



SKB Environmental Cloquet Landfill, Inc.

2023 Coal Combustion Residuals Annual Monitoring Report

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

January 30, 2024



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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 2023 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 2023. 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 2023 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 2023 on the following dates:

- May 4 and 5, 2023
- October 23 and 24, 2023

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 2023 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 SO₄ (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 May 4 and October 23, 2023 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 2023 spring and fall sampling groundwater analytical results to the BTVs, indicate no BTVs exceedances (**Table 2**).

Due to insufficient water volume, groundwater samples were not collected at monitoring well P-2 during the spring and fall 2023 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 2023.

Statistical evaluation of the 2017 - 2023 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 Groundwater Protection Standards

Per § 257.95(d)(2), Groundwater Protection Standards (GPS) were established for each Appendix III constituent detected in the groundwater. GPS were established using United States Environmental Protection Agency (EPA) Maximum Contaminant Levels (MCLs) for detected Appendix III constituents. For constituents for which the background level is higher than the MCL, the background value will be the GPS. GPS levels are shown in **Table 5**.

The groundwater data collected during the 2017 – 2023 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 SO₄, and Total Dissolved Solids in site monitoring wells (P-1, P-2, P-6, P-7, P-5R, P-8, and P-9) and were utilized as background well concentrations. Note available data between 2017 and 2023 for P-3, P-5, and P-6 (wells now sealed) was also used in the assessment. Upper and lower threshold values were developed for pH using box plot statistics (**Appendix C**).

For the sampling events conducted in 2023, no concentration exceeded established GPS values.

8 Report Summary

Per the 40 CFR §§ 40.257.93 – 257.94, 2 monitoring events were conducted at the SKB Cloquet Landfill in 2023. Groundwater samples were analyzed for parameters indicated in Appendix III per § 257.94. Groundwater samples were collected from the monitoring network's 7 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 2023. Groundwater elevation information from the monitoring data indicates a southeast groundwater flow beneath the landfill.

No criteria were exceeded during the 2 sampling events conducted in 2023.

9 Recommendations

CCR groundwater monitoring events will be conducted in the spring and fall of 2024. 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 2024 *CCR Annual Monitoring Report* will be prepared and include sampling results from the 2024 CCR groundwater monitoring events and an evaluation of the analytical results as they pertained to BTVs.



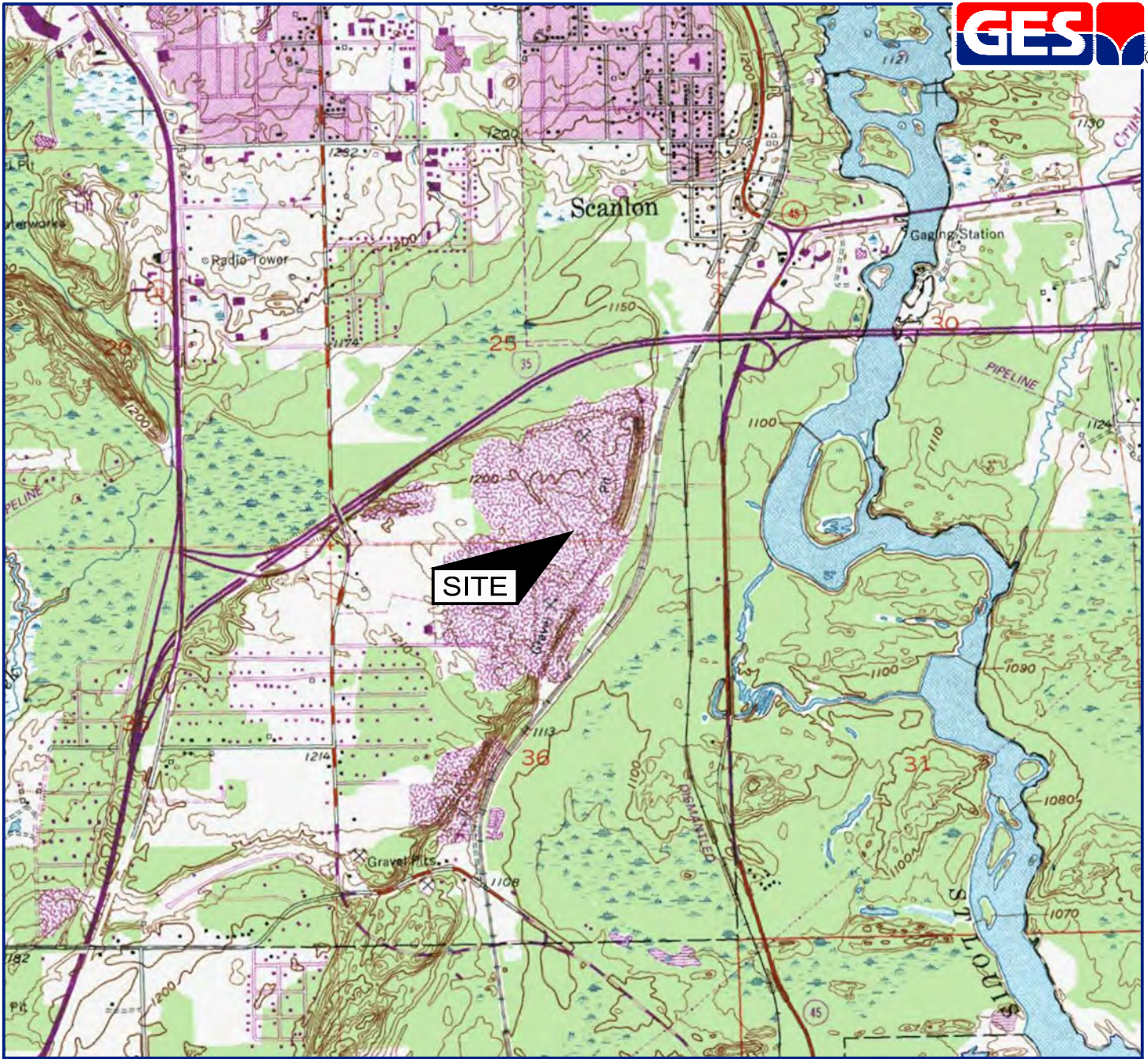
References

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



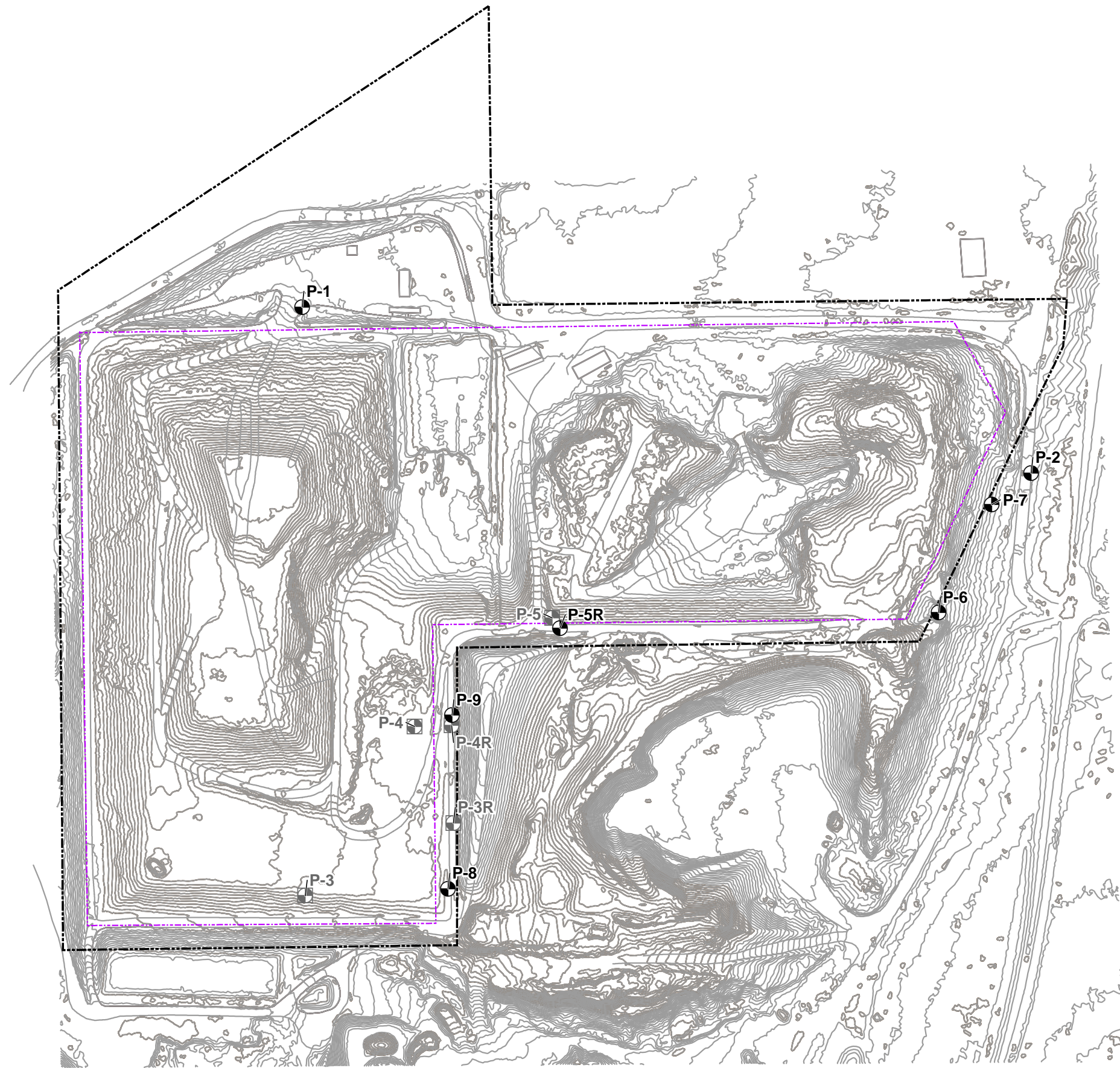
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 TOPOGRAPHIC QUADRANGLE 1993
 CLOQUET, MINNESOTA
 CONTOUR INTERVAL = 10'







QUADRANGLE LOCATION

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

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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

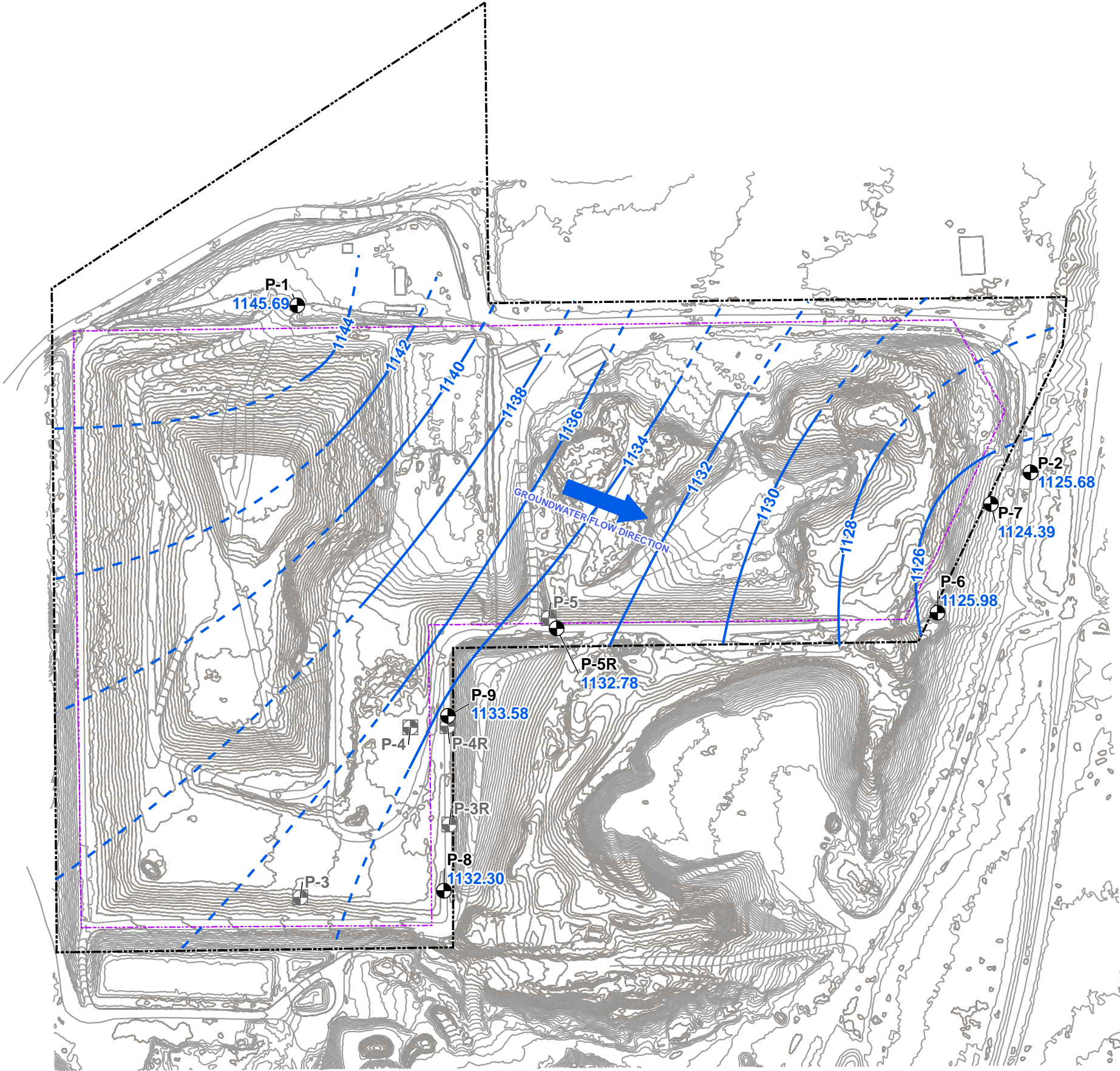


Groundwater & Environmental Services, Inc.

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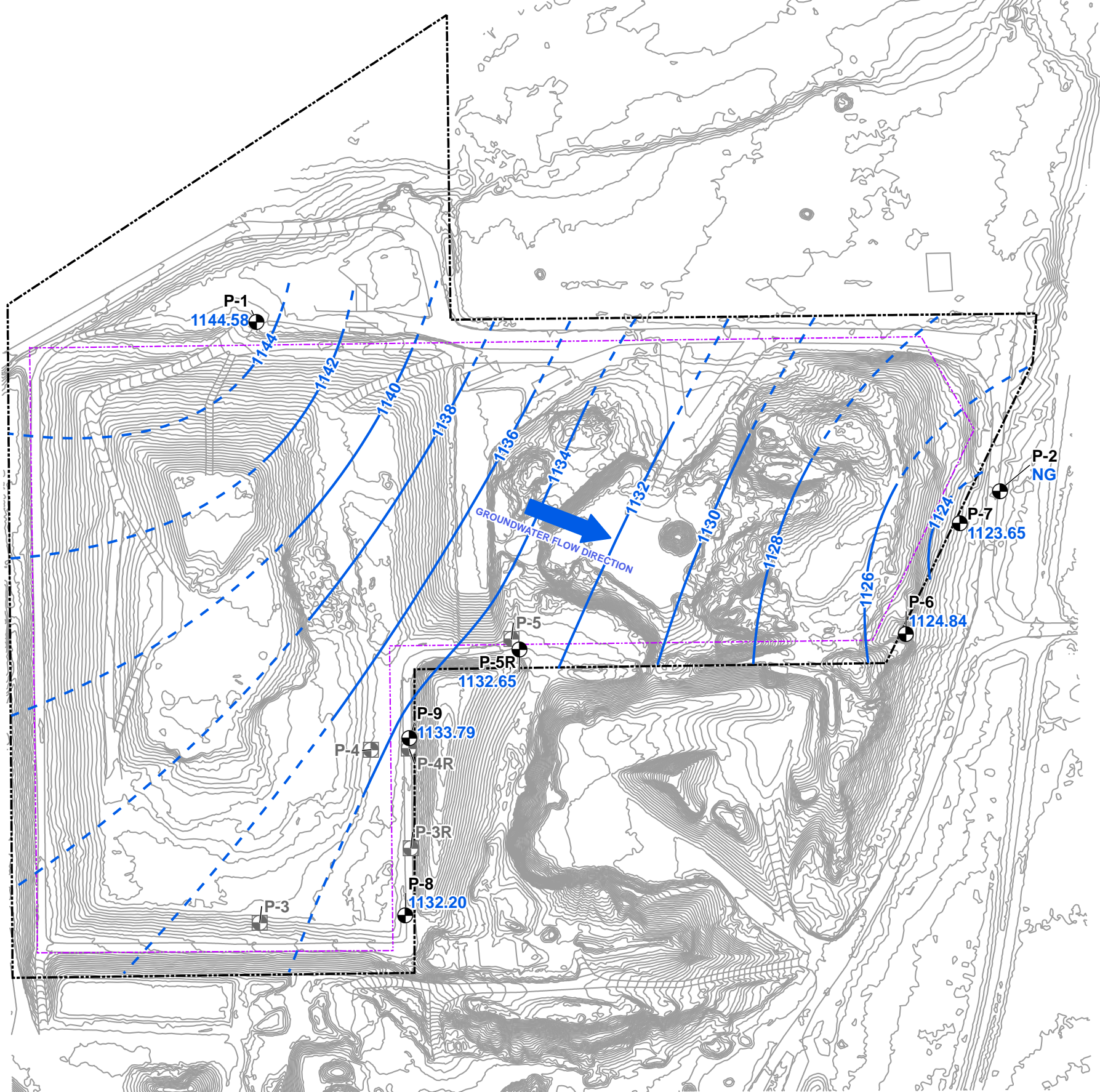
Legend

-  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 May 4, 2023	
SKB Environmental Cloquet Landfill 761 Minnesota State Highway 45 Cloquet, Minnesota	
Drawn GKS Designed DMC Approved JFS	Date 5/31/23 Figure 3
 Scale In Feet (Approximate) 	
 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 23, 2023		
SKB Environmental Cloquet Landfill 761 Minnesota State Highway 45 Cloquet, Minnesota		
Drawn GKS Designed DMC Approved JFS	 Scale In Feet (Approximate)   Groundwater & Environmental Services, Inc.	Date 1/4/24 Figure 4



Tables

Table 1
Groundwater Elevations



Date	P-1	P-2	P-5R	P-6	P-7	P-8	P-9
05/04/2023	1145.69	1125.68	1132.78	1125.98	1124.39	1132.30	1133.58
10/23/2023	1144.58	DRY	1132.65	1124.84	1123.65	1132.20	1133.79

*Groundwater elevations reported in feet above Mean Sea Level.

Table 2



Groundwater Analytical Data
 Appendix III

Location	Date	Parameter	Result	Background Threshold Value (BTV)	Units	CAS #
P-1	05/04/2023	Boron	< 0.10	0.41	mg/l	7440-42-8
P-1	10/23/2023	Boron	< 0.100	0.41	mg/l	7440-42-8
P-1	05/04/2023	Calcium	183	247.2	mg/l	7440-70-2
P-1	10/23/2023	Calcium	151	247.2	mg/l	7440-70-2
P-1	05/04/2023	Chloride	140	426.3	mg/l	16887-00-6
P-1	10/23/2023	Chloride	226	426.3	mg/l	16887-00-6
P-1	05/04/2023	Fluoride	< 1.0	0.50	mg/l	16984-48-8
P-1	10/23/2023	Fluoride	< 1.00	0.50	mg/l	16984-48-8
P-1	05/04/2023	pH	6.6	6.5 < 8.1	pH UNITS	PH
P-1	10/23/2023	pH	6.9	6.5 < 8.1	pH UNITS	PH
P-1	05/04/2023	Sulfate as SO4	27	386.7	mg/l	14808-79-8
P-1	10/23/2023	Sulfate as SO4	30.3	386.7	mg/l	14808-79-8
P-1	05/04/2023	Total Dissolved Solids	682	969	mg/l	TDS
P-1	10/23/2023	Total Dissolved Solids	700	969	mg/l	TDS
P-2	05/05/2023	Boron	< 0.10	0.41	mg/l	7440-42-8
P-2	05/05/2023	Calcium	86.5	247.2	mg/l	7440-70-2
P-2	05/05/2023	Chloride	160	426.3	mg/l	16887-00-6
P-2	05/05/2023	Fluoride	< 1.0	0.50	mg/l	16984-48-8
P-2	05/05/2023	pH	6.7	6.5 < 8.1	pH UNITS	PH
P-2	05/05/2023	Sulfate as SO4	9.8	386.7	mg/l	14808-79-8
P-2	05/05/2023	Total Dissolved Solids	376	969	mg/l	TDS
P-5R	05/05/2023	Boron	< 0.10	0.41	mg/l	7440-42-8
P-5R	10/24/2023	Boron	< 0.100	0.41	mg/l	7440-42-8
P-5R	05/05/2023	Calcium	144	247.2	mg/l	7440-70-2
P-5R	10/24/2023	Calcium	132	247.2	mg/l	7440-70-2
P-5R	05/05/2023	Chloride	220	426.3	mg/l	16887-00-6
P-5R	10/24/2023	Chloride	240	426.3	mg/l	16887-00-6
P-5R	05/05/2023	Fluoride	< 1.0	0.50	mg/l	16984-48-8
P-5R	10/24/2023	Fluoride	< 1.00	0.50	mg/l	16984-48-8
P-5R	05/05/2023	pH	7.2	6.5 < 8.1	pH UNITS	PH
P-5R	10/24/2023	pH	7.1	6.5 < 8.1	pH UNITS	PH
P-5R	05/05/2023	Sulfate as SO4	130	386.7	mg/l	14808-79-8
P-5R	10/24/2023	Sulfate as SO4	26.5	386.7	mg/l	14808-79-8
P-5R	05/05/2023	Total Dissolved Solids	712	969	mg/l	TDS
P-5R	10/24/2023	Total Dissolved Solids	758	969	mg/l	TDS
P-6	05/05/2023	Boron	< 0.10	0.41	mg/l	7440-42-8
P-6	10/24/2023	Boron	0.191	0.41	mg/l	7440-42-8
P-6	05/05/2023	Calcium	128	247.2	mg/l	7440-70-2
P-6	10/24/2023	Calcium	135	247.2	mg/l	7440-70-2
P-6	05/05/2023	Chloride	33	426.3	mg/l	16887-00-6
P-6	10/24/2023	Chloride	52.0	426.3	mg/l	16887-00-6
P-6	05/05/2023	Fluoride	< 1.0	0.50	mg/l	16984-48-8
P-6	10/24/2023	Fluoride	< 1.00	0.50	mg/l	16984-48-8
P-6	05/05/2023	pH	6.9	6.5 < 8.1	pH UNITS	PH
P-6	10/24/2023	pH	6.9	6.5 < 8.1	pH UNITS	PH
P-6	05/05/2023	Sulfate as SO4	110	386.7	mg/l	14808-79-8
P-6	10/24/2023	Sulfate as SO4	124	386.7	mg/l	14808-79-8
P-6	05/05/2023	Total Dissolved Solids	484	969	mg/l	TDS
P-6	10/24/2023	Total Dissolved Solids	694	969	mg/l	TDS

Table 2



Groundwater Analytical Data
 Appendix III

Location	Date	Parameter	Result	Background Threshold Value (BTV)	Units	CAS #
P-7	05/05/2023	Boron	< 0.10	0.41	mg/l	7440-42-8
P-7	10/24/2023	Boron	< 0.100	0.41	mg/l	7440-42-8
P-7	05/05/2023	Calcium	126	247.2	mg/l	7440-70-2
P-7	10/24/2023	Calcium	125	247.2	mg/l	7440-70-2
P-7	05/05/2023	Chloride	63	426.3	mg/l	16887-00-6
P-7	10/24/2023	Chloride	64.2	426.3	mg/l	16887-00-6
P-7	05/05/2023	Fluoride	< 1.0	0.50	mg/l	16984-48-8
P-7	10/24/2023	Fluoride	< 1.00	0.50	mg/l	16984-48-8
P-7	05/05/2023	pH	7.0	6.5 < 8.1	pH UNITS	PH
P-7	10/24/2023	pH	7.0	6.5 < 8.1	pH UNITS	PH
P-7	05/05/2023	Sulfate as SO4	31	386.7	mg/l	14808-79-8
P-7	10/24/2023	Sulfate as SO4	62.2	386.7	mg/l	14808-79-8
P-7	05/05/2023	Total Dissolved Solids	472	969	mg/l	TDS
P-7	10/24/2023	Total Dissolved Solids	612	969	mg/l	TDS
P-8	05/04/2023	Boron	< 0.10	0.41	mg/l	7440-42-8
P-8	05/04/2023	Boron	< 0.10	0.41	mg/l	7440-42-8
P-8	10/23/2023	Boron	< 0.100	0.41	mg/l	7440-42-8
P-8	10/23/2023	Boron	< 0.100	0.41	mg/l	7440-42-8
P-8	05/04/2023	Calcium	112	247.2	mg/l	7440-70-2
P-8	05/04/2023	Calcium	105	247.2	mg/l	7440-70-2
P-8	10/23/2023	Calcium	106	247.2	mg/l	7440-70-2
P-8	10/23/2023	Calcium	101	247.2	mg/l	7440-70-2
P-8	05/04/2023	Chloride	110	426.3	mg/l	16887-00-6
P-8	05/04/2023	Chloride	110	426.3	mg/l	16887-00-6
P-8	10/23/2023	Chloride	106	426.3	mg/l	16887-00-6
P-8	10/23/2023	Chloride	107	426.3	mg/l	16887-00-6
P-8	05/04/2023	Fluoride	< 1.0	0.50	mg/l	16984-48-8
P-8	05/04/2023	Fluoride	< 1.0	0.50	mg/l	16984-48-8
P-8	10/23/2023	Fluoride	< 1.00	0.50	mg/l	16984-48-8
P-8	10/23/2023	Fluoride	< 1.00	0.50	mg/l	16984-48-8
P-8	05/04/2023	pH	8.0	6.5 < 8.1	pH UNITS	PH
P-8	05/04/2023	pH	8.0	6.5 < 8.1	pH UNITS	PH
P-8	10/23/2023	pH	8.0	6.5 < 8.1	pH UNITS	PH
P-8	10/23/2023	pH	7.9	6.5 < 8.1	pH UNITS	PH
P-8	05/04/2023	Sulfate as SO4	33	386.7	mg/l	14808-79-8
P-8	05/04/2023	Sulfate as SO4	34	386.7	mg/l	14808-79-8
P-8	10/23/2023	Sulfate as SO4	29.7	386.7	mg/l	14808-79-8
P-8	10/23/2023	Sulfate as SO4	30.5	386.7	mg/l	14808-79-8
P-8	05/04/2023	Total Dissolved Solids	450	969	mg/l	TDS
P-8	05/04/2023	Total Dissolved Solids	400	969	mg/l	TDS
P-8	10/23/2023	Total Dissolved Solids	464	969	mg/l	TDS
P-8	10/23/2023	Total Dissolved Solids	456	969	mg/l	TDS
P-9	05/04/2023	Boron	< 0.10	0.41	mg/l	7440-42-8
P-9	10/23/2023	Boron	< 0.100	0.41	mg/l	7440-42-8
P-9	05/04/2023	Calcium	80.5	247.2	mg/l	7440-70-2
P-9	10/23/2023	Calcium	95.4	247.2	mg/l	7440-70-2
P-9	05/04/2023	Chloride	140	426.3	mg/l	16887-00-6
P-9	10/23/2023	Chloride	158	426.3	mg/l	16887-00-6
P-9	05/04/2023	Fluoride	< 1.0	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-9	10/23/2023	Fluoride	< 1.00	0.50	mg/l	16984-48-8
P-9	05/04/2023	pH	7.8	6.5 < 8.1	pH UNITS	PH
P-9	10/23/2023	pH	7.6	6.5 < 8.1	pH UNITS	PH
P-9	05/04/2023	Sulfate as SO4	28	386.7	mg/l	14808-79-8
P-9	10/23/2023	Sulfate as SO4	29.2	386.7	mg/l	14808-79-8
P-9	05/04/2023	Total Dissolved Solids	454	969	mg/l	TDS
P-9	10/23/2023	Total Dissolved Solids	540	969	mg/l	TDS

Results in milligrams per liter (mg/l)

Bold = Indicates concentration above Background Threshold Value

Table 3



Well Stabilization Data

Well ID	Sample Date	Purge Rate (ml/min)	Purge Volume (gallons)	Field pH (pH)	Field Specific Conductivity (umhos/cm)	Field Temp (°C)	Dissolved Oxygen (mg/l)	Turbidity (NTU)	ORP (mV)
P-1	5/4/2023	1000	0.1	8.69	1160	13.13	1.73	23.8	-55
P-1	5/4/2023	1000	1.5	8.21	1040	9.78	0.00	12.7	-38
P-1	5/4/2023	1000	3	7.95	1080	9.07	0.00	26.7	-28
P-1	5/4/2023	1000	4	7.72	1090	8.45	0.00	26.4	-19
P-1	5/4/2023			7.70	1090	8.41	0.00	26.2	-18
P-1	10/23/2023	1000	0.1	9.37	1247	11.05	2.51	33.5	-101
P-1	10/23/2023	1000	1	8.44	1260	10.65	1.83	29.7	-25
P-1	10/23/2023	1000	2	7.80	1250	10.61	1.48	24.8	12
P-1	10/23/2023	1000	3.5	7.39	1240	10.56	1.13	24.3	40
P-1	10/23/2023			7.37	1240	10.55	1.09	25.1	44
P-5R	5/5/2023	1000	0.1	8.64	982	17.39	7.26	28.1	166
P-5R	5/5/2023	1000	2	8.26	1100	14.95	0.00	17.4	135
P-5R	5/5/2023	1000	4	8.08	1130	13.68	0.00	23.9	130
P-5R	5/5/2023	1000	6.5	7.90	1170	12.76	0.00	28.8	72
P-5R	5/5/2023			7.90	1170	12.67	0.00	28.9	67
P-5R	10/23/2023	1000	0.1	8.05	1250	12.61	3.76	22.9	-88
P-5R	10/23/2023	1000	2	7.79	1290	12.09	0.37	20.7	-85
P-5R	10/23/2023	1000	4	7.62	1290	12.02	0.00	18.3	-86
P-5R	10/23/2023	1000	6.5	7.56	1290	12.33	0.00	19.6	-90
P-5R	10/23/2023			7.54	1280	12.39	0.00	19.8	-90
P-6	5/5/2023	1000	0.1	8.39	904	10.17	8.13	25.9	67
P-6	5/5/2023	1000	1	8.00	834	9.34	2.42	5.4	91
P-6	5/5/2023	1000	2	7.89	813	9.33	2.05	2.9	96
P-6	5/5/2023	1000	3.5	7.84	814	9.30	2.28	6.3	97
P-6	5/5/2023			7.82	814	9.27	1.78	10.3	99
P-6	10/24/2023	1000	0.1	8.25	1100	9.65	6.60	28.0	74
P-6	10/24/2023	1000	1	7.77	1060	9.07	6.04	21.3	104
P-6	10/24/2023	1000	2	7.61	1050	9.03	3.97	19.8	111
P-6	10/24/2023	1000	3	7.51	1050	9.01	3.60	19.8	114
P-6	10/24/2023			7.50	1060	9.01	3.56	19.7	114
P-7	5/5/2023	1000	0.1	8.03	1020	9.21	8.75	155	109
P-7	5/5/2023	1000	0.5	7.90	904	8.33	6.35	100	121
P-7	5/5/2023	1000	0.75	7.87	880	8.21	5.80	75.7	123
P-7	5/5/2023	1000	1	7.86	871	8.15	5.76	65.0	124
P-7	5/5/2023			7.84	863	8.09	5.56	55.8	125
P-7	10/24/2023	1000	0.1	7.67	1130	9.58	7.31	47.8	69
P-7	10/24/2023	1000	0.5	7.60	1090	9.50	4.91	49.3	-20
P-7	10/24/2023	1000	0.75	7.55	1060	9.41	3.18	41.9	-32
P-7	10/24/2023	1000	1	7.50	1050	9.33	2.19	34.2	-26
P-7	10/24/2023			7.50	1050	9.31	2.10	34.4	-24
P-8	5/4/2023	1000	0.1	8.32	612	12.37	4.44	50.5	-11
P-8	5/4/2023	1000	5	8.50	706	11.45	0.00	16.8	-177
P-8	5/4/2023	1000	10	8.51	726	11.03	0.00	18.4	-179
P-8	5/4/2023	1000	16	8.48	730	10.98	0.00	18.8	-179
P-8	5/4/2023			8.48	730	10.96	0.00	18.8	-178
P-8	10/23/2023	1000	0.1	8.25	734	11.20	1.02	113	-179
P-8	10/23/2023	1000	5	8.32	782	10.72	0.00	26.6	-174
P-8	10/23/2023	1000	10	8.31	792	10.72	0.00	24.3	-172
P-8	10/23/2023	1000	16	8.33	800	10.65	0.00	23.1	-172
P-8	10/23/2023			8.33	801	10.64	0.00	23.0	-172
P-9	5/4/2023	1000	0.1	8.59	661	14.14	4.56	13.7	-4

Table 3
Well Stabilization Data



Well ID	Sample Date	Purge Rate (ml/min)	Purge Volume (gallons)	Field pH (pH)	Field Specific Conductivity (umhos/cm)	Field Temp (°C)	Dissolved Oxygen (mg/l)	Turbidity (NTU)	ORP (mV)
P-9	5/4/2023	1000	1.5	8.58	739	12.60	0.00	20.7	-53
P-9	5/4/2023	1000	3	8.48	771	12.31	0.00	13.7	-109
P-9	5/4/2023	1000	5	8.41	787	12.20	0.00	17.8	-135
P-9	5/4/2023			8.41	789	12.17	0.00	18.6	-138
P-9	10/23/2023	1000	0.1	8.22	880	12.77	2.98	11.0	-176
P-9	10/23/2023	1000	1.5	8.30	916	12.01	0.00	56.3	-219
P-9	10/23/2023	1000	3	8.23	938	11.91	0.00	27.8	-195
P-9	10/23/2023	1000	5	8.11	959	11.85	0.00	22.2	-189
P-9	10/23/2023			8.11	959	11.84	0.00	22.6	-188

Notes:

- | | | | |
|----------|--------------------------|-----|-------------------------------|
| ml/min | milliliters per minute | NTU | Nephelometric Turbidity Units |
| umhos/cm | micromhos per centimeter | ORP | oxidation-reduction potential |
| °C | degrees Celsius | mV | millivolts |
| mg/L | milligrams per Liter | | |

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	247.2	mg/l	7440-70-2
Chloride	426.3	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 SO ₄	386.7	mg/l	14808-79-8
Total Dissolved Solids	969	mg/l	TDS

Results in milligrams per liter (mg/l)

Table 5

2023 Groundwater Protection Standards



Appendix IV to Part 257

Parameter	Background Threshold Value (BTV)	EPA Maximum Contaminate Level (MCL)	Groundwater Protection Standard (GPS)	Units	CAS #
Boron	0.41	--	--	mg/l	7440-36-0
Calcium	247.2	--	--	mg/l	7440-38-2
Chloride	426.3	--	--	mg/l	7440-39-3
Fluoride	0.50	0.004	0.004	mg/l	7440-41-7
pH	lower 6.5 upper 8.1	--	--	pH	7440-43-9
Sulfate as SO ₄	386.7	--	--	mg/l	7440-47-3
Total Dissolved Solids	969	--	--	mg/l	7440-48-4

Results in milligrams per liter (mg/l)



Appendix A – Field Data Sheets

FIELD INFORMATION LOG Part 1

Facility: Cloquet Landfill

Sample Location: P-1

Location: Cloquet, MN

Duplicate Collected: NO

Sample Matrix: Groundwater

Field Blank Collected: NO

Equipment Blank Collected: NO

PURGE INFORMATION

MS/MSD Collected: NO

Method of Well Purge: Dedicated Bladder Pump

Sampler(s): N. Schlegel

Casing Length (ft): 17.7

Date/Time Initiated: 5/14/23 9:05

Dedicated Equipment: Yes

Initial Water Level (feet): 9.92' 11.02'

Casing Diameter (inches): 2

Ground Water Elevation (ft, msl): 1144.59

One Casing Volume (gal): 1.27 1.1

Top of Casing (ft, msl): 1155.61

Total Volume Purged (gal): 4.0

PID (Background): 0.0 (PPM)

Purged Dry?: Yes No (circle)

PID (Headspace): 0.0 (PPM)

Water Level After Purge (ft): 9.98'

PURGE DATA

Date/Time Completed: 5/14/23 9:25

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)
9:05	1000	0.1	13.17	8.69	1,160	23.8	1.73	-55
9:10	1000	1.3	9.78	8.21	1,040	12.7	0.00	-38
9:15	1000	3.0	9.07	7.95	1,080	26.7	0.00	-28
9:20	1000	4.0	8.45	7.72	1,090	26.4	0.00	-19

FIELD INFORMATION LOG Part 2

SAMPLING INFORMATION:

Sample Point ID: 1 P-1

Water Level @ Sampling (ft): 9.90'

Well Collection Sequence 1 of 8

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)
<u>7:25</u> <u>5/14/23</u>	VOCs: <u>100</u> Other: <u>1000</u>	<u>8.41</u>	<u>7.70</u>	<u>1,090</u>	<u>26.2</u>	<u>0.00</u>	<u>-18</u>

YSI Serial Number: _____

YSI Sonde Serial Number: _____

GENERAL INFORMATION:

Weather Conditions @ sampling: 50 F° clear, c9/m

Sampling Characteristics: clear

COMMENTS AND OBSERVATIONS:

Full Bottle Set Collected: Yes No (circle) _____

of Bottles Collected: 11/4/13

Well Closed and Locked: Yes No (circle) _____

Notes: _____

Minnesota Unique Well ID: _____

Date: 5/14/23 By: N. Sen Lopez Title: Staff Env. Scientist

Company: Groundwater and Environmental Services, Inc.

FIELD INFORMATION LOG Part 1

Facility: Cloquet Landfill

Sample Location: P-8

Location: Cloquet, MN

Duplicate Collected: Yes

Sample Matrix: Groundwater

Field Blank Collected: No

PURGE INFORMATION

Equipment Blank Collected: No

Method of Well Purge: Dedicated Bladder Pump

MS/MSD Collected: Yes

Date/Time Initiated: 5/14/23 10:05

Sampler(s): P. Kelly

Casing Length (ft): 89.05

Initial Water Level (feet): 57.07'

Dedicated Equipment: Yes

Ground Water Elevation (ft, msl): -0

Casing Diameter (inches): 2

Top of Casing (ft, msl): -

One Casing Volume (gal): 5.2 2.2

PID (Background): 0.0 (PPM)

Total Volume Purged (gal): 16.0

PID (Headspace): 0.0 (PPM)

Purged Dry?: Yes No (circle)

Water Level After Purge (ft): 57.17'

PURGE DATA

Date/Time Completed: 5/14/23 11:25

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)
10:05	1000	0.1	12.37	8.32	612	50.5	4.44	-11
10:30	1000	5.0	11.45	8.50	706	16.8	0.00	-177
10:55	1000	10.0	11.03	8.51	726	18.4	0.00	-178
11:20	1000	16.0	10.98	8.48	730	18.8	0.00	-179

FIELD INFORMATION LOG Part 2

SAMPLING INFORMATION:

Water Level @ Sampling (ft): 57.17'

Sample Point ID: P-8

Well Collection Sequence 2 of 6

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)
<u>5/14/23</u> <u>11:25</u>	VOCs: <u>100</u> Other: <u>100</u>	<u>10.76</u>	<u>8.48</u>	<u>730</u>	<u>18.8</u>	<u>0.00</u>	<u>-178</u>

YSI Serial Number: _____

YSI Sonde Serial Number: _____

GENERAL INFORMATION:

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

Sampling Characteristics: degl

COMMENTS AND OBSERVATIONS:

Full Bottle Set Collected: Yes No (circle)

of Bottles Collected: 11/4/13

Well Closed and Locked: Yes No (circle)

Notes: _____

Minnesota Unique Well ID: 856321

Date: 5/14/23 By: M. Schlosel Title: staff env. scientist

Company: Groundwater and Environmental Services, Inc.

FIELD INFORMATION LOG Part 1

Facility: Cloquet Landfill

Sample Location: P-9

Location: Cloquet, MN

Duplicate Collected: No

Sample Matrix: Groundwater

Field Blank Collected: No

PURGE INFORMATION

Equipment Blank Collected: No

Method of Well Purge: Dedicated Bladder Pump

MS/MSD Collected: No

Date/Time Initiated: 5/14/23 12:05

Sampler(s): No Schloeder

Casing Length (ft) 59.15

Initial Water Level (feet): 49.15'

Dedicated Equipment: Yes

Ground Water Elevation (ft, msl): 0

Casing Diameter (inches): 2

Top of Casing (ft, msl): 0

One Casing Volume (gal): 1.63 2.2

PID (Background) 0.0 (PPM)

Total Volume Purged (gal): 5.0

PID (Headspace) 0.0 (PPM)

Purged Dry?: Yes (circle) No

Water Level After Purge (ft): 49.25'

PURGE DATA

Date/Time Completed: 5/14/23 12:25

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)
12:05	1000	0.1	14.14	8.59	661	13.7	4.56	-4
12:10	1000	1.5	12.60	8.58	739	20.7	0.00	-53
12:18	1000	3.0	12.31	8.48	771	13.7	0.00	-109
12:20	1000	5.0	12.20	8.41	787	17.8	0.00	-135

FIELD INFORMATION LOG Part 2

SAMPLING INFORMATION:

Water Level @ Sampling (ft): 49.25'

Parameters: Annual _____ Semiannual: _____

Sample Point ID: P-9

Well Collection Sequence 3 of 6

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)
<u>3/4/23</u> <u>12:28</u>	VOCs: <u>100</u> Other: <u>10%</u>	<u>12.1</u>	<u>8.41</u>	<u>789</u>	<u>18.6</u>	<u>0.00</u>	<u>-38</u>

YSI Serial Number: _____

YSI Sonde Serial Number: _____

GENERAL INFORMATION:

Weather Conditions @ sampling: 54° F, sunny, 5-10 mph NE

Sampling Characteristics: _____

COMMENTS AND OBSERVATIONS:

Full Bottle Set Collected: Yes No (circle) # of Bottles Collected: 11/4/3

Well Closed and Locked: Yes No (circle)

Notes:

Minnesota Unique Well ID: 702047

Date: 3/4/23 By: LuSunJagel Title: staff env. scientist

Company: Groundwater and Environmental Services, Inc.

FIELD INFORMATION LOG Part 1

Facility: Cloquet Landfill

Sample Location: P-5R

Location: Cloquet, MN

Duplicate Collected: No

Field Blank Collected: No

Sample Matrix: Groundwater

Equipment Blank Collected: No

PURGE INFORMATION

MS/MSD Collected: No

Method of Well Purge: Dedicated Bladder Pump

Sampler(s): in situ well

Casing Length (ft) 73.2

Date/Time Initiated: 5/5/23 8:15

Dedicated Equipment: Yes

Initial Water Level (feet): 60.20

Casing Diameter (inches): 2

Ground Water Elevation (ft, msl): 0

One Casing Volume (gal): 2.12 ~~6.3~~

Top of Casing (ft, msl): -

Total Volume Purged (gal): 6.8

PID (Background) 0.0 (PPM)

Purged Dry?: Yes (circle)

PID (Headspace) 0.0 (PPM)

Water Level After Purge (ft): 60.20

PURGE DATA

Date/Time Completed: 5/5/23 8:38

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)
8:15	1000	0.1	17.39	8.04	992	20.1	7.26	166
8:20	1000	2.0	14.95	8.26	1,100	17.4	0.00	135
8:25	1000	4.0	13.69	8.09	1,130	23.9	0.00	103
8:30	1000	6.8	12.76	7.90	1,170	29.8	0.00	72

FIELD INFORMATION LOG Part 2

SAMPLING INFORMATION:

Sample Point ID: P-5R

Water Level @ Sampling (ft): 60.30

Well Collection Sequence 4 of 6

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)
<u>5/5/13</u> <u>8:35</u>	VOCs: <u>100</u> Other: <u>1000</u>	<u>12.67</u>	<u>7.90</u>	<u>1,170</u>	<u>28.9</u>	<u>0.00</u>	<u>67</u>

YSI Serial Number: _____

YSI Sonde Serial Number: _____

GENERAL INFORMATION:

Weather Conditions @ sampling: 44°F sunny, 5-10 mph E

Sampling Characteristics: Clear

COMMENTS AND OBSERVATIONS:

Full Bottle Set Collected: Yes No (circle)

of Bottles Collected: 11/4/13

Well Closed and Locked: Yes No (circle)

Notes: _____

Minnesota Unique Well ID: 956322

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

Company: Groundwater and Environmental Services, Inc.

FIELD INFORMATION LOG Part 1

Facility: Cloquet Landfill

Sample Location: P-6

Location: Cloquet, MN

Duplicate Collected: No

Sample Matrix: Groundwater

Field Blank Collected: No

Equipment Blank Collected: No

PURGE INFORMATION

MS/MSD Collected: No

Method of Well Purge: Dedicated Bladder Pump

Sampler(s): M. Schlegel

Casing Length (ft) 36.2

Date/Time Initiated: 5/5/23

Dedicated Equipment: Yes

Initial Water Level (feet): 29.45' .299

Casing Diameter (inches): 2

Ground Water Elevation (ft, msl): 1125.53

One Casing Volume (gal): 1.1 TT

Top of Casing (ft, msl) 1155.43

Total Volume Purged (gal): 3.5

PID (Background) 0.0 (PPM)

Purged Dry?: Yes No (circle)

PID (Headspace) 0.0 (PPM)

Water Level After Purge (ft): 29.55'

PURGE DATA

Date/Time Completed: 5/5/23 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	10.17	8.39	904	25.9	8.13	67
9:35	1000	1.0	9.34	8.00	834	5.4	2.42	91
9:40	1000	2.0	9.33	7.89	813	2.9	2.05	96
9:45	1000	3.5	9.30	7.84	814	6.3	2.28	97

FIELD INFORMATION LOG Part 2

SAMPLING INFORMATION:

Water Level @ Sampling (ft): 29.55 Sample Point ID: P-6
 Well Collection Sequence 5 of 6
 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)
<u>5/5/23</u> <u>9:50</u>	VOCs: <u>700</u> Other: <u>1000</u>	<u>9.27</u>	<u>7.92</u>	<u>814</u>	<u>10.3</u>	<u>1.78</u>	<u>99</u>

YSI Serial Number: _____
 YSI Sonde Serial Number: _____

GENERAL INFORMATION:

Weather Conditions @ sampling: 46°F, sunny, 5-10 mph E

 Sampling Characteristics: Clear

COMMENTS AND OBSERVATIONS:

Full Bottle Set Collected: Yes No (circle) # of Bottles Collected: 11/4/3
 Well Closed and Locked: Yes No (circle)

Notes:

Minnesota Unique Well ID: 772808
 Date: 5/5/23 By: N. Schlegel Title: staff env scientist

Company: Groundwater and Environmental Services, Inc.

FIELD INFORMATION LOG Part 1

Facility: Cloquet Landfill

Sample Location: P-7

Location: Cloquet, MN

Duplicate Collected: No

Field Blank Collected: No

Sample Matrix: Groundwater

Equipment Blank Collected: No

MS/MSD Collected: No

PURGE INFORMATION

Method of Well Purge: Dedicated Bladder Pump

Sampler(s): M-Schlygel

Casing Length (ft) 19.6

Date/Time Initiated: 5/5/23

Dedicated Equipment: Yes

Initial Water Level (feet): 15.00 16.12

Casing Diameter (inches): 2

Ground Water Elevation (ft, msl): 1123.27

One Casing Volume (gal): 0.75 0.6

Top of Casing (ft, msl) 1139.39

Total Volume Purged (gal): 1.0 slow velocity

PID (Background) 0.0 (PPM)

Purged Dry?: Yes No (circle)

PID (Headspace) 0.0 (PPM)

Water Level After Purge (ft): 19.82'

PURGE DATA

Date/Time Completed: 5/5/23 10:40

Time	Purge Rate (mL/min)	Cumulative Volume (gal)	Temp (°C)	pH (std units)	Specific Conductance (uS - umhos/cm)	Turbidity (NTU)	Disolved Oxygen (mg/L)	ORP (mV)
10:20	1000	0.1	9.21	8.03	1,020	155	8.75	109
10:25	1000	0.5	8.33	7.90	904	100	6.35	121
10:30	1000	0.75	8.21	7.87	880	75.7	5.80	123
10:35	1000	1.0	8.15	7.86	871	65.0	5.76	124

FIELD INFORMATION LOG Part 2

SAMPLING INFORMATION:

Sample Point ID: P-7

Water Level @ Sampling (ft): 17.82'

Well Collection Sequence 6 of 8

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)
<u>5/15/23</u> <u>10:40</u>	VOCs: <u>100</u> Other: <u>100</u>	<u>8.09</u>	<u>7.87</u>	<u>963</u>	<u>55.8</u>	<u>5.56</u>	<u>125</u>

YSI Serial Number: _____
YSI Sonde Serial Number: _____

GENERAL INFORMATION:

Weather Conditions @ sampling: 48°F, sunny, 5-10 mph E

Sampling Characteristics: clean

COMMENTS AND OBSERVATIONS:

Full Bottle Set Collected: Yes No (circle) # of Bottles Collected: 11/43

Well Closed and Locked: Yes No (circle)

Notes: _____

Minnesota Unique Well ID: _____

Date: 5/15/23 By: M. Schaefer Title: Staff Env. Scientist

Company: Groundwater and Environmental Services, Inc.

FIELD INFORMATION LOG Part 1

Facility: Cloquet Landfill

Sample Location: P-2

Location: Cloquet, MN

Duplicate Collected: No

Sample Matrix: Groundwater

Field Blank Collected: Yes

PURGE INFORMATION

Method of Well Purge: Dedicated Bladder Pump

Equipment Blank Collected: Yes

Date/Time Initiated: 5/5/23

MS/MSD Collected: No

Sampler(s): N-Schloegel

Casing Length (ft) 10.4

Initial Water Level (feet): 6.11 -8.79

Dedicated Equipment: Yes

Ground Water Elevation (ft, msl): 1123

Casing Diameter (inches): 2

Top of Casing (ft, msl) 1131.79

One Casing Volume (gal): 0.7 -0.3

PID (Background) 0.0 (PPM)

Total Volume Purged (gal): 1.0 slow discharge

PID (Headspace) 0.0 (PPM)

Purged Dry?: Yes No (circle)

Water Level After Purge (ft): 8.76

PURGE DATA

Date/Time Completed: 5/5/23 11:20

Time	Purge Rate (mL/min)	Cumulative Volume (gal)	Temp (°C)	pH (std units)	Specific Conductance (uS - umhos/cm)	Turbidity (NTU)	Disolved Oxygen (mg/L)	ORP (mV)
10:00	1000	0.1	10.65	8.30	683	69.5	10.00	97
11:05	1000	0.5	8.83	8.03	602	70.1	9.15	119
11:10	1000	0.75	8.43	8.01	571	61.9	7.76	124
11:15	1000	1.0	8.33	8.01	570	62.9	7.71	124

FIELD INFORMATION LOG Part 2

SAMPLING INFORMATION:

Sample Point ID: P-2

Water Level @ Sampling (ft): 8.76

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)
<u>5/5/23</u> <u>11:20</u>	VOCs: <u>100</u> Other: <u>1000</u>	<u>8.20</u>	<u>8.00</u>	<u>566</u>	<u>50.3</u>	<u>7.47</u>	<u>126</u>

YSI Serial Number: _____

YSI Sonde Serial Number: _____

GENERAL INFORMATION:

Weather Conditions @ sampling: 48°F, partly cloudy, 5-10 mph E

Sampling Characteristics: clear

COMMENTS AND OBSERVATIONS:

Full Bottle Set Collected: Yes No (circle)

of Bottles Collected: 4/3

Well Closed and Locked: Yes No (circle)

Notes:

Minnesota Unique Well ID: 72-8521

Date: 5/5/23 By: N. Schladt Title: Staff env. scientist

Company: Groundwater and Environmental Services, Inc.

Client Information		Lab P/M: Bindert, Zach T	Carrier Tracking No(s): 310-68858-19695.1							
Client Contact: Mr. Nicholas Schlagel		E-Mail: Zach.Bindert@Eurofinset.com	State of Origin: MN							
Company: Groundwater & Environmental Services Inc		Job #: Page 1 of 1								
Address: 1301 Corporate Center Drive Suite 190		COC No: 310-68858-19695.1								
City: Eagan		Page: Page 1 of 1								
State, Zip: MN, 55121-1562		Job #:								
Phone:										
Email: NSchlagel@gesonline.com										
Project Name: SKB Cloquet CCR Groundwater										
Site: Minnesota										
Due Date Requested:		Analysis Requested								
TAT Requested (days): Standard										
Compliance Project: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No										
PO #:										
Purchase Order Requested										
WO #:										
Project #: 31013983										
SSOW#:										
Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=on-still, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	602B - Boron and Calcium	2640C - Caled - TDS, SM4500_H+ - PH	Total Number of containers	Special Instructions/Note:
Duplicate 1 - CCR	5/14/23	9:25	6	Water	X	X	X	X	4	USE SITES AND EVENTS
P-1 - CCR	5/14/23	9:25	6	Water	X	X	X	X	4	see section 15/11/15
P-2 - CCR	5/15/23	11:20	6	Water	X	X	X	X	4	
P-8 - CCR	5/14/23	11:28	6	Water	X	X	X	X	4	MS/MSD
P-9 CCR	5/14/23	12:25	6	Water	X	X	X	X	4	
P-6 - CCR	5/15/23	9:28	6	Water	X	X	X	X	4	
P-7 - CCR	5/15/23	11:40	6	Water	X	X	X	X	4	
Equipment Blank - CCR	5/15/23	11:50	6	Water	X	X	X	X	4	
Field Blank - CCR	5/15/23	11:45	6	Water	X	X	X	X	4	
P-5R - CCR	5/15/23	9:35	6	Water	X	X	X	X	4	
Possible Hazard Identification <input type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input type="checkbox"/> Unknown <input type="checkbox"/> Radiological Deliverable Requested: I, II, III, IV, Other (specify)										
Sample Disposal (A fee may be assessed if samples are retained longer than 1 month) <input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months										
Special Instructions/QC Requirements:										
Empty Kit Relinquished by:		Date: 5/14/23		Time: 6:25		Company: Company		Method of Shipment:		
Relinquished by:		Date: 5/14/23		Time: 6:25		Company: Company		Date/Time: 5/15/23 15:00		
Relinquished by:		Date: 5/14/23		Time: 6:25		Company: Company		Date/Time: 5/15/23 15:00		
Custody Seals Intact:		Date: 5/14/23		Time: 6:25		Company: Company		Cooler Temperature(s) °C and Other Remarks:		
<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		Date: 5/14/23		Time: 6:25		Company: Company		Custody Seal No.:		

FIELD INFORMATION LOG Part 1

Facility: Cloquet Landfill

Sample Location: P-1

Location: Cloquet, MN

Duplicate Collected: No

Sample Matrix: Groundwater

Field Blank Collected: No

PURGE INFORMATION

Equipment Blank Collected: No

Method of Well Purge: Dedicated Bladder Pump

MS/MSD Collected: No

Date/Time Initiated: 10/23/23 9:25

Sampler(s): N. Schlogel

Casing Length (ft): 17.7

Initial Water Level (feet): 11.03 11.02

Dedicated Equipment: Yes

Ground Water Elevation (ft, msl): 1144.59

Casing Diameter (inches): 2

Top of Casing (ft, msl): 1155.61

One Casing Volume (gal): 1.1 1.1

PID (Background): 0.0 (PPM)

Total Volume Purged (gal): 3.5

PID (Headspace): 0.0 (PPM)

Purged Dry?: Yes No (circle)

Water Level After Purge (ft): 11.05'

PURGE DATA

Date/Time Completed: 10/23/23 9:48

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)
9:25	1000	0.1	11.05	9.37	2408 1,247	33.5	2.57	-101
9:30	1000	1.0	10.65	8.44	277 1,260	29.7	1.83	-25
9:35	1000	2.0	10.61	7.80	1,250	24.9	1.48	12
9:40	1000	3.5	10.56	7.39	1,240	24.3	1.13	40

FIELD INFORMATION LOG Part 2

SAMPLING INFORMATION:

Sample Point ID: * P-1

Water Level @ Sampling (ft): 11.05

Well Collection Sequence 1 of 6

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)
<u>7:48</u> <u>10/23/22</u>	VOCs: <u>100</u> Other: <u>1000</u>	<u>10.58</u>	<u>7.37</u>	<u>1,240</u>	<u>25.1</u>	<u>1.09</u>	<u>44</u>

YSI Serial Number: _____
YSI Sonde Serial Number: _____

GENERAL INFORMATION:

Weather Conditions @ sampling: 49°F cloudy 0-5 mph SE

Sampling Characteristics: clear

COMMENTS AND OBSERVATIONS:

Full Bottle Set Collected: Yes No (circle) _____ # of Bottles Collected: 13/3/2
 Well Closed and Locked: Yes No (circle) _____
 Notes: _____

Minnesota Unique Well ID: 728520

Date: 10/23/22 By: N. Schlegel Title: staff env scientist

Company: Groundwater and Environmental Services, Inc.

FIELD INFORMATION LOG Part 1

Facility: Cloquet Landfill

Sample Location: P-8

Location: Cloquet, MN

Duplicate Collected: YES

Field Blank Collected: NO

Sample Matrix: Groundwater

Equipment Blank Collected: NO

MS/MSD Collected: YES

PURGE INFORMATION

Method of Well Purge: Dedicated Bladder Pump

Sampler(s): M. Schlogel

Casing Length (ft): 89.05

Date/Time Initiated: 10/23/23 10:30

Dedicated Equipment: Yes

Initial Water Level (feet): 57.19

Casing Diameter (inches): 2

Ground Water Elevation (ft, msl): 57.19

One Casing Volume (gal): 5.2 ~~2.2~~

Top of Casing (ft, msl): -

Total Volume Purged (gal): 16.0

PID (Background): 0.0 (PPM)

Purged Dry?: Yes No (circle)

PID (Headspace): 0.0 (PPM)

Water Level After Purge (ft): 57.22

PURGE DATA

Date/Time Completed: 10/23/23 11:50

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)
10:30	1000	0.1	11.20	8.25	734	11.3	1.02	-179
10:55	1000	5.0	10.72	8.32	792	20.6	0.00	-174
11:20	1000	10.0	10.72	8.31	792	24.3	0.00	-172
11:45	1000	16.0	10.65	8.33	800	23.1	0.00	-172

FIELD INFORMATION LOG Part 2

SAMPLING INFORMATION:

Sample Point ID: P-8

Water Level @ Sampling (ft): 57.22

Well Collection Sequence 2 of 6

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)
<u>10/23/23</u>	VOCs: <u>100'</u> Other: <u>100'</u>	<u>11.64</u>	<u>8.33</u>	<u>801</u>	<u>23.0</u>	<u>0.00</u>	<u>-172</u>

YSI Serial Number: _____

YSI Sonde Serial Number: _____

GENERAL INFORMATION:

Weather Conditions @ sampling: 49°F with clouds, 0-5 mph SW

Sampling Characteristics: Clear

COMMENTS AND OBSERVATIONS:

Full Bottle Set Collected: Yes, No (circle)

of Bottles Collected: 13/12

Well Closed and Locked: Yes, No (circle)

Notes: _____

Minnesota Unique Well ID: 856321

Date: 10/23/23 By: N. Schlegel Title: Staff Env. Scientist

Company: Groundwater and Environmental Services, Inc.

FIELD INFORMATION LOG Part 1

Facility: Cloquet Landfill

Sample Location: P-9

Location: Cloquet, MN

Duplicate Collected: No

Sample Matrix: Groundwater

Field Blank Collected: No

PURGE INFORMATION

Method of Well Purge: Dedicated Bladder Pump

Equipment Blank Collected: No

MS/MSD Collected: No

Date/Time Initiated: 12:35 10/23/23

Sampler(s): N. Schaefer

Casing Length (ft): 59.15

Initial Water Level (feet): 48.94'

Dedicated Equipment: Yes

Ground Water Elevation (ft, msl): 0

Casing Diameter (inches): 2

Top of Casing (ft, msl): -

One Casing Volume (gal): 1.67 - 2.2

PID (Background) 0.0 (PPM)

Total Volume Purged (gal): 5.0

PID (Headspace) 0.0 (PPM)

Purged Dry?: Yes (circle)

Water Level After Purge (ft): 48.96

PURGE DATA

Date/Time Completed: 10/23/23 12:55

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)
12:35	1000	0.1	17.77	8.22	880	115	2.98	-176
12:40	1000	1.5	12.01	8.30	916	56.3	0.00	-219
12:45	1000	3.0	11.91	8.23	938	27.8	0.00	-195
12:50	1000	5.0	11.85	8.11	959	22.2	0.00	-189

FIELD INFORMATION LOG Part 2

SAMPLING INFORMATION:

Sample Point ID: P-9
 Water Level @ Sampling (ft): 40.96
 Well Collection Sequence 3 of 6
 Parameters: Annual Y 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)
<u>12:35</u> <u>10/23/23</u>	VOCs: <u>100</u> Other: <u>1000</u>	<u>11.04</u>	<u>8.11</u>	<u>959</u>	<u>27.6</u>	<u>0.00</u>	<u>-180</u>

YSI Serial Number: _____
 YSI Sonde Serial Number: _____

GENERAL INFORMATION:

Weather Conditions @ sampling: 52°F partly cloudy, 5-10 mph SW

 Sampling Characteristics: Clear

COMMENTS AND OBSERVATIONS:

Full Bottle Set Collected: Yes No (circle) _____ # of Bottles Collected: 13/3/2
 Well Closed and Locked: Yes No (circle) _____

Notes:

Minnesota Unique Well ID: 762047
 Date: 11/23/23 By: N. Schlegel Title: Staff env. scientist

Company: Groundwater and Environmental Services, Inc.

FIELD INFORMATION LOG Part 1

Facility: Cloquet Landfill

Sample Location: P-5R

Location: Cloquet, MN

Duplicate Collected: No

Sample Matrix: Groundwater

Field Blank Collected: No

PURGE INFORMATION

Equipment Blank Collected: No

Method of Well Purge: Dedicated Bladder Pump

MS/MSD Collected: No

Date/Time Initiated: 10/23/23 13:35

Sampler(s): MSLH401

Casing Length (ft): 73.2

Initial Water Level (feet): 60.33'

Dedicated Equipment: Yes

Ground Water Elevation (ft, msl): 0

Casing Diameter (inches): 2

Top of Casing (ft, msl): -

One Casing Volume (gal): 2.1 6.3

PID (Background): 0.0 (PPM)

Total Volume Purged (gal): 6.5

PID (Headspace): 0.0 (PPM)

Purged Dry?: Yes No (circle)

Water Level After Purge (ft): 60.35'

PURGE DATA

Date/Time Completed: 10/23/23 13:55

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)
13:35	1000	0.1	12.61	8.05	1,250	22.9	3.76	-98
13:40	1000	2.0	12.09	7.79	1,290	20.7	0.37	-95
13:45	1000	4.0	12.02	7.62	1,290	18.3	0.00	-86
13:50	1000	6.5	12.33	7.56	1,290	14.6	0.00	-90

FIELD INFORMATION LOG Part 2

SAMPLING INFORMATION:

Sample Point ID: P-5R
 Water Level @ Sampling (ft): 60.35
 Well Collection Sequence 4 of 6
 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)
<u>10/23/03</u> <u>13:55</u>	VOCs: <u>100</u> Other: <u>1000</u>	<u>12.39</u>	<u>7.54</u>	<u>1,280</u>	<u>19.8</u>	<u>0.00</u>	<u>-90</u>

YSI Serial Number: _____
 YSI Sonde Serial Number: _____

GENERAL INFORMATION:

Weather Conditions @ sampling: 54°F sunny, 5-10 mph SW

 Sampling Characteristics: Clear

COMMENTS AND OBSERVATIONS:

Full Bottle Set Collected: Yes No (circle) _____ # of Bottles Collected: 13/3/2
 Well Closed and Locked: Yes No (circle) _____

Notes: _____

Minnesota Unique Well ID: 856322
 Date: 10/23/03 By: N. Schlegel Title: staff env scientist

Company: Groundwater and Environmental Services, Inc.

FIELD INFORMATION LOG Part 1

Facility: Cloquet Landfill

Sample Location: P-6

Location: Cloquet, MN

Duplicate Collected: No

Sample Matrix: Groundwater

Field Blank Collected: No

PURGE INFORMATION

Equipment Blank Collected: No

Method of Well Purge: Dedicated Bladder Pump

MS/MSD Collected: No

Date/Time Initiated: 10/24/23 8:00

Sampler(s): K-Schlager

Casing Length (ft): 36.2

Initial Water Level (feet): 30.59 -29.9

Dedicated Equipment: Yes

Ground Water Elevation (ft, msl): 1125.53

Casing Diameter (inches): 2

Top of Casing (ft, msl): 1155.43

One Casing Volume (gal): 0.9 ~~1.1~~

PID (Background): 0-0 (PPM)

Total Volume Purged (gal): 3.0

PID (Headspace): 0-0 (PPM)

Purged Dry?: Yes No (circle)

Water Level After Purge (ft): 30.62'

PURGE DATA

Date/Time Completed: 10/24/23 8:20

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)
8:00	1000	0.1	9.65	8.25	1,100	28.0	6.60	74
8:05	1000	1.0	9.07	7.77	1,060	21.3	6.04	104
8:10	1000	2.0	9.03	7.61	1,050	19.8	3.97	111
8:15	1000	3.0	9.01	7.51	1,050	19.8	3.60	114

FIELD INFORMATION LOG Part 2

SAMPLING INFORMATION:

Water Level @ Sampling (ft): 30.62

Parameters: Annual Semiannual: _____

Sample Point ID: P-6

Well Collection Sequence 5 of 6

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)
<u>8:20</u> <u>10/24/23</u>	VOCs: <u>100</u> Other: <u>1000</u>	<u>9.01</u>	<u>7.50</u>	<u>1,060</u>	<u>19.7</u>	<u>3.58</u>	<u>114</u>

YSI Serial Number: _____

YSI Sonde Serial Number: _____

GENERAL INFORMATION:

Weather Conditions @ sampling: 50°F mostly cloudy, calm

Sampling Characteristics: clean

COMMENTS AND OBSERVATIONS:

Full Bottle Set Collected: Yes No (circle)

of Bottles Collected: 13/3/2

Well Closed and Locked: Yes No (circle)

Notes: _____

Minnesota Unique Well ID: 772809

Date: 10/24/23 By: N. Schlygel Title: staff env. scientist

Company: Groundwater and Environmental Services, Inc.

FIELD INFORMATION LOG Part 1

Facility: Cloquet Landfill

Sample Location: P-7

Location: Cloquet, MN

Duplicate Collected: No

Sample Matrix: Groundwater

Field Blank Collected: Yes

Equipment Blank Collected: Yes

PURGE INFORMATION

MS/MSD Collected: No

Method of Well Purge: Dedicated Bladder Pump

Sampler(s): N-schlagel

Casing Length (ft) 19.6

Date/Time Initiated: 10/24/23 8:45

Dedicated Equipment: Yes

Initial Water Level (feet): 15.74' 16.12

Casing Diameter (inches): 2

Ground Water Elevation (ft, msl): 1123.27

One Casing Volume (gal): 0.63 ~~0.6~~

Top of Casing (ft, msl) 1139.39

Total Volume Purged (gal): 2.0 slow backwash

PID (Background) 0.0 (PPM)

Purged Dry?: Yes No (circle)

PID (Headspace) 0.0 (PPM)

Water Level After Purge (ft): 18.27'

PURGE DATA

Date/Time Completed: 10/24/23 9:05

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)
8:45	1000	0.1	9.58	7.67	1,130	47.8	7.31	89
8:50	1000	0.5	9.50	7.60	1,090	49.3	4.91	-20
8:55	1000	0.75	9.41	7.55	1,060	41.9	3.18	-32
9:00	1000	1.00	9.33	7.50	1,050	34.2	2.19	-26

FIELD INFORMATION LOG Part 2

SAMPLING INFORMATION:

Sample Point ID: P-7

Water Level @ Sampling (ft): 18.27

Well Collection Sequence 6 of 6

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)
<u>9:05 10/24/23</u>	VOCs: <u>100</u> Other: <u>1000</u>	<u>9.31</u>	<u>7.50</u>	<u>11050</u>	<u>34.4</u>	<u>2.10</u>	<u>-24</u>

YSI Serial Number: _____

YSI Sonde Serial Number: _____

GENERAL INFORMATION:

Weather Conditions @ sampling: 51°F, partly cloudy calm

Sampling Characteristics: clear

COMMENTS AND OBSERVATIONS:

Full Bottle Set Collected: Yes / No (circle)

of Bottles Collected: 13/12

Well Closed and Locked: Yes / No (circle)

Notes:

Minnesota Unique Well ID: 772807

Date: 10/24/23 By: N. Sehlager Title: Staff env-scientist

Company: Groundwater and Environmental Services, Inc.

FIELD INFORMATION LOG Part 1

Facility: Cloquet Landfill

Sample Location: P-2

Location: Cloquet, MN

Duplicate Collected: -

Sample Matrix: Groundwater

Field Blank Collected: -

Equipment Blank Collected: -

PURGE INFORMATION

MS/MSD Collected: -

Method of Well Purge: Dedicated Bladder Pump

Sampler(s): N-Schubel

Casing Length (ft) 10.4

Date/Time Initiated: 10/24/23

Dedicated Equipment: Yes

Initial Water Level (feet): DRY 8.79

Casing Diameter (inches): 2

Ground Water Elevation (ft, msl): 1123

One Casing Volume (gal): 0.3

Top of Casing (ft, msl) 1131.79

Total Volume Purged (gal):

PID (Background) 0.0 (PPM)

Purged Dry?: Yes No (circle)

PID (Headspace) 0.0 (PPM)

Water Level After Purge (ft):

PURGE DATA

Date/Time Completed: 10/24/23

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)
INSUFFICIENT WATER IN WELL NO SAMPLE								

Client Information
 Client Contact: Mr. Nicholas Schlegel
 Company: Groundwater & Environmental Services Inc
 Address: 1301 Corporate Center Drive, Suite 190
 City: Eagan
 State, Zip: MN, 55121-1562
 Phone: 651-792-6088
 Email: NSchlegel@gesonline.com
 Project Name: SKB Cloquet CCR Groundwater (Fall)
 Site: Minnesota
 PWSID: 651-792-6088

Lab PM: Binder: Zach T
 E-Mail: Zach.Binder@et.eurofins.com
 Lab No: 310-73819-21058.1
 Page: Page 1 of 1
 Job #:

Analysis Requested
 Due Date Requested:
 TAT Requested (days): Standard
 Compliance Project: Yes No
 PO #:
 Purchase Order Requested
 WO #:
 Project #: 31013983
 SSOW#:
 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_Calcid, pH - SM4500_H+

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, B=biofouling, A=air)	Preservation Code:	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_Calcid, pH - SM4500_H+	Total Number of Containers	Special Instructions/Note:
Duplicate 1 - CCR	10/23/23		6	Water								
P-1 - CCR	10/23/23	9:45	6	Water								
P-2 - CCR	10/23/23	11:50	6	Water								
P-8 - CCR	10/23/23	12:55	6	Water								
P-9 - CCR	10/24/23	8:20	6	Water								
P-6 - CCR	10/24/23	9:05	6	Water								
P-7 - CCR	10/23/23	13:55	6	Water								
Field Blank - CCR	10/24/23	10:00	6	Water								
Equipment Blank - CCR	10/24/23	10:05	6	Water								

Possible Hazard Identification
 Non-Hazard Flammable Skin Irritant
 Deliverable Requested: I, II, III, IV, Other (specify)
 Empty Kit Relinquished by:
 Relinquished by:
 Date: 10/24/23 1300
 Relinquished by:
 Date: 10-24-23 1300
 Custody Seals Intact:
 -A Yes - Δ No
 Relinquished by:
 Date: 10/24/23 1300
 Relinquished by:
 Date: 10-24-23 1300
 Custody Seal No.:
 Relinquished by:
 Date: 10-24-23 1300
 Relinquished by:
 Date: 10-24-23 1300
 Custody Seal No.:
 Relinquished by:
 Date: 10-24-23 1300
 Relinquished by:
 Date: 10-24-23 1300
 Custody Seal No.:



Appendix B – Laboratory Analytical Reports



ANALYTICAL REPORT

PREPARED FOR

Attn: Megan Lindstrom
Waste Connections, Inc.
13425 Courthouse Blvd
Rosemount, Minnesota 55068

Generated 5/30/2023 4:57:26 PM

JOB DESCRIPTION

SKB Cloquet CCR Groundwater
CCR Groundwater (Spring)

JOB NUMBER

310-255242-1

Eurofins Cedar Falls

Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization



Generated
5/30/2023 4:57:26 PM

Authorized for release by
Zach Bindert, Client Service Manager
Zach.Bindert@et.eurofinsus.com
(319)277-2401



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Case Narrative

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

Job ID: 310-255242-1

Job ID: 310-255242-1

Laboratory: Eurofins Cedar Falls

Narrative

Job Narrative
310-255242-1

Receipt

The samples were received on 5/6/2023 10:05 AM. 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 0.3°C and 1.0°C

HPLC/IC

Method 9056A_ORGFM_28D: The following samples were diluted due to the nature of the sample matrix: Duplicate 1 - CCR (310-255242-1), P-1 - CCR (310-255242-2), P-2 - CCR (310-255242-3), P-8 - CCR (310-255242-4) and P-9 - CCR (310-255242-5). 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 additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

General Chemistry

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



Sample Summary

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

Job ID: 310-255242-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
310-255242-1	Duplicate 1 - CCR	Ground Water	05/04/23 00:00	05/06/23 10:05
310-255242-2	P-1 - CCR	Ground Water	05/04/23 09:25	05/06/23 10:05
310-255242-3	P-2 - CCR	Ground Water	05/05/23 11:20	05/06/23 10:05
310-255242-4	P-8 - CCR	Ground Water	05/04/23 11:25	05/06/23 10:05
310-255242-5	P-9 - CCR	Ground Water	05/04/23 12:25	05/06/23 10:05
310-255242-6	P-6 - CCR	Ground Water	05/05/23 09:50	05/06/23 10:05
310-255242-7	P-7 - CCR	Ground Water	05/05/23 10:40	05/06/23 10:05
310-255242-8	Equipment Blank - CCR	Water	05/05/23 11:50	05/06/23 10:05
310-255242-9	P-5R - CCR	Ground Water	05/05/23 08:45	05/06/23 10:05
310-255242-10	Field Blank - CCR	Water	05/05/23 11:45	05/06/23 10:05

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Detection Summary

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

Job ID: 310-255242-1

Client Sample ID: Duplicate 1 - CCR

Lab Sample ID: 310-255242-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	110		5.0		mg/L	5		9056A	Total/NA
Sulfate	33		5.0		mg/L	5		9056A	Total/NA
Calcium	112		0.50		mg/L	1		6020B	Total/NA
Total Dissolved Solids	450		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: 310-255242-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	140		5.0		mg/L	5		9056A	Total/NA
Sulfate	27		5.0		mg/L	5		9056A	Total/NA
Calcium	183		0.50		mg/L	1		6020B	Total/NA
Total Dissolved Solids	682		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-2 - CCR

Lab Sample ID: 310-255242-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	160		5.0		mg/L	5		9056A	Total/NA
Sulfate	9.8		5.0		mg/L	5		9056A	Total/NA
Calcium	86.5		0.50		mg/L	1		6020B	Total/NA
Total Dissolved Solids	376		50.0		mg/L	1		SM 2540C	Total/NA
pH	6.7	HF	0.1		SU	1		SM 4500 H+ B	Total/NA

Client Sample ID: P-8 - CCR

Lab Sample ID: 310-255242-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	110		5.0		mg/L	5		9056A	Total/NA
Sulfate	34		5.0		mg/L	5		9056A	Total/NA
Calcium	105		0.50		mg/L	1		6020B	Total/NA
Total Dissolved Solids	400		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: 310-255242-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	140		5.0		mg/L	5		9056A	Total/NA
Sulfate	28		5.0		mg/L	5		9056A	Total/NA
Calcium	80.5		0.50		mg/L	1		6020B	Total/NA
Total Dissolved Solids	454		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: 310-255242-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	33		5.0		mg/L	5		9056A	Total/NA
Sulfate	110		5.0		mg/L	5		9056A	Total/NA
Calcium	128		0.50		mg/L	1		6020B	Total/NA
Total Dissolved Solids	484		50.0		mg/L	1		SM 2540C	Total/NA
pH	6.9	HF	0.1		SU	1		SM 4500 H+ B	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins Cedar Falls

Detection Summary

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

Job ID: 310-255242-1

Client Sample ID: P-7 - CCR

Lab Sample ID: 310-255242-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	63		5.0		mg/L	5		9056A	Total/NA
Sulfate	31		5.0		mg/L	5		9056A	Total/NA
Calcium	126		0.50		mg/L	1		6020B	Total/NA
Total Dissolved Solids	472		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: 310-255242-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	35		1.0		mg/L	1		9056A	Total/NA
Sulfate	4.6		1.0		mg/L	1		9056A	Total/NA
Calcium	16.8		0.50		mg/L	1		6020B	Total/NA
Total Dissolved Solids	86.0		50.0		mg/L	1		SM 2540C	Total/NA
pH	6.7	HF	0.1		SU	1		SM 4500 H+ B	Total/NA

Client Sample ID: P-5R - CCR

Lab Sample ID: 310-255242-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	220		20		mg/L	20		9056A	Total/NA
Sulfate	130		5.0		mg/L	5		9056A	Total/NA
Calcium	144		0.50		mg/L	1		6020B	Total/NA
Total Dissolved Solids	712		50.0		mg/L	1		SM 2540C	Total/NA
pH	7.2	HF	0.1		SU	1		SM 4500 H+ B	Total/NA

Client Sample ID: Field Blank - CCR

Lab Sample ID: 310-255242-10

Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
pH	5.7	HF	0.1		SU	1		SM 4500 H+ B	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins Cedar Falls

Client Sample Results

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

Job ID: 310-255242-1

Client Sample ID: Duplicate 1 - CCR

Lab Sample ID: 310-255242-1

Date Collected: 05/04/23 00:00

Matrix: Ground Water

Date Received: 05/06/23 10:05

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	110		5.0		mg/L			05/22/23 22:55	5
Fluoride	<1.0		1.0		mg/L			05/22/23 22:55	5
Sulfate	33		5.0		mg/L			05/22/23 22:55	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		05/09/23 09:05	05/23/23 00:51	1
Calcium	112		0.50		mg/L		05/09/23 09:05	05/23/23 00:51	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids (SM 2540C)	450		50.0		mg/L			05/08/23 15:48	1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH (SM 4500 H+ B)	8.0	HF	0.1		SU			05/06/23 11:37	1

Client Sample Results

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

Job ID: 310-255242-1

Client Sample ID: P-1 - CCR

Lab Sample ID: 310-255242-2

Date Collected: 05/04/23 09:25

Matrix: Ground Water

Date Received: 05/06/23 10:05

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	140		5.0		mg/L			05/22/23 23:10	5
Fluoride	<1.0		1.0		mg/L			05/22/23 23:10	5
Sulfate	27		5.0		mg/L			05/22/23 23:10	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		05/09/23 09:05	05/23/23 01:07	1
Calcium	183		0.50		mg/L		05/09/23 09:05	05/23/23 01:07	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids (SM 2540C)	682		50.0		mg/L			05/09/23 13:28	1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH (SM 4500 H+ B)	6.6	HF	0.1		SU			05/06/23 11:35	1

Client Sample Results

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

Job ID: 310-255242-1

Client Sample ID: P-2 - CCR

Lab Sample ID: 310-255242-3

Date Collected: 05/05/23 11:20

Matrix: Ground Water

Date Received: 05/06/23 10:05

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	160		5.0		mg/L			05/22/23 23:26	5
Fluoride	<1.0		1.0		mg/L			05/22/23 23:26	5
Sulfate	9.8		5.0		mg/L			05/22/23 23:26	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		05/09/23 09:05	05/23/23 01:09	1
Calcium	86.5		0.50		mg/L		05/09/23 09:05	05/23/23 01:09	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids (SM 2540C)	376		50.0		mg/L			05/09/23 13:28	1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH (SM 4500 H+ B)	6.7	HF	0.1		SU			05/06/23 11:34	1



Client Sample Results

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

Job ID: 310-255242-1

Client Sample ID: P-8 - CCR

Lab Sample ID: 310-255242-4

Date Collected: 05/04/23 11:25

Matrix: Ground Water

Date Received: 05/06/23 10:05

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	110		5.0		mg/L			05/22/23 23:42	5
Fluoride	<1.0		1.0		mg/L			05/22/23 23:42	5
Sulfate	34		5.0		mg/L			05/22/23 23:42	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		05/09/23 09:05	05/23/23 01:12	1
Calcium	105		0.50		mg/L		05/09/23 09:05	05/23/23 01:12	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids (SM 2540C)	400		50.0		mg/L			05/08/23 15:48	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH (SM 4500 H+ B)	8.0	HF	0.1		SU			05/06/23 11:39	1



Client Sample Results

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

Job ID: 310-255242-1

Client Sample ID: P-9 - CCR

Lab Sample ID: 310-255242-5

Date Collected: 05/04/23 12:25

Matrix: Ground Water

Date Received: 05/06/23 10:05

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	140		5.0		mg/L			05/23/23 00:28	5
Fluoride	<1.0		1.0		mg/L			05/23/23 00:28	5
Sulfate	28		5.0		mg/L			05/23/23 00:28	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		05/09/23 09:05	05/23/23 01:19	1
Calcium	80.5		0.50		mg/L		05/09/23 09:05	05/23/23 01:19	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids (SM 2540C)	454		50.0		mg/L			05/08/23 15:48	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH (SM 4500 H+ B)	7.8	HF	0.1		SU			05/06/23 11:38	1

- 1
- 2
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- 13
- 14

Client Sample Results

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

Job ID: 310-255242-1

Client Sample ID: P-6 - CCR

Lab Sample ID: 310-255242-6

Date Collected: 05/05/23 09:50

Matrix: Ground Water

Date Received: 05/06/23 10:05

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	33		5.0		mg/L			05/25/23 14:59	5
Fluoride	<1.0		1.0		mg/L			05/25/23 14:59	5
Sulfate	110		5.0		mg/L			05/25/23 14:59	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		05/09/23 09:05	05/23/23 01:22	1
Calcium	128		0.50		mg/L		05/09/23 09:05	05/23/23 01:22	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids (SM 2540C)	484		50.0		mg/L			05/09/23 13:28	1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH (SM 4500 H+ B)	6.9	HF	0.1		SU			05/06/23 11:31	1

Client Sample Results

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

Job ID: 310-255242-1

Client Sample ID: P-7 - CCR

Lab Sample ID: 310-255242-7

Date Collected: 05/05/23 10:40

Matrix: Ground Water

Date Received: 05/06/23 10:05

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	63		5.0		mg/L			05/26/23 09:18	5
Fluoride	<1.0		1.0		mg/L			05/26/23 09:18	5
Sulfate	31		5.0		mg/L			05/26/23 09:18	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		05/09/23 09:05	05/23/23 01:25	1
Calcium	126		0.50		mg/L		05/09/23 09:05	05/23/23 01:25	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids (SM 2540C)	472		50.0		mg/L			05/09/23 13:28	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH (SM 4500 H+ B)	7.0	HF	0.1		SU			05/06/23 11:33	1

Client Sample Results

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

Job ID: 310-255242-1

Client Sample ID: Equipment Blank - CCR

Lab Sample ID: 310-255242-8

Date Collected: 05/05/23 11:50

Matrix: Water

Date Received: 05/06/23 10:05

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	35		1.0		mg/L			05/30/23 10:51	1
Fluoride	<0.20		0.20		mg/L			05/26/23 09:33	1
Sulfate	4.6		1.0		mg/L			05/26/23 09:33	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		05/09/23 09:05	05/23/23 01:40	1
Calcium	16.8		0.50		mg/L		05/09/23 09:05	05/23/23 01:40	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids (SM 2540C)	86.0		50.0		mg/L			05/09/23 13:28	1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH (SM 4500 H+ B)	6.7	HF	0.1		SU			05/06/23 11:30	1

Client Sample Results

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

Job ID: 310-255242-1

Client Sample ID: P-5R - CCR

Lab Sample ID: 310-255242-9

Date Collected: 05/05/23 08:45

Matrix: Ground Water

Date Received: 05/06/23 10:05

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	220		20		mg/L			05/30/23 11:06	20
Fluoride	<1.0		1.0		mg/L			05/26/23 09:49	5
Sulfate	130		5.0		mg/L			05/26/23 09:49	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		05/09/23 09:05	05/23/23 01:43	1
Calcium	144		0.50		mg/L		05/09/23 09:05	05/23/23 01:43	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids (SM 2540C)	712		50.0		mg/L			05/09/23 13:28	1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH (SM 4500 H+ B)	7.2	HF	0.1		SU			05/06/23 11:32	1

Client Sample Results

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

Job ID: 310-255242-1

Client Sample ID: Field Blank - CCR

Lab Sample ID: 310-255242-10

Date Collected: 05/05/23 11:45

Matrix: Water

Date Received: 05/06/23 10:05

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<1.0		1.0		mg/L			05/26/23 10:05	1
Fluoride	<0.20		0.20		mg/L			05/26/23 10:05	1
Sulfate	<1.0		1.0		mg/L			05/26/23 10:05	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		05/09/23 09:05	05/23/23 01:45	1
Calcium	<0.50		0.50		mg/L		05/09/23 09:05	05/23/23 01:45	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			05/09/23 13:28	1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH (SM 4500 H+ B)	5.7	HF	0.1		SU			05/08/23 10:29	1

Definitions/Glossary

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

Job ID: 310-255242-1

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.
α	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

QC Sample Results

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

Job ID: 310-255242-1

Method: 9056A - Anions, Ion Chromatography

Lab Sample ID: MB 310-388380/3
Matrix: Water
Analysis Batch: 388380

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

Analyte	MB MB		RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Chloride	<1.0		1.0		mg/L			05/22/23 19:48	1
Fluoride	<0.20		0.20		mg/L			05/22/23 19:48	1
Sulfate	<1.0		1.0		mg/L			05/22/23 19:48	1

Lab Sample ID: LCS 310-388380/4
Matrix: Water
Analysis Batch: 388380

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

Analyte	Spike Added	LCS LCS		Unit	D	%Rec	%Rec Limits
		Result	Qualifier				
Chloride	10.0	9.54		mg/L		95	90 - 110
Fluoride	2.00	2.08		mg/L		104	90 - 110
Sulfate	10.0	9.92		mg/L		99	90 - 110

Lab Sample ID: 310-255242-4 MS
Matrix: Ground Water
Analysis Batch: 388380

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

Analyte	Sample Result	Sample Qualifier	Spike Added	MS MS		Unit	D	%Rec	%Rec Limits
				Result	Qualifier				
Chloride	110		25.0	129	4	mg/L		88	80 - 120
Fluoride	<1.0		5.00	4.89		mg/L		98	80 - 120
Sulfate	34		25.0	59.2		mg/L		102	80 - 120

Lab Sample ID: 310-255242-4 MSD
Matrix: Ground Water
Analysis Batch: 388380

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

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD MSD		Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
				Result	Qualifier						
Chloride	110		25.0	129	4	mg/L		87	80 - 120	0	15
Fluoride	<1.0		5.00	4.90		mg/L		98	80 - 120	0	15
Sulfate	34		25.0	58.8		mg/L		101	80 - 120	1	15

Lab Sample ID: MB 310-388980/3
Matrix: Water
Analysis Batch: 388980

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

Analyte	MB MB		RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Chloride	<1.0		1.0		mg/L			05/25/23 14:11	1
Fluoride	<0.20		0.20		mg/L			05/25/23 14:11	1
Sulfate	<1.0		1.0		mg/L			05/25/23 14:11	1

Lab Sample ID: LCS 310-388980/4
Matrix: Water
Analysis Batch: 388980

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

Analyte	Spike Added	LCS LCS		Unit	D	%Rec	%Rec Limits
		Result	Qualifier				
Chloride	10.0	9.15		mg/L		92	90 - 110
Sulfate	10.0	9.20		mg/L		92	90 - 110

QC Sample Results

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

Job ID: 310-255242-1

Method: 9056A - Anions, Ion Chromatography (Continued)

Lab Sample ID: LCS 310-388980/43
Matrix: Water
Analysis Batch: 388980

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Fluoride	2.00	2.00		mg/L		100	90 - 110

Lab Sample ID: 310-255242-6 MS
Matrix: Ground Water
Analysis Batch: 388980

Client Sample ID: P-6 - CCR
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Chloride	33		25.0	53.6		mg/L		84	80 - 120
Fluoride	<1.0		5.00	4.06		mg/L		81	80 - 120
Sulfate	110		25.0	135	4	mg/L		115	80 - 120

Lab Sample ID: 310-255242-6 MSD
Matrix: Ground Water
Analysis Batch: 388980

Client Sample ID: P-6 - 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	33		25.0	54.1		mg/L		86	80 - 120	1	15
Fluoride	<1.0		5.00	4.03		mg/L		81	80 - 120	1	15
Sulfate	110		25.0	119	4	mg/L		48	80 - 120	13	15

Method: 6020B - Metals (ICP/MS)

Lab Sample ID: MB 310-386825/1-A
Matrix: Water
Analysis Batch: 388342

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 386825

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	<0.10		0.10		mg/L		05/09/23 09:05	05/23/23 00:31	1
Calcium	<0.50		0.50		mg/L		05/09/23 09:05	05/23/23 00:31	1

Lab Sample ID: LCS 310-386825/2-A
Matrix: Water
Analysis Batch: 388342

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 386825

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Boron	0.200	0.208		mg/L		104	80 - 120
Calcium	2.00	2.30		mg/L		115	80 - 120

Lab Sample ID: 310-255242-4 MS
Matrix: Ground Water
Analysis Batch: 388342

Client Sample ID: P-8 MS - CCR
Prep Type: Total/NA
Prep Batch: 386825

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Boron	<0.10		0.200	0.225		mg/L		112	75 - 125
Calcium	105		2.00	113.1	4	mg/L		385	75 - 125

QC Sample Results

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

Job ID: 310-255242-1

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

Lab Sample ID: 310-255242-4 MSD
Matrix: Ground Water
Analysis Batch: 388342

Client Sample ID: P-8 MSD - CCR
Prep Type: Total/NA
Prep Batch: 386825

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Boron	<0.10		0.200	0.223		mg/L		111	75 - 125	1	20
Calcium	105		2.00	105.3	4	mg/L		-5	75 - 125	7	20

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

Lab Sample ID: MB 310-386810/1
Matrix: Water
Analysis Batch: 386810

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			05/08/23 15:48	1

Lab Sample ID: LCS 310-386810/2
Matrix: Water
Analysis Batch: 386810

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	944.0		mg/L		94	90 - 110

Lab Sample ID: 310-255242-4 DU
Matrix: Ground Water
Analysis Batch: 386810

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	400		408.0		mg/L		2	20

Lab Sample ID: MB 310-386930/1
Matrix: Water
Analysis Batch: 386930

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			05/09/23 13:28	1

Lab Sample ID: LCS 310-386930/2
Matrix: Water
Analysis Batch: 386930

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: 310-255242-6 DU
Matrix: Ground Water
Analysis Batch: 386930

Client Sample ID: P-6 - CCR
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Dissolved Solids	484		486.0		mg/L		0.4	20

QC Sample Results

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

Job ID: 310-255242-1

Method: SM 4500 H+ B - pH

Lab Sample ID: LCS 310-386680/1
Matrix: Water
Analysis Batch: 386680

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

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

Lab Sample ID: 310-255242-4 DU
Matrix: Ground Water
Analysis Batch: 386680

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	20

Lab Sample ID: LCS 310-386747/1
Matrix: Water
Analysis Batch: 386747

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

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

Lab Sample ID: 310-255242-10 DU
Matrix: Water
Analysis Batch: 386747

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

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
pH	5.7	HF	5.7		SU		0.2	20

QC Association Summary

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

Job ID: 310-255242-1

HPLC/IC

Analysis Batch: 388380

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-255242-1	Duplicate 1 - CCR	Total/NA	Ground Water	9056A	
310-255242-2	P-1 - CCR	Total/NA	Ground Water	9056A	
310-255242-3	P-2 - CCR	Total/NA	Ground Water	9056A	
310-255242-4	P-8 - CCR	Total/NA	Ground Water	9056A	
310-255242-5	P-9 - CCR	Total/NA	Ground Water	9056A	
MB 310-388380/3	Method Blank	Total/NA	Water	9056A	
LCS 310-388380/4	Lab Control Sample	Total/NA	Water	9056A	
310-255242-4 MS	P-8 MS - CCR	Total/NA	Ground Water	9056A	
310-255242-4 MSD	P-8 MSD - CCR	Total/NA	Ground Water	9056A	

Analysis Batch: 388980

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-255242-6	P-6 - CCR	Total/NA	Ground Water	9056A	
310-255242-7	P-7 - CCR	Total/NA	Ground Water	9056A	
310-255242-8	Equipment Blank - CCR	Total/NA	Water	9056A	
310-255242-8	Equipment Blank - CCR	Total/NA	Water	9056A	
310-255242-9	P-5R - CCR	Total/NA	Ground Water	9056A	
310-255242-9	P-5R - CCR	Total/NA	Ground Water	9056A	
310-255242-10	Field Blank - CCR	Total/NA	Water	9056A	
MB 310-388980/3	Method Blank	Total/NA	Water	9056A	
LCS 310-388980/4	Lab Control Sample	Total/NA	Water	9056A	
LCS 310-388980/43	Lab Control Sample	Total/NA	Water	9056A	
310-255242-6 MS	P-6 - CCR	Total/NA	Ground Water	9056A	
310-255242-6 MSD	P-6 - CCR	Total/NA	Ground Water	9056A	

Metals

Prep Batch: 386825

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-255242-1	Duplicate 1 - CCR	Total/NA	Ground Water	3005A	
310-255242-2	P-1 - CCR	Total/NA	Ground Water	3005A	
310-255242-3	P-2 - CCR	Total/NA	Ground Water	3005A	
310-255242-4	P-8 - CCR	Total/NA	Ground Water	3005A	
310-255242-5	P-9 - CCR	Total/NA	Ground Water	3005A	
310-255242-6	P-6 - CCR	Total/NA	Ground Water	3005A	
310-255242-7	P-7 - CCR	Total/NA	Ground Water	3005A	
310-255242-8	Equipment Blank - CCR	Total/NA	Water	3005A	
310-255242-9	P-5R - CCR	Total/NA	Ground Water	3005A	
310-255242-10	Field Blank - CCR	Total/NA	Water	3005A	
MB 310-386825/1-A	Method Blank	Total/NA	Water	3005A	
LCS 310-386825/2-A	Lab Control Sample	Total/NA	Water	3005A	
310-255242-4 MS	P-8 MS - CCR	Total/NA	Ground Water	3005A	
310-255242-4 MSD	P-8 MSD - CCR	Total/NA	Ground Water	3005A	

Analysis Batch: 388342

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-255242-1	Duplicate 1 - CCR	Total/NA	Ground Water	6020B	386825
310-255242-2	P-1 - CCR	Total/NA	Ground Water	6020B	386825
310-255242-3	P-2 - CCR	Total/NA	Ground Water	6020B	386825
310-255242-4	P-8 - CCR	Total/NA	Ground Water	6020B	386825
310-255242-5	P-9 - CCR	Total/NA	Ground Water	6020B	386825

Eurofins Cedar Falls

QC Association Summary

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

Job ID: 310-255242-1

Metals (Continued)

Analysis Batch: 388342 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-255242-6	P-6 - CCR	Total/NA	Ground Water	6020B	386825
310-255242-7	P-7 - CCR	Total/NA	Ground Water	6020B	386825
310-255242-8	Equipment Blank - CCR	Total/NA	Water	6020B	386825
310-255242-9	P-5R - CCR	Total/NA	Ground Water	6020B	386825
310-255242-10	Field Blank - CCR	Total/NA	Water	6020B	386825
MB 310-386825/1-A	Method Blank	Total/NA	Water	6020B	386825
LCS 310-386825/2-A	Lab Control Sample	Total/NA	Water	6020B	386825
310-255242-4 MS	P-8 MS - CCR	Total/NA	Ground Water	6020B	386825
310-255242-4 MSD	P-8 MSD - CCR	Total/NA	Ground Water	6020B	386825

General Chemistry

Analysis Batch: 386680

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-255242-1	Duplicate 1 - CCR	Total/NA	Ground Water	SM 4500 H+ B	
310-255242-2	P-1 - CCR	Total/NA	Ground Water	SM 4500 H+ B	
310-255242-3	P-2 - CCR	Total/NA	Ground Water	SM 4500 H+ B	
310-255242-4	P-8 - CCR	Total/NA	Ground Water	SM 4500 H+ B	
310-255242-5	P-9 - CCR	Total/NA	Ground Water	SM 4500 H+ B	
310-255242-6	P-6 - CCR	Total/NA	Ground Water	SM 4500 H+ B	
310-255242-7	P-7 - CCR	Total/NA	Ground Water	SM 4500 H+ B	
310-255242-8	Equipment Blank - CCR	Total/NA	Water	SM 4500 H+ B	
310-255242-9	P-5R - CCR	Total/NA	Ground Water	SM 4500 H+ B	
LCS 310-386680/1	Lab Control Sample	Total/NA	Water	SM 4500 H+ B	
310-255242-4 DU	P-8 - CCR	Total/NA	Ground Water	SM 4500 H+ B	

Analysis Batch: 386747

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-255242-10	Field Blank - CCR	Total/NA	Water	SM 4500 H+ B	
LCS 310-386747/1	Lab Control Sample	Total/NA	Water	SM 4500 H+ B	
310-255242-10 DU	Field Blank - CCR	Total/NA	Water	SM 4500 H+ B	

Analysis Batch: 386810

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-255242-1	Duplicate 1 - CCR	Total/NA	Ground Water	SM 2540C	
310-255242-4	P-8 - CCR	Total/NA	Ground Water	SM 2540C	
310-255242-5	P-9 - CCR	Total/NA	Ground Water	SM 2540C	
MB 310-386810/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 310-386810/2	Lab Control Sample	Total/NA	Water	SM 2540C	
310-255242-4 DU	P-8 - CCR	Total/NA	Ground Water	SM 2540C	

Analysis Batch: 386930

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-255242-2	P-1 - CCR	Total/NA	Ground Water	SM 2540C	
310-255242-3	P-2 - CCR	Total/NA	Ground Water	SM 2540C	
310-255242-6	P-6 - CCR	Total/NA	Ground Water	SM 2540C	
310-255242-7	P-7 - CCR	Total/NA	Ground Water	SM 2540C	
310-255242-8	Equipment Blank - CCR	Total/NA	Water	SM 2540C	
310-255242-9	P-5R - CCR	Total/NA	Ground Water	SM 2540C	
310-255242-10	Field Blank - CCR	Total/NA	Water	SM 2540C	
MB 310-386930/1	Method Blank	Total/NA	Water	SM 2540C	

QC Association Summary

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

Job ID: 310-255242-1

General Chemistry (Continued)

Analysis Batch: 386930 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 310-386930/2	Lab Control Sample	Total/NA	Water	SM 2540C	
310-255242-6 DU	P-6 - CCR	Total/NA	Ground Water	SM 2540C	

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Lab Chronicle

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

Job ID: 310-255242-1

Client Sample ID: Duplicate 1 - CCR

Lab Sample ID: 310-255242-1

Date Collected: 05/04/23 00:00

Matrix: Ground Water

Date Received: 05/06/23 10:05

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Batch Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9056A		5	388380	QTZ5	EET CF	05/22/23 22:55
Total/NA	Prep	3005A			386825	DHM5	EET CF	05/09/23 09:05
Total/NA	Analysis	6020B		1	388342	A6US	EET CF	05/23/23 00:51
Total/NA	Analysis	SM 2540C		1	386810	ENB7	EET CF	05/08/23 15:48
Total/NA	Analysis	SM 4500 H+ B		1	386680	A3GU	EET CF	05/06/23 11:37

Client Sample ID: P-1 - CCR

Lab Sample ID: 310-255242-2

Date Collected: 05/04/23 09:25

Matrix: Ground Water

Date Received: 05/06/23 10:05

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Batch Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9056A		5	388380	QTZ5	EET CF	05/22/23 23:10
Total/NA	Prep	3005A			386825	DHM5	EET CF	05/09/23 09:05
Total/NA	Analysis	6020B		1	388342	A6US	EET CF	05/23/23 01:07
Total/NA	Analysis	SM 2540C		1	386930	WZC8	EET CF	05/09/23 13:28
Total/NA	Analysis	SM 4500 H+ B		1	386680	A3GU	EET CF	05/06/23 11:35

Client Sample ID: P-2 - CCR

Lab Sample ID: 310-255242-3

Date Collected: 05/05/23 11:20

Matrix: Ground Water

Date Received: 05/06/23 10:05

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Batch Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9056A		5	388380	QTZ5	EET CF	05/22/23 23:26
Total/NA	Prep	3005A			386825	DHM5	EET CF	05/09/23 09:05
Total/NA	Analysis	6020B		1	388342	A6US	EET CF	05/23/23 01:09
Total/NA	Analysis	SM 2540C		1	386930	WZC8	EET CF	05/09/23 13:28
Total/NA	Analysis	SM 4500 H+ B		1	386680	A3GU	EET CF	05/06/23 11:34

Client Sample ID: P-8 - CCR

Lab Sample ID: 310-255242-4

Date Collected: 05/04/23 11:25

Matrix: Ground Water

Date Received: 05/06/23 10:05

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Batch Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9056A		5	388380	QTZ5	EET CF	05/22/23 23:42
Total/NA	Prep	3005A			386825	DHM5	EET CF	05/09/23 09:05
Total/NA	Analysis	6020B		1	388342	A6US	EET CF	05/23/23 01:12
Total/NA	Analysis	SM 2540C		1	386810	ENB7	EET CF	05/08/23 15:48
Total/NA	Analysis	SM 4500 H+ B		1	386680	A3GU	EET CF	05/06/23 11:39

Lab Chronicle

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

Job ID: 310-255242-1

Client Sample ID: P-9 - CCR

Lab Sample ID: 310-255242-5

Date Collected: 05/04/23 12:25

Matrix: Ground Water

Date Received: 05/06/23 10:05

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Batch Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9056A		5	388380	QTZ5	EET CF	05/23/23 00:28
Total/NA	Prep	3005A			386825	DHM5	EET CF	05/09/23 09:05
Total/NA	Analysis	6020B		1	388342	A6US	EET CF	05/23/23 01:19
Total/NA	Analysis	SM 2540C		1	386810	ENB7	EET CF	05/08/23 15:48
Total/NA	Analysis	SM 4500 H+ B		1	386680	A3GU	EET CF	05/06/23 11:38

Client Sample ID: P-6 - CCR

Lab Sample ID: 310-255242-6

Date Collected: 05/05/23 09:50

Matrix: Ground Water

Date Received: 05/06/23 10:05

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Batch Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9056A		5	388980	QTZ5	EET CF	05/25/23 14:59
Total/NA	Prep	3005A			386825	DHM5	EET CF	05/09/23 09:05
Total/NA	Analysis	6020B		1	388342	A6US	EET CF	05/23/23 01:22
Total/NA	Analysis	SM 2540C		1	386930	WZC8	EET CF	05/09/23 13:28
Total/NA	Analysis	SM 4500 H+ B		1	386680	A3GU	EET CF	05/06/23 11:31

Client Sample ID: P-7 - CCR

Lab Sample ID: 310-255242-7

Date Collected: 05/05/23 10:40

Matrix: Ground Water

Date Received: 05/06/23 10:05

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Batch Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9056A		5	388980	QTZ5	EET CF	05/26/23 09:18
Total/NA	Prep	3005A			386825	DHM5	EET CF	05/09/23 09:05
Total/NA	Analysis	6020B		1	388342	A6US	EET CF	05/23/23 01:25
Total/NA	Analysis	SM 2540C		1	386930	WZC8	EET CF	05/09/23 13:28
Total/NA	Analysis	SM 4500 H+ B		1	386680	A3GU	EET CF	05/06/23 11:33

Client Sample ID: Equipment Blank - CCR

Lab Sample ID: 310-255242-8

Date Collected: 05/05/23 11:50

Matrix: Water

Date Received: 05/06/23 10:05

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Batch Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9056A		1	388980	QTZ5	EET CF	05/26/23 09:33
Total/NA	Analysis	9056A		1	388980	QTZ5	EET CF	05/30/23 10:51
Total/NA	Prep	3005A			386825	DHM5	EET CF	05/09/23 09:05
Total/NA	Analysis	6020B		1	388342	A6US	EET CF	05/23/23 01:40
Total/NA	Analysis	SM 2540C		1	386930	WZC8	EET CF	05/09/23 13:28
Total/NA	Analysis	SM 4500 H+ B		1	386680	A3GU	EET CF	05/06/23 11:30

Lab Chronicle

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

Job ID: 310-255242-1

Client Sample ID: P-5R - CCR

Lab Sample ID: 310-255242-9

Date Collected: 05/05/23 08:45

Matrix: Ground Water

Date Received: 05/06/23 10:05

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Batch Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9056A		5	388980	QTZ5	EET CF	05/26/23 09:49
Total/NA	Analysis	9056A		20	388980	QTZ5	EET CF	05/30/23 11:06
Total/NA	Prep	3005A			386825	DHM5	EET CF	05/09/23 09:05
Total/NA	Analysis	6020B		1	388342	A6US	EET CF	05/23/23 01:43
Total/NA	Analysis	SM 2540C		1	386930	WZC8	EET CF	05/09/23 13:28
Total/NA	Analysis	SM 4500 H+ B		1	386680	A3GU	EET CF	05/06/23 11:32

Client Sample ID: Field Blank - CCR

Lab Sample ID: 310-255242-10

Date Collected: 05/05/23 11:45

Matrix: Water

Date Received: 05/06/23 10:05

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Batch Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9056A		1	388980	QTZ5	EET CF	05/26/23 10:05
Total/NA	Prep	3005A			386825	DHM5	EET CF	05/09/23 09:05
Total/NA	Analysis	6020B		1	388342	A6US	EET CF	05/23/23 01:45
Total/NA	Analysis	SM 2540C		1	386930	WZC8	EET CF	05/09/23 13:28
Total/NA	Analysis	SM 4500 H+ B		1	386747	W9YR	EET CF	05/08/23 10:29

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.
Project/Site: SKB Cloquet CCR Groundwater

Job ID: 310-255242-1

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	12-31-23

- 1
- 2
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Method Summary

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

Job ID: 310-255242-1

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.

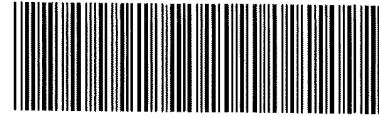
Laboratory References:

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





Environment Testing
America



310-255242 Chain of Custody

Cooler/Sample Receipt and Temperature Log Form

Client Information			
Client: <u>Groundwater & Environmental Services, Inc</u>			
City/State:	CITY <u>Edgson</u>	STATE <u>MA</u>	Project:
Receipt Information			
Date/Time Received:	DATE <u>5/16/2023</u>	TIME <u>10:05</u>	Received By: <u>MV</u>
Delivery Type: <input type="checkbox"/> UPS <input type="checkbox"/> FedEx <input type="checkbox"/> FedEx Ground <input type="checkbox"/> US Mail <input type="checkbox"/> Spee-Dee <input checked="" type="checkbox"/> Lab Courier <input type="checkbox"/> Lab Field Services <input type="checkbox"/> Client Drop-off <input type="checkbox"/> Other: _____			
Condition of Cooler/Containers			
Sample(s) received in Cooler?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	If yes: Cooler ID:	
Multiple Coolers?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	If yes: Cooler # <u>1</u> of <u>2</u>	
Cooler Custody Seals Present?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	If yes: Cooler custody seals intact? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Sample Custody Seals Present?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If yes: Sample custody seals intact? <input type="checkbox"/> Yes <input type="checkbox"/> No	
Trip Blank Present?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If yes: Which VOA samples are in cooler? ↓	
Temperature Record			
Coolant:	<input checked="" type="checkbox"/> Wet ice <input type="checkbox"/> Blue ice <input type="checkbox"/> Dry ice <input type="checkbox"/> Other: _____ <input type="checkbox"/> NONE		
Thermometer ID: <u>W</u>	Correction Factor (°C): <u>0.0</u>		
• Temp Blank Temperature – If no temp blank, or temp blank temperature above criteria, proceed to Sample Container Temperature			
Uncorrected Temp (°C): <u>0.3</u>	Corrected Temp (°C): <u>0.3</u>		
• Sample Container Temperature			
Container(s) used:	CONTAINER 1	CONTAINER 2	
Uncorrected Temp (°C):			
Corrected Temp (°C):			
Exceptions Noted			
1) If temperature exceeds criteria, was sample(s) received same day of sampling? <input type="checkbox"/> Yes <input type="checkbox"/> No			
a) If yes: Is there evidence that the chilling process began? <input type="checkbox"/> Yes <input type="checkbox"/> 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?) <input type="checkbox"/> Yes <input type="checkbox"/> No			
NOTE: If yes, contact PM before proceeding. If no, proceed with login			
Additional Comments			





Environment Testing
America

Place COC scanning label
here

Cooler/Sample Receipt and Temperature Log Form

Client Information			
Client: <u>Groundwater & Environmental Services, Inc</u>			
City/State:	CITY <u>Edgson</u>	STATE <u>MN</u>	Project:
Receipt Information			
Date/Time Received:	DATE <u>5/16/2023</u>	TIME <u>10:05</u>	Received By: <u>MV</u>
Delivery Type: <input type="checkbox"/> UPS <input type="checkbox"/> FedEx <input type="checkbox"/> FedEx Ground <input type="checkbox"/> US Mail <input type="checkbox"/> Spee-Dee <input checked="" type="checkbox"/> Lab Courier <input type="checkbox"/> Lab Field Services <input type="checkbox"/> Client Drop-off <input type="checkbox"/> Other: _____			
Condition of Cooler/Containers			
Sample(s) received in Cooler?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	If yes: Cooler ID: _____	
Multiple Coolers?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	If yes: Cooler # ____ of ____	
Cooler Custody Seals Present?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	If yes: Cooler custody seals intact? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Sample Custody Seals Present?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If yes: Sample custody seals intact? <input type="checkbox"/> Yes <input type="checkbox"/> No	
Trip Blank Present?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If yes: Which VOA samples are in cooler? ↓	
Temperature Record			
Coolant: <input checked="" type="checkbox"/> Wet ice <input type="checkbox"/> Blue ice <input type="checkbox"/> Dry ice <input type="checkbox"/> Other: _____ <input type="checkbox"/> NONE			
Thermometer ID: <u>W</u>		Correction Factor (°C): <u>0.0</u>	
• Temp Blank Temperature – If no temp blank, or temp blank temperature above criteria, proceed to Sample Container Temperature			
Uncorrected Temp (°C): <u>1.0</u>		Corrected Temp (°C): <u>1.0</u>	
• Sample Container Temperature			
Container(s) used:	<u>CONTAINER 1</u>	<u>CONTAINER 2</u>	
Uncorrected Temp (°C):			
Corrected Temp (°C):			
Exceptions Noted			
1) If temperature exceeds criteria, was sample(s) received same day of sampling? <input type="checkbox"/> Yes <input type="checkbox"/> No a) If yes: Is there evidence that the chilling process began? <input type="checkbox"/> Yes <input type="checkbox"/> 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?) <input type="checkbox"/> Yes <input type="checkbox"/> No			
NOTE: If yes, contact PM before proceeding. If no, proceed with login			
Additional Comments			



Client Information Client Contact: Mr. Nicholas Schlegel Company: Groundwater & Environmental Services Inc Address: 1301 Corporate Center Drive Suite 190 City: Eagan State, Zip: MN, 55121-1562 Phone: Email: NSchlegel@gesonline.com Project Name: SKB Cloquet CCR Groundwater Site: Minnesota		Lab PM: Bindert, Zach T E-Mail: Zach.Bindert@Eurofinset.com		Carrier Tracking No(s) 310-68858-19695 1 State of Origin: MN Job #: Page 1 of 1							
Due Date Requested TAT Requested (days): Compliance Project: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Purchase Order Requested PO #: WO #: Project #: 31013983 SSOW #: FWSID:		Analysis Requested Perform MS/MSD (Yes or No) <input checked="" type="checkbox"/> Field Filtered Sample (Yes or No) <input checked="" type="checkbox"/> 9066A, ORGM, 28D - Chloride, Fluoride, Sulfate 6020B - Boron and Calcium 2640C, Calcd - TDS, SM4500 - H - PH									
Sample Identification Duplicate 1 - CCR P-1 - CCR P-2 - CCR P-8 - CCR P-9 CCR P-6 - CCR P-7 - CCR Equipment Blank - CCR Field Blank - CCR P-5R - CCR		Sample Date 5/14/23 5/14/23 5/15/23 5/14/23 5/14/23 5/15/23 5/15/23 5/15/23 5/15/23		Sample Time 8:25 9:25 11:20 11:20 12:25 9:50 10:40 11:50 11:45 9:35		Sample Type (C=Comp, G=grab) G G G G G G G G G G		Matrix (W=water, S=solid, O=waste/oil, BT=biota, A=air) Water Water Water Water Water Water Water Water Water Water		Preservation Code: M - Hexane N - None O - AsNaO2 P - Na2O4S Q - Na2SO3 R - Na2SO3 S - H2SO4 T - TSP Dodecahydrate U - Acetone V - MCAA W - pH 4-5 L - EDTA Z - other (specify) Other	
Possible Hazard Identification <input type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input type="checkbox"/> Unknown <input type="checkbox"/> Radiological Deliverable Requested I, II, III, IV, Other (specify)		Sample Disposal (A fee may be assessed if samples are retained longer than 1 month) <input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months									
Empty Kit Relinquished by: Relinquished by: [Signature] Relinquished by: [Signature] Relinquished by: [Signature]		Date: 5/14/23 5/14/23 5/15/23		Method of Shipment: Date/Time: 5/15/23 15:00 5/16/2023 10:05							
Custody Seals Intact: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		Cooler Temperature(s) °C and Other Remarks: Company: [Signature] Company: [Signature] Company: [Signature]									



Login Sample Receipt Checklist

Client: Waste Connections, Inc.

Job Number: 310-255242-1

Login Number: 255242

List Source: Eurofins Cedar Falls

List Number: 1

Creator: Richardson, Lydia E

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	





ANALYTICAL REPORT

PREPARED FOR

Attn: Megan Lindstrom
Waste Connections, Inc.
13425 Courthouse Blvd
Rosemount, Minnesota 55068

Generated 11/7/2023 2:14:24 PM

JOB DESCRIPTION

SKB Cloquet CCR Groundwater (Fall)

JOB NUMBER

310-268067-1

Eurofins Cedar Falls

Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization



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11/7/2023 2:14:24 PM

Authorized for release by
Zach Bindert, Client Service Manager
Zach.Bindert@et.eurofinsus.com
(319)277-2401



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Case Narrative

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

Job ID: 310-268067-1

Job ID: 310-268067-1

Laboratory: Eurofins Cedar Falls

Narrative

Job Narrative 310-268067-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method. Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt

The samples were received on 10/25/2023 2:15 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 0.0°C and 1.2°C

HPLC/IC

Method 9056A_ORGFM_28D: The following samples were diluted due to the nature of the sample matrix: Duplicate 1 - CCR (310-268067-1), P-1 CCR (310-268067-2), P-8 CCR (310-268067-3), P-9 CCR (310-268067-4), P-6 CCR (310-268067-5), P-7 CCR (310-268067-6) and P-5R CCR (310-268067-7). 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 additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

General Chemistry

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

Sample Summary

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

Job ID: 310-268067-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
310-268067-1	Duplicate 1 - CCR	Water	10/23/23 00:00	10/25/23 14:15
310-268067-2	P-1 CCR	Water	10/23/23 09:45	10/25/23 14:15
310-268067-3	P-8 CCR	Water	10/23/23 11:50	10/25/23 14:15
310-268067-4	P-9 CCR	Water	10/23/23 12:55	10/25/23 14:15
310-268067-5	P-6 CCR	Water	10/24/23 08:20	10/25/23 14:15
310-268067-6	P-7 CCR	Water	10/24/23 09:05	10/25/23 14:15
310-268067-7	P-5R CCR	Water	10/24/23 13:55	10/25/23 14:15
310-268067-8	Field Blank CCR	Water	10/24/23 10:00	10/25/23 14:15
310-268067-9	Equipment Blank CCR	Water	10/24/23 10:05	10/25/23 14:15

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Detection Summary

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

Job ID: 310-268067-1

Client Sample ID: Duplicate 1 - CCR

Lab Sample ID: 310-268067-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	106		5.00		mg/L	5		9056A	Total/NA
Sulfate	29.7		5.00		mg/L	5		9056A	Total/NA
Calcium	106		0.500		mg/L	1		6020B	Total/NA
Total Dissolved Solids	464		50.0		mg/L	1		SM 2540C	Total/NA
pH	8.0	HF	1.0		SU	1		SM 4500 H+ B	Total/NA

Client Sample ID: P-1 CCR

Lab Sample ID: 310-268067-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	226		5.00		mg/L	5		9056A	Total/NA
Sulfate	30.3		5.00		mg/L	5		9056A	Total/NA
Calcium	151		0.500		mg/L	1		6020B	Total/NA
Total Dissolved Solids	700		50.0		mg/L	1		SM 2540C	Total/NA
pH	6.9	HF	1.0		SU	1		SM 4500 H+ B	Total/NA

Client Sample ID: P-8 CCR

Lab Sample ID: 310-268067-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	107		5.00		mg/L	5		9056A	Total/NA
Sulfate	30.5		5.00		mg/L	5		9056A	Total/NA
Calcium	101		0.500		mg/L	1		6020B	Total/NA
Total Dissolved Solids	456		50.0		mg/L	1		SM 2540C	Total/NA
pH	7.9	HF	1.0		SU	1		SM 4500 H+ B	Total/NA

Client Sample ID: P-9 CCR

Lab Sample ID: 310-268067-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	158		5.00		mg/L	5		9056A	Total/NA
Sulfate	29.2		5.00		mg/L	5		9056A	Total/NA
Calcium	95.4		0.500		mg/L	1		6020B	Total/NA
Total Dissolved Solids	540		50.0		mg/L	1		SM 2540C	Total/NA
pH	7.6	HF	1.0		SU	1		SM 4500 H+ B	Total/NA

Client Sample ID: P-6 CCR

Lab Sample ID: 310-268067-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	52.0		5.00		mg/L	5		9056A	Total/NA
Sulfate	124		5.00		mg/L	5		9056A	Total/NA
Boron	0.191		0.100		mg/L	1		6020B	Total/NA
Calcium	135		0.500		mg/L	1		6020B	Total/NA
Total Dissolved Solids	694		50.0		mg/L	1		SM 2540C	Total/NA
pH	6.9	HF	1.0		SU	1		SM 4500 H+ B	Total/NA

Client Sample ID: P-7 CCR

Lab Sample ID: 310-268067-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	64.2		5.00		mg/L	5		9056A	Total/NA
Sulfate	62.2		5.00		mg/L	5		9056A	Total/NA
Calcium	125		0.500		mg/L	1		6020B	Total/NA
Total Dissolved Solids	612		50.0		mg/L	1		SM 2540C	Total/NA
pH	7.0	HF	1.0		SU	1		SM 4500 H+ B	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins Cedar Falls

Detection Summary

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

Job ID: 310-268067-1

Client Sample ID: P-5R CCR

Lab Sample ID: 310-268067-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	240		5.00		mg/L	5		9056A	Total/NA
Sulfate	26.5		5.00		mg/L	5		9056A	Total/NA
Calcium	132		0.500		mg/L	1		6020B	Total/NA
Total Dissolved Solids	758		50.0		mg/L	1		SM 2540C	Total/NA
pH	7.1	HF	1.0		SU	1		SM 4500 H+ B	Total/NA

Client Sample ID: Field Blank CCR

Lab Sample ID: 310-268067-8

Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
pH	7.9	HF	1.0		SU	1		SM 4500 H+ B	Total/NA

Client Sample ID: Equipment Blank CCR

Lab Sample ID: 310-268067-9

Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
pH	7.6	HF	1.0		SU	1		SM 4500 H+ B	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins Cedar Falls

Client Sample Results

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

Job ID: 310-268067-1

Client Sample ID: Duplicate 1 - CCR

Lab Sample ID: 310-268067-1

Date Collected: 10/23/23 00:00

Matrix: Water

Date Received: 10/25/23 14:15

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	106		5.00		mg/L			11/06/23 11:27	5
Fluoride	<1.00		1.00		mg/L			11/06/23 11:27	5
Sulfate	29.7		5.00		mg/L			11/06/23 11:27	5

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	<0.100		0.100		mg/L		10/30/23 10:20	10/31/23 00:08	1
Calcium	106		0.500		mg/L		10/30/23 10:20	10/31/23 00:08	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids (SM 2540C)	464		50.0		mg/L			10/26/23 13:48	1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH (SM 4500 H+ B)	8.0	HF	1.0		SU			10/25/23 20:28	1

Client Sample Results

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

Job ID: 310-268067-1

Client Sample ID: P-1 CCR

Lab Sample ID: 310-268067-2

Date Collected: 10/23/23 09:45

Matrix: Water

Date Received: 10/25/23 14:15

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	226		5.00		mg/L			11/06/23 11:40	5
Fluoride	<1.00		1.00		mg/L			11/06/23 11:40	5
Sulfate	30.3		5.00		mg/L			11/06/23 11:40	5

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	<0.100		0.100		mg/L		10/30/23 10:20	10/31/23 00:10	1
Calcium	151		0.500		mg/L		10/30/23 10:20	10/31/23 00:10	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids (SM 2540C)	700		50.0		mg/L			10/26/23 13:48	1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH (SM 4500 H+ B)	6.9	HF	1.0		SU			10/25/23 20:29	1

Client Sample Results

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

Job ID: 310-268067-1

Client Sample ID: P-8 CCR

Lab Sample ID: 310-268067-3

Date Collected: 10/23/23 11:50

Matrix: Water

Date Received: 10/25/23 14:15

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	107		5.00		mg/L			11/06/23 12:17	5
Fluoride	<1.00		1.00		mg/L			11/06/23 12:17	5
Sulfate	30.5		5.00		mg/L			11/06/23 12:17	5

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	<0.100		0.100		mg/L		10/30/23 10:20	10/31/23 00:12	1
Calcium	101		0.500		mg/L		10/30/23 10:20	10/31/23 00:12	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids (SM 2540C)	456		50.0		mg/L			10/26/23 13:48	1
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH (SM 4500 H+ B)	7.9	HF	1.0		SU			10/25/23 20:26	1

Client Sample Results

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

Job ID: 310-268067-1

Client Sample ID: P-9 CCR

Lab Sample ID: 310-268067-4

Date Collected: 10/23/23 12:55

Matrix: Water

Date Received: 10/25/23 14:15

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	158		5.00		mg/L			11/06/23 12:55	5
Fluoride	<1.00		1.00		mg/L			11/06/23 12:55	5
Sulfate	29.2		5.00		mg/L			11/06/23 12:55	5

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	<0.100		0.100		mg/L		10/30/23 10:20	10/31/23 00:24	1
Calcium	95.4		0.500		mg/L		10/30/23 10:20	10/31/23 00:24	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids (SM 2540C)	540		50.0		mg/L			10/26/23 13:48	1
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH (SM 4500 H+ B)	7.6	HF	1.0		SU			10/25/23 20:30	1

Client Sample Results

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

Job ID: 310-268067-1

Client Sample ID: P-6 CCR

Lab Sample ID: 310-268067-5

Date Collected: 10/24/23 08:20

Matrix: Water

Date Received: 10/25/23 14:15

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	52.0		5.00		mg/L			11/06/23 13:08	5
Fluoride	<1.00		1.00		mg/L			11/06/23 13:08	5
Sulfate	124		5.00		mg/L			11/06/23 13:08	5

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	0.191		0.100		mg/L		10/30/23 10:20	10/31/23 00:42	1
Calcium	135		0.500		mg/L		10/30/23 10:20	10/31/23 00:42	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids (SM 2540C)	694		50.0		mg/L			10/26/23 13:48	1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH (SM 4500 H+ B)	6.9	HF	1.0		SU			10/25/23 20:31	1

Client Sample Results

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

Job ID: 310-268067-1

Client Sample ID: P-7 CCR

Lab Sample ID: 310-268067-6

Date Collected: 10/24/23 09:05

Matrix: Water

Date Received: 10/25/23 14:15

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	64.2		5.00		mg/L			11/06/23 13:20	5
Fluoride	<1.00		1.00		mg/L			11/06/23 13:20	5
Sulfate	62.2		5.00		mg/L			11/06/23 13:20	5

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	<0.100		0.100		mg/L		10/30/23 10:20	10/31/23 00:44	1
Calcium	125		0.500		mg/L		10/30/23 10:20	10/31/23 00:44	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids (SM 2540C)	612		50.0		mg/L			10/26/23 13:48	1
Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH (SM 4500 H+ B)	7.0	HF	1.0		SU			10/25/23 20:32	1

Client Sample Results

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

Job ID: 310-268067-1

Client Sample ID: P-5R CCR

Lab Sample ID: 310-268067-7

Date Collected: 10/24/23 13:55

Matrix: Water

Date Received: 10/25/23 14:15

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	240		5.00		mg/L			11/06/23 13:33	5
Fluoride	<1.00		1.00		mg/L			11/06/23 13:33	5
Sulfate	26.5		5.00		mg/L			11/06/23 13:33	5

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	<0.100		0.100		mg/L		10/30/23 10:20	10/31/23 00:46	1
Calcium	132		0.500		mg/L		10/30/23 10:20	10/31/23 00:46	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids (SM 2540C)	758		50.0		mg/L			10/26/23 13:48	1
Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH (SM 4500 H+ B)	7.1	HF	1.0		SU			10/25/23 20:33	1

Client Sample Results

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

Job ID: 310-268067-1

Client Sample ID: Field Blank CCR

Lab Sample ID: 310-268067-8

Date Collected: 10/24/23 10:00

Matrix: Water

Date Received: 10/25/23 14:15

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<1.00		1.00		mg/L			11/06/23 13:46	1
Fluoride	<0.200		0.200		mg/L			11/06/23 13:46	1
Sulfate	<1.00		1.00		mg/L			11/06/23 13:46	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	<0.100		0.100		mg/L		10/30/23 10:20	10/31/23 00:49	1
Calcium	<0.500		0.500		mg/L		10/30/23 10:20	10/31/23 00:49	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			10/26/23 13:48	1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH (SM 4500 H+ B)	7.9	HF	1.0		SU			10/25/23 20:34	1

Client Sample Results

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

Job ID: 310-268067-1

Client Sample ID: Equipment Blank CCR

Lab Sample ID: 310-268067-9

Date Collected: 10/24/23 10:05

Matrix: Water

Date Received: 10/25/23 14:15

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<1.00		1.00		mg/L			11/06/23 13:58	1
Fluoride	<0.200		0.200		mg/L			11/06/23 13:58	1
Sulfate	<1.00		1.00		mg/L			11/06/23 13:58	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	<0.100		0.100		mg/L		10/30/23 10:20	10/31/23 00:51	1
Calcium	<0.500		0.500		mg/L		10/30/23 10:20	10/31/23 00:51	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			10/26/23 13:48	1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH (SM 4500 H+ B)	7.6	HF	1.0		SU			10/25/23 20:35	1

Definitions/Glossary

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

Job ID: 310-268067-1

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	Parameter with a holding time of 15 minutes. Test performed by laboratory at client's request. Sample was analyzed outside of hold time.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	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

QC Sample Results

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

Job ID: 310-268067-1

Method: 9056A - Anions, Ion Chromatography

Lab Sample ID: MB 310-405134/3
 Matrix: Water
 Analysis Batch: 405134

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

Analyte	MB MB		RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Chloride	<1.00		1.00		mg/L			11/06/23 10:37	1
Fluoride	<0.200		0.200		mg/L			11/06/23 10:37	1
Sulfate	<1.00		1.00		mg/L			11/06/23 10:37	1

Lab Sample ID: LCS 310-405134/4
 Matrix: Water
 Analysis Batch: 405134

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

Analyte	Spike Added	LCS LCS		Unit	D	%Rec	%Rec Limits
		Result	Qualifier				
Chloride	10.0	9.643		mg/L		96	90 - 110
Fluoride	2.00	2.068		mg/L		103	90 - 110
Sulfate	10.0	10.20		mg/L		102	90 - 110

Lab Sample ID: 310-268067-3 MS
 Matrix: Water
 Analysis Batch: 405134

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

Analyte	Sample Result	Sample Qualifier	Spike Added	MS MS		Unit	D	%Rec	%Rec Limits
				Result	Qualifier				
Chloride	107		25.0	129.9	4	mg/L		90	80 - 120
Fluoride	<1.00		5.00	4.890		mg/L		98	80 - 120
Sulfate	30.5		25.0	55.00		mg/L		98	80 - 120

Lab Sample ID: 310-268067-3 MSD
 Matrix: Water
 Analysis Batch: 405134

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

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD MSD		Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
				Result	Qualifier						
Chloride	107		25.0	129.7	4	mg/L		89	80 - 120	0	15
Fluoride	<1.00		5.00	4.913		mg/L		98	80 - 120	0	15
Sulfate	30.5		25.0	54.34		mg/L		95	80 - 120	1	15

Method: 6020B - Metals (ICP/MS)

Lab Sample ID: MB 310-404096/1-A
 Matrix: Water
 Analysis Batch: 404323

Client Sample ID: Method Blank
 Prep Type: Total/NA
 Prep Batch: 404096

Analyte	MB MB		RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Boron	<0.100		0.100		mg/L		10/30/23 10:20	10/31/23 00:03	1
Calcium	<0.500		0.500		mg/L		10/30/23 10:20	10/31/23 00:03	1

Lab Sample ID: LCS 310-404096/2-A
 Matrix: Water
 Analysis Batch: 404323

Client Sample ID: Lab Control Sample
 Prep Type: Total/NA
 Prep Batch: 404096

Analyte	Spike Added	LCS LCS		Unit	D	%Rec	%Rec Limits
		Result	Qualifier				
Boron	0.200	0.1662		mg/L		83	80 - 120
Calcium	2.00	1.775		mg/L		89	80 - 120

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QC Sample Results

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

Job ID: 310-268067-1

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

Lab Sample ID: 310-268067-3 MS
Matrix: Water
Analysis Batch: 404323

Client Sample ID: P-8 CCR
Prep Type: Total/NA
Prep Batch: 404096

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Boron	<0.100		0.200	0.2011		mg/L		101	75 - 125
Calcium	101		2.00	110.0	4	mg/L		457	75 - 125

Lab Sample ID: 310-268067-3 MSD
Matrix: Water
Analysis Batch: 404323

Client Sample ID: P-8 CCR
Prep Type: Total/NA
Prep Batch: 404096

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Boron	<0.100		0.200	0.2008		mg/L		100	75 - 125	0	20
Calcium	101		2.00	108.3	4	mg/L		371	75 - 125	2	20

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

Lab Sample ID: MB 310-403877/1
Matrix: Water
Analysis Batch: 403877

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			10/26/23 13:48	1

Lab Sample ID: LCS 310-403877/2
Matrix: Water
Analysis Batch: 403877

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	980.0		mg/L		98	90 - 110

Lab Sample ID: 310-268067-3 DU
Matrix: Water
Analysis Batch: 403877

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	456		430.0		mg/L		6	20

Lab Sample ID: 310-268067-9 DU
Matrix: Water
Analysis Batch: 403877

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

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 310-403759/1
Matrix: Water
Analysis Batch: 403759

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

Eurofins Cedar Falls

QC Sample Results

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

Job ID: 310-268067-1

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

Lab Sample ID: 310-268067-3 DU

Matrix: Water

Analysis Batch: 403759

Client Sample ID: P-8 CCR

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	Limit
pH	7.9	HF	7.9		SU		0.1	20

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14

QC Association Summary

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

Job ID: 310-268067-1

HPLC/IC

Analysis Batch: 405134

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-268067-1	Duplicate 1 - CCR	Total/NA	Water	9056A	
310-268067-2	P-1 CCR	Total/NA	Water	9056A	
310-268067-3	P-8 CCR	Total/NA	Water	9056A	
310-268067-4	P-9 CCR	Total/NA	Water	9056A	
310-268067-5	P-6 CCR	Total/NA	Water	9056A	
310-268067-6	P-7 CCR	Total/NA	Water	9056A	
310-268067-7	P-5R CCR	Total/NA	Water	9056A	
310-268067-8	Field Blank CCR	Total/NA	Water	9056A	
310-268067-9	Equipment Blank CCR	Total/NA	Water	9056A	
MB 310-405134/3	Method Blank	Total/NA	Water	9056A	
LCS 310-405134/4	Lab Control Sample	Total/NA	Water	9056A	
310-268067-3 MS	P-8 CCR	Total/NA	Water	9056A	
310-268067-3 MSD	P-8 CCR	Total/NA	Water	9056A	

Metals

Prep Batch: 404096

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-268067-1	Duplicate 1 - CCR	Total/NA	Water	3005A	
310-268067-2	P-1 CCR	Total/NA	Water	3005A	
310-268067-3	P-8 CCR	Total/NA	Water	3005A	
310-268067-4	P-9 CCR	Total/NA	Water	3005A	
310-268067-5	P-6 CCR	Total/NA	Water	3005A	
310-268067-6	P-7 CCR	Total/NA	Water	3005A	
310-268067-7	P-5R CCR	Total/NA	Water	3005A	
310-268067-8	Field Blank CCR	Total/NA	Water	3005A	
310-268067-9	Equipment Blank CCR	Total/NA	Water	3005A	
MB 310-404096/1-A	Method Blank	Total/NA	Water	3005A	
LCS 310-404096/2-A	Lab Control Sample	Total/NA	Water	3005A	
310-268067-3 MS	P-8 CCR	Total/NA	Water	3005A	
310-268067-3 MSD	P-8 CCR	Total/NA	Water	3005A	

Analysis Batch: 404323

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-268067-1	Duplicate 1 - CCR	Total/NA	Water	6020B	404096
310-268067-2	P-1 CCR	Total/NA	Water	6020B	404096
310-268067-3	P-8 CCR	Total/NA	Water	6020B	404096
310-268067-4	P-9 CCR	Total/NA	Water	6020B	404096
310-268067-5	P-6 CCR	Total/NA	Water	6020B	404096
310-268067-6	P-7 CCR	Total/NA	Water	6020B	404096
310-268067-7	P-5R CCR	Total/NA	Water	6020B	404096
310-268067-8	Field Blank CCR	Total/NA	Water	6020B	404096
310-268067-9	Equipment Blank CCR	Total/NA	Water	6020B	404096
MB 310-404096/1-A	Method Blank	Total/NA	Water	6020B	404096
LCS 310-404096/2-A	Lab Control Sample	Total/NA	Water	6020B	404096
310-268067-3 MS	P-8 CCR	Total/NA	Water	6020B	404096
310-268067-3 MSD	P-8 CCR	Total/NA	Water	6020B	404096

QC Association Summary

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

Job ID: 310-268067-1

General Chemistry

Analysis Batch: 403759

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-268067-1	Duplicate 1 - CCR	Total/NA	Water	SM 4500 H+ B	
310-268067-2	P-1 CCR	Total/NA	Water	SM 4500 H+ B	
310-268067-3	P-8 CCR	Total/NA	Water	SM 4500 H+ B	
310-268067-4	P-9 CCR	Total/NA	Water	SM 4500 H+ B	
310-268067-5	P-6 CCR	Total/NA	Water	SM 4500 H+ B	
310-268067-6	P-7 CCR	Total/NA	Water	SM 4500 H+ B	
310-268067-7	P-5R CCR	Total/NA	Water	SM 4500 H+ B	
310-268067-8	Field Blank CCR	Total/NA	Water	SM 4500 H+ B	
310-268067-9	Equipment Blank CCR	Total/NA	Water	SM 4500 H+ B	
LCS 310-403759/1	Lab Control Sample	Total/NA	Water	SM 4500 H+ B	
310-268067-3 DU	P-8 CCR	Total/NA	Water	SM 4500 H+ B	

Analysis Batch: 403877

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-268067-1	Duplicate 1 - CCR	Total/NA	Water	SM 2540C	
310-268067-2	P-1 CCR	Total/NA	Water	SM 2540C	
310-268067-3	P-8 CCR	Total/NA	Water	SM 2540C	
310-268067-4	P-9 CCR	Total/NA	Water	SM 2540C	
310-268067-5	P-6 CCR	Total/NA	Water	SM 2540C	
310-268067-6	P-7 CCR	Total/NA	Water	SM 2540C	
310-268067-7	P-5R CCR	Total/NA	Water	SM 2540C	
310-268067-8	Field Blank CCR	Total/NA	Water	SM 2540C	
310-268067-9	Equipment Blank CCR	Total/NA	Water	SM 2540C	
MB 310-403877/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 310-403877/2	Lab Control Sample	Total/NA	Water	SM 2540C	
310-268067-3 DU	P-8 CCR	Total/NA	Water	SM 2540C	
310-268067-9 DU	Equipment Blank CCR	Total/NA	Water	SM 2540C	

Lab Chronicle

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

Job ID: 310-268067-1

Client Sample ID: Duplicate 1 - CCR

Lab Sample ID: 310-268067-1

Date Collected: 10/23/23 00:00

Matrix: Water

Date Received: 10/25/23 14:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Batch Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9056A		5	405134	QTZ5	EET CF	11/06/23 11:27
Total/NA	Prep	3005A			404096	QTZ5	EET CF	10/30/23 10:20
Total/NA	Analysis	6020B		1	404323	A6US	EET CF	10/31/23 00:08
Total/NA	Analysis	SM 2540C		1	403877	DGU1	EET CF	10/26/23 13:48
Total/NA	Analysis	SM 4500 H+ B		1	403759	D7CP	EET CF	10/25/23 20:28

Client Sample ID: P-1 CCR

Lab Sample ID: 310-268067-2

Date Collected: 10/23/23 09:45

Matrix: Water

Date Received: 10/25/23 14:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Batch Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9056A		5	405134	QTZ5	EET CF	11/06/23 11:40
Total/NA	Prep	3005A			404096	QTZ5	EET CF	10/30/23 10:20
Total/NA	Analysis	6020B		1	404323	A6US	EET CF	10/31/23 00:10
Total/NA	Analysis	SM 2540C		1	403877	DGU1	EET CF	10/26/23 13:48
Total/NA	Analysis	SM 4500 H+ B		1	403759	D7CP	EET CF	10/25/23 20:29

Client Sample ID: P-8 CCR

Lab Sample ID: 310-268067-3

Date Collected: 10/23/23 11:50

Matrix: Water

Date Received: 10/25/23 14:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Batch Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9056A		5	405134	QTZ5	EET CF	11/06/23 12:17
Total/NA	Prep	3005A			404096	QTZ5	EET CF	10/30/23 10:20
Total/NA	Analysis	6020B		1	404323	A6US	EET CF	10/31/23 00:12
Total/NA	Analysis	SM 2540C		1	403877	DGU1	EET CF	10/26/23 13:48
Total/NA	Analysis	SM 4500 H+ B		1	403759	D7CP	EET CF	10/25/23 20:26

Client Sample ID: P-9 CCR

Lab Sample ID: 310-268067-4

Date Collected: 10/23/23 12:55

Matrix: Water

Date Received: 10/25/23 14:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Batch Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9056A		5	405134	QTZ5	EET CF	11/06/23 12:55
Total/NA	Prep	3005A			404096	QTZ5	EET CF	10/30/23 10:20
Total/NA	Analysis	6020B		1	404323	A6US	EET CF	10/31/23 00:24
Total/NA	Analysis	SM 2540C		1	403877	DGU1	EET CF	10/26/23 13:48
Total/NA	Analysis	SM 4500 H+ B		1	403759	D7CP	EET CF	10/25/23 20:30

Lab Chronicle

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

Job ID: 310-268067-1

Client Sample ID: P-6 CCR

Lab Sample ID: 310-268067-5

Date Collected: 10/24/23 08:20

Matrix: Water

Date Received: 10/25/23 14:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Batch Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9056A		5	405134	QTZ5	EET CF	11/06/23 13:08
Total/NA	Prep	3005A			404096	QTZ5	EET CF	10/30/23 10:20
Total/NA	Analysis	6020B		1	404323	A6US	EET CF	10/31/23 00:42
Total/NA	Analysis	SM 2540C		1	403877	DGU1	EET CF	10/26/23 13:48
Total/NA	Analysis	SM 4500 H+ B		1	403759	D7CP	EET CF	10/25/23 20:31

Client Sample ID: P-7 CCR

Lab Sample ID: 310-268067-6

Date Collected: 10/24/23 09:05

Matrix: Water

Date Received: 10/25/23 14:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Batch Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9056A		5	405134	QTZ5	EET CF	11/06/23 13:20
Total/NA	Prep	3005A			404096	QTZ5	EET CF	10/30/23 10:20
Total/NA	Analysis	6020B		1	404323	A6US	EET CF	10/31/23 00:44
Total/NA	Analysis	SM 2540C		1	403877	DGU1	EET CF	10/26/23 13:48
Total/NA	Analysis	SM 4500 H+ B		1	403759	D7CP	EET CF	10/25/23 20:32

Client Sample ID: P-5R CCR

Lab Sample ID: 310-268067-7

Date Collected: 10/24/23 13:55

Matrix: Water

Date Received: 10/25/23 14:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Batch Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9056A		5	405134	QTZ5	EET CF	11/06/23 13:33
Total/NA	Prep	3005A			404096	QTZ5	EET CF	10/30/23 10:20
Total/NA	Analysis	6020B		1	404323	A6US	EET CF	10/31/23 00:46
Total/NA	Analysis	SM 2540C		1	403877	DGU1	EET CF	10/26/23 13:48
Total/NA	Analysis	SM 4500 H+ B		1	403759	D7CP	EET CF	10/25/23 20:33

Client Sample ID: Field Blank CCR

Lab Sample ID: 310-268067-8

Date Collected: 10/24/23 10:00

Matrix: Water

Date Received: 10/25/23 14:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Batch Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9056A		1	405134	QTZ5	EET CF	11/06/23 13:46
Total/NA	Prep	3005A			404096	QTZ5	EET CF	10/30/23 10:20
Total/NA	Analysis	6020B		1	404323	A6US	EET CF	10/31/23 00:49
Total/NA	Analysis	SM 2540C		1	403877	DGU1	EET CF	10/26/23 13:48
Total/NA	Analysis	SM 4500 H+ B		1	403759	D7CP	EET CF	10/25/23 20:34

Lab Chronicle

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

Job ID: 310-268067-1

Client Sample ID: Equipment Blank CCR

Lab Sample ID: 310-268067-9

Date Collected: 10/24/23 10:05

Matrix: Water

Date Received: 10/25/23 14:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9056A		1	405134	QTZ5	EET CF	11/06/23 13:58
Total/NA	Prep	3005A			404096	QTZ5	EET CF	10/30/23 10:20
Total/NA	Analysis	6020B		1	404323	A6US	EET CF	10/31/23 00:51
Total/NA	Analysis	SM 2540C		1	403877	DGU1	EET CF	10/26/23 13:48
Total/NA	Analysis	SM 4500 H+ B		1	403759	D7CP	EET CF	10/25/23 20:35

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.
Project/Site: SKB Cloquet CCR Groundwater (Fall)

Job ID: 310-268067-1

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	12-31-23

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14

Method Summary

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

Job ID: 310-268067-1

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





Environment Testing
America



310-268067 Chain of Custody

Cooler/Sample Receipt and Temperature Log Form

Client Information			
Client: <u>GES</u>			
City/State:	CITY	STATE	Project:
Receipt Information			
Date/Time Received:	DATE <u>10/25/23</u>	TIME <u>1415</u>	Received By: <u>EM</u>
Delivery Type: <input type="checkbox"/> UPS <input type="checkbox"/> FedEx <input type="checkbox"/> FedEx Ground <input type="checkbox"/> US Mail <input type="checkbox"/> Spee-Dee			
<input checked="" type="checkbox"/> Lab Courier <input type="checkbox"/> Lab Field Services <input type="checkbox"/> Client Drop-off <input type="checkbox"/> Other: _____			
Condition of Cooler/Containers			
Sample(s) received in Cooler?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	If yes: Cooler ID: _____	
Multiple Coolers?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	If yes: Cooler # <u>1</u> of <u>2</u>	
Cooler Custody Seals Present?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	If yes: Cooler custody seals intact? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Sample Custody Seals Present?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If yes: Sample custody seals intact? <input type="checkbox"/> Yes <input type="checkbox"/> No	
Trip Blank Present?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If yes: Which VOA samples are in cooler? ↓	
Temperature Record			
Coolant:	<input checked="" type="checkbox"/> Wet ice <input type="checkbox"/> Blue ice <input type="checkbox"/> Dry ice <input type="checkbox"/> Other: _____ <input type="checkbox"/> NONE		
Thermometer ID:	<u>X</u>	Correction Factor (°C): <u>0</u>	
• Temp Blank Temperature – If no temp blank, or temp blank temperature above criteria, proceed to Sample Container Temperature			
Uncorrected Temp (°C):	<u>0.0</u>	Corrected Temp (°C): <u>0.0</u>	
• Sample Container Temperature			
Container(s) used:	<u>CONTAINER 1</u>	<u>CONTAINER 2</u>	
Uncorrected Temp (°C):			
Corrected Temp (°C):			
Exceptions Noted			
1) If temperature exceeds criteria, was sample(s) received same day of sampling? <input type="checkbox"/> Yes <input type="checkbox"/> No			
a) If yes: Is there evidence that the chilling process began? <input type="checkbox"/> Yes <input type="checkbox"/> 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?) <input type="checkbox"/> Yes <input type="checkbox"/> No			
NOTE If yes, contact PM before proceeding If no, proceed with login			
Additional Comments			



Environment Testing
America

Place COC scanning label
here

Cooler/Sample Receipt and Temperature Log Form

Client Information			
Client: <u>GES</u>			
City/State:	CITY	STATE	Project:
Receipt Information			
Date/Time Received:	DATE <u>10/25/23</u>	TIME <u>1415</u>	Received By: <u>EM</u>
Delivery Type: <input type="checkbox"/> UPS <input type="checkbox"/> FedEx <input type="checkbox"/> FedEx Ground <input type="checkbox"/> US Mail <input type="checkbox"/> Spee-Dee			
<input checked="" type="checkbox"/> Lab Courier <input type="checkbox"/> Lab Field Services <input type="checkbox"/> Client Drop-off <input type="checkbox"/> Other: _____			
Condition of Cooler/Containers			
Sample(s) received in Cooler?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	If yes: Cooler ID:	
Multiple Coolers?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	If yes: Cooler # <u>2</u> of <u>2</u>	
Cooler Custody Seals Present?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	If yes: Cooler custody seals intact? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Sample Custody Seals Present?	<input type="checkbox"/> Yes <input type="checkbox"/> No	If yes: Sample custody seals intact? <input type="checkbox"/> Yes <input type="checkbox"/> No	
Trip Blank Present?	<input type="checkbox"/> Yes <input type="checkbox"/> No	If yes: Which VOA samples are in cooler? ↓	
Temperature Record			
Coolant: <input checked="" type="checkbox"/> Wet ice <input type="checkbox"/> Blue ice <input type="checkbox"/> Dry ice <input type="checkbox"/> Other: _____ <input type="checkbox"/> NONE			
Thermometer ID: <u>X</u>		Correction Factor (°C): <u>0</u>	
• Temp Blank Temperature – If no temp blank, or temp blank temperature above criteria, proceed to Sample Container Temperature			
Uncorrected Temp (°C): <u>1.2</u>		Corrected Temp (°C): <u>1.2</u>	
• Sample Container Temperature			
Container(s) used:	<u>CONTAINER 1</u>	<u>CONTAINER 2</u>	
Uncorrected Temp (°C):			
Corrected Temp (°C):			
Exceptions Noted			
1) If temperature exceeds criteria, was sample(s) received same day of sampling? <input type="checkbox"/> Yes <input type="checkbox"/> No			
a) If yes: Is there evidence that the chilling process began? <input type="checkbox"/> Yes <input type="checkbox"/> 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?) <input type="checkbox"/> Yes <input type="checkbox"/> No			
NOTE. If yes, contact PM before proceeding. If no, proceed with login			
Additional Comments			

Document CED-P-SAM-FRM45521
Revision: 26
Date: 27 Jan 2022

Eurofins Cedar Falls

General temperature criteria is 0 to 6°C
Bacteria temperature criteria is 0 to 10°C

Client Information		Sampler: <i>N. Schlager</i>		Lab PM: Bindert, Zach T		Carrier Tracking No(s):		COC No: 310-73819-21058.1	
Client Contact: Mr Nicholas Schlager		Phone: 651-792-6088		E-Mail: Zach.Bindert@eurofins.com		State of Origin: MN		Page: Page 1 of 1	
Company: Groundwater & Environmental Services Inc		Address: 1301 Corporate Center Drive, Suite 190		City: Eagan		State: MN		Job #:	
State: IA		Zip: 55121-1562		Phone: 651-792-6088		Due Date Requested:		Analysis Requested:	
Compliance Project: <input type="checkbox"/> Yes <input type="checkbox"/> No		Purchase Order Requested:		PO #:		TAT Requested (days): <i>Standard</i>		Preservation Codes:	
WO #:		Project #:		SSOW #:		Project Name: SKB Cloquet CCR Groundwater (Fall)		M - Hexane N - None O - NaOH P - Na2OAS Q - Na2SOS R - NaHSO4 S - H2SO4 T - TSP Dodecahydrate U - Acetone V - MCAA W - pH 4-5 Y - Trizma Z - other (specify)	
Site: Minnesota		Matrix (Water, Soil, On-wast, AAR)		Sample Type (C-Comp, G-grab)		Sample Date		Sample Time	
Sample Identification		Preservation Code:		Sample Date		Sample Time		Matrix	
Duplicate 1 - CCR		6		10/23/23		~		Water	
P-1 - CCR		6		10/23/23		9:45		Water	
P-2 - CCR		6		10/23/23		11:50		Water	
P-8 - CCR		6		10/23/23		12:55		Water	
P-9 - CCR		6		10/24/23		9:24		Water	
P-6 - CCR		6		10/24/23		9:05		Water	
P-7 - CCR		6		10/23/23		13:55		Water	
P-5R - CCR		6		10/24/23		10:00		Water	
Field Blank - CCR		6		10/24/23		10:05		Water	
Equipment Blank - CCR		6		10/24/23		10:05		Water	
<p>Possible Hazard Identification <input type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input type="checkbox"/> Unknown <input type="checkbox"/> Radiological Deliverable Requested I, II, III, IV, Other (specify)</p> <p>Sample Disposal (A fee may be assessed if samples are retained longer than 1 month) <input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months</p> <p>Special Instructions/QC Requirements:</p>									
Empty Kit Relinquished by:		Date:		Time:		Method of Shipment:		Total Number of Containers	
Relinquished by: <i>[Signature]</i>		Date: 10/24/23		Time: 1300		Company: <i>[Signature]</i>		Special Instructions/Note:	
Relinquished by: <i>[Signature]</i>		Date: 10-24-23		Time: 1300		Company: <i>[Signature]</i>		MS/MSD	
Relinquished by: <i>[Signature]</i>		Date: 10/25/23		Time: 1415		Company: <i>[Signature]</i>			
Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No		Custody Seal No.:		Cooler Temperature(s) °C and Other Remarks:					



Login Sample Receipt Checklist

Client: Waste Connections, Inc.

Job Number: 310-268067-1

SDG Number:

Login Number: 268067

List Number: 1

Creator: Homolar, Dana J

List Source: Eurofins Cedar Falls

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

A	B	C	D	E	F	G	H	I	J	K	L	
1			Background Statistics for Uncensored Full Data Sets									
2	User Selected Options											
3	Date/Time of Computation		ProUCL 5.11/18/2024 12:37:31 AM									
4	From File		\\GES.NET\dw05\Minnesota\Projects\SKB Environmental\Cloquet Facility\Statistics\2023 Annual CCR Statistics									
5	Full Precision		OFF									
6	Confidence Coefficient		95%									
7	Coverage		95%									
8	New or Future K Observations		1									
9	Number of Bootstrap Operations		2000									
10												
11	Boron											
12												
13	General Statistics											
14	Total Number of Observations			156	Number of Distinct Observations			66				
15					Number of Missing Observations			1				
16	Minimum			0.02	First Quartile			0.044				
17	Second Largest			0.39	Median			0.0815				
18	Maximum			0.41	Third Quartile			0.12				
19	Mean			0.108	SD			0.0916				
20	Coefficient of Variation			0.847	Skewness			1.698				
21	Mean of logged Data			-2.509	SD of logged Data			0.733				
22												
23	Critical Values for Background Threshold Values (BTVs)											
24	Tolerance Factor K (For UTL)			1.863	d2max (for USL)			3.355				
25												
26	Normal GOF Test											
27	Shapiro Wilk Test Statistic			0.76	Normal GOF Test							
28	5% Shapiro Wilk P Value			0	Data Not Normal at 5% Significance Level							
29	Lilliefors Test Statistic			0.216	Lilliefors GOF Test							
30	5% Lilliefors Critical Value			0.0713	Data Not Normal at 5% Significance Level							
31	Data Not Normal at 5% Significance Level											
32												
33	Background Statistics Assuming Normal Distribution											
34	95% UTL with 95% Coverage		0.279	90% Percentile (z)		0.225						
35	95% UPL (t)		0.26	95% Percentile (z)		0.259						
36	95% USL		0.415	99% Percentile (z)		0.321						
37												
38	Gamma GOF Test											
39	A-D Test Statistic			4.505	Anderson-Darling Gamma GOF Test							
40	5% A-D Critical Value			0.767	Data Not Gamma Distributed at 5% Significance Level							
41	K-S Test Statistic			0.123	Kolmogorov-Smirnov Gamma GOF Test							
42	5% K-S Critical Value			0.0761	Data Not Gamma Distributed at 5% Significance Level							
43	Data Not Gamma Distributed at 5% Significance Level											
44												
45	Gamma Statistics											
46	k hat (MLE)			1.909	k star (bias corrected MLE)			1.877				
47	Theta hat (MLE)			0.0566	Theta star (bias corrected MLE)			0.0576				
48	nu hat (MLE)			595.6	nu star (bias corrected)			585.5				
49	MLE Mean (bias corrected)			0.108	MLE Sd (bias corrected)			0.0789				
50												
51	Background Statistics Assuming Gamma Distribution											
52	95% Wilson Hilferty (WH) Approx. Gamma UPL			0.259	90% Percentile			0.213				

A	B	C	D	E	F	G	H	I	J	K	L
53	95% Hawkins Wixley (HW) Approx. Gamma UPL				0.261	95% Percentile				0.262	
54	95% WH Approx. Gamma UTL with 95% Coverage				0.289	99% Percentile				0.369	
55	95% HW Approx. Gamma UTL with 95% Coverage				0.294						
56	95% WH USL				0.577	95% HW USL				0.629	
57											
58	Lognormal GOF Test										
59	Shapiro Wilk Test Statistic				0.937	Shapiro Wilk Lognormal GOF Test					
60	5% Shapiro Wilk P Value				1.5616E-7	Data Not Lognormal at 5% Significance Level					
61	Lilliefors Test Statistic				0.0971	Lilliefors Lognormal GOF Test					
62	5% Lilliefors Critical Value				0.0713	Data Not Lognormal at 5% Significance Level					
63	Data Not Lognormal at 5% Significance Level										
64											
65	Background Statistics assuming Lognormal Distribution										
66	95% UTL with 95% Coverage				0.319	90% Percentile (z)				0.208	
67	95% UPL (t)				0.274	95% Percentile (z)				0.271	
68	95% USL				0.95	99% Percentile (z)				0.447	
69											
70	Nonparametric Distribution Free Background Statistics										
71	Data do not follow a Discernible Distribution (0.05)										
72											
73	Nonparametric Upper Limits for Background Threshold Values										
74	Order of Statistic, r				152	95% UTL with 95% Coverage				0.37	
75	Approx, f used to compute achieved CC				1.6	Approximate Actual Confidence Coefficient achieved by UTL				0.894	
76						Approximate Sample Size needed to achieve specified CC				181	
77	95% Percentile Bootstrap UTL with 95% Coverage				0.37	95% BCA Bootstrap UTL with 95% Coverage				0.37	
78	95% UPL				0.335	90% Percentile				0.275	
79	90% Chebyshev UPL				0.384	95% Percentile				0.315	
80	95% Chebyshev UPL				0.509	99% Percentile				0.385	
81	95% USL				0.41						
82											
83	Note: The use of USL tends to yield a conservative estimate of BTV, especially when the sample size starts exceeding 20.										
84	Therefore, one may use USL to estimate a BTV only when the data set represents a background data set free of outliers										
85	and consists of observations collected from clean unimpacted locations.										
86	The use of USL tends to provide a balance between false positives and false negatives provided the data										
87	represents a background data set and when many onsite observations need to be compared with the BTV.										
88											
89	Calcium										
90											
91	General Statistics										
92	Total Number of Observations				146	Number of Distinct Observations				90	
93						Number of Missing Observations				3	
94	Minimum				27	First Quartile				113.5	
95	Second Largest				207	Median				139	
96	Maximum				235	Third Quartile				160	
97	Mean				135.3	SD				33.57	
98	Coefficient of Variation				0.248	Skewness				-0.46	
99	Mean of logged Data				4.868	SD of logged Data				0.304	
100											
101	Critical Values for Background Threshold Values (BTVs)										
102	Tolerance Factor K (For UTL)				1.871	d2max (for USL)				3.334	
103											
104	Normal GOF Test										

A	B	C	D	E	F	G	H	I	J	K	L
105	Shapiro Wilk Test Statistic				0.975	Normal GOF Test					
106	5% Shapiro Wilk P Value				0.176	Data appear Normal at 5% Significance Level					
107	Lilliefors Test Statistic				0.0786	Lilliefors GOF Test					
108	5% Lilliefors Critical Value				0.0737	Data Not Normal at 5% Significance Level					
109	Data appear Approximate Normal at 5% Significance Level										
110											
111	Background Statistics Assuming Normal Distribution										
112	95% UTL with 95% Coverage		198.1					90% Percentile (z)		178.3	
113	95% UPL (t)		191					95% Percentile (z)		190.5	
114	95% USL		247.2					99% Percentile (z)		213.4	
115											
116	Gamma GOF Test										
117	A-D Test Statistic		2.818	Anderson-Darling Gamma GOF Test							
118	5% A-D Critical Value		0.751	Data Not Gamma Distributed at 5% Significance Level							
119	K-S Test Statistic		0.11	Kolmogorov-Smirnov Gamma GOF Test							
120	5% K-S Critical Value		0.0775	Data Not Gamma Distributed at 5% Significance Level							
121	Data Not Gamma Distributed at 5% Significance Level										
122											
123	Gamma Statistics										
124	k hat (MLE)		13.05					k star (bias corrected MLE)		12.78	
125	Theta hat (MLE)		10.37					Theta star (bias corrected MLE)		10.58	
126	nu hat (MLE)		3810					nu star (bias corrected)		3733	
127	MLE Mean (bias corrected)		135.3					MLE Sd (bias corrected)		37.83	
128											
129	Background Statistics Assuming Gamma Distribution										
130	95% Wilson Hilferty (WH) Approx. Gamma UPL		203.1					90% Percentile		185.4	
131	95% Hawkins Wixley (HW) Approx. Gamma UPL		205.6					95% Percentile		202.9	
132	95% WH Approx. Gamma UTL with 95% Coverage		213.6					99% Percentile		238.4	
133	95% HW Approx. Gamma UTL with 95% Coverage		216.8								
134	95% WH USL		296.8					95% HW USL		308.1	
135											
136	Lognormal GOF Test										
137	Shapiro Wilk Test Statistic		0.871	Shapiro Wilk Lognormal GOF Test							
138	5% Shapiro Wilk P Value		0	Data Not Lognormal at 5% Significance Level							
139	Lilliefors Test Statistic		0.12	Lilliefors Lognormal GOF Test							
140	5% Lilliefors Critical Value		0.0737	Data Not Lognormal at 5% Significance Level							
141	Data Not Lognormal at 5% Significance Level										
142											
143	Background Statistics assuming Lognormal Distribution										
144	95% UTL with 95% Coverage		229.6					90% Percentile (z)		192	
145	95% UPL (t)		215.5					95% Percentile (z)		214.4	
146	95% USL		358.1					99% Percentile (z)		263.7	
147											
148	Nonparametric Distribution Free Background Statistics										
149	Data appear Approximate Normal at 5% Significance Level										
150											
151	Nonparametric Upper Limits for Background Threshold Values										
152	Order of Statistic, r		142					95% UTL with 95% Coverage		185	
153	Approx, f used to compute achieved CC		1.495	Approximate Actual Confidence Coefficient achieved by UTL				0.859			
154					Approximate Sample Size needed to achieve specified CC						
155	95% Percentile Bootstrap UTL with 95% Coverage		186					95% BCA Bootstrap UTL with 95% Coverage		185.5	
156	95% UPL		182.3					90% Percentile		170.5	

A	B	C	D	E	F	G	H	I	J	K	L
157			90% Chebyshev UPL		236.3					95% Percentile	180
158			95% Chebyshev UPL		282.1					99% Percentile	200.7
159			95% USL		235						
160											
161	Note: The use of USL tends to yield a conservative estimate of BTV, especially when the sample size starts exceeding 20.										
162	Therefore, one may use USL to estimate a BTV only when the data set represents a background data set free of outliers										
163	and consists of observations collected from clean unimpacted locations.										
164	The use of USL tends to provide a balance between false positives and false negatives provided the data										
165	represents a background data set and when many onsite observations need to be compared with the BTV.										
166											
167	chloride										
168											
169	General Statistics										
170	Total Number of Observations				139	Number of Distinct Observations				113	
171						Number of Missing Observations				24	
172	Minimum				4	First Quartile				64.05	
173	Second Largest				232	Median				97.3	
174	Maximum				240	Third Quartile				140	
175	Mean				108.3	SD				56.87	
176	Coefficient of Variation				0.525	Skewness				0.655	
177	Mean of logged Data				4.523	SD of logged Data				0.635	
178											
179	Critical Values for Background Threshold Values (BTVs)										
180	Tolerance Factor K (For UTL)				1.877	d2max (for USL)				3.319	
181											
182	Normal GOF Test										
183	Shapiro Wilk Test Statistic				0.925	Normal GOF Test					
184	5% Shapiro Wilk P Value				9.3519E-9	Data Not Normal at 5% Significance Level					
185	Lilliefors Test Statistic				0.114	Lilliefors GOF Test					
186	5% Lilliefors Critical Value				0.0755	Data Not Normal at 5% Significance Level					
187	Data Not Normal at 5% Significance Level										
188											
189	Background Statistics Assuming Normal Distribution										
190	95% UTL with 95% Coverage				215.1	90% Percentile (z)				181.2	
191	95% UPL (t)				202.8	95% Percentile (z)				201.9	
192	95% USL				297.1	99% Percentile (z)				240.6	
193											
194	Gamma GOF Test										
195	A-D Test Statistic				0.489	Anderson-Darling Gamma GOF Test					
196	5% A-D Critical Value				0.759	Detected data appear Gamma Distributed at 5% Significance Level					
197	K-S Test Statistic				0.0423	Kolmogorov-Smirnov Gamma GOF Test					
198	5% K-S Critical Value				0.0799	Detected data appear Gamma Distributed at 5% Significance Level					
199	Detected data appear Gamma Distributed at 5% Significance Level										
200											
201	Gamma Statistics										
202	k hat (MLE)				3.239	k star (bias corrected MLE)				3.174	
203	Theta hat (MLE)				33.44	Theta star (bias corrected MLE)				34.13	
204	nu hat (MLE)				900.5	nu star (bias corrected)				882.4	
205	MLE Mean (bias corrected)				108.3	MLE Sd (bias corrected)				60.8	
206											
207	Background Statistics Assuming Gamma Distribution										
208	95% Wilson Hilferty (WH) Approx. Gamma UPL				223.6	90% Percentile				189.8	

A	B	C	D	E	F	G	H	I	J	K	L
209	95% Hawkins Wixley (HW) Approx. Gamma UPL				230	95% Percentile				223.7	
210	95% WH Approx. Gamma UTL with 95% Coverage				245.2	99% Percentile				296.8	
211	95% HW Approx. Gamma UTL with 95% Coverage				254.2						
212	95% WH USL				426.3	95% HW USL				468.3	
213											
214	Lognormal GOF Test										
215	Shapiro Wilk Test Statistic				0.917	Shapiro Wilk Lognormal GOF Test					
216	5% Shapiro Wilk P Value				3.449E-10	Data Not Lognormal at 5% Significance Level					
217	Lilliefors Test Statistic				0.068	Lilliefors Lognormal GOF Test					
218	5% Lilliefors Critical Value				0.0755	Data appear Lognormal at 5% Significance Level					
219	Data appear Approximate Lognormal at 5% Significance Level										
220											
221	Background Statistics assuming Lognormal Distribution										
222	95% UTL with 95% Coverage				303.3	90% Percentile (z)				207.8	
223	95% UPL (t)				264.6	95% Percentile (z)				261.7	
224	95% USL				757.5	99% Percentile (z)				403.4	
225											
226	Nonparametric Distribution Free Background Statistics										
227	Data appear Gamma Distributed at 5% Significance Level										
228											
229	Nonparametric Upper Limits for Background Threshold Values										
230	Order of Statistic, r				136	95% UTL with 95% Coverage				229	
231	Approx, f used to compute achieved CC				1.789	Approximate Actual Confidence Coefficient achieved by UTL				0.921	
232						Approximate Sample Size needed to achieve specified CC				153	
233	95% Percentile Bootstrap UTL with 95% Coverage				227.2	95% BCA Bootstrap UTL with 95% Coverage				227	
234	95% UPL				223	90% Percentile				202.2	
235	90% Chebyshev UPL				279.5	95% Percentile				220.3	
236	95% Chebyshev UPL				357.1	99% Percentile				232	
237	95% USL				240						
238											
239	Note: The use of USL tends to yield a conservative estimate of BTV, especially when the sample size starts exceeding 20.										
240	Therefore, one may use USL to estimate a BTV only when the data set represents a background data set free of outliers										
241	and consists of observations collected from clean unimpacted locations.										
242	The use of USL tends to provide a balance between false positives and false negatives provided the data										
243	represents a background data set and when many onsite observations need to be compared with the BTV.										
244											
245	fluoride										
246											
247	General Statistics										
248	Total Number of Observations				131	Number of Distinct Observations				10	
249						Number of Missing Observations				18	
250	Minimum				0.05	First Quartile				0.25	
251	Second Largest				0.5	Median				0.25	
252	Maximum				0.5	Third Quartile				0.375	
253	Mean				0.29	SD				0.133	
254	Coefficient of Variation				0.46	Skewness				0.508	
255	Mean of logged Data				-1.361	SD of logged Data				0.537	
256											
257	Critical Values for Background Threshold Values (BTVs)										
258	Tolerance Factor K (For UTL)				1.885	d2max (for USL)				3.299	
259											
260	Normal GOF Test										

A	B	C	D	E	F	G	H	I	J	K	L
261	Shapiro Wilk Test Statistic				0.761	Normal GOF Test					
262	5% Shapiro Wilk P Value				0	Data Not Normal at 5% Significance Level					
263	Lilliefors Test Statistic				0.365	Lilliefors GOF Test					
264	5% Lilliefors Critical Value				0.0778	Data Not Normal at 5% Significance Level					
265	Data Not Normal at 5% Significance Level										
266											
267	Background Statistics Assuming Normal Distribution										
268	95% UTL with 95% Coverage		0.541		90% Percentile (z)				0.461		
269	95% UPL (t)		0.512		95% Percentile (z)				0.509		
270	95% USL		0.73		99% Percentile (z)				0.6		
271											
272	Gamma GOF Test										
273	A-D Test Statistic				11.97	Anderson-Darling Gamma GOF Test					
274	5% A-D Critical Value				0.756	Data Not Gamma Distributed at 5% Significance Level					
275	K-S Test Statistic				0.301	Kolmogorov-Smirnov Gamma GOF Test					
276	5% K-S Critical Value				0.0817	Data Not Gamma Distributed at 5% Significance Level					
277	Data Not Gamma Distributed at 5% Significance Level										
278											
279	Gamma Statistics										
280	k hat (MLE)		4.228		k star (bias corrected MLE)				4.136		
281	Theta hat (MLE)		0.0686		Theta star (bias corrected MLE)				0.0701		
282	nu hat (MLE)		1108		nu star (bias corrected)				1084		
283	MLE Mean (bias corrected)		0.29		MLE Sd (bias corrected)				0.143		
284											
285	Background Statistics Assuming Gamma Distribution										
286	95% Wilson Hilferty (WH) Approx. Gamma UPL		0.558		90% Percentile				0.481		
287	95% Hawkins Wixley (HW) Approx. Gamma UPL		0.57		95% Percentile				0.557		
288	95% WH Approx. Gamma UTL with 95% Coverage		0.608		99% Percentile				0.719		
289	95% HW Approx. Gamma UTL with 95% Coverage		0.625								
290	95% WH USL		0.997		95% HW USL				1.074		
291											
292	Lognormal GOF Test										
293	Shapiro Wilk Test Statistic				0.778	Shapiro Wilk Lognormal GOF Test					
294	5% Shapiro Wilk P Value				0	Data Not Lognormal at 5% Significance Level					
295	Lilliefors Test Statistic				0.298	Lilliefors Lognormal GOF Test					
296	5% Lilliefors Critical Value				0.0778	Data Not Lognormal at 5% Significance Level					
297	Data Not Lognormal at 5% Significance Level										
298											
299	Background Statistics assuming Lognormal Distribution										
300	95% UTL with 95% Coverage		0.705		90% Percentile (z)				0.51		
301	95% UPL (t)		0.626		95% Percentile (z)				0.62		
302	95% USL		1.508		99% Percentile (z)				0.894		
303											
304	Nonparametric Distribution Free Background Statistics										
305	Data do not follow a Discernible Distribution (0.05)										
306											
307	Nonparametric Upper Limits for Background Threshold Values										
308	Order of Statistic, r		128		95% UTL with 95% Coverage				0.5		
309	Approx, f used to compute achieved CC		1.684		Approximate Actual Confidence Coefficient achieved by UTL				0.898		
310					Approximate Sample Size needed to achieve specified CC				153		
311	95% Percentile Bootstrap UTL with 95% Coverage		0.5		95% BCA Bootstrap UTL with 95% Coverage				0.5		
312	95% UPL		0.5		90% Percentile				0.5		

A	B	C	D	E	F	G	H	I	J	K	L
313			90% Chebyshev UPL		0.692					95% Percentile	0.5
314			95% Chebyshev UPL		0.874					99% Percentile	0.5
315			95% USL		0.5						
316											
317			Note: The use of USL tends to yield a conservative estimate of BTV, especially when the sample size starts exceeding 20.								
318			Therefore, one may use USL to estimate a BTV only when the data set represents a background data set free of outliers								
319			and consists of observations collected from clean unimpacted locations.								
320			The use of USL tends to provide a balance between false positives and false negatives provided the data								
321			represents a background data set and when many onsite observations need to be compared with the BTV.								
322											
323			sulfate								
324											
325			General Statistics								
326			Total Number of Observations		147				Number of Distinct Observations		126
327			Minimum		5				First Quartile		29.45
328			Second Largest		160				Median		42.5
329			Maximum		161				Third Quartile		64.95
330			Mean		53.63				SD		35.67
331			Coefficient of Variation		0.665				Skewness		1.354
332			Mean of logged Data		3.78				SD of logged Data		0.653
333											
334			Critical Values for Background Threshold Values (BTVs)								
335			Tolerance Factor K (For UTL)		1.87				d2max (for USL)		3.336
336											
337			Normal GOF Test								
338			Shapiro Wilk Test Statistic		0.837				Normal GOF Test		
339			5% Shapiro Wilk P Value		0				Data Not Normal at 5% Significance Level		
340			Lilliefors Test Statistic		0.18				Lilliefors GOF Test		
341			5% Lilliefors Critical Value		0.0735				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		120.4				90% Percentile (z)		99.35
346			95% UPL (t)		112.9				95% Percentile (z)		112.3
347			95% USL		172.7				99% Percentile (z)		136.6
348											
349			Gamma GOF Test								
350			A-D Test Statistic		2.089				Anderson-Darling Gamma GOF Test		
351			5% A-D Critical Value		0.762				Data Not Gamma Distributed at 5% Significance Level		
352			K-S Test Statistic		0.1				Kolmogorov-Smirnov Gamma GOF Test		
353			5% K-S Critical Value		0.078				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)		2.63				k star (bias corrected MLE)		2.581
358			Theta hat (MLE)		20.39				Theta star (bias corrected MLE)		20.78
359			nu hat (MLE)		773.2				nu star (bias corrected)		758.7
360			MLE Mean (bias corrected)		53.63				MLE Sd (bias corrected)		33.39
361											
362			Background Statistics Assuming Gamma Distribution								
363			95% Wilson Hilferty (WH) Approx. Gamma UPL		117.3				90% Percentile		98.37
364			95% Hawkins Wixley (HW) Approx. Gamma UPL		119.2				95% Percentile		117.6

A	B	C	D	E	F	G	H	I	J	K	L
365	95% WH Approx. Gamma UTL with 95% Coverage			129.4	99% Percentile					159.7	
366	95% HW Approx. Gamma UTL with 95% Coverage			132.5							
367	95% WH USL			237.7	95% HW USL					258.2	
368											
369	Lognormal GOF Test										
370	Shapiro Wilk Test Statistic			0.961	Shapiro Wilk Lognormal GOF Test						
371	5% Shapiro Wilk P Value			0.00381	Data Not Lognormal at 5% Significance Level						
372	Lilliefors Test Statistic			0.0591	Lilliefors Lognormal GOF Test						
373	5% Lilliefors Critical Value			0.0735	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		148.5	90% Percentile (z)					101.2		
378	95% UPL (t)		129.6	95% Percentile (z)					128.2		
379	95% USL		386.7	99% Percentile (z)					200		
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		143	95% UTL with 95% Coverage					143		
386	Approx, f used to compute achieved CC		1.505	Approximate Actual Confidence Coefficient achieved by UTL					0.863		
387				Approximate Sample Size needed to achieve specified CC					181		
388	95% Percentile Bootstrap UTL with 95% Coverage		144.6	95% BCA Bootstrap UTL with 95% Coverage					144.6		
389	95% UPL		138.2	90% Percentile					110		
390	90% Chebyshev UPL		161	95% Percentile					136.7		
391	95% Chebyshev UPL		209.7	99% Percentile					155.9		
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				928.3		
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		

Box Plot for ph

8.1
7.8
7.5
7.2
ph
6.9
6.6
6.3

ph

