SKB Environmental Cloquet Landfill, Inc.

2022 Coal Combustion Residuals Annual Monitoring Report

SKB Environmental Cloquet Landfill
761 Minnesota State Highway 45
Cloquet, Minnesota
Permit SW-399-001

January 27, 2023

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761 Minnesota State Highway 45
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Permit SW-399-001

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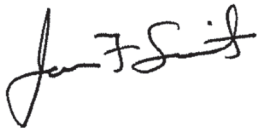
3502292

Date:
January 27, 2023



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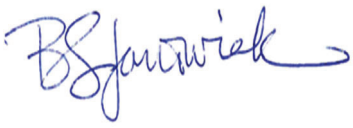

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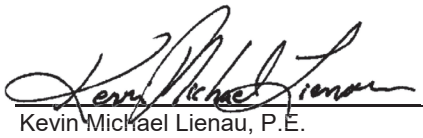

Kevin Michael Lienau, P.E.
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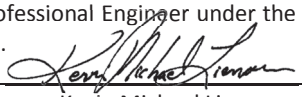
Professional Engineer

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: 01/26/2023 License Number: 25086

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Acronyms

BTV	Background Threshold Values
CCR	Coal Combustion Residuals
CFR	Code of Federal Regulations
COC	Chemicals of Concern
Eurofins TA	Eurofins TestAmerica, Inc.
GES	Groundwater & Environmental Services, Inc.
mg/L	milligrams per liter
MDH	Minnesota Department of Health
MPCA	Minnesota Pollution Control Agency
NGVD	National Geodetic Vertical Datum
ORP	Oxidation-Reduction Potential
QA/QC	Quality assurance/quality control
Report	Coal Combustion Residuals Annual Monitoring Report
SKB Cloquet Landfill	SKB Environmental Cloquet Landfill
SSI	statistically significant increase
USEPA	United States Environmental Protection Agency
USL	Upper Simultaneous Limit

1 Introduction

The *Coal Combustion Residuals Annual Monitoring Report* (Report) was prepared to summarize the results of the 2022 groundwater monitoring events and associated analysis for Appendix III, per 40 Code of Federal Regulations (CFR) §§ 257.90 – 257.98, at the SKB Environmental Cloquet Landfill (SKB Cloquet Landfill). The SKB Cloquet Landfill initiated operations under Minnesota Pollution Control Agency (MPCA) Site Permit Number SW-399-001 in 2011. The SKB Cloquet Landfill is located in Cloquet, Carlton County, Minnesota (**Figure 1**).

Two groundwater monitoring events were conducted at the SKB Cloquet Landfill in the spring and fall of 2022. Analytical results from the groundwater monitoring events are compared and evaluated to Background Threshold Values (BTVs) established for the SKB Cloquet Landfill.

1.1 Scope of Work

The following scope of work was conducted for the 2022 Coal Combustion Residuals (CCR) groundwater monitoring events.

- Conduct 2 gauging and sampling events at the site's 7 monitoring wells.
- 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 background threshold values (BTVs) for each analyte.
- Select tolerance or prediction interval procedure for future statistical analysis of groundwater monitoring data.
- Prepare a CCR Annual Monitoring Report summarizing the groundwater sampling and statistical evaluation.

2 Site Background

2.1 Site Location and Description

The facility is located on a 59-acre parcel of land in Section 25, Township 49 North, Range 17 West, city of Cloquet, Carlton County, Minnesota. With reference to roadways, the facility is located south of Interstate 35 and west of Minnesota State Highway 45. The facility entrance is off Minnesota State Highway 45. The site location is depicted on **Figure 1** and **Figure 2** presents a Site Map.

The nearest body of water is the St. Louis River, which is approximately 0.25 miles east of the facility. The facility's current maximum elevation is approximately 1,234 feet above the National Geodetic Vertical Datum of 1929 (NGVD 29) on top of the existing legacy demolition landfill. The lowest elevation is the old sand pit floor (Ulland Brothers sand pit) in the southwest corner of the

property, which is approximately 1,143 feet (NGVD 29). Stormwater flows either to depressions around the site or to a temporary stormwater basin on the east side of Phase 1. The site is sandy and stormwater is allowed to infiltrate the ground at each of the stormwater ponding locations.

3 Monitoring Network Systems and Sampling Schedule

The CCR sampling groundwater monitoring network at SKB Cloquet Landfill was designed based on the local and regional hydrologic conditions. Currently the groundwater monitoring network system consists of 7 monitoring wells (**Figure 2**). The monitoring wells used as data collection points have been divided into 2 groups for the purpose of this report:

- Upgradient Monitoring Point. The upgradient monitoring point consists of monitoring well P-1.
- Downgradient Monitoring Points. The downgradient monitoring points consist of monitoring wells downgradient of the compliance boundary. The downgradient monitoring wells are P-2, P-5R, P-6, P-7, P-8, and P-9.

For the CCR evaluation, a total of 2 groundwater monitoring events were conducted in 2022 on the following dates:

- April 6 and 7, 2022
- October 26 and 27, 2022

4 Groundwater Sampling Methodology

During the SKB Cloquet 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, Specific Conductance, Turbidity, Dissolved Oxygen, and Oxidation-Reduction Potential (ORP) 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 TestAmerica, Inc. (Eurofins TA) of Amherst, New York.

Groundwater samples obtained during the 2 sampling events in 2022 were analyzed for parameters specified in Appendix III per §§ 257.93 – 257.94 and are noted below:

Appendix III

General Chemistry

- Chloride (Method 9056A)
- Fluoride (Method 9056A)
- Sulfate as SO_4 (Method 9056A)
- pH (Method 4500 H+ B)
- Total Dissolved Solids (Method 2540C)

Metals (Total)

- Boron (Method 6020B)
- Calcium (Method 6020B)

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 6 and October 26, 2022 gauging events. Groundwater flow direction was calculated to be to the southeast (**Figures 3** and **4**).

5.2 Groundwater Analytical Data

Groundwater analytical results for the CCR monitoring events are presented in **Table 2**. QA/QC duplicate samples were collected for precision evaluation, but were not included in **Table 2**. A summary of the stabilization parameter tests performed for each well prior to sampling are provided in **Table 3** 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 Cloquet Landfill are provided in **Table 4**. Comparing the 2022 spring and fall sampling groundwater analytical results to the BTVs, indicate no BTVs exceedances (**Table 2**).

During the 2021 December sampling event, the Chloride concentration (245 milligrams per liter (mg/L)) exceeded the BTV (232 mg/L) at monitoring well P-5R. Subsequent sampling results from the 2022 spring event reported a Chloride concentration of 200 mg/L, which is below the BTV. Thus, the 2021 Chloride exceedance is not considered statistically significant.

Due to insufficient water volume, groundwater samples were not collected at monitoring well P-2 during the spring and fall 2022 sampling events.

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

6 Statistical Evaluation of 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 October 2022.

Statistical evaluation of the 2017 - 2022 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 removal, 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 4**. The statistical evaluation data is included in **Appendix C**.

7 Conclusions

The groundwater data collected in the 2017 – 2022 sampling events were statistically tested following the concepts outlined in this report to form a background data set. Interwell USLs were developed for Boron, Calcium, Chloride, Fluoride, Sulfate as SO_4, and Total Dissolved Solids and in site monitoring wells (P-1, P-2, P-3 (sealed in 2020), P-4R (sealed in 2021), P-5 (sealed in 2021), P-6, P-7, P-5R, P-8, and P-9. Upper and lower threshold values were developed for pH using box plot statistics (**Appendix C**). The resulting threshold values were compared to the current concentrations for each COC and well pair. Compliance is determined by comparing the currently detected concentrations to the calculated USL.

No BTVs were exceeded during the 2 sampling events conducted in 2022. During the December 2021 sampling event, a Chloride concentration of 245 mg/L at monitoring well P-5R exceeded the Chloride BTV of 232 mg/L. Confirmation sampling during spring 2022 determined the Chloride concentration at monitoring well P-5R was below the BTV, and thus, the December 2021 BTV exceedance is not statistically significant.

8 Report Summary

Per the 40 CFR §§ 40.257.93 – 257.94, 2 monitoring events were conducted at the SKB Cloquet Landfill in 2022. Groundwater samples were analyzed for parameters indicated in Appendix III per § 257.94. Groundwater samples were collected from the monitoring network's 6 monitoring wells located at the SKB Cloquet Landfill during the 2 monitoring events. Monitoring well P-2 had an insufficient volume of water, and therefore, was not sampled in 2022. Groundwater elevation information from the monitoring data indicates a southeast groundwater flow beneath the landfill.

No BTVs were exceeded during the 2022 sampling events. A Chloride concentration at monitoring well P-5R exceeded the calculated interwell BTV during the December 2021 sampling event. Confirmation sampling of the well in the spring 2022 indicated the December 2021 exceedance was not statistically significant.

9 Recommendations

CCR groundwater monitoring events will be conducted in the spring and fall of 2023. Groundwater samples will be analyzed for detection monitoring parameters specified in Appendix III per §

257.94. An evaluation of groundwater analytical results after each monitoring event will be completed to determine if a significant increase over BTVs (**Table 4**) for one or more parameter listed in Appendix III 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. Any single constituent that exceeds the BTV is considered to be an exceedance. Confirmation sampling will determine whether the BTV exceedance is statistically significant.

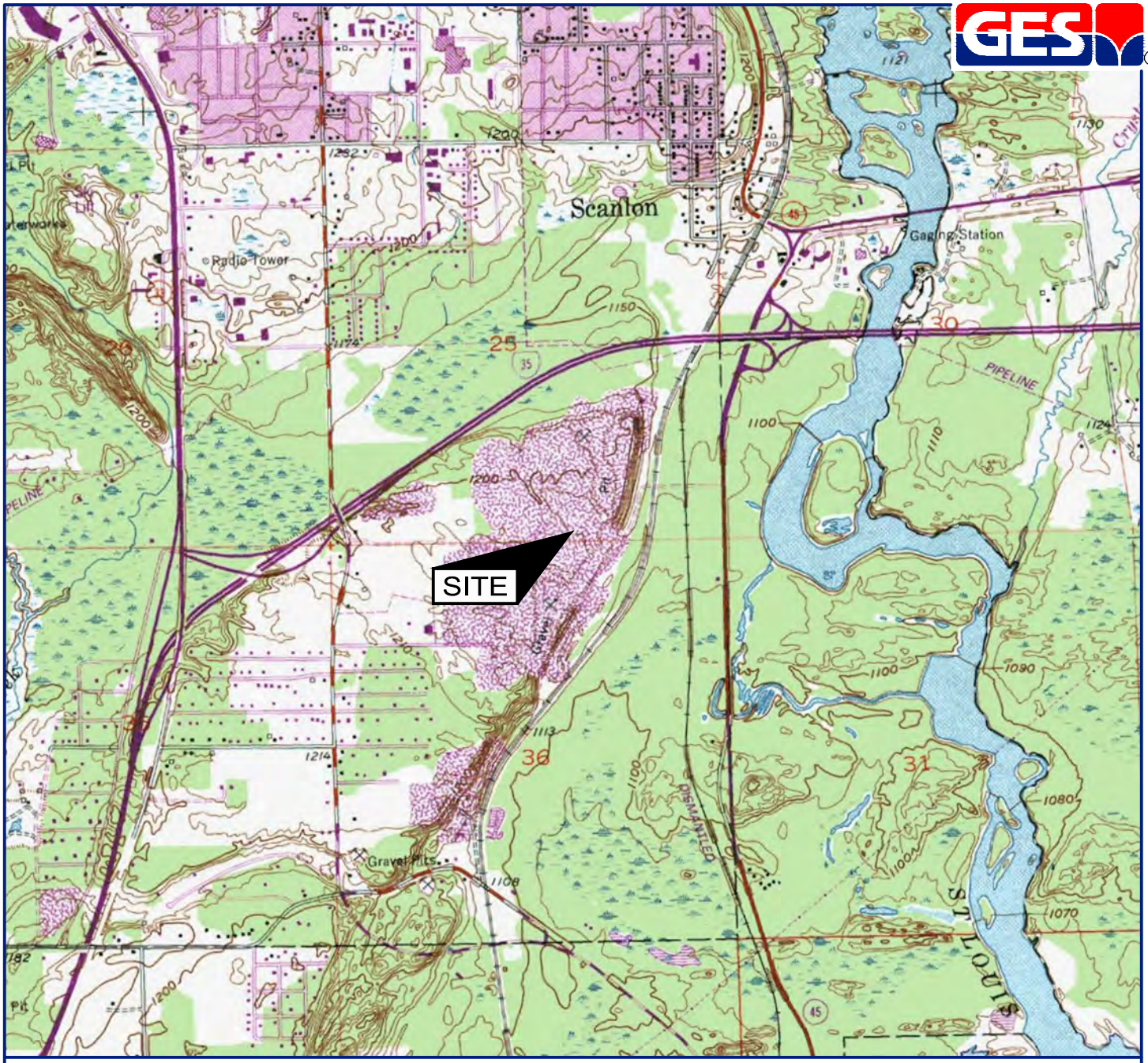
A 2023 Annual Monitoring Report will be prepared and include sampling results from the 2023 CCR groundwater monitoring events and an evaluation of the analytical results as they pertained to BTVs.

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 1993
CLOQUET, MINNESOTA
CONTOUR INTERVAL = 10'

QUADRANGLE LOCATION

DRAFTED BY: W.G.S.	SITE LOCATION MAP
CHECKED BY: NS	SKB ENVIRONMENTAL CLOQUET LANDFILL 761 MINNESOTA STATE HIGHWAY 45 CLOQUET, MINNESOTA
REVIEWED BY: JFS	Groundwater & Environmental Services, Inc. 1285 CORPORATE CENTER DRIVE, SUITE 120, EAGAN, MN 55121
NORTH	SCALE IN FEET: 0 — 2000 / DATE: 9-22-16 / FIGURE: 1

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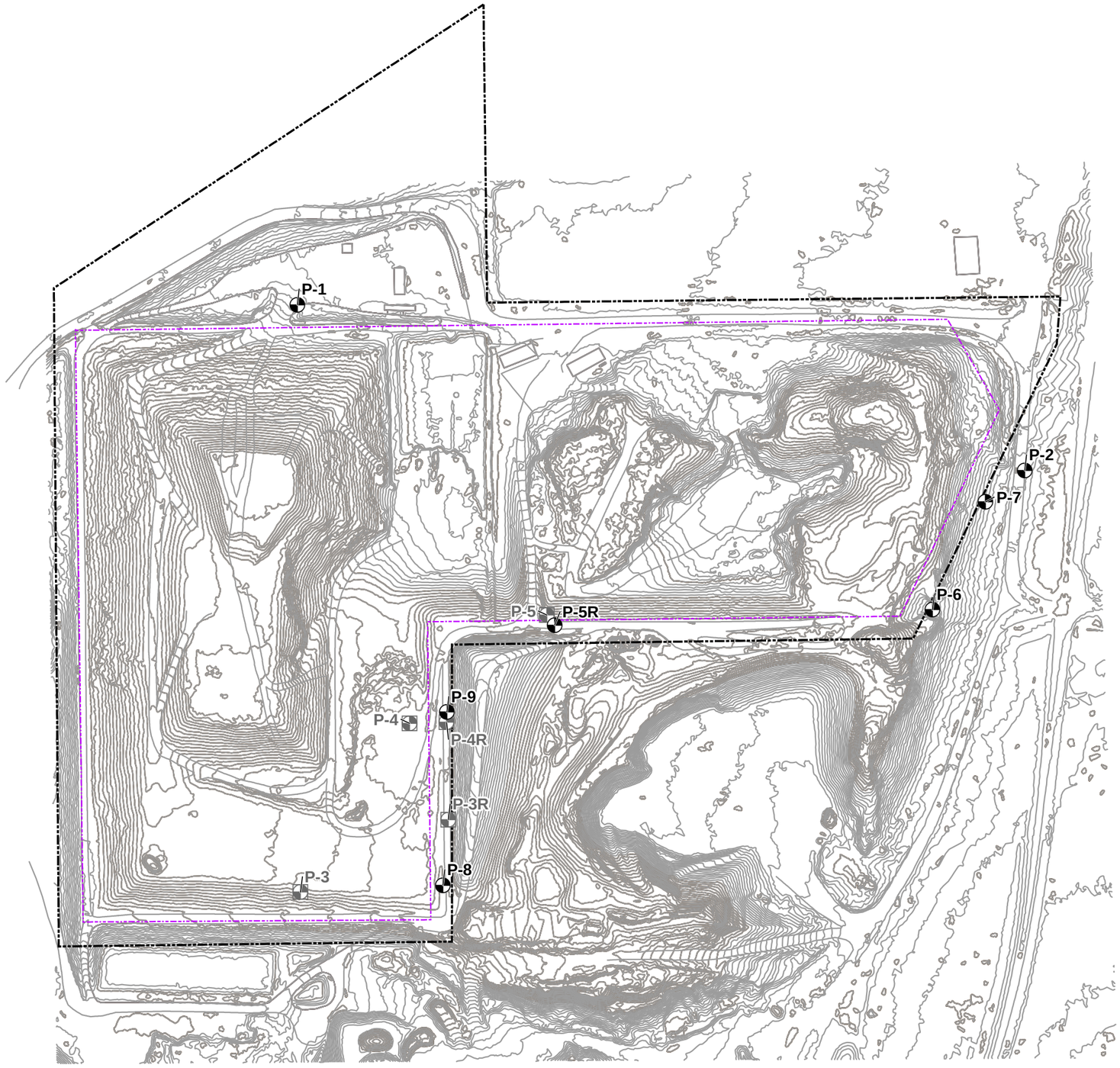

Legend

- MONITORING WELL
- SEALED MONITORING WELL
- PROPERTY BOUNDARY
- PROPOSED WASTE LIMITS

Site Map

SKB Environmental
Cloquet Landfill
761 Minnesota State Highway 45
Cloquet, Minnesota

Drawn **GKS**
Designed **DMC**
Approved **NJS**

Date **11/29/22**
Figure **2**

Scale In Feet (Approximate)
0 80

Groundwater & Environmental Services, Inc.

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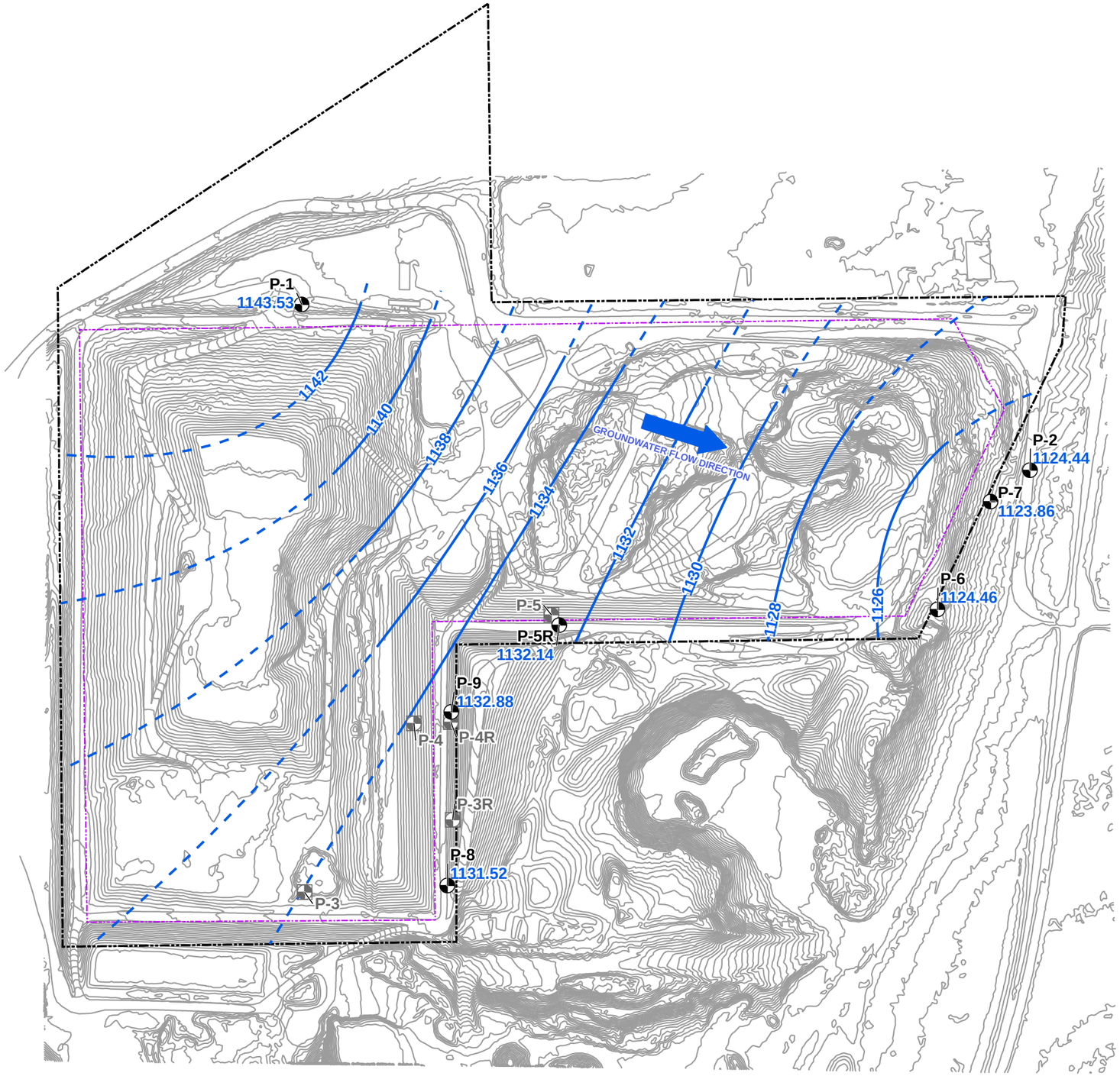

Legend

- MONITORING WELL
- SEALED MONITORING WELL
- GROUNDWATER ELEVATION ISOCONTOUR (ft MSL)
- INFERRED GROUNDWATER ELEVATION ISOCONTOUR (ft MSL)
- 1125.78 MEASURED GROUNDWATER ELEVATION (ft MSL)
- PROPERTY BOUNDARY
- PROPOSED WASTE LIMITS

Groundwater Elevation Map
April 6, 2022

SKB Environmental
Cloquet Landfill
761 Minnesota State Highway 45
Cloquet, Minnesota

Drawn
GKS
Designed
DMC
Approved
JFS

Date
5/25/22
Figure
3

N

Scale In Feet (Approximate)
0 80

Groundwater & Environmental Services, Inc.

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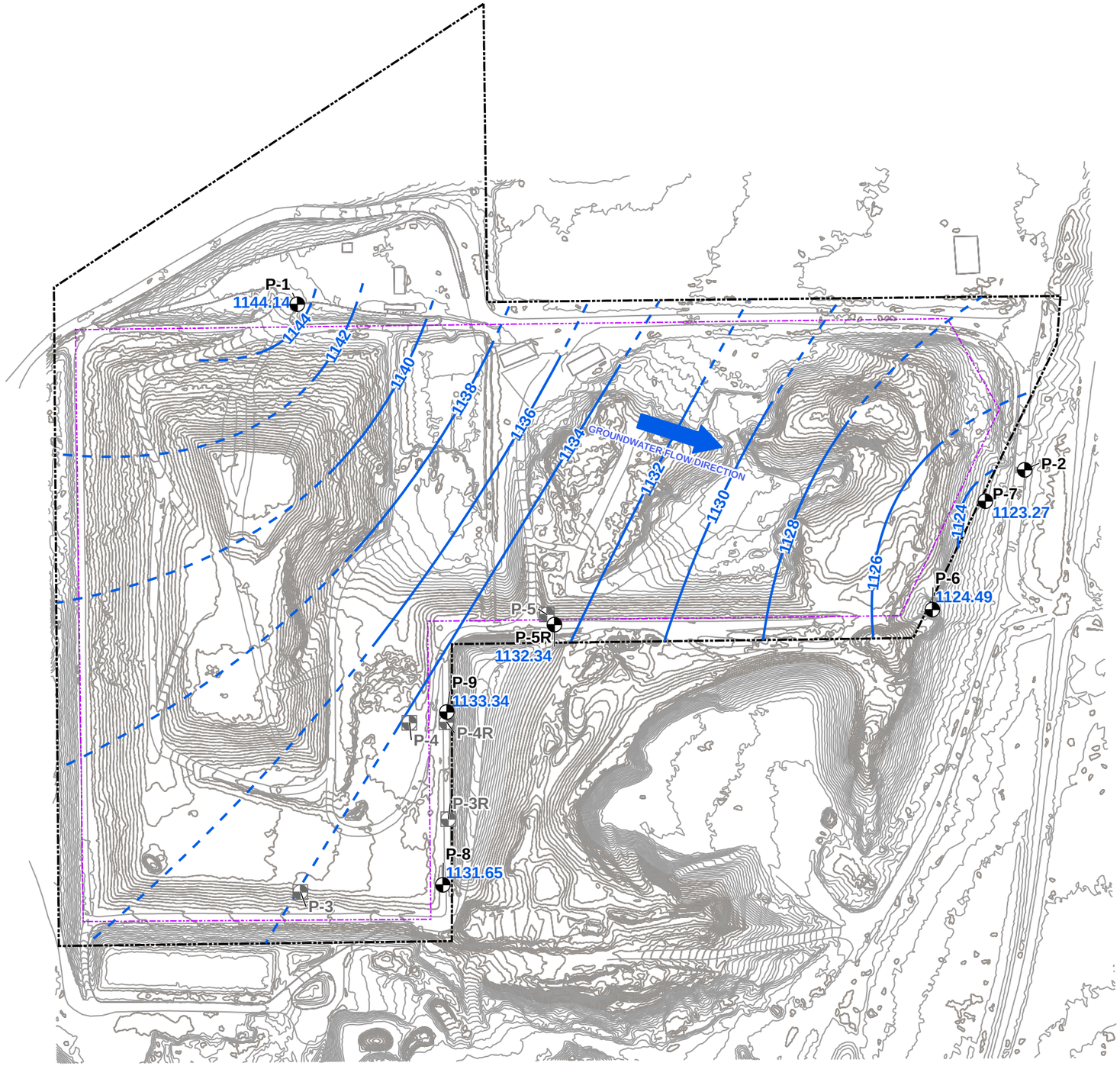

Legend

- MONITORING WELL
- SEALED MONITORING WELL
- GROUNDWATER ELEVATION ISOCONTOUR (ft MSL)
- INFERRED GROUNDWATER ELEVATION ISOCONTOUR (ft MSL)
- 1125.78 MEASURED GROUNDWATER ELEVATION (ft MSL)
- PROPERTY BOUNDARY
- PROPOSED WASTE LIMITS

Groundwater Elevation Map
October 26, 2022

SKB Environmental
Cloquet Landfill
761 Minnesota State Highway 45
Cloquet, Minnesota

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

Date **12/19/22**
Figure **4**

Scale In Feet (Approximate)
0 80

Groundwater & Environmental Services, Inc.

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Tables

2022 CCR Annual Monitoring Report
SKB Cloquet Landfill
761 Minnesota State Highway 45
Cloquet, Minnesota

Table 1

Groundwater Elevations

Date	P-1	P-2	P-5R	P-6	P-7	P-8	P-9
04/06/2022	1143.53	1124.44	1132.14	1124.46	1123.86	1131.52	1132.88
10/26/2022	1144.14		1132.34	1124.49	1123.27	1131.65	1133.34

Table 2

Groundwater Analytical Data
Appendix III

Location	Date	Parameter	Result	Background Threshold Value (BTV)	Units	CAS #
P-1	04/06/2022	Boron	< 0.10	0.41	mg/l	7440-42-8
P-1	10/26/2022	Boron	< 0.10	0.41	mg/l	7440-42-8
P-1	04/06/2022	Calcium	162	248.4	mg/l	7440-70-2
P-1	10/26/2022	Calcium	149	248.4	mg/l	7440-70-2
P-1	04/06/2022	Chloride	220	407.3	mg/l	16887-00-6
P-1	10/26/2022	Chloride	160	407.3	mg/l	16887-00-6
P-1	04/06/2022	Fluoride	< 0.50	0.50	mg/l	16984-48-8
P-1	10/26/2022	Fluoride	< 0.50	0.50	mg/l	16984-48-8
P-1	04/06/2022	pH	6.6	6.5 < 8.1	pH UNITS	PH
P-1	10/26/2022	pH	6.8	6.5 < 8.1	pH UNITS	PH
P-1	04/06/2022	Sulfate as SO4	26	382.7	mg/l	14808-79-8
P-1	10/26/2022	Sulfate as SO4	29	382.7	mg/l	14808-79-8
P-1	04/06/2022	Total Dissolved Solids	678	969	mg/l	TDS
P-1	10/26/2022	Total Dissolved Solids	622	969	mg/l	TDS
P-5R	04/07/2022	Boron	< 0.10	0.41	mg/l	7440-42-8
P-5R	10/26/2022	Boron	< 0.10	0.41	mg/l	7440-42-8
P-5R	04/07/2022	Calcium	116	248.4	mg/l	7440-70-2
P-5R	10/26/2022	Calcium	143	248.4	mg/l	7440-70-2
P-5R	04/07/2022	Chloride	200	407.3	mg/l	16887-00-6
P-5R	10/26/2022	Chloride	200	407.3	mg/l	16887-00-6
P-5R	04/07/2022	Fluoride	< 0.50	0.50	mg/l	16984-48-8
P-5R	10/26/2022	Fluoride	< 0.50	0.50	mg/l	16984-48-8
P-5R	04/07/2022	pH	7.2	6.5 < 8.1	pH UNITS	PH
P-5R	10/26/2022	pH	6.8	6.5 < 8.1	pH UNITS	PH
P-5R	04/07/2022	Sulfate as SO4	28	382.7	mg/l	14808-79-8
P-5R	10/26/2022	Sulfate as SO4	36	382.7	mg/l	14808-79-8
P-5R	04/07/2022	Total Dissolved Solids	624	969	mg/l	TDS
P-5R	10/26/2022	Total Dissolved Solids	810	969	mg/l	TDS
P-6	04/07/2022	Boron	0.18	0.41	mg/l	7440-42-8
P-6	10/27/2022	Boron	0.16	0.41	mg/l	7440-42-8
P-6	04/07/2022	Calcium	128	248.4	mg/l	7440-70-2
P-6	10/27/2022	Calcium	139	248.4	mg/l	7440-70-2
P-6	04/07/2022	Chloride	57	407.3	mg/l	16887-00-6
P-6	10/27/2022	Chloride	63	407.3	mg/l	16887-00-6
P-6	04/07/2022	Fluoride	< 0.50	0.50	mg/l	16984-48-8
P-6	10/27/2022	Fluoride	< 0.50	0.50	mg/l	16984-48-8
P-6	04/07/2022	pH	7.0	6.5 < 8.1	pH UNITS	PH
P-6	10/27/2022	pH	7.0	6.5 < 8.1	pH UNITS	PH
P-6	04/07/2022	Sulfate as SO4	96	382.7	mg/l	14808-79-8
P-6	10/27/2022	Sulfate as SO4	110	382.7	mg/l	14808-79-8
P-6	04/07/2022	Total Dissolved Solids	514	969	mg/l	TDS
P-6	10/27/2022	Total Dissolved Solids	588	969	mg/l	TDS
P-7	04/07/2022	Boron	0.12	0.41	mg/l	7440-42-8
P-7	10/27/2022	Boron	0.13	0.41	mg/l	7440-42-8
P-7	04/07/2022	Calcium	128	248.4	mg/l	7440-70-2
P-7	10/27/2022	Calcium	174	248.4	mg/l	7440-70-2
P-7	04/07/2022	Chloride	62	407.3	mg/l	16887-00-6
P-7	10/27/2022	Chloride	65	407.3	mg/l	16887-00-6
P-7	04/07/2022	Fluoride	< 0.50	0.50	mg/l	16984-48-8
P-7	10/27/2022	Fluoride	< 0.50	0.50	mg/l	16984-48-8

Table 2

Groundwater Analytical Data
Appendix III

Location	Date	Parameter	Result	Background Threshold Value (BTV)	Units	CAS #
P-7	04/07/2022	pH	7.0	6.5 < 8.1	pH UNITS	PH
P-7	10/27/2022	pH	7.0	6.5 < 8.1	pH UNITS	PH
P-7	04/07/2022	Sulfate as SO4	36	382.7	mg/l	14808-79-8
P-7	10/27/2022	Sulfate as SO4	72	382.7	mg/l	14808-79-8
P-7	04/07/2022	Total Dissolved Solids	536	969	mg/l	TDS
P-7	10/27/2022	Total Dissolved Solids	760	969	mg/l	TDS
P-8	04/06/2022	Boron	< 0.10	0.41	mg/l	7440-42-8
P-8	10/26/2022	Boron	< 0.10	0.41	mg/l	7440-42-8
P-8	04/06/2022	Calcium	97.4	248.4	mg/l	7440-70-2
P-8	10/26/2022	Calcium	103	248.4	mg/l	7440-70-2
P-8	04/06/2022	Chloride	97	407.3	mg/l	16887-00-6
P-8	10/26/2022	Chloride	100	407.3	mg/l	16887-00-6
P-8	04/06/2022	Fluoride	< 0.50	0.50	mg/l	16984-48-8
P-8	10/26/2022	Fluoride	< 0.50	0.50	mg/l	16984-48-8
P-8	04/06/2022	pH	8.0	6.5 < 8.1	pH UNITS	PH
P-8	10/26/2022	pH	8.0	6.5 < 8.1	pH UNITS	PH
P-8	04/06/2022	Sulfate as SO4	28	382.7	mg/l	14808-79-8
P-8	10/26/2022	Sulfate as SO4	29	382.7	mg/l	14808-79-8
P-8	04/06/2022	Total Dissolved Solids	346	969	mg/l	TDS
P-8	10/26/2022	Total Dissolved Solids	420	969	mg/l	TDS
P-9	04/06/2022	Boron	< 0.10	0.41	mg/l	7440-42-8
P-9	10/26/2022	Boron	< 0.10	0.41	mg/l	7440-42-8
P-9	04/06/2022	Calcium	81.6	248.4	mg/l	7440-70-2
P-9	10/26/2022	Calcium	78.5	248.4	mg/l	7440-70-2
P-9	04/06/2022	Chloride	120	407.3	mg/l	16887-00-6
P-9	10/26/2022	Chloride	120	407.3	mg/l	16887-00-6
P-9	04/06/2022	Fluoride	< 0.50	0.50	mg/l	16984-48-8
P-9	10/26/2022	Fluoride	< 0.50	0.50	mg/l	16984-48-8
P-9	04/06/2022	pH	7.7	6.5 < 8.1	pH UNITS	PH
P-9	10/26/2022	pH	7.8	6.5 < 8.1	pH UNITS	PH
P-9	04/06/2022	Sulfate as SO4	25	382.7	mg/l	14808-79-8
P-9	10/26/2022	Sulfate as SO4	25	382.7	mg/l	14808-79-8
P-9	04/06/2022	Total Dissolved Solids	402	969	mg/l	TDS
P-9	10/26/2022	Total Dissolved Solids	566	969	mg/l	TDS

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

2022 CCR Annual Monitoring Report
SKB Cloquet Landfill
761 Minnesota State Highway 45
Cloquet, Minnesota

Table 3

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
P-1	4/6/2022	1000	0.1	6.95	1400	8.36	0.00	0.0	114
P-1	4/6/2022	1000	1	6.66	1380	7.56	0.00	0.0	124
P-1	4/6/2022	1000	2	6.51	1370	7.52	0.00	0.0	129
P-1	4/6/2022	1000	3	6.35	1360	7.50	0.00	0.0	139
P-1	4/6/2022			6.34	1360	7.49	0.00	0.0	140
P-1	10/26/2022	1000	0.1	7.62	1200	8.68	4.23	4.6	245
P-1	10/26/2022	1000	1	7.26	1180	9.51	2.55	5.2	261
P-1	10/26/2022	1000	2	7.18	1180	9.61	2.13	3.5	272
P-1	10/26/2022	1000	3	7.13	1180	9.65	1.86	1.1	282
P-1	10/26/2022			7.09	1180	9.66	1.79	1.0	287
P-5R	4/7/2022	1000	0.1	6.91	1330	8.23	0.06	0.0	85
P-5R	4/7/2022	1000	2	6.75	1300	8.99	0.00	0.0	73
P-5R	4/7/2022	1000	4	6.56	1280	9.16	0.00	0.0	68
P-5R	4/7/2022	1000	6	6.56	1280	9.23	0.00	0.0	65
P-5R	4/7/2022			6.54	1280	9.22	0.00	0.0	65
P-5R	10/26/2022	1000	0.1	7.17	1530	11.21	11.61	0.8	-40
P-5R	10/26/2022	1000	2	7.04	1560	11.23	8.15	1.0	-66
P-5R	10/26/2022	1000	4	6.98	1560	11.24	6.20	0.8	-69
P-5R	10/26/2022	1000	6	6.97	1560	11.24	6.20	0.8	-69
P-5R	10/26/2022			6.96	1550	11.25	5.67	0.8	-69
P-6	4/7/2022	1000	0.1	6.47	1170	6.67	0.00	5.8	30
P-6	4/7/2022	1000	1	6.47	1040	8.01	0.00	0.0	38
P-6	4/7/2022	1000	2	6.52	983	8.20	0.00	0.0	57
P-6	4/7/2022	1000	3	6.52	984	8.19	0.00	0.0	57
P-6	4/7/2022			6.52	984	8.19	0.00	0.0	57
P-6	10/26/2022	1000	0.1	8.42	1120	5.25	10.40	3.7	48
P-6	10/26/2022	1000	1	7.57	1090	8.15	2.47	6.4	41
P-6	10/26/2022	1000	2	7.46	1070	8.25	2.23	6.0	43
P-6	10/26/2022	1000	3	7.40	1070	8.42	1.98	5.4	43
P-6	10/26/2022			7.40	1070	8.43	1.94	5.3	44
P-7	4/7/2022	1000	0.1	7.02	895	6.08	6.93	38.9	108
P-7	4/7/2022	1000	0.5	6.57	981	6.36	1.16	29.7	110
P-7	4/7/2022	1000	0.75	6.58	969	6.45	0.62	25.3	110
P-7	4/7/2022	1000	1	6.59	966	6.48	0.49	24.5	110
P-7	4/7/2022			6.60	967	6.48	0.47	23.7	110
P-7	10/26/2022	1000	0.1	7.40	1360	7.69	3.49	2.8	78
P-7	10/26/2022	1000	0.5	7.40	1360	7.74	3.52	2.9	78
P-7	10/26/2022	1000	0.75	7.38	1360	7.78	3.40	2.9	78
P-7	10/26/2022	1000	1	7.38	1350	7.84	3.23	2.8	78
P-7	10/26/2022			7.36	1350	7.93	2.95	2.7	78
P-8	4/6/2022	1000	0.1	7.26	591	8.99	3.39	23.7	157
P-8	4/6/2022	1000	5	7.04	781	9.19	0.00	45.2	-134
P-8	4/6/2022	1000	10	7.04	797	8.93	0.00	1.7	-123
P-8	4/6/2022	1000	15.5	7.02	796	8.98	0.00	0.0	-118
P-8	4/6/2022			7.02	796	8.98	0.00	0.0	-118
P-8	10/26/2022	1000	0.1	8.03	777	9.18	12.82	4.8	63
P-8	10/26/2022	1000	5	8.00	795	9.75	6.40	1.9	-103
P-8	10/26/2022	1000	10	7.94	796	9.95	3.20	1.3	-97
P-8	10/26/2022	1000	15.5	7.92	815	9.35	2.89	1.1	153
P-8	10/26/2022			7.96	811	9.49	0.65	1.1	129
P-9	4/6/2022	1000	0.1	7.29	852	11.89	5.28	0.0	8

Table 3

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
P-9	4/6/2022	1000	1.5	7.31	850	12.55	6.25	0.0	-142
P-9	4/6/2022	1000	3	7.19	856	12.62	4.88	0.0	-131
P-9	4/6/2022	1000	5	7.21	859	12.61	4.12	0.0	-126
P-9	4/6/2022			7.21	859	12.60	4.11	0.0	-126
P-9	10/26/2022	1000	0.1	8.05	809	11.96	1.08	24.6	-69
P-9	10/26/2022	1000	1.5	8.14	819	12.23	0.00	11.5	-74
P-9	10/26/2022	1000	3	8.07	830	12.29	0.00	4.8	-146
P-9	10/26/2022	1000	5	8.02	836	12.30	0.00	3.2	-142
P-9	10/26/2022			8.04	837	12.30	0.00	3.1	-145

Table 4

Background Threshold Values

Appendix III to Part 257

Parameter	Background Threshold Value (BTV)	Units	CAS #
Boron	0.41	mg/l	7440-42-8
Calcium	248.4	mg/l	7440-70-2
Chloride	407.3	mg/l	16887-00-6
Fluoride	0.50	mg/l	15984-48-8
pH	lower 6.5 upper 8.1	pH UNITS	PH
Sulfate as SO4	382.7	mg/l	14808-79-8
Total Dissolved Solids	969	mg/l	TDS

Results in milligrams per liter (mg/l)

Appendix A – Field Data Sheets

FIELD INFORMATION LOG Part 1

Facility: Cloquet Landfill

Location: Cloquet, MN

Sample Matrix: Groundwater

PURGE INFORMATION

Method of Well Purge: Dedicated Bladder Pump

Date/Time Initiated: 4/6/22 10:55

Initial Water Level (feet): 12.08' ~~11.02~~

Ground Water Elevation (ft, msl): ~~1144.59~~

Top of Casing (ft, msl) 1155.61

PID (Background) 0.0 (PPM)

PID (Headspace) 0.0 (PPM)

Sample Location: P-1

Duplicate Collected: No

Field Blank Collected: No

Equipment Blank Collected: No

MS/MSD Collected: No

Sampler(s): N. Kuntzel

Casing Length (ft) 17.7

Dedicated Equipment: Yes

Casing Diameter (inches): 2

One Casing Volume (gal): 0.92 ~~1.1~~

Total Volume Purged (gal): 3.0

Purged Dry?: Yes (No) (circle)

Water Level After Purge (ft): 12.10'

Date/Time Completed: 4/6/22 11:15

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)
10:55	1000	0.1	9.36	6.95	1,400	0.0	0.06	114
11:00	1000	1.0	7.56	6.66	1,380	0.0	0.00	124
11:05	1000	2.0	7.52	6.51	1,370	0.0	0.00	129
11:10	1000	3.0	7.50	6.35	1,360	0.0	0.00	139

FIELD INFORMATION LOG Part 2

SAMPLING INFORMATION:

Sample Point ID: P-1

Water Lever @ Sampling (ft): 12.10'

Well Collection Sequence 1 of 6

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)
11:15 2/6/22	VOCs: 100 Other: 1000	7.49	6.34	1,360	0.0	0.00	140

YSI Serial Number: _____

YSI Sonde Serial Number: _____

GENERAL INFORMATION:

Weather Conditions @ sampling: 34°F, rain 5-10 mph NW

Sampling Characteristics: clear

COMMENTS AND OBSERVATIONS:

Full Bottle Set Collected: Yes No (circle)

# of Bottles Collected: 14/4

Well Closed and Locked: Yes No (circle)

Notes: _____

Minnesota Unique Well ID: _____

Date: 2/6/22 By: M. Schlegel Title: staff env. scientist

Company: Groundwater and Environmental Services, Inc.

FIELD INFORMATION LOG Part 1

Facility: Cloquet Landfill

Location: Cloquet, MN

Sample Matrix: Groundwater

PURGE INFORMATION

Method of Well Purge: Dedicated Bladder Pump

Date/Time Initiated: 4/6/22

Initial Water Level (feet): 57.87'

Ground Water Elevation (ft, msl): ~~0~~

Top of Casing (ft, msl)

PID (Background) 0.0 (PPM)

PID (Headspace) 0.0 (PPM)

PURGE DATA

Sample Location: P-8

Duplicate Collected: Yes - Duplicate1

Field Blank Collected: No

Equipment Blank Collected: No

MS/MSD Collected: Yes

Sampler(s): N. Schabel

Casing Length (ft) 89.05

Dedicated Equipment: Yes

Casing Diameter (inches): 2

One Casing Volume (gal): 5.08 ~~2.2~~

Total Volume Purged (gal): 15.5

Purged Dry?: Yes (No) (circle)

Water Level After Purge (ft): 57.39

Date/Time Completed: 4/6/22 12:50

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)
11:45	1000	0.1	8.99	7.26	591	23.7	3.39	157
12:05	1000	5.0	9.19	7.04	781	45.2	0.00	-134
12:25	1000	10.0	8.93	7.04	797	1.7	0.00	-125
12:45	1000	15.5	8.98	7.02	796	0.0	0.00	-118

FIELD INFORMATION LOG Part 2

SAMPLING INFORMATION: Sample Point ID: P-8

Water Lever @ Sampling (ft): 57.89' Well Collection Sequence 2 of 6

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)
12:56 4/6/22	VOCs: 100 Other: 100	8.98	702	796	0.0	0.00	-118

YSI Serial Number: _____

YSI Sonde Serial Number: _____

GENERAL INFORMATION:

Weather Conditions @ sampling: 39°F, rain 5-10 mph NE

Sampling Characteristics: clear

COMMENTS AND OBSERVATIONS:

Full Bottle Set Collected: (Yes) No (circle) # of Bottles Collected: 1/1/4

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

Notes: _____

Minnesota Unique Well ID: _____

Date: 4/6/22 By: M Sundell Title: staff env. scientist

Company: Groundwater and Environmental Services, Inc.

FIELD INFORMATION LOG Part 1

Facility: Cloquet Landfill

Location: Cloquet, MN

Sample Matrix: Groundwater

PURGE INFORMATION

Method of Well Purge: Dedicated Bladder Pump

Date/Time Initiated: 4/6/22 13:45

Initial Water Level (feet): 49.85'

Ground Water Elevation (ft, msl): ~~0~~

Top of Casing (ft, msl)

PID (Background) 0.0 (PPM)

PID (Headspace) 0.0 (PPM)

PURGE DATA

Sample Location: P-9

Duplicate Collected: No

Field Blank Collected: No

Equipment Blank Collected: NO

MS/MSD Collected: NO

Sampler(s): N. Ichter

Casing Length (ft) 59.15

Dedicated Equipment: Yes

Casing Diameter (inches): 2

One Casing Volume (gal): 1.5 ~~2.2~~

Total Volume Purged (gal): 5.0

Purged Dry?: Yes (No) (circle)

Water Level After Purge (ft): 49.87

Date/Time Completed: 4/6/22 14:05

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)
13:45	1000	0.1	12.69	7.29	852	0.0	5.28	8
13:50	1000	1.5	12.55	7.31	850	0.0	6.25	-142
13:55	1000	3.0	12.62	7.19	856	0.0	4.88	-131
14:00	1000	5.0	12.61	7.21	859	0.0	4.12	-126

FIELD INFORMATION LOG Part 2

SAMPLING INFORMATION:

Sample Point ID: P-9

Water Lever @ Sampling (ft): 49.87'

Well Collection Sequence 3 of 6

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)
14:05 4/6/22	VOCs: 100 Other: 1000	12.60	7.21	859	0.0	4.11	-126

YSI Serial Number: _____

YSI Sonde Serial Number: _____

GENERAL INFORMATION:

Weather Conditions @ sampling: 37°F, rainy 5-10 mph NE

Sampling Characteristics: Clear

COMMENTS AND OBSERVATIONS:

Full Bottle Set Collected: (Yes) No (circle)

# of Bottles Collected: 11/4

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

Notes: _____

Minnesota Unique Well ID: _____

Date: 4/6/22 By: N. Seidyl Title: Staff Env. Scientist

Company: Groundwater and Environmental Services, Inc.

FIELD INFORMATION LOG Part 1

Facility: Cloquet Landfill

Location: Cloquet, MN

Sample Matrix: Groundwater

PURGE INFORMATION

Method of Well Purge: Dedicated Bladder Pump

Date/Time Initiated: 4/7/22 8:05

Initial Water Level (feet): 60.84'

Ground Water Elevation (ft, msl): 0

Top of Casing (ft, msl) –

PID (Background) 0.0 (PPM)

PID (Headspace) 0.0 (PPM)

Sample Location: P-5R

Duplicate Collected: No

Field Blank Collected: No

Equipment Blank Collected: No

MS/MSD Collected: No

Sampler(s): M-Schlegel

Casing Length (ft) 73.2

Dedicated Equipment: Yes

Casing Diameter (inches): 2

One Casing Volume (gal): 2.0 ~~6.3~~

Total Volume Purged (gal): 6.0

Purged Dry?: Yes (No) (circle)

Water Level After Purge (ft): 60.86'

Date/Time Completed: 4/7/22 8:40

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)
8:05	1000	0.1	8.23	6.91	1,330	0.0	0.08	85
8:15	1000	2.0	8.99	6.75	1,300	0.0	0.00	73
8:25	1000	4.0	9.16	6.56	1,280	0.0	0.00	68
8:35	1000	6.0	9.23	6.56	1,280	0.0	0.00	65

FIELD INFORMATION LOG Part 2

SAMPLING INFORMATION:

Sample Point ID: P-5R

Water Lever @ Sampling (ft): 60.86'

Well Collection Sequence 4 of 6

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)
0940 4/7/22	VOCs: 100 Other: 1000	9.22	6.54	1,250	0.0	0.00	65

YSI Serial Number: _____

YSI Sonde Serial Number: _____

GENERAL INFORMATION:

Weather Conditions @ sampling: 31°F, light snow, 10-15 mph N

Sampling Characteristics: clear

COMMENTS AND OBSERVATIONS:

Full Bottle Set Collected: Yes No (circle)

# of Bottles Collected: 11/4

Well Closed and Locked: Yes No (circle)

Notes: _____

Minnesota Unique Well ID: 856322

Date: 4/7/22 By: N. Schlagel Title: Staff Env. Scientist

Company: Groundwater and Environmental Services, Inc.

FIELD INFORMATION LOG Part 1

Facility: Cloquet Landfill

Location: Cloquet, MN

Sample Matrix: Groundwater

PURGE INFORMATION

Method of Well Purge: Dedicated Bladder Pump

Date/Time Initiated: 4/7/22 :

Initial Water Level (feet): 30.97 ~~29.9~~

Ground Water Elevation (ft, msl): ~~1125.53~~

Top of Casing (ft, msl) 1155.43

PID (Background) 0.0 (PPM)

PID (Headspace) 0.0 (PPM)

PURGE DATA

Sample Location: P-6

Duplicate Collected: No

Field Blank Collected: No

Equipment Blank Collected: No

MS/MSD Collected: No

Sampler(s): N. Schlagel

Casing Length (ft) 36.2

Dedicated Equipment: Yes

Casing Diameter (inches): ~~1~~ 2

One Casing Volume (gal): 0.85 ~~1.1~~

Total Volume Purged (gal): 3.0 ~~3.3~~

Purged Dry?: Yes (No) (circle)

Water Level After Purge (ft): 30.99

Date/Time Completed: 4/7/22 10:30

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)
10:10	1000	0.1	6.67	6.47	1,170	5.8	0.00	30
10:15	1000	1.0	8.01	6.47	1,040	0.0	0.00	38
10:20	1000	2.0	8.20	6.52	983	0.0	0.00	57
10:25	1000	3.0	8.19	6.52	984	0.0	0.00	57

FIELD INFORMATION LOG Part 2

SAMPLING INFORMATION: Sample Point ID: P-6

Water Lever @ Sampling (ft): 30.99 Well Collection Sequence 5 of 6

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)
10:30 4/7/22	VOCs: 100 Other: 1000	8.19	6.52	984	0.0	0.00	57

YSI Serial Number: _____

YSI Sonde Serial Number: _____

GENERAL INFORMATION:

Weather Conditions @ sampling: 30°F, light snow 10-15 mph N

Sampling Characteristics: Clear

COMMENTS AND OBSERVATIONS:

Full Bottle Set Collected: (Yes) No (circle) # of Bottles Collected: 11/4

Well Closed and Locked: (Yes) No (circle

Notes: _____

Minnesota Unique Well ID: _____

Date: 4/7/22 By: N-Scin [illegible] Title: staff env. scientist

Company: Groundwater and Environmental Services, Inc.

FIELD INFORMATION LOG Part 1

Facility: Cloquet Landfill

Location: Cloquet, MN

Sample Matrix: Groundwater

PURGE INFORMATION

Method of Well Purge: Dedicated Bladder Pump

Date/Time Initiated: 4/7/22 :

Initial Water Level (feet): 15.53' ~~16.12~~

Ground Water Elevation (ft, msl): ~~1123.27~~

Top of Casing (ft, msl) 1139.39

PID (Background) 0.0 (PPM)

PID (Headspace) 0.0 (PPM)

Sample Location: P-7

Duplicate Collected: No

Field Blank Collected: ~~No~~ Yes

Equipment Blank Collected: ~~No~~ Yes

MS/MSD Collected: No

Sampler(s): M Schlagel

Casing Length (ft) 19.6

Dedicated Equipment: Yes

Casing Diameter (inches): 2

One Casing Volume (gal): 0.66 ~~0.6~~

Total Volume Purged (gal): 1.0 slow recharge

Purged Dry?: Yes (No) (circle)

Water Level After Purge (ft): 17.87'

Date/Time Completed: 4/7/22 11:00

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)
10:40	1000	0.1	6.08	7.02	895	38.9	6.93	108
10:45	1000	0.5	6.36	6.57	981	29.7	1.16	110
10:50	1000	0.75	6.45	6.58	969	25.7	0.62	110
10:55	1000	1.0	6.49	6.57	966	24.5	0.49	110

FIELD INFORMATION LOG Part 2

SAMPLING INFORMATION: Sample Point ID: P-7

Water Lever @ Sampling (ft): 17.87 Well Collection Sequence 6 of 6

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)
1150 4/7/22	VOCs: 100 Other: 1000	6.48	6.60	967	23.7	0.47	110

YSI Serial Number: _____

YSI Sonde Serial Number: _____

GENERAL INFORMATION:

Weather Conditions @ sampling: 30°F, light snow, 10-15 mph N

Sampling Characteristics: clear

COMMENTS AND OBSERVATIONS:

Full Bottle Set Collected: (Yes) No (circle) # of Bottles Collected: 11/4

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

Notes: _____

Minnesota Unique Well ID: _____

Date: 4/7/22 By: N. Schlegel Title: staff env. scientist

Company: Groundwater and Environmental Services, Inc.

FIELD INFORMATION LOG Part 1

Facility: Cloquet Landfill

Location: Cloquet, MN

Sample Matrix: Groundwater

PURGE INFORMATION

Method of Well Purge: Dedicated Bladder Pump

Date/Time Initiated: 4/7/22 11:45

Initial Water Level (feet): 7.35 ~~8.79~~

Ground Water Elevation (ft, msl): 1123

Top of Casing (ft, msl) 1131.79

PID (Background) 0.0 (PPM)

PID (Headspace) 0.0 (PPM)

PURGE DATA

Sample Location: P-2

Duplicate Collected: No

Field Blank Collected: No

Equipment Blank Collected: No

MS/MSD Collected: No

Sampler(s): M. Ichlay

Casing Length (ft) 10.4

Dedicated Equipment: Yes

Casing Diameter (inches): 2

One Casing Volume (gal): 0.5 ~~0.3~~

Total Volume Purged (gal):

Purged Dry?: (Yes) No (circle)

Water Level After Purge (ft):

Date/Time Completed: 4/7/22 11:45

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)
11:45	1000	0.1						

INSUFFCIENT WATER IN WELL TO COLLECT SAMPLE

FIELD INFORMATION LOG Part 2

SAMPLING INFORMATION: Sample Point ID: P-2

Water Lever @ Sampling (ft): _____ Well Collection Sequence _____ of _____

Parameters: Annual _____ Semiannual: _____ Quarterly: _____ 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)
	VOCs:						
	Other:						

YSI Serial Number: _____

YSI Sonde Serial Number: _____

GENERAL INFORMATION:

Weather Conditions @ sampling: _____

_____

Sampling Characteristics: _____

COMMENTS AND OBSERVATIONS:

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

Well Closed and Locked: Yes No (circle)

Notes: _____

Minnesota Unique Well ID: _____

Date: _____ By: _____ Title: _____

Company: Groundwater and Environmental Services, Inc.

INSTRUMENT CALIBRATION DATA:

Start of day: (Date/Time) 4/6/22 10:00

End of day: (Date/Time) 4/7/22 12:00

YSI Model Number U-5000

YSI Serial Number 9NX6E4RS

Sonde Model Number U-52

Sonde Serial Number UBELRSHL

Sampling Event

Time:	Value:		
10:00		NTU std =	DI Water
↓	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:

Groundwater Elevation Measurements
Cloquet Landfill

Site: SKB Cloquet

Personnel: N. Schlagel

Well ID	Date	Time	Depth To Water:	Notes:
P-1	4/6/22	10:55	12.18	
P-8	4/6/22	11:45	57.87	
P-9	4/6/22	13:45	49.85	
P-5R	4/6/22	14:35	60.84	
P-6	4/6/22	14:50	30.97	
P-7	4/6/22	14:40	15.53	
P-2	4/6/22	14:45	7.35	

FIELD INFORMATION LOG Part 1

Facility: Cloquet Landfill

Location: Cloquet, MN

Sample Matrix: Groundwater

PURGE INFORMATION

Method of Well Purge: Dedicated Bladder Pump

Date/Time Initiated: 10/26/22 8:52

Initial Water Level (feet): 11.47 ~~11.02~~

Ground Water Elevation (ft, msl): ~~1144.59~~

Top of Casing (ft, msl) 1155.61

PID (Background) 0.0 (PPM)

PID (Headspace) 0.0 (PPM)

PURGE DATA

Sample Location: P-1

Duplicate Collected: No

Field Blank Collected: No

Equipment Blank Collected: No

MS/MSD Collected: No

Sampler(s): N. Schlegel

Casing Length (ft) 17.7

Dedicated Equipment: Yes

Casing Diameter (inches): 2

One Casing Volume (gal): 1.02 ~~1.1~~

Total Volume Purged (gal): 3.0

Purged Dry?: Yes (No) (circle)

Water Level After Purge (ft): 11.51'

Date/Time Completed: 10/26/22 9:10

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)
8:52	1000	0.1	8.68	7.62	1,200	4.6	4.23	245
8:57	1000	1.0	9.51	7.26	1,180	5.2	2.55	261
9:02	1000	2.0	9.61	7.18	1,180	3.5	2.13	272
9:07	1000	3.0	9.65	7.13	1,180	1.1	1.86	282

FIELD INFORMATION LOG Part 2

SAMPLING INFORMATION: Sample Point ID: P-1

Water Lever @ Sampling (ft): 11.51' Well Collection Sequence 1 of 7

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)
9:10 10/20/22	VOCs: 100 Other: 1000	9.66	7.09	1,180	1.0	1.79	287

YSI Serial Number: _____

YSI Sonde Serial Number: _____

GENERAL INFORMATION:

Weather Conditions @ sampling: 37°F, cloudy 5-10 mph N

Sampling Characteristics: clear

COMMENTS AND OBSERVATIONS:

Full Bottle Set Collected: Yes No (circle) # of Bottles Collected: 11 (MPCA) 3 (CCR)

Well Closed and Locked: Yes No (circle

Notes: _____

Minnesota Unique Well ID: 728520

Date: 10/20/22 By: N. Schlagel Title: Staff env. scientist

Company: Groundwater and Environmental Services, Inc.

FIELD INFORMATION LOG Part 1

Facility: Cloquet Landfill

Location: Cloquet, MN

Sample Matrix: Groundwater

PURGE INFORMATION

Method of Well Purge: Dedicated Bladder Pump

Date/Time Initiated: 10/26/22 9:50

Initial Water Level (feet): 57.74

Ground Water Elevation (ft, msl): ~~0~~

Top of Casing (ft, msl) –

PID (Background) 0.0 (PPM)

PID (Headspace) 0.0 (PPM)

PURGE DATA

Sample Location: P-8

Duplicate Collected: Yes

Field Blank Collected: Yes

Equipment Blank Collected: Nd

MS/MSD Collected: Yes

Sampler(s): N. Schlegel

Casing Length (ft) 89.05

Dedicated Equipment: Yes

Casing Diameter (inches): 2

One Casing Volume (gal): 5.1 ~~2.2~~

Total Volume Purged (gal): 5.5

Purged Dry?: Yes (No) (circle)

Water Level After Purge (ft): 57.82

Date/Time Completed: 10/26/22 11:10

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)
9:50	1000	0.1	9.19	8.03	777	4.9	12.82	63
10:15	1000	5.0	9.75	8.00	795	1.9	6.40	-103
10:40	1000	10.0	9.95	7.94	796	1.3	3.20	-97
11:05	1000	15.5	9.35	7.92	915	1.1	2.89	153

FIELD INFORMATION LOG Part 2

SAMPLING INFORMATION: Sample Point ID: P-8

Water Lever @ Sampling (ft): 52.82 Well Collection Sequence 2 of 7

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)
10/26/22 11:10	VOCs: 100 Other: 1000	9.44	7.96	911	1.1	0.65	129

YSI Serial Number: _____

YSI Sonde Serial Number: _____

GENERAL INFORMATION:

Weather Conditions @ sampling: 37°F cloudy 5-10 mph N

Sampling Characteristics: clear

COMMENTS AND OBSERVATIONS:

Full Bottle Set Collected: Yes No (circle) # of Bottles Collected: 3 11 MPCA

Well Closed and Locked: Yes No (circle

Notes: _____

Minnesota Unique Well ID: 856321

Date: 10/26/22 By: [signature] Title: staff env scientist

Company: Groundwater and Environmental Services, Inc.

FIELD INFORMATION LOG Part 1

Facility: Cloquet Landfill

Location: Cloquet, MN

Sample Matrix: Groundwater

PURGE INFORMATION

Method of Well Purge: Dedicated Bladder Pump

Date/Time Initiated: 10/20/22 11:50

Initial Water Level (feet): 49.391

Ground Water Elevation (ft, msl): —0

Top of Casing (ft, msl) —

PID (Background) 0.6 (PPM)

PID (Headspace) 0.0 (PPM)

PURGE DATA

Sample Location: P-9

Duplicate Collected: No

Field Blank Collected: No

Equipment Blank Collected: No

MS/MSD Collected: No

Sampler(s): K. Scalzitti

Casing Length (ft) 59.15

Dedicated Equipment: Yes

Casing Diameter (inches): 2

One Casing Volume (gal): 1.59 ~~2.2~~

Total Volume Purged (gal): 5.0

Purged Dry?: Yes (No) (circle)

Water Level After Purge (ft): 52.45'

Date/Time Completed: 10/21/22 12:10

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)
11:50	1000	0.1	11.96	8.05	809	24.6	1.08	-69
11:55	1000	1.5	12.23	8.14	819	11.5	0.00	-74
12:00	1000	3.0	12.29	8.07	830	4.9	0.00	-146
12:05	1000	5.0	12.30	8.02	836	3.2	0.00	-142

FIELD INFORMATION LOG Part 2

SAMPLING INFORMATION: Sample Point ID: P-9

Water Lever @ Sampling (ft): 52-45' Well Collection Sequence 3 of 7

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)
12:16 10/26/22	VOCs: 100 Other: 2000	12.30	8.04	837	3.1	0.00	-145

YSI Serial Number: _____

YSI Sonde Serial Number: _____

GENERAL INFORMATION:

Weather Conditions @ sampling: 38°F, Cloudy, 5-10 mph N

Sampling Characteristics: clear

COMMENTS AND OBSERVATIONS:

Full Bottle Set Collected: Yes No (circle) # of Bottles Collected: 3 11

Well Closed and Locked: Yes No (circle

Notes: _____

Minnesota Unique Well ID: 762047

Date: 10/26/22 By: M. Schlegel Title: staff env. scientist

Company: Groundwater and Environmental Services, Inc.

FIELD INFORMATION LOG Part 1

Facility: Cloquet Landfill

Location: Cloquet, MN

Sample Matrix: Groundwater

PURGE INFORMATION

Method of Well Purge: Dedicated Bladder Pump

Date/Time Initiated: 10/26/22 12:30

Initial Water Level (feet): 60.64

Ground Water Elevation (ft, msl): 0

Top of Casing (ft, msl) –

PID (Background) 0.0 (PPM)

PID (Headspace) 0.0 (PPM)

Sample Location: P-5R

Duplicate Collected: No

Field Blank Collected: No

Equipment Blank Collected: No

MS/MSD Collected: No

Sampler(s): M. Schlagel

Casing Length (ft) 73.2

Dedicated Equipment: Yes

Casing Diameter (inches): 2

One Casing Volume (gal): 2.05 ~~6.3~~

Total Volume Purged (gal): 6.5

Purged Dry?: Yes (No) (circle)

Water Level After Purge (ft): 60.85

Date/Time Completed: 10/26/22 12:50

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)
12:30	1000	0.1	11.21	7.17	1,530	0.8	11.61	-40
12:35	1000	2.0	11.23	7.04	1,560	1.0	8.15	-66
12:40	1000	4.0	11.24	6.98	1560	0.8	6.20	-69
12:45	1000	6.0	11.24	6.97	1,560	0.8	6.20	-69

FIELD INFORMATION LOG Part 2

SAMPLING INFORMATION:

Sample Point ID: P-5R

Water Lever @ Sampling (ft): 60.85

Well Collection Sequence 4 of 7

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)
10/26/22 12:50	VOCs: 10 Other: 1000	11.25	6.96	1,550	0.3	5.67	-69

YSI Serial Number: _____

YSI Sonde Serial Number: _____

GENERAL INFORMATION:

Weather Conditions @ sampling: 37°F, cloudy, 5-10 mph N

Sampling Characteristics: clear

COMMENTS AND OBSERVATIONS:

Full Bottle Set Collected: (Yes) No (circle)

# of Bottles Collected: 11 (MPCA) 3 (CCR)

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

Notes: _____

Minnesota Unique Well ID: 856322

Date: 10/26/22 By: N-Schlagel Title: staff env scientist

Company: Groundwater and Environmental Services, Inc.

FIELD INFORMATION LOG Part 1

Facility: Cloquet Landfill

Location: Cloquet, MN

Sample Matrix: Groundwater

PURGE INFORMATION

Method of Well Purge: Dedicated Bladder Pump

Date/Time Initiated: 10/27/22 8:40

Initial Water Level (feet): 30.94 ~~29.9~~

Ground Water Elevation (ft, msl): 1125.53

Top of Casing (ft, msl) 1155.43

PID (Background) 0.0 (PPM)

PID (Headspace) 0.0 (PPM)

PURGE DATA

Sample Location: P-6

Duplicate Collected: No

Field Blank Collected: No

Equipment Blank Collected: No

MS/MSD Collected: No

Sampler(s): M. Sunlagel

Casing Length (ft) 36.2

Dedicated Equipment: Yes

Casing Diameter (inches): 2

One Casing Volume (gal): 0.86 ~~1.1~~

Total Volume Purged (gal): 2.85

Purged Dry?: Yes (No) (circle)

Water Level After Purge (ft): 30.27

Date/Time Completed: 10/27/22 9:00

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)
8:40	1000	0.1	5.25	8.42	1,120	27	10.40	48
8:45	1000	1.0	8.15	7.57	1,090	6.4	2.47	41
8:50	1000	2.0	8.25	7.46	1,070	6.0	2.23	43
8:55	1000	3.0	8.42	7.40	1,070	5.4	1.98	43

FIELD INFORMATION LOG Part 2

SAMPLING INFORMATION: Sample Point ID: P-6

Water Lever @ Sampling (ft): 31.27' Well Collection Sequence 5 of 7

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)
8:40 10/27/22	VOCs: 100 Other: 100	9.43	7.40	1,070	5.3	1.94	44

YSI Serial Number: _____

YSI Sonde Serial Number: _____

GENERAL INFORMATION:

Weather Conditions @ sampling: 34°F cloudy, calm

Sampling Characteristics: clear

COMMENTS AND OBSERVATIONS:

Full Bottle Set Collected: Yes No (circle) # of Bottles Collected: 11 (MPCA) 3 (CCR)

Well Closed and Locked: Yes No (circle)

Notes: _____

Minnesota Unique Well ID: 722808

Date: 10/27/22 By: N. Schlagel Title: staff env scientist

Company: Groundwater and Environmental Services, Inc.

FIELD INFORMATION LOG Part 1

Facility: Cloquet Landfill

Location: Cloquet, MN

Sample Matrix: Groundwater

PURGE INFORMATION

Method of Well Purge: Dedicated Bladder Pump

Date/Time Initiated: 10/27/22 :

Initial Water Level (feet): 16.12 ~~16.12~~

Ground Water Elevation (ft, msl): 1123.27

Top of Casing (ft, msl) 1139.39

PID (Background) 0.0 (PPM)

PID (Headspace) 0.0 (PPM)

PURGE DATA

Sample Location: P-7

Duplicate Collected: No

Field Blank Collected: No

Equipment Blank Collected: No

MS/MSD Collected: No

Sampler(s): N. Schlegel

Casing Length (ft) 19.6

Dedicated Equipment: Yes

Casing Diameter (inches): 2

One Casing Volume (gal): 0.57 ~~0.6~~

Total Volume Purged (gal): 1.0 slow recharge

Purged Dry?: Yes (No) (circle)

Water Level After Purge (ft): 18.26

Date/Time Completed: 10/27/22 9:50

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)
9:30	1000	0.1	7.69	7.40	1,360	2.8	3.49	78
9:35	1000	0.5	7.74	7.40	1,360	2.9	3.52	78
9:40	1000	0.75	7.78	7.38	1,360	2.9	3.40	78
9:45	1000	1.0	7.84	7.38	1,350	2.8	3.23	78

FIELD INFORMATION LOG Part 2

SAMPLING INFORMATION:

Sample Point ID: P-7

Water Lever @ Sampling (ft): 16.26'

Well Collection Sequence 6 of 7

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)
10/27/22 9:50	VOCs: 100 Other: 1000	7.93	7.36	1,350	2.7	2.95	78

YSI Serial Number: _____

YSI Sonde Serial Number: _____

GENERAL INFORMATION:

Weather Conditions @ sampling: 36°F, cloudy, calm

Sampling Characteristics: clear

COMMENTS AND OBSERVATIONS:

Full Bottle Set Collected: (Yes) No (circle)

# of Bottles Collected: 11 (MPCA) 3 (QA/QC)

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

Notes: _____

Minnesota Unique Well ID: 772807

Date: 10/27/22 By: N. Schultz Title: Staff Env. scientist

Company: Groundwater and Environmental Services, Inc.

FIELD INFORMATION LOG Part 1

Facility: Cloquet Landfill

Location: Cloquet, MN

Sample Matrix: Groundwater

PURGE INFORMATION

Method of Well Purge: Dedicated Bladder Pump

Date/Time Initiated: 10/27/22

Initial Water Level (feet): DRY ~~8.79~~

Ground Water Elevation (ft, msl): 1123

Top of Casing (ft, msl) 1131.79

PID (Background) 0.0 (PPM)

PID (Headspace) 0.0 (PPM)

PURGE DATA

Sample Location: P-2

Duplicate Collected: No

Field Blank Collected: No

Equipment Blank Collected: ~~No~~ Yes

MS/MSD Collected: No

Sampler(s): N.Schlagel

Casing Length (ft) 10.4

Dedicated Equipment: Yes

Casing Diameter (inches): 2

One Casing Volume (gal): ~~0.5~~

Total Volume Purged (gal): 0.0

Purged Dry?: Yes No (circle)

Water Level After Purge (ft): -

Date/Time Completed: 10/27/22

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)
		DRY			NO SAMPLE			

FIELD INFORMATION LOG Part 2

SAMPLING INFORMATION: Sample Point ID: P-2

Water Lever @ Sampling (ft): _____ Well Collection Sequence 7 of 7

Parameters: Annual _____ Semiannual: _____ Quarterly: _____ 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)
	VOCs:						
	Other:						

YSI Serial Number: _____

YSI Sonde Serial Number: _____

GENERAL INFORMATION:

Weather Conditions @ sampling: _____

_____

Sampling Characteristics: _____

COMMENTS AND OBSERVATIONS:

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

Well Closed and Locked: Yes No (circle

Notes: _____

Minnesota Unique Well ID: _____

Date: _____ By: _____ Title: _____

Company: Groundwater and Environmental Services, Inc.

INSTRUMENT CALIBRATION DATA:

Start of day: (Date/Time) 10/26/22 8:30

End of day: (Date/Time) 10/27/22 11:00

YSI Model Number U-5000

YSI Serial Number 103310

Sonde Model Number U-52

Sonde Serial Number U1032994

Sampling Event

Time:	Value:		
0	0	NTU std =	DI Water
100	100	NTU std =	100
4:45	4:45	uS std =	445 ~~1409~~
4:00	4:00	pH std =	4
7:00	7:00	pH std =	7
10:00	10:00	pH std =	10

Calibration Notes:

Groundwater Elevation Measurements
Cloquet Landfill

Site: SKB Cloquet
Personnel: N-Schlagel

Well ID	Date	Time	Depth To Water:	Notes:
P-1	10/26/22	8:44	11.47	
P-8		9:47	57.74	
P-9		11:47	49.39	
P-5R		12:27	60.64	
P-6		14:32	30.94	
P-7		14:27	16.12	
P-2		14:24	DRY	Top of bladder pump = 7.60'

Appendix B – Laboratory Analytical Reports

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins Cedar Falls
3019 Venture Way
Cedar Falls, IA 50613
Tel: (319)277-2401

Laboratory Job ID: 310-228522-1
Client Project/Site: SKB Cloquet - CCR Groundwater
Sampling Event: CCR Groundwater (Spring)

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

Attn: Megan Lindstrom

Authorized for release by:
4/27/2022 4:14:30 PM

Zach Bindert, Project Manager I
(319)277-2401
Zach.Bindert@et.eurofinsus.com

Table of Contents

Case Narrative

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

Job ID: 310-228522-1

Job ID: 310-228522-1

Laboratory: Eurofins Cedar Falls

Narrative

Job Narrative
310-228522-1

Comments
No additional comments.

Receipt
The samples were received on 4/7/2022 9:45 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was -0.6° C.

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

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

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

Sample Summary

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

Job ID: 310-228522-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
310-228522-1	Duplicate 1 - CCR	Ground Water	04/06/22 00:00	04/07/22 09:45
310-228522-2	P-1 - CCR	Ground Water	04/06/22 11:15	04/07/22 09:45
310-228522-3	P-8 - CCR	Ground Water	04/06/22 12:50	04/07/22 09:45
310-228522-4	P-9 - CCR	Ground Water	04/06/22 14:05	04/07/22 09:45

Detection Summary

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

Job ID: 310-228522-1

Client Sample ID: Duplicate 1 - CCR — Lab Sample ID: 310-228522-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	98		5.0		mg/L	5		9056A	Total/NA
Sulfate	28		5.0		mg/L	5		9056A	Total/NA
Calcium	97.1		0.50		mg/L	1		6020B	Total/NA
Total Dissolved Solids	374		50.0		mg/L	1		SM 2540C	Total/NA
pH	8.1	HF	0.1		SU	1		SM 4500 H+ B	Total/NA

Client Sample ID: P-1 - CCR — Lab Sample ID: 310-228522-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	220		5.0		mg/L	5		9056A	Total/NA
Sulfate	26		5.0		mg/L	5		9056A	Total/NA
Calcium	162		0.50		mg/L	1		6020B	Total/NA
Total Dissolved Solids	678		50.0		mg/L	1		SM 2540C	Total/NA
pH	6.6	HF	0.1		SU	1		SM 4500 H+ B	Total/NA

Client Sample ID: P-8 - CCR — Lab Sample ID: 310-228522-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	97		5.0		mg/L	5		9056A	Total/NA
Sulfate	28		5.0		mg/L	5		9056A	Total/NA
Calcium	97.4		0.50		mg/L	1		6020B	Total/NA
Total Dissolved Solids	346		50.0		mg/L	1		SM 2540C	Total/NA
pH	8.0	HF	0.1		SU	1		SM 4500 H+ B	Total/NA

Client Sample ID: P-9 - CCR — Lab Sample ID: 310-228522-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	120		5.0		mg/L	5		9056A	Total/NA
Sulfate	25		5.0		mg/L	5		9056A	Total/NA
Calcium	81.6		0.50		mg/L	1		6020B	Total/NA
Total Dissolved Solids	402		50.0		mg/L	1		SM 2540C	Total/NA
pH	7.7	HF	0.1		SU	1		SM 4500 H+ B	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample Results

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

Job ID: 310-228522-1

Client Sample ID: Duplicate 1 - CCR

Date Collected: 04/06/22 00:00
Date Received: 04/07/22 09:45

Lab Sample ID: 310-228522-1

Matrix: Ground Water

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**98**		5.0		mg/L			04/13/22 21:11	5
Fluoride	<0.50		0.50		mg/L			04/13/22 21:11	5
Sulfate	**28**		5.0		mg/L			04/13/22 21:11	5

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	<0.10		0.10		mg/L		04/14/22 09:00	04/27/22 13:47	1
Calcium	**97.1**		0.50		mg/L		04/14/22 09:00	04/25/22 16:47	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	**374**		50.0		mg/L			04/12/22 13:50	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	**8.1**	**HF**	0.1		SU			04/07/22 13:07	1

Client Sample Results

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

Job ID: 310-228522-1

Client Sample ID: P-1 - CCR

Date Collected: 04/06/22 11:15
Date Received: 04/07/22 09:45

Lab Sample ID: 310-228522-2

Matrix: Ground Water

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**220**		5.0		mg/L			04/13/22 21:26	5
Fluoride	<0.50		0.50		mg/L			04/13/22 21:26	5
Sulfate	**26**		5.0		mg/L			04/13/22 21:26	5

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	<0.10		0.10		mg/L		04/14/22 09:00	04/27/22 13:51	1
Calcium	**162**		0.50		mg/L		04/14/22 09:00	04/25/22 16:50	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	**678**		50.0		mg/L			04/12/22 13:50	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	**6.6**	**HF**	0.1		SU			04/07/22 13:06	1

Client Sample Results

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

Job ID: 310-228522-1

Client Sample ID: P-8 - CCR

Date Collected: 04/06/22 12:50
Date Received: 04/07/22 09:45

Lab Sample ID: 310-228522-3

Matrix: Ground Water

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**97**		5.0		mg/L			04/13/22 22:14	5
Fluoride	<0.50		0.50		mg/L			04/13/22 22:14	5
Sulfate	**28**		5.0		mg/L			04/13/22 22:14	5

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	<0.10	F1	0.10		mg/L		04/14/22 09:00	04/27/22 13:55	1
Calcium	**97.4**		0.50		mg/L		04/14/22 09:00	04/25/22 16:53	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	**346**		50.0		mg/L			04/12/22 13:50	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	**8.0**	**HF**	0.1		SU			04/07/22 12:59	1

Client Sample Results

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

Job ID: 310-228522-1

Client Sample ID: P-9 - CCR

Date Collected: 04/06/22 14:05
Date Received: 04/07/22 09:45

Lab Sample ID: 310-228522-4

Matrix: Ground Water

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	120		5.0		mg/L			04/13/22 23:04	5
Fluoride	<0.50		0.50		mg/L			04/13/22 23:04	5
Sulfate	25		5.0		mg/L			04/13/22 23:04	5

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	<0.10		0.10		mg/L		04/14/22 09:00	04/27/22 14:22	1
Calcium	81.6		0.50		mg/L		04/14/22 09:00	04/25/22 17:03	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	402		50.0		mg/L			04/12/22 13:50	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	7.7	HF	0.1		SU			04/07/22 13:08	1

Qualifiers

HPLC/IC

Qualifier	Qualifier Description
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.

Metals

Qualifier	Qualifier Description
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.
F1	MS and/or MSD recovery exceeds control limits.

General Chemistry

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

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

Method: 9056A - Anions, Ion Chromatography

Lab Sample ID: MB 310-349843/3
Matrix: Water
Analysis Batch: 349843

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<1.0		1.0		mg/L			04/13/22 20:24	1
Fluoride	<0.10		0.10		mg/L			04/13/22 20:24	1
Sulfate	<1.0		1.0		mg/L			04/13/22 20:24	1

Lab Sample ID: LCS 310-349843/4
Matrix: Water
Analysis Batch: 349843

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Chloride	10.0	9.15		mg/L		92	90 - 110
Fluoride	2.00	1.91		mg/L		95	90 - 110
Sulfate	10.0	9.26		mg/L		93	90 - 110

Lab Sample ID: 310-228522-3 MS
Matrix: Ground Water
Analysis Batch: 349843

Client Sample ID: P-8 - CCR
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Chloride	97		5.00	23.8	4	mg/L		-1459	80 - 120
Fluoride	<0.50		1.00	1.04		mg/L		104	80 - 120
Sulfate	28		5.00	10.2	4	mg/L		-356	80 - 120

Lab Sample ID: 310-228522-3 MSD
Matrix: Ground Water
Analysis Batch: 349843

Client Sample ID: P-8 - 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	97		5.00	23.9	4	mg/L		-1457	80 - 120	0	15
Fluoride	<0.50		1.00	1.05		mg/L		105	80 - 120	1	15
Sulfate	28		5.00	10.3	4	mg/L		-355	80 - 120	0	15

Method: 6020B - Metals (ICP/MS)

Lab Sample ID: MB 310-349469/1-A
Matrix: Water
Analysis Batch: 350746

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 349469

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	<0.50		0.50		mg/L		04/14/22 09:00	04/21/22 23:37	1

Lab Sample ID: MB 310-349469/1-A
Matrix: Water
Analysis Batch: 351263

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 349469

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	<0.10		0.10		mg/L		04/14/22 09:00	04/27/22 13:39	1

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

Lab Sample ID: LCS 310-349469/2-A
Matrix: Water
Analysis Batch: 351055

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 349469

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Calcium	2.00	1.83		mg/L		91	80 - 120

Lab Sample ID: LCS 310-349469/2-A
Matrix: Water
Analysis Batch: 351263

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 349469

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Boron	0.200	0.192		mg/L		96	80 - 120

Lab Sample ID: 310-228522-3 MS
Matrix: Ground Water
Analysis Batch: 350746

Client Sample ID: P-8 - CCR
Prep Type: Total/NA
Prep Batch: 349469

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Calcium	97.3	^2	2.00	97.31	4	mg/L		-0.8	75 - 125

Lab Sample ID: 310-228522-3 MS
Matrix: Ground Water
Analysis Batch: 351263

Client Sample ID: P-8 - CCR
Prep Type: Total/NA
Prep Batch: 349469

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Boron	<0.10	F1	0.200	0.228		mg/L		114	75 - 125

Lab Sample ID: 310-228522-3 MSD
Matrix: Ground Water
Analysis Batch: 350746

Client Sample ID: P-8 - CCR
Prep Type: Total/NA
Prep Batch: 349469

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Calcium	97.3	^2	2.00	96.35	4	mg/L		-49	75 - 125	1	20

Lab Sample ID: 310-228522-3 MSD
Matrix: Ground Water
Analysis Batch: 351263

Client Sample ID: P-8 - CCR
Prep Type: Total/NA
Prep Batch: 349469

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Boron	<0.10	F1	0.200	0.259	F1	mg/L		129	75 - 125	12	20

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

Lab Sample ID: MB 310-349583/1
Matrix: Water
Analysis Batch: 349583

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	<50.0		50.0		mg/L			04/12/22 13:50	1

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

Lab Sample ID: LCS 310-349583/2
Matrix: Water
Analysis Batch: 349583

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			1000	902.0		mg/L		90	90 - 110		

Lab Sample ID: 310-228522-3 DU
Matrix: Ground Water
Analysis Batch: 349583

Client Sample ID: P-8 - CCR
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Total Dissolved Solids	346			350.0		mg/L				1	20

Method: SM 4500 H+ B - pH

Lab Sample ID: LCS 310-349115/1
Matrix: Water
Analysis Batch: 349115

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	98 - 102		

Lab Sample ID: 310-228522-3 DU
Matrix: Ground Water
Analysis Batch: 349115

Client Sample ID: P-8 - CCR
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
pH	8.0	HF		8.0		SU				0.1	20

HPLC/IC

Analysis Batch: 349843

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-228522-1	Duplicate 1 - CCR	Total/NA	Ground Water	9056A	
310-228522-2	P-1 - CCR	Total/NA	Ground Water	9056A	
310-228522-3	P-8 - CCR	Total/NA	Ground Water	9056A	
310-228522-4	P-9 - CCR	Total/NA	Ground Water	9056A	
MB 310-349843/3	Method Blank	Total/NA	Water	9056A	
LCS 310-349843/4	Lab Control Sample	Total/NA	Water	9056A	
310-228522-3 MS	P-8 - CCR	Total/NA	Ground Water	9056A	
310-228522-3 MSD	P-8 - CCR	Total/NA	Ground Water	9056A	

Metals

Prep Batch: 349469

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-228522-1	Duplicate 1 - CCR	Total/NA	Ground Water	3005A	
310-228522-2	P-1 - CCR	Total/NA	Ground Water	3005A	
310-228522-3	P-8 - CCR	Total/NA	Ground Water	3005A	
310-228522-4	P-9 - CCR	Total/NA	Ground Water	3005A	
MB 310-349469/1-A	Method Blank	Total/NA	Water	3005A	
LCS 310-349469/2-A	Lab Control Sample	Total/NA	Water	3005A	
310-228522-3 MS	P-8 - CCR	Total/NA	Ground Water	3005A	
310-228522-3 MSD	P-8 - CCR	Total/NA	Ground Water	3005A	

Analysis Batch: 350746

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 310-349469/1-A	Method Blank	Total/NA	Water	6020B	349469
310-228522-3 MS	P-8 - CCR	Total/NA	Ground Water	6020B	349469
310-228522-3 MSD	P-8 - CCR	Total/NA	Ground Water	6020B	349469

Analysis Batch: 351055

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-228522-1	Duplicate 1 - CCR	Total/NA	Ground Water	6020B	349469
310-228522-2	P-1 - CCR	Total/NA	Ground Water	6020B	349469
310-228522-3	P-8 - CCR	Total/NA	Ground Water	6020B	349469
310-228522-4	P-9 - CCR	Total/NA	Ground Water	6020B	349469
LCS 310-349469/2-A	Lab Control Sample	Total/NA	Water	6020B	349469

Analysis Batch: 351263

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-228522-1	Duplicate 1 - CCR	Total/NA	Ground Water	6020B	349469
310-228522-2	P-1 - CCR	Total/NA	Ground Water	6020B	349469
310-228522-3	P-8 - CCR	Total/NA	Ground Water	6020B	349469
310-228522-4	P-9 - CCR	Total/NA	Ground Water	6020B	349469
MB 310-349469/1-A	Method Blank	Total/NA	Water	6020B	349469
LCS 310-349469/2-A	Lab Control Sample	Total/NA	Water	6020B	349469
310-228522-3 MS	P-8 - CCR	Total/NA	Ground Water	6020B	349469
310-228522-3 MSD	P-8 - CCR	Total/NA	Ground Water	6020B	349469

General Chemistry

Analysis Batch: 349115

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-228522-1	Duplicate 1 - CCR	Total/NA	Ground Water	SM 4500 H+ B	

General Chemistry (Continued)

Analysis Batch: 349115 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-228522-2	P-1 - CCR	Total/NA	Ground Water	SM 4500 H+ B	
310-228522-3	P-8 - CCR	Total/NA	Ground Water	SM 4500 H+ B	
310-228522-4	P-9 - CCR	Total/NA	Ground Water	SM 4500 H+ B	
LCS 310-349115/1	Lab Control Sample	Total/NA	Water	SM 4500 H+ B	
310-228522-3 DU	P-8 - CCR	Total/NA	Ground Water	SM 4500 H+ B	

Analysis Batch: 349583

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-228522-1	Duplicate 1 - CCR	Total/NA	Ground Water	SM 2540C	
310-228522-2	P-1 - CCR	Total/NA	Ground Water	SM 2540C	
310-228522-3	P-8 - CCR	Total/NA	Ground Water	SM 2540C	
310-228522-4	P-9 - CCR	Total/NA	Ground Water	SM 2540C	
MB 310-349583/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 310-349583/2	Lab Control Sample	Total/NA	Water	SM 2540C	
310-228522-3 DU	P-8 - CCR	Total/NA	Ground Water	SM 2540C	

Lab Chronicle

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

Job ID: 310-228522-1

Client Sample ID: Duplicate 1 - CCR

Lab Sample ID: 310-228522-1

Date Collected: 04/06/22 00:00
Matrix: Ground Water
Date Received: 04/07/22 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		5	349843	04/13/22 21:11	JNR	TAL CF
Total/NA	Prep	3005A			349469	04/14/22 09:00	ACM2	TAL CF
Total/NA	Analysis	6020B		1	351263	04/27/22 13:47	SAP	TAL CF
Total/NA	Prep	3005A			349469	04/14/22 09:00	ACM2	TAL CF
Total/NA	Analysis	6020B		1	351055	04/25/22 16:47	SAP	TAL CF
Total/NA	Analysis	SM 2540C		1	349583	04/12/22 13:50	TGF	TAL CF
Total/NA	Analysis	SM 4500 H+ B		1	349115	04/07/22 13:07	LBB	TAL CF

Client Sample ID: P-1 - CCR

Lab Sample ID: 310-228522-2

Date Collected: 04/06/22 11:15
Matrix: Ground Water
Date Received: 04/07/22 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		5	349843	04/13/22 21:26	JNR	TAL CF
Total/NA	Prep	3005A			349469	04/14/22 09:00	ACM2	TAL CF
Total/NA	Analysis	6020B		1	351263	04/27/22 13:51	SAP	TAL CF
Total/NA	Prep	3005A			349469	04/14/22 09:00	ACM2	TAL CF
Total/NA	Analysis	6020B		1	351055	04/25/22 16:50	SAP	TAL CF
Total/NA	Analysis	SM 2540C		1	349583	04/12/22 13:50	TGF	TAL CF
Total/NA	Analysis	SM 4500 H+ B		1	349115	04/07/22 13:06	LBB	TAL CF

Client Sample ID: P-8 - CCR

Lab Sample ID: 310-228522-3

Date Collected: 04/06/22 12:50
Matrix: Ground Water
Date Received: 04/07/22 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		5	349843	04/13/22 22:14	JNR	TAL CF
Total/NA	Prep	3005A			349469	04/14/22 09:00	ACM2	TAL CF
Total/NA	Analysis	6020B		1	351263	04/27/22 13:55	SAP	TAL CF
Total/NA	Prep	3005A			349469	04/14/22 09:00	ACM2	TAL CF
Total/NA	Analysis	6020B		1	351055	04/25/22 16:53	SAP	TAL CF
Total/NA	Analysis	SM 2540C		1	349583	04/12/22 13:50	TGF	TAL CF
Total/NA	Analysis	SM 4500 H+ B		1	349115	04/07/22 12:59	LBB	TAL CF

Client Sample ID: P-9 - CCR

Lab Sample ID: 310-228522-4

Date Collected: 04/06/22 14:05
Matrix: Ground Water
Date Received: 04/07/22 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		5	349843	04/13/22 23:04	JNR	TAL CF
Total/NA	Prep	3005A			349469	04/14/22 09:00	ACM2	TAL CF
Total/NA	Analysis	6020B		1	351263	04/27/22 14:22	SAP	TAL CF
Total/NA	Prep	3005A			349469	04/14/22 09:00	ACM2	TAL CF
Total/NA	Analysis	6020B		1	351055	04/25/22 17:03	SAP	TAL CF

Lab Chronicle

Client: Waste Connections, Inc.
Job ID: 310-228522-1
Project/Site: SKB Cloquet - CCR Groundwater

Client Sample ID: P-9 - CCR
Lab Sample ID: 310-228522-4
Date Collected: 04/06/22 14:05
Matrix: Ground Water
Date Received: 04/07/22 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	SM 2540C		1	349583	04/12/22 13:50	TGF	TAL CF
Total/NA	Analysis	SM 4500 H+ B		1	349115	04/07/22 13:08	LBB	TAL CF

Laboratory References:

TAL CF = Eurofins Cedar Falls, 3019 Venture Way, Cedar Falls, IA 50613, TEL (319)277-2401

Accreditation/Certification Summary

Client: Waste Connections, Inc.
Job ID: 310-228522-1
Project/Site: SKB Cloquet - CCR Groundwater

Laboratory: Eurofins Cedar Falls

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Minnesota	NELAP	019-999-319	12-31-22

Method Summary

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

Job ID: 310-228522-1

Method	Method Description	Protocol	Laboratory
9056A	Anions, Ion Chromatography	SW846	TAL CF
6020B	Metals (ICP/MS)	SW846	TAL CF
SM 2540C	Solids, Total Dissolved (TDS)	SM	TAL CF
SM 4500 H+ B	pH	SM	TAL CF
3005A	Preparation, Total Metals	SW846	TAL CF

Protocol References:

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 CF = Eurofins Cedar Falls, 3019 Venture Way, Cedar Falls, IA 50613, TEL (319)277-2401

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310-228522 Chain of Custody

Cooler/Sample Receipt and Temperature Log Form

Client Information			
Client	GW Treatment		
City/State	CITY Elgin	STATE MN	Project
Receipt Information			
Date/Time Received	DATE 4 7 22	TIME 945	Received By PL

Delivery Type ☐ UPS ☑ FedEx ☐ FedEx Ground ☐ US Mail ☐ Spee Dee
☐ Lab Courier ☐ Lab Field Services ☐ Client Drop-off ☐ Other:_____

Condition of Cooler/Containers

Sample(s) received in Cooler?	☑ Yes	☐ No	*If yes* Cooler ID
Multiple Coolers?	☐ Yes	☑ No	*If yes* Cooler # _____ of _____
Cooler Custody Seals Present?	☐ Yes	☑ No	*If yes* Cooler custody seals intact? ☐ Yes ☐ No
Sample Custody Seals Present?	☐ Yes	☑ No	*If yes* Sample custody seals intact? ☐ Yes ☐ No
Trip Blank Present?	☐ Yes	☑ No	*If yes* Which VOA samples are in cooler? ↓

Temperature Record

Coolant ☑ Wet ice ☐ Blue ice ☐ Dry ice ☐ Other._____ ☐ NONE

Thermometer ID 0	Correction Factor (°C) 0

• **Temp Blank Temperature** – If no temp blank, or temp blank temperature above criteria, proceed to Sample Container Temperature

Uncorrected Temp (°C) -0.6	*Corrected Temp (°C)* -0.6

• **Sample Container Temperature**

	CONTAINER 1	CONTAINER 2
Container(s) used		
Uncorrected Temp (°C)		
Corrected Temp (°C)		

Exceptions Noted

1) If temperature exceeds criteria, was sample(s) received same day of sampling? ☐ Yes ☐ No
   a) *If yes* Is there evidence that the chilling process began? ☐ Yes ☐ No

2) If temperature is <0°C, are there obvious signs that the integrity of sample containers is compromised? (e.g , bulging septa, broken/cracked bottles, frozen solid?) ☐ Yes ☐ No

NOTE. If yes, contact PM before proceeding If no, proceed with login

Additional Comments

Eurofins Cedar Falls
3019 Venture Way
Cedar Falls, IA 50613
Phone (319) 277-2401 Phone (319) 277-2425

Chain of Custody Record

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Client Information	Sampler: N Schlagel	Lab PM: Bindert, Zach T	Carrier Tracking No(s):	COC No: 310-68858-19695.1
Client Contact: Mr Nicholas Schlagel	Phone: 651-792-6065	E-Mail: Zach.Bindert@Eurofinset.com	State of Origin: MN	Page: Page 1 of 1
Company: Groundwater & Environmental Services Inc	PWSID:			Job #:
Address: 1301 Corporate Center Drive Suite 190	Due Date Requested:			
City: Eagan	TAT Requested (days): Standard			
State, Zip: MN, 55121 1562	Compliance Project: Δ Yes Δ No			
Phone:	PO #: Purchase Order Requested			
Email: NSchlagel@gesonline.com	WO #:			
Project Name: SKB Cloquet CCR Groundwater	Project #: 31013983			
Site: Minnesota	SSOW#:			

Analysis Requested

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

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)	9056A_ORGFM_28D Chloride, Fluoride, Sulfate	6020B Boron and Calcium	2540C_Calcd TDS SM4500_H+ pH	Total Number of containers	Special Instructions/Note:
			Preservation Code:				N	D	N		
Duplicate 1 - CCR	4/6/22	—	G	Water			X	X	X	4	USE SITES AND EVENTS
P-1 - CCR	4/6/22	1115	G	Water			X	X	X	4	
P-2 CCR				Water			X	X	X	4	
P-8 CCR	4/6/22	1250	G	Water		Y	X	X	X	4	MS/MSD
P-9 CCR	4/6/22	1405	G	Water			X	X	X	4	
P-6 - CCR				Water			X	X	X	4	
P-7 CCR				Water			X	X	X	4	
Equipment Blank CCR				Water			X	X	X	4	
Field Blank - CCR				Water			X	X	X	4	
P-5R - CCR				Water			X	X	X	4	

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		4/6/22 1530	GES		4/6/22 1530	Eurofins
2		4/6/22 1530				
3					4-7-22 945	

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

Cooler Temperature(s) °C and Other Remarks:

Ver 01/16/2019

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4/7/2022

Login Sample Receipt Checklist

Client: Waste Connections, Inc.

Job Number: 310-228522-1

Login Number: 228522

List Source: Eurofins Cedar Falls

List Number: 1

Creator: Bindert, Zach T

Question	Answer	Comment
Radioactivity either was not measured or, if measured, is at or below background	N/A	
The cooler's custody seal, if present, is intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	N/A	
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	
Samples received within 48 hours of sampling.	True	
Samples requiring field filtration have been filtered in the field.	True	
Chlorine Residual checked.	N/A	

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ANALYTICAL REPORT

Eurofins Cedar Falls
3019 Venture Way
Cedar Falls, IA 50613
Tel: (319)277-2401

Laboratory Job ID: 310-228606-1
Client Project/Site: SKB Cloquet - CCR Groundwater
Sampling Event: CCR Groundwater (Spring)

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

Attn: Megan Lindstrom

Authorized for release by:
4/27/2022 4:16:40 PM

Zach Bindert, Project Manager I
(319)277-2401
Zach.Bindert@et.eurofinsus.com

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

Table of Contents

Case Narrative

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

Job ID: 310-228606-1

Job ID: 310-228606-1

Laboratory: Eurofins Cedar Falls

Narrative

Job Narrative
310-228606-1

Comments
No additional comments.

Receipt
The samples were received on 4/8/2022 9:35 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 1.6º C.

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

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

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

Sample Summary

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

Job ID: 310-228606-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
310-228606-1	P-6 - CCR	Ground Water	04/07/22 10:30	04/08/22 09:35
310-228606-2	P-7 - CCR	Ground Water	04/07/22 11:00	04/08/22 09:35
310-228606-3	Equipment Blank - CCR	Water	04/07/22 11:45	04/08/22 09:35
310-228606-4	Field Blank - CCR	Water	04/07/22 11:40	04/08/22 09:35
310-228606-5	P-5R - CCR	Ground Water	04/07/22 08:40	04/08/22 09:35

Detection Summary

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

Job ID: 310-228606-1

Client Sample ID: P-6 - CCR — Lab Sample ID: 310-228606-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	57		5.0		mg/L	5		9056A	Total/NA
Sulfate	96		5.0		mg/L	5		9056A	Total/NA
Boron	0.18		0.10		mg/L	1		6020B	Total/NA
Calcium	128		0.50		mg/L	1		6020B	Total/NA
Total Dissolved Solids	514		50.0		mg/L	1		SM 2540C	Total/NA
pH	7.0	HF	0.1		SU	1		SM 4500 H+ B	Total/NA

Client Sample ID: P-7 - CCR — Lab Sample ID: 310-228606-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	62		5.0		mg/L	5		9056A	Total/NA
Sulfate	36		5.0		mg/L	5		9056A	Total/NA
Boron	0.12		0.10		mg/L	1		6020B	Total/NA
Calcium	128		0.50		mg/L	1		6020B	Total/NA
Total Dissolved Solids	536		50.0		mg/L	1		SM 2540C	Total/NA
pH	7.0	HF	0.1		SU	1		SM 4500 H+ B	Total/NA

Client Sample ID: Equipment Blank - CCR — Lab Sample ID: 310-228606-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	1.4		1.0		mg/L	1		9056A	Total/NA
Calcium	1.3		0.50		mg/L	1		6020B	Total/NA
pH	7.8	HF	0.1		SU	1		SM 4500 H+ B	Total/NA

Client Sample ID: Field Blank - CCR — Lab Sample ID: 310-228606-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	1.3		1.0		mg/L	1		9056A	Total/NA
Calcium	0.71		0.50		mg/L	1		6020B	Total/NA
pH	7.6	HF	0.1		SU	1		SM 4500 H+ B	Total/NA

Client Sample ID: P-5R - CCR — Lab Sample ID: 310-228606-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	200		5.0		mg/L	5		9056A	Total/NA
Sulfate	28		5.0		mg/L	5		9056A	Total/NA
Calcium	116		0.50		mg/L	1		6020B	Total/NA
Total Dissolved Solids	624		50.0		mg/L	1		SM 2540C	Total/NA
pH	7.2	HF	0.1		SU	1		SM 4500 H+ B	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample Results

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

Job ID: 310-228606-1

Client Sample ID: P-6 - CCR

Date Collected: 04/07/22 10:30
Date Received: 04/08/22 09:35

Lab Sample ID: 310-228606-1

Matrix: Ground Water

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**57**		5.0		mg/L			04/14/22 16:21	5
Fluoride	<0.50		0.50		mg/L			04/14/22 16:21	5
Sulfate	**96**		5.0		mg/L			04/14/22 16:21	5

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	**0.18**		0.10		mg/L		04/14/22 09:00	04/27/22 14:25	1
Calcium	**128**		0.50		mg/L		04/14/22 09:00	04/25/22 17:06	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	**514**		50.0		mg/L			04/13/22 15:32	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	**7.0**	**HF**	0.1		SU			04/08/22 11:43	1

Client Sample Results

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

Job ID: 310-228606-1

Client Sample ID: P-7 - CCR

Date Collected: 04/07/22 11:00
Date Received: 04/08/22 09:35

Lab Sample ID: 310-228606-2

Matrix: Ground Water

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	62		5.0		mg/L			04/14/22 16:37	5
Fluoride	<0.50		0.50		mg/L			04/14/22 16:37	5
Sulfate	36		5.0		mg/L			04/14/22 16:37	5

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	0.12		0.10		mg/L		04/14/22 09:00	04/27/22 14:29	1
Calcium	128		0.50		mg/L		04/14/22 09:00	04/25/22 17:22	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	536		50.0		mg/L			04/13/22 15:32	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	7.0	HF	0.1		SU			04/08/22 11:43	1

Client: Waste Connections, Inc.
Job ID: 310-228606-1
Project/Site: SKB Cloquet - CCR Groundwater

Client Sample ID: Equipment Blank - CCR

Lab Sample ID: 310-228606-3
Date Collected: 04/07/22 11:45
Matrix: Water
Date Received: 04/08/22 09:35

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**1.4**		1.0		mg/L			04/14/22 16:52	1
Fluoride	<0.10		0.10		mg/L			04/14/22 16:52	1
Sulfate	<1.0		1.0		mg/L			04/14/22 16:52	1

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	<0.10		0.10		mg/L		04/14/22 09:00	04/27/22 14:33	1
Calcium	**1.3**		0.50		mg/L		04/14/22 09:00	04/25/22 17:25	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	<50.0		50.0		mg/L			04/13/22 15:32	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	**7.8**	**HF**	0.1		SU			04/08/22 11:43	1

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

Job ID: 310-228606-1

Client Sample ID: Field Blank - CCR

Date Collected: 04/07/22 11:40
Date Received: 04/08/22 09:35

Lab Sample ID: 310-228606-4

Matrix: Water

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**1.3**		1.0		mg/L			04/14/22 17:39	1
Fluoride	<0.10		0.10		mg/L			04/14/22 17:39	1
Sulfate	<1.0		1.0		mg/L			04/14/22 17:39	1

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	<0.10		0.10		mg/L		04/14/22 09:00	04/27/22 14:37	1
Calcium	**0.71**		0.50		mg/L		04/14/22 09:00	04/25/22 17:29	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	<50.0		50.0		mg/L			04/13/22 15:32	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	**7.6**	**HF**	0.1		SU			04/08/22 11:43	1

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

Job ID: 310-228606-1

Client Sample ID: P-5R - CCR

Date Collected: 04/07/22 08:40
Date Received: 04/08/22 09:35

Lab Sample ID: 310-228606-5

Matrix: Ground Water

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	200		5.0		mg/L			04/14/22 17:55	5
Fluoride	<0.50		0.50		mg/L			04/14/22 17:55	5
Sulfate	28		5.0		mg/L			04/14/22 17:55	5

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	<0.10		0.10		mg/L		04/14/22 09:00	04/27/22 14:41	1
Calcium	116		0.50		mg/L		04/14/22 09:00	04/25/22 17:32	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	624		50.0		mg/L			04/13/22 15:32	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	7.2	HF	0.1		SU			04/08/22 11:43	1

Definitions/Glossary

Client: Waste Connections, Inc.
Job ID: 310-228606-1
Project/Site: SKB Cloquet - CCR Groundwater

Qualifiers

General Chemistry

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

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

Method: 9056A - Anions, Ion Chromatography

Lab Sample ID: MB 310-350174/3
Matrix: Water
Analysis Batch: 350174

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<1.0		1.0		mg/L			04/14/22 15:50	1
Fluoride	<0.10		0.10		mg/L			04/14/22 15:50	1
Sulfate	<1.0		1.0		mg/L			04/14/22 15:50	1

Lab Sample ID: LCS 310-350174/4
Matrix: Water
Analysis Batch: 350174

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Chloride	10.0	9.44		mg/L		94	90 - 110
Fluoride	2.00	2.06		mg/L		103	90 - 110
Sulfate	10.0	9.50		mg/L		95	90 - 110

Lab Sample ID: 310-228606-3 MS
Matrix: Water
Analysis Batch: 350174

Client Sample ID: Equipment Blank - CCR
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Chloride	1.4		5.00	5.62		mg/L		84	80 - 120
Fluoride	<0.10		1.00	1.09		mg/L		109	80 - 120
Sulfate	<1.0		5.00	4.53		mg/L		91	80 - 120

Lab Sample ID: 310-228606-3 MSD
Matrix: Water
Analysis Batch: 350174

Client Sample ID: Equipment Blank - 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	1.4		5.00	5.55		mg/L		82	80 - 120	1	15
Fluoride	<0.10		1.00	1.07		mg/L		107	80 - 120	2	15
Sulfate	<1.0		5.00	4.45		mg/L		89	80 - 120	2	15

Method: 6020B - Metals (ICP/MS)

Lab Sample ID: MB 310-349469/1-A
Matrix: Water
Analysis Batch: 350746

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 349469

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	<0.50		0.50		mg/L		04/14/22 09:00	04/21/22 23:37	1

Lab Sample ID: MB 310-349469/1-A
Matrix: Water
Analysis Batch: 351263

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 349469

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	<0.10		0.10		mg/L		04/14/22 09:00	04/27/22 13:39	1

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

Lab Sample ID: LCS 310-349469/2-A
Matrix: Water
Analysis Batch: 351055

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 349469

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Calcium	2.00	1.83		mg/L		91	80 - 120

Lab Sample ID: LCS 310-349469/2-A
Matrix: Water
Analysis Batch: 351263

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 349469

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Boron	0.200	0.192		mg/L		96	80 - 120

Lab Sample ID: 310-228606-5 DU
Matrix: Ground Water
Analysis Batch: 350746

Client Sample ID: P-5R - CCR
Prep Type: Total/NA
Prep Batch: 349469

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Calcium	111	^2	115.6		mg/L		4	20

Lab Sample ID: 310-228606-5 DU
Matrix: Ground Water
Analysis Batch: 351055

Client Sample ID: P-5R - CCR
Prep Type: Total/NA
Prep Batch: 349469

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Calcium	116		117.5		mg/L		2	20

Lab Sample ID: 310-228606-5 DU
Matrix: Ground Water
Analysis Batch: 351263

Client Sample ID: P-5R - CCR
Prep Type: Total/NA
Prep Batch: 349469

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Boron	<0.10		<0.10		mg/L		NC	20

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

Lab Sample ID: MB 310-349754/1
Matrix: Water
Analysis Batch: 349754

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	<50.0		50.0		mg/L			04/13/22 15:32	1

Lab Sample ID: LCS 310-349754/2
Matrix: Water
Analysis Batch: 349754

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	1000	950.0		mg/L		95	90 - 110

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

Lab Sample ID: 310-228606-4 DU
Client Sample ID: Field Blank - CCR
Matrix: Water
Prep Type: Total/NA
Analysis Batch: 349754

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Total Dissolved Solids	<50.0			<50.0		mg/L				NC	20

Method: SM 4500 H+ B - pH

Lab Sample ID: LCS 310-349262/1
Client Sample ID: Lab Control Sample
Matrix: Water
Prep Type: Total/NA
Analysis Batch: 349262

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
pH			7.00	7.1		SU		101	98 - 102		

Lab Sample ID: 310-228606-3 DU
Client Sample ID: Equipment Blank - CCR
Matrix: Water
Prep Type: Total/NA
Analysis Batch: 349262

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
pH	7.8	HF		7.8		SU				0.1	20

HPLC/IC

Analysis Batch: 350174

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-228606-1	P-6 - CCR	Total/NA	Ground Water	9056A	
310-228606-2	P-7 - CCR	Total/NA	Ground Water	9056A	
310-228606-3	Equipment Blank - CCR	Total/NA	Water	9056A	
310-228606-4	Field Blank - CCR	Total/NA	Water	9056A	
310-228606-5	P-5R - CCR	Total/NA	Ground Water	9056A	
MB 310-350174/3	Method Blank	Total/NA	Water	9056A	
LCS 310-350174/4	Lab Control Sample	Total/NA	Water	9056A	
310-228606-3 MS	Equipment Blank - CCR	Total/NA	Water	9056A	
310-228606-3 MSD	Equipment Blank - CCR	Total/NA	Water	9056A	

Metals

Prep Batch: 349469

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-228606-1	P-6 - CCR	Total/NA	Ground Water	3005A	
310-228606-2	P-7 - CCR	Total/NA	Ground Water	3005A	
310-228606-3	Equipment Blank - CCR	Total/NA	Water	3005A	
310-228606-4	Field Blank - CCR	Total/NA	Water	3005A	
310-228606-5	P-5R - CCR	Total/NA	Ground Water	3005A	
MB 310-349469/1-A	Method Blank	Total/NA	Water	3005A	
LCS 310-349469/2-A	Lab Control Sample	Total/NA	Water	3005A	
310-228606-5 DU	P-5R - CCR	Total/NA	Ground Water	3005A	

Analysis Batch: 350746

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 310-349469/1-A	Method Blank	Total/NA	Water	6020B	349469
310-228606-5 DU	P-5R - CCR	Total/NA	Ground Water	6020B	349469

Analysis Batch: 351055

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-228606-1	P-6 - CCR	Total/NA	Ground Water	6020B	349469
310-228606-2	P-7 - CCR	Total/NA	Ground Water	6020B	349469
310-228606-3	Equipment Blank - CCR	Total/NA	Water	6020B	349469
310-228606-4	Field Blank - CCR	Total/NA	Water	6020B	349469
310-228606-5	P-5R - CCR	Total/NA	Ground Water	6020B	349469
LCS 310-349469/2-A	Lab Control Sample	Total/NA	Water	6020B	349469
310-228606-5 DU	P-5R - CCR	Total/NA	Ground Water	6020B	349469

Analysis Batch: 351263

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-228606-1	P-6 - CCR	Total/NA	Ground Water	6020B	349469
310-228606-2	P-7 - CCR	Total/NA	Ground Water	6020B	349469
310-228606-3	Equipment Blank - CCR	Total/NA	Water	6020B	349469
310-228606-4	Field Blank - CCR	Total/NA	Water	6020B	349469
310-228606-5	P-5R - CCR	Total/NA	Ground Water	6020B	349469
MB 310-349469/1-A	Method Blank	Total/NA	Water	6020B	349469
LCS 310-349469/2-A	Lab Control Sample	Total/NA	Water	6020B	349469
310-228606-5 DU	P-5R - CCR	Total/NA	Ground Water	6020B	349469

QC Association Summary

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

Job ID: 310-228606-1

General Chemistry

Analysis Batch: 349262

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-228606-1	P-6 - CCR	Total/NA	Ground Water	SM 4500 H+ B	
310-228606-2	P-7 - CCR	Total/NA	Ground Water	SM 4500 H+ B	
310-228606-3	Equipment Blank - CCR	Total/NA	Water	SM 4500 H+ B	
310-228606-4	Field Blank - CCR	Total/NA	Water	SM 4500 H+ B	
310-228606-5	P-5R - CCR	Total/NA	Ground Water	SM 4500 H+ B	
LCS 310-349262/1	Lab Control Sample	Total/NA	Water	SM 4500 H+ B	
310-228606-3 DU	Equipment Blank - CCR	Total/NA	Water	SM 4500 H+ B	

Analysis Batch: 349754

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-228606-1	P-6 - CCR	Total/NA	Ground Water	SM 2540C	
310-228606-2	P-7 - CCR	Total/NA	Ground Water	SM 2540C	
310-228606-3	Equipment Blank - CCR	Total/NA	Water	SM 2540C	
310-228606-4	Field Blank - CCR	Total/NA	Water	SM 2540C	
310-228606-5	P-5R - CCR	Total/NA	Ground Water	SM 2540C	
MB 310-349754/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 310-349754/2	Lab Control Sample	Total/NA	Water	SM 2540C	
310-228606-4 DU	Field Blank - CCR	Total/NA	Water	SM 2540C	

Lab Chronicle

Client: Waste Connections, Inc.
Job ID: 310-228606-1
Project/Site: SKB Cloquet - CCR Groundwater

Client Sample ID: P-6 - CCR
Lab Sample ID: 310-228606-1
Date Collected: 04/07/22 10:30
Matrix: Ground Water
Date Received: 04/08/22 09:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		5	350174	04/14/22 16:21	JNR	TAL CF
Total/NA	Prep	3005A			349469	04/14/22 09:00	ACM2	TAL CF
Total/NA	Analysis	6020B		1	351263	04/27/22 14:25	SAP	TAL CF
Total/NA	Prep	3005A			349469	04/14/22 09:00	ACM2	TAL CF
Total/NA	Analysis	6020B		1	351055	04/25/22 17:06	SAP	TAL CF
Total/NA	Analysis	SM 2540C		1	349754	04/13/22 15:32	TGF	TAL CF
Total/NA	Analysis	SM 4500 H+ B		1	349262	04/08/22 11:43	LBB	TAL CF

Client Sample ID: P-7 - CCR
Lab Sample ID: 310-228606-2
Date Collected: 04/07/22 11:00
Matrix: Ground Water
Date Received: 04/08/22 09:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		5	350174	04/14/22 16:37	JNR	TAL CF
Total/NA	Prep	3005A			349469	04/14/22 09:00	ACM2	TAL CF
Total/NA	Analysis	6020B		1	351263	04/27/22 14:29	SAP	TAL CF
Total/NA	Prep	3005A			349469	04/14/22 09:00	ACM2	TAL CF
Total/NA	Analysis	6020B		1	351055	04/25/22 17:22	SAP	TAL CF
Total/NA	Analysis	SM 2540C		1	349754	04/13/22 15:32	TGF	TAL CF
Total/NA	Analysis	SM 4500 H+ B		1	349262	04/08/22 11:43	LBB	TAL CF

Client Sample ID: Equipment Blank - CCR
Lab Sample ID: 310-228606-3
Date Collected: 04/07/22 11:45
Matrix: Water
Date Received: 04/08/22 09:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		1	350174	04/14/22 16:52	JNR	TAL CF
Total/NA	Prep	3005A			349469	04/14/22 09:00	ACM2	TAL CF
Total/NA	Analysis	6020B		1	351263	04/27/22 14:33	SAP	TAL CF
Total/NA	Prep	3005A			349469	04/14/22 09:00	ACM2	TAL CF
Total/NA	Analysis	6020B		1	351055	04/25/22 17:25	SAP	TAL CF
Total/NA	Analysis	SM 2540C		1	349754	04/13/22 15:32	TGF	TAL CF
Total/NA	Analysis	SM 4500 H+ B		1	349262	04/08/22 11:43	LBB	TAL CF

Client Sample ID: Field Blank - CCR
Lab Sample ID: 310-228606-4
Date Collected: 04/07/22 11:40
Matrix: Water
Date Received: 04/08/22 09:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		1	350174	04/14/22 17:39	JNR	TAL CF
Total/NA	Prep	3005A			349469	04/14/22 09:00	ACM2	TAL CF
Total/NA	Analysis	6020B		1	351263	04/27/22 14:37	SAP	TAL CF
Total/NA	Prep	3005A			349469	04/14/22 09:00	ACM2	TAL CF
Total/NA	Analysis	6020B		1	351055	04/25/22 17:29	SAP	TAL CF

Lab Chronicle

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

Job ID: 310-228606-1

Client Sample ID: Field Blank - CCR

Lab Sample ID: 310-228606-4

Date Collected: 04/07/22 11:40
Matrix: Water
Date Received: 04/08/22 09:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	SM 2540C		1	349754	04/13/22 15:32	TGF	TAL CF
Total/NA	Analysis	SM 4500 H+ B		1	349262	04/08/22 11:43	LBB	TAL CF

Client Sample ID: P-5R - CCR

Lab Sample ID: 310-228606-5

Date Collected: 04/07/22 08:40
Matrix: Ground Water
Date Received: 04/08/22 09:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		5	350174	04/14/22 17:55	JNR	TAL CF
Total/NA	Prep	3005A			349469	04/14/22 09:00	ACM2	TAL CF
Total/NA	Analysis	6020B		1	351263	04/27/22 14:41	SAP	TAL CF
Total/NA	Prep	3005A			349469	04/14/22 09:00	ACM2	TAL CF
Total/NA	Analysis	6020B		1	351055	04/25/22 17:32	SAP	TAL CF
Total/NA	Analysis	SM 2540C		1	349754	04/13/22 15:32	TGF	TAL CF
Total/NA	Analysis	SM 4500 H+ B		1	349262	04/08/22 11:43	LBB	TAL CF

Laboratory References:

TAL CF = Eurofins Cedar Falls, 3019 Venture Way, Cedar Falls, IA 50613, TEL (319)277-2401

Accreditation/Certification Summary

Client: Waste Connections, Inc.
Job ID: 310-228606-1
Project/Site: SKB Cloquet - CCR Groundwater

Laboratory: Eurofins Cedar Falls

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Minnesota	NELAP	019-999-319	12-31-22

Method Summary

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

Job ID: 310-228606-1

Method	Method Description	Protocol	Laboratory
9056A	Anions, Ion Chromatography	SW846	TAL CF
6020B	Metals (ICP/MS)	SW846	TAL CF
SM 2540C	Solids, Total Dissolved (TDS)	SM	TAL CF
SM 4500 H+ B	pH	SM	TAL CF
3005A	Preparation, Total Metals	SW846	TAL CF

Protocol References:

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 CF = Eurofins Cedar Falls, 3019 Venture Way, Cedar Falls, IA 50613, TEL (319)277-2401

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310-228606 Chain of Custody

Cooler/Sample Receipt and Temperature Log Form

Client Information					
Client	QES				
City/State	CITY		STATE IN	Project	
Receipt Information					
Date/Time Received	DATE 4/8/22		TIME 0935	Received By	
Delivery Type	☐ UPS	☒ FedEx	☐ FedEx Ground	☐ US Mail	☐ Spee-Dee
	☐ Lab Courier	☐ Lab Field Services	☐ Client Drop-off	☐ Other:_____	
Condition of Cooler/Containers					
Sample(s) received in Cooler?	☒ Yes	☐ No	*If yes* Cooler ID		
Multiple Coolers?	☐ Yes	☒ No	*If yes* Cooler # _____ of _____		
Cooler Custody Seals Present? No	☒ Yes	☐ No	*If yes* Cooler custody seals intact?	☒ Yes	☐ No
Sample Custody Seals Present? No	☐ Yes	☒ No	*If yes* Sample custody seals intact?	☐ Yes	☐ No
Trip Blank Present?	☐ Yes	☒ No	*If yes* Which VOA samples are in cooler? ↓		
Temperature Record					
Coolant	☒ Wet ice	☐ Blue ice	☐ Dry ice	☐ Other._____	☐ NONE
Thermometer ID	N		Correction Factor (°C)	-0.0	
• Temp Blank Temperature – If no temp blank, or temp blank temperature above criteria, proceed to Sample Container Temperature					
Uncorrected Temp (°C)			Corrected Temp (°C)		
• Sample Container Temperature					
Container(s) used	CONTAINER 1: PL 250 NT		CONTAINER 2		
Uncorrected Temp (°C)	1.6				
Corrected Temp (°C)	1.6				
Exceptions Noted					
1) If temperature exceeds criteria, was sample(s) received same day of sampling?			☐ Yes	☐ No	
a) *If yes* Is there evidence that the chilling process began?			☐ Yes	☐ No	
2) If temperature is <0°C, are there obvious signs that the integrity of sample containers is compromised? (e.g , bulging septa, broken/cracked bottles, frozen solid?)			☐ Yes	☐ No	
NOTE If yes, contact PM before proceeding If no, proceed with login					
Additional Comments					

Eurofins Cedar Falls
3019 Venture Way
Cedar Falls, IA 50613
Phone (319) 277-2401 Phone (319) 277-2425

Chain of Custody Record

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Client Information	Sampler: N. Schlagel	Lab PM: Bindert, Zach T	Carrier Tracking No(s):	COC No: 310-68858-19695.1
Client Contact: Mr Nicholas Schlagel	Phone: 651-792-6065	E-Mail: Zach.Bindert@Eurofinset.com	State of Origin: MN	Page: Page 1 of 1
Company: Groundwater & Environmental Services Inc	PWSID:			Job #:
Address: 1301 Corporate Center Drive Suite 190	Due Date Requested:			
City: Eagan	TAT Requested (days): Standard			
State, Zip: MN, 55121-1562	Compliance Project: Δ Yes Δ No			
Phone:	PO #: Purchase Order Requested			
Email: NSchlagel@gesonline.com	WO #:			
Project Name: SKB Cloquet CCR Groundwater	Project #: 31013983			
Site: Minnesota	SSOW#:			

Analysis Requested

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:

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)	9056A_ORGFM_28D Chloride, Fluoride, Sulfate	6020B Boron and Calcium	2540C_Calcd TDS SM4500_H+ pH	Total Number of containers	Special Instructions/Note:
Preservation Code:							N	D	N		
Duplicate 1 - CCR				Water			X	X	X	4	USE SITES AND EVENTS
P-1 CCR				Water			X	X	X	4	
P-2 - CCR				Water			X	X	X	4	
P-8 CCR				Water			X	X	X	4	
P-9 CCR				Water			X	X	X	4	
P-6 - CCR	4/7/22	10 36	6	Water			X	X	X	4	
P-7 - CCR	4/7/22	11 00	6	Water			X	X	X	4	
Equipment Blank - CCR	4/7/22	11 45	6	Water			X	X	X	4	
Field Blank - CCR	4/7/22	11 40	G	Water			X	X	X	4	
P-5R - CCR	4/7/22	9-40	6	Water			X	X	X	4	

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		4/7/22 15:00	GES		4/7/22 1500	Eurofins
2		4/7/22 1530				
3					4-8 22 935	

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

Cooler Temperature(s) °C and Other Remarks:

Ver: 01/16/2019

4/27/2022

Login Sample Receipt Checklist

Client: Waste Connections, Inc.

Job Number: 310-228606-1

Login Number: 228606

List Source: Eurofins Cedar Falls

List Number: 1

Creator: Bindert, Zach T

Question	Answer	Comment
Radioactivity either was not measured or, if measured, is at or below background	N/A	
The cooler's custody seal, if present, is intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	N/A	
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	
Samples received within 48 hours of sampling.	True	
Samples requiring field filtration have been filtered in the field.	True	
Chlorine Residual checked.	N/A	

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ANALYTICAL REPORT

Eurofins Cedar Falls
3019 Venture Way
Cedar Falls, IA 50613
Tel: (319)277-2401

Laboratory Job ID: 310-243505-1
Client Project/Site: SKB Cloquet CCR Groundwater (Fall)

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

Attn: Megan Lindstrom

Authorized for release by:
11/11/2022 12:40:26 PM

Zach Bindert, Project Manager I
(319)277-2401
Zach.Bindert@et.eurofinsus.com

Table of Contents

Case Narrative

Client: Waste Connections, Inc.
Project/Site: SKB Cloquet CCR Groundwater (Fall)

Job ID: 310-243505-1

Job ID: 310-243505-1

Laboratory: Eurofins Cedar Falls

Narrative

Job Narrative
310-243505-1

Comments
No additional comments.

Receipt
The samples were received on 10/28/2022 1:20 PM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 1.1º C and 1.6º C.

HPLC/IC
Method 9056A: The following samples were diluted due to the nature of the sample matrix: Duplicate 1 - CCR (310-243505-1), P-1 - CCR (310-243505-2), P-8 - CCR (310-243505-3), P-9 - CCR (310-243505-4), P-6 - CCR (310-243505-5), P-7 - CCR (310-243505-6) and P-5R - CCR (310-243505-7). 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
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

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

Sample Summary

Client: Waste Connections, Inc.
Job ID: 310-243505-1
Project/Site: SKB Cloquet CCR Groundwater (Fall)

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
310-243505-1	Duplicate 1 - CCR	Water	10/26/22 00:00	10/28/22 13:20
310-243505-2	P-1 - CCR	Water	10/26/22 09:10	10/28/22 13:20
310-243505-3	P-8 - CCR	Water	10/26/22 11:10	10/28/22 13:20
310-243505-4	P-9 - CCR	Water	10/26/22 12:10	10/28/22 13:20
310-243505-5	P-6 - CCR	Water	10/27/22 09:00	10/28/22 13:20
310-243505-6	P-7 - CCR	Water	10/27/22 09:50	10/28/22 13:20
310-243505-7	P-5R - CCR	Water	10/26/22 12:50	10/28/22 13:20
310-243505-8	Field Blank - CCR	Water	10/26/22 11:30	10/28/22 13:20
310-243505-9	Equipment Blank - CCR	Water	10/27/22 10:15	10/28/22 13:20

Detection Summary

Client: Waste Connections, Inc.
Project/Site: SKB Cloquet CCR Groundwater (Fall)

Job ID: 310-243505-1

Client Sample ID: Duplicate 1 - CCR — Lab Sample ID: 310-243505-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	100		5.0		mg/L	5		9056A	Total/NA
Sulfate	29		5.0		mg/L	5		9056A	Total/NA
Calcium	98.5		0.50		mg/L	1		6020B	Total/NA
Total Dissolved Solids	416		50.0		mg/L	1		SM 2540C	Total/NA
pH	8.0	HF	0.1		SU	1		SM 4500 H+ B	Total/NA

Client Sample ID: P-1 - CCR — Lab Sample ID: 310-243505-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	160		5.0		mg/L	5		9056A	Total/NA
Sulfate	29		5.0		mg/L	5		9056A	Total/NA
Calcium	149		0.50		mg/L	1		6020B	Total/NA
Total Dissolved Solids	622		50.0		mg/L	1		SM 2540C	Total/NA
pH	6.8	HF	0.1		SU	1		SM 4500 H+ B	Total/NA

Client Sample ID: P-8 - CCR — Lab Sample ID: 310-243505-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	100		5.0		mg/L	5		9056A	Total/NA
Sulfate	29		5.0		mg/L	5		9056A	Total/NA
Calcium	103		0.50		mg/L	1		6020B	Total/NA
Total Dissolved Solids	420		50.0		mg/L	1		SM 2540C	Total/NA
pH	8.0	HF	0.1		SU	1		SM 4500 H+ B	Total/NA

Client Sample ID: P-9 - CCR — Lab Sample ID: 310-243505-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	120		5.0		mg/L	5		9056A	Total/NA
Sulfate	25		5.0		mg/L	5		9056A	Total/NA
Calcium	78.5		0.50		mg/L	1		6020B	Total/NA
Total Dissolved Solids	566		50.0		mg/L	1		SM 2540C	Total/NA
pH	7.8	HF	0.1		SU	1		SM 4500 H+ B	Total/NA

Client Sample ID: P-6 - CCR — Lab Sample ID: 310-243505-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	63		5.0		mg/L	5		9056A	Total/NA
Sulfate	110		5.0		mg/L	5		9056A	Total/NA
Boron	0.16		0.10		mg/L	1		6020B	Total/NA
Calcium	139		0.50		mg/L	1		6020B	Total/NA
Total Dissolved Solids	588		50.0		mg/L	1		SM 2540C	Total/NA
pH	7.0	HF	0.1		SU	1		SM 4500 H+ B	Total/NA

Client Sample ID: P-7 - CCR — Lab Sample ID: 310-243505-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	65		5.0		mg/L	5		9056A	Total/NA
Sulfate	72		5.0		mg/L	5		9056A	Total/NA
Boron	0.13		0.10		mg/L	1		6020B	Total/NA
Calcium	174		0.50		mg/L	1		6020B	Total/NA
Total Dissolved Solids	760		50.0		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.

Detection Summary

Client: Waste Connections, Inc.
Job ID: 310-243505-1
Project/Site: SKB Cloquet CCR Groundwater (Fall)

Client Sample ID: P-5R - CCR
Lab Sample ID: 310-243505-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	200		5.0		mg/L	5		9056A	Total/NA
Sulfate	36		5.0		mg/L	5		9056A	Total/NA
Calcium	143		0.50		mg/L	1		6020B	Total/NA
Total Dissolved Solids	810		50.0		mg/L	1		SM 2540C	Total/NA
pH	6.8	HF	0.1		SU	1		SM 4500 H+ B	Total/NA

Client Sample ID: Field Blank - CCR
Lab Sample ID: 310-243505-8

Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
pH	7.0	HF	0.1		SU	1		SM 4500 H+ B	Total/NA

Client Sample ID: Equipment Blank - CCR
Lab Sample ID: 310-243505-9

Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
pH	5.5	HF	0.1		SU	1		SM 4500 H+ B	Total/NA

This Detection Summary does not include radiochemical test results.

Client: Waste Connections, Inc.
Job ID: 310-243505-1
Project/Site: SKB Cloquet CCR Groundwater (Fall)

Client Sample ID: Duplicate 1 - CCR

Lab Sample ID: 310-243505-1

Date Collected: 10/26/22 00:00

Matrix: Water

Date Received: 10/28/22 13:20

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**100**		5.0		mg/L			11/08/22 16:55	5
Fluoride	<0.50		0.50		mg/L			11/08/22 16:55	5
Sulfate	**29**		5.0		mg/L			11/08/22 16:55	5

Method: SW846 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	<0.10		0.10		mg/L		11/02/22 09:50	11/08/22 14:30	1
Calcium	**98.5**		0.50		mg/L		11/02/22 09:50	11/07/22 22:08	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids (SM 2540C)	**416**		50.0		mg/L			10/30/22 05:24	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH (SM 4500 H+ B)	**8.0**	**HF**	0.1		SU			10/28/22 13:51	1

Client Sample Results

Client: Waste Connections, Inc.
Job ID: 310-243505-1
Project/Site: SKB Cloquet CCR Groundwater (Fall)

Client Sample ID: P-1 - CCR
Lab Sample ID: 310-243505-2
Date Collected: 10/26/22 09:10
Matrix: Water
Date Received: 10/28/22 13:20

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**160**		5.0		mg/L			11/08/22 17:07	5
Fluoride	<0.50		0.50		mg/L			11/08/22 17:07	5
Sulfate	**29**		5.0		mg/L			11/08/22 17:07	5

Method: SW846 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	<0.10		0.10		mg/L		11/02/22 09:50	11/08/22 14:33	1
Calcium	**149**		0.50		mg/L		11/02/22 09:50	11/07/22 22:12	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids (SM 2540C)	**622**		50.0		mg/L			10/30/22 05:24	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH (SM 4500 H+ B)	**6.8**	**HF**	0.1		SU			10/28/22 13:53	1

Client: Waste Connections, Inc.
Job ID: 310-243505-1
Project/Site: SKB Cloquet CCR Groundwater (Fall)

Client Sample ID: P-8 - CCR
Lab Sample ID: 310-243505-3
Date Collected: 10/26/22 11:10
Matrix: Water
Date Received: 10/28/22 13:20

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	100		5.0		mg/L			11/08/22 17:19	5
Fluoride	<0.50		0.50		mg/L			11/08/22 17:19	5
Sulfate	29		5.0		mg/L			11/08/22 17:19	5

Method: SW846 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	<0.10		0.10		mg/L		11/02/22 09:50	11/08/22 14:37	1
Calcium	103		0.50		mg/L		11/02/22 09:50	11/07/22 22:15	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids (SM 2540C)	420		50.0		mg/L			10/30/22 05:24	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH (SM 4500 H+ B)	8.0	HF	0.1		SU			10/28/22 14:03	1

Client: Waste Connections, Inc.
Job ID: 310-243505-1
Project/Site: SKB Cloquet CCR Groundwater (Fall)

Client Sample ID: P-9 - CCR
Lab Sample ID: 310-243505-4

Date Collected: 10/26/22 12:10
Matrix: Water
Date Received: 10/28/22 13:20

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**120**		5.0		mg/L			11/08/22 17:55	5
Fluoride	<0.50		0.50		mg/L			11/08/22 17:55	5
Sulfate	**25**		5.0		mg/L			11/08/22 17:55	5

Method: SW846 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	<0.10		0.10		mg/L		11/02/22 09:50	11/07/22 22:52	1
Calcium	**78.5**		0.50		mg/L		11/02/22 09:50	11/07/22 22:52	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids (SM 2540C)	**566**		50.0		mg/L			10/30/22 06:35	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH (SM 4500 H+ B)	**7.8**	**HF**	0.1		SU			10/28/22 13:54	1

Client: Waste Connections, Inc.
Job ID: 310-243505-1
Project/Site: SKB Cloquet CCR Groundwater (Fall)

Client Sample ID: P-6 - CCR
Lab Sample ID: 310-243505-5
Date Collected: 10/27/22 09:00
Matrix: Water
Date Received: 10/28/22 13:20

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	63		5.0		mg/L			11/08/22 18:07	5
Fluoride	<0.50		0.50		mg/L			11/08/22 18:07	5
Sulfate	110		5.0		mg/L			11/08/22 18:07	5

Method: SW846 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	0.16		0.10		mg/L		11/02/22 09:50	11/07/22 22:55	1
Calcium	139		0.50		mg/L		11/02/22 09:50	11/07/22 22:55	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids (SM 2540C)	588		50.0		mg/L			10/31/22 17:28	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH (SM 4500 H+ B)	7.0	HF	0.1		SU			10/28/22 13:55	1

Client Sample Results

Client: Waste Connections, Inc.
Project/Site: SKB Cloquet CCR Groundwater (Fall)

Job ID: 310-243505-1

Client Sample ID: P-7 - CCR

Date Collected: 10/27/22 09:50
Date Received: 10/28/22 13:20

Lab Sample ID: 310-243505-6

Matrix: Water

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	65		5.0		mg/L			11/08/22 18:19	5
Fluoride	<0.50		0.50		mg/L			11/08/22 18:19	5
Sulfate	72		5.0		mg/L			11/08/22 18:19	5

Method: SW846 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	0.13		0.10		mg/L		11/02/22 09:50	11/07/22 22:58	1
Calcium	174		0.50		mg/L		11/02/22 09:50	11/07/22 22:58	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids (SM 2540C)	760		50.0		mg/L			10/31/22 17:28	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH (SM 4500 H+ B)	7.0	HF	0.1		SU			10/28/22 13:56	1

Client Sample Results

Client: Waste Connections, Inc.
Job ID: 310-243505-1
Project/Site: SKB Cloquet CCR Groundwater (Fall)

Client Sample ID: P-5R - CCR
Lab Sample ID: 310-243505-7

Date Collected: 10/26/22 12:50
Matrix: Water
Date Received: 10/28/22 13:20

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**200**		5.0		mg/L			11/08/22 18:56	5
Fluoride	<0.50		0.50		mg/L			11/08/22 18:56	5
Sulfate	**36**		5.0		mg/L			11/08/22 18:56	5

Method: SW846 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	<0.10		0.10		mg/L		11/02/22 09:50	11/07/22 23:01	1
Calcium	**143**		0.50		mg/L		11/02/22 09:50	11/07/22 23:01	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids (SM 2540C)	**810**		50.0		mg/L			10/30/22 06:35	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH (SM 4500 H+ B)	**6.8**	**HF**	0.1		SU			10/28/22 14:05	1

Client: Waste Connections, Inc.
Job ID: 310-243505-1
Project/Site: SKB Cloquet CCR Groundwater (Fall)

Client Sample ID: Field Blank - CCR

Lab Sample ID: 310-243505-8
Date Collected: 10/26/22 11:30
Matrix: Water
Date Received: 10/28/22 13:20

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<1.0		1.0		mg/L			11/08/22 19:08	1
Fluoride	<0.10		0.10		mg/L			11/08/22 19:08	1
Sulfate	<1.0		1.0		mg/L			11/08/22 19:08	1

Method: SW846 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	<0.10		0.10		mg/L		11/02/22 09:50	11/07/22 23:20	1
Calcium	<0.50		0.50		mg/L		11/02/22 09:50	11/07/22 23:20	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids (SM 2540C)	<50.0		50.0		mg/L			10/30/22 06:35	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH (SM 4500 H+ B)	**7.0**	**HF**	0.1		SU			10/28/22 14:07	1

Client: Waste Connections, Inc.
Job ID: 310-243505-1
Project/Site: SKB Cloquet CCR Groundwater (Fall)

Client Sample ID: Equipment Blank - CCR

Lab Sample ID: 310-243505-9

Date Collected: 10/27/22 10:15

Matrix: Water

Date Received: 10/28/22 13:20

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<1.0		1.0		mg/L			11/08/22 19:20	1
Fluoride	<0.10		0.10		mg/L			11/08/22 19:20	1
Sulfate	<1.0		1.0		mg/L			11/08/22 19:20	1

Method: SW846 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	<0.10		0.10		mg/L		11/02/22 09:50	11/07/22 23:23	1
Calcium	<0.50		0.50		mg/L		11/02/22 09:50	11/07/22 23:23	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids (SM 2540C)	<50.0		50.0		mg/L			10/31/22 17:28	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH (SM 4500 H+ B)	**5.5**	**HF**	0.1		SU			10/28/22 14:09	1

Qualifiers

HPLC/IC

Qualifier	Qualifier Description
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.

Metals

Qualifier	Qualifier Description
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.

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

Method: 9056A - Anions, Ion Chromatography

Lab Sample ID: MB 310-371547/3
Matrix: Water
Analysis Batch: 371547

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<1.0		1.0		mg/L			11/08/22 15:18	1
Fluoride	<0.10		0.10		mg/L			11/08/22 15:18	1
Sulfate	<1.0		1.0		mg/L			11/08/22 15:18	1

Lab Sample ID: LCS 310-371547/4
Matrix: Water
Analysis Batch: 371547

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Chloride	10.0	9.93		mg/L		99	90 - 110
Fluoride	2.00	2.13		mg/L		107	90 - 110
Sulfate	10.0	10.5		mg/L		105	90 - 110

Lab Sample ID: 310-243505-3 MS
Matrix: Water
Analysis Batch: 371547

Client Sample ID: P-8 - CCR
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Chloride	100		25.0	123	4	mg/L		92	80 - 120
Fluoride	<0.50		5.00	5.42		mg/L		108	80 - 120
Sulfate	29		25.0	54.6		mg/L		101	80 - 120

Lab Sample ID: 310-243505-3 MSD
Matrix: Water
Analysis Batch: 371547

Client Sample ID: P-8 - 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	100		25.0	123	4	mg/L		91	80 - 120	0	15
Fluoride	<0.50		5.00	5.40		mg/L		108	80 - 120	0	15
Sulfate	29		25.0	54.4		mg/L		99	80 - 120	0	15

Method: 6020B - Metals (ICP/MS)

Lab Sample ID: MB 310-370501/1-A
Matrix: Water
Analysis Batch: 371296

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 370501

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	<0.50		0.50		mg/L		11/02/22 09:50	11/07/22 22:02	1

Lab Sample ID: MB 310-370501/1-A
Matrix: Water
Analysis Batch: 371394

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 370501

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	<0.10		0.10		mg/L		11/02/22 09:50	11/08/22 14:24	1

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

Lab Sample ID: LCS 310-370501/2-A
Client Sample ID: Lab Control Sample
Matrix: Water
Prep Type: Total/NA
Analysis Batch: 371296
Prep Batch: 370501

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Calcium	2.00	1.92		mg/L		96	80 - 120

Lab Sample ID: LCS 310-370501/2-A
Client Sample ID: Lab Control Sample
Matrix: Water
Prep Type: Total/NA
Analysis Batch: 371394
Prep Batch: 370501

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Boron	0.200	0.213		mg/L		107	80 - 120

Lab Sample ID: 310-243505-3 MS
Client Sample ID: P-8 - CCR
Matrix: Water
Prep Type: Total/NA
Analysis Batch: 371296
Prep Batch: 370501

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Calcium	103		2.00	103.2	4	mg/L		18	75 - 125

Lab Sample ID: 310-243505-3 MS
Client Sample ID: P-8 - CCR
Matrix: Water
Prep Type: Total/NA
Analysis Batch: 371394
Prep Batch: 370501

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Boron	<0.10		0.200	0.236		mg/L		118	75 - 125

Lab Sample ID: 310-243505-3 MSD
Client Sample ID: P-8 - CCR
Matrix: Water
Prep Type: Total/NA
Analysis Batch: 371296
Prep Batch: 370501

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Calcium	103		2.00	103.8	4	mg/L		50	75 - 125	1	20

Lab Sample ID: 310-243505-3 MSD
Client Sample ID: P-8 - CCR
Matrix: Water
Prep Type: Total/NA
Analysis Batch: 371394
Prep Batch: 370501

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Boron	<0.10		0.200	0.236		mg/L		118	75 - 125	0	20

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

Lab Sample ID: MB 310-370266/1
Client Sample ID: Method Blank
Matrix: Water
Prep Type: Total/NA
Analysis Batch: 370266

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	<50.0		50.0		mg/L			10/30/22 05:24	1

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

Lab Sample ID: LCS 310-370266/2
Matrix: Water
Analysis Batch: 370266

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			1000	960.0		mg/L		96	90 - 110		

Lab Sample ID: 310-243505-3 DU
Matrix: Water
Analysis Batch: 370266

Client Sample ID: P-8 - CCR
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Total Dissolved Solids	420			394.0		mg/L				6	20

Lab Sample ID: MB 310-370267/1
Matrix: Water
Analysis Batch: 370267

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	<50.0		50.0		mg/L			10/30/22 06:35	1

Lab Sample ID: LCS 310-370267/2
Matrix: Water
Analysis Batch: 370267

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			1000	994.0		mg/L		99	90 - 110		

Lab Sample ID: MB 310-370393/1
Matrix: Water
Analysis Batch: 370393

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	<50.0		50.0		mg/L			10/31/22 17:28	1

Lab Sample ID: LCS 310-370393/2
Matrix: Water
Analysis Batch: 370393

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			1000	974.0		mg/L		97	90 - 110		

Method: SM 4500 H+ B - pH

Lab Sample ID: LCS 310-370170/1
Matrix: Water
Analysis Batch: 370170

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		101	98 - 102		

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

Lab Sample ID: LCS 310-370170/32
Client Sample ID: Lab Control Sample
Matrix: Water
Prep Type: Total/NA
Analysis Batch: 370170

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
pH			7.00	7.0		SU		101	98 - 102		

Lab Sample ID: 310-243505-3 DU
Client Sample ID: P-8 - CCR
Matrix: Water
Prep Type: Total/NA
Analysis Batch: 370170

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
pH	8.0	HF		8.0		SU				0.1	20

HPLC/IC

Analysis Batch: 371547

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-243505-1	Duplicate 1 - CCR	Total/NA	Water	9056A	
310-243505-2	P-1 - CCR	Total/NA	Water	9056A	
310-243505-3	P-8 - CCR	Total/NA	Water	9056A	
310-243505-4	P-9 - CCR	Total/NA	Water	9056A	
310-243505-5	P-6 - CCR	Total/NA	Water	9056A	
310-243505-6	P-7 - CCR	Total/NA	Water	9056A	
310-243505-7	P-5R - CCR	Total/NA	Water	9056A	
310-243505-8	Field Blank - CCR	Total/NA	Water	9056A	
310-243505-9	Equipment Blank - CCR	Total/NA	Water	9056A	
MB 310-371547/3	Method Blank	Total/NA	Water	9056A	
LCS 310-371547/4	Lab Control Sample	Total/NA	Water	9056A	
310-243505-3 MS	P-8 - CCR	Total/NA	Water	9056A	
310-243505-3 MSD	P-8 - CCR	Total/NA	Water	9056A	

Metals

Prep Batch: 370501

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-243505-1	Duplicate 1 - CCR	Total/NA	Water	3005A	
310-243505-2	P-1 - CCR	Total/NA	Water	3005A	
310-243505-3	P-8 - CCR	Total/NA	Water	3005A	
310-243505-4	P-9 - CCR	Total/NA	Water	3005A	
310-243505-5	P-6 - CCR	Total/NA	Water	3005A	
310-243505-6	P-7 - CCR	Total/NA	Water	3005A	
310-243505-7	P-5R - CCR	Total/NA	Water	3005A	
310-243505-8	Field Blank - CCR	Total/NA	Water	3005A	
310-243505-9	Equipment Blank - CCR	Total/NA	Water	3005A	
MB 310-370501/1-A	Method Blank	Total/NA	Water	3005A	
LCS 310-370501/2-A	Lab Control Sample	Total/NA	Water	3005A	
310-243505-3 MS	P-8 - CCR	Total/NA	Water	3005A	
310-243505-3 MSD	P-8 - CCR	Total/NA	Water	3005A	

Analysis Batch: 371296

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-243505-1	Duplicate 1 - CCR	Total/NA	Water	6020B	370501
310-243505-2	P-1 - CCR	Total/NA	Water	6020B	370501
310-243505-3	P-8 - CCR	Total/NA	Water	6020B	370501
310-243505-4	P-9 - CCR	Total/NA	Water	6020B	370501
310-243505-5	P-6 - CCR	Total/NA	Water	6020B	370501
310-243505-6	P-7 - CCR	Total/NA	Water	6020B	370501
310-243505-7	P-5R - CCR	Total/NA	Water	6020B	370501
310-243505-8	Field Blank - CCR	Total/NA	Water	6020B	370501
310-243505-9	Equipment Blank - CCR	Total/NA	Water	6020B	370501
MB 310-370501/1-A	Method Blank	Total/NA	Water	6020B	370501
LCS 310-370501/2-A	Lab Control Sample	Total/NA	Water	6020B	370501
310-243505-3 MS	P-8 - CCR	Total/NA	Water	6020B	370501
310-243505-3 MSD	P-8 - CCR	Total/NA	Water	6020B	370501

Analysis Batch: 371394

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-243505-1	Duplicate 1 - CCR	Total/NA	Water	6020B	370501

Metals (Continued)

Analysis Batch: 371394 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-243505-2	P-1 - CCR	Total/NA	Water	6020B	370501
310-243505-3	P-8 - CCR	Total/NA	Water	6020B	370501
MB 310-370501/1-A	Method Blank	Total/NA	Water	6020B	370501
LCS 310-370501/2-A	Lab Control Sample	Total/NA	Water	6020B	370501
310-243505-3 MS	P-8 - CCR	Total/NA	Water	6020B	370501
310-243505-3 MSD	P-8 - CCR	Total/NA	Water	6020B	370501

General Chemistry

Analysis Batch: 370170

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-243505-1	Duplicate 1 - CCR	Total/NA	Water	SM 4500 H+ B	
310-243505-2	P-1 - CCR	Total/NA	Water	SM 4500 H+ B	
310-243505-3	P-8 - CCR	Total/NA	Water	SM 4500 H+ B	
310-243505-4	P-9 - CCR	Total/NA	Water	SM 4500 H+ B	
310-243505-5	P-6 - CCR	Total/NA	Water	SM 4500 H+ B	
310-243505-6	P-7 - CCR	Total/NA	Water	SM 4500 H+ B	
310-243505-7	P-5R - CCR	Total/NA	Water	SM 4500 H+ B	
310-243505-8	Field Blank - CCR	Total/NA	Water	SM 4500 H+ B	
310-243505-9	Equipment Blank - CCR	Total/NA	Water	SM 4500 H+ B	
LCS 310-370170/1	Lab Control Sample	Total/NA	Water	SM 4500 H+ B	
LCS 310-370170/32	Lab Control Sample	Total/NA	Water	SM 4500 H+ B	
310-243505-3 DU	P-8 - CCR	Total/NA	Water	SM 4500 H+ B	

Analysis Batch: 370266

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-243505-1	Duplicate 1 - CCR	Total/NA	Water	SM 2540C	
310-243505-2	P-1 - CCR	Total/NA	Water	SM 2540C	
310-243505-3	P-8 - CCR	Total/NA	Water	SM 2540C	
MB 310-370266/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 310-370266/2	Lab Control Sample	Total/NA	Water	SM 2540C	
310-243505-3 DU	P-8 - CCR	Total/NA	Water	SM 2540C	

Analysis Batch: 370267

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-243505-4	P-9 - CCR	Total/NA	Water	SM 2540C	
310-243505-7	P-5R - CCR	Total/NA	Water	SM 2540C	
310-243505-8	Field Blank - CCR	Total/NA	Water	SM 2540C	
MB 310-370267/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 310-370267/2	Lab Control Sample	Total/NA	Water	SM 2540C	

Analysis Batch: 370393

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-243505-5	P-6 - CCR	Total/NA	Water	SM 2540C	
310-243505-6	P-7 - CCR	Total/NA	Water	SM 2540C	
310-243505-9	Equipment Blank - CCR	Total/NA	Water	SM 2540C	
MB 310-370393/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 310-370393/2	Lab Control Sample	Total/NA	Water	SM 2540C	

Client Sample ID: Duplicate 1 - CCR
Lab Sample ID: 310-243505-1

Date Collected: 10/26/22 00:00
Matrix: Water
Date Received: 10/28/22 13:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9056A		5	371547	DHM5	EET CF	11/08/22 16:55
Total/NA	Prep	3005A			370501	QTZ5	EET CF	11/02/22 09:50
Total/NA	Analysis	6020B		1	371296	A6US	EET CF	11/07/22 22:08
Total/NA	Prep	3005A			370501	QTZ5	EET CF	11/02/22 09:50
Total/NA	Analysis	6020B		1	371394	A6US	EET CF	11/08/22 14:30
Total/NA	Analysis	SM 2540C		1	370266	WZC8	EET CF	10/30/22 05:24
Total/NA	Analysis	SM 4500 H+ B		1	370170	W9YR	EET CF	10/28/22 13:51

Client Sample ID: P-1 - CCR
Lab Sample ID: 310-243505-2

Date Collected: 10/26/22 09:10
Matrix: Water
Date Received: 10/28/22 13:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9056A		5	371547	DHM5	EET CF	11/08/22 17:07
Total/NA	Prep	3005A			370501	QTZ5	EET CF	11/02/22 09:50
Total/NA	Analysis	6020B		1	371296	A6US	EET CF	11/07/22 22:12
Total/NA	Prep	3005A			370501	QTZ5	EET CF	11/02/22 09:50
Total/NA	Analysis	6020B		1	371394	A6US	EET CF	11/08/22 14:33
Total/NA	Analysis	SM 2540C		1	370266	WZC8	EET CF	10/30/22 05:24
Total/NA	Analysis	SM 4500 H+ B		1	370170	W9YR	EET CF	10/28/22 13:53

Client Sample ID: P-8 - CCR
Lab Sample ID: 310-243505-3

Date Collected: 10/26/22 11:10
Matrix: Water
Date Received: 10/28/22 13:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9056A		5	371547	DHM5	EET CF	11/08/22 17:19
Total/NA	Prep	3005A			370501	QTZ5	EET CF	11/02/22 09:50
Total/NA	Analysis	6020B		1	371296	A6US	EET CF	11/07/22 22:15
Total/NA	Prep	3005A			370501	QTZ5	EET CF	11/02/22 09:50
Total/NA	Analysis	6020B		1	371394	A6US	EET CF	11/08/22 14:37
Total/NA	Analysis	SM 2540C		1	370266	WZC8	EET CF	10/30/22 05:24
Total/NA	Analysis	SM 4500 H+ B		1	370170	W9YR	EET CF	10/28/22 14:03

Client Sample ID: P-9 - CCR
Lab Sample ID: 310-243505-4

Date Collected: 10/26/22 12:10
Matrix: Water
Date Received: 10/28/22 13:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9056A		5	371547	DHM5	EET CF	11/08/22 17:55
Total/NA	Prep	3005A			370501	QTZ5	EET CF	11/02/22 09:50
Total/NA	Analysis	6020B		1	371296	A6US	EET CF	11/07/22 22:52
Total/NA	Analysis	SM 2540C		1	370267	WZC8	EET CF	10/30/22 06:35
Total/NA	Analysis	SM 4500 H+ B		1	370170	W9YR	EET CF	10/28/22 13:54

Lab Chronicle

Client: Waste Connections, Inc.
Job ID: 310-243505-1
Project/Site: SKB Cloquet CCR Groundwater (Fall)

Client Sample ID: P-6 - CCR
Lab Sample ID: 310-243505-5
Date Collected: 10/27/22 09:00
Matrix: Water
Date Received: 10/28/22 13:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9056A		5	371547	DHM5	EET CF	11/08/22 18:07
Total/NA	Prep	3005A			370501	QTZ5	EET CF	11/02/22 09:50
Total/NA	Analysis	6020B		1	371296	A6US	EET CF	11/07/22 22:55
Total/NA	Analysis	SM 2540C		1	370393	ENB7	EET CF	10/31/22 17:28
Total/NA	Analysis	SM 4500 H+ B		1	370170	W9YR	EET CF	10/28/22 13:55

Client Sample ID: P-7 - CCR
Lab Sample ID: 310-243505-6
Date Collected: 10/27/22 09:50
Matrix: Water
Date Received: 10/28/22 13:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9056A		5	371547	DHM5	EET CF	11/08/22 18:19
Total/NA	Prep	3005A			370501	QTZ5	EET CF	11/02/22 09:50
Total/NA	Analysis	6020B		1	371296	A6US	EET CF	11/07/22 22:58
Total/NA	Analysis	SM 2540C		1	370393	ENB7	EET CF	10/31/22 17:28
Total/NA	Analysis	SM 4500 H+ B		1	370170	W9YR	EET CF	10/28/22 13:56

Client Sample ID: P-5R - CCR
Lab Sample ID: 310-243505-7
Date Collected: 10/26/22 12:50
Matrix: Water
Date Received: 10/28/22 13:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9056A		5	371547	DHM5	EET CF	11/08/22 18:56
Total/NA	Prep	3005A			370501	QTZ5	EET CF	11/02/22 09:50
Total/NA	Analysis	6020B		1	371296	A6US	EET CF	11/07/22 23:01
Total/NA	Analysis	SM 2540C		1	370267	WZC8	EET CF	10/30/22 06:35
Total/NA	Analysis	SM 4500 H+ B		1	370170	W9YR	EET CF	10/28/22 14:05

Client Sample ID: Field Blank - CCR
Lab Sample ID: 310-243505-8
Date Collected: 10/26/22 11:30
Matrix: Water
Date Received: 10/28/22 13:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9056A		1	371547	DHM5	EET CF	11/08/22 19:08
Total/NA	Prep	3005A			370501	QTZ5	EET CF	11/02/22 09:50
Total/NA	Analysis	6020B		1	371296	A6US	EET CF	11/07/22 23:20
Total/NA	Analysis	SM 2540C		1	370267	WZC8	EET CF	10/30/22 06:35
Total/NA	Analysis	SM 4500 H+ B		1	370170	W9YR	EET CF	10/28/22 14:07

Lab Chronicle

Client: Waste Connections, Inc.
Job ID: 310-243505-1
Project/Site: SKB Cloquet CCR Groundwater (Fall)

Client Sample ID: Equipment Blank - CCR
Lab Sample ID: 310-243505-9

Date Collected: 10/27/22 10:15
Matrix: Water

Date Received: 10/28/22 13:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9056A		1	371547	DHM5	EET CF	11/08/22 19:20
Total/NA	Prep	3005A			370501	QTZ5	EET CF	11/02/22 09:50
Total/NA	Analysis	6020B		1	371296	A6US	EET CF	11/07/22 23:23
Total/NA	Analysis	SM 2540C		1	370393	ENB7	EET CF	10/31/22 17:28
Total/NA	Analysis	SM 4500 H+ B		1	370170	W9YR	EET CF	10/28/22 14:09

Laboratory References:

EET CF = Eurofins Cedar Falls, 3019 Venture Way, Cedar Falls, IA 50613, TEL (319)277-2401

Accreditation/Certification Summary

Client: Waste Connections, Inc. Job ID: 310-243505-1
Project/Site: SKB Cloquet CCR Groundwater (Fall)

Laboratory: Eurofins Cedar Falls

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Minnesota	NELAP	019-999-319	12-31-22

Method Summary

Client: Waste Connections, Inc.
Job ID: 310-243505-1
Project/Site: SKB Cloquet CCR Groundwater (Fall)

Method	Method Description	Protocol	Laboratory
9056A	Anions, Ion Chromatography	SW846	EET CF
6020B	Metals (ICP/MS)	SW846	EET CF
SM 2540C	Solids, Total Dissolved (TDS)	SM	EET CF
SM 4500 H+ B	pH	SM	EET CF
3005A	Preparation, Total Metals	SW846	EET CF

Protocol References:

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:

EET CF = Eurofins Cedar Falls, 3019 Venture Way, Cedar Falls, IA 50613, TEL (319)277-2401

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310-243505 Chain of Custody

Cooler/Sample Receipt and Temperature Log Form

Client Information

Client: G+E SERVICES

City/State: CITY EAGAN | STATE MN | Project: SKD GROUND WATER

Receipt Information

Date/Time Received: DATE 10/24/22 | TIME 1320 | Received By: RM

Delivery Type: ☐ UPS ☐ FedEx ☐ FedEx Ground ☐ US Mail ☐ Spee-Dee
☒ Lab Courier ☐ Lab Field Services ☐ Client Drop-off ☐ Other:_____

Condition of Cooler/Containers

Sample(s) received in Cooler? ☒ Yes ☐ No *If yes:* Cooler ID:

Multiple Coolers? ☒ Yes ☐ No *If yes:* Cooler # 1 of 2

Cooler Custody Seals Present? ☒ Yes ☐ No *If yes:* Cooler custody seals intact? ☐ Yes ☐ No

Sample Custody Seals Present? ☐ Yes ☒ No *If yes:* Sample custody seals intact? ☐ Yes ☐ No

Trip Blank Present? ☐ Yes ☒ No *If yes:* Which VOA samples are in cooler? ↓

Temperature Record

Coolant: ☒ Wet ice ☐ Blue ice ☐ Dry ice ☐ Other:_____ ☐ NONE

Thermometer ID: A | Correction Factor (°C): 0.0

Temp Blank Temperature – If no temp blank, or temp blank temperature above criteria, proceed to Sample Container Temperature

Uncorrected Temp (°C): 1.6 | Corrected Temp (°C): 1.6

Sample Container Temperature

	CONTAINER 1	CONTAINER 2
Container(s) used:		
Uncorrected Temp (°C):		
Corrected Temp (°C):		

Exceptions Noted

1) If temperature exceeds criteria, was sample(s) received same day of sampling? ☐ Yes ☐ No
   a) *If yes:* Is there evidence that the chilling process began? ☐ Yes ☐ No

2) If temperature is <0°C, are there obvious signs that the integrity of sample containers is compromised? (e.g., bulging septa, broken/cracked bottles, frozen solid?) ☐ Yes ☐ No

NOTE: If yes, contact PM before proceeding If no, proceed with login

Additional Comments

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Place COC scanning label here

Cooler/Sample Receipt and Temperature Log Form

Client Information

Client: G+E SERVICES

City/State: CITY EAGAN | STATE MN | Project: SKP GROUND WATER

Receipt Information

Date/Time Received: DATE 10/28/22 | TIME 1320 | Received By: RM

Delivery Type: ☐ UPS ☐ FedEx ☐ FedEx Ground ☐ US Mail ☐ Spee-Dee
☒ Lab Courier ☐ Lab Field Services ☐ Client Drop-off ☐ Other:_____

Condition of Cooler/Containers

Sample(s) received in Cooler? ☒ Yes ☐ No *If yes:* Cooler ID:

Multiple Coolers? ☒ Yes ☐ No *If yes:* Cooler # 2 of 2

Cooler Custody Seals Present? ☒ Yes ☐ No *If yes:* Cooler custody seals intact? ☐ Yes ☐ No

Sample Custody Seals Present? ☐ Yes ☒ No *If yes:* Sample custody seals intact? ☐ Yes ☐ No

Trip Blank Present? ☐ Yes ☒ No *If yes:* Which VOA samples are in cooler? ↓

Temperature Record

Coolant: ☒ Wet ice ☐ Blue ice ☐ Dry ice ☐ Other:_____ ☐ NONE

Thermometer ID: F | Correction Factor (°C): 0.0

• **Temp Blank Temperature** – If no temp blank, or temp blank temperature above criteria, proceed to Sample Container Temperature

Uncorrected Temp (°C): 1.1 | Corrected Temp (°C): 1.1

• **Sample Container Temperature**

	CONTAINER 1	CONTAINER 2
Container(s) used:		
Uncorrected Temp (°C):		
Corrected Temp (°C):		

Exceptions Noted

1) If temperature exceeds criteria, was sample(s) received same day of sampling? ☐ Yes ☐ No
   a) *If yes:* Is there evidence that the chilling process began? ☐ Yes ☐ No

2) If temperature is <0°C, are there obvious signs that the integrity of sample containers is compromised? (e.g., bulging septa, broken/cracked bottles, frozen solid?) ☐ Yes ☐ No

NOTE: If yes, contact PM before proceeding. If no, proceed with login

Additional Comments

Eurofins Cedar Falls
3019 Venture Way
Cedar Falls, IA 50613
Phone (319) 277-2401 Phone (319) 277-2425

Chain of Custody Record

Eurofins Minneapolis SC 213 — eurofins — Environment Testing America

Client Information	Sampler: N-Schlagel	Lab PM: Bindert, Zach T	Carrier Tracking No(s):	COC No: 310-73819-21058 1
Client Contact: Mr Nicholas Schlagel	Phone: 651 792-6065	E-Mail: Zach.Bindert@et.eurofinsus.com	State of Origin: MN	Page: Page 1 of 1
Company: Groundwater & Environmental Services Inc	PWSID:			Job #:
Address: 1301 Corporate Center Drive Suite 190	Due Date Requested			
City: Eagan	TAT Requested (days): Standard			
State Zip: MN, 55121-1562	Compliance Project: Δ Yes Δ No			
Phone:	PO #: Purchase Order Requested			
Email: NSchlagel@gesonline.com	WO #:			
Project Name: SKB Cloquet CCR Groundwater (Fall)	Project #: 31013983			
Site: Minnesota	SSOW#:			

Analysis Requested

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, Y - Trizma, 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)	Chloride, Fluoride and Sulfate - 9056A_ORGFM_28D	6020B - Boron and Calcium	TDS - 2540C_Calcd, pH - SM4500_H+	Total Number of containers	Special Instructions/Note:
			Preservation Code:				N	D	N		
Duplicate 1 - CCR	10/26/22	-	G	Water			X	X	X	3	
P-1 - CCR	10/26/22	9:10	G	Water			X	X	X	3	
~~P-2 - CCR~~				Water			~~X~~	~~X~~	~~X~~	3	
P-8 - CCR	10/26/22	11:10	G	Water		Y	X	X	X	3	MS/MSD
P-9 - CCR	10/26/22	12:10	G	Water			X	X	X	3	
P-6 - CCR	10/27/22	9:30	G	Water			X	X	X	3	
P-7 - CCR	10/27/22	9:50	G	Water			X	X	X	3	
P-5R - CCR	10/26/22	12:50	G	Water			X	X	X	3	
Field Blank - CCR	10/26/22	11:30	G	Water			X	X	X	3	
Equipment Blank - CCR	10/27/22	16:15	G	Water			X	X	X	3	
				Water							

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]	10/27/22 14:00	GES	Thomas G Reis	10-27-22 14:00	Eurofins
Thomas G. Reis	10-27-22 17:00	Eurofins			
			[signature]	10-28-22 1320	

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

Cooler Temperature(s) °C and Other Remarks:

Ver 01/16/2019

Login Sample Receipt Checklist

Client: Waste Connections, Inc.

Job Number: 310-243505-1

Login Number: 243505

List Source: Eurofins Cedar Falls

List Number: 1

Creator: Kizer, Preston V

Question	Answer	Comment
Radioactivity either was not measured or, if measured, is at or below background	N/A	
The cooler's custody seal, if present, is intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	N/A	
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	
Samples received within 48 hours of sampling.	True	
Samples requiring field filtration have been filtered in the field.	True	
Chlorine Residual checked.	N/A	

Appendix C – Statistical Evaluation Data

	Background Statistics for Uncensored Full Data Sets	
User Selected Options		
Date/Time of Computation	ProUCL 5.112/13/2022 1:34:37 PM	
From File	\\Svrrmt101-vm2\minn-01\Projects\SKB Environmental\Cloquet Facility\Statistics\2022 Spring CCR Sampling Ev	
Full Precision	OFF	
Confidence Coefficient	95%	
Coverage	95%	
New or Future K Observations	1	
Number of Bootstrap Operations	2000	

Boron

General Statistics

Total Number of Observations	142	Number of Distinct Observations	63
Minimum	0.02	First Quartile	0.0423
Second Largest	0.39	Median	0.066
Maximum	0.41	Third Quartile	0.128
Mean	0.108	SD	0.0956
Coefficient of Variation	0.885	Skewness	1.634
Mean of logged Data	-2.535	SD of logged Data	0.761

Critical Values for Background Threshold Values (BTVs)

Tolerance Factor K (For UTL)	1.875	d2max (for USL)	3.325

Normal GOF Test

Shapiro Wilk Test Statistic	0.752	**Normal GOF Test**
5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.198	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.0747	Data Not Normal at 5% Significance Level

Data Not Normal at 5% Significance Level

Background Statistics Assuming Normal Distribution

95% UTL with 95% Coverage	0.287	90% Percentile (z)	0.231
95% UPL (t)	0.267	95% Percentile (z)	0.265
95% USL	0.426	99% Percentile (z)	0.331

Gamma GOF Test

A-D Test Statistic	5.023	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.768	Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.152	**Kolmogorov-Smirnov Gamma GOF Test**
5% K-S Critical Value	0.0799	Data Not Gamma Distributed at 5% Significance Level

Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	1.76	k star (bias corrected MLE)	1.728
Theta hat (MLE)	0.0614	Theta star (bias corrected MLE)	0.0625
nu hat (MLE)	499.9	nu star (bias corrected)	490.7
MLE Mean (bias corrected)	0.108	MLE Sd (bias corrected)	0.0822

Background Statistics Assuming Gamma Distribution

95% Wilson Hilferty (WH) Approx. Gamma UPL	0.266	90% Percentile	0.218
95% Hawkins Wixley (HW) Approx. Gamma UPL	0.268	95% Percentile	0.269

53	95% WH Approx. Gamma UTL with 95% Coverage					0.299	99% Percentile					0.383
54	95% HW Approx. Gamma UTL with 95% Coverage					0.304						
55	95% WH USL					0.598	95% HW USL					0.653
56												
57	**Lognormal GOF Test**											
58	Shapiro Wilk Test Statistic					0.925	**Shapiro Wilk Lognormal GOF Test**					
59	5% Shapiro Wilk P Value					7.1782E-9	Data Not Lognormal at 5% Significance Level					
60	Lilliefors Test Statistic					0.122	**Lilliefors Lognormal GOF Test**					
61	5% Lilliefors Critical Value					0.0747	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					0.33	90% Percentile (z)					0.21
66	95% UPL (t)					0.28	95% Percentile (z)					0.277
67	95% USL					0.995	99% Percentile (z)					0.465
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					138	95% UTL with 95% Coverage					0.37
74	Approx, f used to compute achieved CC					1.453	Approximate Actual Confidence Coefficient achieved by UTL					0.843
75							Approximate Sample Size needed to achieve specified CC					181
76	95% Percentile Bootstrap UTL with 95% Coverage					0.37	95% BCA Bootstrap UTL with 95% Coverage					0.37
77	95% UPL					0.356	90% Percentile					0.28
78	90% Chebyshev UPL					0.396	95% Percentile					0.329
79	95% Chebyshev UPL					0.526	99% Percentile					0.386
80	95% USL					0.41						
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	**Calcium**											
89												
90	**General Statistics**											
91	Total Number of Observations					139	Number of Distinct Observations					87
92							Number of Missing Observations					3
93	Minimum					27	First Quartile					115
94	Second Largest					207	Median					140
95	Maximum					235	Third Quartile					160
96	Mean					135.8	SD					33.94
97	Coefficient of Variation					0.25	Skewness					-0.491
98	Mean of logged Data					4.871	SD of logged Data					0.308
99												
100	**Critical Values for Background Threshold Values (BTVs)**											
101	Tolerance Factor K (For UTL)					1.877	d2max (for USL)					3.319
102												
103	**Normal GOF Test**											
104	Shapiro Wilk Test Statistic					0.973	**Normal GOF Test**					

	A	B	C	D	E	F	G	H	I	J	K	L
105					5% Shapiro Wilk P Value	0.126	Data appear Normal at 5% Significance Level					
106					Lilliefors Test Statistic	0.0845	**Lilliefors GOF Test**					
107					5% Lilliefors Critical Value	0.0755	Data Not Normal at 5% Significance Level					
108	**Data appear Approximate Normal at 5% Significance Level**											
109												
110	**Background Statistics Assuming Normal Distribution**											
111					95% UTL with 95% Coverage	199.5				90% Percentile (z)	179.3	
112					95% UPL (t)	192.2				95% Percentile (z)	191.6	
113					95% USL	248.4				99% Percentile (z)	214.7	
114												
115	**Gamma GOF Test**											
116					A-D Test Statistic	2.915	**Anderson-Darling Gamma GOF Test**					
117					5% A-D Critical Value	0.751	Data Not Gamma Distributed at 5% Significance Level					
118					K-S Test Statistic	0.117	**Kolmogorov-Smirnov Gamma GOF Test**					
119					5% K-S Critical Value	0.0793	Data Not Gamma Distributed at 5% Significance Level					
120	**Data Not Gamma Distributed at 5% Significance Level**											
121												
122	**Gamma Statistics**											
123					k hat (MLE)	12.74				k star (bias corrected MLE)	12.47	
124					Theta hat (MLE)	10.65				Theta star (bias corrected MLE)	10.89	
125					nu hat (MLE)	3543				nu star (bias corrected)	3468	
126					MLE Mean (bias corrected)	135.8				MLE Sd (bias corrected)	38.44	
127												
128	**Background Statistics Assuming Gamma Distribution**											
129				95% Wilson Hilferty (WH) Approx. Gamma UPL		204.8				90% Percentile	186.8	
130				95% Hawkins Wixley (HW) Approx. Gamma UPL		207.4				95% Percentile	204.6	
131				95% WH Approx. Gamma UTL with 95% Coverage		215.8				99% Percentile	240.8	
132				95% HW Approx. Gamma UTL with 95% Coverage		219.1						
133					95% WH USL	299.3				95% HW USL	310.9	
134												
135	**Lognormal GOF Test**											
136					Shapiro Wilk Test Statistic	0.865	**Shapiro Wilk Lognormal GOF Test**					
137					5% Shapiro Wilk P Value	0	Data Not Lognormal at 5% Significance Level					
138					Lilliefors Test Statistic	0.128	**Lilliefors Lognormal GOF Test**					
139					5% Lilliefors Critical Value	0.0755	Data Not Lognormal at 5% Significance Level					
140	**Data Not Lognormal at 5% Significance Level**											
141												
142	**Background Statistics assuming Lognormal Distribution**											
143					95% UTL with 95% Coverage	232.7				90% Percentile (z)	193.7	
144					95% UPL (t)	217.7				95% Percentile (z)	216.6	
145					95% USL	362.8				99% Percentile (z)	267.2	
146												
147	**Nonparametric Distribution Free Background Statistics**											
148	**Data appear Approximate Normal at 5% Significance Level**											
149												
150	**Nonparametric Upper Limits for Background Threshold Values**											
151					Order of Statistic, r	136				95% UTL with 95% Coverage	187	
152					Approx, f used to compute achieved CC	1.789				Approximate Actual Confidence Coefficient achieved by UTL	0.921	
153										Approximate Sample Size needed to achieve specified CC	153	
154				95% Percentile Bootstrap UTL with 95% Coverage		185.2				95% BCA Bootstrap UTL with 95% Coverage	187	
155					95% UPL	183				90% Percentile	171.2	
156					90% Chebyshev UPL	238				95% Percentile	181.2	

157				95% Chebyshev UPL	284.2					99% Percentile	201.7
158				95% USL	235						
159											
160	Note: The use of USL tends to yield a conservative estimate of BTV, especially when the sample size starts exceeding 20.										
161	Therefore, one may use USL to estimate a BTV only when the data set represents a background data set free of outliers										
162	and consists of observations collected from clean unimpacted locations.										
163	The use of USL tends to provide a balance between false positives and false negatives provided the data										
164	represents a background data set and when many onsite observations need to be compared with the BTV.										
165											
166	**chloride**										
167											
168	**General Statistics**										
169				Total Number of Observations	117					Number of Distinct Observations	98
170										Number of Missing Observations	24
171				Minimum	4					First Quartile	63.5
172				Second Largest	232					Median	93.9
173				Maximum	232					Third Quartile	135
174				Mean	104.7					SD	55.28
175				Coefficient of Variation	0.528					Skewness	0.7
176				Mean of logged Data	4.487					SD of logged Data	0.646
177											
178	**Critical Values for Background Threshold Values (BTVs)**										
179				Tolerance Factor K (For UTL)	1.9					d2max (for USL)	3.262
180											
181	**Normal GOF Test**										
182				Shapiro Wilk Test Statistic	0.926					**Normal GOF Test**	
183				5% Shapiro Wilk P Value	4.9529E-7					Data Not Normal at 5% Significance Level	
184				Lilliefors Test Statistic	0.103					**Lilliefors GOF Test**	
185				5% Lilliefors Critical Value	0.0822					Data Not Normal at 5% Significance Level	
186	**Data Not Normal at 5% Significance Level**										
187											
188	**Background Statistics Assuming Normal Distribution**										
189				95% UTL with 95% Coverage	209.8					90% Percentile (z)	175.6
190				95% UPL (t)	196.8					95% Percentile (z)	195.7
191				95% USL	285.1					99% Percentile (z)	233.3
192											
193	**Gamma GOF Test**										
194				A-D Test Statistic	0.455					**Anderson-Darling Gamma GOF Test**	
195				5% A-D Critical Value	0.758					Detected data appear Gamma Distributed at 5% Significance Level	
196				K-S Test Statistic	0.0469					**Kolmogorov-Smirnov Gamma GOF Test**	
197				5% K-S Critical Value	0.0856					Detected data appear Gamma Distributed at 5% Significance Level	
198	**Detected data appear Gamma Distributed at 5% Significance Level**										
199											
200	**Gamma Statistics**										
201				k hat (MLE)	3.189					k star (bias corrected MLE)	3.113
202				Theta hat (MLE)	32.84					Theta star (bias corrected MLE)	33.64
203				nu hat (MLE)	746.2					nu star (bias corrected)	728.4
204				MLE Mean (bias corrected)	104.7					MLE Sd (bias corrected)	59.36
205											
206	**Background Statistics Assuming Gamma Distribution**										
207				95% Wilson Hilferty (WH) Approx. Gamma UPL	217.5					90% Percentile	184.3
208				95% Hawkins Wixley (HW) Approx. Gamma UPL	224.1					95% Percentile	217.5

209	95% WH Approx. Gamma UTL with 95% Coverage					240.6					99% Percentile	289.2
210	95% HW Approx. Gamma UTL with 95% Coverage					250						
211					95% WH USL	407.3					95% HW USL	447.6
212												
213	**Lognormal GOF Test**											
214					Shapiro Wilk Test Statistic	0.91	**Shapiro Wilk Lognormal GOF Test**					
215					5% Shapiro Wilk P Value	2.4795E-9	Data Not Lognormal at 5% Significance Level					
216					Lilliefors Test Statistic	0.0812	**Lilliefors Lognormal GOF Test**					
217					5% Lilliefors Critical Value	0.0822	Data appear Lognormal at 5% Significance Level					
218	**Data appear Approximate Lognormal at 5% Significance Level**											
219												
220	**Background Statistics assuming Lognormal Distribution**											
221					95% UTL with 95% Coverage	302.8					90% Percentile (z)	203.1
222					95% UPL (t)	260.2					95% Percentile (z)	256.8
223					95% USL	729.6					99% Percentile (z)	398.7
224												
225	**Nonparametric Distribution Free Background Statistics**											
226	**Data appear Gamma Distributed at 5% Significance Level**											
227												
228	**Nonparametric Upper Limits for Background Threshold Values**											
229					Order of Statistic, r	114					95% UTL with 95% Coverage	227
230					Approx, f used to compute achieved CC	1.5					Approximate Actual Confidence Coefficient achieved by UTL	0.842
231											Approximate Sample Size needed to achieve specified CC	153
232	95% Percentile Bootstrap UTL with 95% Coverage					227.4					95% BCA Bootstrap UTL with 95% Coverage	227.4
233					95% UPL	220.3					90% Percentile	196.4
234					90% Chebyshev UPL	271.3					95% Percentile	218.4
235					95% Chebyshev UPL	346.7					99% Percentile	231.5
236					95% USL	232						
237												
238	Note: The use of USL tends to yield a conservative estimate of BTV, especially when the sample size starts exceeding 20.											
239	Therefore, one may use USL to estimate a BTV only when the data set represents a background data set free of outliers											
240	and consists of observations collected from clean unimpacted locations.											
241	The use of USL tends to provide a balance between false positives and false negatives provided the data											
242	represents a background data set and when many onsite observations need to be compared with the BTV.											
243												
244	**fluoride**											
245												
246	**General Statistics**											
247					Total Number of Observations	124					Number of Distinct Observations	9
248											Number of Missing Observations	17
249					Minimum	0.05					First Quartile	0.25
250					Second Largest	0.5					Median	0.25
251					Maximum	0.5					Third Quartile	0.5
252					Mean	0.295					SD	0.135
253					Coefficient of Variation	0.459					Skewness	0.417
254					Mean of logged Data	-1.347					SD of logged Data	0.549
255												
256	**Critical Values for Background Threshold Values (BTVs)**											
257					Tolerance Factor K (For UTL)	1.892					d2max (for USL)	3.281
258												
259	**Normal GOF Test**											
260					Shapiro Wilk Test Statistic	0.752	**Normal GOF Test**					

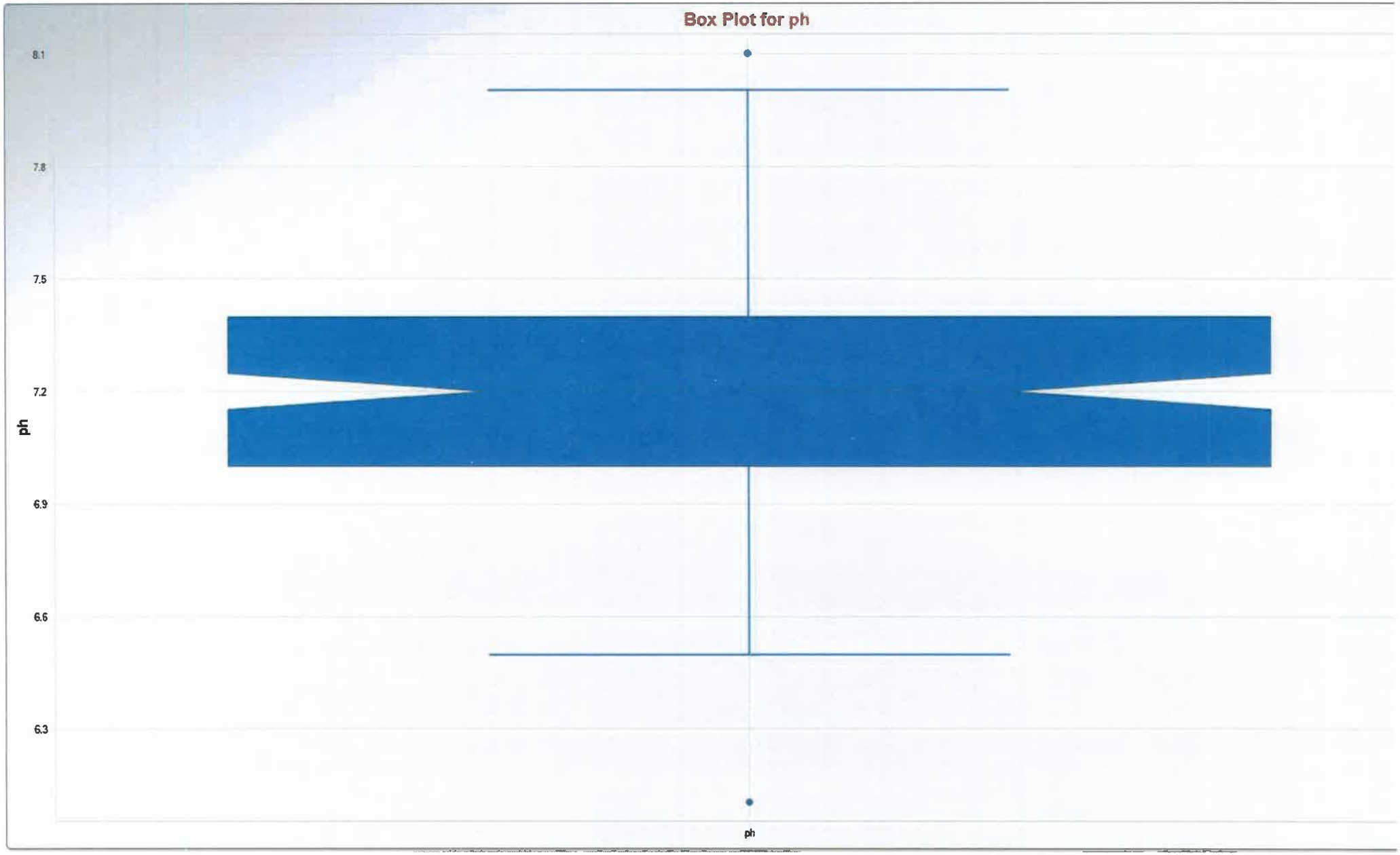
261				5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level						
262				Lilliefors Test Statistic	0.364	**Lilliefors GOF Test**						
263				5% Lilliefors Critical Value	0.0799	Data Not Normal at 5% Significance Level						
264	**Data Not Normal at 5% Significance Level**											
265												
266	**Background Statistics Assuming Normal Distribution**											
267				95% UTL with 95% Coverage	0.551	90% Percentile (z)	0.468					
268				95% UPL (t)	0.52	95% Percentile (z)	0.518					
269				95% USL	0.739	99% Percentile (z)	0.61					
270												
271	**Gamma GOF Test**											
272				A-D Test Statistic	12.36	**Anderson-Darling Gamma GOF Test**						
273				5% A-D Critical Value	0.756	Data Not Gamma Distributed at 5% Significance Level						
274				K-S Test Statistic	0.3	**Kolmogorov-Smirnov Gamma GOF Test**						
275				5% K-S Critical Value	0.0835	Data Not Gamma Distributed at 5% Significance Level						
276	**Data Not Gamma Distributed at 5% Significance Level**											
277												
278	**Gamma Statistics**											
279				k hat (MLE)	4.12	k star (bias corrected MLE)	4.026					
280				Theta hat (MLE)	0.0716	Theta star (bias corrected MLE)	0.0733					
281				nu hat (MLE)	1022	nu star (bias corrected)	998.4					
282				MLE Mean (bias corrected)	0.295	MLE Sd (bias corrected)	0.147					
283												
284	**Background Statistics Assuming Gamma Distribution**											
285				95% Wilson Hilferty (WH) Approx. Gamma UPL	0.572	90% Percentile	0.492					
286				95% Hawkins Wixley (HW) Approx. Gamma UPL	0.586	95% Percentile	0.571					
287				95% WH Approx. Gamma UTL with 95% Coverage	0.625	99% Percentile	0.739					
288				95% HW Approx. Gamma UTL with 95% Coverage	0.645							
289				95% WH USL	1.021	95% HW USL	1.103					
290												
291	**Lognormal GOF Test**											
292				Shapiro Wilk Test Statistic	0.759	**Shapiro Wilk Lognormal GOF Test**						
293				5% Shapiro Wilk P Value	0	Data Not Lognormal at 5% Significance Level						
294				Lilliefors Test Statistic	0.335	**Lilliefors Lognormal GOF Test**						
295				5% Lilliefors Critical Value	0.0799	Data Not Lognormal at 5% Significance Level						
296	**Data Not Lognormal at 5% Significance Level**											
297												
298	**Background Statistics assuming Lognormal Distribution**											
299				95% UTL with 95% Coverage	0.734	90% Percentile (z)	0.525					
300				95% UPL (t)	0.648	95% Percentile (z)	0.641					
301				95% USL	1.574	99% Percentile (z)	0.932					
302												
303	**Nonparametric Distribution Free Background Statistics**											
304	**Data do not follow a Discernible Distribution (0.05)**											
305												
306	**Nonparametric Upper Limits for Background Threshold Values**											
307				Order of Statistic, r	121	95% UTL with 95% Coverage	0.5					
308				Approx, f used to compute achieved CC	1.592	Approximate Actual Confidence Coefficient achieved by UTL	0.872					
309						Approximate Sample Size needed to achieve specified CC	153					
310				95% Percentile Bootstrap UTL with 95% Coverage	0.5	95% BCA Bootstrap UTL with 95% Coverage	0.5					
311				95% UPL	0.5	90% Percentile	0.5					
312				90% Chebyshev UPL	0.703	95% Percentile	0.5					

313				95% Chebyshev UPL	0.887					99% Percentile	0.5	
314				95% USL	0.5							
315												
316	Note: The use of USL tends to yield a conservative estimate of BTV, especially when the sample size starts exceeding 20.											
317	Therefore, one may use USL to estimate a BTV only when the data set represents a background data set free of outliers											
318	and consists of observations collected from clean unimpacted locations.											
319	The use of USL tends to provide a balance between false positives and false negatives provided the data											
320	represents a background data set and when many onsite observations need to be compared with the BTV.											
321												
322												
323	**sulfate**											
324												
325	**General Statistics**											
326				Total Number of Observations	125					Number of Distinct Observations	107	
327				Minimum	5					First Quartile	30.2	
328				Second Largest	160					Median	43.7	
329				Maximum	161					Third Quartile	65.8	
330				Mean	54.41					SD	35.39	
331				Coefficient of Variation	0.65					Skewness	1.36	
332				Mean of logged Data	3.799					SD of logged Data	0.654	
333												
334	**Critical Values for Background Threshold Values (BTVs)**											
335				Tolerance Factor K (For UTL)	1.891					d2max (for USL)	3.284	
336												
337	**Normal GOF Test**											
338				Shapiro Wilk Test Statistic	0.849					**Normal GOF Test**		
339				5% Shapiro Wilk P Value	0					Data Not Normal at 5% Significance Level		
340				Lilliefors Test Statistic	0.177					**Lilliefors GOF Test**		
341				5% Lilliefors Critical Value	0.0796					Data Not Normal at 5% Significance Level		
342	**Data Not Normal at 5% Significance Level**											
343												
344	**Background Statistics Assuming Normal Distribution**											
345				95% UTL with 95% Coverage	121.3					90% Percentile (z)	99.77	
346				95% UPL (t)	113.3					95% Percentile (z)	112.6	
347				95% USL	170.6					99% Percentile (z)	136.7	
348												
349	**Gamma GOF Test**											
350				A-D Test Statistic	1.264					**Anderson-Darling Gamma GOF Test**		
351				5% A-D Critical Value	0.761					Data Not Gamma Distributed at 5% Significance Level		
352				K-S Test Statistic	0.0972					**Kolmogorov-Smirnov Gamma GOF Test**		
353				5% K-S Critical Value	0.0837					Data Not Gamma Distributed at 5% Significance Level		
354	**Data Not Gamma Distributed at 5% Significance Level**											
355												
356	**Gamma Statistics**											
357				k hat (MLE)	2.681					k star (bias corrected MLE)	2.622	
358				Theta hat (MLE)	20.3					Theta star (bias corrected MLE)	20.75	
359				nu hat (MLE)	670.2					nu star (bias corrected)	655.4	
360				MLE Mean (bias corrected)	54.41					MLE Sd (bias corrected)	33.6	
361												
362	**Background Statistics Assuming Gamma Distribution**											
363				95% Wilson Hilferty (WH) Approx. Gamma UPL	118.6					90% Percentile	99.44	
364				95% Hawkins Wixley (HW) Approx. Gamma UPL	120.8					95% Percentile	118.8	

365				95% WH Approx. Gamma UTL with	95% Coverage	131.8					99% Percentile	161
366				95% HW Approx. Gamma UTL with	95% Coverage	135.3						
367					95% WH USL	234.1					95% HW USL	254.4
368												
369						**Lognormal GOF Test**						
370					Shapiro Wilk Test Statistic	0.961				**Shapiro Wilk Lognormal GOF Test**		
371					5% Shapiro Wilk P Value	0.0113				Data Not Lognormal at 5% Significance Level		
372					Lilliefors Test Statistic	0.0654				**Lilliefors Lognormal GOF Test**		
373					5% Lilliefors Critical Value	0.0796				Data appear Lognormal at 5% Significance Level		
374					**Data appear Approximate Lognormal at 5% Significance Level**							
375												
376						**Background Statistics assuming Lognormal Distribution**						
377				95% UTL with	95% Coverage	153.8					90% Percentile (z)	103.2
378					95% UPL (t)	132.6					95% Percentile (z)	130.9
379					95% USL	382.7					99% Percentile (z)	204.5
380												
381						**Nonparametric Distribution Free Background Statistics**						
382						**Data appear Approximate Lognormal at 5% Significance Level**						
383												
384						**Nonparametric Upper Limits for Background Threshold Values**						
385					Order of Statistic, r	122					95% UTL with 95% Coverage	147
386					Approx, f used to compute achieved CC	1.605					Approximate Actual Confidence Coefficient achieved by UTL	0.876
387											Approximate Sample Size needed to achieve specified CC	153
388				95% Percentile Bootstrap UTL with	95% Coverage	147					95% BCA Bootstrap UTL with 95% Coverage	146.2
389					95% UPL	139					90% Percentile	109
390					90% Chebyshev UPL	161					95% Percentile	138.6
391					95% Chebyshev UPL	209.3					99% Percentile	157.8
392					95% USL	161						
393												
394						Note: The use of USL tends to yield a conservative estimate of BTV, especially when the sample size starts exceeding 20.						
395						Therefore, one may use USL to estimate a BTV only when the data set represents a background data set free of outliers						
396						and consists of observations collected from clean unimpacted locations.						
397						The use of USL tends to provide a balance between false positives and false negatives provided the data						
398						represents a background data set and when many onsite observations need to be compared with the BTV.						
399												
400	**tDS**											
401												
402	**General Statistics**											
403					Total Number of Observations	103					Number of Distinct Observations	100
404					Minimum	90					First Quartile	494
405					Second Largest	942					Median	634
406					Maximum	969					Third Quartile	772.5
407					Mean	621					SD	190.3
408					Coefficient of Variation	0.306					Skewness	-0.5
409					Mean of logged Data	6.368					SD of logged Data	0.399
410												
411						**Critical Values for Background Threshold Values (BTVs)**						
412					Tolerance Factor K (For UTL)	1.919					d2max (for USL)	3.22
413												
414						**Normal GOF Test**						
415					Shapiro Wilk Test Statistic	0.961				**Normal GOF Test**		
416					5% Shapiro Wilk P Value	0.0254				Data Not Normal at 5% Significance Level		

	A	B	C	D	E	F	G	H	I	J	K	L
417					Lilliefors Test Statistic	0.102	**Lilliefors GOF Test**					
418					5% Lilliefors Critical Value	0.0876	Data Not Normal at 5% Significance Level					
419	**Data Not Normal at 5% Significance Level**											
420												
421	**Background Statistics Assuming Normal Distribution**											
422					95% UTL with 95% Coverage	986.1				90% Percentile (z)	864.8	
423					95% UPL (t)	938.3				95% Percentile (z)	933.9	
424					95% USL	1234				99% Percentile (z)	1064	
425												
426	**Gamma GOF Test**											
427					A-D Test Statistic	2.222	**Anderson-Darling Gamma GOF Test**					
428					5% A-D Critical Value	0.753	Data Not Gamma Distributed at 5% Significance Level					
429					K-S Test Statistic	0.11	**Kolmogorov-Smirnov Gamma GOF Test**					
430					5% K-S Critical Value	0.0887	Data Not Gamma Distributed at 5% Significance Level					
431	**Data Not Gamma Distributed at 5% Significance Level**											
432												
433	**Gamma Statistics**											
434					k hat (MLE)	8.012				k star (bias corrected MLE)	7.785	
435					Theta hat (MLE)	77.51				Theta star (bias corrected MLE)	79.77	
436					nu hat (MLE)	1650				nu star (bias corrected)	1604	
437					MLE Mean (bias corrected)	621				MLE Sd (bias corrected)	222.6	
438												
439	**Background Statistics Assuming Gamma Distribution**											
440			95% Wilson Hilferty (WH) Approx. Gamma UPL			1029				90% Percentile	917.8	
441			95% Hawkins Wixley (HW) Approx. Gamma UPL			1049				95% Percentile	1027	
442			95% WH Approx. Gamma UTL with 95% Coverage			1108				99% Percentile	1252	
443			95% HW Approx. Gamma UTL with 95% Coverage			1135						
444					95% WH USL	1583				95% HW USL	1671	
445												
446	**Lognormal GOF Test**											
447					Shapiro Wilk Test Statistic	0.856	**Shapiro Wilk Lognormal GOF Test**					
448					5% Shapiro Wilk P Value	7.661E-15	Data Not Lognormal at 5% Significance Level					
449					Lilliefors Test Statistic	0.114	**Lilliefors Lognormal GOF Test**					
450					5% Lilliefors Critical Value	0.0876	Data Not Lognormal at 5% Significance Level					
451	**Data Not Lognormal at 5% Significance Level**											
452												
453	**Background Statistics assuming Lognormal Distribution**											
454					95% UTL with 95% Coverage	1252				90% Percentile (z)	971.1	
455					95% UPL (t)	1133				95% Percentile (z)	1122	
456					95% USL	2103				99% Percentile (z)	1473	
457												
458	**Nonparametric Distribution Free Background Statistics**											
459	**Data do not follow a Discernible Distribution (0.05)**											
460												
461	**Nonparametric Upper Limits for Background Threshold Values**											
462					Order of Statistic, r	101				95% UTL with 95% Coverage	930	
463					Approx, f used to compute achieved CC	1.772				Approximate Actual Confidence Coefficient achieved by UTL	0.894	
464										Approximate Sample Size needed to achieve specified CC	124	
465			95% Percentile Bootstrap UTL with 95% Coverage			929.6				95% BCA Bootstrap UTL with 95% Coverage	929.6	
466					95% UPL	909.2				90% Percentile	836.8	
467					90% Chebyshev UPL	1195				95% Percentile	892.5	
468					95% Chebyshev UPL	1454				99% Percentile	941.8	

	A	B	C	D	E	F	G	H	I	J	K	L
469					95% USL	969						
470												
471	Note: The use of USL tends to yield a conservative estimate of BTV, especially when the sample size starts exceeding 20.											
472	Therefore, one may use USL to estimate a BTV only when the data set represents a background data set free of outliers											
473	and consists of observations collected from clean unimpacted locations.											
474	The use of USL tends to provide a balance between false positives and false negatives provided the data											
475	represents a background data set and when many onsite observations need to be compared with the BTV.											
476												


Box Plot for ph
8.1
7.8
7.5
7.2
6.9
6.6
6.3
ph
ph