma UPL	7.653			95% Percentile	7.65	
846					95% WH Approx. Gamma UTL with 95% Coverage	7.724			99% Percentile	7.88	
847					95% HW Approx. Gamma UTL with 95% Coverage	7.726					
848					95% WH USL	8.214			95% HW USL	8.221	

849											
850					Lognormal GOF Test						
851				Shapiro Wilk Test Statistic	0.964			Shapiro Wilk Lognormal GOF Test			
852				5% Shapiro Wilk P Value	0.0139			Data Not Lognormal at 5% Significance Level			
853				Lilliefors Test Statistic	0.102			Lilliefors Lognormal GOF Test			
854				5% Lilliefors Critical Value	0.0758			Data Not Lognormal at 5% Significance Level			
855					Data Not Lognormal at 5% Significance Level						
856											
857					Background Statistics assuming Lognormal Distribution						
858				95% UTL with 95% Coverage	7.732			90% Percentile (z)	7.529		
859				95% UPL (t)	7.658			95% Percentile (z)	7.652		
860				95% USL	8.243			99% Percentile (z)	7.888		
861											
862					Nonparametric Distribution Free Background Statistics						
863					Data do not follow a Discernible Distribution (0.05)						
864											
865					Nonparametric Upper Limits for Background Threshold Values						
866				Order of Statistic, r	135			95% UTL with 95% Coverage	7.7		
867				Approx, f used to compute achieved CC	1.776			pproximate Actual Confidence Coefficient achieved by UTL	0.918		
868								Approximate Sample Size needed to achieve specified CC	153		
869				95% Percentile Bootstrap UTL with 95% Coverage	7.7			95% BCA Bootstrap UTL with 95% Coverage	7.6		
870				95% UPL	7.605			90% Percentile	7.5		
871				90% Chebyshev UPL	8.065			95% Percentile	7.6		
872				95% Chebyshev UPL	8.494			99% Percentile	7.7		
873				95% USL	7.7						
874											
875					Note: The use of USL tends to yield a conservative estimate of BTV, especially when the sample size starts exceeding 20.						
876					Therefore, one may use USL to estimate a BTV only when the data set represents a background data set free of outliers						
877					and consists of observations collected from clean unimpacted locations.						
878					The use of USL tends to provide a balance between false positives and false negatives provided the data						
879					represents a background data set and when many onsite observations need to be compared with the BTV.						
880											
881	|Selenium|T^										
882											
883	General Statistics										
884				Total Number of Observations	90			Number of Distinct Observations	9		
885				Minimum	0.001			First Quartile	0.001		
886				Second Largest	0.025			Median	0.001		
887				Maximum	0.025			Third Quartile	0.001		
888				Mean	0.00352			SD	0.00706		
889				Coefficient of Variation	2.007			Skewness	2.642		
890				Mean of logged Data	-6.52			SD of logged Data	0.992		
891											
892					Critical Values for Background Threshold Values (BTVs)						
893				Tolerance Factor K (For UTL)	1.94			d2max (for USL)	3.173		
894											
895					Normal GOF Test						
896				Shapiro Wilk Test Statistic	0.382			Normal GOF Test			
897				5% Shapiro Wilk P Value	0			Data Not Normal at 5% Significance Level			
898				Lilliefors Test Statistic	0.49			Lilliefors GOF Test			
899				5% Lilliefors Critical Value	0.0936			Data Not Normal at 5% Significance Level			
900					Data Not Normal at 5% Significance Level						
901											

	A	B	C	D	E	F	G	H	I	J	K	L
902	Background Statistics Assuming Normal Distribution											
903				95% UTL with	95% Coverage	0.0172				90% Percentile (z)		0.0126
904					95% UPL (t)	0.0153				95% Percentile (z)		0.0151
905					95% USL	0.0259				99% Percentile (z)		0.0199
906												
907	Gamma GOF Test											
908					A-D Test Statistic	27	Anderson-Darling Gamma GOF Test					
909					5% A-D Critical Value	0.799	Data Not Gamma Distributed at 5% Significance Level					
910					K-S Test Statistic	0.48	Kolmogorov-Smirnov Gamma GOF Test					
911					5% K-S Critical Value	0.0983	Data Not Gamma Distributed at 5% Significance Level					
912	Data Not Gamma Distributed at 5% Significance Level											
913												
914	Gamma Statistics											
915					k hat (MLE)	0.695				k star (bias corrected MLE)		0.679
916					Theta hat (MLE)	0.00506				Theta star (bias corrected MLE)		0.00518
917					nu hat (MLE)	125.1				nu star (bias corrected)		122.3
918					MLE Mean (bias corrected)	0.00352				MLE Sd (bias corrected)		0.00427
919												
920	Background Statistics Assuming Gamma Distribution											
921			95% Wilson Hilferty (WH) Approx. Gamma UPL			0.0106				90% Percentile		0.00889
922			95% Hawkins Wixley (HW) Approx. Gamma UPL			0.00984				95% Percentile		0.0121
923			95% WH Approx. Gamma UTL with	95% Coverage		0.013				99% Percentile		0.0198
924			95% HW Approx. Gamma UTL with	95% Coverage		0.0123						
925					95% WH USL	0.0289				95% HW USL		0.0298
926												
927	Lognormal GOF Test											
928					Shapiro Wilk Test Statistic	0.419	Shapiro Wilk Lognormal GOF Test					
929					5% Shapiro Wilk P Value	0	Data Not Lognormal at 5% Significance Level					
930					Lilliefors Test Statistic	0.441	Lilliefors Lognormal GOF Test					
931					5% Lilliefors Critical Value	0.0936	Data Not Lognormal at 5% Significance Level					
932	Data Not Lognormal at 5% Significance Level											
933												
934	Background Statistics assuming Lognormal Distribution											
935				95% UTL with	95% Coverage	0.0101				90% Percentile (z)		0.00526
936					95% UPL (t)	0.00774				95% Percentile (z)		0.00754
937					95% USL	0.0344				99% Percentile (z)		0.0148
938												
939	Nonparametric Distribution Free Background Statistics											
940	Data do not follow a Discernible Distribution (0.05)											
941												
942	Nonparametric Upper Limits for Background Threshold Values											
943					Order of Statistic, r	88				95% UTL with	95% Coverage	0.025
944					Approx, f used to compute achieved CC	1.544				pproximate Actual Confidence Coefficient achieved by UTL		0.834
945										Approximate Sample Size needed to achieve specified CC		124
946			95% Percentile Bootstrap UTL with	95% Coverage		0.025				95% BCA Bootstrap UTL with	95% Coverage	0.025
947					95% UPL	0.025				90% Percentile		0.0146
948					90% Chebyshev UPL	0.0248				95% Percentile		0.025
949					95% Chebyshev UPL	0.0345				99% Percentile		0.025
950					95% USL	0.025						
951												
952	Note: The use of USL tends to yield a conservative estimate of BTV, especially when the sample size starts exceeding 20.											
953	Therefore, one may use USL to estimate a BTV only when the data set represents a background data set free of outliers											
954	and consists of observations collected from clean unimpacted locations.											

	A	B	C	D	E	F	G	H	I	J	K	L
955	The use of USL tends to provide a balance between false positives and false negatives provided the data											
956	represents a background data set and when many onsite observations need to be compared with the BTV.											
957												
958	|Sulfate as SO4|T^											
959												
960	General Statistics											
961					Total Number of Observations	132			Number of Distinct Observations	115		
962					Minimum	2			First Quartile	30.8		
963					Second Largest	304			Median	67.3		
964					Maximum	310			Third Quartile	108.8		
965					Mean	81.75			SD	66.22		
966					Coefficient of Variation	0.81			Skewness	1.433		
967					Mean of logged Data	3.986			SD of logged Data	1.101		
968												
969	Critical Values for Background Threshold Values (BTVs)											
970					Tolerance Factor K (For UTL)	1.884			d2max (for USL)	3.302		
971												
972	Normal GOF Test											
973					Shapiro Wilk Test Statistic	0.865			Normal GOF Test			
974					5% Shapiro Wilk P Value	0			Data Not Normal at 5% Significance Level			
975					Lilliefors Test Statistic	0.114			Lilliefors GOF Test			
976					5% Lilliefors Critical Value	0.0775			Data Not Normal at 5% Significance Level			
977	Data Not Normal at 5% Significance Level											
978												
979	Background Statistics Assuming Normal Distribution											
980				95% UTL with	95% Coverage	206.5			90% Percentile (z)	166.6		
981					95% UPL (t)	191.9			95% Percentile (z)	190.7		
982					95% USL	300.4			99% Percentile (z)	235.8		
983												
984	Gamma GOF Test											
985					A-D Test Statistic	0.708			Anderson-Darling Gamma GOF Test			
986					5% A-D Critical Value	0.774			Detected data appear Gamma Distributed at 5% Significance Level			
987					K-S Test Statistic	0.0749			Kolmogorov-Smirnov Gamma GOF Test			
988					5% K-S Critical Value	0.083			Detected data appear Gamma Distributed at 5% Significance Level			
989	Detected data appear Gamma Distributed at 5% Significance Level											
990												
991	Gamma Statistics											
992					k hat (MLE)	1.338			k star (bias corrected MLE)	1.313		
993					Theta hat (MLE)	61.1			Theta star (bias corrected MLE)	62.28		
994					nu hat (MLE)	353.2			nu star (bias corrected)	346.5		
995					MLE Mean (bias corrected)	81.75			MLE Sd (bias corrected)	71.35		
996												
997	Background Statistics Assuming Gamma Distribution											
998					95% Wilson Hilferty (WH) Approx. Gamma UPL	220.9			90% Percentile	176		
999					95% Hawkins Wixley (HW) Approx. Gamma UPL	234.6			95% Percentile	222.8		
1000				95% WH Approx. Gamma UTL with	95% Coverage	252.1			99% Percentile	329.3		
1001				95% HW Approx. Gamma UTL with	95% Coverage	272.1						
1002					95% WH USL	523.7			95% HW USL	630		
1003												
1004	Lognormal GOF Test											
1005					Shapiro Wilk Test Statistic	0.887			Shapiro Wilk Lognormal GOF Test			
1006					5% Shapiro Wilk P Value	4.108E-15			Data Not Lognormal at 5% Significance Level			
1007					Lilliefors Test Statistic	0.112			Lilliefors Lognormal GOF Test			

1008				5% Lilliefors Critical Value	0.0775	Data Not Lognormal at 5% Significance Level					
1009	Data Not Lognormal at 5% Significance Level										
1010											
1011	Background Statistics assuming Lognormal Distribution										
1012				95% UTL with 95% Coverage	428.3			90% Percentile (z)	220.7		
1013				95% UPL (t)	335.8			95% Percentile (z)	329.2		
1014				95% USL	2041			99% Percentile (z)	697.2		
1015											
1016	Nonparametric Distribution Free Background Statistics										
1017	Data appear Gamma Distributed at 5% Significance Level										
1018											
1019	Nonparametric Upper Limits for Background Threshold Values										
1020				Order of Statistic, r	129			95% UTL with 95% Coverage	278		
1021				Approx, f used to compute achieved CC	1.697			pproximate Actual Confidence Coefficient achieved by UTL	0.901		
1022								Approximate Sample Size needed to achieve specified CC	153		
1023				95% Percentile Bootstrap UTL with 95% Coverage	278			95% BCA Bootstrap UTL with 95% Coverage	278		
1024				95% UPL	236.9			90% Percentile	153.2		
1025				90% Chebyshev UPL	281.1			95% Percentile	228.6		
1026				95% Chebyshev UPL	371.5			99% Percentile	301.8		
1027				95% USL	310						
1028											
1029	Note: The use of USL tends to yield a conservative estimate of BTV, especially when the sample size starts exceeding 20.										
1030	Therefore, one may use USL to estimate a BTV only when the data set represents a background data set free of outliers										
1031	and consists of observations collected from clean unimpacted locations.										
1032	The use of USL tends to provide a balance between false positives and false negatives provided the data										
1033	represents a background data set and when many onsite observations need to be compared with the BTV.										
1034											
1035	|Total Dissolved Solids|T^										
1036											
1037	General Statistics										
1038				Total Number of Observations	25			Number of Distinct Observations	24		
1039				Minimum	10			First Quartile	827		
1040				Second Largest	1380			Median	1020		
1041				Maximum	1380			Third Quartile	1100		
1042				Mean	927.3			SD	345		
1043				Coefficient of Variation	0.372			Skewness	-1.282		
1044				Mean of logged Data	6.607			SD of logged Data	1.035		
1045											
1046	Critical Values for Background Threshold Values (BTVs)										
1047				Tolerance Factor K (For UTL)	2.292			d2max (for USL)	2.663		
1048											
1049	Normal GOF Test										
1050				Shapiro Wilk Test Statistic	0.883	Shapiro Wilk GOF Test					
1051				5% Shapiro Wilk Critical Value	0.918	Data Not Normal at 5% Significance Level					
1052				Lilliefors Test Statistic	0.167	Lilliefors GOF Test					
1053				5% Lilliefors Critical Value	0.173	Data appear Normal at 5% Significance Level					
1054	Data appear Approximate Normal at 5% Significance Level										
1055											
1056	Background Statistics Assuming Normal Distribution										
1057				95% UTL with 95% Coverage	1718			90% Percentile (z)	1369		
1058				95% UPL (t)	1529			95% Percentile (z)	1495		
1059				95% USL	1846			99% Percentile (z)	1730		
1060											

	A	B	C	D	E	F	G	H	I	J	K	L
1061	Gamma GOF Test											
1062					A-D Test Statistic	3.236	Anderson-Darling Gamma GOF Test					
1063					5% A-D Critical Value	0.755	Data Not Gamma Distributed at 5% Significance Level					
1064					K-S Test Statistic	0.307	Kolmogorov-Smirnov Gamma GOF Test					
1065					5% K-S Critical Value	0.176	Data Not Gamma Distributed at 5% Significance Level					
1066	Data Not Gamma Distributed at 5% Significance Level											
1067												
1068	Gamma Statistics											
1069					k hat (MLE)	2.375			k star (bias corrected MLE)	2.117		
1070					Theta hat (MLE)	390.4			Theta star (bias corrected MLE)	438		
1071					nu hat (MLE)	118.8			nu star (bias corrected)	105.9		
1072					MLE Mean (bias corrected)	927.3			MLE Sd (bias corrected)	637.3		
1073												
1074	Background Statistics Assuming Gamma Distribution											
1075				95% Wilson Hilferty (WH) Approx. Gamma UPL		2162			90% Percentile	1780		
1076				95% Hawkins Wixley (HW) Approx. Gamma UPL		2407			95% Percentile	2161		
1077				95% WH Approx. Gamma UTL with	95% Coverage	2762			99% Percentile	3003		
1078				95% HW Approx. Gamma UTL with	95% Coverage	3206						
1079					95% WH USL	3226			95% HW USL	3850		
1080												
1081	Lognormal GOF Test											
1082					Shapiro Wilk Test Statistic	0.52	Shapiro Wilk Lognormal GOF Test					
1083					5% Shapiro Wilk Critical Value	0.918	Data Not Lognormal at 5% Significance Level					
1084					Lilliefors Test Statistic	0.335	Lilliefors Lognormal GOF Test					
1085					5% Lilliefors Critical Value	0.173	Data Not Lognormal at 5% Significance Level					
1086	Data Not Lognormal at 5% Significance Level											
1087												
1088	Background Statistics assuming Lognormal Distribution											
1089				95% UTL with	95% Coverage	7939			90% Percentile (z)	2790		
1090					95% UPL (t)	4506			95% Percentile (z)	4063		
1091					95% USL	11653			99% Percentile (z)	8226		
1092												
1093	Nonparametric Distribution Free Background Statistics											
1094	Data appear Approximate Normal at 5% Significance Level											
1095												
1096	Nonparametric Upper Limits for Background Threshold Values											
1097					Order of Statistic, r	25			95% UTL with	95% Coverage	1380	
1098					Approx, f used to compute achieved CC	1.316			pproximate Actual Confidence Coefficient achieved by UTL		0.723	
1099									Approximate Sample Size needed to achieve specified CC		59	
1100				95% Percentile Bootstrap UTL with	95% Coverage	1380			95% BCA Bootstrap UTL with	95% Coverage	1380	
1101					95% UPL	1380			90% Percentile	1276		
1102					90% Chebyshev UPL	1983			95% Percentile	1364		
1103					95% Chebyshev UPL	2461			99% Percentile	1380		
1104					95% USL	1380						
1105												
1106	Note: The use of USL tends to yield a conservative estimate of BTV, especially when the sample size starts exceeding 20.											
1107	Therefore, one may use USL to estimate a BTV only when the data set represents a background data set free of outliers											
1108	and consists of observations collected from clean unimpacted locations.											
1109	The use of USL tends to provide a balance between false positives and false negatives provided the data											
1110	represents a background data set and when many onsite observations need to be compared with the BTV.											
1111												
1112	|Radium (226)|T^											
1113												

	A	B	C	D	E	F	G	H	I	J	K	L
1114	General Statistics											
1115					Total Number of Observations	82				Number of Distinct Observations		76
1116					Minimum	0.0816				First Quartile		0.289
1117					Second Largest	0.881				Median		0.371
1118					Maximum	1.03				Third Quartile		0.512
1119					Mean	0.404				SD		0.195
1120					Coefficient of Variation	0.483				Skewness		0.75
1121					Mean of logged Data	-1.034				SD of logged Data		0.54
1122												
1123					Critical Values for Background Threshold Values (BTVs)							
1124					Tolerance Factor K (For UTL)	1.956				d2max (for USL)		3.141
1125												
1126					Normal GOF Test							
1127					Shapiro Wilk Test Statistic	0.952				Normal GOF Test		
1128					5% Shapiro Wilk P Value	0.0119				Data Not Normal at 5% Significance Level		
1129					Lilliefors Test Statistic	0.112				Lilliefors GOF Test		
1130					5% Lilliefors Critical Value	0.098				Data Not Normal at 5% Significance Level		
1131					Data Not Normal at 5% Significance Level							
1132												
1133					Background Statistics Assuming Normal Distribution							
1134				95% UTL with	95% Coverage	0.786				90% Percentile (z)		0.654
1135					95% UPL (t)	0.731				95% Percentile (z)		0.725
1136					95% USL	1.017				99% Percentile (z)		0.858
1137												
1138					Gamma GOF Test							
1139					A-D Test Statistic	0.338				Anderson-Darling Gamma GOF Test		
1140					5% A-D Critical Value	0.756				Detected data appear Gamma Distributed at 5% Significance Level		
1141					K-S Test Statistic	0.085				Kolmogorov-Smirnov Gamma GOF Test		
1142					5% K-S Critical Value	0.0991				Detected data appear Gamma Distributed at 5% Significance Level		
1143					Detected data appear Gamma Distributed at 5% Significance Level							
1144												
1145					Gamma Statistics							
1146					k hat (MLE)	4.067				k star (bias corrected MLE)		3.926
1147					Theta hat (MLE)	0.0994				Theta star (bias corrected MLE)		0.103
1148					nu hat (MLE)	667				nu star (bias corrected)		643.9
1149					MLE Mean (bias corrected)	0.404				MLE Sd (bias corrected)		0.204
1150												
1151					Background Statistics Assuming Gamma Distribution							
1152				95% Wilson Hilferty (WH) Approx. Gamma UPL		0.791				90% Percentile		0.678
1153				95% Hawkins Wixley (HW) Approx. Gamma UPL		0.807				95% Percentile		0.787
1154				95% WH Approx. Gamma UTL with	95% Coverage	0.883				99% Percentile		1.022
1155				95% HW Approx. Gamma UTL with	95% Coverage	0.908						
1156					95% WH USL	1.349				95% HW USL		1.442
1157												
1158					Lognormal GOF Test							
1159					Shapiro Wilk Test Statistic	0.951				Shapiro Wilk Lognormal GOF Test		
1160					5% Shapiro Wilk P Value	0.00959				Data Not Lognormal at 5% Significance Level		
1161					Lilliefors Test Statistic	0.116				Lilliefors Lognormal GOF Test		
1162					5% Lilliefors Critical Value	0.098				Data Not Lognormal at 5% Significance Level		
1163					Data Not Lognormal at 5% Significance Level							
1164												
1165					Background Statistics assuming Lognormal Distribution							
1166				95% UTL with	95% Coverage	1.023				90% Percentile (z)		0.711

1167				95% UPL (t)	0.878			95% Percentile (z)	0.864		
1168				95% USL	1.939			99% Percentile (z)	1.249		
1169											
1170				Nonparametric Distribution Free Background Statistics							
1171				Data appear Gamma Distributed at 5% Significance Level							
1172											
1173				Nonparametric Upper Limits for Background Threshold Values							
1174				Order of Statistic, r	80			95% UTL with 95% Coverage	0.78		
1175				Approx, f used to compute achieved CC	1.404			pproximate Actual Confidence Coefficient achieved by UTL	0.784		
1176								Approximate Sample Size needed to achieve specified CC	124		
1177				95% Percentile Bootstrap UTL with 95% Coverage	0.875			95% BCA Bootstrap UTL with 95% Coverage	0.78		
1178				95% UPL	0.773			90% Percentile	0.661		
1179				90% Chebyshev UPL	0.993			95% Percentile	0.769		
1180				95% Chebyshev UPL	1.26			99% Percentile	0.909		
1181				95% USL	1.03						
1182											
1183				Note: The use of USL tends to yield a conservative estimate of BTV, especially when the sample size starts exceeding 20.							
1184				Therefore, one may use USL to estimate a BTV only when the data set represents a background data set free of outliers							
1185				and consists of observations collected from clean unimpacted locations.							
1186				The use of USL tends to provide a balance between false positives and false negatives provided the data							
1187				represents a background data set and when many onsite observations need to be compared with the BTV.							
1188											
1189	|Radium 228|T^										
1190											
1191	General Statistics										
1192				Total Number of Observations	80			Number of Distinct Observations	76		
1193				Minimum	0.297			First Quartile	0.506		
1194				Second Largest	1.56			Median	0.615		
1195				Maximum	1.58			Third Quartile	0.826		
1196				Mean	0.679			SD	0.263		
1197				Coefficient of Variation	0.387			Skewness	1.26		
1198				Mean of logged Data	-0.454			SD of logged Data	0.361		
1199											
1200				Critical Values for Background Threshold Values (BTVs)							
1201				Tolerance Factor K (For UTL)	1.961			d2max (for USL)	3.132		
1202											
1203				Normal GOF Test							
1204				Shapiro Wilk Test Statistic	0.902			Normal GOF Test			
1205				5% Shapiro Wilk P Value	1.0601E-6			Data Not Normal at 5% Significance Level			
1206				Lilliefors Test Statistic	0.127			Lilliefors GOF Test			
1207				5% Lilliefors Critical Value	0.0991			Data Not Normal at 5% Significance Level			
1208				Data Not Normal at 5% Significance Level							
1209											
1210				Background Statistics Assuming Normal Distribution							
1211				95% UTL with 95% Coverage	1.194			90% Percentile (z)	1.016		
1212				95% UPL (t)	1.119			95% Percentile (z)	1.111		
1213				95% USL	1.502			99% Percentile (z)	1.29		
1214											
1215				Gamma GOF Test							
1216				A-D Test Statistic	0.612			Anderson-Darling Gamma GOF Test			
1217				5% A-D Critical Value	0.752			Detected data appear Gamma Distributed at 5% Significance Level			
1218				K-S Test Statistic	0.0876			Kolmogorov-Smirnov Gamma GOF Test			
1219				5% K-S Critical Value	0.0998			Detected data appear Gamma Distributed at 5% Significance Level			

1220	Detected data appear Gamma Distributed at 5% Significance Level										
1221											
1222	Gamma Statistics										
1223					k hat (MLE)	7.692			k star (bias corrected MLE)	7.411	
1224					Theta hat (MLE)	0.0883			Theta star (bias corrected MLE)	0.0916	
1225					nu hat (MLE)	1231			nu star (bias corrected)	1186	
1226					MLE Mean (bias corrected)	0.679			MLE Sd (bias corrected)	0.249	
1227											
1228	Background Statistics Assuming Gamma Distribution										
1229				95% Wilson Hilferty (WH) Approx. Gamma UPL		1.137			90% Percentile	1.012	
1230				95% Hawkins Wixley (HW) Approx. Gamma UPL		1.143			95% Percentile	1.134	
1231				95% WH Approx. Gamma UTL with 95% Coverage		1.24			99% Percentile	1.389	
1232				95% HW Approx. Gamma UTL with 95% Coverage		1.25					
1233					95% WH USL	1.723			95% HW USL	1.771	
1234											
1235	Lognormal GOF Test										
1236					Shapiro Wilk Test Statistic	0.976			Shapiro Wilk Lognormal GOF Test		
1237					5% Shapiro Wilk P Value	0.428			Data appear Lognormal at 5% Significance Level		
1238					Lilliefors Test Statistic	0.0666			Lilliefors Lognormal GOF Test		
1239					5% Lilliefors Critical Value	0.0991			Data appear Lognormal at 5% Significance Level		
1240	Data appear Lognormal at 5% Significance Level										
1241											
1242	Background Statistics assuming Lognormal Distribution										
1243				95% UTL with 95% Coverage		1.29			90% Percentile (z)	1.009	
1244					95% UPL (t)	1.163			95% Percentile (z)	1.151	
1245					95% USL	1.97			99% Percentile (z)	1.472	
1246											
1247	Nonparametric Distribution Free Background Statistics										
1248	Data appear Gamma Distributed at 5% Significance Level										
1249											
1250	Nonparametric Upper Limits for Background Threshold Values										
1251					Order of Statistic, r	79			95% UTL with 95% Coverage	1.56	
1252					Approx, f used to compute achieved CC	2.079			pproximate Actual Confidence Coefficient achieved by UTL	0.914	
1253									Approximate Sample Size needed to achieve specified CC	93	
1254				95% Percentile Bootstrap UTL with 95% Coverage		1.56			95% BCA Bootstrap UTL with 95% Coverage	1.333	
1255					95% UPL	1.177			90% Percentile	0.983	
1256					90% Chebyshev UPL	1.472			95% Percentile	1.123	
1257					95% Chebyshev UPL	1.832			99% Percentile	1.564	
1258					95% USL	1.58					
1259											
1260	Note: The use of USL tends to yield a conservative estimate of BTV, especially when the sample size starts exceeding 20.										
1261	Therefore, one may use USL to estimate a BTV only when the data set represents a background data set free of outliers										
1262	and consists of observations collected from clean unimpacted locations.										
1263	The use of USL tends to provide a balance between false positives and false negatives provided the data										
1264	represents a background data set and when many onsite observations need to be compared with the BTV.										
1265											

1				**Background Statistics for Uncensored Full Data Sets**								
2			**User Selected Options**									
3			Date/Time of Computation	ProUCL 5.18/12/2021 10:57:46 AM								
4			From File	\\svrrmt101-vm2\Minn-01\Projects\SKB Environmental\Lansing Facility\Statistics\Working\Total concentration ra								
5			Full Precision	OFF								
6			Confidence Coefficient	95%								
7			Coverage	95%								
8			New or Future K Observations	1								
9			Number of Bootstrap Operations	2000								
10												
11	**|Antimony|T^**											
12												
13	**General Statistics**											
14						Total Number of Observations	64			Number of Distinct Observations	2		
15						Minimum	0.36			First Quartile	1		
16						Second Largest	1			Median	1		
17						Maximum	1			Third Quartile	1		
18						Mean	0.99			SD	0.08		
19						Coefficient of Variation	0.0808			Skewness	-8		
20						Mean of logged Data	-0.016			SD of logged Data	0.128		
21													
22						**Critical Values for Background Threshold Values (BTVs)**							
23						Tolerance Factor K (For UTL)	2.003			d2max (for USL)	3.051		
24													
25						**Normal GOF Test**							
26						Shapiro Wilk Test Statistic	0.126			**Normal GOF Test**			
27						5% Shapiro Wilk P Value	0			Data Not Normal at 5% Significance Level			
28						Lilliefors Test Statistic	0.534			**Lilliefors GOF Test**			
29						5% Lilliefors Critical Value	0.111			Data Not Normal at 5% Significance Level			
30						**Data Not Normal at 5% Significance Level**							
31													
32						**Background Statistics Assuming Normal Distribution**							
33						95% UTL with 95% Coverage	1.15			90% Percentile (z)	1.093		
34						95% UPL (t)	1.125			95% Percentile (z)	1.122		
35						95% USL	1.234			99% Percentile (z)	1.176		
36													
37						**Gamma GOF Test**							
38						A-D Test Statistic	24.34			**Anderson-Darling Gamma GOF Test**			
39						5% A-D Critical Value	0.748			Data Not Gamma Distributed at 5% Significance Level			
40						K-S Test Statistic	0.536			**Kolmogorov-Smirnov Gamma GOF Test**			
41						5% K-S Critical Value	0.111			Data Not Gamma Distributed at 5% Significance Level			
42						**Data Not Gamma Distributed at 5% Significance Level**							
43													
44						**Gamma Statistics**							
45						k hat (MLE)	84.73			k star (bias corrected MLE)	80.77		
46						Theta hat (MLE)	0.0117			Theta star (bias corrected MLE)	0.0123		
47						nu hat (MLE)	10845			nu star (bias corrected)	10338		
48						MLE Mean (bias corrected)	0.99			MLE Sd (bias corrected)	0.11		
49													

Background Statistics Assuming Gamma Distribution											
95% Wilson Hilferty (WH) Approx. Gamma UPL					1.178				90% Percentile		1.134
95% Hawkins Wixley (HW) Approx. Gamma UPL					1.187				95% Percentile		1.178
95% WH Approx. Gamma UTL with 95% Coverage					1.217				99% Percentile		1.264
95% HW Approx. Gamma UTL with 95% Coverage					1.229						
95% WH USL					1.351				95% HW USL		1.373
Lognormal GOF Test											
Shapiro Wilk Test Statistic					0.126	**Shapiro Wilk Lognormal GOF Test**					
5% Shapiro Wilk P Value					0	Data Not Lognormal at 5% Significance Level					
Lilliefors Test Statistic					0.534	**Lilliefors Lognormal GOF Test**					
5% Lilliefors Critical Value					0.111	Data Not Lognormal at 5% Significance Level					
Data Not Lognormal at 5% Significance Level											
Background Statistics assuming Lognormal Distribution											
95% UTL with 95% Coverage					1.271				90% Percentile (z)		1.159
95% UPL (t)					1.22				95% Percentile (z)		1.214
95% USL					1.453				99% Percentile (z)		1.325
Nonparametric Distribution Free Background Statistics											
Data do not follow a Discernible Distribution (0.05)											
Nonparametric Upper Limits for Background Threshold Values											
Order of Statistic, r					63				95% UTL with 95% Coverage		1
Approx, f used to compute achieved CC					1.658				Approximate Actual Confidence Coefficient achieved by UTL		0.836
									Approximate Sample Size needed to achieve specified CC		93
95% Percentile Bootstrap UTL with 95% Coverage					N/A				95% BCA Bootstrap UTL with 95% Coverage		N/A
95% UPL					1				90% Percentile		1
90% Chebyshev UPL					1.232				95% Percentile		1
95% Chebyshev UPL					1.341				99% Percentile		1
95% USL					1						
Note: The use of USL tends to yield a conservative estimate of BTV, especially when the sample size starts exceeding 20.											
Therefore, one may use USL to estimate a BTV only when the data set represents a background data set free of outliers											
and consists of observations collected from clean unimpacted locations.											
The use of USL tends to provide a balance between false positives and false negatives provided the data											
represents a background data set and when many onsite observations need to be compared with the BTV.											
|Beryllium|T^											
General Statistics											
Total Number of Observations					79				Number of Distinct Observations		5
Minimum					0.041				First Quartile		0.7
Second Largest					2				Median		0.7
Maximum					2				Third Quartile		0.7
Mean					0.809				SD		0.419
Coefficient of Variation					0.518				Skewness		2.209
Mean of logged Data					-0.331				SD of logged Data		0.545
Critical Values for Background Threshold Values (BTVs)											
Tolerance Factor K (For UTL)					1.963				d2max (for USL)		3.127

102	**Normal GOF Test**											
103					Shapiro Wilk Test Statistic	0.462	**Normal GOF Test**					
104					5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level					
105					Lilliefors Test Statistic	0.501	**Lilliefors GOF Test**					
106					5% Lilliefors Critical Value	0.0998	Data Not Normal at 5% Significance Level					
107	**Data Not Normal at 5% Significance Level**											
108												
109	**Background Statistics Assuming Normal Distribution**											
110				95% UTL with	95% Coverage	1.631			90% Percentile (z)	1.346		
111					95% UPL (t)	1.51			95% Percentile (z)	1.498		
112					95% USL	2.119			99% Percentile (z)	1.783		
113												
114	**Gamma GOF Test**											
115					A-D Test Statistic	19.83	**Anderson-Darling Gamma GOF Test**					
116					5% A-D Critical Value	0.756	Data Not Gamma Distributed at 5% Significance Level					
117					K-S Test Statistic	0.452	**Kolmogorov-Smirnov Gamma GOF Test**					
118					5% K-S Critical Value	0.101	Data Not Gamma Distributed at 5% Significance Level					
119	**Data Not Gamma Distributed at 5% Significance Level**											
120												
121	**Gamma Statistics**											
122					k hat (MLE)	4.373			k star (bias corrected MLE)	4.216		
123					Theta hat (MLE)	0.185			Theta star (bias corrected MLE)	0.192		
124					nu hat (MLE)	691			nu star (bias corrected)	666.1		
125					MLE Mean (bias corrected)	0.809			MLE Sd (bias corrected)	0.394		
126												
127	**Background Statistics Assuming Gamma Distribution**											
128				95% Wilson Hilferty (WH) Approx. Gamma UPL		1.539			90% Percentile	1.337		
129				95% Hawkins Wixley (HW) Approx. Gamma UPL		1.572			95% Percentile	1.546		
130				95% WH Approx. Gamma UTL with	95% Coverage	1.714			99% Percentile	1.993		
131				95% HW Approx. Gamma UTL with	95% Coverage	1.765						
132					95% WH USL	2.559			95% HW USL	2.733		
133												
134	**Lognormal GOF Test**											
135					Shapiro Wilk Test Statistic	0.487	**Shapiro Wilk Lognormal GOF Test**					
136					5% Shapiro Wilk P Value	0	Data Not Lognormal at 5% Significance Level					
137					Lilliefors Test Statistic	0.443	**Lilliefors Lognormal GOF Test**					
138					5% Lilliefors Critical Value	0.0998	Data Not Lognormal at 5% Significance Level					
139	**Data Not Lognormal at 5% Significance Level**											
140												
141	**Background Statistics assuming Lognormal Distribution**											
142				95% UTL with	95% Coverage	2.095			90% Percentile (z)	1.445		
143					95% UPL (t)	1.791			95% Percentile (z)	1.762		
144					95% USL	3.954			99% Percentile (z)	2.555		
145												
146	**Nonparametric Distribution Free Background Statistics**											
147	**Data do not follow a Discernible Distribution (0.05)**											
148												
149	**Nonparametric Upper Limits for Background Threshold Values**											
150					Order of Statistic, r	78			95% UTL with	95% Coverage	2	
151					Approx, f used to compute achieved CC	2.053			Approximate Actual Confidence Coefficient achieved by UTL		0.91	
152									Approximate Sample Size needed to achieve specified CC		93	
153				95% Percentile Bootstrap UTL with	95% Coverage	2			95% BCA Bootstrap UTL with	95% Coverage	2	
154					95% UPL	2			90% Percentile		0.96	
155					90% Chebyshev UPL	2.073			95% Percentile		2	
156					95% Chebyshev UPL	2.646			99% Percentile		2	
157					95% USL	2						
158												
159	Note: The use of USL tends to yield a conservative estimate of BTV, especially when the sample size starts exceeding 20.											
160	Therefore, one may use USL to estimate a BTV only when the data set represents a background data set free of outliers											
161	and consists of observations collected from clean unimpacted locations.											
162	The use of USL tends to provide a balance between false positives and false negatives provided the data											
163	represents a background data set and when many onsite observations need to be compared with the BTV.											

164											
165	**|Cadmium|T^**										
166											
167	**General Statistics**										
168						Total Number of Observations	76			Number of Distinct Observations	11	
169						Minimum	0.18			First Quartile	0.5
170						Second Largest	2			Median	0.5
171						Maximum	2			Third Quartile	0.5
172						Mean	0.666			SD	0.479
173						Coefficient of Variation	0.719			Skewness	2.345
174						Mean of logged Data	-0.559			SD of logged Data	0.495
175											
176						**Critical Values for Background Threshold Values (BTVs)**						
177						Tolerance Factor K (For UTL)	1.97			d2max (for USL)	3.114
178											
179						**Normal GOF Test**					
180						Shapiro Wilk Test Statistic	0.479			**Normal GOF Test**	
181						5% Shapiro Wilk P Value	0			Data Not Normal at 5% Significance Level	
182						Lilliefors Test Statistic	0.438			**Lilliefors GOF Test**	
183						5% Lilliefors Critical Value	0.102			Data Not Normal at 5% Significance Level	
184						**Data Not Normal at 5% Significance Level**					
185											
186						**Background Statistics Assuming Normal Distribution**					
187						95% UTL with 95% Coverage	1.609			90% Percentile (z)	1.279
188						95% UPL (t)	1.468			95% Percentile (z)	1.453
189						95% USL	2.156			99% Percentile (z)	1.779
190											
191						**Gamma GOF Test**					
192						A-D Test Statistic	17.1			**Anderson-Darling Gamma GOF Test**	
193						5% A-D Critical Value	0.757			Data Not Gamma Distributed at 5% Significance Level	
194						K-S Test Statistic	0.429			**Kolmogorov-Smirnov Gamma GOF Test**	
195						5% K-S Critical Value	0.103			Data Not Gamma Distributed at 5% Significance Level	
196						**Data Not Gamma Distributed at 5% Significance Level**					
197											
198						**Gamma Statistics**					
199						k hat (MLE)	3.44			k star (bias corrected MLE)	3.313
200						Theta hat (MLE)	0.194			Theta star (bias corrected MLE)	0.201
201						nu hat (MLE)	522.9			nu star (bias corrected)	503.6
202						MLE Mean (bias corrected)	0.666			MLE Sd (bias corrected)	0.366
203											
204						**Background Statistics Assuming Gamma Distribution**					
205						95% Wilson Hilferty (WH) Approx. Gamma UPL	1.351			90% Percentile	1.156
206						95% Hawkins Wixley (HW) Approx. Gamma UPL	1.338			95% Percentile	1.358
207						95% WH Approx. Gamma UTL with 95% Coverage	1.527			99% Percentile	1.794
208						95% HW Approx. Gamma UTL with 95% Coverage	1.52				
209						95% WH USL	2.359			95% HW USL	2.412
210											
211						**Lognormal GOF Test**					
212						Shapiro Wilk Test Statistic	0.6			**Shapiro Wilk Lognormal GOF Test**	
213						5% Shapiro Wilk P Value	0			Data Not Lognormal at 5% Significance Level	
214						Lilliefors Test Statistic	0.409			**Lilliefors Lognormal GOF Test**	
215						5% Lilliefors Critical Value	0.102			Data Not Lognormal at 5% Significance Level	
216						**Data Not Lognormal at 5% Significance Level**					
217											
218						**Background Statistics assuming Lognormal Distribution**					
219						95% UTL with 95% Coverage	1.516			90% Percentile (z)	1.078
220						95% UPL (t)	1.311			95% Percentile (z)	1.291
221						95% USL	2.672			99% Percentile (z)	1.809
222											
223						**Nonparametric Distribution Free Background Statistics**					
224						**Data do not follow a Discernible Distribution (0.05)**					
225											
226						**Nonparametric Upper Limits for Background Threshold Values**					

227				Order of Statistic, r	75				95% UTL with	95% Coverage	2	
228				Approx, f used to compute achieved CC	1.974				Approximate Actual Confidence Coefficient achieved by UTL		0.899	
229									Approximate Sample Size needed to achieve specified CC		93	
230			95% Percentile Bootstrap UTL with	95% Coverage	2				95% BCA Bootstrap UTL with	95% Coverage	2	
231				95% UPL	2					90% Percentile	1.7	
232				90% Chebyshev UPL	2.111					95% Percentile	2	
233				95% Chebyshev UPL	2.766					99% Percentile	2	
234				95% USL	2							
235												
236	Note: The use of USL tends to yield a conservative estimate of BTV, especially when the sample size starts exceeding 20.											
237	Therefore, one may use USL to estimate a BTV only when the data set represents a background data set free of outliers											
238	and consists of observations collected from clean unimpacted locations.											
239	The use of USL tends to provide a balance between false positives and false negatives provided the data											
240	represents a background data set and when many onsite observations need to be compared with the BTV.											
241												
242	**|Lead|T^**											
243												
244	**General Statistics**											
245				Total Number of Observations	74					Number of Distinct Observations	4	
246										Number of Missing Observations	2	
247				Minimum	0.01					First Quartile	0.01	
248				Second Largest	0.012					Median	0.01	
249				Maximum	0.016					Third Quartile	0.01	
250				Mean	0.0101					SD	7.3936E-4	
251				Coefficient of Variation	0.073					Skewness	7.326	
252				Mean of logged Data	-4.595					SD of logged Data	0.0592	
253												
254	**Critical Values for Background Threshold Values (BTVs)**											
255				Tolerance Factor K (For UTL)	1.975					d2max (for USL)	3.104	
256												
257	**Normal GOF Test**											
258				Shapiro Wilk Test Statistic	0.183	**Normal GOF Test**						
259				5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level						
260				Lilliefors Test Statistic	0.525	**Lilliefors GOF Test**						
261				5% Lilliefors Critical Value	0.103	Data Not Normal at 5% Significance Level						
262	**Data Not Normal at 5% Significance Level**											
263												
264	**Background Statistics Assuming Normal Distribution**											
265				95% UTL with	95% Coverage	0.0116				90% Percentile (z)	0.0111	
266					95% UPL (t)	0.0114				95% Percentile (z)	0.0113	
267					95% USL	0.0124				99% Percentile (z)	0.0118	
268												
269	**Gamma GOF Test**											
270				A-D Test Statistic	26	**Anderson-Darling Gamma GOF Test**						
271				5% A-D Critical Value	0.749	Data Not Gamma Distributed at 5% Significance Level						
272				K-S Test Statistic	0.527	**Kolmogorov-Smirnov Gamma GOF Test**						
273				5% K-S Critical Value	0.103	Data Not Gamma Distributed at 5% Significance Level						
274	**Data Not Gamma Distributed at 5% Significance Level**											
275												
276	**Gamma Statistics**											
277				k hat (MLE)	252					k star (bias corrected MLE)	241.8	
278				Theta hat (MLE)	4.0169E-5					Theta star (bias corrected MLE)	4.1864E-5	
279				nu hat (MLE)	37293					nu star (bias corrected)	35782	
280				MLE Mean (bias corrected)	0.0101					MLE Sd (bias corrected)	6.5095E-4	
281												
282	**Background Statistics Assuming Gamma Distribution**											
283			95% Wilson Hilferty (WH) Approx. Gamma UPL		0.0112					90% Percentile	0.011	
284			95% Hawkins Wixley (HW) Approx. Gamma UPL		0.0112					95% Percentile	0.0112	
285			95% WH Approx. Gamma UTL with	95% Coverage	0.0114					99% Percentile	0.0117	
286			95% HW Approx. Gamma UTL with	95% Coverage	0.0114							
287				95% WH USL	0.0122					95% HW USL	0.0122	
288												
289	**Lognormal GOF Test**											

290				Shapiro Wilk Test Statistic		0.192	**Shapiro Wilk Lognormal GOF Test**					
291				5% Shapiro Wilk P Value		0	Data Not Lognormal at 5% Significance Level					
292				Lilliefors Test Statistic		0.527	**Lilliefors Lognormal GOF Test**					
293				5% Lilliefors Critical Value		0.103	Data Not Lognormal at 5% Significance Level					
294	**Data Not Lognormal at 5% Significance Level**											
295												
296	**Background Statistics assuming Lognormal Distribution**											
297				95% UTL with 95% Coverage		0.0114			90% Percentile (z)			0.0109
298				95% UPL (t)		0.0112			95% Percentile (z)			0.0111
299				95% USL		0.0121			99% Percentile (z)			0.0116
300												
301	**Nonparametric Distribution Free Background Statistics**											
302	**Data do not follow a Discernible Distribution (0.05)**											
303												
304	**Nonparametric Upper Limits for Background Threshold Values**											
305				Order of Statistic, r		73			95% UTL with 95% Coverage			0.012
306				Approx, f used to compute achieved CC		1.921			Approximate Actual Confidence Coefficient achieved by UTL			0.89
307									Approximate Sample Size needed to achieve specified CC			93
308				95% Percentile Bootstrap UTL with 95% Coverage		0.012			95% BCA Bootstrap UTL with 95% Coverage			0.01
309				95% UPL		0.0103			90% Percentile			0.01
310				90% Chebyshev UPL		0.0124			95% Percentile			0.01
311				95% Chebyshev UPL		0.0134			99% Percentile			0.0131
312				95% USL		0.016						
313												

Note: The use of USL tends to yield a conservative estimate of BTV, especially when the sample size starts exceeding 20.
Therefore, one may use USL to estimate a BTV only when the data set represents a background data set free of outliers
and consists of observations collected from clean unimpacted locations.
The use of USL tends to provide a balance between false positives and false negatives provided the data
represents a background data set and when many onsite observations need to be compared with the BTV.

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General Statistics

Total Number of Observations	68	Number of Distinct Observations	3
		Number of Missing Observations	8
Minimum	0.056	First Quartile	0.2
Second Largest	0.2	Median	0.2
Maximum	0.2	Third Quartile	0.2
Mean	0.196	SD	0.0243
Coefficient of Variation	0.124	Skewness	-5.697
Mean of logged Data	-1.646	SD of logged Data	0.214

Critical Values for Background Threshold Values (BTVs)

Tolerance Factor K (For UTL)	1.991	d2max (for USL)	3.073

Normal GOF Test

Shapiro Wilk Test Statistic	0.175	**Normal GOF Test**
5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.539	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.107	Data Not Normal at 5% Significance Level

Data Not Normal at 5% Significance Level

Background Statistics Assuming Normal Distribution

95% UTL with 95% Coverage	0.244	90% Percentile (z)	0.227
95% UPL (t)	0.237	95% Percentile (z)	0.236
95% USL	0.271	99% Percentile (z)	0.252

Gamma GOF Test

A-D Test Statistic	25.41	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.749	Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.542	**Kolmogorov-Smirnov Gamma GOF Test**
5% K-S Critical Value	0.108	Data Not Gamma Distributed at 5% Significance Level

Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	32.07	k star (bias corrected MLE)	30.67
Theta hat (MLE)	0.0061	Theta star (bias corrected MLE)	0.00638
nu hat (MLE)	4362	nu star (bias corrected)	4171
MLE Mean (bias corrected)	0.196	MLE Sd (bias corrected)	0.0354

Background Statistics Assuming Gamma Distribution

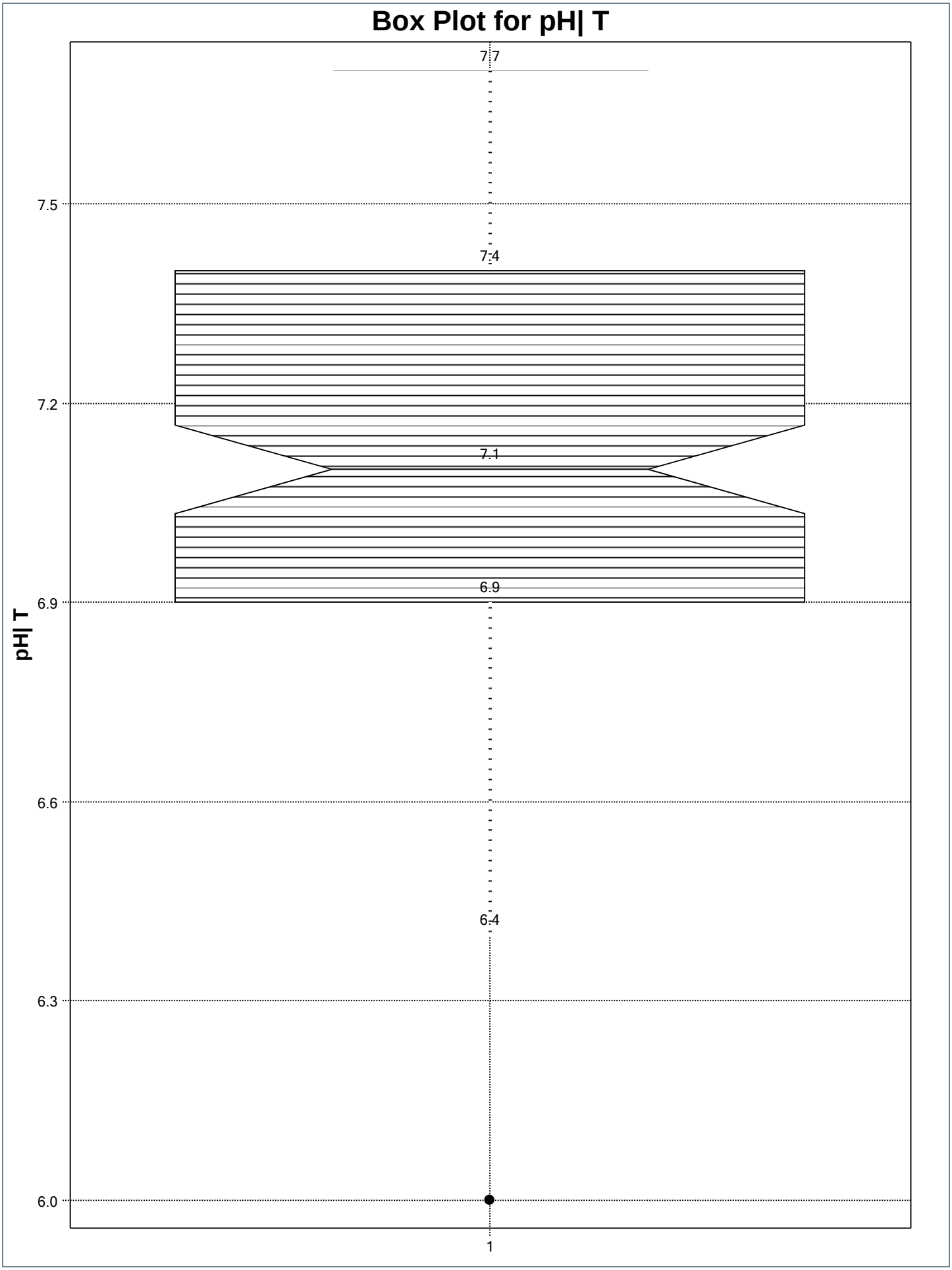
95% Wilson Hilferty (WH) Approx. Gamma UPL	0.257	90% Percentile	0.242
95% Hawkins Wixley (HW) Approx. Gamma UPL	0.261	95% Percentile	0.257
95% WH Approx. Gamma UTL with 95% Coverage	0.27	99% Percentile	0.287
95% HW Approx. Gamma UTL with 95% Coverage	0.276		
95% WH USL	0.319	95% HW USL	0.33

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.176	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk P Value	0	Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.539	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.107	Data Not Lognormal at 5% Significance Level

Data Not Lognormal at 5% Significance Level

373												
374	**Background Statistics assuming Lognormal Distribution**											
375					95% UTL with 95% Coverage	0.295				90% Percentile (z)	0.253	
376					95% UPL (t)	0.276				95% Percentile (z)	0.274	
377					95% USL	0.372				99% Percentile (z)	0.317	
378												
379	**Nonparametric Distribution Free Background Statistics**											
380	**Data do not follow a Discernible Distribution (0.05)**											
381												
382	**Nonparametric Upper Limits for Background Threshold Values**											
383					Order of Statistic, r	67				95% UTL with 95% Coverage	0.2	
384					Approx, f used to compute achieved CC	1.763				Approximate Actual Confidence Coefficient achieved by UTL	0.86	
385										Approximate Sample Size needed to achieve specified CC	93	
386					95% Percentile Bootstrap UTL with 95% Coverage	N/A				95% BCA Bootstrap UTL with 95% Coverage	N/A	
387					95% UPL	0.2				90% Percentile	0.2	
388					90% Chebyshev UPL	0.269				95% Percentile	0.2	
389					95% Chebyshev UPL	0.303				99% Percentile	0.2	
390					95% USL	0.2						
391												
392	Note: The use of USL tends to yield a conservative estimate of BTV, especially when the sample size starts exceeding 20.											
393	Therefore, one may use USL to estimate a BTV only when the data set represents a background data set free of outliers											
394	and consists of observations collected from clean unimpacted locations.											
395	The use of USL tends to provide a balance between false positives and false negatives provided the data											
396	represents a background data set and when many onsite observations need to be compared with the BTV.											
397												


Box Plot for pH| T
7.7
7.5
7.4
7.2
7.1
6.9
6.9
6.6
6.4
6.3
6.0
pH| T
1