



SKB Environmental Cloquet Landfill Inc.

# Coal Combustion Residuals Annual Groundwater Monitoring Report

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

January 29, 2018

Final



**Coal Combustion Residuals Annual  
Groundwater Monitoring Report**

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

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## Acronyms

BTV	Background Threshold Values
CCR	Coal Combustion Residuals
CFR	Code of Federal Regulations
COC	Chemicals of Concern
GES	Groundwater & Environmental Services, Inc.
ug/L	micrograms per liter
mg/l	milligrams per liter
MPCA	Minnesota Pollution Control Agency
NGVD	National Geodetic Vertical Datum
pci/l	picoCuries per liter
QA/QC	Quality assurance/quality contro
SAP	Sampling Analysis Plan
SKB Cloquet Landfill	SKB Environmental Cloquet Landfill
USL	Upper Simultaneous Limit



# 1 Introduction

The *Coal Combustion Residuals Annual Groundwater Monitoring Report* (Report) was prepared to summarize the results of 2017 groundwater monitoring events and associated analysis for Coal Combustion Residuals (CCR) 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 in 2011. Per CFR 40.257.90 – 257.98, 8 groundwater sampling events were conducted at the SKB Cloquet Landfill in 2017 prior to the October deadline for the purpose of collecting CCR background groundwater analytical data. Using statistical evaluations, the 2017 CCR groundwater data was evaluated to determine CCR Background Threshold Values (BTVs). The SKB Cloquet Landfill is located in Cloquet, Carlton County, Minnesota (**Figure 1**).

## 1.1 Scope of Work

The following scope of work was conducted for the 2017 CCR background monitoring project:

- Conduct 8 gauging and sampling events of 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 Groundwater 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 Plan 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 groundwater monitoring network at SKB Cloquet Landfill was designed based on the analysis of local and regional hydrologic conditions. Currently the system consists of 7 monitoring wells. 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-3, P-4R, P-5, P-6 and P-7.

For the CCR background evaluation, a total of 8 groundwater monitoring events were conducted in 2017 on the following dates:

- February 28, 2017
- March 30, 2017
- April 27, 2017
- May 17, 2017
- June 29, 2017
- July 27, 2017
- August 18, 2017
- September 8, 2017





## 4 Groundwater Sampling Methodology

For 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 well dedicated, pneumatic low-flow bladder pump, each well was purged and field stabilization parameters including temperature, pH, dissolved oxygen, conductance, and redox potential were measured.

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 Test America, Inc. (Test America) of Amhurst, New York.

Groundwater samples obtained during the 8 sampling events in 2017 were analyzed for parameters specified in Appendix III and IV to Part 257 and are noted below:

### Appendix III

#### *General Chemistry*

- Chloride (Method 300.0)
- Fluoride (Method 300.0)
- Sulfate as SO<sub>4</sub> (Method 300.0)
- pH (Standard Method 4500 H+ B)
- Total Dissolved Solids (Standard Method 2540C)

#### *Metals*

- Boron (Method 200.7 Rev. 4.4)
- Calcium (Method 200.7 Rev. 4.4)

### Appendix IV

#### *General Chemistry*

- Fluoride (Method 300.0)

#### Metals

- Antimony
- Arsenic
- Barium
- Beryllium



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

The above metals were analyzed by Methods 200.7 Rev 4.4, 200.8, and 245.1. Radium was analyzed by Method 901.1.

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 groundwater events are presented in **Table 1**. Groundwater contours maps were generated for the March 30, July 27, and September 8, 2017 monitoring events. Groundwater flow direction was calculated to be the east (**Figures 3** through **Figure 5**).

### 5.2 Groundwater Analytical Data

Groundwater analytical results for the CCR monitoring events are presented in **Table 2**. A summary of the stabilization parameter tests performed for each well prior to sampling is provided in **Table 3** and copies of field sampling data sheets are in **Appendix A**. Laboratory analytical reports are included in **Appendix B**.

A summary of the groundwater analytical concentrations for each analyte are summarized below:

#### Appendix III

##### *General Chemistry*

- Chloride = 4.0 – 601 mg/l
- Fluoride = <0.10 - <0.50 mg/l
- Sulfate as SO<sub>4</sub> = 13.0 – 147 mg/l
- pH = 6.1 – 7.8 pH Units
- Total Dissolved Solids = 90 – 2,300 mg/l

##### *Metals*

- Boron = 0.024 – 0.38 mg/l
- Calcium = 27.0 - 367 mg/l

#### Appendix IV

##### *General Chemistry*

- Fluoride = <0.10 - <0.50 mg/l

##### *Metals*

- Antimony = <1.0 ug/l
- Arsenic = <1.0 – 7.0 ug/l
- Barium = 0.027 – 0.35 mg/l
- Beryllium = <0.70 ug/l
- Cadmium = <0.50 ug/l – 0.59 ug/l
- Chromium = 0.0040 – 0.018 mg/l



- Cobalt = <0.30 – 15.2 ug/l
- Lead = 0.010 – 0.017 mg/l
- Lithium = <0.030 mg/l
- Mercury = <0.00020 mg/l
- Molybdenum = <1.0 – 28.9 ug/l
- Radium 226 = <0.0763 – 79.6 pci/l
- Radium 228 = <0.278 – 33.1 pci/l
- Selenium = <1.0 - <5.0 ug/l
- Thallium = <0.20 ug/l



## 6 Statistical Evaluation of Data

Statistical evaluation of the 2017 CCR groundwater monitoring data was completed to determine background concentrations and included:

- 1) Establishing final background datasets for each Chemical of Concern (COC) using outlier testing.
- 2) Deriving statistical, upper bound estimates of the background population for each COC using the final background datasets.

To establish final background datasets for each COC, descriptive statistics, outlier analysis and comparative statistical analysis on the background datasets are typically performed to confirm whether all data in each background dataset for a given COC is representative of the 'true' background population. Descriptive statistics including 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.

An outlier analysis can identify potential outliers that are not representative of the true background population. Including real outliers in a dataset can potentially lead to Type I or Type II errors (USEPA, 2002. Guidance for Comparing Background and Chemical Concentrations for CERCLA Sites). Methods of outlier analysis include statistical outlier tests such as Dixon's test, which is available in ProUCL 5.0.00 (Singh, 2013). Outliers were only attributed to those data sets that had more than 4 detections, otherwise all detections are statistically significant.

For the final background datasets after outlier analyses, summary statistics including the number of samples, number of detections, detection frequency, maximum and minimum detected concentrations, mean concentration, and the standard deviation were calculated. The final datasets were tested for the underlying distributions (e.g., normal, lognormal, gamma) using ProUCL 5.0.00 (Singh, 2013) before statistical limits were estimated in order to determine the estimates that best described 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 sites.
- 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 BTVs. The calculated BTVs are included in **Table 4**. The statistical evaluation data is included in **Appendix C**.



## 7 Report Summary

Per CFR 40.257.90 – 257.98, 8 monitoring events were conducted at the SKB Cloquet Landfill in 2017 for the purpose of determining background CCR concentrations. Groundwater samples were collected from the monitoring network's 7 monitoring wells located at the SKB Cloquet Landfill during the 8 monitoring events. Groundwater elevation information from the monthly monitoring data indicates an easterly groundwater flow beneath the landfill. Using statistical evaluations of the groundwater sampling results, BTVs were determined (**Table 4**).



## 8 Recommendations

CCR groundwater monitoring events will be conducted in the spring and fall of 2018. Groundwater samples will be analyzed for detection monitoring parameters specified in Appendix III to Part 257. 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 to Part 257 has occurred at any monitoring wells. The evaluation will be performed using a tolerance or prediction interval procedure (CFR 40.257.93(f)(3)). The level of each constituent in the monitoring well will be compared to an established BTV generated as the USL. Any single constituent that exceeds the BTV is considered to be an exceedance. Confirmation sampling will determine whether the BTV exceedance is statistically significant. As data from 2017 was used to generate the background data, comparison of data will begin in subsequent 2018 sampling events.

A *2018 Annual Groundwater Monitoring Report* will be prepared and include sampling results from the 2018 CCR groundwater monitoring events and an evaluation of the analytical results as they pertained to BTVs.





## References

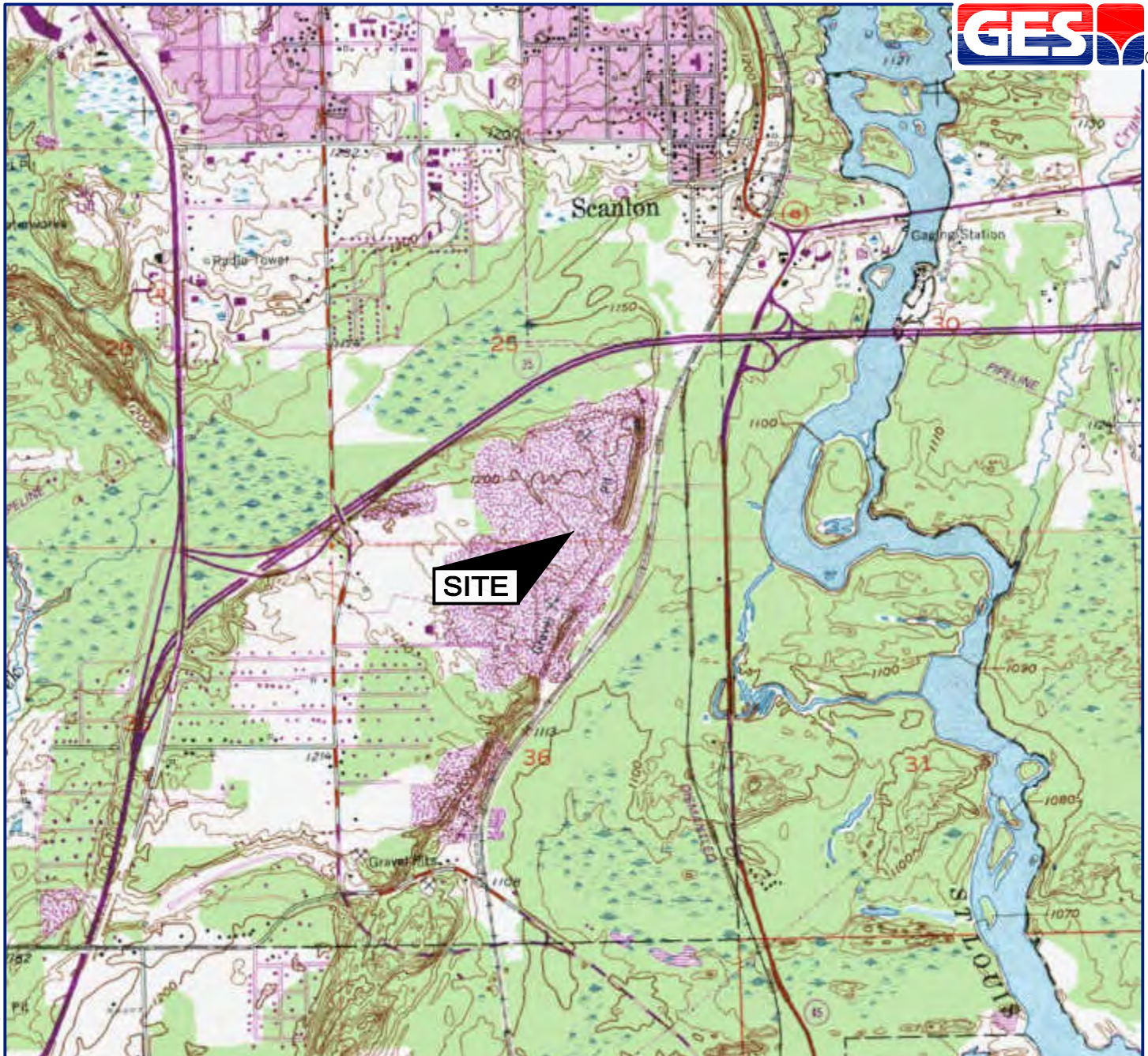
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- Singh and Singh, 2013. *ProUCL Version 5.0.00 Statistical Software for Environmental Applications for Data Sets with and without Nondetect Observations*, United States Environmental Protection Agency
- United States Environmental Protection Agency, 2002. *Guidance for Comparing Background and Chemical Concentrations for CERCLA Sites*.
- United States Geological Survey, 1979. *Water Resources of The St. Louis River Watershed, Northeastern Minnesota*.



## Figures

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

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 TOPOGRAPHIC QUADRANGLE 1993  
 CLOQUET, MINNESOTA  
 CONTOUR INTERVAL = 10'

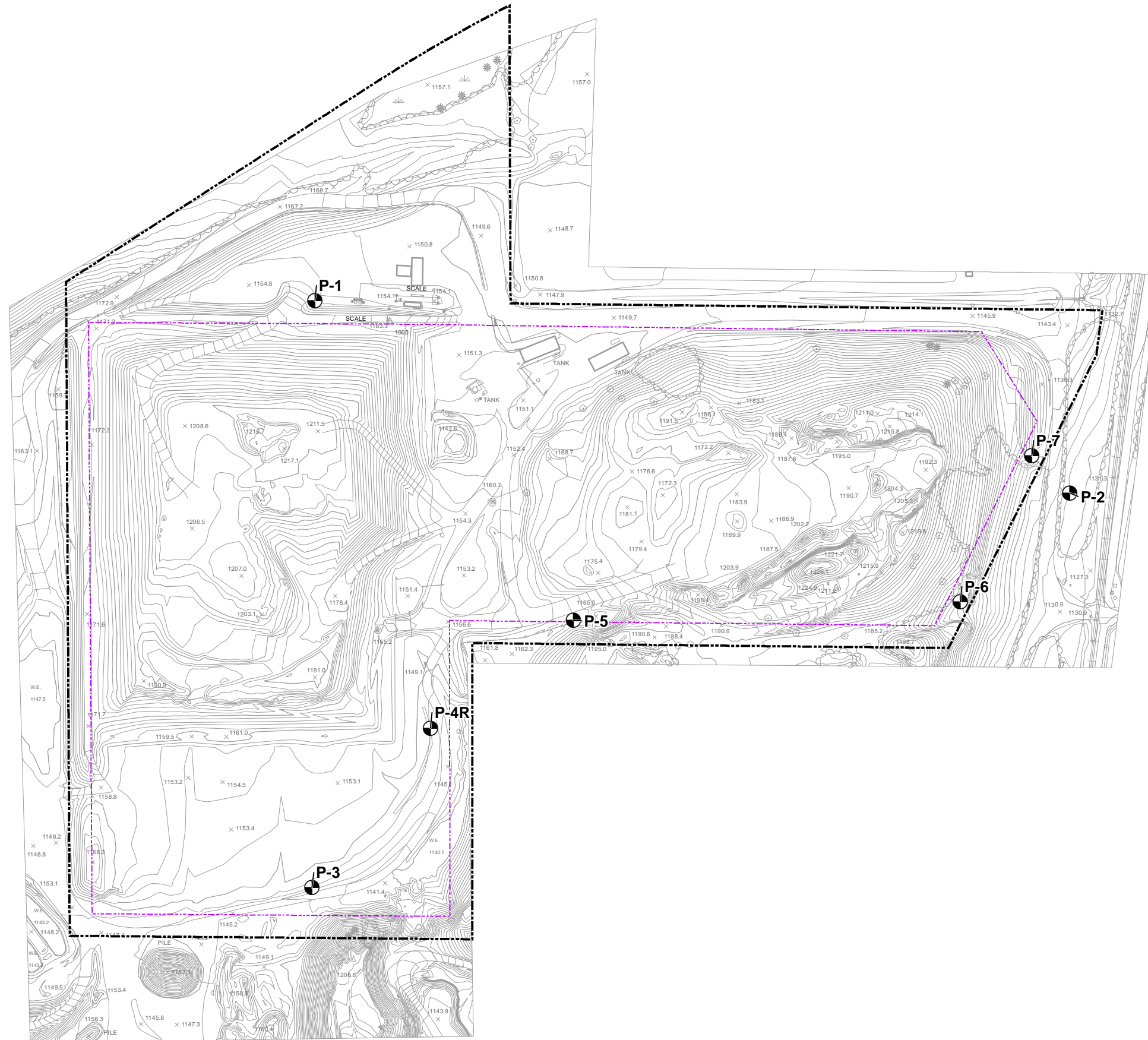


QUADRANGLE LOCATION

DRAFTED BY: W.G.S. (N.J.)	<b>SITE LOCATION MAP</b>		
CHECKED BY:			
REVIEWED BY:			
<b>SKB ENVIRONMENTAL SHAMROCK ENVIRONMENTAL LANDFILL 761 MINNESOTA STATE HIGHWAY 45 CLOQUET, MINNESOTA</b>			
<b>Groundwater &amp; Environmental Services, Inc.</b> 1285 CORPORATE CENTER DRIVE, SUITE 120, EAGAN, MN 55121			
NORTH 	SCALE IN FEET	DATE	FIGURE
		1-8-14	1

**Legend**

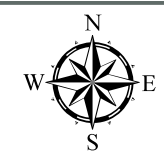
-  MONITORING WELL
-  PROPERTY BOUNDARY
-  PROPOSED WASTE LIMITS



**SITE MAP**

**SKB ENVIRONMENTAL  
CLOQUET LANDFILL  
761 MINNESOTA STATE HIGHWAY 45  
CLOQUET, MINNESOTA**

Drawn  
**JTL**  
Designed  
**DMC**  
Approved  
-



Date  
**1-5-18**  
Figure  
**2**

Scale In Feet (Approximate)



**Legend**

- MONITORING WELL
- GROUNDWATER ELEVATION ISOCONTOUR (ft MSL)
- PROPERTY BOUNDARY
- PROPOSED WASTE LIMITS
- 1127.45** MEASURED GROUNDWATER ELEVATION (ft MSL)








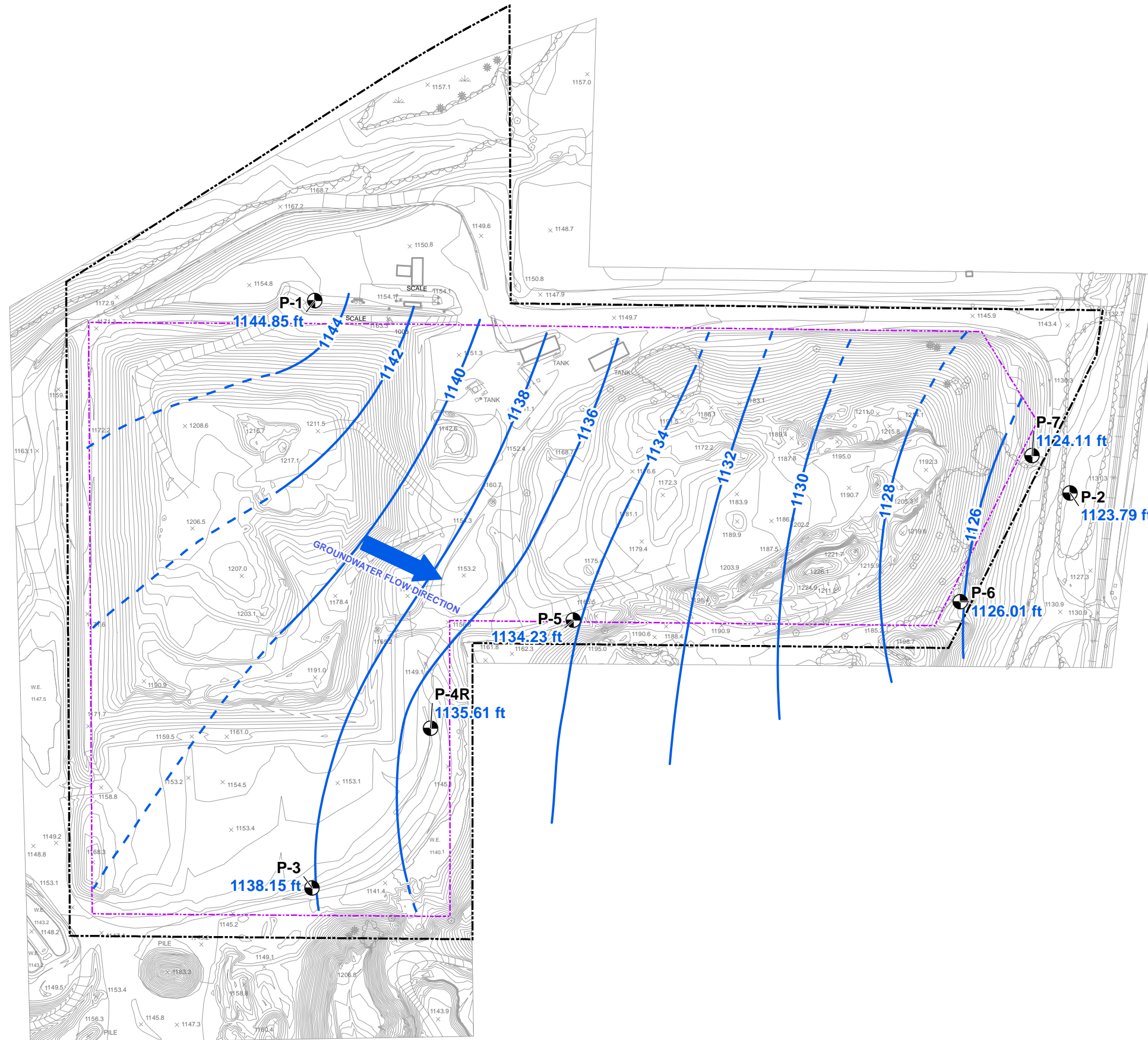
L:\Projects\SKB Environmental\Shamrock Environmental Landfill\GIS\Shamrock\_GWE\_20170330.mxd - Scale 1:3,000 - 5/11/2017 11:03:09 AM - GStewart -

DRAFTED BY:	GROUNDWATER ELEVATION MAP		
GKS	MARCH 30, 2017		
CHECKED BY:	SKB ENVIRONMENTAL		
DMC	CLOQUET LANDFILL		
REVIEWED BY:	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	FIGURE
		5-11-17	3

L:\Projects\SKB Environmental\Shamrock Environmental Landfill\GIS\Shamrock\_GWE\_20170727.mxd - Scale 1:3,000 - 1/29/2018 5:56:56 PM - J.Lauterio -

**Legend**


-  MONITORING WELL
-  GROUNDWATER ELEVATION ISOCONTOUR (ft MSL)
-  INFERRED GROUNDWATER ELEVATION ISOCONTOUR (ft MSL)
-  PROPERTY BOUNDARY
-  PROPOSED WASTE LIMITS
- 1127.45** MEASURED GROUNDWATER ELEVATION (ft MSL)





**GROUNDWATER ELEVATION MAP**  
JULY 27, 2017

**SKB ENVIRONMENTAL**  
**CLOQUET LANDFILL**  
761 MINNESOTA STATE HIGHWAY 45  
CLOQUET, MINNESOTA

Drawn JTL Designed JTL Approved DMC	Date 1-29-18 Figure 4
--	--------------------------------








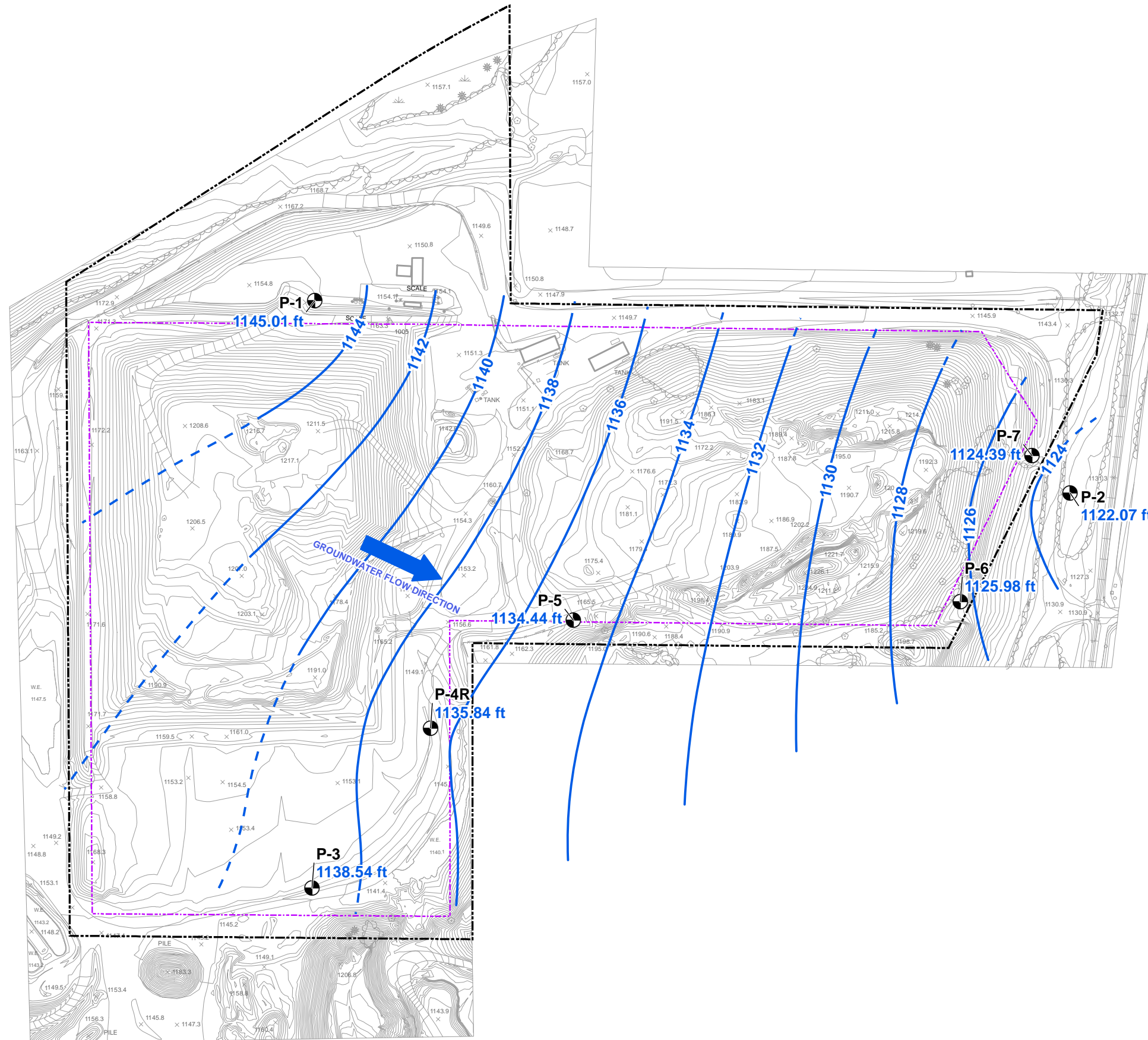
Scale in Feet (Approximate)

Groundwater & Environmental Services, Inc.


**Legend**

-  MONITORING WELL
-  GROUNDWATER ELEVATION ISOCONTOUR (ft MSL)
-  INFERRED GROUNDWATER ELEVATION ISOCONTOUR (ft MSL)
-  PROPERTY BOUNDARY
-  PROPOSED WASTE LIMITS
- 1127.45** MEASURED GROUNDWATER ELEVATION (ft MSL)



**GROUNDWATER ELEVATION MAP  
SEPTEMBER 8, 2017**

**SKB ENVIRONMENTAL  
CLOQUET LANDFILL  
761 MINNESOTA STATE HIGHWAY 45  
CLOQUET, MINNESOTA**

Drawn <b>JTL</b>		Date <b>1-26-18</b>
Designed <b>JTL</b>		Figure <b>5</b>
Approved <b>DMC</b>		





## Tables

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**Table 1**  
**Groundwater Elevations**



Date	P-1	P-2	P-3	P-4R	P-5	P-6	P-7
02/28/2017	1144.07	1124.93	1137.43	1135.33	1133.09	1123.92	1122.41
03/30/2017	1144.22	1124.96	1137.45	1134.76	1133.3	1125.84	1124.24
04/27/2017	1144.38	1125.44	1137.47	1134.85	1133.25	1125.70	1124.43
05/17/2017	1144.73	1127.59	1138.68	--*	1133.48	1125.82	1124.64
06/29/2017	1145.53	1127.09	1137.03	1135.39	1134.14	1126.08	1124.61
07/27/2017	1144.85	1123.79	1138.15	1135.61	1134.23	1126.01	1124.11
08/18/2017	1144.83	1125.69	1138.30	1135.71	1134.24	1125.98	1124.44
09/08/2017	1145.01	1122.07	1138.54	1135.84	1134.44	1125.98	1124.39

Note: \*Well not accessible due to ponding of water around wellhead.

**Table 2**



**Well Stabilization Data**

Well ID	Measurement Date	Field pH	Field Specific Conductivity umhos/cm	Field Temp dec c	Purge Rate ml/min
P-1	2/28/17 9:06	8.79	1350	8.63	1000
P-1	2/28/17 9:07	8.55	1370	8.65	1000
P-1	2/28/17 9:08	8.5	1390	8.71	1000
P-1	2/28/17 9:09	8.5	1390	8.71	1000
P-1	3/30/17 8:40	7.51	1140	9.94	1000
P-1	3/30/17 8:45	7.11	1150	8.61	1000
P-1	3/30/17 8:50	7.09	1150	8.44	1000
P-1	3/30/17 8:55	7.06	1160	8.4	1000
P-1	3/30/17 9:00	7.05	1160	8.33	
P-1	4/27/17 9:45	7.91	1100	1.8	1000
P-1	4/27/17 9:47	7.65	1070	7.76	1000
P-1	4/27/17 9:49	7.68	1080	7.73	1000
P-1	4/27/17 9:50	7.68	1080	7.72	1000
P-1	5/17/17 8:25	7.27	708	8.21	1000
P-1	5/17/17 8:27	6.9	770	8.01	1000
P-1	5/17/17 8:29	6.87	807	7.91	1000
P-1	5/17/17 8:30	6.81	808	7.92	1000
P-1	6/29/17 9:15	7.12	798	14.66	1000
P-1	6/29/17 9:17	6.92	826	10.12	1000
P-1	6/29/17 9:19	6.94	875	9.56	1000
P-1	6/29/17 9:20	6.95	878	9.47	1000
P-1	7/27/17 9:00	7.82	866	14.11	1000
P-1	7/27/17 9:05	7.19	940	9.13	1000
P-1	7/27/17 9:10	7.05	961	9.03	1000
P-1	7/27/17 9:15	6.97	968	8.98	1000
P-1	7/27/17 9:20	6.95	967	8.96	
P-1	8/18/17 8:35	6.82	966	10.73	1000
P-1	8/18/17 8:37	6.91	979	9.86	1000
P-1	8/18/17 8:39	6.85	974	9.77	1000
P-1	8/18/17 8:40	6.85	974	9.75	1000
P-1	9/8/17 8:30	6.68	1030	10.23	1000
P-1	9/8/17 8:32	6.7	1040	10.32	1000
P-1	9/8/17 8:34	6.69	1040	10.32	1000
P-1	9/8/17 8:35	6.69	1040	10.32	1000
P-2	2/28/17 14:16	8.84	822	3.45	1000
P-2	2/28/17 14:18	8.5	8.07	3.37	1000
P-2	2/28/17 14:20	8.48	807	3.33	1000
P-2	2/28/17 14:23	8.47	8.08	3.32	1000
P-2	3/30/17 14:30	7.99	675	7.35	1000
P-2	3/30/17 14:40	7.37	650	4.95	1000
P-2	3/30/17 14:50	7.28	623	4.67	1000
P-2	3/30/17 15:00	7.25	613	4.61	1000
P-2	3/30/17 15:05	7.21	604	4.53	
P-2	4/27/17 13:25	8.42	700	4.32	1000

**Table 2**



**Well Stabilization Data**

Well ID	Measurement Date	Field pH	Field Specific Conductivity umhos/cm	Field Temp dec c	Purge Rate ml/min
P-2	4/27/17 13:27	7.85	550	4.27	1000
P-2	4/27/17 13:29	7.78	552	4.2	1000
P-2	4/27/17 13:30	7.78	552	4.18	1000
P-2	5/17/17 11:00	7.67	545	10.4	1000
P-2	5/17/17 11:02	7.53	498	10.42	1000
P-2	5/17/17 11:04	7.51	499	10.4	1000
P-2	5/17/17 11:05	7.51	499	10.4	1000
P-2	6/29/17 13:15	7.31	1800	12.7	1000
P-2	6/29/17 13:17	6.77	2810	12.69	1000
P-2	6/29/17 13:19	6.78	2810	12.67	1000
P-2	6/29/17 13:20	6.79	2810	12.65	1000
P-2	7/27/17 15:15	6.77	2550	14.72	1000
P-2	7/27/17 15:20	6.6	2350	13.67	1000
P-2	7/27/17 15:25	6.44	2220	13.17	1000
P-2	7/27/17 15:29	6.44	2230	13.16	1000
P-2	7/27/17 15:30	6.42	2230	13.13	
P-2	8/18/17 11:50	6.76	1740	14.61	1000
P-2	8/18/17 11:52	6.53	1600	14.71	1000
P-2	8/18/17 11:54	6.5	1630	14.73	1000
P-2	8/18/17 11:55	6.51	1640	14.73	1000
P-2	9/8/17 11:55	6.69	1350	13.87	1000
P-2	9/8/17 11:57	6.58	1130	13.94	1000
P-2	9/8/17 11:59	6.56	1160	13.97	1000
P-2	9/8/17 12:00	6.57	1170	13.98	1000
P-3	2/28/17 10:11	8.85	879	5.22	1000
P-3	2/28/17 10:12	8.82	909	4.92	1000
P-3	2/28/17 10:13	8.79	916	4.89	1000
P-3	2/28/17 10:14	8.82	916	4.9	1000
P-3	3/30/17 9:30	7.85	982	6.49	1000
P-3	3/30/17 9:35	7.46	1080	5.39	1000
P-3	3/30/17 9:40	7.44	1090	5.14	1000
P-3	3/30/17 9:45	7.44	1100	5.08	1000
P-3	3/30/17 9:50	7.43	1010	5.04	
P-3	4/27/17 10:15	8.2	1190	5.64	1000
P-3	4/27/17 10:17	8.18	1200	5.26	1000
P-3	4/27/17 10:19	8.19	1210	5.22	1000
P-3	4/27/17 10:20	8.19	1210	5.22	1000
P-3	5/17/17 8:55	7.36	1230	7.14	1000
P-3	5/17/17 8:57	7.33	1210	6.08	1000
P-3	5/17/17 8:59	7.25	1200	6.41	1000
P-3	5/17/17 9:00	7.25	1200	6.41	1000
P-3	6/29/17 9:50	7.12	1120	12.59	1000
P-3	6/29/17 9:52	7.29	1110	11.14	1000
P-3	6/29/17 9:54	7.3	1100	11.09	1000

**Table 2**



**Well Stabilization Data**

Well ID	Measurement Date	Field pH	Field Specific Conductivity umhos/cm	Field Temp dec c	Purge Rate ml/min
P-3	6/29/17 9:55	7.3	1100	11.1	1000
P-3	7/27/17 10:00	7.39	1040	13.52	1000
P-3	7/27/17 10:05	7.26	973	12.96	1000
P-3	7/27/17 10:10	7.24	973	12.92	1000
P-3	7/27/17 10:14	7.21	975	12.88	1000
P-3	7/27/17 10:15	7.21	973	12.87	
P-3	8/18/17 9:00	7.6	935	14.02	1000
P-3	8/18/17 9:02	7.28	895	14.27	1000
P-3	8/18/17 9:04	7.2	889	14.34	1000
P-3	8/18/17 9:05	7.19	889	14.34	1000
P-3	9/8/17 8:55	7	964	13.84	1000
P-3	9/8/17 8:57	6.97	938	14.14	1000
P-3	9/8/17 8:59	6.94	937	14.27	1000
P-3	9/8/17 9:00	6.94	937	14.27	1000
P-4R	2/28/17 11:21	9.38	223	1.25	1000
P-4R	2/28/17 11:22	8.84	227	1.05	1000
P-4R	2/28/17 11:23	8.85	217	0.94	1000
P-4R	2/28/17 11:24	8.85	216	0.97	1000
P-4R	3/30/17 11:00	8.05	635	5.23	1000
P-4R	3/30/17 11:05	7.79	646	4.45	1000
P-4R	3/30/17 11:10	7.78	653	4.31	1000
P-4R	3/30/17 11:15	7.77	665	4.19	1000
P-4R	3/30/17 11:20	7.77	669	4.18	
P-4R	4/27/17 10:55	8.96	550	4.32	1000
P-4R	4/27/17 10:57	8.46	613	6.36	1000
P-4R	4/27/17 10:59	8.45	6123	6.35	1000
P-4R	4/27/17 11:00	8.45	623	6.34	1000
P-4R	6/29/17 10:40	7.71	957	13.85	1000
P-4R	6/29/17 10:42	7.53	1030	11.64	1000
P-4R	6/29/17 10:44	7.55	1040	11.57	1000
P-4R	6/29/17 10:45	7.58	1060	11.55	1000
P-4R	7/27/17 11:20	7.4	994	15.21	1000
P-4R	7/27/17 11:25	7.28	1030	12.84	1000
P-4R	7/27/17 11:30	7.28	1030	12.81	1000
P-4R	7/27/17 11:34	7.28	1030	12.8	1000
P-4R	7/27/17 11:35	7.27	1040	12.77	
P-4R	8/18/17 9:40	7.24	980	14.91	1000
P-4R	8/18/17 9:42	7.24	986	14.46	1000
P-4R	8/18/17 9:44	7.24	986	14.46	1000
P-4R	8/18/17 9:45	7.24	986	14.46	1000
P-4R	9/8/17 9:40	7.3	1090	14.8	1000
P-4R	9/8/17 9:42	6.93	1160	13.87	1000
P-4R	9/8/17 9:44	6.95	1150	13.95	1000
P-4R	9/8/17 9:45	6.96	1150	13.96	1000

**Table 2**



**Well Stabilization Data**

Well ID	Measurement Date	Field pH	Field Specific Conductivity umhos/cm	Field Temp dec c	Purge Rate ml/min
P-5	2/28/17 11:56	8.28	1610	6.82	1000
P-5	2/28/17 11:57	8.25	1630	8.14	1000
P-5	2/28/17 11:58	8.16	1630	8.68	1000
P-5	2/28/17 11:59	8.14	1640	9.05	1000
P-5	3/30/17 12:00	7.22	1470	8.38	1000
P-5	3/30/17 12:05	6.83	1470	9.28	1000
P-5	3/30/17 12:10	6.79	1470	9.51	1000
P-5	3/30/17 12:15	6.78	1470	9.54	1000
P-5	3/30/17 12:20	6.78	1470	9.54	
P-5	4/27/17 11:45	7.07	1580	8.43	1000
P-5	4/27/17 11:47	7.72	1600	8.69	1000
P-5	4/27/17 11:49	7.73	1600	8.17	1000
P-5	4/27/17 11:50	7.73	1610	8.19	1000
P-5	5/17/17 9:30	7.34	1550	8.97	1000
P-5	5/17/17 9:32	6.72	1570	8.94	1000
P-5	5/17/17 9:34	6.72	1570	8.94	1000
P-5	5/17/17 9:35	6.72	1570	8.93	1000
P-5	6/29/17 11:20	7.42	1350	14.15	1000
P-5	6/29/17 11:22	6.85	1320	9.92	1000
P-5	6/29/17 11:24	6.85	1320	9.92	1000
P-5	6/29/17 11:25	6.85	1320	9.95	1000
P-5	7/27/17 12:20	7.18	1420	13.43	1000
P-5	7/27/17 12:25	6.86	1590	9.81	1000
P-5	7/27/17 12:30	6.75	1560	9.47	1000
P-5	7/27/17 12:34	6.77	1550	9.39	1000
P-5	7/27/17 12:35	6.7	1560	9.3	
P-5	8/18/17 10:10	6.76	1460	11.42	1000
P-5	8/18/17 10:12	6.75	1490	10.1	1000
P-5	8/18/17 10:14	6.75	1490	10.08	1000
P-5	8/18/17 10:15	6.75	1490	10.08	1000
P-5	9/8/17 10:10	6.59	1340	13.52	1000
P-5	9/8/17 10:12	6.54	1350	13.5	1000
P-5	9/8/17 10:14	6.52	1420	11.6	1000
P-5	9/8/17 10:15	6.52	1420	11.61	1000
P-6	2/28/17 12:51	8.61	1160	5.24	1000
P-6	2/28/17 12:52	8.35	1340	7.31	1000
P-6	2/28/17 12:53	8.24	1380	7.54	1000
P-6	2/28/17 12:54	8.22	1390	7.54	1000
P-6	3/30/17 13:00	7.47	1240	8.47	1000
P-6	3/30/17 13:05	6.93	1240	8.88	1000
P-6	3/30/17 13:10	6.92	1220	8.87	1000
P-6	3/30/17 13:15	6.91	1230	8.87	1000
P-6	3/30/17 13:20	6.91	1230	8.87	
P-6	4/27/17 12:30	8.19	1380	5.35	1000

**Table 2**  
**Well Stabilization Data**



Well ID	Measurement Date	Field pH	Field Specific Conductivity umhos/cm	Field Temp dec c	Purge Rate ml/min
P-6	4/27/17 12:32	7.8	1340	7.92	1000
P-6	4/27/17 12:34	7.8	1340	8.07	1000
P-6	4/27/17 12:35	7.8	1330	8.09	1000
P-6	5/17/17 10:05	7.29	1240	10.95	1000
P-6	5/17/17 10:07	6.95	1240	10.84	1000
P-6	5/17/17 10:09	6.88	1240	10.76	1000
P-6	5/17/17 10:10	6.88	1240	10.71	1000
P-6	6/29/17 12:10	7.42	1200	13.76	1000
P-6	6/29/17 12:12	7.08	1260	11.83	1000
P-6	6/29/17 12:14	7.02	1270	11.37	1000
P-6	6/29/17 12:15	7.03	128	11.17	1000
P-6	7/27/17 13:25	7.17	1320	10.78	1000
P-6	7/27/17 13:30	7.04	1350	9.33	1000
P-6	7/27/17 13:35	6.94	1350	9.06	1000
P-6	7/27/17 13:39	6.92	1360	8.95	1000
P-6	7/27/17 13:40	6.9	1360	8.89	
P-6	8/18/17 10:45	7	1260	11.99	1000
P-6	8/18/17 10:47	6.88	1240	9.65	1000
P-6	8/18/17 10:49	6.86	1240	9.53	1000
P-6	8/18/17 10:50	6.87	1240	9.5	1000
P-6	9/8/17 10:55	6.89	1090	14.16	1000
P-6	9/8/17 10:57	6.7	1120	12	1000
P-6	9/8/17 10:59	6.69	1130	11.51	1000
P-6	9/8/17 11:00	6.68	1140	11.16	1000
P-7	2/28/17 13:41	8.37	1560	5.6	1000
P-7	2/28/17 13:42	8.32	1560	6.52	1000
P-7	2/28/17 13:43	8.32	1550	6.78	1000
P-7	2/28/17 13:44	8.32	1550	6.82	1000
P-7	3/30/17 14:00	7.29	1370	8.47	1000
P-7	3/30/17 14:10	7.06	1380	7.96	1000
P-7	3/30/17 14:20	7.04	1370	7.96	1000
P-7	3/30/17 14:30	7.04	1370	7.95	1000
P-7	3/30/17 14:35	7.02	1370	7.96	
P-7	4/27/17 13:00	8.1	1440	5.59	1000
P-7	4/27/17 13:02	7.97	1430	6.24	1000
P-7	4/27/17 13:04	7.97	1430	6.33	1000
P-7	4/27/17 13:05	7.98	1430	6.41	1000
P-7	5/17/17 10:35	7.26	1260	10.68	1000
P-7	5/17/17 10:37	7.05	1200	10.62	1000
P-7	5/17/17 10:39	7.02	1230	10.59	1000
P-7	5/17/17 10:40	6.997	1280	9.35	1000
P-7	6/29/17 12:45	7.01	1260	10.47	1000
P-7	6/29/17 12:47	6.94	1260	9.57	1000
P-7	6/29/17 12:49	6.95	1280	9.38	1000

**Table 2**

**Well Stabilization Data**



Well ID	Measurement Date	Field pH	Field Specific Conductivity umhos/cm	Field Temp dec c	Purge Rate ml/min
P-7	6/29/17 12:50	6.98	1290	9.34	1000
P-7	7/27/17 14:30	7.18	1250	13.75	1000
P-7	7/27/17 14:35	6.85	1330	9.42	1000
P-7	7/27/17 14:40	6.82	1320	9.34	1000
P-7	7/27/17 14:44	6.83	1320	9.37	1000
P-7	7/27/17 14:45	8.83	1310	9.32	
P-7	8/18/17 11:15	6.94	1200	11.87	1000
P-7	8/18/17 11:17	6.91	1310	10.22	1000
P-7	8/18/17 11:19	9.89	1320	10	1000
P-7	8/18/17 11:20	6.89	1320	9.9	1000
P-7	9/8/17 11:30	7.23	1220	13.54	1000
P-7	9/8/17 11:32	6.78	1240	12.2	1000
P-7	9/8/17 11:34	6.77	1230	12.31	1000
P-7	9/8/17 11:35	6.78	1230	12.41	1000

Table 3



Groundwater Analytical Data

Location	Date	Parameter	Result	Units	CAS #
P-1	02/28/2017	Antimony	< 1.0	ug/l	7440-36-0
P-1	03/30/2017	Antimony	< 1.0	ug/l	7440-36-0
P-1	04/27/2017	Antimony	< 1.0	ug/l	7440-36-0
P-1	05/17/2017	Antimony	< 1.0	ug/l	7440-36-0
P-1	06/29/2017	Antimony	< 1.0	ug/l	7440-36-0
P-1	07/27/2017	Antimony	< 1.0	ug/l	7440-36-0
P-1	08/21/2017	Antimony	< 1.0	ug/l	7440-36-0
P-1	09/08/2017	Antimony	< 1.0	ug/l	7440-36-0
P-1	02/28/2017	Arsenic	< 1.0	ug/l	7440-38-2
P-1	03/30/2017	Arsenic	< 1.0	ug/l	7440-38-2
P-1	04/27/2017	Arsenic	< 1.0	ug/l	7440-38-2
P-1	05/17/2017	Arsenic	< 1.0	ug/l	7440-38-2
P-1	06/29/2017	Arsenic	< 1.0	ug/l	7440-38-2
P-1	07/27/2017	Arsenic	< 1.0	ug/l	7440-38-2
P-1	08/21/2017	Arsenic	< 1.0	ug/l	7440-38-2
P-1	09/08/2017	Arsenic	< 1.0	ug/l	7440-38-2
P-1	02/28/2017	Barium	0.15	mg/l	7440-39-3
P-1	03/30/2017	Barium	0.14	mg/l	7440-39-3
P-1	04/27/2017	Barium	0.12	mg/l	7440-39-3
P-1	05/17/2017	Barium	0.10	mg/l	7440-39-3
P-1	06/29/2017	Barium	0.10	mg/l	7440-39-3
P-1	07/27/2017	Barium	0.11	mg/l	7440-39-3
P-1	08/21/2017	Barium	0.10	mg/l	7440-39-3
P-1	09/08/2017	Barium	0.12	mg/l	7440-39-3
P-1	02/28/2017	Beryllium	< 0.70	ug/l	7440-41-7
P-1	03/30/2017	Beryllium	< 0.70	ug/l	7440-41-7
P-1	04/27/2017	Beryllium	< 0.70	ug/l	7440-41-7
P-1	05/17/2017	Beryllium	< 0.70	ug/l	7440-41-7
P-1	06/29/2017	Beryllium	< 0.70	ug/l	7440-41-7
P-1	07/27/2017	Beryllium	< 0.70	ug/l	7440-41-7
P-1	08/21/2017	Beryllium	< 0.70	ug/l	7440-41-7
P-1	09/08/2017	Beryllium	< 0.70	ug/l	7440-41-7
P-1	02/28/2017	Boron	0.057	mg/l	7440-42-8
P-1	03/30/2017	Boron	0.055	mg/l	7440-42-8
P-1	04/27/2017	Boron	0.054	mg/l	7440-42-8
P-1	05/17/2017	Boron	0.071	mg/l	7440-42-8
P-1	06/29/2017	Boron	0.085	mg/l	7440-42-8
P-1	07/27/2017	Boron	0.050	mg/l	7440-42-8
P-1	07/27/2017	Boron	0.052	mg/l	7440-42-8
P-1	08/21/2017	Boron	0.054	mg/l	7440-42-8
P-1	09/08/2017	Boron	0.058	mg/l	7440-42-8
P-1	02/28/2017	Cadmium	< 0.50	ug/l	7440-43-9
P-1	03/30/2017	Cadmium	< 0.50	ug/l	7440-43-9
P-1	04/27/2017	Cadmium	< 0.50	ug/l	7440-43-9
P-1	05/17/2017	Cadmium	< 0.50	ug/l	7440-43-9
P-1	06/29/2017	Cadmium	< 0.50	ug/l	7440-43-9
P-1	07/27/2017	Cadmium	< 0.50	ug/l	7440-43-9
P-1	08/21/2017	Cadmium	< 0.50	ug/l	7440-43-9
P-1	09/08/2017	Cadmium	< 0.50	ug/l	7440-43-9



Table 3



Groundwater Analytical Data

Location	Date	Parameter	Result	Units	CAS #
P-1	02/28/2017	Calcium	160	mg/l	7440-70-2
P-1	03/30/2017	Calcium	149	mg/l	7440-70-2
P-1	04/27/2017	Calcium	128	mg/l	7440-70-2
P-1	05/17/2017	Calcium	98.4	mg/l	7440-70-2
P-1	06/29/2017	Calcium	110	mg/l	7440-70-2
P-1	07/27/2017	Calcium	112	mg/l	7440-70-2
P-1	07/27/2017	Calcium	115	mg/l	7440-70-2
P-1	08/21/2017	Calcium	126	mg/l	7440-70-2
P-1	09/08/2017	Calcium	127	mg/l	7440-70-2
P-1	02/28/2017	Chloride	167	mg/l	16887-00-6
P-1	03/30/2017	Chloride	147	mg/l	16887-00-6
P-1	04/27/2017	Chloride	115	mg/l	16887-00-6
P-1	05/17/2017	Chloride	50.3	mg/l	16887-00-6
P-1	06/29/2017	Chloride	59.8	mg/l	16887-00-6
P-1	07/27/2017	Chloride	70.7	mg/l	16887-00-6
P-1	08/21/2017	Chloride	89.0	mg/l	16887-00-6
P-1	09/08/2017	Chloride	109	mg/l	16887-00-6
P-1	02/28/2017	Chromium	< 0.0040	mg/l	7440-47-3
P-1	03/30/2017	Chromium	< 0.0040	mg/l	7440-47-3
P-1	04/27/2017	Chromium	< 0.0040	mg/l	7440-47-3
P-1	05/17/2017	Chromium	< 0.0040	mg/l	7440-47-3
P-1	06/29/2017	Chromium	< 0.0040	mg/l	7440-47-3
P-1	07/27/2017	Chromium	< 0.0040	mg/l	7440-47-3
P-1	08/21/2017	Chromium	< 0.0040	mg/l	7440-47-3
P-1	09/08/2017	Chromium	< 0.0040	mg/l	7440-47-3
P-1	02/28/2017	Cobalt	0.53	ug/l	7440-48-4
P-1	03/30/2017	Cobalt	0.49	ug/l	7440-48-4
P-1	04/27/2017	Cobalt	0.54	ug/l	7440-48-4
P-1	05/17/2017	Cobalt	0.49	ug/l	7440-48-4
P-1	06/29/2017	Cobalt	0.67	ug/l	7440-48-4
P-1	07/27/2017	Cobalt	0.64	ug/l	7440-48-4
P-1	07/27/2017	Cobalt	0.67	ug/l	7440-48-4
P-1	08/21/2017	Cobalt	0.45	ug/l	7440-48-4
P-1	09/08/2017	Cobalt	0.50	ug/l	7440-48-4
P-1	02/28/2017	Fluoride	< 0.50	mg/l	16984-48-8
P-1	03/30/2017	Fluoride	< 0.50	mg/l	16984-48-8
P-1	04/27/2017	Fluoride	< 0.50	mg/l	16984-48-8
P-1	05/17/2017	Fluoride	< 0.50	mg/l	16984-48-8
P-1	06/29/2017	Fluoride	< 0.10	mg/l	16984-48-8
P-1	07/27/2017	Fluoride	< 0.25	mg/l	16984-48-8
P-1	08/21/2017	Fluoride	< 0.25	mg/l	16984-48-8
P-1	09/08/2017	Fluoride	< 0.25	mg/l	16984-48-8
P-1	02/28/2017	Lead	< 0.010	mg/l	7439-92-1
P-1	03/30/2017	Lead	< 0.010	mg/l	7439-92-1
P-1	04/27/2017	Lead	< 0.010	mg/l	7439-92-1
P-1	05/17/2017	Lead	< 0.010	mg/l	7439-92-1
P-1	06/29/2017	Lead	< 0.010	mg/l	7439-92-1
P-1	07/27/2017	Lead	< 0.010	mg/l	7439-92-1
P-1	08/21/2017	Lead	< 0.010	mg/l	7439-92-1

Table 3



Groundwater Analytical Data

Location	Date	Parameter	Result	Units	CAS #
P-1	09/08/2017	Lead	< 0.010	mg/l	7439-92-1
P-1	02/28/2017	Lithium	< 0.030	mg/l	7439-93-2
P-1	03/30/2017	Lithium	< 0.030	mg/l	7439-93-2
P-1	04/27/2017	Lithium	< 0.030	mg/l	7439-93-2
P-1	05/17/2017	Lithium	< 0.030	mg/l	7439-93-2
P-1	06/29/2017	Lithium	< 0.030	mg/l	7439-93-2
P-1	07/27/2017	Lithium	< 0.030	mg/l	7439-93-2
P-1	08/21/2017	Lithium	< 0.030	mg/l	7439-93-2
P-1	09/08/2017	Lithium	< 0.030	mg/l	7439-93-2
P-1	02/28/2017	Mercury	< 0.00020	mg/l	7439-97-6
P-1	03/30/2017	Mercury	< 0.00020	mg/l	7439-97-6
P-1	04/27/2017	Mercury	< 0.00020	mg/l	7439-97-6
P-1	05/17/2017	Mercury	< 0.00020	mg/l	7439-97-6
P-1	06/29/2017	Mercury	< 0.00020	mg/l	7439-97-6
P-1	07/27/2017	Mercury	< 0.00020	mg/l	7439-97-6
P-1	07/27/2017	Mercury	< 0.20	ug/l	7439-97-6
P-1	08/21/2017	Mercury	< 0.00020	mg/l	7439-97-6
P-1	09/08/2017	Mercury	< 0.00020	mg/l	7439-97-6
P-1	02/28/2017	MOLYBDENUM	< 1.0	ug/l	7439-98-7
P-1	03/30/2017	MOLYBDENUM	< 1.0	ug/l	7439-98-7
P-1	04/27/2017	MOLYBDENUM	< 1.0	ug/l	7439-98-7
P-1	05/17/2017	MOLYBDENUM	< 1.0	ug/l	7439-98-7
P-1	06/29/2017	MOLYBDENUM	< 1.0	ug/l	7439-98-7
P-1	07/27/2017	MOLYBDENUM	< 1.0	ug/l	7439-98-7
P-1	08/21/2017	MOLYBDENUM	< 1.0	ug/l	7439-98-7
P-1	09/08/2017	MOLYBDENUM	< 1.0	ug/l	7439-98-7
P-1	02/28/2017	pH	6.7	pH UNITS	PH
P-1	03/30/2017	pH	6.9	pH UNITS	PH
P-1	03/30/2017	pH	7.2	pH UNITS	PH
P-1	04/27/2017	pH	7.1	pH UNITS	PH
P-1	05/17/2017	pH	6.6	pH UNITS	PH
P-1	06/29/2017	pH	6.8	pH UNITS	PH
P-1	07/27/2017	pH	7.0	pH UNITS	PH
P-1	07/27/2017	pH	7.2	pH UNITS	PH
P-1	08/21/2017	pH	7.0	pH UNITS	PH
P-1	09/08/2017	pH	7.0	pH UNITS	PH
P-1	10/20/2017	pH	7.2	pH UNITS	PH
P-1	02/28/2017	Radium (226)	< 12.7	pci/l	13982-63-3
P-1	03/30/2017	Radium (226)	< 16.6	pci/l	13982-63-3
P-1	04/27/2017	Radium (226)	42.9	pci/l	13982-63-3
P-1	05/17/2017	Radium (226)	< 0.127	pci/l	13982-63-3
P-1	06/29/2017	Radium (226)	< 0.0879	pci/l	13982-63-3
P-1	07/27/2017	Radium (226)	0.104	pci/l	13982-63-3
P-1	08/21/2017	Radium (226)	0.127	pci/l	13982-63-3
P-1	09/08/2017	Radium (226)	0.213	pci/l	13982-63-3
P-1	02/28/2017	Radium 228	< 29.1	pci/l	15262-20-1
P-1	03/30/2017	Radium 228	< 24.2	pci/l	15262-20-1
P-1	04/27/2017	Radium 228	< 33.8	pci/l	15262-20-1
P-1	05/17/2017	Radium 228	< 0.426	pci/l	15262-20-1

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Groundwater Analytical Data

Location	Date	Parameter	Result	Units	CAS #
P-1	06/29/2017	Radium 228	< 0.326	pci/l	15262-20-1
P-1	07/27/2017	Radium 228	< 0.361	pci/l	15262-20-1
P-1	08/21/2017	Radium 228	< 0.446	pci/l	15262-20-1
P-1	09/08/2017	Radium 228	< 0.451	pci/l	15262-20-1
P-1	02/28/2017	Selenium	< 1.0	ug/l	7782-49-2
P-1	03/30/2017	Selenium	< 1.0	ug/l	7782-49-2
P-1	04/27/2017	Selenium	< 1.0	ug/l	7782-49-2
P-1	05/17/2017	Selenium	< 1.0	ug/l	7782-49-2
P-1	06/29/2017	Selenium	< 1.0	ug/l	7782-49-2
P-1	07/27/2017	Selenium	< 1.0	ug/l	7782-49-2
P-1	08/21/2017	Selenium	< 1.0	ug/l	7782-49-2
P-1	09/08/2017	Selenium	< 1.0	ug/l	7782-49-2
P-1	02/28/2017	Sulfate as SO4	41.0	mg/l	14808-79-8
P-1	03/30/2017	Sulfate as SO4	34.9	mg/l	14808-79-8
P-1	04/27/2017	Sulfate as SO4	35.8	mg/l	14808-79-8
P-1	05/17/2017	Sulfate as SO4	< 20.0	mg/l	14808-79-8
P-1	06/29/2017	Sulfate as SO4	42.1	mg/l	14808-79-8
P-1	07/27/2017	Sulfate as SO4	50.5	mg/l	14808-79-8
P-1	07/27/2017	Sulfate as SO4	51.1	mg/l	14808-79-8
P-1	08/21/2017	Sulfate as SO4	53.3	mg/l	14808-79-8
P-1	09/08/2017	Sulfate as SO4	50.3	mg/l	14808-79-8
P-1	02/28/2017	Thallium	< 0.20	ug/l	7440-28-0
P-1	03/30/2017	Thallium	< 0.20	ug/l	7440-28-0
P-1	04/27/2017	Thallium	< 0.20	ug/l	7440-28-0
P-1	05/17/2017	Thallium	< 0.20	ug/l	7440-28-0
P-1	06/29/2017	Thallium	< 0.20	ug/l	7440-28-0
P-1	07/27/2017	Thallium	< 0.20	ug/l	7440-28-0
P-1	08/21/2017	Thallium	< 0.20	ug/l	7440-28-0
P-1	09/08/2017	Thallium	< 0.20	ug/l	7440-28-0
P-1	02/28/2017	Total Dissolved Solids	723	mg/l	TDS
P-1	03/30/2017	Total Dissolved Solids	730	mg/l	TDS
P-1	04/27/2017	Total Dissolved Solids	581	mg/l	TDS
P-1	05/17/2017	Total Dissolved Solids	456	mg/l	TDS
P-1	06/29/2017	Total Dissolved Solids	498	mg/l	TDS
P-1	07/27/2017	Total Dissolved Solids	518	mg/l	TDS
P-1	08/21/2017	Total Dissolved Solids	553	mg/l	TDS
P-1	09/08/2017	Total Dissolved Solids	634	mg/l	TDS
P-2	02/28/2017	Antimony	< 1.0	ug/l	7440-36-0
P-2	03/30/2017	Antimony	< 1.0	ug/l	7440-36-0
P-2	04/27/2017	Antimony	< 1.0	ug/l	7440-36-0
P-2	05/17/2017	Antimony	< 1.0	ug/l	7440-36-0
P-2	06/29/2017	Antimony	< 1.0	ug/l	7440-36-0
P-2	07/27/2017	Antimony	< 1.0	ug/l	7440-36-0
P-2	08/21/2017	Antimony	< 1.0	ug/l	7440-36-0
P-2	09/08/2017	Antimony	< 1.0	ug/l	7440-36-0
P-2	02/28/2017	Arsenic	< 1.0	ug/l	7440-38-2
P-2	03/30/2017	Arsenic	1.8	ug/l	7440-38-2
P-2	04/27/2017	Arsenic	< 1.0	ug/l	7440-38-2
P-2	05/17/2017	Arsenic	< 1.0	ug/l	7440-38-2

Table 3



Groundwater Analytical Data

Location	Date	Parameter	Result	Units	CAS #
P-2	06/29/2017	Arsenic	7.0	ug/l	7440-38-2
P-2	07/27/2017	Arsenic	6.0	ug/l	7440-38-2
P-2	08/21/2017	Arsenic	1.2	ug/l	7440-38-2
P-2	09/08/2017	Arsenic	3.6	ug/l	7440-38-2
P-2	02/28/2017	Barium	0.062	mg/l	7440-39-3
P-2	03/30/2017	Barium	0.10	mg/l	7440-39-3
P-2	04/27/2017	Barium	0.057	mg/l	7440-39-3
P-2	05/17/2017	Barium	0.068	mg/l	7440-39-3
P-2	06/29/2017	Barium	0.34	mg/l	7440-39-3
P-2	07/27/2017	Barium	0.23	mg/l	7440-39-3
P-2	08/21/2017	Barium	0.15	mg/l	7440-39-3
P-2	09/08/2017	Barium	0.19	mg/l	7440-39-3
P-2	02/28/2017	Beryllium	< 0.70	ug/l	7440-41-7
P-2	03/30/2017	Beryllium	< 0.70	ug/l	7440-41-7
P-2	04/27/2017	Beryllium	< 0.70	ug/l	7440-41-7
P-2	05/17/2017	Beryllium	< 0.70	ug/l	7440-41-7
P-2	06/29/2017	Beryllium	< 0.70	ug/l	7440-41-7
P-2	07/27/2017	Beryllium	< 0.70	ug/l	7440-41-7
P-2	08/21/2017	Beryllium	< 0.70	ug/l	7440-41-7
P-2	09/08/2017	Beryllium	< 0.70	ug/l	7440-41-7
P-2	02/28/2017	Boron	0.044	mg/l	7440-42-8
P-2	03/30/2017	Boron	0.046	mg/l	7440-42-8
P-2	04/27/2017	Boron	0.050	mg/l	7440-42-8
P-2	05/17/2017	Boron	0.054	mg/l	7440-42-8
P-2	06/29/2017	Boron	0.12	mg/l	7440-42-8
P-2	07/27/2017	Boron	0.077	mg/l	7440-42-8
P-2	08/21/2017	Boron	0.097	mg/l	7440-42-8
P-2	09/08/2017	Boron	0.085	mg/l	7440-42-8
P-2	02/28/2017	Cadmium	< 0.50	ug/l	7440-43-9
P-2	03/30/2017	Cadmium	< 0.50	ug/l	7440-43-9
P-2	04/27/2017	Cadmium	< 0.50	ug/l	7440-43-9
P-2	05/17/2017	Cadmium	< 0.50	ug/l	7440-43-9
P-2	06/29/2017	Cadmium	< 0.50	ug/l	7440-43-9
P-2	07/27/2017	Cadmium	< 0.50	ug/l	7440-43-9
P-2	08/21/2017	Cadmium	< 0.50	ug/l	7440-43-9
P-2	09/08/2017	Cadmium	< 0.50	ug/l	7440-43-9
P-2	02/28/2017	Calcium	103	mg/l	7440-70-2
P-2	03/30/2017	Calcium	81.0	mg/l	7440-70-2
P-2	04/27/2017	Calcium	71.7	mg/l	7440-70-2
P-2	05/17/2017	Calcium	66.7	mg/l	7440-70-2
P-2	06/29/2017	Calcium	367	mg/l	7440-70-2
P-2	07/27/2017	Calcium	296	mg/l	7440-70-2
P-2	08/21/2017	Calcium	235	mg/l	7440-70-2
P-2	09/08/2017	Calcium	207	mg/l	7440-70-2
P-2	02/28/2017	Chloride	136	mg/l	16887-00-6
P-2	03/30/2017	Chloride	81.2	mg/l	16887-00-6
P-2	04/27/2017	Chloride	50.1	mg/l	16887-00-6
P-2	05/17/2017	Chloride	56.1	mg/l	16887-00-6
P-2	06/29/2017	Chloride	763	mg/l	16887-00-6

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Groundwater Analytical Data

Location	Date	Parameter	Result	Units	CAS #
P-2	07/27/2017	Chloride	601	mg/l	16887-00-6
P-2	08/21/2017	Chloride	344	mg/l	16887-00-6
P-2	09/08/2017	Chloride	408	mg/l	16887-00-6
P-2	02/28/2017	Chromium	< 0.0040	mg/l	7440-47-3
P-2	03/30/2017	Chromium	0.015	mg/l	7440-47-3
P-2	04/27/2017	Chromium	0.0059	mg/l	7440-47-3
P-2	05/17/2017	Chromium	< 0.0040	mg/l	7440-47-3
P-2	06/29/2017	Chromium	< 0.0040	mg/l	7440-47-3
P-2	07/27/2017	Chromium	< 0.0040	mg/l	7440-47-3
P-2	08/21/2017	Chromium	< 0.0040	mg/l	7440-47-3
P-2	09/08/2017	Chromium	0.018	mg/l	7440-47-3
P-2	02/28/2017	Cobalt	0.93	ug/l	7440-48-4
P-2	03/30/2017	Cobalt	5.5	ug/l	7440-48-4
P-2	04/27/2017	Cobalt	1.8	ug/l	7440-48-4
P-2	05/17/2017	Cobalt	0.97	ug/l	7440-48-4
P-2	06/29/2017	Cobalt	1.0	ug/l	7440-48-4
P-2	07/27/2017	Cobalt	1.2	ug/l	7440-48-4
P-2	08/21/2017	Cobalt	0.91	ug/l	7440-48-4
P-2	09/08/2017	Cobalt	6.0	ug/l	7440-48-4
P-2	02/28/2017	Fluoride	< 0.25	mg/l	16984-48-8
P-2	03/30/2017	Fluoride	< 0.25	mg/l	16984-48-8
P-2	04/27/2017	Fluoride	< 0.25	mg/l	16984-48-8
P-2	05/17/2017	Fluoride	< 0.25	mg/l	16984-48-8
P-2	06/29/2017	Fluoride	< 0.50	mg/l	16984-48-8
P-2	07/27/2017	Fluoride	< 0.50	mg/l	16984-48-8
P-2	08/21/2017	Fluoride	< 0.25	mg/l	16984-48-8
P-2	09/08/2017	Fluoride	< 0.25	mg/l	16984-48-8
P-2	02/28/2017	Lead	< 0.010	mg/l	7439-92-1
P-2	03/30/2017	Lead	0.015	mg/l	7439-92-1
P-2	04/27/2017	Lead	< 0.010	mg/l	7439-92-1
P-2	05/17/2017	Lead	< 0.010	mg/l	7439-92-1
P-2	06/29/2017	Lead	< 0.010	mg/l	7439-92-1
P-2	07/27/2017	Lead	< 0.010	mg/l	7439-92-1
P-2	08/21/2017	Lead	< 0.010	mg/l	7439-92-1
P-2	09/08/2017	Lead	0.015	mg/l	7439-92-1
P-2	02/28/2017	Lithium	< 0.030	mg/l	7439-93-2
P-2	03/30/2017	Lithium	< 0.030	mg/l	7439-93-2
P-2	04/27/2017	Lithium	< 0.030	mg/l	7439-93-2
P-2	05/17/2017	Lithium	< 0.030	mg/l	7439-93-2
P-2	06/29/2017	Lithium	< 0.030	mg/l	7439-93-2
P-2	07/27/2017	Lithium	< 0.030	mg/l	7439-93-2
P-2	08/21/2017	Lithium	< 0.030	mg/l	7439-93-2
P-2	09/08/2017	Lithium	< 0.030	mg/l	7439-93-2
P-2	02/28/2017	Mercury	< 0.00020	mg/l	7439-97-6
P-2	03/30/2017	Mercury	< 0.00020	mg/l	7439-97-6
P-2	04/27/2017	Mercury	< 0.00020	mg/l	7439-97-6
P-2	05/17/2017	Mercury	< 0.00020	mg/l	7439-97-6
P-2	06/29/2017	Mercury	< 0.00020	mg/l	7439-97-6
P-2	07/27/2017	Mercury	< 0.00020	mg/l	7439-97-6

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Groundwater Analytical Data

Location	Date	Parameter	Result	Units	CAS #
P-2	08/21/2017	Mercury	< 0.00020	mg/l	7439-97-6
P-2	09/08/2017	Mercury	< 0.00020	mg/l	7439-97-6
P-2	02/28/2017	MOLYBDENUM	< 1.0	ug/l	7439-98-7
P-2	03/30/2017	MOLYBDENUM	1.7	ug/l	7439-98-7
P-2	04/27/2017	MOLYBDENUM	1.0	ug/l	7439-98-7
P-2	05/17/2017	MOLYBDENUM	2.8	ug/l	7439-98-7
P-2	06/29/2017	MOLYBDENUM	1.6	ug/l	7439-98-7
P-2	07/27/2017	MOLYBDENUM	< 1.0	ug/l	7439-98-7
P-2	08/21/2017	MOLYBDENUM	1.0	ug/l	7439-98-7
P-2	09/08/2017	MOLYBDENUM	1.3	ug/l	7439-98-7
P-2	02/28/2017	pH	6.8	pH UNITS	PH
P-2	03/30/2017	pH	7.3	pH UNITS	PH
P-2	03/30/2017	pH	7.4	pH UNITS	PH
P-2	04/27/2017	pH	7.2	pH UNITS	PH
P-2	05/17/2017	pH	6.8	pH UNITS	PH
P-2	06/29/2017	pH	6.1	pH UNITS	PH
P-2	07/27/2017	pH	6.5	pH UNITS	PH
P-2	07/27/2017	pH	6.8	pH UNITS	PH
P-2	08/21/2017	pH	6.7	pH UNITS	PH
P-2	09/08/2017	pH	6.7	pH UNITS	PH
P-2	10/20/2017	pH	7.0	pH UNITS	PH
P-2	02/28/2017	Radium (226)	38.1	pci/l	13982-63-3
P-2	03/30/2017	Radium (226)	< 43.0	pci/l	13982-63-3
P-2	04/27/2017	Radium (226)	32.8	pci/l	13982-63-3
P-2	05/17/2017	Radium (226)	< 0.138	pci/l	13982-63-3
P-2	06/29/2017	Radium (226)	0.300	pci/l	13982-63-3
P-2	07/27/2017	Radium (226)	0.548	pci/l	13982-63-3
P-2	08/21/2017	Radium (226)	0.247	pci/l	13982-63-3
P-2	09/08/2017	Radium (226)	0.567	pci/l	13982-63-3
P-2	02/28/2017	Radium 228	< 35.5	pci/l	15262-20-1
P-2	03/30/2017	Radium 228	31.7	pci/l	15262-20-1
P-2	04/27/2017	Radium 228	< 37.4	pci/l	15262-20-1
P-2	05/17/2017	Radium 228	< 0.398	pci/l	15262-20-1
P-2	06/29/2017	Radium 228	0.355	pci/l	15262-20-1
P-2	07/27/2017	Radium 228	0.894	pci/l	15262-20-1
P-2	08/21/2017	Radium 228	0.756	pci/l	15262-20-1
P-2	09/08/2017	Radium 228	< 0.901	pci/l	15262-20-1
P-2	02/28/2017	Selenium	< 1.0	ug/l	7782-49-2
P-2	03/30/2017	Selenium	< 1.0	ug/l	7782-49-2
P-2	04/27/2017	Selenium	< 1.0	ug/l	7782-49-2
P-2	05/17/2017	Selenium	< 1.0	ug/l	7782-49-2
P-2	06/29/2017	Selenium	< 2.0	ug/l	7782-49-2
P-2	07/27/2017	Selenium	< 5.0	ug/l	7782-49-2
P-2	08/21/2017	Selenium	< 5.0	ug/l	7782-49-2
P-2	09/08/2017	Selenium	< 5.0	ug/l	7782-49-2
P-2	02/28/2017	Sulfate as SO4	18.8	mg/l	14808-79-8
P-2	03/30/2017	Sulfate as SO4	18.9	mg/l	14808-79-8
P-2	04/27/2017	Sulfate as SO4	21.2	mg/l	14808-79-8
P-2	05/17/2017	Sulfate as SO4	13.0	mg/l	14808-79-8

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Groundwater Analytical Data

Location	Date	Parameter	Result	Units	CAS #
P-2	06/29/2017	Sulfate as SO4	23.1	mg/l	14808-79-8
P-2	07/27/2017	Sulfate as SO4	< 20.0	mg/l	14808-79-8
P-2	08/21/2017	Sulfate as SO4	15.1	mg/l	14808-79-8
P-2	09/08/2017	Sulfate as SO4	18.0	mg/l	14808-79-8
P-2	02/28/2017	Thallium	< 0.20	ug/l	7440-28-0
P-2	03/30/2017	Thallium	< 0.20	ug/l	7440-28-0
P-2	04/27/2017	Thallium	< 0.20	ug/l	7440-28-0
P-2	05/17/2017	Thallium	< 0.20	ug/l	7440-28-0
P-2	06/29/2017	Thallium	< 0.20	ug/l	7440-28-0
P-2	07/27/2017	Thallium	< 0.20	ug/l	7440-28-0
P-2	08/21/2017	Thallium	< 0.20	ug/l	7440-28-0
P-2	09/08/2017	Thallium	< 0.20	ug/l	7440-28-0
P-2	02/28/2017	Total Dissolved Solids	403	mg/l	TDS
P-2	03/30/2017	Total Dissolved Solids	400	mg/l	TDS
P-2	04/27/2017	Total Dissolved Solids	335	mg/l	TDS
P-2	05/17/2017	Total Dissolved Solids	310	mg/l	TDS
P-2	06/29/2017	Total Dissolved Solids	2330	mg/l	TDS
P-2	07/27/2017	Total Dissolved Solids	1930	mg/l	TDS
P-2	08/21/2017	Total Dissolved Solids	1200	mg/l	TDS
P-2	09/08/2017	Total Dissolved Solids	1590	mg/l	TDS
P-3	02/28/2017	Antimony	< 1.0	ug/l	7440-36-0
P-3	02/28/2017	Antimony	< 1.0	ug/l	7440-36-0
P-3	03/30/2017	Antimony	< 1.0	ug/l	7440-36-0
P-3	04/27/2017	Antimony	< 1.0	ug/l	7440-36-0
P-3	05/17/2017	Antimony	< 1.0	ug/l	7440-36-0
P-3	06/29/2017	Antimony	< 1.0	ug/l	7440-36-0
P-3	07/27/2017	Antimony	< 1.0	ug/l	7440-36-0
P-3	08/21/2017	Antimony	< 1.0	ug/l	7440-36-0
P-3	09/08/2017	Antimony	< 1.0	ug/l	7440-36-0
P-3	02/28/2017	Arsenic	< 1.0	ug/l	7440-38-2
P-3	02/28/2017	Arsenic	< 1.0	ug/l	7440-38-2
P-3	03/30/2017	Arsenic	< 1.0	ug/l	7440-38-2
P-3	04/27/2017	Arsenic	< 1.0	ug/l	7440-38-2
P-3	05/17/2017	Arsenic	< 1.0	ug/l	7440-38-2
P-3	06/29/2017	Arsenic	< 1.0	ug/l	7440-38-2
P-3	07/27/2017	Arsenic	< 1.0	ug/l	7440-38-2
P-3	07/27/2017	Arsenic	< 2.0	ug/l	7440-38-2
P-3	08/21/2017	Arsenic	< 1.0	ug/l	7440-38-2
P-3	09/08/2017	Arsenic	< 1.0	ug/l	7440-38-2
P-3	02/28/2017	Barium	0.13	mg/l	7440-39-3
P-3	02/28/2017	Barium	0.12	mg/l	7440-39-3
P-3	03/30/2017	Barium	0.16	mg/l	7440-39-3
P-3	03/30/2017	Barium	0.17	mg/l	7440-39-3
P-3	04/27/2017	Barium	0.18	mg/l	7440-39-3
P-3	04/27/2017	Barium	0.19	mg/l	7440-39-3
P-3	05/17/2017	Barium	0.19	mg/l	7440-39-3
P-3	06/29/2017	Barium	0.18	mg/l	7440-39-3
P-3	07/27/2017	Barium	0.16	mg/l	7440-39-3
P-3	08/21/2017	Barium	0.15	mg/l	7440-39-3

Table 3



Groundwater Analytical Data

Location	Date	Parameter	Result	Units	CAS #
P-3	09/08/2017	Barium	0.16	mg/l	7440-39-3
P-3	02/28/2017	Beryllium	< 0.70	ug/l	7440-41-7
P-3	02/28/2017	Beryllium	< 0.70	ug/l	7440-41-7
P-3	03/30/2017	Beryllium	< 0.70	ug/l	7440-41-7
P-3	04/27/2017	Beryllium	< 0.70	ug/l	7440-41-7
P-3	05/17/2017	Beryllium	< 0.70	ug/l	7440-41-7
P-3	06/29/2017	Beryllium	< 0.70	ug/l	7440-41-7
P-3	07/27/2017	Beryllium	< 0.70	ug/l	7440-41-7
P-3	08/21/2017	Beryllium	< 0.70	ug/l	7440-41-7
P-3	09/08/2017	Beryllium	< 0.70	ug/l	7440-41-7
P-3	02/28/2017	Boron	0.025	mg/l	7440-42-8
P-3	02/28/2017	Boron	0.024	mg/l	7440-42-8
P-3	03/30/2017	Boron	0.025	mg/l	7440-42-8
P-3	04/27/2017	Boron	0.026	mg/l	7440-42-8
P-3	05/17/2017	Boron	0.031	mg/l	7440-42-8
P-3	06/29/2017	Boron	0.036	mg/l	7440-42-8
P-3	07/27/2017	Boron	0.037	mg/l	7440-42-8
P-3	07/27/2017	Boron	0.038	mg/l	7440-42-8
P-3	08/21/2017	Boron	0.037	mg/l	7440-42-8
P-3	08/21/2017	Boron	0.038	mg/l	7440-42-8
P-3	09/08/2017	Boron	0.039	mg/l	7440-42-8
P-3	09/08/2017	Boron	0.041	mg/l	7440-42-8
P-3	02/28/2017	Cadmium	< 0.50	ug/l	7440-43-9
P-3	02/28/2017	Cadmium	< 0.50	ug/l	7440-43-9
P-3	03/30/2017	Cadmium	< 0.50	ug/l	7440-43-9
P-3	04/27/2017	Cadmium	< 0.50	ug/l	7440-43-9
P-3	05/17/2017	Cadmium	< 0.50	ug/l	7440-43-9
P-3	06/29/2017	Cadmium	< 0.50	ug/l	7440-43-9
P-3	07/27/2017	Cadmium	< 0.50	ug/l	7440-43-9
P-3	08/21/2017	Cadmium	< 0.50	ug/l	7440-43-9
P-3	09/08/2017	Cadmium	< 0.50	ug/l	7440-43-9
P-3	02/28/2017	Calcium	106	mg/l	7440-70-2
P-3	02/28/2017	Calcium	104	mg/l	7440-70-2
P-3	03/30/2017	Calcium	129	mg/l	7440-70-2
P-3	03/30/2017	Calcium	131	mg/l	7440-70-2
P-3	04/27/2017	Calcium	137	mg/l	7440-70-2
P-3	04/27/2017	Calcium	139	mg/l	7440-70-2
P-3	05/17/2017	Calcium	140	mg/l	7440-70-2
P-3	06/29/2017	Calcium	131	mg/l	7440-70-2
P-3	07/27/2017	Calcium	118	mg/l	7440-70-2
P-3	07/27/2017	Calcium	124	mg/l	7440-70-2
P-3	08/21/2017	Calcium	119	mg/l	7440-70-2
P-3	08/21/2017	Calcium	120	mg/l	7440-70-2
P-3	09/08/2017	Calcium	115	mg/l	7440-70-2
P-3	09/08/2017	Calcium	119	mg/l	7440-70-2
P-3	02/28/2017	Chloride	87.0	mg/l	16887-00-6
P-3	02/28/2017	Chloride	86.5	mg/l	16887-00-6
P-3	03/30/2017	Chloride	168	mg/l	16887-00-6
P-3	03/30/2017	Chloride	174	mg/l	16887-00-6



Table 3

Groundwater Analytical Data



Location	Date	Parameter	Result	Units	CAS #
P-3	04/27/2017	Chloride	137	mg/l	16887-00-6
P-3	04/27/2017	Chloride	139	mg/l	16887-00-6
P-3	05/17/2017	Chloride	127	mg/l	16887-00-6
P-3	06/29/2017	Chloride	79.4	mg/l	16887-00-6
P-3	07/27/2017	Chloride	72.5	mg/l	16887-00-6
P-3	08/21/2017	Chloride	58.3	mg/l	16887-00-6
P-3	08/21/2017	Chloride	64.9	mg/l	16887-00-6
P-3	09/08/2017	Chloride	74.8	mg/l	16887-00-6
P-3	09/08/2017	Chloride	76.2	mg/l	16887-00-6
P-3	02/28/2017	Chromium	< 0.0040	mg/l	7440-47-3
P-3	02/28/2017	Chromium	< 0.0040	mg/l	7440-47-3
P-3	03/30/2017	Chromium	< 0.0040	mg/l	7440-47-3
P-3	04/27/2017	Chromium	< 0.0040	mg/l	7440-47-3
P-3	05/17/2017	Chromium	< 0.0040	mg/l	7440-47-3
P-3	06/29/2017	Chromium	< 0.0040	mg/l	7440-47-3
P-3	07/27/2017	Chromium	< 0.0040	mg/l	7440-47-3
P-3	08/21/2017	Chromium	< 0.0040	mg/l	7440-47-3
P-3	09/08/2017	Chromium	< 0.0040	mg/l	7440-47-3
P-3	02/28/2017	Cobalt	< 0.30	ug/l	7440-48-4
P-3	02/28/2017	Cobalt	< 0.30	ug/l	7440-48-4
P-3	03/30/2017	Cobalt	< 0.30	ug/l	7440-48-4
P-3	04/27/2017	Cobalt	< 0.30	ug/l	7440-48-4
P-3	05/17/2017	Cobalt	0.41	ug/l	7440-48-4
P-3	06/29/2017	Cobalt	< 0.30	ug/l	7440-48-4
P-3	07/27/2017	Cobalt	0.37	ug/l	7440-48-4
P-3	08/21/2017	Cobalt	< 0.30	ug/l	7440-48-4
P-3	09/08/2017	Cobalt	< 0.30	ug/l	7440-48-4
P-3	02/28/2017	Fluoride	< 0.50	mg/l	16984-48-8
P-3	02/28/2017	Fluoride	< 0.25	mg/l	16984-48-8
P-3	03/30/2017	Fluoride	< 0.25	mg/l	16984-48-8
P-3	04/27/2017	Fluoride	< 0.25	mg/l	16984-48-8
P-3	04/27/2017	Fluoride	< 0.50	mg/l	16984-48-8
P-3	05/17/2017	Fluoride	< 0.25	mg/l	16984-48-8
P-3	06/29/2017	Fluoride	< 0.10	mg/l	16984-48-8
P-3	07/27/2017	Fluoride	< 0.25	mg/l	16984-48-8
P-3	08/21/2017	Fluoride	< 0.25	mg/l	16984-48-8
P-3	09/08/2017	Fluoride	< 0.25	mg/l	16984-48-8
P-3	02/28/2017	Lead	< 0.010	mg/l	7439-92-1
P-3	02/28/2017	Lead	0.010	mg/l	7439-92-1
P-3	03/30/2017	Lead	< 0.010	mg/l	7439-92-1
P-3	04/27/2017	Lead	< 0.010	mg/l	7439-92-1
P-3	05/17/2017	Lead	< 0.010	mg/l	7439-92-1
P-3	06/29/2017	Lead	< 0.010	mg/l	7439-92-1
P-3	07/27/2017	Lead	< 0.010	mg/l	7439-92-1
P-3	08/21/2017	Lead	< 0.010	mg/l	7439-92-1
P-3	09/08/2017	Lead	< 0.010	mg/l	7439-92-1
P-3	02/28/2017	Lithium	< 0.030	mg/l	7439-93-2
P-3	02/28/2017	Lithium	< 0.030	mg/l	7439-93-2
P-3	03/30/2017	Lithium	< 0.030	mg/l	7439-93-2

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Groundwater Analytical Data

Location	Date	Parameter	Result	Units	CAS #
P-3	04/27/2017	Lithium	< 0.030	mg/l	7439-93-2
P-3	05/17/2017	Lithium	< 0.030	mg/l	7439-93-2
P-3	06/29/2017	Lithium	< 0.030	mg/l	7439-93-2
P-3	07/27/2017	Lithium	< 0.030	mg/l	7439-93-2
P-3	08/21/2017	Lithium	< 0.030	mg/l	7439-93-2
P-3	09/08/2017	Lithium	< 0.030	mg/l	7439-93-2
P-3	02/28/2017	Mercury	< 0.00020	mg/l	7439-97-6
P-3	02/28/2017	Mercury	< 0.00020	mg/l	7439-97-6
P-3	03/30/2017	Mercury	< 0.00020	mg/l	7439-97-6
P-3	04/27/2017	Mercury	< 0.00020	mg/l	7439-97-6
P-3	05/17/2017	Mercury	< 0.00020	mg/l	7439-97-6
P-3	06/29/2017	Mercury	< 0.00020	mg/l	7439-97-6
P-3	07/27/2017	Mercury	< 0.00020	mg/l	7439-97-6
P-3	07/27/2017	Mercury	< 0.20	ug/l	7439-97-6
P-3	08/21/2017	Mercury	< 0.00020	mg/l	7439-97-6
P-3	09/08/2017	Mercury	< 0.00020	mg/l	7439-97-6
P-3	02/28/2017	MOLYBDENUM	< 1.0	ug/l	7439-98-7
P-3	02/28/2017	MOLYBDENUM	< 1.0	ug/l	7439-98-7
P-3	03/30/2017	MOLYBDENUM	< 1.0	ug/l	7439-98-7
P-3	04/27/2017	MOLYBDENUM	< 1.0	ug/l	7439-98-7
P-3	05/17/2017	MOLYBDENUM	< 1.0	ug/l	7439-98-7
P-3	06/29/2017	MOLYBDENUM	< 1.0	ug/l	7439-98-7
P-3	07/27/2017	MOLYBDENUM	< 1.0	ug/l	7439-98-7
P-3	08/21/2017	MOLYBDENUM	< 1.0	ug/l	7439-98-7
P-3	09/08/2017	MOLYBDENUM	< 1.0	ug/l	7439-98-7
P-3	02/28/2017	pH	7.3	pH UNITS	PH
P-3	02/28/2017	pH	7.2	pH UNITS	PH
P-3	03/30/2017	pH	7.2	pH UNITS	PH
P-3	03/30/2017	pH	7.3	pH UNITS	PH
P-3	03/30/2017	pH	7.5	pH UNITS	PH
P-3	03/30/2017	pH	7.6	pH UNITS	PH
P-3	04/27/2017	pH	7.4	pH UNITS	PH
P-3	05/17/2017	pH	7.2	pH UNITS	PH
P-3	06/29/2017	pH	7.2	pH UNITS	PH
P-3	07/27/2017	pH	7.4	pH UNITS	PH
P-3	07/27/2017	pH	7.6	pH UNITS	PH
P-3	08/21/2017	pH	7.4	pH UNITS	PH
P-3	09/08/2017	pH	7.4	pH UNITS	PH
P-3	10/20/2017	pH	7.6	pH UNITS	PH
P-3	02/28/2017	Radium (226)	28.7	pci/l	13982-63-3
P-3	02/28/2017	Radium (226)	37.6	pci/l	13982-63-3
P-3	03/30/2017	Radium (226)	< 16.3	pci/l	13982-63-3
P-3	03/30/2017	Radium (226)	< 37.2	pci/l	13982-63-3
P-3	04/27/2017	Radium (226)	< 46.1	pci/l	13982-63-3
P-3	04/27/2017	Radium (226)	< 58.2	pci/l	13982-63-3
P-3	05/17/2017	Radium (226)	0.213	pci/l	13982-63-3
P-3	06/29/2017	Radium (226)	0.204	pci/l	13982-63-3
P-3	07/27/2017	Radium (226)	0.178	pci/l	13982-63-3
P-3	08/21/2017	Radium (226)	0.112	pci/l	13982-63-3

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Groundwater Analytical Data

Location	Date	Parameter	Result	Units	CAS #
P-3	08/21/2017	Radium (226)	0.223	pci/l	13982-63-3
P-3	09/08/2017	Radium (226)	0.244	pci/l	13982-63-3
P-3	09/08/2017	Radium (226)	0.274	pci/l	13982-63-3
P-3	02/28/2017	Radium 228	< 26.0	pci/l	15262-20-1
P-3	02/28/2017	Radium 228	< 31.6	pci/l	15262-20-1
P-3	03/30/2017	Radium 228	< 26.9	pci/l	15262-20-1
P-3	03/30/2017	Radium 228	< 29.1	pci/l	15262-20-1
P-3	04/27/2017	Radium 228	< 38.4	pci/l	15262-20-1
P-3	04/27/2017	Radium 228	< 41.8	pci/l	15262-20-1
P-3	05/17/2017	Radium 228	< 0.433	pci/l	15262-20-1
P-3	06/29/2017	Radium 228	0.332	pci/l	15262-20-1
P-3	07/27/2017	Radium 228	< 0.356	pci/l	15262-20-1
P-3	08/21/2017	Radium 228	< 0.368	pci/l	15262-20-1
P-3	08/21/2017	Radium 228	0.556	pci/l	15262-20-1
P-3	09/08/2017	Radium 228	0.482	pci/l	15262-20-1
P-3	09/08/2017	Radium 228	0.601	pci/l	15262-20-1
P-3	02/28/2017	Selenium	< 1.0	ug/l	7782-49-2
P-3	02/28/2017	Selenium	< 1.0	ug/l	7782-49-2
P-3	03/30/2017	Selenium	< 1.0	ug/l	7782-49-2
P-3	04/27/2017	Selenium	< 1.0	ug/l	7782-49-2
P-3	05/17/2017	Selenium	< 1.0	ug/l	7782-49-2
P-3	06/29/2017	Selenium	< 1.0	ug/l	7782-49-2
P-3	07/27/2017	Selenium	< 1.0	ug/l	7782-49-2
P-3	08/21/2017	Selenium	< 1.0	ug/l	7782-49-2
P-3	09/08/2017	Selenium	< 1.0	ug/l	7782-49-2
P-3	02/28/2017	Sulfate as SO4	47.7	mg/l	14808-79-8
P-3	02/28/2017	Sulfate as SO4	47.8	mg/l	14808-79-8
P-3	03/30/2017	Sulfate as SO4	49.6	mg/l	14808-79-8
P-3	03/30/2017	Sulfate as SO4	51.2	mg/l	14808-79-8
P-3	04/27/2017	Sulfate as SO4	76.0	mg/l	14808-79-8
P-3	04/27/2017	Sulfate as SO4	77.1	mg/l	14808-79-8
P-3	05/17/2017	Sulfate as SO4	90.7	mg/l	14808-79-8
P-3	06/29/2017	Sulfate as SO4	90.3	mg/l	14808-79-8
P-3	07/27/2017	Sulfate as SO4	63.2	mg/l	14808-79-8
P-3	08/21/2017	Sulfate as SO4	56.3	mg/l	14808-79-8
P-3	08/21/2017	Sulfate as SO4	64.1	mg/l	14808-79-8
P-3	09/08/2017	Sulfate as SO4	59.8	mg/l	14808-79-8
P-3	09/08/2017	Sulfate as SO4	61.4	mg/l	14808-79-8
P-3	02/28/2017	Thallium	< 0.20	ug/l	7440-28-0
P-3	02/28/2017	Thallium	< 0.20	ug/l	7440-28-0
P-3	03/30/2017	Thallium	< 0.20	ug/l	7440-28-0
P-3	04/27/2017	Thallium	< 0.20	ug/l	7440-28-0
P-3	05/17/2017	Thallium	< 0.20	ug/l	7440-28-0
P-3	06/29/2017	Thallium	< 0.20	ug/l	7440-28-0
P-3	07/27/2017	Thallium	< 0.20	ug/l	7440-28-0
P-3	08/21/2017	Thallium	< 0.20	ug/l	7440-28-0
P-3	09/08/2017	Thallium	< 0.20	ug/l	7440-28-0
P-3	02/28/2017	Total Dissolved Solids	470	mg/l	TDS
P-3	02/28/2017	Total Dissolved Solids	467	mg/l	TDS

Table 3



Groundwater Analytical Data

Location	Date	Parameter	Result	Units	CAS #
P-3	03/30/2017	Total Dissolved Solids	690	mg/l	TDS
P-3	03/30/2017	Total Dissolved Solids	691	mg/l	TDS
P-3	04/27/2017	Total Dissolved Solids	637	mg/l	TDS
P-3	04/27/2017	Total Dissolved Solids	646	mg/l	TDS
P-3	05/17/2017	Total Dissolved Solids	683	mg/l	TDS
P-3	06/29/2017	Total Dissolved Solids	626	mg/l	TDS
P-3	07/27/2017	Total Dissolved Solids	551	mg/l	TDS
P-3	08/21/2017	Total Dissolved Solids	515	mg/l	TDS
P-3	08/21/2017	Total Dissolved Solids	529	mg/l	TDS
P-3	09/08/2017	Total Dissolved Solids	570	mg/l	TDS
P-3	09/08/2017	Total Dissolved Solids	573	mg/l	TDS
P-4R	02/28/2017	Antimony	< 1.0	ug/l	7440-36-0
P-4R	03/30/2017	Antimony	< 1.0	ug/l	7440-36-0
P-4R	04/27/2017	Antimony	< 1.0	ug/l	7440-36-0
P-4R	06/29/2017	Antimony	< 1.0	ug/l	7440-36-0
P-4R	07/27/2017	Antimony	< 1.0	ug/l	7440-36-0
P-4R	08/21/2017	Antimony	< 1.0	ug/l	7440-36-0
P-4R	09/08/2017	Antimony	< 1.0	ug/l	7440-36-0
P-4R	02/28/2017	Arsenic	< 1.0	ug/l	7440-38-2
P-4R	03/30/2017	Arsenic	< 1.0	ug/l	7440-38-2
P-4R	04/27/2017	Arsenic	< 1.0	ug/l	7440-38-2
P-4R	06/29/2017	Arsenic	< 1.0	ug/l	7440-38-2
P-4R	07/27/2017	Arsenic	< 1.0	ug/l	7440-38-2
P-4R	08/21/2017	Arsenic	< 1.0	ug/l	7440-38-2
P-4R	09/08/2017	Arsenic	< 1.0	ug/l	7440-38-2
P-4R	02/28/2017	Barium	0.027	mg/l	7440-39-3
P-4R	03/30/2017	Barium	0.11	mg/l	7440-39-3
P-4R	04/27/2017	Barium	0.10	mg/l	7440-39-3
P-4R	06/29/2017	Barium	0.20	mg/l	7440-39-3
P-4R	07/27/2017	Barium	0.17	mg/l	7440-39-3
P-4R	07/27/2017	Barium	0.19	mg/l	7440-39-3
P-4R	08/21/2017	Barium	0.18	mg/l	7440-39-3
P-4R	09/08/2017	Barium	0.20	mg/l	7440-39-3
P-4R	02/28/2017	Beryllium	< 0.70	ug/l	7440-41-7
P-4R	03/30/2017	Beryllium	< 0.70	ug/l	7440-41-7
P-4R	04/27/2017	Beryllium	< 0.70	ug/l	7440-41-7
P-4R	06/29/2017	Beryllium	< 0.70	ug/l	7440-41-7
P-4R	07/27/2017	Beryllium	< 0.70	ug/l	7440-41-7
P-4R	08/21/2017	Beryllium	< 0.70	ug/l	7440-41-7
P-4R	09/08/2017	Beryllium	< 0.70	ug/l	7440-41-7
P-4R	02/28/2017	Boron	0.036	mg/l	7440-42-8
P-4R	03/30/2017	Boron	0.067	mg/l	7440-42-8
P-4R	04/27/2017	Boron	0.11	mg/l	7440-42-8
P-4R	06/29/2017	Boron	0.11	mg/l	7440-42-8
P-4R	07/27/2017	Boron	0.080	mg/l	7440-42-8
P-4R	07/27/2017	Boron	0.083	mg/l	7440-42-8
P-4R	08/21/2017	Boron	0.085	mg/l	7440-42-8
P-4R	09/08/2017	Boron	0.076	mg/l	7440-42-8
P-4R	02/28/2017	Cadmium	< 0.50	ug/l	7440-43-9

Table 3



Groundwater Analytical Data

Location	Date	Parameter	Result	Units	CAS #
P-4R	03/30/2017	Cadmium	< 0.50	ug/l	7440-43-9
P-4R	04/27/2017	Cadmium	< 0.50	ug/l	7440-43-9
P-4R	06/29/2017	Cadmium	< 0.50	ug/l	7440-43-9
P-4R	07/27/2017	Cadmium	< 0.50	ug/l	7440-43-9
P-4R	08/21/2017	Cadmium	< 0.50	ug/l	7440-43-9
P-4R	09/08/2017	Cadmium	< 0.50	ug/l	7440-43-9
P-4R	02/28/2017	Calcium	27.0	mg/l	7440-70-2
P-4R	03/30/2017	Calcium	91.5	mg/l	7440-70-2
P-4R	04/27/2017	Calcium	75.1	mg/l	7440-70-2
P-4R	06/29/2017	Calcium	134	mg/l	7440-70-2
P-4R	07/27/2017	Calcium	111	mg/l	7440-70-2
P-4R	07/27/2017	Calcium	113	mg/l	7440-70-2
P-4R	08/21/2017	Calcium	129	mg/l	7440-70-2
P-4R	09/08/2017	Calcium	138	mg/l	7440-70-2
P-4R	02/28/2017	Chloride	4.0	mg/l	16887-00-6
P-4R	03/30/2017	Chloride	84.6	mg/l	16887-00-6
P-4R	04/27/2017	Chloride	38.4	mg/l	16887-00-6
P-4R	06/29/2017	Chloride	107	mg/l	16887-00-6
P-4R	07/27/2017	Chloride	133	mg/l	16887-00-6
P-4R	08/21/2017	Chloride	120	mg/l	16887-00-6
P-4R	09/08/2017	Chloride	135	mg/l	16887-00-6
P-4R	02/28/2017	Chromium	< 0.0040	mg/l	7440-47-3
P-4R	03/30/2017	Chromium	< 0.0040	mg/l	7440-47-3
P-4R	04/27/2017	Chromium	< 0.0040	mg/l	7440-47-3
P-4R	06/29/2017	Chromium	< 0.0040	mg/l	7440-47-3
P-4R	07/27/2017	Chromium	< 0.0040	mg/l	7440-47-3
P-4R	07/27/2017	Chromium	0.0091	mg/l	7440-47-3
P-4R	08/21/2017	Chromium	0.0040	mg/l	7440-47-3
P-4R	09/08/2017	Chromium	< 0.0040	mg/l	7440-47-3
P-4R	02/28/2017	Cobalt	< 0.30	ug/l	7440-48-4
P-4R	03/30/2017	Cobalt	< 0.30	ug/l	7440-48-4
P-4R	04/27/2017	Cobalt	< 0.30	ug/l	7440-48-4
P-4R	06/29/2017	Cobalt	0.66	ug/l	7440-48-4
P-4R	07/27/2017	Cobalt	0.34	ug/l	7440-48-4
P-4R	07/27/2017	Cobalt	1.8	ug/l	7440-48-4
P-4R	08/21/2017	Cobalt	0.82	ug/l	7440-48-4
P-4R	09/08/2017	Cobalt	0.55	ug/l	7440-48-4
P-4R	02/28/2017	Fluoride	< 0.25	mg/l	16984-48-8
P-4R	03/30/2017	Fluoride	< 0.25	mg/l	16984-48-8
P-4R	04/27/2017	Fluoride	< 0.25	mg/l	16984-48-8
P-4R	06/29/2017	Fluoride	< 0.10	mg/l	16984-48-8
P-4R	07/27/2017	Fluoride	< 0.25	mg/l	16984-48-8
P-4R	08/21/2017	Fluoride	< 0.25	mg/l	16984-48-8
P-4R	09/08/2017	Fluoride	< 0.25	mg/l	16984-48-8
P-4R	02/28/2017	Lead	< 0.010	mg/l	7439-92-1
P-4R	03/30/2017	Lead	< 0.010	mg/l	7439-92-1
P-4R	04/27/2017	Lead	< 0.010	mg/l	7439-92-1
P-4R	06/29/2017	Lead	< 0.010	mg/l	7439-92-1
P-4R	07/27/2017	Lead	< 0.010	mg/l	7439-92-1

Table 3



Groundwater Analytical Data

Location	Date	Parameter	Result	Units	CAS #
P-4R	08/21/2017	Lead	< 0.010	mg/l	7439-92-1
P-4R	09/08/2017	Lead	< 0.010	mg/l	7439-92-1
P-4R	02/28/2017	Lithium	< 0.030	mg/l	7439-93-2
P-4R	03/30/2017	Lithium	< 0.030	mg/l	7439-93-2
P-4R	04/27/2017	Lithium	< 0.030	mg/l	7439-93-2
P-4R	06/29/2017	Lithium	< 0.030	mg/l	7439-93-2
P-4R	07/27/2017	Lithium	< 0.030	mg/l	7439-93-2
P-4R	08/21/2017	Lithium	< 0.030	mg/l	7439-93-2
P-4R	09/08/2017	Lithium	< 0.030	mg/l	7439-93-2
P-4R	02/28/2017	Mercury	< 0.00020	mg/l	7439-97-6
P-4R	03/30/2017	Mercury	< 0.00020	mg/l	7439-97-6
P-4R	04/27/2017	Mercury	< 0.00020	mg/l	7439-97-6
P-4R	06/29/2017	Mercury	< 0.00020	mg/l	7439-97-6
P-4R	07/27/2017	Mercury	< 0.00020	mg/l	7439-97-6
P-4R	07/27/2017	Mercury	< 0.20	ug/l	7439-97-6
P-4R	08/21/2017	Mercury	< 0.00020	mg/l	7439-97-6
P-4R	09/08/2017	Mercury	< 0.00020	mg/l	7439-97-6
P-4R	02/28/2017	MOLYBDENUM	13.2	ug/l	7439-98-7
P-4R	03/30/2017	MOLYBDENUM	18.2	ug/l	7439-98-7
P-4R	04/27/2017	MOLYBDENUM	28.9	ug/l	7439-98-7
P-4R	06/29/2017	MOLYBDENUM	4.7	ug/l	7439-98-7
P-4R	07/27/2017	MOLYBDENUM	2.3	ug/l	7439-98-7
P-4R	07/27/2017	MOLYBDENUM	2.9	ug/l	7439-98-7
P-4R	08/21/2017	MOLYBDENUM	3.9	ug/l	7439-98-7
P-4R	09/08/2017	MOLYBDENUM	4.1	ug/l	7439-98-7
P-4R	02/28/2017	pH	7.8	pH UNITS	PH
P-4R	03/30/2017	pH	7.5	pH UNITS	PH
P-4R	03/30/2017	pH	7.6	pH UNITS	PH
P-4R	04/27/2017	pH	7.7	pH UNITS	PH
P-4R	06/29/2017	pH	7.3	pH UNITS	PH
P-4R	07/27/2017	pH	7.5	pH UNITS	PH
P-4R	07/27/2017	pH	7.6	pH UNITS	PH
P-4R	08/21/2017	pH	7.4	pH UNITS	PH
P-4R	09/08/2017	pH	7.6	pH UNITS	PH
P-4R	10/20/2017	pH	7.6	pH UNITS	PH
P-4R	02/28/2017	Radium (226)	< 17.3	pci/l	13982-63-3
P-4R	03/30/2017	Radium (226)	< 44.7	pci/l	13982-63-3
P-4R	04/27/2017	Radium (226)	< 58.0	pci/l	13982-63-3
P-4R	06/29/2017	Radium (226)	0.298	pci/l	13982-63-3
P-4R	07/27/2017	Radium (226)	0.248	pci/l	13982-63-3
P-4R	08/21/2017	Radium (226)	0.262	pci/l	13982-63-3
P-4R	09/08/2017	Radium (226)	0.254	pci/l	13982-63-3
P-4R	02/28/2017	Radium 228	< 28.9	pci/l	15262-20-1
P-4R	03/30/2017	Radium 228	< 43.1	pci/l	15262-20-1
P-4R	04/27/2017	Radium 228	< 49.7	pci/l	15262-20-1
P-4R	06/29/2017	Radium 228	< 0.288	pci/l	15262-20-1
P-4R	07/27/2017	Radium 228	< 0.363	pci/l	15262-20-1
P-4R	08/21/2017	Radium 228	0.573	pci/l	15262-20-1
P-4R	09/08/2017	Radium 228	< 0.383	pci/l	15262-20-1

Table 3



Groundwater Analytical Data

Location	Date	Parameter	Result	Units	CAS #
P-4R	02/28/2017	Selenium	< 1.0	ug/l	7782-49-2
P-4R	03/30/2017	Selenium	< 1.0	ug/l	7782-49-2
P-4R	04/27/2017	Selenium	< 1.0	ug/l	7782-49-2
P-4R	06/29/2017	Selenium	< 1.0	ug/l	7782-49-2
P-4R	07/27/2017	Selenium	< 1.0	ug/l	7782-49-2
P-4R	08/21/2017	Selenium	< 1.0	ug/l	7782-49-2
P-4R	09/08/2017	Selenium	< 1.0	ug/l	7782-49-2
P-4R	02/28/2017	Sulfate as SO4	17.6	mg/l	14808-79-8
P-4R	03/30/2017	Sulfate as SO4	47.1	mg/l	14808-79-8
P-4R	04/27/2017	Sulfate as SO4	69.2	mg/l	14808-79-8
P-4R	06/29/2017	Sulfate as SO4	46.4	mg/l	14808-79-8
P-4R	07/27/2017	Sulfate as SO4	38.6	mg/l	14808-79-8
P-4R	07/27/2017	Sulfate as SO4	39.8	mg/l	14808-79-8
P-4R	08/21/2017	Sulfate as SO4	43.1	mg/l	14808-79-8
P-4R	09/08/2017	Sulfate as SO4	42.8	mg/l	14808-79-8
P-4R	02/28/2017	Thallium	< 0.20	ug/l	7440-28-0
P-4R	03/30/2017	Thallium	< 0.20	ug/l	7440-28-0
P-4R	04/27/2017	Thallium	< 0.20	ug/l	7440-28-0
P-4R	06/29/2017	Thallium	< 0.20	ug/l	7440-28-0
P-4R	07/27/2017	Thallium	< 0.20	ug/l	7440-28-0
P-4R	08/21/2017	Thallium	< 0.20	ug/l	7440-28-0
P-4R	09/08/2017	Thallium	< 0.20	ug/l	7440-28-0
P-4R	02/28/2017	Total Dissolved Solids	90.0	mg/l	TDS
P-4R	03/30/2017	Total Dissolved Solids	418	mg/l	TDS
P-4R	04/27/2017	Total Dissolved Solids	358	mg/l	TDS
P-4R	06/29/2017	Total Dissolved Solids	617	mg/l	TDS
P-4R	07/27/2017	Total Dissolved Solids	649	mg/l	TDS
P-4R	08/21/2017	Total Dissolved Solids	594	mg/l	TDS
P-4R	09/08/2017	Total Dissolved Solids	686	mg/l	TDS
P-5	02/28/2017	Antimony	< 1.0	ug/l	7440-36-0
P-5	03/30/2017	Antimony	< 1.0	ug/l	7440-36-0
P-5	04/27/2017	Antimony	< 1.0	ug/l	7440-36-0
P-5	05/17/2017	Antimony	< 1.0	ug/l	7440-36-0
P-5	06/29/2017	Antimony	< 1.0	ug/l	7440-36-0
P-5	07/27/2017	Antimony	< 1.0	ug/l	7440-36-0
P-5	08/21/2017	Antimony	< 1.0	ug/l	7440-36-0
P-5	09/08/2017	Antimony	< 1.0	ug/l	7440-36-0
P-5	02/28/2017	Arsenic	< 1.0	ug/l	7440-38-2
P-5	03/30/2017	Arsenic	< 1.0	ug/l	7440-38-2
P-5	04/27/2017	Arsenic	< 1.0	ug/l	7440-38-2
P-5	05/17/2017	Arsenic	< 1.0	ug/l	7440-38-2
P-5	06/29/2017	Arsenic	< 1.0	ug/l	7440-38-2
P-5	07/27/2017	Arsenic	< 1.0	ug/l	7440-38-2
P-5	08/21/2017	Arsenic	< 1.0	ug/l	7440-38-2
P-5	09/08/2017	Arsenic	< 1.0	ug/l	7440-38-2
P-5	02/28/2017	Barium	0.35	mg/l	7440-39-3
P-5	03/30/2017	Barium	0.32	mg/l	7440-39-3
P-5	04/27/2017	Barium	0.32	mg/l	7440-39-3
P-5	05/17/2017	Barium	0.32	mg/l	7440-39-3

Table 3



Groundwater Analytical Data

Location	Date	Parameter	Result	Units	CAS #
P-5	06/29/2017	Barium	0.30	mg/l	7440-39-3
P-5	07/27/2017	Barium	0.32	mg/l	7440-39-3
P-5	08/21/2017	Barium	0.31	mg/l	7440-39-3
P-5	09/08/2017	Barium	0.27	mg/l	7440-39-3
P-5	02/28/2017	Beryllium	< 0.70	ug/l	7440-41-7
P-5	03/30/2017	Beryllium	< 0.70	ug/l	7440-41-7
P-5	04/27/2017	Beryllium	< 0.70	ug/l	7440-41-7
P-5	05/17/2017	Beryllium	< 0.70	ug/l	7440-41-7
P-5	06/29/2017	Beryllium	< 0.70	ug/l	7440-41-7
P-5	07/27/2017	Beryllium	< 0.70	ug/l	7440-41-7
P-5	08/21/2017	Beryllium	< 0.70	ug/l	7440-41-7
P-5	09/08/2017	Beryllium	< 0.70	ug/l	7440-41-7
P-5	02/28/2017	Boron	0.045	mg/l	7440-42-8
P-5	03/30/2017	Boron	0.043	mg/l	7440-42-8
P-5	04/27/2017	Boron	0.040	mg/l	7440-42-8
P-5	05/17/2017	Boron	0.042	mg/l	7440-42-8
P-5	06/29/2017	Boron	0.073	mg/l	7440-42-8
P-5	07/27/2017	Boron	0.057	mg/l	7440-42-8
P-5	07/27/2017	Boron	0.059	mg/l	7440-42-8
P-5	08/21/2017	Boron	0.050	mg/l	7440-42-8
P-5	09/08/2017	Boron	0.041	mg/l	7440-42-8
P-5	02/28/2017	Cadmium	0.67	ug/l	7440-43-9
P-5	03/30/2017	Cadmium	0.58	ug/l	7440-43-9
P-5	04/27/2017	Cadmium	0.59	ug/l	7440-43-9
P-5	05/17/2017	Cadmium	0.51	ug/l	7440-43-9
P-5	06/29/2017	Cadmium	< 0.50	ug/l	7440-43-9
P-5	07/27/2017	Cadmium	0.50	ug/l	7440-43-9
P-5	07/27/2017	Cadmium	0.57	ug/l	7440-43-9
P-5	08/21/2017	Cadmium	0.57	ug/l	7440-43-9
P-5	09/08/2017	Cadmium	0.53	ug/l	7440-43-9
P-5	02/28/2017	Calcium	184	mg/l	7440-70-2
P-5	03/30/2017	Calcium	166	mg/l	7440-70-2
P-5	04/27/2017	Calcium	160	mg/l	7440-70-2
P-5	05/17/2017	Calcium	163	mg/l	7440-70-2
P-5	06/29/2017	Calcium	151	mg/l	7440-70-2
P-5	07/27/2017	Calcium	167	mg/l	7440-70-2
P-5	07/27/2017	Calcium	168	mg/l	7440-70-2
P-5	08/21/2017	Calcium	174	mg/l	7440-70-2
P-5	09/08/2017	Calcium	143	mg/l	7440-70-2
P-5	02/28/2017	Chloride	211	mg/l	16887-00-6
P-5	03/30/2017	Chloride	227	mg/l	16887-00-6
P-5	04/27/2017	Chloride	242	mg/l	16887-00-6
P-5	05/17/2017	Chloride	229	mg/l	16887-00-6
P-5	06/29/2017	Chloride	54.0	mg/l	16887-00-6
P-5	07/27/2017	Chloride	187	mg/l	16887-00-6
P-5	08/21/2017	Chloride	194	mg/l	16887-00-6
P-5	09/08/2017	Chloride	218	mg/l	16887-00-6
P-5	02/28/2017	Chromium	< 0.0040	mg/l	7440-47-3
P-5	03/30/2017	Chromium	< 0.0040	mg/l	7440-47-3



Table 3



Groundwater Analytical Data

Location	Date	Parameter	Result	Units	CAS #
P-5	04/27/2017	Chromium	< 0.0040	mg/l	7440-47-3
P-5	05/17/2017	Chromium	< 0.0040	mg/l	7440-47-3
P-5	06/29/2017	Chromium	< 0.0040	mg/l	7440-47-3
P-5	07/27/2017	Chromium	< 0.0040	mg/l	7440-47-3
P-5	08/21/2017	Chromium	< 0.0040	mg/l	7440-47-3
P-5	09/08/2017	Chromium	< 0.0040	mg/l	7440-47-3
P-5	02/28/2017	Cobalt	15.2	ug/l	7440-48-4
P-5	03/30/2017	Cobalt	11.8	ug/l	7440-48-4
P-5	04/27/2017	Cobalt	11.6	ug/l	7440-48-4
P-5	05/17/2017	Cobalt	10.8	ug/l	7440-48-4
P-5	06/29/2017	Cobalt	8.5	ug/l	7440-48-4
P-5	07/27/2017	Cobalt	11.3	ug/l	7440-48-4
P-5	07/27/2017	Cobalt	9.3	ug/l	7440-48-4
P-5	08/21/2017	Cobalt	10.3	ug/l	7440-48-4
P-5	09/08/2017	Cobalt	9.2	ug/l	7440-48-4
P-5	02/28/2017	Fluoride	< 0.50	mg/l	16984-48-8
P-5	03/30/2017	Fluoride	< 0.50	mg/l	16984-48-8
P-5	04/27/2017	Fluoride	< 0.50	mg/l	16984-48-8
P-5	05/17/2017	Fluoride	< 0.50	mg/l	16984-48-8
P-5	06/29/2017	Fluoride	< 0.25	mg/l	16984-48-8
P-5	07/27/2017	Fluoride	< 0.25	mg/l	16984-48-8
P-5	08/21/2017	Fluoride	< 0.25	mg/l	16984-48-8
P-5	09/08/2017	Fluoride	< 0.25	mg/l	16984-48-8
P-5	02/28/2017	Lead	0.011	mg/l	7439-92-1
P-5	03/30/2017	Lead	< 0.010	mg/l	7439-92-1
P-5	04/27/2017	Lead	0.012	mg/l	7439-92-1
P-5	05/17/2017	Lead	0.011	mg/l	7439-92-1
P-5	06/29/2017	Lead	< 0.010	mg/l	7439-92-1
P-5	07/27/2017	Lead	< 0.010	mg/l	7439-92-1
P-5	08/21/2017	Lead	< 0.010	mg/l	7439-92-1
P-5	09/08/2017	Lead	< 0.010	mg/l	7439-92-1
P-5	02/28/2017	Lithium	< 0.030	mg/l	7439-93-2
P-5	03/30/2017	Lithium	< 0.030	mg/l	7439-93-2
P-5	04/27/2017	Lithium	< 0.030	mg/l	7439-93-2
P-5	05/17/2017	Lithium	< 0.030	mg/l	7439-93-2
P-5	06/29/2017	Lithium	< 0.030	mg/l	7439-93-2
P-5	07/27/2017	Lithium	< 0.030	mg/l	7439-93-2
P-5	08/21/2017	Lithium	< 0.030	mg/l	7439-93-2
P-5	09/08/2017	Lithium	< 0.030	mg/l	7439-93-2
P-5	02/28/2017	Mercury	< 0.00020	mg/l	7439-97-6
P-5	03/30/2017	Mercury	< 0.00020	mg/l	7439-97-6
P-5	04/27/2017	Mercury	< 0.00020	mg/l	7439-97-6
P-5	05/17/2017	Mercury	< 0.00020	mg/l	7439-97-6
P-5	06/29/2017	Mercury	< 0.00020	mg/l	7439-97-6
P-5	07/27/2017	Mercury	< 0.00020	mg/l	7439-97-6
P-5	07/27/2017	Mercury	< 0.20	ug/l	7439-97-6
P-5	08/21/2017	Mercury	< 0.00020	mg/l	7439-97-6
P-5	09/08/2017	Mercury	< 0.00020	mg/l	7439-97-6
P-5	02/28/2017	MOLYBDENUM	< 1.0	ug/l	7439-98-7

Table 3



Groundwater Analytical Data

Location	Date	Parameter	Result	Units	CAS #
P-5	03/30/2017	MOLYBDENUM	< 1.0	ug/l	7439-98-7
P-5	04/27/2017	MOLYBDENUM	< 1.0	ug/l	7439-98-7
P-5	05/17/2017	MOLYBDENUM	< 1.0	ug/l	7439-98-7
P-5	06/29/2017	MOLYBDENUM	< 1.0	ug/l	7439-98-7
P-5	07/27/2017	MOLYBDENUM	< 1.0	ug/l	7439-98-7
P-5	08/21/2017	MOLYBDENUM	< 1.0	ug/l	7439-98-7
P-5	09/08/2017	MOLYBDENUM	< 1.0	ug/l	7439-98-7
P-5	02/28/2017	pH	6.7	pH UNITS	PH
P-5	03/30/2017	pH	6.9	pH UNITS	PH
P-5	03/30/2017	pH	7.1	pH UNITS	PH
P-5	04/27/2017	pH	7.0	pH UNITS	PH
P-5	05/17/2017	pH	6.7	pH UNITS	PH
P-5	06/29/2017	pH	6.7	pH UNITS	PH
P-5	07/27/2017	pH	6.9	pH UNITS	PH
P-5	07/27/2017	pH	7.2	pH UNITS	PH
P-5	08/21/2017	pH	6.9	pH UNITS	PH
P-5	09/08/2017	pH	7.0	pH UNITS	PH
P-5	10/20/2017	pH	7.1	pH UNITS	PH
P-5	02/28/2017	Radium (226)	< 32.1	pci/l	13982-63-3
P-5	03/30/2017	Radium (226)	25.9	pci/l	13982-63-3
P-5	04/27/2017	Radium (226)	< 57.7	pci/l	13982-63-3
P-5	05/17/2017	Radium (226)	0.794	pci/l	13982-63-3
P-5	06/29/2017	Radium (226)	0.447	pci/l	13982-63-3
P-5	07/27/2017	Radium (226)	0.569	pci/l	13982-63-3
P-5	08/21/2017	Radium (226)	0.697	pci/l	13982-63-3
P-5	09/08/2017	Radium (226)	0.485	pci/l	13982-63-3
P-5	02/28/2017	Radium 228	< 26.9	pci/l	15262-20-1
P-5	03/30/2017	Radium 228	< 25.0	pci/l	15262-20-1
P-5	04/27/2017	Radium 228	< 38.4	pci/l	15262-20-1
P-5	05/17/2017	Radium 228	0.975	pci/l	15262-20-1
P-5	06/29/2017	Radium 228	0.547	pci/l	15262-20-1
P-5	07/27/2017	Radium 228	0.504	pci/l	15262-20-1
P-5	08/21/2017	Radium 228	0.532	pci/l	15262-20-1
P-5	09/08/2017	Radium 228	0.530	pci/l	15262-20-1
P-5	02/28/2017	Selenium	< 1.0	ug/l	7782-49-2
P-5	03/30/2017	Selenium	< 1.0	ug/l	7782-49-2
P-5	04/27/2017	Selenium	< 1.0	ug/l	7782-49-2
P-5	05/17/2017	Selenium	< 1.0	ug/l	7782-49-2
P-5	06/29/2017	Selenium	< 1.0	ug/l	7782-49-2
P-5	07/27/2017	Selenium	< 1.0	ug/l	7782-49-2
P-5	08/21/2017	Selenium	< 1.0	ug/l	7782-49-2
P-5	09/08/2017	Selenium	< 1.0	ug/l	7782-49-2
P-5	02/28/2017	Sulfate as SO4	44.2	mg/l	14808-79-8
P-5	03/30/2017	Sulfate as SO4	38.3	mg/l	14808-79-8
P-5	04/27/2017	Sulfate as SO4	43.7	mg/l	14808-79-8
P-5	05/17/2017	Sulfate as SO4	43.4	mg/l	14808-79-8
P-5	06/29/2017	Sulfate as SO4	50.8	mg/l	14808-79-8
P-5	07/27/2017	Sulfate as SO4	34.9	mg/l	14808-79-8
P-5	07/27/2017	Sulfate as SO4	35.0	mg/l	14808-79-8

Table 3



Groundwater Analytical Data

Location	Date	Parameter	Result	Units	CAS #
P-5	08/21/2017	Sulfate as SO4	39.5	mg/l	14808-79-8
P-5	09/08/2017	Sulfate as SO4	36.0	mg/l	14808-79-8
P-5	02/28/2017	Thallium	< 0.20	ug/l	7440-28-0
P-5	03/30/2017	Thallium	< 0.20	ug/l	7440-28-0
P-5	04/27/2017	Thallium	< 0.20	ug/l	7440-28-0
P-5	05/17/2017	Thallium	< 0.20	ug/l	7440-28-0
P-5	06/29/2017	Thallium	< 0.20	ug/l	7440-28-0
P-5	07/27/2017	Thallium	< 0.20	ug/l	7440-28-0
P-5	08/21/2017	Thallium	< 0.20	ug/l	7440-28-0
P-5	09/08/2017	Thallium	< 0.20	ug/l	7440-28-0
P-5	02/28/2017	Total Dissolved Solids	894	mg/l	TDS
P-5	03/30/2017	Total Dissolved Solids	969	mg/l	TDS
P-5	04/27/2017	Total Dissolved Solids	879	mg/l	TDS
P-5	05/17/2017	Total Dissolved Solids	866	mg/l	TDS
P-5	06/29/2017	Total Dissolved Solids	767	mg/l	TDS
P-5	07/27/2017	Total Dissolved Solids	913	mg/l	TDS
P-5	08/21/2017	Total Dissolved Solids	869	mg/l	TDS
P-5	09/08/2017	Total Dissolved Solids	942	mg/l	TDS
P-6	02/28/2017	Antimony	< 1.0	ug/l	7440-36-0
P-6	03/30/2017	Antimony	< 1.0	ug/l	7440-36-0
P-6	04/27/2017	Antimony	< 1.0	ug/l	7440-36-0
P-6	05/17/2017	Antimony	< 1.0	ug/l	7440-36-0
P-6	06/29/2017	Antimony	< 1.0	ug/l	7440-36-0
P-6	07/27/2017	Antimony	< 1.0	ug/l	7440-36-0
P-6	08/21/2017	Antimony	< 1.0	ug/l	7440-36-0
P-6	09/08/2017	Antimony	< 1.0	ug/l	7440-36-0
P-6	02/28/2017	Arsenic	< 1.0	ug/l	7440-38-2
P-6	03/30/2017	Arsenic	< 1.0	ug/l	7440-38-2
P-6	04/27/2017	Arsenic	< 1.0	ug/l	7440-38-2
P-6	05/17/2017	Arsenic	< 1.0	ug/l	7440-38-2
P-6	06/29/2017	Arsenic	< 1.0	ug/l	7440-38-2
P-6	07/27/2017	Arsenic	< 1.0	ug/l	7440-38-2
P-6	07/27/2017	Arsenic	< 2.0	ug/l	7440-38-2
P-6	08/21/2017	Arsenic	< 1.0	ug/l	7440-38-2
P-6	09/08/2017	Arsenic	< 1.0	ug/l	7440-38-2
P-6	02/28/2017	Barium	0.11	mg/l	7440-39-3
P-6	03/30/2017	Barium	0.11	mg/l	7440-39-3
P-6	04/27/2017	Barium	0.11	mg/l	7440-39-3
P-6	05/17/2017	Barium	0.11	mg/l	7440-39-3
P-6	06/29/2017	Barium	0.11	mg/l	7440-39-3
P-6	07/27/2017	Barium	0.12	mg/l	7440-39-3
P-6	08/21/2017	Barium	0.11	mg/l	7440-39-3
P-6	09/08/2017	Barium	0.10	mg/l	7440-39-3
P-6	02/28/2017	Beryllium	< 0.70	ug/l	7440-41-7
P-6	03/30/2017	Beryllium	< 0.70	ug/l	7440-41-7
P-6	04/27/2017	Beryllium	< 0.70	ug/l	7440-41-7
P-6	05/17/2017	Beryllium	< 0.70	ug/l	7440-41-7
P-6	06/29/2017	Beryllium	< 0.70	ug/l	7440-41-7
P-6	07/27/2017	Beryllium	< 0.70	ug/l	7440-41-7

Table 3



Groundwater Analytical Data

Location	Date	Parameter	Result	Units	CAS #
P-6	08/21/2017	Beryllium	< 0.70	ug/l	7440-41-7
P-6	09/08/2017	Beryllium	< 0.70	ug/l	7440-41-7
P-6	02/28/2017	Boron	0.29	mg/l	7440-42-8
P-6	03/30/2017	Boron	0.27	mg/l	7440-42-8
P-6	04/27/2017	Boron	0.30	mg/l	7440-42-8
P-6	05/17/2017	Boron	0.31	mg/l	7440-42-8
P-6	06/29/2017	Boron	0.29	mg/l	7440-42-8
P-6	07/27/2017	Boron	0.38	mg/l	7440-42-8
P-6	08/21/2017	Boron	0.37	mg/l	7440-42-8
P-6	09/08/2017	Boron	0.33	mg/l	7440-42-8
P-6	02/28/2017	Cadmium	< 0.50	ug/l	7440-43-9
P-6	03/30/2017	Cadmium	< 0.50	ug/l	7440-43-9
P-6	04/27/2017	Cadmium	< 0.50	ug/l	7440-43-9
P-6	05/17/2017	Cadmium	< 0.50	ug/l	7440-43-9
P-6	06/29/2017	Cadmium	< 0.50	ug/l	7440-43-9
P-6	07/27/2017	Cadmium	< 0.50	ug/l	7440-43-9
P-6	08/21/2017	Cadmium	< 0.50	ug/l	7440-43-9
P-6	09/08/2017	Cadmium	< 0.50	ug/l	7440-43-9
P-6	02/28/2017	Calcium	163	mg/l	7440-70-2
P-6	03/30/2017	Calcium	165	mg/l	7440-70-2
P-6	04/27/2017	Calcium	160	mg/l	7440-70-2
P-6	05/17/2017	Calcium	164	mg/l	7440-70-2
P-6	06/29/2017	Calcium	146	mg/l	7440-70-2
P-6	07/27/2017	Calcium	152	mg/l	7440-70-2
P-6	07/27/2017	Calcium	153	mg/l	7440-70-2
P-6	08/21/2017	Calcium	157	mg/l	7440-70-2
P-6	09/08/2017	Calcium	139	mg/l	7440-70-2
P-6	02/28/2017	Chloride	79.2	mg/l	16887-00-6
P-6	03/30/2017	Chloride	81.9	mg/l	16887-00-6
P-6	04/27/2017	Chloride	95.1	mg/l	16887-00-6
P-6	05/17/2017	Chloride	107	mg/l	16887-00-6
P-6	06/29/2017	Chloride	130	mg/l	16887-00-6
P-6	07/27/2017	Chloride	114	mg/l	16887-00-6
P-6	08/21/2017	Chloride	94.8	mg/l	16887-00-6
P-6	09/08/2017	Chloride	85.9	mg/l	16887-00-6
P-6	02/28/2017	Chromium	< 0.0040	mg/l	7440-47-3
P-6	03/30/2017	Chromium	< 0.0040	mg/l	7440-47-3
P-6	04/27/2017	Chromium	< 0.0040	mg/l	7440-47-3
P-6	05/17/2017	Chromium	< 0.0040	mg/l	7440-47-3
P-6	06/29/2017	Chromium	< 0.0040	mg/l	7440-47-3
P-6	07/27/2017	Chromium	< 0.0040	mg/l	7440-47-3
P-6	08/21/2017	Chromium	< 0.0040	mg/l	7440-47-3
P-6	09/08/2017	Chromium	< 0.0040	mg/l	7440-47-3
P-6	02/28/2017	Cobalt	0.40	ug/l	7440-48-4
P-6	03/30/2017	Cobalt	0.34	ug/l	7440-48-4
P-6	04/27/2017	Cobalt	0.36	ug/l	7440-48-4
P-6	05/17/2017	Cobalt	0.48	ug/l	7440-48-4
P-6	06/29/2017	Cobalt	< 0.30	ug/l	7440-48-4
P-6	07/27/2017	Cobalt	0.47	ug/l	7440-48-4

Table 3



Groundwater Analytical Data

Location	Date	Parameter	Result	Units	CAS #
P-6	07/27/2017	Cobalt	0.49	ug/l	7440-48-4
P-6	08/21/2017	Cobalt	< 0.30	ug/l	7440-48-4
P-6	09/08/2017	Cobalt	< 0.30	ug/l	7440-48-4
P-6	02/28/2017	Fluoride	< 0.50	mg/l	16984-48-8
P-6	03/30/2017	Fluoride	< 0.50	mg/l	16984-48-8
P-6	04/27/2017	Fluoride	< 0.50	mg/l	16984-48-8
P-6	05/17/2017	Fluoride	< 0.50	mg/l	16984-48-8
P-6	06/29/2017	Fluoride	< 0.25	mg/l	16984-48-8
P-6	07/27/2017	Fluoride	< 0.25	mg/l	16984-48-8
P-6	08/21/2017	Fluoride	< 0.25	mg/l	16984-48-8
P-6	09/08/2017	Fluoride	< 0.25	mg/l	16984-48-8
P-6	02/28/2017	Lead	0.017	mg/l	7439-92-1
P-6	03/30/2017	Lead	< 0.010	mg/l	7439-92-1
P-6	04/27/2017	Lead	0.011	mg/l	7439-92-1
P-6	05/17/2017	Lead	< 0.010	mg/l	7439-92-1
P-6	06/29/2017	Lead	< 0.010	mg/l	7439-92-1
P-6	07/27/2017	Lead	< 0.010	mg/l	7439-92-1
P-6	08/21/2017	Lead	< 0.010	mg/l	7439-92-1
P-6	09/08/2017	Lead	< 0.010	mg/l	7439-92-1
P-6	02/28/2017	Lithium	< 0.030	mg/l	7439-93-2
P-6	03/30/2017	Lithium	< 0.030	mg/l	7439-93-2
P-6	04/27/2017	Lithium	< 0.030	mg/l	7439-93-2
P-6	05/17/2017	Lithium	< 0.030	mg/l	7439-93-2
P-6	06/29/2017	Lithium	< 0.030	mg/l	7439-93-2
P-6	07/27/2017	Lithium	< 0.030	mg/l	7439-93-2
P-6	08/21/2017	Lithium	< 0.030	mg/l	7439-93-2
P-6	09/08/2017	Lithium	< 0.030	mg/l	7439-93-2
P-6	02/28/2017	Mercury	< 0.00020	mg/l	7439-97-6
P-6	03/30/2017	Mercury	< 0.00020	mg/l	7439-97-6
P-6	04/27/2017	Mercury	< 0.00020	mg/l	7439-97-6
P-6	05/17/2017	Mercury	< 0.00020	mg/l	7439-97-6
P-6	06/29/2017	Mercury	< 0.00020	mg/l	7439-97-6
P-6	07/27/2017	Mercury	< 0.00020	mg/l	7439-97-6
P-6	07/27/2017	Mercury	< 0.20	ug/l	7439-97-6
P-6	08/21/2017	Mercury	< 0.00020	mg/l	7439-97-6
P-6	09/08/2017	Mercury	< 0.00020	mg/l	7439-97-6
P-6	02/28/2017	MOLYBDENUM	< 1.0	ug/l	7439-98-7
P-6	03/30/2017	MOLYBDENUM	< 1.0	ug/l	7439-98-7
P-6	04/27/2017	MOLYBDENUM	< 1.0	ug/l	7439-98-7
P-6	05/17/2017	MOLYBDENUM	< 1.0	ug/l	7439-98-7
P-6	06/29/2017	MOLYBDENUM	< 1.0	ug/l	7439-98-7
P-6	07/27/2017	MOLYBDENUM	< 1.0	ug/l	7439-98-7
P-6	08/21/2017	MOLYBDENUM	< 1.0	ug/l	7439-98-7
P-6	09/08/2017	MOLYBDENUM	< 1.0	ug/l	7439-98-7
P-6	02/28/2017	pH	6.8	pH UNITS	PH
P-6	03/30/2017	pH	7.0	pH UNITS	PH
P-6	03/30/2017	pH	7.2	pH UNITS	PH
P-6	04/27/2017	pH	7.1	pH UNITS	PH
P-6	05/17/2017	pH	6.8	pH UNITS	PH

Table 3



Groundwater Analytical Data

Location	Date	Parameter	Result	Units	CAS #
P-6	06/29/2017	pH	6.9	pH UNITS	PH
P-6	07/27/2017	pH	7.0	pH UNITS	PH
P-6	07/27/2017	pH	7.3	pH UNITS	PH
P-6	08/21/2017	pH	7.0	pH UNITS	PH
P-6	09/08/2017	pH	7.1	pH UNITS	PH
P-6	10/20/2017	pH	7.2	pH UNITS	PH
P-6	02/28/2017	Radium (226)	42.7	pci/l	13982-63-3
P-6	03/30/2017	Radium (226)	23.2	pci/l	13982-63-3
P-6	04/27/2017	Radium (226)	< 60.5	pci/l	13982-63-3
P-6	05/17/2017	Radium (226)	0.161	pci/l	13982-63-3
P-6	06/29/2017	Radium (226)	0.0968	pci/l	13982-63-3
P-6	07/27/2017	Radium (226)	0.141	pci/l	13982-63-3
P-6	08/21/2017	Radium (226)	< 0.0763	pci/l	13982-63-3
P-6	09/08/2017	Radium (226)	0.140	pci/l	13982-63-3
P-6	02/28/2017	Radium 228	< 26.2	pci/l	15262-20-1
P-6	03/30/2017	Radium 228	33.1	pci/l	15262-20-1
P-6	04/27/2017	Radium 228	< 67.1	pci/l	15262-20-1
P-6	05/17/2017	Radium 228	< 0.340	pci/l	15262-20-1
P-6	06/29/2017	Radium 228	< 0.300	pci/l	15262-20-1
P-6	07/27/2017	Radium 228	< 0.336	pci/l	15262-20-1
P-6	08/21/2017	Radium 228	< 0.342	pci/l	15262-20-1
P-6	09/08/2017	Radium 228	< 0.367	pci/l	15262-20-1
P-6	02/28/2017	Selenium	< 1.0	ug/l	7782-49-2
P-6	03/30/2017	Selenium	< 1.0	ug/l	7782-49-2
P-6	04/27/2017	Selenium	< 1.0	ug/l	7782-49-2
P-6	05/17/2017	Selenium	< 1.0	ug/l	7782-49-2
P-6	06/29/2017	Selenium	< 1.0	ug/l	7782-49-2
P-6	07/27/2017	Selenium	< 1.0	ug/l	7782-49-2
P-6	08/21/2017	Selenium	< 1.0	ug/l	7782-49-2
P-6	09/08/2017	Selenium	< 1.0	ug/l	7782-49-2
P-6	02/28/2017	Sulfate as SO4	109	mg/l	14808-79-8
P-6	03/30/2017	Sulfate as SO4	103	mg/l	14808-79-8
P-6	04/27/2017	Sulfate as SO4	120	mg/l	14808-79-8
P-6	05/17/2017	Sulfate as SO4	125	mg/l	14808-79-8
P-6	06/29/2017	Sulfate as SO4	139	mg/l	14808-79-8
P-6	07/27/2017	Sulfate as SO4	143	mg/l	14808-79-8
P-6	07/27/2017	Sulfate as SO4	147	mg/l	14808-79-8
P-6	08/21/2017	Sulfate as SO4	137	mg/l	14808-79-8
P-6	09/08/2017	Sulfate as SO4	109	mg/l	14808-79-8
P-6	02/28/2017	Thallium	< 0.20	ug/l	7440-28-0
P-6	03/30/2017	Thallium	< 0.20	ug/l	7440-28-0
P-6	04/27/2017	Thallium	< 0.20	ug/l	7440-28-0
P-6	05/17/2017	Thallium	< 0.20	ug/l	7440-28-0
P-6	06/29/2017	Thallium	< 0.20	ug/l	7440-28-0
P-6	07/27/2017	Thallium	< 0.20	ug/l	7440-28-0
P-6	08/21/2017	Thallium	< 0.20	ug/l	7440-28-0
P-6	09/08/2017	Thallium	< 0.20	ug/l	7440-28-0
P-6	02/28/2017	Total Dissolved Solids	750	mg/l	TDS
P-6	03/30/2017	Total Dissolved Solids	803	mg/l	TDS

Table 3



Groundwater Analytical Data

Location	Date	Parameter	Result	Units	CAS #
P-6	04/27/2017	Total Dissolved Solids	760	mg/l	TDS
P-6	05/17/2017	Total Dissolved Solids	799	mg/l	TDS
P-6	06/29/2017	Total Dissolved Solids	782	mg/l	TDS
P-6	07/27/2017	Total Dissolved Solids	801	mg/l	TDS
P-6	08/21/2017	Total Dissolved Solids	779	mg/l	TDS
P-6	09/08/2017	Total Dissolved Solids	795	mg/l	TDS
P-7	02/28/2017	Antimony	< 1.0	ug/l	7440-36-0
P-7	03/30/2017	Antimony	< 1.0	ug/l	7440-36-0
P-7	04/27/2017	Antimony	< 1.0	ug/l	7440-36-0
P-7	05/17/2017	Antimony	< 1.0	ug/l	7440-36-0
P-7	06/29/2017	Antimony	< 1.0	ug/l	7440-36-0
P-7	07/27/2017	Antimony	< 1.0	ug/l	7440-36-0
P-7	08/21/2017	Antimony	< 1.0	ug/l	7440-36-0
P-7	09/08/2017	Antimony	< 1.0	ug/l	7440-36-0
P-7	02/28/2017	Arsenic	< 1.0	ug/l	7440-38-2
P-7	03/30/2017	Arsenic	< 1.0	ug/l	7440-38-2
P-7	04/27/2017	Arsenic	< 1.0	ug/l	7440-38-2
P-7	05/17/2017	Arsenic	< 1.0	ug/l	7440-38-2
P-7	06/29/2017	Arsenic	< 1.0	ug/l	7440-38-2
P-7	07/27/2017	Arsenic	< 1.0	ug/l	7440-38-2
P-7	08/21/2017	Arsenic	< 1.0	ug/l	7440-38-2
P-7	09/08/2017	Arsenic	< 1.0	ug/l	7440-38-2
P-7	02/28/2017	Barium	0.25	mg/l	7440-39-3
P-7	03/30/2017	Barium	0.22	mg/l	7440-39-3
P-7	04/27/2017	Barium	0.22	mg/l	7440-39-3
P-7	05/17/2017	Barium	0.23	mg/l	7440-39-3
P-7	06/29/2017	Barium	0.23	mg/l	7440-39-3
P-7	07/27/2017	Barium	0.21	mg/l	7440-39-3
P-7	07/27/2017	Barium	0.23	mg/l	7440-39-3
P-7	08/21/2017	Barium	0.23	mg/l	7440-39-3
P-7	09/08/2017	Barium	0.23	mg/l	7440-39-3
P-7	02/28/2017	Beryllium	< 0.70	ug/l	7440-41-7
P-7	03/30/2017	Beryllium	< 0.70	ug/l	7440-41-7
P-7	04/27/2017	Beryllium	< 0.70	ug/l	7440-41-7
P-7	05/17/2017	Beryllium	< 0.70	ug/l	7440-41-7
P-7	06/29/2017	Beryllium	< 0.70	ug/l	7440-41-7
P-7	07/27/2017	Beryllium	< 0.70	ug/l	7440-41-7
P-7	08/21/2017	Beryllium	< 0.70	ug/l	7440-41-7
P-7	09/08/2017	Beryllium	< 0.70	ug/l	7440-41-7
P-7	02/28/2017	Boron	0.13	mg/l	7440-42-8
P-7	03/30/2017	Boron	0.12	mg/l	7440-42-8
P-7	04/27/2017	Boron	0.12	mg/l	7440-42-8
P-7	05/17/2017	Boron	0.11	mg/l	7440-42-8
P-7	06/29/2017	Boron	0.13	mg/l	7440-42-8
P-7	07/27/2017	Boron	0.13	mg/l	7440-42-8
P-7	08/21/2017	Boron	0.14	mg/l	7440-42-8
P-7	09/08/2017	Boron	0.14	mg/l	7440-42-8
P-7	02/28/2017	Cadmium	< 0.50	ug/l	7440-43-9
P-7	03/30/2017	Cadmium	< 0.50	ug/l	7440-43-9

Table 3



Groundwater Analytical Data

Location	Date	Parameter	Result	Units	CAS #
P-7	04/27/2017	Cadmium	< 0.50	ug/l	7440-43-9
P-7	05/17/2017	Cadmium	< 0.50	ug/l	7440-43-9
P-7	06/29/2017	Cadmium	< 0.50	ug/l	7440-43-9
P-7	07/27/2017	Cadmium	< 0.50	ug/l	7440-43-9
P-7	08/21/2017	Cadmium	< 0.50	ug/l	7440-43-9
P-7	09/08/2017	Cadmium	< 0.50	ug/l	7440-43-9
P-7	02/28/2017	Calcium	193	mg/l	7440-70-2
P-7	03/30/2017	Calcium	181	mg/l	7440-70-2
P-7	04/27/2017	Calcium	174	mg/l	7440-70-2
P-7	05/17/2017	Calcium	172	mg/l	7440-70-2
P-7	06/29/2017	Calcium	167	mg/l	7440-70-2
P-7	07/27/2017	Calcium	157	mg/l	7440-70-2
P-7	07/27/2017	Calcium	164	mg/l	7440-70-2
P-7	08/21/2017	Calcium	183	mg/l	7440-70-2
P-7	09/08/2017	Calcium	171	mg/l	7440-70-2
P-7	02/28/2017	Chloride	93.9	mg/l	16887-00-6
P-7	03/30/2017	Chloride	92.4	mg/l	16887-00-6
P-7	04/27/2017	Chloride	81.4	mg/l	16887-00-6
P-7	05/17/2017	Chloride	72.9	mg/l	16887-00-6
P-7	06/29/2017	Chloride	38.3	mg/l	16887-00-6
P-7	07/27/2017	Chloride	36.7	mg/l	16887-00-6
P-7	08/21/2017	Chloride	37.3	mg/l	16887-00-6
P-7	09/08/2017	Chloride	63.9	mg/l	16887-00-6
P-7	02/28/2017	Chromium	< 0.0040	mg/l	7440-47-3
P-7	03/30/2017	Chromium	< 0.0040	mg/l	7440-47-3
P-7	04/27/2017	Chromium	< 0.0040	mg/l	7440-47-3
P-7	05/17/2017	Chromium	< 0.0040	mg/l	7440-47-3
P-7	06/29/2017	Chromium	< 0.0040	mg/l	7440-47-3
P-7	07/27/2017	Chromium	< 0.0040	mg/l	7440-47-3
P-7	08/21/2017	Chromium	< 0.0040	mg/l	7440-47-3
P-7	09/08/2017	Chromium	< 0.0040	mg/l	7440-47-3
P-7	02/28/2017	Cobalt	0.53	ug/l	7440-48-4
P-7	03/30/2017	Cobalt	0.52	ug/l	7440-48-4
P-7	04/27/2017	Cobalt	0.65	ug/l	7440-48-4
P-7	05/17/2017	Cobalt	0.64	ug/l	7440-48-4
P-7	06/29/2017	Cobalt	0.46	ug/l	7440-48-4
P-7	07/27/2017	Cobalt	0.53	ug/l	7440-48-4
P-7	07/27/2017	Cobalt	0.59	ug/l	7440-48-4
P-7	08/21/2017	Cobalt	0.73	ug/l	7440-48-4
P-7	09/08/2017	Cobalt	0.64	ug/l	7440-48-4
P-7	02/28/2017	Fluoride	< 0.50	mg/l	16984-48-8
P-7	03/30/2017	Fluoride	< 0.50	mg/l	16984-48-8
P-7	04/27/2017	Fluoride	< 0.50	mg/l	16984-48-8
P-7	05/17/2017	Fluoride	< 0.50	mg/l	16984-48-8
P-7	06/29/2017	Fluoride	< 0.25	mg/l	16984-48-8
P-7	07/27/2017	Fluoride	< 0.25	mg/l	16984-48-8
P-7	08/21/2017	Fluoride	< 0.25	mg/l	16984-48-8
P-7	09/08/2017	Fluoride	< 0.25	mg/l	16984-48-8
P-7	02/28/2017	Lead	< 0.010	mg/l	7439-92-1



Table 3



Groundwater Analytical Data

Location	Date	Parameter	Result	Units	CAS #
P-7	03/30/2017	Lead	< 0.010	mg/l	7439-92-1
P-7	04/27/2017	Lead	< 0.010	mg/l	7439-92-1
P-7	05/17/2017	Lead	< 0.010	mg/l	7439-92-1
P-7	06/29/2017	Lead	< 0.010	mg/l	7439-92-1
P-7	07/27/2017	Lead	< 0.010	mg/l	7439-92-1
P-7	08/21/2017	Lead	< 0.010	mg/l	7439-92-1
P-7	09/08/2017	Lead	< 0.010	mg/l	7439-92-1
P-7	02/28/2017	Lithium	< 0.030	mg/l	7439-93-2
P-7	03/30/2017	Lithium	< 0.030	mg/l	7439-93-2
P-7	04/27/2017	Lithium	< 0.030	mg/l	7439-93-2
P-7	05/17/2017	Lithium	< 0.030	mg/l	7439-93-2
P-7	06/29/2017	Lithium	< 0.030	mg/l	7439-93-2
P-7	07/27/2017	Lithium	< 0.030	mg/l	7439-93-2
P-7	08/21/2017	Lithium	< 0.030	mg/l	7439-93-2
P-7	09/08/2017	Lithium	< 0.030	mg/l	7439-93-2
P-7	02/28/2017	Mercury	< 0.00020	mg/l	7439-97-6
P-7	03/30/2017	Mercury	< 0.00020	mg/l	7439-97-6
P-7	04/27/2017	Mercury	< 0.00020	mg/l	7439-97-6
P-7	05/17/2017	Mercury	< 0.00020	mg/l	7439-97-6
P-7	06/29/2017	Mercury	< 0.00020	mg/l	7439-97-6
P-7	07/27/2017	Mercury	< 0.00020	mg/l	7439-97-6
P-7	07/27/2017	Mercury	< 0.20	ug/l	7439-97-6
P-7	08/21/2017	Mercury	< 0.00020	mg/l	7439-97-6
P-7	09/08/2017	Mercury	< 0.00020	mg/l	7439-97-6
P-7	02/28/2017	MOLYBDENUM	< 1.0	ug/l	7439-98-7
P-7	03/30/2017	MOLYBDENUM	< 1.0	ug/l	7439-98-7
P-7	04/27/2017	MOLYBDENUM	< 1.0	ug/l	7439-98-7
P-7	05/17/2017	MOLYBDENUM	< 1.0	ug/l	7439-98-7
P-7	06/29/2017	MOLYBDENUM	< 1.0	ug/l	7439-98-7
P-7	07/27/2017	MOLYBDENUM	< 1.0	ug/l	7439-98-7
P-7	08/21/2017	MOLYBDENUM	< 1.0	ug/l	7439-98-7
P-7	09/08/2017	MOLYBDENUM	< 1.0	ug/l	7439-98-7
P-7	02/28/2017	pH	6.9	pH UNITS	PH
P-7	03/30/2017	pH	7.1	pH UNITS	PH
P-7	03/30/2017	pH	7.3	pH UNITS	PH
P-7	04/27/2017	pH	7.3	pH UNITS	PH
P-7	05/17/2017	pH	7.0	pH UNITS	PH
P-7	06/29/2017	pH	6.9	pH UNITS	PH
P-7	07/27/2017	pH	7.1	pH UNITS	PH
P-7	07/27/2017	pH	7.3	pH UNITS	PH
P-7	08/21/2017	pH	7.0	pH UNITS	PH
P-7	09/08/2017	pH	7.1	pH UNITS	PH
P-7	10/20/2017	pH	7.2	pH UNITS	PH
P-7	02/28/2017	Radium (226)	79.6	pci/l	13982-63-3
P-7	03/30/2017	Radium (226)	20.5	pci/l	13982-63-3
P-7	04/27/2017	Radium (226)	< 50.3	pci/l	13982-63-3
P-7	05/17/2017	Radium (226)	0.210	pci/l	13982-63-3
P-7	06/29/2017	Radium (226)	0.234	pci/l	13982-63-3
P-7	07/27/2017	Radium (226)	0.205	pci/l	13982-63-3

Table 3



Groundwater Analytical Data

Location	Date	Parameter	Result	Units	CAS #
P-7	08/21/2017	Radium (226)	0.343	pci/l	13982-63-3
P-7	09/08/2017	Radium (226)	0.177	pci/l	13982-63-3
P-7	02/28/2017	Radium 228	< 29.6	pci/l	15262-20-1
P-7	03/30/2017	Radium 228	< 31.7	pci/l	15262-20-1
P-7	04/27/2017	Radium 228	< 28.4	pci/l	15262-20-1
P-7	05/17/2017	Radium 228	< 0.350	pci/l	15262-20-1
P-7	06/29/2017	Radium 228	< 0.278	pci/l	15262-20-1
P-7	07/27/2017	Radium 228	0.471	pci/l	15262-20-1
P-7	08/21/2017	Radium 228	< 0.369	pci/l	15262-20-1
P-7	09/08/2017	Radium 228	< 0.385	pci/l	15262-20-1
P-7	02/28/2017	Selenium	< 1.0	ug/l	7782-49-2
P-7	03/30/2017	Selenium	< 1.0	ug/l	7782-49-2
P-7	04/27/2017	Selenium	< 1.0	ug/l	7782-49-2
P-7	05/17/2017	Selenium	< 1.0	ug/l	7782-49-2
P-7	06/29/2017	Selenium	< 1.0	ug/l	7782-49-2
P-7	07/27/2017	Selenium	< 1.0	ug/l	7782-49-2
P-7	08/21/2017	Selenium	< 1.0	ug/l	7782-49-2
P-7	09/08/2017	Selenium	< 1.0	ug/l	7782-49-2
P-7	02/28/2017	Sulfate as SO4	44.7	mg/l	14808-79-8
P-7	03/30/2017	Sulfate as SO4	42.5	mg/l	14808-79-8
P-7	04/27/2017	Sulfate as SO4	49.8	mg/l	14808-79-8
P-7	05/17/2017	Sulfate as SO4	44.8	mg/l	14808-79-8
P-7	06/29/2017	Sulfate as SO4	61.1	mg/l	14808-79-8
P-7	07/27/2017	Sulfate as SO4	65.8	mg/l	14808-79-8
P-7	07/27/2017	Sulfate as SO4	66.2	mg/l	14808-79-8
P-7	08/21/2017	Sulfate as SO4	71.1	mg/l	14808-79-8
P-7	09/08/2017	Sulfate as SO4	68.0	mg/l	14808-79-8
P-7	02/28/2017	Thallium	< 0.20	ug/l	7440-28-0
P-7	03/30/2017	Thallium	< 0.20	ug/l	7440-28-0
P-7	04/27/2017	Thallium	< 0.20	ug/l	7440-28-0
P-7	05/17/2017	Thallium	< 0.20	ug/l	7440-28-0
P-7	06/29/2017	Thallium	< 0.20	ug/l	7440-28-0
P-7	07/27/2017	Thallium	< 0.20	ug/l	7440-28-0
P-7	08/21/2017	Thallium	< 0.20	ug/l	7440-28-0
P-7	09/08/2017	Thallium	< 0.20	ug/l	7440-28-0
P-7	02/28/2017	Total Dissolved Solids	838	mg/l	TDS
P-7	03/30/2017	Total Dissolved Solids	844	mg/l	TDS
P-7	04/27/2017	Total Dissolved Solids	780	mg/l	TDS
P-7	05/17/2017	Total Dissolved Solids	735	mg/l	TDS
P-7	06/29/2017	Total Dissolved Solids	767	mg/l	TDS
P-7	07/27/2017	Total Dissolved Solids	772	mg/l	TDS
P-7	08/21/2017	Total Dissolved Solids	794	mg/l	TDS
P-7	09/08/2017	Total Dissolved Solids	796	mg/l	TDS

**Table 4**  
**Background Threshold Values**



**Appendix III to Part 257**

Parameter	Background Threshold Value (BTV)	Units	CAS #
Boron	0.6994	mg/l	7440-42-8
Calcium	277.103	mg/l	7440-70-2
Chloride	712.951	mg/l	16887-00-6
Fluoride	0.500	mg/l	15984-48-8
pH	7.906	pH UNITS	PH
Sulfate as SO4	205.934	mg/l	14808-79-8
Total Dissolved Solids	1930	mg/l	TDS

**Appendix IV to Part 257**

Parameter	Background Threshold Value (BTV)	Units	CAS #
Antimony	1.0	ug/l	7440-36-0
Arsenic	7.0	ug/l	7440-38-2
Barium	0.340	mg/l	7440-39-3
Beryllium	0.70	ug/l	7440-41-7
Cadmium	0.59	ug/l	7440-43-9
Chromium	0.015	mg/l	7440-47-3
Cobalt	11.8	ug/l	7440-48-4
Lead	0.015	mg/l	7439-92-1
Lithium	0.030	mg/l	7439-93-2
Mercury	0.0002	mg/l	7439-97-6
Molybdenum	18.2	ug/l	7439-98-7
Radium 226	57.94	pci/l	13982-63-3
Radium 228	48.38	pci/l	15262-20-1
Radium 226/228	1.967	pci/l	EDF-206
Selenium	1.0	ug/l	7782-49-2
Thallium	0.20	ug/l	7440-28-0



## Appendix A – Field Data Sheets

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## WELL PURGING RECORD LOW-FLOW SAMPLING METHOD

Site: SK-B Cloquet  
Project Number: 3501772  
Sampling Device: Dedicated Bladder Pump  
Date: 2/20/17  
Well ID: P-1

Tubing Diameter (ID): 2 inches  
Depth to Water: 11.54' ft, TOC  
Depth to Bottom of Well: 17.7 ft, TOC  
Feet of Water in Well: 6.16 ft  
Volume of Water in Well: 1.0 gal

Elapsed Time (min)	Depth to Water (ft, TOC)	pH (s.u.)	Specific Conductance (µmhos / Lh)	Temperature (°K) °C	Purge Rate (L/min)
1	11.50'	8.79	1,350	8.63	1000
2	11.50'	8.55	1,370	8.65	1000
3	11.50'	8.50	1,370	8.71	1000
4	11.50'	8.50	1,390	8.71	1000

Purge Start Time: 9:05 Purge End Time: 9:10 Total Volume Purged: 4.0 gal  
Approximate Purge Rate: 1000 mL/min. Purged/Sampled by: N. Schmitt  
Weather Conditions: 34°F, 14 mph, 5-10 mph N  
Comments: \_\_\_\_\_  
\_\_\_\_\_



## WELL PURGING RECORD LOW-FLOW SAMPLING METHOD

Site: SKB Cloquet  
 Project Number: 3501872  
 Sampling Device: Applied Bladder Pump  
 Date: 2/28/17  
 Well ID: R-2

Tubing Diameter (ID): 2 inches  
 Depth to Water: 6.91 ft, TOC  
 Depth to Bottom of Well: 10.4 ft, TOC  
 Feet of Water in Well: 3.49 ft  
 Volume of Water in Well: 0.57 gal

Elapsed Time (min)	Depth to Water (ft, TOC)	pH (s.u.)	Specific Conductance (µmhos/cm)	Temperature (°F) °C	Purge Rate (L/min)
1	7.05	8.84	822	3.45	1000
3	7.15	8.50	817	3.37	1000
5	7.25	8.48	807	3.33	1000
8	7.25	8.47	813 803	3.32	1000

Purge Start Time: 14:15 Purge End Time: 14:25 Total Volume Purged: 0.75 gal  
 Approximate Purge Rate: 1000 mL/min Purged/Sampled by: N. Schlegel  
 Weather Conditions: 32°F, light snow, 5-P mph NW  
 Comments: \_\_\_\_\_



### WELL PURGING RECORD LOW-FLOW SAMPLING METHOD

Site: SKB Cleanwell  
Project Number: 3501772  
Sampling Device: dedicated bladder pump  
Date: 2/20/17  
Well ID: P-7

Tubing Diameter (ID): 2 inches  
Depth to Water: 8.25 ft, TOC  
Depth to Bottom of Well: 12.95 ft, TOC  
Feet of Water in Well: 4.7 ft  
Volume of Water in Well: 0.76 gal

Elapsed Time (min)	Depth to Water (ft, TOC)	pH (s.u.)	Specific Conductance (µmhos / cm)	Temperature (°F) °C	Purge Rate (gpm)
1	8.25	8.85	879	5.72	1000
2	8.25	8.82	909	4.92	1000
3	8.25	8.79	916	4.89	1000
4	8.25	8.82	916	4.90	1000

Purge Start Time: 10:10 Purge End Time: 10:15 Total Volume Purged: 1.0 gal

Approximate Purge Rate: \_\_\_\_\_ Purged/Sampled by: N. Selogel

Weather Conditions: 34°F light snow, 5-10 mph W

Comments: collect duplicate sample



## WELL PURGING RECORD LOW-FLOW SAMPLING METHOD

Site: SKB Cloquet  
 Project Number: 3801772  
 Sampling Device: Delicatid Bucker Pump  
 Date: 2/28/17  
 Well ID: P-44

Tubing Diameter (ID): 2 inches  
 Depth to Water: 6.61' ft, TOC  
 Depth to Bottom of Well: 9.52 ft, TOC  
 Feet of Water in Well: 2.91 ft  
 Volume of Water in Well: 0.47 gal

Elapsed Time (min)	Depth to Water (ft, TOC)	pH (s.u.)	Specific Conductance ( $\mu$ mhos/cm)	Temperature (°F) °C	Purge Rate (L/min)
1	6.65'	9.30	223	1.25	1000
2	6.65'	9.42	221	1.05	1000
3	6.65'	8.85	217	0.94	1000
4	6.65'	8.85	216	0.97	1000

Purge Start Time: 11:20 Purge End Time: 11:25 Total Volume Purged: 1.0 gal  
 Approximate Purge Rate: 1000 mL/min Purged/Sampled by: N. Schlager  
 Weather Conditions: 34°F, light rain, 5-10 mph N  
 Comments: \_\_\_\_\_

























**Chain of Custody Record**

<b>Client Information</b>		Lab Pk: VanDette, Ryan T		Carrier Tracking No(s):	
Client Contact: Nathaniel Beinmann		E-Mail: ryan.vandette@testamericainc.com		COC No: 480-94273-22507.1	
Company: Waste Connections, Inc.		Phone: 651-792-6055		Page 1 of 1	
Address: 13425 Courthouse Blvd		City: Rosemount		Job #:	
State, Zip: MN, 55068		PO #: Purchase Order Requested		Analysis Requested	
Phone:		TAT Requested (days): Standard		Preservation Codes:	
Email: nathaniel@wcnx.org		Project #: 48013722		A - HCL B - NaOH C - Zn Acetate D - Nitric Acid E - NaHSO4 F - MeOH G - Antichlor H - Ascorbic Acid I - Ice J - DI Water K - EDTA L - EDA Other:	
Project Name: SKB Cloquet/ Event Desc: CCR Groundwater		SSOW#:		M - Hexane N - None O - AsNaO2 P - Na2O4S Q - Na2SO3 R - Na2S2O3 S - H2SO4 T - TSP Dodecylsulfate U - Acetone V - MCAA W - pH 4.5 Z - other (specify)	
Site: Minnesota		Due Date Requested:		Special Instructions/Note:	

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=oil, A=acid)	Field Filtered Sample (Yes or No)		Performed Method (Yes or No)		Analysis Requested		Special Instructions/Note
					Yes	No	Yes	No	D	N	
P-1	3/30/17	8:45	6	Water	X	X	X	X	X	X	
P-2		14:10		Water	X	X	X	X	X	X	
P-3		9:35		Water	X	X	X	X	X	X	
P-4R		11:05		Water	X	X	X	X	X	X	
P-5		12:05		Water	X	X	X	X	X	X	
P-6		15:05		Water	X	X	X	X	X	X	
P-7		14:10		Water	X	X	X	X	X	X	
Duplicate				Water	X	X	X	X	X	X	
Field Blank		15:10		Water	X	X	X	X	X	X	
Equip Blank		15:15		Water	X	X	X	X	X	X	

<b>Possible Hazard Identification</b> <input type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Unknown <input type="checkbox"/> Radiological		<b>Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)</b> <input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months	
<b>Deliverable Requested:</b> I, II, III, IV, Other (specify)		<b>Special Instructions/QC Requirements:</b>	
<b>Empty Kit Relinquished by:</b>		<b>Method of Shipment:</b>	
<b>Relinquished by:</b> <i>[Signature]</i>		<b>Received by:</b>	
<b>Relinquished by:</b>		<b>Received by:</b>	
<b>Relinquished by:</b>		<b>Received by:</b>	
<b>Custody Seals Intact:</b>		<b>Cooler Temperature(s) °C and Other Remarks:</b>	
<input type="checkbox"/> Yes <input type="checkbox"/> No			















## WELL PURGING RECORD LOW-FLOW SAMPLING METHOD

Site: SLB Clogwell  
 Project Number: 3501772  
 Sampling Device: Dedicated Bladder Pump  
 Date: 4/27/17  
 Well ID: P-6

Tubing Diameter (ID): 2 inches  
 Depth to Water: 29.73 ft, TOC  
 Depth to Bottom of Well: 36.2 ft, TOC  
 Feet of Water in Well: 6.47 ft  
 Volume of Water in Well: 1.1 gal

Elapsed Time (min)	Depth to Water (ft, TOC)	pH (s.u.)	Specific Conductance (µmhos/cm)	Temperature (°F)	Purge Rate (L/min)
0	29.73	8.19	1,380	5.35	1
2	29.74	7.80	1,340	7.92	1
4	29.74	7.80	1,320	8.57	1
5	29.74	7.90	1,330	8.09	1

Purge Start Time: 12:30      Purge End Time: 12:35      Total Volume Purged: 1.5 gal  
 Approximate Purge Rate: 1 L/min.      Purged/Sampled by: N. Schlegel  
 Weather Conditions: 25°F, cloudy, 5-10 mph N  
 Comments: \_\_\_\_\_



**WELL PURGING RECORD  
LOW-FLOW SAMPLING METHOD**

Site: SKB Clover  
 Project Number: 350772  
 Sampling Device: Dedicated Bladder Pump  
 Date: 4/27/17  
 Well ID: P-7

Tubing Diameter (ID): 2 inches  
 Depth to Water: 14.96 ft, TOC  
 Depth to Bottom of Well: 19.6 ft, TOC  
 Feet of Water in Well: 4.64 ft  
 Volume of Water in Well: 0.9 gal

Elapsed Time (min)	Depth to Water (ft, TOC)	pH (s.u.)	Specific Conductance (uMhos/cm)	Temperature (°C)	Purge Rate (L/min)
0	14.96	8.10	1,440	5.55	1
2	14.97	7.97	1,430	6.24	1
4	14.97	7.97	1,430	6.33	1
5	14.97	7.98	1,430	6.41	1

Purge Start Time: 13:00      Purge End Time: 13:05      Total Volume Purged: 1.0 gal  
 Approximate Purge Rate: 1 L/min.      Purged/Sampled by: M. Schlegel  
 Weather Conditions: 20°F, cloudy, 5-10 mph NW  
 Comments: \_\_\_\_\_



**WELL PURGING RECORD  
LOW-FLOW SAMPLING METHOD**

Site: S/LB Ploguet  
 Project Number: 350177L  
 Sampling Device: Dedicated Bubbler Pump  
 Date: 4/27/17  
 Well ID: P-2

Tubing Diameter (ID): 2 inches  
 Depth to Water: 6.35 ft, TOC  
 Depth to Bottom of Well: 10.4 ft, TOC  
 Feet of Water in Well: 4.05 ft  
 Volume of Water in Well: 0.7 gal

Elapsed Time (min)	Depth to Water (ft, TOC)	pH (s.u.)	Specific Conductance ( $\mu\text{mhos/cm}$ )	Temperature ( $^{\circ}\text{F}$ )	Purge Rate (L/min)
0	6.35	7.42	709	4.32	1
2	6.37	7.45	550	4.27	1
4	6.39	7.70	552	4.20	1
5	6.39	7.70	552	4.18	1

Purge Start Time: 13:25 Purge End Time: 13:30 Total Volume Purged: 1.0 gal

Approximate Purge Rate: 1 L/min Purged/Sampled by: N. Schklydt

Weather Conditions: 28°F, cloudy, 5-10 mph, NV

Comments: \_\_\_\_\_  
\_\_\_\_\_

Regulatory Program:  DW  NPDES  RCRA  Other:

Project Manager: Ryan Van Dette  
Site Contact: Nathaniel Beineman Date: 4/27/17  
Carrier: \_\_\_\_\_

Client Contact  
SKB Environmental  
13425 Courthouse Blvd  
Rosemount, MN 55068  
Phone (651) 438-1500  
FAX (651) 438-1518  
Project Name: Cloquet 2017 CCR GW Event 3  
Site:  
P O # 3078-17-00161

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS/MSD (Y/N)	Metals (totals) + Mercury	Chloride	Fluoride	Sulfate	TDS	pH	Radium 226 & 228 combined	Sample Specific Notes:
P-1	4/27/17	9:50	Grab	Water	5			X	X	X	X	X	X	X	
P-2		12:30	Grab	Water	5			X	X	X	X	X	X	X	
P-3		10:20	Grab	Water	5			X	X	X	X	X	X	X	
P-4		11:00	Grab	Water	5			X	X	X	X	X	X	X	
P-5		11:50	Grab	Water	5			X	X	X	X	X	X	X	
P-6		12:35	Grab	Water	5			X	X	X	X	X	X	X	
P-7		13:05	Grab	Water	5			X	X	X	X	X	X	X	
DUPLICATE WELL			Grab	Water	5			X	X	X	X	X	X	X	
Field Blank			Grab	Water	5			X	X	X	X	X	X	X	
Equipment Blank			Grab	Water	5			X	X	X	X	X	X	X	

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4= HNO3; 5= NaOH; 6= Other  
 Possible Hazard Identification: Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.  
 Non-Hazard  Flammable  Skin Irritant  Poison B  Unknown  
 Return to Client  Disposal by Lab  Archive for \_\_\_\_\_ Months

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)  
 Received by: \_\_\_\_\_ Date/Time: \_\_\_\_\_  
 Company: \_\_\_\_\_  
 Received by: \_\_\_\_\_ Date/Time: \_\_\_\_\_  
 Company: \_\_\_\_\_  
 Received by: \_\_\_\_\_ Date/Time: \_\_\_\_\_  
 Company: \_\_\_\_\_  
 Therm ID No.: \_\_\_\_\_  
 Cooler Temp. (°C): Obs'd: \_\_\_\_\_  
 Corrd: \_\_\_\_\_  
 Company: \_\_\_\_\_



### WELL PURGING RECORD LOW-FLOW SAMPLING METHOD

Site: SKB Voquet  
 Project Number: 3501772  
 Sampling Device: Dedicated Bladder Pump  
 Date: 5/17/17  
 Well ID: P-1

Tubing Diameter (ID): 2 inches  
 Depth to Water: 10.88 ft, TOC  
 Depth to Bottom of Well: 17.7 ft, TOC  
 Feet of Water in Well: 6.22 ft  
 Volume of Water in Well: 1.0 gal

Elapsed Time (min)	Depth to Water (ft, TOC)	pH (s.u.)	Specific Conductance ( $\mu\text{mhos/cm}$ )	Temperature ( $^{\circ}\text{F}$ / $^{\circ}\text{C}$ )	Purge Rate (L/min)
0	10.88	7.27	708	8.21	1
2	10.89	6.90	770	8.01	1
4	10.89	6.87	807	7.91	1
5	10.90	6.81	808	7.92	1

Purge Start Time: 8:25 Purge End Time: 8:30 Total Volume Purged: 7.0 gal  
 Approximate Purge Rate: 1 L/min Purged/Sampled by: M. Schlegel  
 Weather Conditions: 54°F, cloudy, N 5-10 mph  
 Comments: \_\_\_\_\_



## WELL PURGING RECORD LOW-FLOW SAMPLING METHOD

Site: S/LB Quarry  
 Project Number: 3501772  
 Sampling Device: Upgraded Blanklow Pump  
 Date: 5/12/17  
 Well ID: P-3

Tubing Diameter (ID): 2 inches  
 Depth to Water: 7.40 ft, TOC  
 Depth to Bottom of Well: 12.95 ft, TOC  
 Feet of Water in Well: 5.55 ft  
 Volume of Water in Well: 0.4 gal

Elapsed Time (min)	Depth to Water (ft, TOC)	pH (s.u.)	Specific Conductance (µmho/cm)	Temperature (°C)	Purge Rate (L/min)
0	7.40	7.36	1,230	7.14	1
2	7.41	7.38	1,210	6.08	1
4	7.41	7.25	1,200	6.41	1
5	7.41	7.25	1,200	6.41	1

Purge Start Time: 8:55 Purge End Time: 9:00 Total Volume Purged: 2.0 gal  
 Approximate Purge Rate: 1 L/min. Purged/Sampled by: N. Seitzinger  
 Weather Conditions: 59°F, cloudy, NE 5-10 mph  
 Comments: Collect Duplicate



### WELL PURGING RECORD LOW-FLOW SAMPLING METHOD

Site: SK B Hoquet  
 Project Number: 3501772  
 Sampling Device: Dedicated Bladder Pump  
 Date: 5/17/17  
 Well ID: B-4R

Tubing Diameter (ID): 2 inches  
 Depth to Water: \_\_\_\_\_ ft, TOC  
 Depth to Bottom of Well: 9.5L ft, TOC  
 Feet of Water in Well: \_\_\_\_\_ ft  
 Volume of Water in Well: \_\_\_\_\_ gal

Elapsed Time (min)	Depth to Water (ft, TOC)	pH (s.u.)	Specific Conductance ( / )	Temperature (°F)	Purge Rate (L/min)
Inaccessible due to high water over well, no sample collected					

Purge Start Time: \_\_\_\_\_ Purge End Time: \_\_\_\_\_ Total Volume Purged: \_\_\_\_\_ gal  
 Approximate Purge Rate: \_\_\_\_\_ Purged/Sampled by: \_\_\_\_\_  
 Weather Conditions: \_\_\_\_\_  
 Comments: \_\_\_\_\_



### WELL PURGING RECORD LOW-FLOW SAMPLING METHOD

Site: SICK HOUSE  
 Project Number: 3501772  
 Sampling Device: Dedicated Blackliver Pump  
 Date: 3/17/17  
 Well ID: P-5

Tubing Diameter (ID): 2 inches  
 Depth to Water: 32.76 ft, TOC  
 Depth to Bottom of Well: 37.3 ft, TOC  
 Feet of Water in Well: 4.54 ft  
 Volume of Water in Well: 0.75 gal

Elapsed Time (min)	Depth to Water (ft, TOC)	pH (s.u.)	Specific Conductance (µmhos/cm)	Temperature (°F) L	Purge Rate (L/min)
0	32.76	7.34	1,550	8.92	
2	32.77	6.72	1,570	8.94	
4	32.77	6.72	1,570	8.93	
6	32.77	6.72	1,570	8.93	

Purge Start Time: 9:30      Purge End Time: 9:35      Total Volume Purged: 2.0 gal  
 Approximate Purge Rate: 1 L/min      Purged/Sampled by: M. Schlegel  
 Weather Conditions: 55°F, cloudy, NE 5-10 mph  
 Comments: \_\_\_\_\_





## WELL PURGING RECORD LOW-FLOW SAMPLING METHOD

Site: S/LB Claret  
 Project Number: 250777  
 Sampling Device: Dedicated Bladder Pump  
 Date: 5/17/17  
 Well ID: P-6

Tubing Diameter (ID): 2 inches  
 Depth to Water: 29.01 ft, TOC  
 Depth to Bottom of Well: 36.2 ft, TOC  
 Feet of Water in Well: 6.59 ft  
 Volume of Water in Well: 1.1 gal

Elapsed Time (min)	Depth to Water (ft, TOC)	pH (s.u.)	Specific Conductance (µmhos/cm)	Temperature (°F)	Purge Rate (L/min)
0	29.61	7.29	1,240	10.95	1
2	29.62	6.95	1,240	10.84	1
4	29.62	6.80	1,240	10.76	1
8	29.62	6.88	1,240	10.71	1

Purge Start Time: 10:05      Purge End Time: 10:10      Total Volume Purged: 2.0 gal  
 Approximate Purge Rate: 1 L/min      Purged/Sampled by: N. Schlagel  
 Weather Conditions: 55°F, Cloudy, NE 5-10 mph  
 Comments: \_\_\_\_\_  
 \_\_\_\_\_



## WELL PURGING RECORD LOW-FLOW SAMPLING METHOD

Site: SKB Cloquet  
 Project Number: 350777  
 Sampling Device: Deductor & Bladder Pump  
 Date: 8/17/17  
 Well ID: P-7

Tubing Diameter (ID): 2 inches  
 Depth to Water: 14.75 ft, TOC  
 Depth to Bottom of Well: 19.6 ft, TOC  
 Feet of Water in Well: 4.85 ft  
 Volume of Water in Well: 0.8 gal

Elapsed Time (min)	Depth to Water (ft, TOC)	pH (s.u.)	Specific Conductance (µmhos/cm)	Temperature (°F)	Purge Rate (L/min)
0	14.75	7.28	1,260	10.68	1
2	14.76	7.05	1,200	10.62	1
4	14.76	7.02	1,230	10.59	1
5	14.76	6.97	1,280	9.35	1

Purge Start Time: 10:35      Purge End Time: 10:40      Total Volume Purged: 1.0 gal  
 Approximate Purge Rate: 1 L/min      Purged/Sampled by: N. Schlegel  
 Weather Conditions: 55°F, cloudy, NE 5-10 mph  
 Comments: \_\_\_\_\_



# WELL PURGING RECORD LOW-FLOW SAMPLING METHOD

Site: SLB LIQUET  
Project Number: 3501772  
Sampling Device: Dedicated Bladder Pump  
Date: 5/17/17  
Well ID: P-2

Tubing Diameter (ID): 2 inches  
Depth to Water: 4.20 ft, TOC  
Depth to Bottom of Well: 10.4 ft, TOC  
Feet of Water in Well: 6.20 ft  
Volume of Water in Well: 1.0 gal

Elapsed Time (min)	Depth to Water (ft, TOC)	pH (s.u.)	Specific Conductance (µmhos / CM)	Temperature (°F)	Purge Rate (L/min)
0	4.20	7.67	545	10.40	1
2	4.21	7.53	498	10.42	1
4	4.22	7.51	499	10.40	1
5	4.22	7.51	499	10.40	1

Purge Start Time: 11:00 Purge End Time: 11:05 Total Volume Purged: 1.0 gal  
Approximate Purge Rate: 1 L/min. Purged/Sampled by: M. Schlegel  
Weather Conditions: 55°F, cloudy, NE 5-10 mph  
Comments: \_\_\_\_\_



## WELL PURGING RECORD LOW-FLOW SAMPLING METHOD

Site: SKB Closet  
 Project Number: 3501772  
 Sampling Device: Dechlorinated Bladder Pump  
 Date: 6/29/13  
 Well ID: P-1

Tubing Diameter (ID): 2 inches  
 Depth to Water: 10.68 ft, TOC  
 Depth to Bottom of Well: 17.7 ft, TOC  
 Feet of Water in Well: 7.02 ft  
 Volume of Water in Well: 1.14 gal

Elapsed Time (min)	Depth to Water (ft, TOC)	pH (s.u.)	Specific Conductance (µmhos/cm)	Temperature (°F) °C	Purge Rate (L/min)
0	10.68	7.12	799	14.66	1
2	10.69	6.92	826	10.12	1
4	10.69	6.94	875	9.56	1
5	10.69	6.95	678	9.47	1

Purge Start Time: 9:15 Purge End Time: 9:20 Total Volume Purged: 2.0 gal  
 Approximate Purge Rate: 1 L/min Purged/Sampled by: M. Schlegel  
 Weather Conditions: 61°F, cloudy, 10-15 mph N/W  
 Comments: \_\_\_\_\_



## WELL PURGING RECORD LOW-FLOW SAMPLING METHOD

Site: SKB Closet  
 Project Number: 3501772  
 Sampling Device: Dedicated Bladder Pump  
 Date: 8/27/17  
 Well ID: P-3

Tubing Diameter (ID): 2 inches  
 Depth to Water: 0.05 ft, TOC  
 Depth to Bottom of Well: 12.95 ft, TOC  
 Feet of Water in Well: 4.90 ft  
 Volume of Water in Well: 0.00 gal

Elapsed Time (min)	Depth to Water (ft, TOC)	pH (s.u.)	Specific Conductance (µmhos/cm)	Temperature (°F)	Purge Rate (L/min)
0	0.05	7.62	1,120	12.59	1
2	0.05	7.29	1,110	12.14	1
4	0.05	7.30	1,100	11.83	1
5	0.05	7.30	1,100	11.10	1

Purge Start Time: 9:50      Purge End Time: 9:55      Total Volume Purged: 2.0 gal  
 Approximate Purge Rate: 1 L/min      Purged/Sampled by: M. Schlegel  
 Weather Conditions: 61°F cloudy, 10-15 mph NW  
 Comments: collect duplicate



## WELL PURGING RECORD LOW-FLOW SAMPLING METHOD

Site: SKB 110002A  
 Project Number: 350172  
 Sampling Device: Dedicated Battery Pump  
 Date: 6/29/13  
 Well ID: P-4P

Tubing Diameter (ID): 2 inches  
 Depth to Water: 8.50 ft, TOC  
 Depth to Bottom of Well: 9.52 ft, TOC  
 Feet of Water in Well: 5.02 ft  
 Volume of Water in Well: 0.5 gal

Elapsed Time (min)	Depth to Water (ft, TOC)	pH (s.u.)	Specific Conductance (umhg/cm)	Temperature (°F) °C	Purge Rate (L/min)
0	8.50	7.71	957	13.85	1
2	8.51	7.53	1,030	11.64	1
4	8.51	7.55	1,040	11.57	1
5	8.51	7.58	1,060	11.55	1

Purge Start Time: 10:40      Purge End Time: 10:45      Total Volume Purged: 1.5 gal  
 Approximate Purge Rate: 1 L/min      Purged/Sampled by: M. Schlegel  
 Weather Conditions: 61°F, cloudy, 10-15 mph NW  
 Comments: \_\_\_\_\_



## WELL PURGING RECORD LOW-FLOW SAMPLING METHOD

Site: SKB Cloquet  
 Project Number: 3501772  
 Sampling Device: dedicated Bladder Pump  
 Date: 6/29/17  
 Well ID: P-5

Tubing Diameter (ID): 2 inches  
 Depth to Water: 32.10 ft, TOC  
 Depth to Bottom of Well: 37.3 ft, TOC  
 Feet of Water in Well: 5.2 ft  
 Volume of Water in Well: 0.85 gal

Elapsed Time (min)	Depth to Water (ft, TOC)	pH (s.u.)	Specific Conductance (µmhos/cm)	Temperature (°F) °C	Purge Rate (L/min)
0	32.10	7.42	1,380	14.15	1
2	32.11	6.85	1,320	9.92	1
4	32.11	6.85	1,320	9.92	1
5	32.11	6.85	1,320	9.95	1

Purge Start Time: 11:20 Purge End Time: 11:25 Total Volume Purged: 2.0 gal  
 Approximate Purge Rate: 1 L/min Purged/Sampled by: M. Schlagel  
 Weather Conditions: 89°F, cloudy 10-15 mph NW

Comments: \_\_\_\_\_  
 \_\_\_\_\_



**WELL PURGING RECORD  
LOW-FLOW SAMPLING METHOD**

Site: SKB Cloquet  
Project Number: 3501772  
Sampling Device: Dedicated Bladder Pump  
Date: 6/29/17  
Well ID: P-6

Tubing Diameter (ID): 2 inches  
Depth to Water: 29.35 ft, TOC  
Depth to Bottom of Well: 36.2 ft, TOC  
Feet of Water in Well: 6.85 ft  
Volume of Water in Well: 1.12 gal

Elapsed Time (min)	Depth to Water (ft, TOC)	pH (s.u.)	Specific Conductance (µmhos/cm)	Temperature (°F) °C	Purge Rate (L/min)
0	29.35	7.42	11200	17.70	1
2	29.38	7.08	11260	11.83	1
4	29.36	7.02	11270	11.37	1
5	29.26	7.03	11280	11.17	1

Purge Start Time: 12:10 Purge End Time: 12:15 Total Volume Purged: 2.5 gal  
Approximate Purge Rate: 1 L/min Purged/Sampled by: W. Schlagel  
Weather Conditions: 61°F, Cloudy, 10-15 mph NW  
Comments: \_\_\_\_\_





## WELL PURGING RECORD LOW-FLOW SAMPLING METHOD

Site: SK-B Clogwell  
 Project Number: 360172  
 Sampling Device: Percolated Bladder Pump  
 Date: 11-28-17  
 Well ID: P-7

Tubing Diameter (ID): 2 inches  
 Depth to Water: 14.78 ft, TOC  
 Depth to Bottom of Well: 19.6 ft, TOC  
 Feet of Water in Well: 4.82 ft  
 Volume of Water in Well: 12.79 gal

Elapsed Time (min)	Depth to Water (ft, TOC)	pH (s.u.)	Specific Conductance (umhos/cm)	Temperature (°C)	Purge Rate (L/min)
0	14.78	7.01	1,260	10.47	1
2	14.79	6.94	1,260	9.57	1
4	14.80	6.95	1,280	9.30	1
5	14.80	6.98	1,290	9.74	1

Purge Start Time: 12:45 Purge End Time: 12:50 Total Volume Purged: 1.5 gal  
 Approximate Purge Rate: 1 L/min. Purged/Sampled by: M. Sehnigall  
 Weather Conditions: 64°F, Cloudy, 10-15 mph NW  
 Comments: \_\_\_\_\_  
 \_\_\_\_\_



## WELL PURGING RECORD LOW-FLOW SAMPLING METHOD

Site: 578 Cloquet  
 Project Number: 7501772  
 Sampling Device: Dedicated Blocker Pump  
 Date: 8/29/17  
 Well ID: D-2

Tubing Diameter (ID): 2 inches  
 Depth to Water: 4.70 ft, TOC  
 Depth to Bottom of Well: 10-4 ft, TOC  
 Feet of Water in Well: 5.70 ft  
 Volume of Water in Well: 0-93 gal

Elapsed Time (min)	Depth to Water (ft, TOC)	pH (s.u.)	Specific Conductance (µmhos/cm)	Temperature (°F) °C	Purge Rate (L/min)
0	4.70	7.31	1,800	12.70	1
2	4.71	6.77	2,810	12.69	1
4	4.71	6.79	2,810	12.67	1
5	4.71	6.79	2,810	12.65	1

Purge Start Time: 13:15 Purge End Time: 13:20 Total Volume Purged: 1.0 gal  
 Approximate Purge Rate: 1 L/min Purged/Sampled by: W. Schipol  
 Weather Conditions: 68° F, cloudy, 10-15 mph NW  
 Comments: \_\_\_\_\_

**Client Contact**  
SKB Environmental  
13425 Courthouse Blvd  
Rosemount, MN 55068  
(651) 438-1500 Phone  
(651) 438-1518 FAX  
Project Name: Cloquet 2017 CCR GW Event 5  
Site:  
P O # 3078-17-00253

**Regulatory Program:** DW NPDES RCRA Other

**Project Manager:** Ryan Van Dette

**Tel/Fax:** Analysis Turnaround Time  
CALENDAR DAYS WORKING DAYS

TAT if different from Below  
2 weeks  
1 week  
2 days  
1 day

**TestAmerica Laboratories, Inc.**  
COC No: 1 of 1 COCs

**Site Contact:** Nathaniel Beinmark Date: 6/29/17

**Lab Contact:** Carrier:

**Sampler:**

**For Lab Use Only:**

Walk-in Client:

Lab Sampling:

Job / SDG No.:

Sample Specific Notes:

Filtered Sample (Y/N)

Perform MS/MSD (Y/N)

Metals (totals) + Mercury

Chloride

Fluoride

Sulfate

TDS

pH

Radium 226 & 228 combined

**Preservation Used:** 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other

**Possible Hazard Identification:** Please List any EPA Waste Codes for the sample in the

Comments Section if the lab is to dispose of the sample.

Non-Hazardous Flammable Skin Irritant Poison B Unknown

\*Metals - Boron, Calcium, Antimony, Arsenic, Barium, Beryllium, Cadmium, Chromium, Cobalt, Lead, Lithium, Molybdenum, Selenium, Thallium

Return to Client \_\_\_\_\_ Archive for \_\_\_\_\_ Months

Disposal by Lab \_\_\_\_\_

Received by: \_\_\_\_\_

Received in Laboratory by: \_\_\_\_\_

Company: \_\_\_\_\_

Date/Time: \_\_\_\_\_

Company: \_\_\_\_\_

Date/Time: \_\_\_\_\_

Company: \_\_\_\_\_

Date/Time: \_\_\_\_\_

Company: \_\_\_\_\_

Date/Time: \_\_\_\_\_

Company: \_\_\_\_\_

Date/Time: \_\_\_\_\_

Company: \_\_\_\_\_



**WELL PURGING RECORD  
LOW-FLOW SAMPLING METHOD**

Site: SKB Llaquet  
 Project Number: 3501772  
 Sampling Device: Reducible Bladder Pump  
 Date: 7/27/17  
 Well ID: P-1

Tubing Diameter (ID): 2 inches  
 Depth to Water: 16.76 ft, TOC  
 Depth to Bottom of Well: 17.9 ft, TOC  
 Feet of Water in Well: 6.94 ft  
 Volume of Water in Well: 1.13 gal

Elapsed Time (min)	Depth to Water (ft, TOC)	pH (s.u.)	Specific Conductance ( $\mu\text{mhos/cm}$ )	Temperature ( $^{\circ}\text{C}$ )	Purge Rate (L/min)
0	16.76	7.82	866	14.1	1
2	16.77	7.19	940	9.13	1
4	16.77	7.05	961	9.03	1
5	16.77	8.97	768	8.98	1

Purge Start Time: 9:00 Purge End Time: 9:05 Total Volume Purged: 2.0 gal

Approximate Purge Rate: 1 L/min. Purged/Sampled by: M. Seitz

Weather Conditions: 68°F, sunny, 0-5 mph westerly

Comments: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_



## WELL PURGING RECORD LOW-FLOW SAMPLING METHOD

Site: SKB Cloquet  
 Project Number: 3501772  
 Sampling Device: Dedicated Bladder Pump  
 Date: 7/27/17  
 Well ID: P-3

Tubing Diameter (ID): 2 inches  
 Depth to Water: 7.92 ft, TOC  
 Depth to Bottom of Well: 12.55 ft, TOC  
 Feet of Water in Well: 5.02 ft  
 Volume of Water in Well: 0.82 gal

Elapsed Time (min)	Depth to Water (ft, TOC)	pH (s.u.)	Specific Conductance (umhos/cm)	Temperature (°F/°C)	Purge Rate (L/min)
0	7.92	7.39	1,040	13.52	
2	7.94	7.26	973	12.96	
4	7.94	7.24	973	12.82	
5	7.94	7.21	975	12.88	

Purge Start Time: 10:00     Purge End Time: 10:05     Total Volume Purged: 1.0 gal  
 Approximate Purge Rate: 1 L/min     Purged/Sampled by: M. Schlygel  
 Weather Conditions: 72°F, sunny, 0-5 mph North  
 Comments: collect duplicate



## WELL PURGING RECORD LOW-FLOW SAMPLING METHOD

Site: SK B 1109 Well  
 Project Number: 350172  
 Sampling Device: Reinforced Bladder Pump  
 Date: 7/27/17  
 Well ID: P-4R

Tubing Diameter (ID): 2 inches  
 Depth to Water: 6.28 ft, TOC  
 Depth to Bottom of Well: 9.52 ft, TOC  
 Feet of Water in Well: 3.24 ft  
 Volume of Water in Well: 0.57 gal

Elapsed Time (min)	Depth to Water (ft, TOC)	pH (s.u.)	Specific Conductance (umho/cm)	Temperature (°F) °C	Purge Rate (L/min)
0	9.52	7.40	994	15.21	1
2	9.53	7.28	1,040	12.84	1
4	9.53	7.28	1,030	12.81	1
5	9.53	7.28	1,030	12.81	1

Purge Start Time: 11:20 Purge End Time: 11:25 Total Volume Purged: 1.5 gal  
 Approximate Purge Rate: 1L/min Purged/Sampled by: N. Schlegel  
 Weather Conditions: Bof, sunny, 0-5 mph NW

Comments: \_\_\_\_\_



# WELL PURGING RECORD LOW-FLOW SAMPLING METHOD

Site: 52B Horvet  
Project Number: 350177Z  
Sampling Device: Dedicated Bladder Pump  
Date: 7/27/17  
Well ID: P-5

Tubing Diameter (ID): 2 inches  
Depth to Water: 32.01 ft, TOC  
Depth to Bottom of Well: 37.3 ft, TOC  
Feet of Water in Well: 5.29 ft  
Volume of Water in Well: 0.86 gal

Elapsed Time (min)	Depth to Water (ft, TOC)	pH (s.u.)	Specific Conductance (µmho / cm)	Temperature (°F) °C	Purge Rate (L/min)
0	32.01	7.18	1420	13.43	
2	32.02	6.86	1590	9.81	
4	32.02	6.75	1560	9.47	
5	32.02	6.71	1580	9.37	

Purge Start Time: 12:20 Purge End Time: 12:25 Total Volume Purged: 1.5 gal

Approximate Purge Rate: 1 L/min Purged/Sampled by: V. Etlinger

Weather Conditions: 75°F, partly cloudy, 0-5 mph North

Comments: \_\_\_\_\_  
\_\_\_\_\_



## WELL PURGING RECORD LOW-FLOW SAMPLING METHOD

Site: SKB Clognet  
 Project Number: 3501772  
 Sampling Device: Precision P bladder pump  
 Date: 7/27/17  
 Well ID: P-6

Tubing Diameter (ID): 2 inches  
 Depth to Water: 29.42 ft, TOC  
 Depth to Bottom of Well: 36.2 ft, TOC  
 Feet of Water in Well: 6.78 ft  
 Volume of Water in Well: 1.16 gal

Elapsed Time (min)	Depth to Water (ft, TOC)	pH (s.u.)	Specific Conductance (µmhos/cm)	Temperature (°R) °C	Purge Rate (L/min)
0	29.42	7.17	1,320	10.78	1
2	29.43	7.04	1,350	9.33	1
4	29.43	6.96	1,350	9.06	1
5	29.43	6.91	1,360	8.95	1

Purge Start Time: 13:28    Purge End Time: 13:50    Total Volume Purged: 2.0 gal  
 Approximate Purge Rate: 1 L/min    Purged/Sampled by: M. Schmitt  
 Weather Conditions: 75° F, partly cloudy, 0-5 mph North

Comments: \_\_\_\_\_  
 \_\_\_\_\_





## WELL PURGING RECORD LOW-FLOW SAMPLING METHOD

Site: SQB Hoquet  
 Project Number: 3501772  
 Sampling Device: Dedicated Bladder Pump  
 Date: 7/27/16  
 Well ID: P-7

Tubing Diameter (ID): 2 inches  
 Depth to Water: 15.28 ft, TOC  
 Depth to Bottom of Well: 19.6 ft, TOC  
 Feet of Water in Well: 4.32 ft  
 Volume of Water in Well: 0.70 gal

Elapsed Time (min)	Depth to Water (ft, TOC)	pH (s.u.)	Specific Conductance (µmhos/cm)	Temperature (°F) °C	Purge Rate (L/min)
0	15.28	7.18	1,250	13.75°	1
2	15.29	6.88	1,330	9.42	1
4	15.29	6.82	1,320	9.39	1
5	15.29	6.83	1,320	9.37	1

Purge Start Time: 14:30      Purge End Time: 14:35      Total Volume Purged: 1.5 gal  
 Approximate Purge Rate: 1 L/min      Purged/Sampled by: M. Schlagel  
 Weather Conditions: 79°F, pretty cloudy, 0-5 mph North  
 Comments: \_\_\_\_\_



**WELL PURGING RECORD  
LOW-FLOW SAMPLING METHOD**

Site: SKB Claret  
 Project Number: 7501772  
 Sampling Device: Dedicated bladder pump  
 Date: 7/27/17  
 Well ID: P-2

Tubing Diameter (ID): 2 inches  
 Depth to Water: 9.0 ft, TOC  
 Depth to Bottom of Well: 10.4 ft, TOC  
 Feet of Water in Well: 2.40 ft  
 Volume of Water in Well: 0.39 gal

Elapsed Time (min)	Depth to Water (ft, TOC)	pH (s.u.)	Specific Conductance (µmhos/cm)	Temperature (°F) °C	Purge Rate (L/min)
0	8.00	6.77	2,550	14.72	1
2	8.01	6.60	2,350	13.67	1
4	8.01	6.44	2,230	13.17	1
5	8.01	6.44	2,270	13.16	1

Purge Start Time: 15:15 Purge End Time: 15:20 Total Volume Purged: 0.5 gal  
 Approximate Purge Rate: 2 L/min Purged/Sampled by: M. Schlager  
 Weather Conditions: 79°F, partly cloudy, 0-5 mph NW  
 Comments: \_\_\_\_\_

**Chain of Custody Record**

**TestAmerica Buffalo**  
10 Hazelwood Drive

Amherst, NY 14228-2223  
phone 716.691.2600 fax 716.691.7991

Regulatory Program:          DW          NPDES          RCRA          Other:         

Client Contact  
SKB Environmental  
13425 Courthouse Blvd  
Rosemount, MN 55068  
Phone (651) 438-1500  
FAX (651) 438-1518  
Project Name: Cloquet 2017 CCR GW Event 6  
Site:  
P.O.#

Project Manager: Ryan Van Dette  
Tel/Fax:           
Analysis Turnaround Time  
CALENDAR DAYS WORKING DAYS  
TAT if different from Below  
2 weeks  
1 week  
2 days  
1 day

Site Contact: Nathaniel Beineman Date: 7/27/17  
Lab Contact:          Carrier:           
COC No:          of          COCs

Sampler:           
For Lab Use Only:  
Walk-in Client:           
Lab Sampling:           
Job / SDG No.:           
Sample Specific Notes:         

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Performs MS/MSD (Y/N)	Metals (total) + Mercury	Chloride	Sulfate	TDS	pH	Radium 226 & 228 combined
P-1	7/27/17	9:05	Grab	Water	7		X	X	X	X	X	X	X
P-2		10:05	Grab	Water	7		X	X	X	X	X	X	X
P-3		10:05	Grab	Water	7		X	X	X	X	X	X	X
P-4		11:25	Grab	Water	7		X	X	X	X	X	X	X
P-5		12:25	Grab	Water	7		X	X	X	X	X	X	X
P-6		13:30	Grab	Water	7		X	X	X	X	X	X	X
P-7		14:35	Grab	Water	7		X	X	X	X	X	X	X
DUPLICATE WELL		-	Grab	Water	7		X	X	X	X	X	X	X
Field Blank		16:00	Grab	Water	7		X	X	X	X	X	X	X
Equipment Blank		16:05	Grab	Water	7		X	X	X	X	X	X	X

Preservation Used: 1=Ice, 2=HCl; 3=H2SO4; 4=HNO3; 5=NaOH; 6=Other  
Possible Hazard Identification: Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

Non-Hazardous          Flammable          Skin Irritant          Poison B          Unknown           
Return to Client          Disposal by Lab          Archive for          Months

Custody Seals Intact: Yes <u>        </u> No <u>        </u>	Custody Seal No.: <u>        </u>	Therm ID No.: <u>        </u>
Relinquished by: <u>        </u>	Company: <u>        </u>	Date/Time: <u>7/27/17 19:00</u>
Relinquished by: <u>        </u>	Company: <u>        </u>	Date/Time: <u>        </u>
Relinquished by: <u>        </u>	Company: <u>        </u>	Date/Time: <u>        </u>



## WELL PURGING RECORD LOW-FLOW SAMPLING METHOD

Site: SKB Cigarettes  
 Project Number: 350172  
 Sampling Device: Dedicated Disher Pump  
 Date: 8/18/17  
 Well ID: P-1

Tubing Diameter (ID): 2 inches  
 Depth to Water: 10.78 ft, TOC  
 Depth to Bottom of Well: 17.9 ft, TOC  
 Feet of Water in Well: 7.12 ft  
 Volume of Water in Well: 1.16 gal

Elapsed Time (min)	Depth to Water (ft, TOC)	pH (s.u.)	Specific Conductance (µmhos/cm)	Temperature (°C)	Purge Rate (L/min)
0	10.78	6.82	966	10.73	1
2	10.79	6.91	979	9.88	1
4	10.80	6.85	974	9.77	1
5	10.80	6.85	974	9.75	1

Purge Start Time: 8:35 Purge End Time: 8:40 Total Volume Purged: 2.0 gal  
 Approximate Purge Rate: 1 L/min Purged/Sampled by: M. Schwarz  
 Weather Conditions: 55°F, partly cloudy, 5-10 mph NW  
 Comments: \_\_\_\_\_



## WELL PURGING RECORD LOW-FLOW SAMPLING METHOD

Site: SKB Clogwell  
 Project Number: 3501772  
 Sampling Device: Peristaltic bladder pump  
 Date: 8/18/17  
 Well ID: P-3

Tubing Diameter (ID): 7 inches  
 Depth to Water: 7.70 ft, TOC  
 Depth to Bottom of Well: 12.95 ft, TOC  
 Feet of Water in Well: 5.17 ft  
 Volume of Water in Well: 0.84 gal

Elapsed Time (min)	Depth to Water (ft, TOC)	pH (s.u.)	Specific Conductance (umhos/cm)	Temperature (°R) °C	Purge Rate (L/min)
0	7.78	7.26	835	14.02	1
2	7.78	7.25	895	14.27	1
4	7.80	7.20	889	14.34	1
5	7.90	7.19	884	14.32	1

Purge Start Time: 9:00 Purge End Time: 9:05 Total Volume Purged: 2.0 gal

Approximate Purge Rate: 1 L/min Purged/Sampled by: N. Schlotz

Weather Conditions: 61° F, partly cloudy, 5-10 mph NW

Comments: collect duplicate



# WELL PURGING RECORD LOW-FLOW SAMPLING METHOD

Site: SKB Uquest  
Project Number: 3501772  
Sampling Device: Peristaltic Bladder Pump  
Date: 8/18/17  
Well ID: P-4R

Tubing Diameter (ID): 2 inches  
Depth to Water: 6.18 ft, TOC  
Depth to Bottom of Well: 9.52 ft, TOC  
Feet of Water in Well: 3.34 ft  
Volume of Water in Well: 0.54 gal

Elapsed Time (min)	Depth to Water (ft, TOC)	pH (s.u.)	Specific Conductance (µmhos/cm)	Temperature (°F)	Purge Rate (L/min)
0	6.18	7.24	980	14.91	1
2	6.19	7.24	980	14.46	1
4	6.20	7.24	980	14.46	1
5	6.20	7.24	980	14.40	1

Purge Start Time: 9:40 Purge End Time: 9:45 Total Volume Purged: 2.0 gal  
Approximate Purge Rate: 1 L/min. Purged/Sampled by: M. Schlegel  
Weather Conditions: 61°F, mostly cloudy, 5-10 mph W  
Comments: \_\_\_\_\_



## WELL PURGING RECORD LOW-FLOW SAMPLING METHOD

Site: SLB Closed  
 Project Number: 350772  
 Sampling Device: Peristaltic Bladder Pump  
 Date: 8/16/13  
 Well ID: P-5

Tubing Diameter (ID): 2 inches  
 Depth to Water: 32.00 ft, TOC  
 Depth to Bottom of Well: 32.3 ft, TOC  
 Feet of Water in Well: 5.30 ft  
 Volume of Water in Well: 0.86 gal

Elapsed Time (min)	Depth to Water (ft, TOC)	pH (s.u.)	Specific Conductance (µmhos / cm)	Temperature (°F) °C	Purge Rate (L/min)
0	32.00	6.76	1,460	11.42	1
2	32.01	6.75	1,490	10.10	1
4	32.02	6.75	1,490	10.08	1
5	32.02	6.75	1,490	10.00	1

Purge Start Time: 10:10 Purge End Time: 10:15 Total Volume Purged: 2.0 gal  
 Approximate Purge Rate: 1 L/min Purged/Sampled by: M. Schladeg  
 Weather Conditions: 60°F, mostly cloudy, 5-10 mph W  
 Comments: \_\_\_\_\_



WELL PURGING RECORD
LOW-FLOW SAMPLING METHOD

Site: SKB Closet
Project Number: 3501772
Sampling Device: Resealed bladder pump
Date: 8/18/17
Well ID: P-6

Tubing Diameter (ID): 2 inches
Depth to Water: 29.45 ft, TOC
Depth to Bottom of Well: 36.2 ft, TOC
Feet of Water in Well: 6.75 ft
Volume of Water in Well: 1.10 gal

Table with 6 columns: Elapsed Time (min), Depth to Water (ft, TOC), pH (s.u.), Specific Conductance (µmhos/cm), Temperature (°R) °C, Purge Rate (L/min). Contains handwritten data for the first 5 minutes.

Purge Start Time: 10:45 Purge End Time: 10:50 Total Volume Purged: 2.5 gal
Approximate Purge Rate: 1 L/min Purged/Sampled by: M. Schlegel
Weather Conditions: 64°F, mostly cloudy, 5-10 mph W
Comments:





# WELL PURGING RECORD LOW-FLOW SAMPLING METHOD

Site: SKB Clonville  
 Project Number: 3501772  
 Sampling Device: Dedicated Bladder Pump  
 Date: 8/18/17  
 Well ID: P-7

Tubing Diameter (ID): 2 inches  
 Depth to Water: 14.95 ft, TOC  
 Depth to Bottom of Well: 19.6 ft, TOC  
 Feet of Water in Well: 4.65 ft  
 Volume of Water in Well: 0.76 gal

Elapsed Time (min)	Depth to Water (ft, TOC)	pH (s.u.)	Specific Conductance (µmhos / Cm )	Temperature (°F) °C	Purge Rate (L/min)
0	14.95	6.94	1,200	11.07	1
2	14.96	6.91	1,310	10.22	1
4	14.97	6.89	1,320	10.00	1
5	14.97	6.89	1,320	9.99	1

Purge Start Time: 11:15 Purge End Time: 11:20 Total Volume Purged: 1.0 gal

Approximate Purge Rate: 1 L/min Purged/Sampled by: N. Schlegel

Weather Conditions: 64°F, cloudy, 5-10 mph W

Comments: \_\_\_\_\_

\_\_\_\_\_



# WELL PURGING RECORD LOW-FLOW SAMPLING METHOD

Site: 4B Uconnect  
Project Number: 30172  
Sampling Device: Dedicated Bladder Pump  
Date: 8/18/17  
Well ID: P-2

Tubing Diameter (ID): 2 inches  
Depth to Water: 6.10 ft, TOC  
Depth to Bottom of Well: 10.4 ft, TOC  
Feet of Water in Well: 4.3 ft  
Volume of Water in Well: 0.70 gal

Elapsed Time (min)	Depth to Water (ft, TOC)	pH (s.u.)	Specific Conductance (microsiemens/cm)	Temperature (°F) °C	Purge Rate (L/min)
0	6.10	6.78	1,740	14.61	1
2	6.11	6.53	1,600	14.71	1
4	6.12	6.50	1,630	14.73	1
5	6.12	6.51	1,640	14.73	1

Purge Start Time: 11:50 Purge End Time: 11:55 Total Volume Purged: 1.0 gal  
Approximate Purge Rate: 1 L/min. Purged/Sampled by: Mr. Schlegel  
Weather Conditions: 64 °F, cloudy, 5-10 mph W  
Comments: \_\_\_\_\_

**Client Contact**  
SKB Environmental  
13425 Courthouse Blvd  
Rosemount, MN 55068  
(651) 438-1500 Phone  
(651) 438-1518 FAX  
Project Name: Cloquet 2017 CCR GW Event 7  
Site:  
P O # 3078-17-00306

**Regulatory Program:**  DW  NPDES  RCRA  Other:  
Project Manager: Ryan Van Dette  
Tel/Fax:

**Analysis Turnaround Time**  
CALENDAR DAYS WORKING DAYS  
TAT if different from Below \_\_\_\_\_  
 2 weeks  
 1 week  
 2 days  
 1 day

**Site Contact:** Nathaniel Beineman Date: 9/18/17  
**Lab Contact:** \_\_\_\_\_

COC No: \_\_\_\_\_ of \_\_\_\_\_ COCs  
Sampler: \_\_\_\_\_  
For Lab Use Only:  
Walk-in Client: \_\_\_\_\_  
Lab Sampling: \_\_\_\_\_  
Job / SDG No.: \_\_\_\_\_

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Performs MS / MSD (Y / N)										Sample Specific Notes:
						Metals (totals)* + Mercury	Chloride	Fluoride	Sulfate	TDS	pH	Radium 226 & 228 combined				
P-1		8:40	Grab	Water	7	X	X	X	X	X	X	X	X	X		
P-2		11:55	Grab	Water	7	X	X	X	X	X	X	X	X	X		
P-3		9:05	Grab	Water	7	X	X	X	X	X	X	X	X	X		
P-4R		9:45	Grab	Water	7	X	X	X	X	X	X	X	X	X		
P-5		10:15	Grab	Water	7	X	X	X	X	X	X	X	X	X		
P-6		10:50	Grab	Water	7	X	X	X	X	X	X	X	X	X		
P-7		11:20	Grab	Water	7	X	X	X	X	X	X	X	X	X		
DUPLICATE <del>WATER</del>			Grab	Water	7	X	X	X	X	X	X	X	X	X		
Field Blank		12:25	Grab	Water	7	X	X	X	X	X	X	X	X	X		
Equipment Blank		12:30	Grab	Water	7	X	X	X	X	X	X	X	X	X		

**Preservation Used:** 1=Ice, 2=HCl; 3=H2SO4; 4=HNO3; 5=NaOH; 6=Other

**Possible Hazard Identification:** Please List any EPA Waste Codes for the sample in the Are any samples from a listed EPA Hazardous Waste?  Yes  No  
Comments Section if the lab is to dispose of the sample.

Non-Hazard  Flammable  Skin Irritant  Poison B  Unknown  Return to Client  Disposal by Lab  Archive for \_\_\_\_\_ Months

\*Metals - Boron, Calcium, Antimony, Arsenic, Barium, Beryllium, Cadmium, Chromium, Cobalt, Lead, Lithium, Molybdenum, Selenium, Thallium

Cooler Temp. (°C): Obs'd: \_\_\_\_\_ Cor'd: \_\_\_\_\_ Therm ID No.: \_\_\_\_\_

Received by: *MMW* Company: *BES* Date/Time: 9/21/17 12:00  
Received by: \_\_\_\_\_ Company: \_\_\_\_\_ Date/Time: \_\_\_\_\_  
Received by: \_\_\_\_\_ Company: \_\_\_\_\_ Date/Time: \_\_\_\_\_

Form No. CA-C-WI-002, Rev. 4.9, dated 2/2/2016



**WELL PURGING RECORD  
LOW-FLOW SAMPLING METHOD**

Site: SKB Creek  
Project Number: 350772  
Sampling Device: RECATOR A Bladder Pump  
Date: 9/18/17  
Well ID: P-1

Tubing Diameter (ID): 2 inches  
Depth to Water: 10.60 ft, TOC  
Depth to Bottom of Well: 17.9 ft, TOC  
Feet of Water in Well: 7.3 ft  
Volume of Water in Well: 1.19 gal

Elapsed Time (min)	Depth to Water (ft, TOC)	pH (s.u.)	Specific Conductance (umhos/cm)	Temperature (°F) °C	Purge Rate (L/min)
0	10.60	6.68	1,030	10.23	1
2	10.61	6.70	1,040	10.32	1
4	10.62	6.69	1,040	10.32	1
8	10.65	6.69	1,040	10.32	1

Purge Start Time: 8:30 Purge End Time: 8:35 Total Volume Purged: 1.5 gal  
Approximate Purge Rate: 1 L/min. Purged/Sampled by: N. Schmidt  
Weather Conditions: 36 °F, Sunny, 0-5 mph E  
Comments: \_\_\_\_\_



# WELL PURGING RECORD LOW-FLOW SAMPLING METHOD

Site: SKB Unvet  
Project Number: 3501772  
Sampling Device: Isco 6210 Peristaltic Pump  
Date: 9/20/17  
Well ID: P-3

Tubing Diameter (ID): 2 inches  
Depth to Water: 7.54 ft, TOC  
Depth to Bottom of Well: 12.95 ft, TOC  
Feet of Water in Well: 5.41 ft  
Volume of Water in Well: 0.89 gal

Elapsed Time (min)	Depth to Water (ft, TOC)	pH (s.u.)	Specific Conductance (microS/cm)	Temperature (°C)	Purge Rate (L/min)
0	7.54	7.00	937	13.94	1
2	7.55	6.97	938	14.14	1
4	7.56	6.94	937	14.27	1
8	7.57	6.94	937	14.27	1

Purge Start Time: 8:35 Purge End Time: 9:00 Total Volume Purged: 1.0 gal  
Approximate Purge Rate: 1 L/min Purged/Sampled by: M. Szwajgel  
Weather Conditions: 43°F sunny 0-5 mph E  
Comments: Collect duplicate



## WELL PURGING RECORD LOW-FLOW SAMPLING METHOD

Site: SKB Cloquet  
 Project Number: 350772  
 Sampling Device: Dedicated Bladder Pump  
 Date: 9/18/17  
 Well ID: P-4R

Tubing Diameter (ID): 2 inches  
 Depth to Water: 6.05 ft, TOC  
 Depth to Bottom of Well: 9.52 ft, TOC  
 Feet of Water in Well: 2.47 ft  
 Volume of Water in Well: 0.57 gal

Elapsed Time (min)	Depth to Water (ft, TOC)	pH (s.u.)	Specific Conductance (µmhos/cm)	Temperature (°F) °C	Purge Rate (L/min)
0	6.05	7.20	1,090	14.60	1
2	6.06	6.93	1,160	13.87	1
4	6.07	6.95	1,150	13.95	1
5	6.08	6.96	1,150	13.96	1

Purge Start Time: 9:40 Purge End Time: 9:45 Total Volume Purged: 1.0 gal

Approximate Purge Rate: 1 L/min Purged/Sampled by: M. Schlegel

Weather Conditions: 43°F, Sunny, 0 - 5 mph E

Comments: \_\_\_\_\_



### WELL PURGING RECORD LOW-FLOW SAMPLING METHOD

Site: 5KB Uquet  
 Project Number: 3801772  
 Sampling Device: Depth of 2" Peristaltic Pump  
 Date: 9/8/17  
 Well ID: P-5

Tubing Diameter (ID): 2 inches  
 Depth to Water: 31.80 ft, TOC  
 Depth to Bottom of Well: 37.5 ft, TOC  
 Feet of Water in Well: 5.7 ft  
 Volume of Water in Well: 0.97 gal

Elapsed Time (min)	Depth to Water (ft, TOC)	pH (s.u.)	Specific Conductance (µmhos/cm)	Temperature (°F/°C)	Purge Rate (L/min)
0	31.80	6.59	1,340	13.52	1
2	31.81	6.54	1,350	13.50	1
4	31.82	6.52	1,420	11.80	1
5	31.83	6.52	1,420	11.61	1

Purge Start Time: 10:10      Purge End Time: 10:15      Total Volume Purged: 1.0 gal  
 Approximate Purge Rate: 1 L/min.      Purged/Sampled by: M. Schlegel  
 Weather Conditions: 52°F, sunny, 5-10 mph E  
 Comments: \_\_\_\_\_



## WELL PURGING RECORD LOW-FLOW SAMPLING METHOD

Site: 443 Claggett  
 Project Number: 3501772  
 Sampling Device: Redi-rod Blender Pump  
 Date: 9/8/17  
 Well ID: P-6

Tubing Diameter (ID): 7 inches  
 Depth to Water: 29.45 ft, TOC  
 Depth to Bottom of Well: 36.2 ft, TOC  
 Feet of Water in Well: 6.75 ft  
 Volume of Water in Well: 1.10 gal

Elapsed Time (min)	Depth to Water (ft, TOC)	pH (s.u.)	Specific Conductance (microhos/cm)	Temperature (°F) °C	Purge Rate (L/min)
0	29.45	6.89	1,090	14.16	1
2	29.46	6.70	1,120	12.00	1
4	29.47	6.69	1,130	11.51	1
5	29.48	6.68	1,140	11.16	1

Purge Start Time: 10:55 Purge End Time: 11:00 Total Volume Purged: 1.5 gal  
 Approximate Purge Rate: 1 L/min Purged/Sampled by: N. Schlegel  
 Weather Conditions: 52 °F, sunny, 5-10 mph E  
 Comments: \_\_\_\_\_  
 \_\_\_\_\_





**WELL PURGING RECORD  
LOW-FLOW SAMPLING METHOD**

Site: SKB Cloona  
 Project Number: 3501772  
 Sampling Device: Dedicated Bubbler Pump  
 Date: 9/8/17  
 Well ID: P-7

Tubing Diameter (ID): 2 inches  
 Depth to Water: 15.00 ft, TOC  
 Depth to Bottom of Well: 19.6 ft, TOC  
 Feet of Water in Well: 4.6 ft  
 Volume of Water in Well: 0.75 gal

Elapsed Time (min)	Depth to Water (ft, TOC)	pH (s.u.)	Specific Conductance (µmhos/cm)	Temperature (°F) °C	Purge Rate (L/min)
0	15.00	7.23	1220	13.54	1
2	15.07	6.78	1,240	12.20	1
4	10.27	6.77	1,230	12.31	1
5	12.16	6.78	1,230	12.41	1

Purge Start Time: 11:30 Purge End Time: 11:35 Total Volume Purged: 0.75 gal  
 Approximate Purge Rate: 1 L/min Purged/Sampled by: M. Schlegel  
 Weather Conditions: 55°f, mostly sunny, 5-10 mph E  
 Comments: \_\_\_\_\_



## WELL PURGING RECORD LOW-FLOW SAMPLING METHOD

Site: SKB UOJHET  
Project Number: 301772  
Sampling Device: Peristaltic siphon pump  
Date: 9/3/17  
Well ID: P-2

Tubing Diameter (ID): 2 inches  
Depth to Water: 9.72 ft, TOC  
Depth to Bottom of Well: 10.4 ft, TOC  
Feet of Water in Well: 0.68 ft  
Volume of Water in Well: 0.11 gal

Elapsed Time (min)	Depth to Water (ft, TOC)	pH (s.u.)	Specific Conductance (µmhos/cm)	Temperature (°F) °C	Purge Rate (L/min)
0	9.72	6.69	1,350	13.87	1
2	10.04	6.58	1,130	13.94	1
4	10.17	6.56	1,160	13.97	1
5	10.20	6.57	1,170	13.98	1

Purge Start Time: 11:55 Purge End Time: 12:00 Total Volume Purged: 0.5 gal  
Approximate Purge Rate: 1 L/min Purged/Sampled by: M. Schlapf  
Weather Conditions: 59 °F, mostly sunny, 5-0 mph E  
Comments: \_\_\_\_\_

**Chain of Custody Record**

**TestAmerica Buffalo**  
10 Hazelwood Drive  
Amherst, NY 14228-2223  
phone 716.691.2600 fax 716.691.7991

Regulatory Program:  DW  NPDES  RCR  Other: \_\_\_\_\_  
 Project Manager: Ryan Van Dente  
 Site Contact: \_\_\_\_\_  
 Client Contact: \_\_\_\_\_  
 Tel/Fax: \_\_\_\_\_  
 Analysis Turnaround Time  
 CALENDAR DAYS WORKING DAYS  
 TAT if different from Below  
 2 weeks  
 1 week  
 2 days  
 1 day

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Lab Contact: Nathaniel Beinemat Date: 9/18/17											
						Filtered Sample (Y/N)	Perform MS/MSD (Y/N)	Metals (totals) + Mercury	Chloride	Sulfate	TDS	pH	Radium 226 & 228 combined	Carrier:	COC No:		
P-1	9/18/17	8:38	Grab	Water	7		X	X	X	X	X	X	X				
P-2		12:00	Grab	Water	7		X	X	X	X	X	X	X				
P-3		9:00	Grab	Water	7		X	X	X	X	X	X	X				
P-4		9:45	Grab	Water	7		X	X	X	X	X	X	X				
P-5		10:15	Grab	Water	7		X	X	X	X	X	X	X				
P-6		11:00	Grab	Water	7		X	X	X	X	X	X	X				
P-7		11:35	Grab	Water	7		X	X	X	X	X	X	X				
DUPLICATE WELL			Grab	Water	7		X	X	X	X	X	X	X				
Field Blank			Grab	Water	7		X	X	X	X	X	X	X				
Equipment Blank			Grab	Water	7		X	X	X	X	X	X	X				

Preservation Used: 1= Ice, 2= HCl, 3= H2SO4, 4=HNO3, 5=NaOH, 6= Other  
 Possible Hazard Identification: \_\_\_\_\_  
 Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.  
 Non-Hazardous  Flammable  Skin Irritant  Poison B  Unknown

Custody Seal No.:		Cooler Temp. (°C): Obs'd:		Therm ID No.:	
Relinquished by: <i>Mark Salter</i>	Company: <i>DES</i>	Received by: <i>AB</i>	Company: <i>DES</i>	Date/Time: 9/18/17 12:00	Date/Time: 9/18/17 12:00
Relinquished by: <i>AB</i>	Company: <i>DES</i>	Received by: <i>AB</i>	Company: <i>DES</i>	Date/Time: 9-18-17 1:00	Date/Time: 9-18-17 1:00
Relinquished by: _____	Company: _____	Received in Laboratory by: _____	Company: _____	Date/Time: _____	Date/Time: _____



## Appendix B – Laboratory Analytical Reports

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# TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

## ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Buffalo

10 Hazelwood Drive

Amherst, NY 14228-2298

Tel: (716)691-2600

TestAmerica Job ID: 480-114043-1

Client Project/Site: SKB Cloquet - CCR Groundwater

Sampling Event: CCR Groundwater

For:

Waste Connections, Inc.

13425 Courthouse Blvd

Rosemount, Minnesota 55068

Attn: Nathaniel Beinemann



Authorized for release by:

3/7/2017 3:57:47 PM

Denise Giglia, Project Management Assistant II

[denise.giglia@testamericainc.com](mailto:denise.giglia@testamericainc.com)

Designee for

Ryan VanDette, Project Manager II

(716)504-9830

[ryan.vandette@testamericainc.com](mailto:ryan.vandette@testamericainc.com)

### LINKS

Review your project  
results through

**TotalAccess**

Have a Question?



Visit us at:

[www.testamericainc.com](http://www.testamericainc.com)

*The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.*

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

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

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# Definitions/Glossary

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

TestAmerica Job ID: 480-114043-1

## Qualifiers

### 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
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
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)

# Case Narrative

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

TestAmerica Job ID: 480-114043-1

**Job ID: 480-114043-1**

**Laboratory: TestAmerica Buffalo**

## Narrative

### Job Narrative 480-114043-1

#### Comments

No additional comments.

#### Receipt

The samples were received on 3/1/2017 9:30 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were 2.0° C and 2.4° C.

#### HPLC/IC

Method(s) 300.0: The following samples were diluted to bring the concentration of target analytes within the calibration range: P-1 (480-114043-1), P-2 (480-114043-2), P-3 (480-114043-3), P-4R (480-114043-4), P-5 (480-114043-5), P-6 (480-114043-6), P-7 (480-114043-7) and DUPLICATE WELL (480-114043-8). Elevated reporting limits (RLs) are provided.

Method(s) 300.0: The following sample was diluted due to the nature of the sample matrix: FIELD BLANK (480-114043-9). Elevated reporting limits (RLs) are provided.

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

#### Metals

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

#### General Chemistry

Method(s) 9040C, SM 4500 H+ B: This analysis is normally performed in the field and has a method-defined holding time of 15 minutes. The following samples has been qualified with the "HF" flag to indicate analysis was performed in the laboratory outside the 15 minute timeframe: P-1 (480-114043-1), P-2 (480-114043-2), P-3 (480-114043-3), P-4R (480-114043-4), P-5 (480-114043-5), P-6 (480-114043-6), P-7 (480-114043-7), DUPLICATE WELL (480-114043-8) and FIELD BLANK (480-114043-9).

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



# Detection Summary

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

TestAmerica Job ID: 480-114043-1

## Client Sample ID: P-1

## Lab Sample ID: 480-114043-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.15		0.0020		mg/L	1		200.7 Rev 4.4	Total/NA
Boron	0.057		0.020		mg/L	1		200.7 Rev 4.4	Total/NA
Calcium	160		0.50		mg/L	1		200.7 Rev 4.4	Total/NA
Cobalt	0.53		0.30		ug/L	1		200.8	Total/NA
Chloride	167		5.0		mg/L	10		300.0	Total/NA
Sulfate	41.0		20.0		mg/L	10		300.0	Total/NA
Total Dissolved Solids	723		10.0		mg/L	1		SM 2540C	Total/NA
Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
pH	6.7	HF	0.1		SU	1		SM 4500 H+ B	Total/NA

## Client Sample ID: P-2

## Lab Sample ID: 480-114043-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.062		0.0020		mg/L	1		200.7 Rev 4.4	Total/NA
Boron	0.044		0.020		mg/L	1		200.7 Rev 4.4	Total/NA
Calcium	103		0.50		mg/L	1		200.7 Rev 4.4	Total/NA
Cobalt	0.93		0.30		ug/L	1		200.8	Total/NA
Chloride	136		2.5		mg/L	5		300.0	Total/NA
Sulfate	18.8		10.0		mg/L	5		300.0	Total/NA
Total Dissolved Solids	403		10.0		mg/L	1		SM 2540C	Total/NA
Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
pH	6.8	HF	0.1		SU	1		SM 4500 H+ B	Total/NA

## Client Sample ID: P-3

## Lab Sample ID: 480-114043-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.12		0.0020		mg/L	1		200.7 Rev 4.4	Total/NA
Boron	0.024		0.020		mg/L	1		200.7 Rev 4.4	Total/NA
Calcium	104		0.50		mg/L	1		200.7 Rev 4.4	Total/NA
Lead	0.010		0.010		mg/L	1		200.7 Rev 4.4	Total/NA
Chloride	86.5		2.5		mg/L	5		300.0	Total/NA
Sulfate	47.8		10.0		mg/L	5		300.0	Total/NA
Total Dissolved Solids	467		10.0		mg/L	1		SM 2540C	Total/NA
Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
pH	7.2	HF	0.1		SU	1		SM 4500 H+ B	Total/NA

## Client Sample ID: P-4R

## Lab Sample ID: 480-114043-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.027		0.0020		mg/L	1		200.7 Rev 4.4	Total/NA
Boron	0.036		0.020		mg/L	1		200.7 Rev 4.4	Total/NA
Calcium	27.0		0.50		mg/L	1		200.7 Rev 4.4	Total/NA
Molybdenum	13.2		1.0		ug/L	1		200.8	Total/NA
Chloride	4.0		2.5		mg/L	5		300.0	Total/NA
Sulfate	17.6		10.0		mg/L	5		300.0	Total/NA
Total Dissolved Solids	90.0		10.0		mg/L	1		SM 2540C	Total/NA
Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
pH	7.8	HF	0.1		SU	1		SM 4500 H+ B	Total/NA

This Detection Summary does not include radiochemical test results.

TestAmerica Buffalo

# Detection Summary

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

TestAmerica Job ID: 480-114043-1

## Client Sample ID: P-5

## Lab Sample ID: 480-114043-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.35		0.0020		mg/L	1		200.7 Rev 4.4	Total/NA
Boron	0.045		0.020		mg/L	1		200.7 Rev 4.4	Total/NA
Calcium	184		0.50		mg/L	1		200.7 Rev 4.4	Total/NA
Lead	0.011		0.010		mg/L	1		200.7 Rev 4.4	Total/NA
Cadmium	0.67		0.50		ug/L	1		200.8	Total/NA
Cobalt	15.2		0.30		ug/L	1		200.8	Total/NA
Chloride	211		5.0		mg/L	10		300.0	Total/NA
Sulfate	44.2		20.0		mg/L	10		300.0	Total/NA
Total Dissolved Solids	894		10.0		mg/L	1		SM 2540C	Total/NA
Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
pH	6.7	HF	0.1		SU	1		SM 4500 H+ B	Total/NA

## Client Sample ID: P-6

## Lab Sample ID: 480-114043-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.11		0.0020		mg/L	1		200.7 Rev 4.4	Total/NA
Boron	0.29		0.020		mg/L	1		200.7 Rev 4.4	Total/NA
Calcium	163		0.50		mg/L	1		200.7 Rev 4.4	Total/NA
Lead	0.017		0.010		mg/L	1		200.7 Rev 4.4	Total/NA
Cobalt	0.40		0.30		ug/L	1		200.8	Total/NA
Chloride	79.2		5.0		mg/L	10		300.0	Total/NA
Sulfate	109		20.0		mg/L	10		300.0	Total/NA
Total Dissolved Solids	750		10.0		mg/L	1		SM 2540C	Total/NA
Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
pH	6.8	HF	0.1		SU	1		SM 4500 H+ B	Total/NA

## Client Sample ID: P-7

## Lab Sample ID: 480-114043-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.25		0.0020		mg/L	1		200.7 Rev 4.4	Total/NA
Boron	0.13		0.020		mg/L	1		200.7 Rev 4.4	Total/NA
Calcium	193		0.50		mg/L	1		200.7 Rev 4.4	Total/NA
Cobalt	0.53		0.30		ug/L	1		200.8	Total/NA
Chloride	93.9		5.0		mg/L	10		300.0	Total/NA
Sulfate	44.7		20.0		mg/L	10		300.0	Total/NA
Total Dissolved Solids	838		10.0		mg/L	1		SM 2540C	Total/NA
Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
pH	6.9	HF	0.1		SU	1		SM 4500 H+ B	Total/NA

## Client Sample ID: DUPLICATE WELL

## Lab Sample ID: 480-114043-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.13		0.0020		mg/L	1		200.7 Rev 4.4	Total/NA
Boron	0.025		0.020		mg/L	1		200.7 Rev 4.4	Total/NA
Calcium	106		0.50		mg/L	1		200.7 Rev 4.4	Total/NA
Chloride	87.0		5.0		mg/L	10		300.0	Total/NA
Sulfate	47.7		20.0		mg/L	10		300.0	Total/NA
Total Dissolved Solids	470		10.0		mg/L	1		SM 2540C	Total/NA

This Detection Summary does not include radiochemical test results.

TestAmerica Buffalo

# Detection Summary

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

TestAmerica Job ID: 480-114043-1

## Client Sample ID: DUPLICATE WELL (Continued)

Lab Sample ID: 480-114043-8

Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
pH	7.3	HF	0.1		SU	1		SM 4500 H+ B	Total/NA

## Client Sample ID: FIELD BLANK

Lab Sample ID: 480-114043-9

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

This Detection Summary does not include radiochemical test results.

TestAmerica Buffalo



# Client Sample Results

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

TestAmerica Job ID: 480-114043-1

**Client Sample ID: P-1**

**Date Collected: 02/28/17 09:10**

**Date Received: 03/01/17 09:30**

**Lab Sample ID: 480-114043-1**

**Matrix: Water**

**Method: 200.7 Rev 4.4 - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	0.15		0.0020		mg/L		03/02/17 09:33	03/03/17 19:01	1
Boron	0.057		0.020		mg/L		03/02/17 09:33	03/03/17 19:01	1
Calcium	160		0.50		mg/L		03/02/17 09:33	03/03/17 19:01	1
Chromium	ND		0.0040		mg/L		03/02/17 09:33	03/03/17 19:01	1
Lead	ND		0.010		mg/L		03/02/17 09:33	03/03/17 19:01	1
Lithium	ND		0.030		mg/L		03/02/17 09:33	03/03/17 19:01	1

**Method: 200.8 - Metals (ICP/MS)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		1.0		ug/L		03/02/17 10:35	03/02/17 17:48	1
Arsenic	ND		1.0		ug/L		03/02/17 10:35	03/02/17 17:48	1
Beryllium	ND		0.70		ug/L		03/02/17 10:35	03/02/17 17:48	1
Cadmium	ND		0.50		ug/L		03/02/17 10:35	03/02/17 17:48	1
Cobalt	0.53		0.30		ug/L		03/02/17 10:35	03/02/17 17:48	1
Molybdenum	ND		1.0		ug/L		03/02/17 10:35	03/02/17 17:48	1
Selenium	ND		1.0		ug/L		03/02/17 10:35	03/02/17 17:48	1
Thallium	ND		0.20		ug/L		03/02/17 10:35	03/02/17 17:48	1

**Method: 245.1 - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020		mg/L		03/02/17 09:20	03/02/17 16:21	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	167		5.0		mg/L			03/03/17 18:07	10
Fluoride	ND		0.50		mg/L			03/03/17 18:07	10
Sulfate	41.0		20.0		mg/L			03/03/17 18:07	10
Total Dissolved Solids	723		10.0		mg/L			03/01/17 18:26	1
Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	6.7	HF	0.1		SU			03/02/17 13:44	1

# Client Sample Results

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

TestAmerica Job ID: 480-114043-1

**Client Sample ID: P-2**

**Date Collected: 02/28/17 14:25**

**Date Received: 03/01/17 09:30**

**Lab Sample ID: 480-114043-2**

**Matrix: Water**

**Method: 200.7 Rev 4.4 - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	0.062		0.0020		mg/L		03/02/17 09:33	03/03/17 19:18	1
Boron	0.044		0.020		mg/L		03/02/17 09:33	03/03/17 19:18	1
Calcium	103		0.50		mg/L		03/02/17 09:33	03/03/17 19:18	1
Chromium	ND		0.0040		mg/L		03/02/17 09:33	03/03/17 19:18	1
Lead	ND		0.010		mg/L		03/02/17 09:33	03/03/17 19:18	1
Lithium	ND		0.030		mg/L		03/02/17 09:33	03/03/17 19:18	1

**Method: 200.8 - Metals (ICP/MS)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		1.0		ug/L		03/02/17 10:35	03/02/17 17:55	1
Arsenic	ND		1.0		ug/L		03/02/17 10:35	03/02/17 17:55	1
Beryllium	ND		0.70		ug/L		03/02/17 10:35	03/02/17 17:55	1
Cadmium	ND		0.50		ug/L		03/02/17 10:35	03/02/17 17:55	1
Cobalt	0.93		0.30		ug/L		03/02/17 10:35	03/02/17 17:55	1
Molybdenum	ND		1.0		ug/L		03/02/17 10:35	03/02/17 17:55	1
Selenium	ND		1.0		ug/L		03/02/17 10:35	03/02/17 17:55	1
Thallium	ND		0.20		ug/L		03/02/17 10:35	03/02/17 17:55	1

**Method: 245.1 - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020		mg/L		03/02/17 09:20	03/02/17 16:22	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	136		2.5		mg/L			03/03/17 18:15	5
Fluoride	ND		0.25		mg/L			03/03/17 18:15	5
Sulfate	18.8		10.0		mg/L			03/03/17 18:15	5
Total Dissolved Solids	403		10.0		mg/L			03/01/17 18:26	1
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH	6.8	HF	0.1		SU			03/02/17 13:47	1

# Client Sample Results

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

TestAmerica Job ID: 480-114043-1

**Client Sample ID: P-3**

**Date Collected: 02/28/17 10:15**

**Date Received: 03/01/17 09:30**

**Lab Sample ID: 480-114043-3**

**Matrix: Water**

**Method: 200.7 Rev 4.4 - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	0.12		0.0020		mg/L		03/02/17 09:33	03/03/17 19:22	1
Boron	0.024		0.020		mg/L		03/02/17 09:33	03/03/17 19:22	1
Calcium	104		0.50		mg/L		03/02/17 09:33	03/03/17 19:22	1
Chromium	ND		0.0040		mg/L		03/02/17 09:33	03/03/17 19:22	1
Lead	0.010		0.010		mg/L		03/02/17 09:33	03/03/17 19:22	1
Lithium	ND		0.030		mg/L		03/02/17 09:33	03/03/17 19:22	1

**Method: 200.8 - Metals (ICP/MS)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		1.0		ug/L		03/02/17 10:35	03/02/17 18:01	1
Arsenic	ND		1.0		ug/L		03/02/17 10:35	03/02/17 18:01	1
Beryllium	ND		0.70		ug/L		03/02/17 10:35	03/02/17 18:01	1
Cadmium	ND		0.50		ug/L		03/02/17 10:35	03/02/17 18:01	1
Cobalt	ND		0.30		ug/L		03/02/17 10:35	03/02/17 18:01	1
Molybdenum	ND		1.0		ug/L		03/02/17 10:35	03/02/17 18:01	1
Selenium	ND		1.0		ug/L		03/02/17 10:35	03/02/17 18:01	1
Thallium	ND		0.20		ug/L		03/02/17 10:35	03/02/17 18:01	1

**Method: 245.1 - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020		mg/L		03/02/17 09:20	03/02/17 16:24	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	86.5		2.5		mg/L			03/03/17 18:23	5
Fluoride	ND		0.25		mg/L			03/03/17 18:23	5
Sulfate	47.8		10.0		mg/L			03/03/17 18:23	5
Total Dissolved Solids	467		10.0		mg/L			03/01/17 18:26	1
Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	7.2	HF	0.1		SU			03/02/17 13:50	1

# Client Sample Results

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

TestAmerica Job ID: 480-114043-1

**Client Sample ID: P-4R**  
**Date Collected: 02/28/17 11:25**  
**Date Received: 03/01/17 09:30**

**Lab Sample ID: 480-114043-4**  
**Matrix: Water**

### Method: 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	0.027		0.0020		mg/L		03/02/17 09:33	03/03/17 19:25	1
Boron	0.036		0.020		mg/L		03/02/17 09:33	03/03/17 19:25	1
Calcium	27.0		0.50		mg/L		03/02/17 09:33	03/03/17 19:25	1
Chromium	ND		0.0040		mg/L		03/02/17 09:33	03/03/17 19:25	1
Lead	ND		0.010		mg/L		03/02/17 09:33	03/03/17 19:25	1
Lithium	ND		0.030		mg/L		03/02/17 09:33	03/03/17 19:25	1

### Method: 200.8 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		1.0		ug/L		03/02/17 10:35	03/04/17 05:51	1
Arsenic	ND		1.0		ug/L		03/02/17 10:35	03/04/17 05:51	1
Beryllium	ND		0.70		ug/L		03/02/17 10:35	03/06/17 17:36	1
Cadmium	ND		0.50		ug/L		03/02/17 10:35	03/04/17 05:51	1
Cobalt	ND		0.30		ug/L		03/02/17 10:35	03/04/17 05:51	1
Molybdenum	13.2		1.0		ug/L		03/02/17 10:35	03/04/17 05:51	1
Selenium	ND		1.0		ug/L		03/02/17 10:35	03/04/17 05:51	1
Thallium	ND		0.20		ug/L		03/02/17 10:35	03/04/17 05:51	1

### Method: 245.1 - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020		mg/L		03/02/17 09:20	03/02/17 16:32	1

### General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	4.0		2.5		mg/L			03/03/17 18:31	5
Fluoride	ND		0.25		mg/L			03/03/17 18:31	5
Sulfate	17.6		10.0		mg/L			03/03/17 18:31	5
Total Dissolved Solids	90.0		10.0		mg/L			03/01/17 18:26	1
Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	7.8	HF	0.1		SU			03/02/17 13:53	1

# Client Sample Results

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

TestAmerica Job ID: 480-114043-1

**Client Sample ID: P-5**

**Date Collected: 02/28/17 12:00**

**Date Received: 03/01/17 09:30**

**Lab Sample ID: 480-114043-5**

**Matrix: Water**

**Method: 200.7 Rev 4.4 - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	0.35		0.0020		mg/L		03/02/17 09:33	03/03/17 19:39	1
Boron	0.045		0.020		mg/L		03/02/17 09:33	03/03/17 19:39	1
Calcium	184		0.50		mg/L		03/02/17 09:33	03/03/17 19:39	1
Chromium	ND		0.0040		mg/L		03/02/17 09:33	03/03/17 19:39	1
Lead	0.011		0.010		mg/L		03/02/17 09:33	03/03/17 19:39	1
Lithium	ND		0.030		mg/L		03/02/17 09:33	03/03/17 19:39	1

**Method: 200.8 - Metals (ICP/MS)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		1.0		ug/L		03/02/17 10:35	03/04/17 05:57	1
Arsenic	ND		1.0		ug/L		03/02/17 10:35	03/04/17 05:57	1
Beryllium	ND		0.70		ug/L		03/02/17 10:35	03/06/17 17:43	1
Cadmium	0.67		0.50		ug/L		03/02/17 10:35	03/04/17 05:57	1
Cobalt	15.2		0.30		ug/L		03/02/17 10:35	03/04/17 05:57	1
Molybdenum	ND		1.0		ug/L		03/02/17 10:35	03/04/17 05:57	1
Selenium	ND		1.0		ug/L		03/02/17 10:35	03/04/17 05:57	1
Thallium	ND		0.20		ug/L		03/02/17 10:35	03/04/17 05:57	1

**Method: 245.1 - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020		mg/L		03/02/17 09:20	03/02/17 16:37	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	211		5.0		mg/L			03/03/17 18:39	10
Fluoride	ND		0.50		mg/L			03/03/17 18:39	10
Sulfate	44.2		20.0		mg/L			03/03/17 18:39	10
Total Dissolved Solids	894		10.0		mg/L			03/01/17 18:26	1
Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	6.7	HF	0.1		SU			03/02/17 13:56	1



# Client Sample Results

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

TestAmerica Job ID: 480-114043-1

**Client Sample ID: P-6**

**Date Collected: 02/28/17 12:55**

**Date Received: 03/01/17 09:30**

**Lab Sample ID: 480-114043-6**

**Matrix: Water**

**Method: 200.7 Rev 4.4 - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	0.11		0.0020		mg/L		03/02/17 09:33	03/03/17 19:43	1
Boron	0.29		0.020		mg/L		03/02/17 09:33	03/03/17 19:43	1
Calcium	163		0.50		mg/L		03/02/17 09:33	03/03/17 19:43	1
Chromium	ND		0.0040		mg/L		03/02/17 09:33	03/03/17 19:43	1
Lead	0.017		0.010		mg/L		03/02/17 09:33	03/03/17 19:43	1
Lithium	ND		0.030		mg/L		03/02/17 09:33	03/03/17 19:43	1

**Method: 200.8 - Metals (ICP/MS)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		1.0		ug/L		03/02/17 10:35	03/04/17 06:04	1
Arsenic	ND		1.0		ug/L		03/02/17 10:35	03/04/17 06:04	1
Beryllium	ND		0.70		ug/L		03/02/17 10:35	03/06/17 17:49	1
Cadmium	ND		0.50		ug/L		03/02/17 10:35	03/04/17 06:04	1
Cobalt	0.40		0.30		ug/L		03/02/17 10:35	03/04/17 06:04	1
Molybdenum	ND		1.0		ug/L		03/02/17 10:35	03/04/17 06:04	1
Selenium	ND		1.0		ug/L		03/02/17 10:35	03/04/17 06:04	1
Thallium	ND		0.20		ug/L		03/02/17 10:35	03/04/17 06:04	1

**Method: 245.1 - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020		mg/L		03/02/17 09:20	03/02/17 16:39	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	79.2		5.0		mg/L			03/03/17 18:48	10
Fluoride	ND		0.50		mg/L			03/03/17 18:48	10
Sulfate	109		20.0		mg/L			03/03/17 18:48	10
Total Dissolved Solids	750		10.0		mg/L			03/01/17 18:26	1
Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	6.8	HF	0.1		SU			03/02/17 13:58	1

# Client Sample Results

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

TestAmerica Job ID: 480-114043-1

**Client Sample ID: P-7**

**Date Collected: 02/28/17 13:45**

**Date Received: 03/01/17 09:30**

**Lab Sample ID: 480-114043-7**

**Matrix: Water**

### Method: 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	0.25		0.0020		mg/L		03/02/17 09:33	03/03/17 19:47	1
Boron	0.13		0.020		mg/L		03/02/17 09:33	03/03/17 19:47	1
Calcium	193		0.50		mg/L		03/02/17 09:33	03/03/17 19:47	1
Chromium	ND		0.0040		mg/L		03/02/17 09:33	03/03/17 19:47	1
Lead	ND		0.010		mg/L		03/02/17 09:33	03/03/17 19:47	1
Lithium	ND		0.030		mg/L		03/02/17 09:33	03/03/17 19:47	1

### Method: 200.8 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		1.0		ug/L		03/02/17 10:35	03/04/17 06:10	1
Arsenic	ND		1.0		ug/L		03/02/17 10:35	03/04/17 06:10	1
Beryllium	ND		0.70		ug/L		03/02/17 10:35	03/06/17 17:56	1
Cadmium	ND		0.50		ug/L		03/02/17 10:35	03/04/17 06:10	1
Cobalt	0.53		0.30		ug/L		03/02/17 10:35	03/04/17 06:10	1
Molybdenum	ND		1.0		ug/L		03/02/17 10:35	03/04/17 06:10	1
Selenium	ND		1.0		ug/L		03/02/17 10:35	03/04/17 06:10	1
Thallium	ND		0.20		ug/L		03/02/17 10:35	03/04/17 06:10	1

### Method: 245.1 - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020		mg/L		03/02/17 09:20	03/02/17 16:41	1

### General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	93.9		5.0		mg/L			03/03/17 19:36	10
Fluoride	ND		0.50		mg/L			03/03/17 19:36	10
Sulfate	44.7		20.0		mg/L			03/03/17 19:36	10
Total Dissolved Solids	838		10.0		mg/L			03/01/17 18:26	1
Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	6.9	HF	0.1		SU			03/02/17 14:04	1

# Client Sample Results

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

TestAmerica Job ID: 480-114043-1

**Client Sample ID: DUPLICATE WELL**

**Lab Sample ID: 480-114043-8**

Date Collected: 02/28/17 00:00

Matrix: Water

Date Received: 03/01/17 09:30

**Method: 200.7 Rev 4.4 - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	0.13		0.0020		mg/L		03/02/17 09:33	03/03/17 19:50	1
Boron	0.025		0.020		mg/L		03/02/17 09:33	03/03/17 19:50	1
Calcium	106		0.50		mg/L		03/02/17 09:33	03/03/17 19:50	1
Chromium	ND		0.0040		mg/L		03/02/17 09:33	03/03/17 19:50	1
Lead	ND		0.010		mg/L		03/02/17 09:33	03/03/17 19:50	1
Lithium	ND		0.030		mg/L		03/02/17 09:33	03/03/17 19:50	1

**Method: 200.8 - Metals (ICP/MS)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		1.0		ug/L		03/02/17 10:35	03/04/17 06:36	1
Arsenic	ND		1.0		ug/L		03/02/17 10:35	03/04/17 06:36	1
Beryllium	ND		0.70		ug/L		03/02/17 10:35	03/06/17 18:21	1
Cadmium	ND		0.50		ug/L		03/02/17 10:35	03/04/17 06:36	1
Cobalt	ND		0.30		ug/L		03/02/17 10:35	03/04/17 06:36	1
Molybdenum	ND		1.0		ug/L		03/02/17 10:35	03/04/17 06:36	1
Selenium	ND		1.0		ug/L		03/02/17 10:35	03/04/17 06:36	1
Thallium	ND		0.20		ug/L		03/02/17 10:35	03/04/17 06:36	1

**Method: 245.1 - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020		mg/L		03/02/17 09:20	03/02/17 16:43	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	87.0		5.0		mg/L			03/03/17 19:45	10
Fluoride	ND		0.50		mg/L			03/03/17 19:45	10
Sulfate	47.7		20.0		mg/L			03/03/17 19:45	10
Total Dissolved Solids	470		10.0		mg/L			03/01/17 18:26	1
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH	7.3	HF	0.1		SU			03/02/17 14:07	1

# Client Sample Results

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

TestAmerica Job ID: 480-114043-1

**Client Sample ID: FIELD BLANK**

**Lab Sample ID: 480-114043-9**

**Date Collected: 02/28/17 15:15**

**Matrix: Water**

**Date Received: 03/01/17 09:30**

**Method: 200.7 Rev 4.4 - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	ND		0.0020		mg/L		03/02/17 09:33	03/03/17 19:54	1
Boron	ND		0.020		mg/L		03/02/17 09:33	03/03/17 19:54	1
Calcium	ND		0.50		mg/L		03/02/17 09:33	03/03/17 19:54	1
Chromium	ND		0.0040		mg/L		03/02/17 09:33	03/03/17 19:54	1
Lead	ND		0.010		mg/L		03/02/17 09:33	03/03/17 19:54	1
Lithium	ND		0.030		mg/L		03/02/17 09:33	03/03/17 19:54	1

**Method: 200.8 - Metals (ICP/MS)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		1.0		ug/L		03/02/17 10:35	03/04/17 06:30	1
Arsenic	ND		1.0		ug/L		03/02/17 10:35	03/04/17 06:30	1
Beryllium	ND		0.70		ug/L		03/02/17 10:35	03/06/17 18:28	1
Cadmium	ND		0.50		ug/L		03/02/17 10:35	03/04/17 06:30	1
Cobalt	ND		0.30		ug/L		03/02/17 10:35	03/04/17 06:30	1
Molybdenum	ND		1.0		ug/L		03/02/17 10:35	03/04/17 06:30	1
Selenium	ND		1.0		ug/L		03/02/17 10:35	03/04/17 06:30	1
Thallium	ND		0.20		ug/L		03/02/17 10:35	03/04/17 06:30	1

**Method: 245.1 - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020		mg/L		03/02/17 09:20	03/02/17 16:44	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		5.0		mg/L			03/03/17 19:53	10
Fluoride	ND		0.50		mg/L			03/03/17 19:53	10
Sulfate	ND		20.0		mg/L			03/03/17 19:53	10
Total Dissolved Solids	ND		10.0		mg/L			03/01/17 18:26	1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH	5.8	HF	0.1		SU			03/02/17 14:10	1

# QC Sample Results

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

TestAmerica Job ID: 480-114043-1

## Method: 200.7 Rev 4.4 - Metals (ICP)

**Lab Sample ID: MB 480-345860/1-A**  
**Matrix: Water**  
**Analysis Batch: 346243**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 345860**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	ND		0.0020		mg/L		03/02/17 09:33	03/03/17 18:43	1
Boron	ND		0.020		mg/L		03/02/17 09:33	03/03/17 18:43	1
Calcium	ND		0.50		mg/L		03/02/17 09:33	03/03/17 18:43	1
Chromium	ND		0.0040		mg/L		03/02/17 09:33	03/03/17 18:43	1
Lead	ND		0.010		mg/L		03/02/17 09:33	03/03/17 18:43	1
Lithium	ND		0.030		mg/L		03/02/17 09:33	03/03/17 18:43	1

**Lab Sample ID: LCS 480-345860/2-A**  
**Matrix: Water**  
**Analysis Batch: 346243**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 345860**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Barium	0.200	0.198		mg/L		99	85 - 115
Boron	0.200	0.196		mg/L		98	85 - 115
Calcium	10.0	10.15		mg/L		101	85 - 115
Chromium	0.200	0.204		mg/L		102	85 - 115
Lead	0.200	0.203		mg/L		102	85 - 115

**Lab Sample ID: 480-114043-1 MS**  
**Matrix: Water**  
**Analysis Batch: 346243**

**Client Sample ID: P-1**  
**Prep Type: Total/NA**  
**Prep Batch: 345860**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Barium	0.15		0.200	0.346		mg/L		99	70 - 130
Boron	0.057		0.200	0.259		mg/L		101	70 - 130
Calcium	160		10.0	172.6	4	mg/L		125	70 - 130
Chromium	ND		0.200	0.202		mg/L		101	70 - 130
Lead	ND		0.200	0.218		mg/L		105	70 - 130

**Lab Sample ID: 480-114043-1 MSD**  
**Matrix: Water**  
**Analysis Batch: 346243**

**Client Sample ID: P-1**  
**Prep Type: Total/NA**  
**Prep Batch: 345860**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Barium	0.15		0.200	0.345		mg/L		99	70 - 130	0	20
Boron	0.057		0.200	0.258		mg/L		100	70 - 130	0	20
Calcium	160		10.0	170.3	4	mg/L		102	70 - 130	1	20
Chromium	ND		0.200	0.200		mg/L		100	70 - 130	1	20
Lead	ND		0.200	0.215		mg/L		103	70 - 130	2	20

## Method: 200.8 - Metals (ICP/MS)

**Lab Sample ID: MB 480-345911/1-A**  
**Matrix: Water**  
**Analysis Batch: 346135**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 345911**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		1.0		ug/L		03/02/17 10:35	03/02/17 16:38	1
Arsenic	ND		1.0		ug/L		03/02/17 10:35	03/02/17 16:38	1

TestAmerica Buffalo

# QC Sample Results

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

TestAmerica Job ID: 480-114043-1

## Method: 200.8 - Metals (ICP/MS) (Continued)

**Lab Sample ID: MB 480-345911/1-A**  
**Matrix: Water**  
**Analysis Batch: 346135**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 345911**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Beryllium	ND		0.70		ug/L		03/02/17 10:35	03/02/17 16:38	1
Cadmium	ND		0.50		ug/L		03/02/17 10:35	03/02/17 16:38	1
Cobalt	ND		0.30		ug/L		03/02/17 10:35	03/02/17 16:38	1
Molybdenum	ND		1.0		ug/L		03/02/17 10:35	03/02/17 16:38	1
Selenium	ND		1.0		ug/L		03/02/17 10:35	03/02/17 16:38	1
Thallium	ND		0.20		ug/L		03/02/17 10:35	03/02/17 16:38	1

**Lab Sample ID: LCS 480-345911/2-A**  
**Matrix: Water**  
**Analysis Batch: 346135**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 345911**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Antimony	20.0	19.14		ug/L		96	85 - 115
Arsenic	20.0	19.10		ug/L		95	85 - 115
Beryllium	20.0	19.28		ug/L		96	85 - 115
Cadmium	20.0	19.28		ug/L		96	85 - 115
Cobalt	20.0	18.47		ug/L		92	85 - 115
Molybdenum	20.0	18.76		ug/L		94	85 - 115
Selenium	20.0	18.60		ug/L		93	85 - 115
Thallium	20.0	18.64		ug/L		93	85 - 115

**Lab Sample ID: 480-114043-7 MS**  
**Matrix: Water**  
**Analysis Batch: 346350**

**Client Sample ID: P-7**  
**Prep Type: Total/NA**  
**Prep Batch: 345911**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Antimony	ND		20.0	20.11		ug/L		101	70 - 130
Arsenic	ND		20.0	21.27		ug/L		105	70 - 130
Cadmium	ND		20.0	19.01		ug/L		94	70 - 130
Cobalt	0.53		20.0	19.12		ug/L		93	70 - 130
Molybdenum	ND		20.0	20.06		ug/L		100	70 - 130
Selenium	ND		20.0	19.73		ug/L		99	70 - 130
Thallium	ND		20.0	20.69		ug/L		103	70 - 130

**Lab Sample ID: 480-114043-7 MS**  
**Matrix: Water**  
**Analysis Batch: 346452**

**Client Sample ID: P-7**  
**Prep Type: Total/NA**  
**Prep Batch: 345911**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Beryllium	ND		20.0	17.92		ug/L		90	70 - 130

**Lab Sample ID: 480-114043-7 MSD**  
**Matrix: Water**  
**Analysis Batch: 346350**

**Client Sample ID: P-7**  
**Prep Type: Total/NA**  
**Prep Batch: 345911**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Antimony	ND		20.0	20.58		ug/L		103	70 - 130	2	20
Arsenic	ND		20.0	21.63		ug/L		106	70 - 130	2	20
Cadmium	ND		20.0	19.38		ug/L		96	70 - 130	2	20

TestAmerica Buffalo

# QC Sample Results

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

TestAmerica Job ID: 480-114043-1

## Method: 200.8 - Metals (ICP/MS) (Continued)

**Lab Sample ID: 480-114043-7 MSD**  
**Matrix: Water**  
**Analysis Batch: 346350**

**Client Sample ID: P-7**  
**Prep Type: Total/NA**  
**Prep Batch: 345911**

Analyte	Sample	Sample	Spike	MSD	MSD	Unit	D	%Rec	%Rec.	RPD	Limit
	Result	Qualifier	Added	Result	Qualifier				Limits	RPD	
Cobalt	0.53		20.0	19.43		ug/L		94	70 - 130	2	20
Molybdenum	ND		20.0	20.57		ug/L		102	70 - 130	2	20
Selenium	ND		20.0	19.92		ug/L		100	70 - 130	1	20
Thallium	ND		20.0	20.99		ug/L		105	70 - 130	1	20

**Lab Sample ID: 480-114043-7 MSD**  
**Matrix: Water**  
**Analysis Batch: 346452**

**Client Sample ID: P-7**  
**Prep Type: Total/NA**  
**Prep Batch: 345911**

Analyte	Sample	Sample	Spike	MSD	MSD	Unit	D	%Rec	%Rec.	RPD	Limit
	Result	Qualifier	Added	Result	Qualifier				Limits	RPD	
Beryllium	ND		20.0	17.77		ug/L		89	70 - 130	1	20

## Method: 245.1 - Mercury (CVAA)

**Lab Sample ID: MB 480-345883/1-A**  
**Matrix: Water**  
**Analysis Batch: 345993**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 345883**

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Mercury	ND		0.00020		mg/L		03/02/17 09:20	03/02/17 16:17	1

**Lab Sample ID: LCS 480-345883/2-A**  
**Matrix: Water**  
**Analysis Batch: 345993**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 345883**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec.
							Limits
Mercury	0.00667	0.00688		mg/L		103	85 - 115

**Lab Sample ID: 480-114043-3 MS**  
**Matrix: Water**  
**Analysis Batch: 345993**

**Client Sample ID: P-3**  
**Prep Type: Total/NA**  
**Prep Batch: 345883**

Analyte	Sample	Sample	Spike	MS	MS	Unit	D	%Rec	%Rec.	RPD	Limit
	Result	Qualifier	Added	Result	Qualifier				Limits	RPD	
Mercury	ND		0.00667	0.00672		mg/L		101	70 - 130		

**Lab Sample ID: 480-114043-3 MSD**  
**Matrix: Water**  
**Analysis Batch: 345993**

**Client Sample ID: P-3**  
**Prep Type: Total/NA**  
**Prep Batch: 345883**

Analyte	Sample	Sample	Spike	MSD	MSD	Unit	D	%Rec	%Rec.	RPD	Limit
	Result	Qualifier	Added	Result	Qualifier				Limits	RPD	
Mercury	ND		0.00667	0.00673		mg/L		101	70 - 130	0	20

TestAmerica Buffalo

# QC Sample Results

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

TestAmerica Job ID: 480-114043-1

## Method: 300.0 - Anions, Ion Chromatography

**Lab Sample ID: MB 480-346144/4**  
**Matrix: Water**  
**Analysis Batch: 346144**

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		0.50		mg/L			03/03/17 17:59	1
Fluoride	ND		0.050		mg/L			03/03/17 17:59	1
Sulfate	ND		2.0		mg/L			03/03/17 17:59	1

**Lab Sample ID: LCS 480-346144/3**  
**Matrix: Water**  
**Analysis Batch: 346144**

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	50.0	50.22		mg/L		100	90 - 110
Fluoride	5.00	4.87		mg/L		97	90 - 110
Sulfate	50.0	49.17		mg/L		98	90 - 110

**Lab Sample ID: 480-114043-6 MS**  
**Matrix: Water**  
**Analysis Batch: 346144**

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

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	79.2		500	592.9		mg/L		103	81 - 120
Fluoride	ND		50.0	49.79		mg/L		100	82 - 120
Sulfate	109		500	603.9		mg/L		99	80 - 120

**Lab Sample ID: 480-114043-6 MSD**  
**Matrix: Water**  
**Analysis Batch: 346144**

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

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	79.2		500	594.4		mg/L		103	81 - 120	0	20
Fluoride	ND		50.0	49.82		mg/L		100	82 - 120	0	20
Sulfate	109		500	606.4		mg/L		100	80 - 120	0	20

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

**Lab Sample ID: MB 480-345812/1**  
**Matrix: Water**  
**Analysis Batch: 345812**

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	ND		10.0		mg/L			03/01/17 18:26	1

**Lab Sample ID: LCS 480-345812/2**  
**Matrix: Water**  
**Analysis Batch: 345812**

**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	506	488.0		mg/L		96	85 - 115

TestAmerica Buffalo



# QC Sample Results

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

TestAmerica Job ID: 480-114043-1

## Method: SM 4500 H+ B - pH

Lab Sample ID: LCS 480-345973/1  
Matrix: Water  
Analysis Batch: 345973

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

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

- 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

TestAmerica Job ID: 480-114043-1

## Metals

### Prep Batch: 345860

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-114043-1	P-1	Total/NA	Water	200.7	
480-114043-2	P-2	Total/NA	Water	200.7	
480-114043-3	P-3	Total/NA	Water	200.7	
480-114043-4	P-4R	Total/NA	Water	200.7	
480-114043-5	P-5	Total/NA	Water	200.7	
480-114043-6	P-6	Total/NA	Water	200.7	
480-114043-7	P-7	Total/NA	Water	200.7	
480-114043-8	DUPLICATE WELL	Total/NA	Water	200.7	
480-114043-9	FIELD BLANK	Total/NA	Water	200.7	
MB 480-345860/1-A	Method Blank	Total/NA	Water	200.7	
LCS 480-345860/2-A	Lab Control Sample	Total/NA	Water	200.7	
480-114043-1 MS	P-1	Total/NA	Water	200.7	
480-114043-1 MSD	P-1	Total/NA	Water	200.7	

### Prep Batch: 345883

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-114043-1	P-1	Total/NA	Water	245.1	
480-114043-2	P-2	Total/NA	Water	245.1	
480-114043-3	P-3	Total/NA	Water	245.1	
480-114043-4	P-4R	Total/NA	Water	245.1	
480-114043-5	P-5	Total/NA	Water	245.1	
480-114043-6	P-6	Total/NA	Water	245.1	
480-114043-7	P-7	Total/NA	Water	245.1	
480-114043-8	DUPLICATE WELL	Total/NA	Water	245.1	
480-114043-9	FIELD BLANK	Total/NA	Water	245.1	
MB 480-345883/1-A	Method Blank	Total/NA	Water	245.1	
LCS 480-345883/2-A	Lab Control Sample	Total/NA	Water	245.1	
480-114043-3 MS	P-3	Total/NA	Water	245.1	
480-114043-3 MSD	P-3	Total/NA	Water	245.1	

### Prep Batch: 345911

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-114043-1	P-1	Total/NA	Water	200.8	
480-114043-2	P-2	Total/NA	Water	200.8	
480-114043-3	P-3	Total/NA	Water	200.8	
480-114043-4	P-4R	Total/NA	Water	200.8	
480-114043-5	P-5	Total/NA	Water	200.8	
480-114043-6	P-6	Total/NA	Water	200.8	
480-114043-7	P-7	Total/NA	Water	200.8	
480-114043-8	DUPLICATE WELL	Total/NA	Water	200.8	
480-114043-9	FIELD BLANK	Total/NA	Water	200.8	
MB 480-345911/1-A	Method Blank	Total/NA	Water	200.8	
LCS 480-345911/2-A	Lab Control Sample	Total/NA	Water	200.8	
480-114043-7 MS	P-7	Total/NA	Water	200.8	
480-114043-7 MSD	P-7	Total/NA	Water	200.8	

### Analysis Batch: 345993

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-114043-1	P-1	Total/NA	Water	245.1	345883
480-114043-2	P-2	Total/NA	Water	245.1	345883
480-114043-3	P-3	Total/NA	Water	245.1	345883

TestAmerica Buffalo

# QC Association Summary

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

TestAmerica Job ID: 480-114043-1

## Metals (Continued)

### Analysis Batch: 345993 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-114043-4	P-4R	Total/NA	Water	245.1	345883
480-114043-5	P-5	Total/NA	Water	245.1	345883
480-114043-6	P-6	Total/NA	Water	245.1	345883
480-114043-7	P-7	Total/NA	Water	245.1	345883
480-114043-8	DUPLICATE WELL	Total/NA	Water	245.1	345883
480-114043-9	FIELD BLANK	Total/NA	Water	245.1	345883
MB 480-345883/1-A	Method Blank	Total/NA	Water	245.1	345883
LCS 480-345883/2-A	Lab Control Sample	Total/NA	Water	245.1	345883
480-114043-3 MS	P-3	Total/NA	Water	245.1	345883
480-114043-3 MSD	P-3	Total/NA	Water	245.1	345883

### Analysis Batch: 346135

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-114043-1	P-1	Total/NA	Water	200.8	345911
480-114043-2	P-2	Total/NA	Water	200.8	345911
480-114043-3	P-3	Total/NA	Water	200.8	345911
MB 480-345911/1-A	Method Blank	Total/NA	Water	200.8	345911
LCS 480-345911/2-A	Lab Control Sample	Total/NA	Water	200.8	345911

### Analysis Batch: 346243

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-114043-1	P-1	Total/NA	Water	200.7 Rev 4.4	345860
480-114043-2	P-2	Total/NA	Water	200.7 Rev 4.4	345860
480-114043-3	P-3	Total/NA	Water	200.7 Rev 4.4	345860
480-114043-4	P-4R	Total/NA	Water	200.7 Rev 4.4	345860
480-114043-5	P-5	Total/NA	Water	200.7 Rev 4.4	345860
480-114043-6	P-6	Total/NA	Water	200.7 Rev 4.4	345860
480-114043-7	P-7	Total/NA	Water	200.7 Rev 4.4	345860
480-114043-8	DUPLICATE WELL	Total/NA	Water	200.7 Rev 4.4	345860
480-114043-9	FIELD BLANK	Total/NA	Water	200.7 Rev 4.4	345860
MB 480-345860/1-A	Method Blank	Total/NA	Water	200.7 Rev 4.4	345860
LCS 480-345860/2-A	Lab Control Sample	Total/NA	Water	200.7 Rev 4.4	345860
480-114043-1 MS	P-1	Total/NA	Water	200.7 Rev 4.4	345860
480-114043-1 MSD	P-1	Total/NA	Water	200.7 Rev 4.4	345860

### Analysis Batch: 346350

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-114043-4	P-4R	Total/NA	Water	200.8	345911
480-114043-5	P-5	Total/NA	Water	200.8	345911
480-114043-6	P-6	Total/NA	Water	200.8	345911
480-114043-7	P-7	Total/NA	Water	200.8	345911
480-114043-8	DUPLICATE WELL	Total/NA	Water	200.8	345911
480-114043-9	FIELD BLANK	Total/NA	Water	200.8	345911
480-114043-7 MS	P-7	Total/NA	Water	200.8	345911
480-114043-7 MSD	P-7	Total/NA	Water	200.8	345911

### Analysis Batch: 346452

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-114043-4	P-4R	Total/NA	Water	200.8	345911
480-114043-5	P-5	Total/NA	Water	200.8	345911
480-114043-6	P-6	Total/NA	Water	200.8	345911

TestAmerica Buffalo

# QC Association Summary

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

TestAmerica Job ID: 480-114043-1

## Metals (Continued)

### Analysis Batch: 346452 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-114043-7	P-7	Total/NA	Water	200.8	345911
480-114043-8	DUPLICATE WELL	Total/NA	Water	200.8	345911
480-114043-9	FIELD BLANK	Total/NA	Water	200.8	345911
480-114043-7 MS	P-7	Total/NA	Water	200.8	345911
480-114043-7 MSD	P-7	Total/NA	Water	200.8	345911

## General Chemistry

### Analysis Batch: 345812

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-114043-1	P-1	Total/NA	Water	SM 2540C	
480-114043-2	P-2	Total/NA	Water	SM 2540C	
480-114043-3	P-3	Total/NA	Water	SM 2540C	
480-114043-4	P-4R	Total/NA	Water	SM 2540C	
480-114043-5	P-5	Total/NA	Water	SM 2540C	
480-114043-6	P-6	Total/NA	Water	SM 2540C	
480-114043-7	P-7	Total/NA	Water	SM 2540C	
480-114043-8	DUPLICATE WELL	Total/NA	Water	SM 2540C	
480-114043-9	FIELD BLANK	Total/NA	Water	SM 2540C	
MB 480-345812/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 480-345812/2	Lab Control Sample	Total/NA	Water	SM 2540C	

### Analysis Batch: 345973

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-114043-1	P-1	Total/NA	Water	SM 4500 H+ B	
480-114043-2	P-2	Total/NA	Water	SM 4500 H+ B	
480-114043-3	P-3	Total/NA	Water	SM 4500 H+ B	
480-114043-4	P-4R	Total/NA	Water	SM 4500 H+ B	
480-114043-5	P-5	Total/NA	Water	SM 4500 H+ B	
480-114043-6	P-6	Total/NA	Water	SM 4500 H+ B	
480-114043-7	P-7	Total/NA	Water	SM 4500 H+ B	
480-114043-8	DUPLICATE WELL	Total/NA	Water	SM 4500 H+ B	
480-114043-9	FIELD BLANK	Total/NA	Water	SM 4500 H+ B	
LCS 480-345973/1	Lab Control Sample	Total/NA	Water	SM 4500 H+ B	

### Analysis Batch: 346144

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-114043-1	P-1	Total/NA	Water	300.0	
480-114043-2	P-2	Total/NA	Water	300.0	
480-114043-3	P-3	Total/NA	Water	300.0	
480-114043-4	P-4R	Total/NA	Water	300.0	
480-114043-5	P-5	Total/NA	Water	300.0	
480-114043-6	P-6	Total/NA	Water	300.0	
480-114043-7	P-7	Total/NA	Water	300.0	
480-114043-8	DUPLICATE WELL	Total/NA	Water	300.0	
480-114043-9	FIELD BLANK	Total/NA	Water	300.0	
MB 480-346144/4	Method Blank	Total/NA	Water	300.0	
LCS 480-346144/3	Lab Control Sample	Total/NA	Water	300.0	
480-114043-6 MS	P-6	Total/NA	Water	300.0	
480-114043-6 MSD	P-6	Total/NA	Water	300.0	

TestAmerica Buffalo

# Lab Chronicle

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

TestAmerica Job ID: 480-114043-1

## Client Sample ID: P-1

Date Collected: 02/28/17 09:10

Date Received: 03/01/17 09:30

## Lab Sample ID: 480-114043-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	200.7			345860	03/02/17 09:33	MVZ	TAL BUF
Total/NA	Analysis	200.7 Rev 4.4		1	346243	03/03/17 19:01	AMH	TAL BUF
Total/NA	Prep	200.8			345911	03/02/17 10:35	MVZ	TAL BUF
Total/NA	Analysis	200.8		1	346135	03/02/17 17:48	MTM2	TAL BUF
Total/NA	Prep	245.1			345883	03/02/17 09:20	RMZ	TAL BUF
Total/NA	Analysis	245.1		1	345993	03/02/17 16:21	RMZ	TAL BUF
Total/NA	Analysis	300.0		10	346144	03/03/17 18:07	DMR	TAL BUF
Total/NA	Analysis	SM 2540C		1	345812	03/01/17 18:26	CDC	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	345973	03/02/17 13:44	CEA	TAL BUF

## Client Sample ID: P-2

Date Collected: 02/28/17 14:25

Date Received: 03/01/17 09:30

## Lab Sample ID: 480-114043-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	200.7			345860	03/02/17 09:33	MVZ	TAL BUF
Total/NA	Analysis	200.7 Rev 4.4		1	346243	03/03/17 19:18	AMH	TAL BUF
Total/NA	Prep	200.8			345911	03/02/17 10:35	MVZ	TAL BUF
Total/NA	Analysis	200.8		1	346135	03/02/17 17:55	MTM2	TAL BUF
Total/NA	Prep	245.1			345883	03/02/17 09:20	RMZ	TAL BUF
Total/NA	Analysis	245.1		1	345993	03/02/17 16:22	RMZ	TAL BUF
Total/NA	Analysis	300.0		5	346144	03/03/17 18:15	DMR	TAL BUF
Total/NA	Analysis	SM 2540C		1	345812	03/01/17 18:26	CDC	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	345973	03/02/17 13:47	CEA	TAL BUF

## Client Sample ID: P-3

Date Collected: 02/28/17 10:15

Date Received: 03/01/17 09:30

## Lab Sample ID: 480-114043-3

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	200.7			345860	03/02/17 09:33	MVZ	TAL BUF
Total/NA	Analysis	200.7 Rev 4.4		1	346243	03/03/17 19:22	AMH	TAL BUF
Total/NA	Prep	200.8			345911	03/02/17 10:35	MVZ	TAL BUF
Total/NA	Analysis	200.8		1	346135	03/02/17 18:01	MTM2	TAL BUF
Total/NA	Prep	245.1			345883	03/02/17 09:20	RMZ	TAL BUF
Total/NA	Analysis	245.1		1	345993	03/02/17 16:24	RMZ	TAL BUF
Total/NA	Analysis	300.0		5	346144	03/03/17 18:23	DMR	TAL BUF
Total/NA	Analysis	SM 2540C		1	345812	03/01/17 18:26	CDC	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	345973	03/02/17 13:50	CEA	TAL BUF

# Lab Chronicle

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

TestAmerica Job ID: 480-114043-1

**Client Sample ID: P-4R**

**Lab Sample ID: 480-114043-4**

**Date Collected: 02/28/17 11:25**

**Matrix: Water**

**Date Received: 03/01/17 09:30**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	200.7			345860	03/02/17 09:33	MVZ	TAL BUF
Total/NA	Analysis	200.7 Rev 4.4		1	346243	03/03/17 19:25	AMH	TAL BUF
Total/NA	Prep	200.8			345911	03/02/17 10:35	MVZ	TAL BUF
Total/NA	Analysis	200.8		1	346350	03/04/17 05:51	TRB	TAL BUF
Total/NA	Prep	200.8			345911	03/02/17 10:35	MVZ	TAL BUF
Total/NA	Analysis	200.8		1	346452	03/06/17 17:36	TRB	TAL BUF
Total/NA	Prep	245.1			345883	03/02/17 09:20	RMZ	TAL BUF
Total/NA	Analysis	245.1		1	345993	03/02/17 16:32	RMZ	TAL BUF
Total/NA	Analysis	300.0		5	346144	03/03/17 18:31	DMR	TAL BUF
Total/NA	Analysis	SM 2540C		1	345812	03/01/17 18:26	CDC	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	345973	03/02/17 13:53	CEA	TAL BUF

**Client Sample ID: P-5**

**Lab Sample ID: 480-114043-5**

**Date Collected: 02/28/17 12:00**

**Matrix: Water**

**Date Received: 03/01/17 09:30**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	200.7			345860	03/02/17 09:33	MVZ	TAL BUF
Total/NA	Analysis	200.7 Rev 4.4		1	346243	03/03/17 19:39	AMH	TAL BUF
Total/NA	Prep	200.8			345911	03/02/17 10:35	MVZ	TAL BUF
Total/NA	Analysis	200.8		1	346350	03/04/17 05:57	TRB	TAL BUF
Total/NA	Prep	200.8			345911	03/02/17 10:35	MVZ	TAL BUF
Total/NA	Analysis	200.8		1	346452	03/06/17 17:43	TRB	TAL BUF
Total/NA	Prep	245.1			345883	03/02/17 09:20	RMZ	TAL BUF
Total/NA	Analysis	245.1		1	345993	03/02/17 16:37	RMZ	TAL BUF
Total/NA	Analysis	300.0		10	346144	03/03/17 18:39	DMR	TAL BUF
Total/NA	Analysis	SM 2540C		1	345812	03/01/17 18:26	CDC	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	345973	03/02/17 13:56	CEA	TAL BUF

**Client Sample ID: P-6**

**Lab Sample ID: 480-114043-6**

**Date Collected: 02/28/17 12:55**

**Matrix: Water**

**Date Received: 03/01/17 09:30**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	200.7			345860	03/02/17 09:33	MVZ	TAL BUF
Total/NA	Analysis	200.7 Rev 4.4		1	346243	03/03/17 19:43	AMH	TAL BUF
Total/NA	Prep	200.8			345911	03/02/17 10:35	MVZ	TAL BUF
Total/NA	Analysis	200.8		1	346350	03/04/17 06:04	TRB	TAL BUF
Total/NA	Prep	200.8			345911	03/02/17 10:35	MVZ	TAL BUF
Total/NA	Analysis	200.8		1	346452	03/06/17 17:49	TRB	TAL BUF
Total/NA	Prep	245.1			345883	03/02/17 09:20	RMZ	TAL BUF
Total/NA	Analysis	245.1		1	345993	03/02/17 16:39	RMZ	TAL BUF
Total/NA	Analysis	300.0		10	346144	03/03/17 18:48	DMR	TAL BUF

TestAmerica Buffalo

# Lab Chronicle

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

TestAmerica Job ID: 480-114043-1

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	SM 2540C		1	345812	03/01/17 18:26	CDC	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	345973	03/02/17 13:58	CEA	TAL BUF

## Client Sample ID: P-7

Lab Sample ID: 480-114043-7

Date Collected: 02/28/17 13:45

Matrix: Water

Date Received: 03/01/17 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	200.7			345860	03/02/17 09:33	MVZ	TAL BUF
Total/NA	Analysis	200.7 Rev 4.4		1	346243	03/03/17 19:47	AMH	TAL BUF
Total/NA	Prep	200.8			345911	03/02/17 10:35	MVZ	TAL BUF
Total/NA	Analysis	200.8		1	346350	03/04/17 06:10	TRB	TAL BUF
Total/NA	Prep	200.8			345911	03/02/17 10:35	MVZ	TAL BUF
Total/NA	Analysis	200.8		1	346452	03/06/17 17:56	TRB	TAL BUF
Total/NA	Prep	245.1			345883	03/02/17 09:20	RMZ	TAL BUF
Total/NA	Analysis	245.1		1	345993	03/02/17 16:41	RMZ	TAL BUF
Total/NA	Analysis	300.0		10	346144	03/03/17 19:36	DMR	TAL BUF
Total/NA	Analysis	SM 2540C		1	345812	03/01/17 18:26	CDC	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	345973	03/02/17 14:04	CEA	TAL BUF

## Client Sample ID: DUPLICATE WELL

Lab Sample ID: 480-114043-8

Date Collected: 02/28/17 00:00

Matrix: Water

Date Received: 03/01/17 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	200.7			345860	03/02/17 09:33	MVZ	TAL BUF
Total/NA	Analysis	200.7 Rev 4.4		1	346243	03/03/17 19:50	AMH	TAL BUF
Total/NA	Prep	200.8			345911	03/02/17 10:35	MVZ	TAL BUF
Total/NA	Analysis	200.8		1	346350	03/04/17 06:36	TRB	TAL BUF
Total/NA	Prep	200.8			345911	03/02/17 10:35	MVZ	TAL BUF
Total/NA	Analysis	200.8		1	346452	03/06/17 18:21	TRB	TAL BUF
Total/NA	Prep	245.1			345883	03/02/17 09:20	RMZ	TAL BUF
Total/NA	Analysis	245.1		1	345993	03/02/17 16:43	RMZ	TAL BUF
Total/NA	Analysis	300.0		10	346144	03/03/17 19:45	DMR	TAL BUF
Total/NA	Analysis	SM 2540C		1	345812	03/01/17 18:26	CDC	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	345973	03/02/17 14:07	CEA	TAL BUF

## Client Sample ID: FIELD BLANK

Lab Sample ID: 480-114043-9

Date Collected: 02/28/17 15:15

Matrix: Water

Date Received: 03/01/17 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	200.7			345860	03/02/17 09:33	MVZ	TAL BUF
Total/NA	Analysis	200.7 Rev 4.4		1	346243	03/03/17 19:54	AMH	TAL BUF
Total/NA	Prep	200.8			345911	03/02/17 10:35	MVZ	TAL BUF
Total/NA	Analysis	200.8		1	346350	03/04/17 06:30	TRB	TAL BUF

TestAmerica Buffalo

# Lab Chronicle

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

TestAmerica Job ID: 480-114043-1

**Client Sample ID: FIELD BLANK**

**Lab Sample ID: 480-114043-9**

**Date Collected: 02/28/17 15:15**

**Matrix: Water**

**Date Received: 03/01/17 09:30**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	200.8			345911	03/02/17 10:35	MVZ	TAL BUF
Total/NA	Analysis	200.8		1	346452	03/06/17 18:28	TRB	TAL BUF
Total/NA	Prep	245.1			345883	03/02/17 09:20	RMZ	TAL BUF
Total/NA	Analysis	245.1		1	345993	03/02/17 16:44	RMZ	TAL BUF
Total/NA	Analysis	300.0		10	346144	03/03/17 19:53	DMR	TAL BUF
Total/NA	Analysis	SM 2540C		1	345812	03/01/17 18:26	CDC	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	345973	03/02/17 14:10	CEA	TAL BUF

**Laboratory References:**

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



# Certification Summary

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

TestAmerica Job ID: 480-114043-1

## Laboratory: TestAmerica Buffalo

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

Authority	Program	EPA Region	Certification ID	Expiration Date
Minnesota	NELAP	5	036-999-337	12-31-17

The following analytes are included in this report, but certification is not offered by the governing authority:

Analysis Method	Prep Method	Matrix	Analyte
200.7 Rev 4.4	200.7	Water	Lithium
SM 4500 H+ B		Water	pH

- 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

TestAmerica Job ID: 480-114043-1

Method	Method Description	Protocol	Laboratory
200.7 Rev 4.4	Metals (ICP)	EPA	TAL BUF
200.8	Metals (ICP/MS)	EPA	TAL BUF
245.1	Mercury (CVAA)	EPA	TAL BUF
300.0	Anions, Ion Chromatography	MCAWW	TAL BUF
SM 2540C	Solids, Total Dissolved (TDS)	SM	TAL BUF
SM 4500 H+ B	pH	SM	TAL BUF

#### Protocol References:

EPA = US Environmental Protection Agency

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

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

#### Laboratory References:

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

# Sample Summary

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

TestAmerica Job ID: 480-114043-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
480-114043-1	P-1	Water	02/28/17 09:10	03/01/17 09:30
480-114043-2	P-2	Water	02/28/17 14:25	03/01/17 09:30
480-114043-3	P-3	Water	02/28/17 10:15	03/01/17 09:30
480-114043-4	P-4R	Water	02/28/17 11:25	03/01/17 09:30
480-114043-5	P-5	Water	02/28/17 12:00	03/01/17 09:30
480-114043-6	P-6	Water	02/28/17 12:55	03/01/17 09:30
480-114043-7	P-7	Water	02/28/17 13:45	03/01/17 09:30
480-114043-8	DUPLICATE WELL	Water	02/28/17 00:00	03/01/17 09:30
480-114043-9	FIELD BLANK	Water	02/28/17 15:15	03/01/17 09:30

Tel/Fax: \_\_\_\_\_ Date: 6/28/17 Carrier: \_\_\_\_\_

SKB Environmental  
13425 Courthouse Blvd  
Rosemount, MN 55068  
(651) 438-1500 Phone  
(651) 438-1518 FAX  
Project Name: Cloquet 2017 CCR GW Event 1  
Site:  
P O # 3078 - 17 - 00073

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Lab Contact:							Sample Specific Notes:
						Filtered Sample (Y/N)	Perform MS / MSD (Y/N)	Metals (totals) + Mercury	Chloride	Sulfate	TDS	pH	
P-1	2/28/17	9:10	Grab	Water	5	X	X	X	X	X	X		
P-2	2/29/17	14:25	Grab	Water	5	X	X	X	X	X	X		
P-3	2/29/17	10:45	Grab	Water	5	X	X	X	X	X	X		
P-4	2/28/17	11:25	Grab	Water	5	X	X	X	X	X	X		
P-5	2/28/17	12:00	Grab	Water	5	X	X	X	X	X	X		
P-6	2/28/17	12:55	Grab	Water	5	X	X	X	X	X	X		
P-7	2/28/17	13:45	Grab	Water	5	X	X	X	X	X	X		
DUPLICATE WELL	2/28/17	-	Grab	Water	5	X	X	X	X	X	X		
Field Blank	2/28/17	15:15	Grab	Water	5	X	X	X	X	X	X		

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6=Other

Possible Hazard Identification: Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

Non-Hazard  Flammable  Skin Irritant  Poison B  Unknown

\*Metals - Boron, Calcium, Antimony, Arsenic, Barium, Beryllium, Cadmium, Chromium, Cobalt, Lead, Lithium, Molybdenum, Selenium, Thallium

Cooler Temp. (°C): Obs'd: \_\_\_\_\_ Cor'd: \_\_\_\_\_ Therm ID No.: \_\_\_\_\_

Received by: *[Signature]* Company: \_\_\_\_\_ Date/Time: 2/28/17 06:30

Relinquished by: *[Signature]* Company: \_\_\_\_\_ Date/Time: \_\_\_\_\_

Relinquished by: \_\_\_\_\_ Company: \_\_\_\_\_ Date/Time: \_\_\_\_\_

# Login Sample Receipt Checklist

Client: Waste Connections, Inc.

Job Number: 480-114043-1

SDG Number:

**Login Number: 114043**

**List Number: 1**

**Creator: Wallace, Cameron**

**List Source: TestAmerica Buffalo**

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



# TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

## ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Buffalo

10 Hazelwood Drive

Amherst, NY 14228-2298

Tel: (716)691-2600

TestAmerica Job ID: 480-114043-2

Client Project/Site: SKB Cloquet - CCR Groundwater

Sampling Event: CCR Groundwater

For:

Waste Connections, Inc.

13425 Courthouse Blvd

Rosemount, Minnesota 55068

Attn: Nathaniel Beinemann



Authorized for release by:

3/29/2017 3:32:37 PM

Denise Giglia, Project Management Assistant II

[denise.giglia@testamericainc.com](mailto:denise.giglia@testamericainc.com)

Designee for

Ryan VanDette, Project Manager II

(716)504-9830

[ryan.vandette@testamericainc.com](mailto:ryan.vandette@testamericainc.com)

### LINKS

Review your project  
results through

**TotalAccess**

Have a Question?



Visit us at:

[www.testamericainc.com](http://www.testamericainc.com)

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

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

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# Definitions/Glossary

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

TestAmerica Job ID: 480-114043-2

## Qualifiers

### Rad

Qualifier	Qualifier Description
U	Result is less than the sample detection limit.
G	The Sample MDC is greater than the requested RL.

## 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
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
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)



# Case Narrative

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

TestAmerica Job ID: 480-114043-2

**Job ID: 480-114043-2**

**Laboratory: TestAmerica Buffalo**

## Narrative

**Job Narrative  
480-114043-2**

## Comments

No additional comments.

## Receipt

The samples were received on 3/1/2017 9:30 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were 2.0° C and 2.4° C.

## RAD

Method(s) 901.1: Gamma Prep Batch: 160-295979: The radium-226 MDC (53.0 pCi/L) for the method blank (MB) is above the requested limit of 50 pCi/L. Radium-226 activity was not observed in the MB above the MDC or RL. The MDC for the associated samples is less than the requested limit. The data have been qualified and reported with the MDC achieved. P-1 (480-114043-1), P-2 (480-114043-2), P-3 (480-114043-3), P-4R (480-114043-4), P-5 (480-114043-5), P-6 (480-114043-6), P-7 (480-114043-7), DUPLICATE WELL (480-114043-8), FIELD BLANK (480-114043-9), (LCS 160-295979/2-A), (MB 160-295979/1-A) and (480-114043-A-1-B DU).

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

# Detection Summary

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

TestAmerica Job ID: 480-114043-2

**Client Sample ID: P-1**

**Lab Sample ID: 480-114043-1**

No Detections.

**Client Sample ID: P-2**

**Lab Sample ID: 480-114043-2**

No Detections.

**Client Sample ID: P-3**

**Lab Sample ID: 480-114043-3**

No Detections.

**Client Sample ID: P-4R**

**Lab Sample ID: 480-114043-4**

No Detections.

**Client Sample ID: P-5**

**Lab Sample ID: 480-114043-5**

No Detections.

**Client Sample ID: P-6**

**Lab Sample ID: 480-114043-6**

No Detections.

**Client Sample ID: P-7**

**Lab Sample ID: 480-114043-7**

No Detections.

**Client Sample ID: DUPLICATE WELL**

**Lab Sample ID: 480-114043-8**

No Detections.

**Client Sample ID: FIELD BLANK**

**Lab Sample ID: 480-114043-9**

No Detections.

This Detection Summary does not include radiochemical test results.

TestAmerica Buffalo

# Client Sample Results

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

TestAmerica Job ID: 480-114043-2

**Client Sample ID: P-1**

**Date Collected: 02/28/17 09:10**

**Date Received: 03/01/17 09:30**

**Lab Sample ID: 480-114043-1**

**Matrix: Water**

**Method: 901.1 - Radium-226 & Other Gamma Emitters (GS)**

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Radium-226	12.6	U	9.79	9.87	50.0	12.7	pCi/L	03/03/17 16:20	03/28/17 12:43	1
Radium-228	2.94	U	6.40	6.41	50.0	29.1	pCi/L	03/03/17 16:20	03/28/17 12:43	1

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# Client Sample Results

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

TestAmerica Job ID: 480-114043-2

**Client Sample ID: P-2**

**Date Collected: 02/28/17 14:25**

**Date Received: 03/01/17 09:30**

**Lab Sample ID: 480-114043-2**

**Matrix: Water**

**Method: 901.1 - Radium-226 & Other Gamma Emitters (GS)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
<b>Radium-226</b>	<b>38.1</b>		17.4	17.8	50.0	18.3	pCi/L	03/03/17 16:20	03/28/17 13:15	1
Radium-228	13.4	U	27.1	27.1	50.0	35.5	pCi/L	03/03/17 16:20	03/28/17 13:15	1

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# Client Sample Results

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

TestAmerica Job ID: 480-114043-2

**Client Sample ID: P-3**

**Date Collected: 02/28/17 10:15**

**Date Received: 03/01/17 09:30**

**Lab Sample ID: 480-114043-3**

**Matrix: Water**

**Method: 901.1 - Radium-226 & Other Gamma Emitters (GS)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
<b>Radium-226</b>	<b>37.6</b>		15.2	15.7	50.0	17.0	pCi/L	03/03/17 16:20	03/28/17 13:19	1
Radium-228	4.07	U	5.52	5.53	50.0	31.6	pCi/L	03/03/17 16:20	03/28/17 13:19	1

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# Client Sample Results

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

TestAmerica Job ID: 480-114043-2

**Client Sample ID: P-4R**  
**Date Collected: 02/28/17 11:25**  
**Date Received: 03/01/17 09:30**

**Lab Sample ID: 480-114043-4**  
**Matrix: Water**

**Method: 901.1 - Radium-226 & Other Gamma Emitters (GS)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	7.94	U	13.9	14.0	50.0	17.3	pCi/L	03/03/17 16:20	03/28/17 13:17	1
Radium-228	14.1	U	24.1	24.2	50.0	28.9	pCi/L	03/03/17 16:20	03/28/17 13:17	1

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# Client Sample Results

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

TestAmerica Job ID: 480-114043-2

**Client Sample ID: P-5**

**Date Collected: 02/28/17 12:00**

**Date Received: 03/01/17 09:30**

**Lab Sample ID: 480-114043-5**

**Matrix: Water**

**Method: 901.1 - Radium-226 & Other Gamma Emitters (GS)**

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Radium-226	-2.21	U	3.22	3.23	50.0	32.1	pCi/L	03/03/17 16:20	03/29/17 09:47	1
Radium-228	10.7	U	17.6	17.7	50.0	26.9	pCi/L	03/03/17 16:20	03/29/17 09:47	1

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# Client Sample Results

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

TestAmerica Job ID: 480-114043-2

**Client Sample ID: P-6**

**Date Collected: 02/28/17 12:55**

**Date Received: 03/01/17 09:30**

**Lab Sample ID: 480-114043-6**

**Matrix: Water**

**Method: 901.1 - Radium-226 & Other Gamma Emitters (GS)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
<b>Radium-226</b>	<b>42.7</b>		13.5	14.2	50.0	17.1	pCi/L	03/03/17 16:20	03/28/17 14:20	1
Radium-228	8.21	U	12.8	12.8	50.0	26.2	pCi/L	03/03/17 16:20	03/28/17 14:20	1

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# Client Sample Results

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

TestAmerica Job ID: 480-114043-2

**Client Sample ID: P-7**

**Date Collected: 02/28/17 13:45**

**Date Received: 03/01/17 09:30**

**Lab Sample ID: 480-114043-7**

**Matrix: Water**

**Method: 901.1 - Radium-226 & Other Gamma Emitters (GS)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
<b>Radium-226</b>	<b>79.6</b>		19.0	20.6	50.0	14.9	pCi/L	03/03/17 16:20	03/28/17 14:53	1
Radium-228	18.2	U	16.5	16.6	50.0	29.6	pCi/L	03/03/17 16:20	03/28/17 14:53	1

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# Client Sample Results

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

TestAmerica Job ID: 480-114043-2

**Client Sample ID: DUPLICATE WELL**

**Lab Sample ID: 480-114043-8**

Date Collected: 02/28/17 00:00

Matrix: Water

Date Received: 03/01/17 09:30

**Method: 901.1 - Radium-226 & Other Gamma Emitters (GS)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
<b>Radium-226</b>	<b>28.7</b>		11.6	11.9	50.0	13.3	pCi/L	03/03/17 16:20	03/28/17 14:56	1
Radium-228	6.37	U	20.3	20.3	50.0	26.0	pCi/L	03/03/17 16:20	03/28/17 14:56	1

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# Client Sample Results

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

TestAmerica Job ID: 480-114043-2

**Client Sample ID: FIELD BLANK**

**Lab Sample ID: 480-114043-9**

Date Collected: 02/28/17 15:15

Matrix: Water

Date Received: 03/01/17 09:30

**Method: 901.1 - Radium-226 & Other Gamma Emitters (GS)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
<b>Radium-226</b>	<b>51.9</b>		17.2	18.0	50.0	18.3	pCi/L	03/03/17 16:20	03/28/17 15:43	1
Radium-228	13.4	U	20.1	20.1	50.0	28.7	pCi/L	03/03/17 16:20	03/28/17 15:43	1

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# QC Sample Results

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

TestAmerica Job ID: 480-114043-2

## Method: 901.1 - Radium-226 & Other Gamma Emitters (GS)

**Lab Sample ID: MB 160-295979/1-A**  
**Matrix: Water**  
**Analysis Batch: 300175**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 295979**

Analyte	MB MB		Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier	Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Radium-226	-15.66	U	20.6	20.7	50.0	45.3	pCi/L	03/03/17 16:20	03/28/17 11:48	1
Radium-228	-48.09	U G	36.5	36.8	50.0	53.0	pCi/L	03/03/17 16:20	03/28/17 11:48	1

**Lab Sample ID: LCS 160-295979/2-A**  
**Matrix: Water**  
**Analysis Batch: 300176**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 295979**

Analyte	Spike Added	LCS Result	LCS Qual	Total	RL	MDC	Unit	%Rec	%Rec.
				Uncert. (2σ+/-)					Limits
Americium-241	136000	128500		14800		246	pCi/L	94	90 - 111
Cesium-137	46900	46700		4680		88.2	pCi/L	100	90 - 111
Cobalt-60	39200	38210		3770		51.8	pCi/L	97	89 - 110

**Lab Sample ID: 480-114043-1 DU**  
**Matrix: Water**  
**Analysis Batch: 300177**

**Client Sample ID: P-1**  
**Prep Type: Total/NA**  
**Prep Batch: 295979**

Analyte	Sample Sample		DU	DU	Total	RL	MDC	Unit	RER	RER
	Result	Qual	Result	Qual	Uncert. (2σ+/-)					Limit
Radium-226	12.6	U	26.05		14.7	50.0	18.2	pCi/L	0.55	1
Radium-228	2.94	U	12.62	U	16.5	50.0	23.1	pCi/L	0.42	1

# QC Association Summary

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

TestAmerica Job ID: 480-114043-2

## Rad

### Prep Batch: 295979

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-114043-1	P-1	Total/NA	Water	Fill_Geo-21	
480-114043-2	P-2	Total/NA	Water	Fill_Geo-21	
480-114043-3	P-3	Total/NA	Water	Fill_Geo-21	
480-114043-4	P-4R	Total/NA	Water	Fill_Geo-21	
480-114043-5	P-5	Total/NA	Water	Fill_Geo-21	
480-114043-6	P-6	Total/NA	Water	Fill_Geo-21	
480-114043-7	P-7	Total/NA	Water	Fill_Geo-21	
480-114043-8	DUPLICATE WELL	Total/NA	Water	Fill_Geo-21	
480-114043-9	FIELD BLANK	Total/NA	Water	Fill_Geo-21	
MB 160-295979/1-A	Method Blank	Total/NA	Water	Fill_Geo-21	
LCS 160-295979/2-A	Lab Control Sample	Total/NA	Water	Fill_Geo-21	
480-114043-1 DU	P-1	Total/NA	Water	Fill_Geo-21	

# Lab Chronicle

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

TestAmerica Job ID: 480-114043-2

## Client Sample ID: P-1

Date Collected: 02/28/17 09:10

Date Received: 03/01/17 09:30

Lab Sample ID: 480-114043-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Fill_Geo-21			295979	03/03/17 16:20	R1S	TAL SL
Total/NA	Analysis	901.1		1	300173	03/28/17 12:43	KLS	TAL SL

## Client Sample ID: P-2

Date Collected: 02/28/17 14:25

Date Received: 03/01/17 09:30

Lab Sample ID: 480-114043-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Fill_Geo-21			295979	03/03/17 16:20	R1S	TAL SL
Total/NA	Analysis	901.1		1	300178	03/28/17 13:15	KLS	TAL SL

## Client Sample ID: P-3

Date Collected: 02/28/17 10:15

Date Received: 03/01/17 09:30

Lab Sample ID: 480-114043-3

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Fill_Geo-21			295979	03/03/17 16:20	R1S	TAL SL
Total/NA	Analysis	901.1		1	300177	03/28/17 13:19	KLS	TAL SL

## Client Sample ID: P-4R

Date Collected: 02/28/17 11:25

Date Received: 03/01/17 09:30

Lab Sample ID: 480-114043-4

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Fill_Geo-21			295979	03/03/17 16:20	R1S	TAL SL
Total/NA	Analysis	901.1		1	300166	03/28/17 13:17	KLS	TAL SL

## Client Sample ID: P-5

Date Collected: 02/28/17 12:00

Date Received: 03/01/17 09:30

Lab Sample ID: 480-114043-5

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Fill_Geo-21			295979	03/03/17 16:20	R1S	TAL SL
Total/NA	Analysis	901.1		1	300592	03/29/17 09:47	RTM	TAL SL

## Client Sample ID: P-6

Date Collected: 02/28/17 12:55

Date Received: 03/01/17 09:30

Lab Sample ID: 480-114043-6

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Fill_Geo-21			295979	03/03/17 16:20	R1S	TAL SL
Total/NA	Analysis	901.1		1	300176	03/28/17 14:20	KLS	TAL SL

TestAmerica Buffalo

# Lab Chronicle

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

TestAmerica Job ID: 480-114043-2

**Client Sample ID: P-7**

**Date Collected: 02/28/17 13:45**

**Date Received: 03/01/17 09:30**

**Lab Sample ID: 480-114043-7**

**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Fill_Geo-21			295979	03/03/17 16:20	R1S	TAL SL
Total/NA	Analysis	901.1		1	300168	03/28/17 14:53	KLS	TAL SL

**Client Sample ID: DUPLICATE WELL**

**Date Collected: 02/28/17 00:00**

**Date Received: 03/01/17 09:30**

**Lab Sample ID: 480-114043-8**

**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Fill_Geo-21			295979	03/03/17 16:20	R1S	TAL SL
Total/NA	Analysis	901.1		1	300173	03/28/17 14:56	KLS	TAL SL

**Client Sample ID: FIELD BLANK**

**Date Collected: 02/28/17 15:15**

**Date Received: 03/01/17 09:30**

**Lab Sample ID: 480-114043-9**

**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Fill_Geo-21			295979	03/03/17 16:20	R1S	TAL SL
Total/NA	Analysis	901.1		1	300178	03/28/17 15:43	KLS	TAL SL

**Laboratory References:**

TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

# Certification Summary

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

TestAmerica Job ID: 480-114043-2

## Laboratory: TestAmerica Buffalo

The certifications listed below are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Minnesota	NELAP	5	036-999-337	12-31-17

## Laboratory: TestAmerica St. Louis

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

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska	State Program	10	MO00054	06-30-17
California	State Program	9	2886	03-31-18 *
Connecticut	State Program	1	PH-0241	03-31-17 *
Florida	NELAP	4	E87689	06-30-17
Illinois	NELAP	5	200023	11-30-17
Iowa	State Program	7	373	02-01-18
Kansas	NELAP	7	E-10236	10-31-17
Kentucky (DW)	State Program	4	90125	12-31-17
L-A-B	DoD ELAP		L2305	04-06-19
Louisiana	NELAP	6	04080	06-30-17
Louisiana (DW)	NELAP	6	LA170011	12-31-17
Maryland	State Program	3	310	09-30-17
Missouri	State Program	7	780	06-30-17
Nevada	State Program	9	MO000542017-1	07-31-17
New Jersey	NELAP	2	MO002	06-30-17 *
New York	NELAP	2	11616	03-31-17 *
North Dakota	State Program	8	R207	06-30-17
NRC	NRC		24-24817-01	12-31-22
Oklahoma	State Program	6	9997	08-31-17
Pennsylvania	NELAP	3	68-00540	02-28-18
South Carolina	State Program	4	85002001	06-30-17
Texas	NELAP	6	T104704193-16-10	07-31-17
US Fish & Wildlife	Federal		LE058448-0	10-31-17
USDA	Federal		P330-17-0028	02-02-20
Utah	NELAP	8	MO000542016-8	07-31-17
Virginia	NELAP	3	460230	06-14-17
Washington	State Program	10	C592	08-30-17
West Virginia DEP	State Program	3	381	08-31-17 *

\* Certification renewal pending - certification considered valid.



# Method Summary

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

TestAmerica Job ID: 480-114043-2

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Method	Method Description	Protocol	Laboratory
901.1	Radium-226 & Other Gamma Emitters (GS)	EPA	TAL SL

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**Protocol References:**

EPA = US Environmental Protection Agency

**Laboratory References:**

TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

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# Sample Summary

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

TestAmerica Job ID: 480-114043-2

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
480-114043-1	P-1	Water	02/28/17 09:10	03/01/17 09:30
480-114043-2	P-2	Water	02/28/17 14:25	03/01/17 09:30
480-114043-3	P-3	Water	02/28/17 10:15	03/01/17 09:30
480-114043-4	P-4R	Water	02/28/17 11:25	03/01/17 09:30
480-114043-5	P-5	Water	02/28/17 12:00	03/01/17 09:30
480-114043-6	P-6	Water	02/28/17 12:55	03/01/17 09:30
480-114043-7	P-7	Water	02/28/17 13:45	03/01/17 09:30
480-114043-8	DUPLICATE WELL	Water	02/28/17 00:00	03/01/17 09:30
480-114043-9	FIELD BLANK	Water	02/28/17 15:15	03/01/17 09:30



**Client Contact**  
SKB Environmental  
13425 Courthouse Blvd  
Rosemount, MN 55068  
(651) 438-1500 Phone  
(651) 438-1518 FAX  
Project Name: Cloquet 2017 CCR GW Event 1  
Site:  
P O # 3078 - 17 - 00073

**Analysis Turnaround Time**  
 CALENDAR DAYS  WORKING DAYS  
TAT if different from Below  
 2 weeks  
 1 week  
 2 days  
 1 day

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS / MSD (Y/N)	Metals (totals) + Mercury	Chloride	Sulfate	TDS	pH	Radium 226 & 228 combined	Sample Specific Notes:
P-1	2/28/17	9:10	Grab	Water	5	X	X	X	X	X	X	X		
P-2	2/29/17	14:25	Grab	Water	5	X	X	X	X	X	X	X		
P-3	2/29/17	10:45	Grab	Water	5	X	X	X	X	X	X	X		
P-4	2/28/17	11:25	Grab	Water	5	X	X	X	X	X	X	X		
P-5	2/28/17	12:00	Grab	Water	5	X	X	X	X	X	X	X		
P-6	2/28/17	12:55	Grab	Water	5	X	X	X	X	X	X	X		
P-7	2/28/17	13:45	Grab	Water	5	X	X	X	X	X	X	X		
DUPLICATE WELL	2/28/17	-	Grab	Water	5	X	X	X	X	X	X	X		
Field Blank	2/28/17	15:15	Grab	Water	5	X	X	X	X	X	X	X		

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6=Other

Possible Hazard Identification: Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

Non-Hazard  Flammable  Skin Irritant  Poison B  Unknown

Return to Client  Disposal by Lab  Archive for \_\_\_\_\_ Months

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

Cooler Temp. (°C): Obs'd: \_\_\_\_\_ Cor'd: \_\_\_\_\_

Therm ID No.: \_\_\_\_\_

Received by: *[Signature]* Company: \_\_\_\_\_ Date/Time: 3/17 0630

Relinquished by: *[Signature]* Company: \_\_\_\_\_ Date/Time: \_\_\_\_\_

Relinquished by: \_\_\_\_\_ Company: \_\_\_\_\_ Date/Time: \_\_\_\_\_



**Chain of Custody Record**



<b>Client Information (Sub Contract Lab)</b>		Lab PM: VanDette, Ryan T								
Shipping/Receiving		E-Mail: ryan.vandette@testamericainc.com								
Company: TestAmerica Laboratories, Inc.		Address: Minnesota								
Address: 13715 Rider Trail North,		Job #: 480-114043-2								
City: Earth City		Preservation Codes: A - HCL B - NaOH C - Zn Acetate D - Nitric Acid E - NaHSO4 F - MeOH G - Amchlor H - Ascorbic Acid I - Ice J - DI Water K - EDTA L - EDA Other: M - Hexane N - None O - AsNaOZ P - Na2OAS Q - Na2SO3 R - Na2S2O3 S - H2SO4 T - TSP Dodacahydrate U - Acetone V - MCAA W - pH 4-5 Z - other (specify)								
State, Zip: MO, 63045		Project Name: SKB Cloquet - CCR Groundwater								
Phone: 314-298-8566(Tel) 314-298-8757(Fax)		Site: Shamrock								
Email:		Due Date Requested: 3/29/2017								
Project #: 48013722		TAT Requested (days):								
Site: SSOW#		PO #:								
City:		WO #:								
State, Zip:		Project #:								
MO, 63045		48013722								
Phone:		SSOW#:								
314-298-8566(Tel) 314-298-8757(Fax)										
Email:										
Project Name:		Due Date Requested:								
SKB Cloquet - CCR Groundwater		3/29/2017								
Site:		TAT Requested (days):								
Shamrock										
Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=organic, N=none, A=air)	Field Filtered Sample (Yes or No)	Perform M/MSD (Yes or No)	901.1 Ra/Fill_Geo_21 Radium-226/228	Analysis Requested	Total Number of containers	Special Instructions/Note:
P-1 (480-114043-1)	2/28/17	09:10 Central	Water	Water	X	X			1	
P-2 (480-114043-2)	2/28/17	14:25 Central	Water	Water	X	X			1	
P-3 (480-114043-3)	2/28/17	10:15 Central	Water	Water	X	X			1	
P-4R (480-114043-4)	2/28/17	11:25 Central	Water	Water	X	X			1	
P-5 (480-114043-5)	2/28/17	12:00 Central	Water	Water	X	X			1	
P-6 (480-114043-6)	2/28/17	12:55 Central	Water	Water	X	X			1	
P-7 (480-114043-7)	2/28/17	13:45 Central	Water	Water	X	X			1	
DUPPLICATE WELL (480-114043-8)	2/28/17	Central	Water	Water	X	X			1	
FIELD BLANK (480-114043-9)	2/28/17	15:15 Central	Water	Water	X	X			1	
<p>Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte &amp; accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/test/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to TestAmerica Laboratories, Inc.</p>										
<b>Possible Hazard Identification</b>										
<input type="checkbox"/> Unconfirmed <input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months <b>Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month)</b>										
Special Instructions/QC Requirements:										
Primary Deliverable Rank: 2 Date: _____ Time: _____ Method of Shipment: _____										
Empty Kit Relinquished by:										
Relinquished by: <i>[Signature]</i> Date/Time: 2-17-17 1545 Company: LAB Relinquished by: _____ Date/Time: _____ Company: _____ Relinquished by: _____ Date/Time: _____ Company: _____										
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: 480-114043-2

SDG Number:

**Login Number: 114043**

**List Number: 1**

**Creator: Wallace, Cameron**

**List Source: TestAmerica Buffalo**

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



## Login Sample Receipt Checklist

Client: Waste Connections, Inc.

Job Number: 480-114043-2

SDG Number:

**Login Number: 114043**

**List Number: 2**

**Creator: Taylor, Kristene N**

**List Source: TestAmerica St. Louis**

**List Creation: 03/02/17 12:35 PM**

Question	Answer	Comment
Radioactivity wasn't checked or is <math>\leq</math> background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	3.0
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?	False	
There are no discrepancies between the containers received 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	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

# TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

## ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Buffalo

10 Hazelwood Drive

Amherst, NY 14228-2298

Tel: (716)691-2600

TestAmerica Job ID: 480-115433-1

Client Project/Site: SKB Cloquet - CCR Groundwater

Sampling Event: CCR Groundwater

For:

Waste Connections, Inc.

13425 Courthouse Blvd

Rosemount, Minnesota 55068

Attn: Nathaniel Beinemann



Authorized for release by:

4/12/2017 7:38:49 PM

Denise Giglia, Project Management Assistant II

[denise.giglia@testamericainc.com](mailto:denise.giglia@testamericainc.com)

Designee for

Ryan VanDette, Project Manager II

(716)504-9830

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### LINKS

Review your project  
results through

**TotalAccess**

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*The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.*

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

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

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# Definitions/Glossary

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

TestAmerica Job ID: 480-115433-1

## Qualifiers

### Metals

Qualifier	Qualifier Description
*	LCS or LCSD is outside acceptance limits.
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
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
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)

# Case Narrative

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

TestAmerica Job ID: 480-115433-1

**Job ID: 480-115433-1**

**Laboratory: TestAmerica Buffalo**

## Narrative

### Job Narrative 480-115433-1

#### Comments

No additional comments.

#### Receipt

The samples were received on 4/1/2017 9:00 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 3.1° C.

#### HPLC/IC

Method(s) 300.0, 9056A: The following sample was diluted to bring the concentration of target analytes within the calibration range: P-6 (480-115433-6). Elevated reporting limits (RLs) are provided.

Method(s) 300.0: The following samples was diluted to bring the concentration of target analytes within the calibration range: P-1 (480-115433-1), P-2 (480-115433-2), P-3 (480-115433-3), P-4R (480-115433-4), P-5 (480-115433-5) and P-6 (480-115433-6). Elevated reporting limits (RLs) are provided.

Method(s) 300.0: The following samples were diluted to bring the concentration of target analytes within the calibration range: P-1 (480-115433-1), P-2 (480-115433-2), P-3 (480-115433-3), P-4R (480-115433-4), P-5 (480-115433-5), P-6 (480-115433-6), P-7 (480-115433-7) and DUPLICATE (480-115433-8). Elevated reporting limits (RLs) are provided.

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

#### Metals

Method(s) 200.8: The laboratory control sample (LCS) for preparation batch 480-349944 and analytical batch 480-350345 recovered outside control limits for the following analytes: Total Beryllium. These analytes were biased high in the LCS and were not detected in the associated samples, P-1 (480-115433-1), P-2 (480-115433-2), P-3 (480-115433-3), P-4R (480-115433-4), P-5 (480-115433-5), P-6 (480-115433-6), P-7 (480-115433-7), DUPLICATE (480-115433-8), FIELD BLANK (480-115433-9) and EQUIP BLANK (480-115433-10); therefore, the data have been reported.

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

#### General Chemistry

Method(s) 9040C, SM 4500 H+ B: This analysis is normally performed in the field and has a method-defined holding time of 15 minutes. The following samples has been qualified with the "HF" flag to indicate analysis was performed in the laboratory outside the 15 minute timeframe: P-1 (480-115433-1), P-2 (480-115433-2), P-3 (480-115433-3), P-4R (480-115433-4), P-5 (480-115433-5), P-6 (480-115433-6), P-7 (480-115433-7), DUPLICATE (480-115433-8), FIELD BLANK (480-115433-9) and EQUIP BLANK (480-115433-10).

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

# Detection Summary

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

TestAmerica Job ID: 480-115433-1

## Client Sample ID: P-1

## Lab Sample ID: 480-115433-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.14		0.0020		mg/L	1		200.7 Rev 4.4	Total/NA
Boron	0.055		0.020		mg/L	1		200.7 Rev 4.4	Total/NA
Calcium	149		0.50		mg/L	1		200.7 Rev 4.4	Total/NA
Cobalt	0.49		0.30		ug/L	1		200.8	Total/NA
Chloride	147		5.0		mg/L	10		300.0	Total/NA
Sulfate	34.9		20.0		mg/L	10		300.0	Total/NA
Total Dissolved Solids	730		10.0		mg/L	1		SM 2540C	Total/NA
Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
pH	7.2	HF	0.1		SU	1		SM 4500 H+ B	Total/NA
Temperature	20.4	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

## Client Sample ID: P-2

## Lab Sample ID: 480-115433-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.10		0.0020		mg/L	1		200.7 Rev 4.4	Total/NA
Boron	0.046		0.020		mg/L	1		200.7 Rev 4.4	Total/NA
Calcium	81.0		0.50		mg/L	1		200.7 Rev 4.4	Total/NA
Chromium	0.015		0.0040		mg/L	1		200.7 Rev 4.4	Total/NA
Lead	0.015		0.010		mg/L	1		200.7 Rev 4.4	Total/NA
Arsenic	1.8		1.0		ug/L	1		200.8	Total/NA
Cobalt	5.5		0.30		ug/L	1		200.8	Total/NA
Molybdenum	1.7		1.0		ug/L	1		200.8	Total/NA
Chloride	81.2		2.5		mg/L	5		300.0	Total/NA
Sulfate	18.9		10.0		mg/L	5		300.0	Total/NA
Total Dissolved Solids	400		10.0		mg/L	1		SM 2540C	Total/NA
Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
pH	7.3	HF	0.1		SU	1		SM 4500 H+ B	Total/NA
Temperature	20.5	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

## Client Sample ID: P-3

## Lab Sample ID: 480-115433-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.17		0.0020		mg/L	1		200.7 Rev 4.4	Total/NA
Boron	0.025		0.020		mg/L	1		200.7 Rev 4.4	Total/NA
Calcium	131		0.50		mg/L	1		200.7 Rev 4.4	Total/NA
Chloride	174		2.5		mg/L	5		300.0	Total/NA
Sulfate	51.2		10.0		mg/L	5		300.0	Total/NA
Total Dissolved Solids	691		10.0		mg/L	1		SM 2540C	Total/NA
Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
pH	7.5	HF	0.1		SU	1		SM 4500 H+ B	Total/NA
Temperature	20.7	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

## Client Sample ID: P-4R

## Lab Sample ID: 480-115433-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.11		0.0020		mg/L	1		200.7 Rev 4.4	Total/NA
Boron	0.067		0.020		mg/L	1		200.7 Rev 4.4	Total/NA
Calcium	91.5		0.50		mg/L	1		200.7 Rev 4.4	Total/NA
Molybdenum	18.2		1.0		ug/L	1		200.8	Total/NA
Chloride	84.6		2.5		mg/L	5		300.0	Total/NA

This Detection Summary does not include radiochemical test results.

TestAmerica Buffalo

# Detection Summary

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

TestAmerica Job ID: 480-115433-1

## Client Sample ID: P-4R (Continued)

## Lab Sample ID: 480-115433-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Sulfate	47.1		10.0		mg/L	5		300.0	Total/NA
Total Dissolved Solids	418		10.0		mg/L	1		SM 2540C	Total/NA
Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
pH	7.6	HF	0.1		SU	1		SM 4500 H+ B	Total/NA
Temperature	21.2	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

## Client Sample ID: P-5

## Lab Sample ID: 480-115433-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.32		0.0020		mg/L	1		200.7 Rev 4.4	Total/NA
Boron	0.043		0.020		mg/L	1		200.7 Rev 4.4	Total/NA
Calcium	166		0.50		mg/L	1		200.7 Rev 4.4	Total/NA
Cadmium	0.58		0.50		ug/L	1		200.8	Total/NA
Cobalt	11.8		0.30		ug/L	1		200.8	Total/NA
Chloride	227		5.0		mg/L	10		300.0	Total/NA
Sulfate	38.3		20.0		mg/L	10		300.0	Total/NA
Total Dissolved Solids	969		10.0		mg/L	1		SM 2540C	Total/NA
Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
pH	7.1	HF	0.1		SU	1		SM 4500 H+ B	Total/NA
Temperature	21.0	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

## Client Sample ID: P-6

## Lab Sample ID: 480-115433-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.11		0.0020		mg/L	1		200.7 Rev 4.4	Total/NA
Boron	0.27		0.020		mg/L	1		200.7 Rev 4.4	Total/NA
Calcium	165		0.50		mg/L	1		200.7 Rev 4.4	Total/NA
Cobalt	0.34		0.30		ug/L	1		200.8	Total/NA
Chloride	81.9		5.0		mg/L	10		300.0	Total/NA
Sulfate	103		20.0		mg/L	10		300.0	Total/NA
Total Dissolved Solids	803		10.0		mg/L	1		SM 2540C	Total/NA
Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
pH	7.2	HF	0.1		SU	1		SM 4500 H+ B	Total/NA
Temperature	20.8	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

## Client Sample ID: P-7

## Lab Sample ID: 480-115433-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.22		0.0020		mg/L	1		200.7 Rev 4.4	Total/NA
Boron	0.12		0.020		mg/L	1		200.7 Rev 4.4	Total/NA
Calcium	181		0.50		mg/L	1		200.7 Rev 4.4	Total/NA
Cobalt	0.52		0.30		ug/L	1		200.8	Total/NA
Chloride	92.4		5.0		mg/L	10		300.0	Total/NA
Sulfate	42.5		20.0		mg/L	10		300.0	Total/NA
Total Dissolved Solids	844		10.0		mg/L	1		SM 2540C	Total/NA
Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
pH	7.3	HF	0.1		SU	1		SM 4500 H+ B	Total/NA
Temperature	20.7	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

This Detection Summary does not include radiochemical test results.

TestAmerica Buffalo

# Detection Summary

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

TestAmerica Job ID: 480-115433-1

## Client Sample ID: DUPLICATE

## Lab Sample ID: 480-115433-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.16		0.0020		mg/L	1		200.7 Rev 4.4	Total/NA
Boron	0.025		0.020		mg/L	1		200.7 Rev 4.4	Total/NA
Calcium	129		0.50		mg/L	1		200.7 Rev 4.4	Total/NA
Chloride	168		2.5		mg/L	5		300.0	Total/NA
Sulfate	49.6		10.0		mg/L	5		300.0	Total/NA
Total Dissolved Solids	690		10.0		mg/L	1		SM 2540C	Total/NA
Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
pH	7.6	HF	0.1		SU	1		SM 4500 H+ B	Total/NA
Temperature	20.7	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

## Client Sample ID: FIELD BLANK

## Lab Sample ID: 480-115433-9

Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
pH	6.0	HF	0.1		SU	1		SM 4500 H+ B	Total/NA
Temperature	20.7	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

## Client Sample ID: EQUIP BLANK

## Lab Sample ID: 480-115433-10

Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
pH	5.8	HF	0.1		SU	1		SM 4500 H+ B	Total/NA
Temperature	20.7	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

This Detection Summary does not include radiochemical test results.

TestAmerica Buffalo

# Client Sample Results

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

TestAmerica Job ID: 480-115433-1

**Client Sample ID: P-1**

**Date Collected: 03/30/17 08:45**

**Date Received: 04/01/17 09:00**

**Lab Sample ID: 480-115433-1**

**Matrix: Water**

**Method: 200.7 Rev 4.4 - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	0.14		0.0020		mg/L		04/04/17 08:30	04/05/17 02:40	1
Boron	0.055		0.020		mg/L		04/04/17 08:30	04/05/17 02:40	1
Calcium	149		0.50		mg/L		04/04/17 08:30	04/05/17 02:40	1
Chromium	ND		0.0040		mg/L		04/04/17 08:30	04/05/17 02:40	1
Lead	ND		0.010		mg/L		04/04/17 08:30	04/05/17 02:40	1
Lithium	ND		0.030		mg/L		04/04/17 08:30	04/05/17 02:40	1

**Method: 200.8 - Metals (ICP/MS)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		1.0		ug/L		04/03/17 10:40	04/04/17 15:46	1
Arsenic	ND		1.0		ug/L		04/03/17 10:40	04/05/17 12:49	1
Beryllium	ND	*	0.70		ug/L		04/03/17 10:40	04/04/17 15:46	1
Cadmium	ND		0.50		ug/L		04/03/17 10:40	04/04/17 15:46	1
Cobalt	0.49		0.30		ug/L		04/03/17 10:40	04/05/17 12:49	1
Molybdenum	ND		1.0		ug/L		04/03/17 10:40	04/04/17 15:46	1
Selenium	ND		1.0		ug/L		04/03/17 10:40	04/05/17 12:49	1
Thallium	ND		0.20		ug/L		04/03/17 10:40	04/04/17 15:46	1

**Method: 245.1 - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020		mg/L		04/04/17 07:55	04/04/17 12:37	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	147		5.0		mg/L			04/08/17 00:17	10
Fluoride	ND		0.50		mg/L			04/08/17 00:17	10
Sulfate	34.9		20.0		mg/L			04/10/17 23:51	10
Total Dissolved Solids	730		10.0		mg/L			04/04/17 17:28	1
Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	7.2	HF	0.1		SU			04/03/17 20:35	1
Temperature	20.4	HF	0.001		Degrees C			04/03/17 20:35	1

# Client Sample Results

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

TestAmerica Job ID: 480-115433-1

**Client Sample ID: P-2**

**Date Collected: 03/30/17 14:40**

**Date Received: 04/01/17 09:00**

**Lab Sample ID: 480-115433-2**

**Matrix: Water**

**Method: 200.7 Rev 4.4 - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	0.10		0.0020		mg/L		04/04/17 08:30	04/05/17 02:58	1
Boron	0.046		0.020		mg/L		04/04/17 08:30	04/05/17 02:58	1
Calcium	81.0		0.50		mg/L		04/04/17 08:30	04/05/17 02:58	1
Chromium	0.015		0.0040		mg/L		04/04/17 08:30	04/05/17 02:58	1
Lead	0.015		0.010		mg/L		04/04/17 08:30	04/05/17 02:58	1
Lithium	ND		0.030		mg/L		04/04/17 08:30	04/05/17 02:58	1

**Method: 200.8 - Metals (ICP/MS)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		1.0		ug/L		04/03/17 10:40	04/04/17 15:51	1
Arsenic	1.8		1.0		ug/L		04/03/17 10:40	04/05/17 13:00	1
Beryllium	ND	*	0.70		ug/L		04/03/17 10:40	04/04/17 15:51	1
Cadmium	ND		0.50		ug/L		04/03/17 10:40	04/04/17 15:51	1
Cobalt	5.5		0.30		ug/L		04/03/17 10:40	04/05/17 13:00	1
Molybdenum	1.7		1.0		ug/L		04/03/17 10:40	04/04/17 15:51	1
Selenium	ND		1.0		ug/L		04/03/17 10:40	04/05/17 13:00	1
Thallium	ND		0.20		ug/L		04/03/17 10:40	04/04/17 15:51	1

**Method: 245.1 - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020		mg/L		04/04/17 07:55	04/04/17 12:38	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	81.2		2.5		mg/L			04/08/17 00:25	5
Fluoride	ND		0.25		mg/L			04/08/17 00:25	5
Sulfate	18.9		10.0		mg/L			04/10/17 23:59	5
Total Dissolved Solids	400		10.0		mg/L			04/04/17 17:28	1
Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	7.3	HF	0.1		SU			04/03/17 20:39	1
Temperature	20.5	HF	0.001		Degrees C			04/03/17 20:39	1

# Client Sample Results

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

TestAmerica Job ID: 480-115433-1

**Client Sample ID: P-3**

**Date Collected: 03/30/17 09:35**

**Date Received: 04/01/17 09:00**

**Lab Sample ID: 480-115433-3**

**Matrix: Water**

**Method: 200.7 Rev 4.4 - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	0.17		0.0020		mg/L		04/04/17 08:30	04/05/17 03:01	1
Boron	0.025		0.020		mg/L		04/04/17 08:30	04/05/17 03:01	1
Calcium	131		0.50		mg/L		04/04/17 08:30	04/05/17 03:01	1
Chromium	ND		0.0040		mg/L		04/04/17 08:30	04/05/17 03:01	1
Lead	ND		0.010		mg/L		04/04/17 08:30	04/05/17 03:01	1
Lithium	ND		0.030		mg/L		04/04/17 08:30	04/05/17 03:01	1

**Method: 200.8 - Metals (ICP/MS)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		1.0		ug/L		04/03/17 10:40	04/04/17 15:57	1
Arsenic	ND		1.0		ug/L		04/03/17 10:40	04/05/17 13:11	1
Beryllium	ND	*	0.70		ug/L		04/03/17 10:40	04/04/17 15:57	1
Cadmium	ND		0.50		ug/L		04/03/17 10:40	04/04/17 15:57	1
Cobalt	ND		0.30		ug/L		04/03/17 10:40	04/05/17 13:11	1
Molybdenum	ND		1.0		ug/L		04/03/17 10:40	04/04/17 15:57	1
Selenium	ND		1.0		ug/L		04/03/17 10:40	04/05/17 13:11	1
Thallium	ND		0.20		ug/L		04/03/17 10:40	04/04/17 15:57	1

**Method: 245.1 - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020		mg/L		04/04/17 07:55	04/04/17 12:40	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	174		2.5		mg/L			04/08/17 00:33	5
Fluoride	ND		0.25		mg/L			04/08/17 00:33	5
Sulfate	51.2		10.0		mg/L			04/11/17 00:07	5
Total Dissolved Solids	691		10.0		mg/L			04/04/17 17:28	1
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH	7.5	HF	0.1		SU			04/03/17 20:42	1
Temperature	20.7	HF	0.001		Degrees C			04/03/17 20:42	1



# Client Sample Results

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

TestAmerica Job ID: 480-115433-1

**Client Sample ID: P-4R**  
**Date Collected: 03/30/17 11:05**  
**Date Received: 04/01/17 09:00**

**Lab Sample ID: 480-115433-4**  
**Matrix: Water**

### Method: 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	0.11		0.0020		mg/L		04/04/17 08:30	04/05/17 03:05	1
Boron	0.067		0.020		mg/L		04/04/17 08:30	04/05/17 03:05	1
Calcium	91.5		0.50		mg/L		04/04/17 08:30	04/05/17 03:05	1
Chromium	ND		0.0040		mg/L		04/04/17 08:30	04/05/17 03:05	1
Lead	ND		0.010		mg/L		04/04/17 08:30	04/05/17 03:05	1
Lithium	ND		0.030		mg/L		04/04/17 08:30	04/05/17 03:05	1

### Method: 200.8 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		1.0		ug/L		04/03/17 10:40	04/04/17 16:02	1
Arsenic	ND		1.0		ug/L		04/03/17 10:40	04/05/17 13:22	1
Beryllium	ND	*	0.70		ug/L		04/03/17 10:40	04/04/17 16:02	1
Cadmium	ND		0.50		ug/L		04/03/17 10:40	04/04/17 16:02	1
Cobalt	ND		0.30		ug/L		04/03/17 10:40	04/05/17 13:22	1
Molybdenum	18.2		1.0		ug/L		04/03/17 10:40	04/04/17 16:02	1
Selenium	ND		1.0		ug/L		04/03/17 10:40	04/05/17 13:22	1
Thallium	ND		0.20		ug/L		04/03/17 10:40	04/04/17 16:02	1

### Method: 245.1 - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020		mg/L		04/04/17 07:55	04/04/17 12:46	1

### General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	84.6		2.5		mg/L			04/08/17 00:42	5
Fluoride	ND		0.25		mg/L			04/08/17 00:42	5
Sulfate	47.1		10.0		mg/L			04/11/17 00:15	5
Total Dissolved Solids	418		10.0		mg/L			04/04/17 17:28	1
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH	7.6	HF	0.1		SU			04/03/17 20:48	1
Temperature	21.2	HF	0.001		Degrees C			04/03/17 20:48	1

# Client Sample Results

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

TestAmerica Job ID: 480-115433-1

**Client Sample ID: P-5**

**Date Collected: 03/30/17 12:05**

**Date Received: 04/01/17 09:00**

**Lab Sample ID: 480-115433-5**

**Matrix: Water**

### Method: 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	0.32		0.0020		mg/L		04/04/17 08:30	04/05/17 03:08	1
Boron	0.043		0.020		mg/L		04/04/17 08:30	04/05/17 03:08	1
Calcium	166		0.50		mg/L		04/04/17 08:30	04/05/17 03:08	1
Chromium	ND		0.0040		mg/L		04/04/17 08:30	04/05/17 03:08	1
Lead	ND		0.010		mg/L		04/04/17 08:30	04/05/17 03:08	1
Lithium	ND		0.030		mg/L		04/04/17 08:30	04/05/17 03:08	1

### Method: 200.8 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		1.0		ug/L		04/03/17 10:40	04/04/17 16:08	1
Arsenic	ND		1.0		ug/L		04/03/17 10:40	04/05/17 13:50	1
Beryllium	ND	*	0.70		ug/L		04/03/17 10:40	04/04/17 16:08	1
Cadmium	0.58		0.50		ug/L		04/03/17 10:40	04/04/17 16:08	1
Cobalt	11.8		0.30		ug/L		04/03/17 10:40	04/05/17 13:50	1
Molybdenum	ND		1.0		ug/L		04/03/17 10:40	04/04/17 16:08	1
Selenium	ND		1.0		ug/L		04/03/17 10:40	04/05/17 13:50	1
Thallium	ND		0.20		ug/L		04/03/17 10:40	04/04/17 16:08	1

### Method: 245.1 - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020		mg/L		04/04/17 07:55	04/04/17 12:48	1

### General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	227		5.0		mg/L			04/08/17 00:50	10
Fluoride	ND		0.50		mg/L			04/08/17 00:50	10
Sulfate	38.3		20.0		mg/L			04/11/17 00:23	10
Total Dissolved Solids	969		10.0		mg/L			04/04/17 17:28	1
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH	7.1	HF	0.1		SU			04/03/17 20:51	1
Temperature	21.0	HF	0.001		Degrees C			04/03/17 20:51	1

# Client Sample Results

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

TestAmerica Job ID: 480-115433-1

**Client Sample ID: P-6**

**Date Collected: 03/30/17 13:05**

**Date Received: 04/01/17 09:00**

**Lab Sample ID: 480-115433-6**

**Matrix: Water**

**Method: 200.7 Rev 4.4 - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	0.11		0.0020		mg/L		04/04/17 08:30	04/05/17 03:22	1
Boron	0.27		0.020		mg/L		04/04/17 08:30	04/05/17 03:22	1
Calcium	165		0.50		mg/L		04/04/17 08:30	04/05/17 03:22	1
Chromium	ND		0.0040		mg/L		04/04/17 08:30	04/05/17 03:22	1
Lead	ND		0.010		mg/L		04/04/17 08:30	04/05/17 03:22	1
Lithium	ND		0.030		mg/L		04/04/17 08:30	04/05/17 03:22	1

**Method: 200.8 - Metals (ICP/MS)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		1.0		ug/L		04/03/17 10:40	04/04/17 16:13	1
Arsenic	ND		1.0		ug/L		04/03/17 10:40	04/05/17 14:01	1
Beryllium	ND	*	0.70		ug/L		04/03/17 10:40	04/04/17 16:13	1
Cadmium	ND		0.50		ug/L		04/03/17 10:40	04/04/17 16:13	1
Cobalt	0.34		0.30		ug/L		04/03/17 10:40	04/05/17 14:01	1
Molybdenum	ND		1.0		ug/L		04/03/17 10:40	04/04/17 16:13	1
Selenium	ND		1.0		ug/L		04/03/17 10:40	04/05/17 14:01	1
Thallium	ND		0.20		ug/L		04/03/17 10:40	04/04/17 16:13	1

**Method: 245.1 - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020		mg/L		04/04/17 07:55	04/04/17 12:50	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	81.9		5.0		mg/L			04/08/17 00:58	10
Fluoride	ND		0.50		mg/L			04/08/17 00:58	10
Sulfate	103		20.0		mg/L			04/11/17 00:31	10
Total Dissolved Solids	803		10.0		mg/L			04/04/17 17:28	1
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH	7.2	HF	0.1		SU			04/03/17 20:55	1
Temperature	20.8	HF	0.001		Degrees C			04/03/17 20:55	1

# Client Sample Results

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

TestAmerica Job ID: 480-115433-1

**Client Sample ID: P-7**

**Date Collected: 03/30/17 14:10**

**Date Received: 04/01/17 09:00**

**Lab Sample ID: 480-115433-7**

**Matrix: Water**

## Method: 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	0.22		0.0020		mg/L		04/04/17 08:30	04/05/17 03:25	1
Boron	0.12		0.020		mg/L		04/04/17 08:30	04/05/17 03:25	1
Calcium	181		0.50		mg/L		04/04/17 08:30	04/05/17 03:25	1
Chromium	ND		0.0040		mg/L		04/04/17 08:30	04/05/17 03:25	1
Lead	ND		0.010		mg/L		04/04/17 08:30	04/05/17 03:25	1
Lithium	ND		0.030		mg/L		04/04/17 08:30	04/05/17 03:25	1

## Method: 200.8 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		1.0		ug/L		04/03/17 10:40	04/04/17 16:50	1
Arsenic	ND		1.0		ug/L		04/03/17 10:40	04/05/17 14:13	1
Beryllium	ND	*	0.70		ug/L		04/03/17 10:40	04/04/17 16:50	1
Cadmium	ND		0.50		ug/L		04/03/17 10:40	04/04/17 16:50	1
Cobalt	0.52		0.30		ug/L		04/03/17 10:40	04/05/17 14:13	1
Molybdenum	ND		1.0		ug/L		04/03/17 10:40	04/04/17 16:50	1
Selenium	ND		1.0		ug/L		04/03/17 10:40	04/05/17 14:13	1
Thallium	ND		0.20		ug/L		04/03/17 10:40	04/04/17 16:50	1

## Method: 245.1 - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020		mg/L		04/04/17 07:55	04/04/17 12:51	1

## General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	92.4		5.0		mg/L			04/11/17 01:20	10
Fluoride	ND		0.50		mg/L			04/11/17 01:20	10
Sulfate	42.5		20.0		mg/L			04/11/17 01:20	10
Total Dissolved Solids	844		10.0		mg/L			04/04/17 17:28	1
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH	7.3	HF	0.1		SU			04/03/17 20:59	1
Temperature	20.7	HF	0.001		Degrees C			04/03/17 20:59	1

# Client Sample Results

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

TestAmerica Job ID: 480-115433-1

**Client Sample ID: DUPLICATE**

**Lab Sample ID: 480-115433-8**

**Date Collected: 03/30/17 00:00**

**Matrix: Water**

**Date Received: 04/01/17 09:00**

### Method: 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	0.16		0.0020		mg/L		04/04/17 08:30	04/05/17 03:29	1
Boron	0.025		0.020		mg/L		04/04/17 08:30	04/05/17 03:29	1
Calcium	129		0.50		mg/L		04/04/17 08:30	04/05/17 03:29	1
Chromium	ND		0.0040		mg/L		04/04/17 08:30	04/05/17 03:29	1
Lead	ND		0.010		mg/L		04/04/17 08:30	04/05/17 03:29	1
Lithium	ND		0.030		mg/L		04/04/17 08:30	04/05/17 03:29	1

### Method: 200.8 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		1.0		ug/L		04/03/17 10:40	04/04/17 17:06	1
Arsenic	ND		1.0		ug/L		04/03/17 10:40	04/05/17 15:03	1
Beryllium	ND	*	0.70		ug/L		04/03/17 10:40	04/04/17 17:06	1
Cadmium	ND		0.50		ug/L		04/03/17 10:40	04/04/17 17:06	1
Cobalt	ND		0.30		ug/L		04/03/17 10:40	04/05/17 15:03	1
Molybdenum	ND		1.0		ug/L		04/03/17 10:40	04/04/17 17:06	1
Selenium	ND		1.0		ug/L		04/03/17 10:40	04/05/17 15:03	1
Thallium	ND		0.20		ug/L		04/03/17 10:40	04/04/17 17:06	1

### Method: 245.1 - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020		mg/L		04/04/17 07:55	04/04/17 12:53	1

### General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	168		2.5		mg/L			04/11/17 01:28	5
Fluoride	ND		0.25		mg/L			04/11/17 01:28	5
Sulfate	49.6		10.0		mg/L			04/11/17 01:28	5
Total Dissolved Solids	690		10.0		mg/L			04/04/17 18:46	1
Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	7.6	HF	0.1		SU			04/03/17 21:03	1
Temperature	20.7	HF	0.001		Degrees C			04/03/17 21:03	1

# Client Sample Results

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

TestAmerica Job ID: 480-115433-1

**Client Sample ID: FIELD BLANK**

**Lab Sample ID: 480-115433-9**

**Date Collected: 03/30/17 15:10**

**Matrix: Water**

**Date Received: 04/01/17 09:00**

**Method: 200.7 Rev 4.4 - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	ND		0.0020		mg/L		04/04/17 08:30	04/05/17 03:32	1
Boron	ND		0.020		mg/L		04/04/17 08:30	04/05/17 03:32	1
Calcium	ND		0.50		mg/L		04/04/17 08:30	04/05/17 03:32	1
Chromium	ND		0.0040		mg/L		04/04/17 08:30	04/05/17 03:32	1
Lead	ND		0.010		mg/L		04/04/17 08:30	04/05/17 03:32	1
Lithium	ND		0.030		mg/L		04/04/17 08:30	04/05/17 03:32	1

**Method: 200.8 - Metals (ICP/MS)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		1.0		ug/L		04/03/17 10:40	04/04/17 17:12	1
Arsenic	ND		1.0		ug/L		04/03/17 10:40	04/05/17 15:14	1
Beryllium	ND	*	0.70		ug/L		04/03/17 10:40	04/04/17 17:12	1
Cadmium	ND		0.50		ug/L		04/03/17 10:40	04/04/17 17:12	1
Cobalt	ND		0.30		ug/L		04/03/17 10:40	04/05/17 15:14	1
Molybdenum	ND		1.0		ug/L		04/03/17 10:40	04/04/17 17:12	1
Selenium	ND		1.0		ug/L		04/03/17 10:40	04/05/17 15:14	1
Thallium	ND		0.20		ug/L		04/03/17 10:40	04/04/17 17:12	1

**Method: 245.1 - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020		mg/L		04/04/17 07:55	04/04/17 12:58	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		0.50		mg/L			04/11/17 01:36	1
Fluoride	ND		0.050		mg/L			04/11/17 01:36	1
Sulfate	ND		2.0		mg/L			04/11/17 01:36	1
Total Dissolved Solids	ND		10.0		mg/L			04/04/17 18:46	1
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH	6.0	HF	0.1		SU			04/03/17 21:05	1
Temperature	20.7	HF	0.001		Degrees C			04/03/17 21:05	1

# Client Sample Results

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

TestAmerica Job ID: 480-115433-1

**Client Sample ID: EQUIP BLANK**

**Lab Sample ID: 480-115433-10**

**Date Collected: 03/30/17 15:15**

**Matrix: Water**

**Date Received: 04/01/17 09:00**

**Method: 200.7 Rev 4.4 - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	ND		0.0020		mg/L		04/04/17 08:30	04/05/17 03:36	1
Boron	ND		0.020		mg/L		04/04/17 08:30	04/05/17 03:36	1
Calcium	ND		0.50		mg/L		04/04/17 08:30	04/05/17 03:36	1
Chromium	ND		0.0040		mg/L		04/04/17 08:30	04/05/17 03:36	1
Lead	ND		0.010		mg/L		04/04/17 08:30	04/05/17 03:36	1
Lithium	ND		0.030		mg/L		04/04/17 08:30	04/05/17 03:36	1

**Method: 200.8 - Metals (ICP/MS)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		1.0		ug/L		04/03/17 10:40	04/04/17 17:17	1
Arsenic	ND		1.0		ug/L		04/03/17 10:40	04/05/17 15:27	1
Beryllium	ND	*	0.70		ug/L		04/03/17 10:40	04/04/17 17:17	1
Cadmium	ND		0.50		ug/L		04/03/17 10:40	04/04/17 17:17	1
Cobalt	ND		0.30		ug/L		04/03/17 10:40	04/05/17 15:27	1
Molybdenum	ND		1.0		ug/L		04/03/17 10:40	04/04/17 17:17	1
Selenium	ND		1.0		ug/L		04/03/17 10:40	04/05/17 15:27	1
Thallium	ND		0.20		ug/L		04/03/17 10:40	04/04/17 17:17	1

**Method: 245.1 - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020		mg/L		04/04/17 07:55	04/04/17 13:00	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		0.50		mg/L			04/11/17 01:45	1
Fluoride	ND		0.050		mg/L			04/11/17 01:45	1
Sulfate	ND		2.0		mg/L			04/11/17 01:45	1
Total Dissolved Solids	ND		10.0		mg/L			04/04/17 18:46	1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH	5.8	HF	0.1		SU			04/03/17 21:08	1
Temperature	20.7	HF	0.001		Degrees C			04/03/17 21:08	1

# QC Sample Results

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

TestAmerica Job ID: 480-115433-1

## Method: 200.7 Rev 4.4 - Metals (ICP)

Lab Sample ID: MB 480-350063/1-A  
Matrix: Water  
Analysis Batch: 350369

Client Sample ID: Method Blank  
Prep Type: Total/NA  
Prep Batch: 350063

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	ND		0.0020		mg/L		04/04/17 08:30	04/05/17 02:23	1
Boron	ND		0.020		mg/L		04/04/17 08:30	04/05/17 02:23	1
Calcium	ND		0.50		mg/L		04/04/17 08:30	04/05/17 02:23	1
Chromium	ND		0.0040		mg/L		04/04/17 08:30	04/05/17 02:23	1
Lead	ND		0.010		mg/L		04/04/17 08:30	04/05/17 02:23	1
Lithium	ND		0.030		mg/L		04/04/17 08:30	04/05/17 02:23	1

Lab Sample ID: LCS 480-350063/2-A  
Matrix: Water  
Analysis Batch: 350369

Client Sample ID: Lab Control Sample  
Prep Type: Total/NA  
Prep Batch: 350063

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Barium	0.200	0.201		mg/L		100	85 - 115
Boron	0.200	0.204		mg/L		102	85 - 115
Calcium	10.0	9.87		mg/L		99	85 - 115
Chromium	0.200	0.189		mg/L		95	85 - 115
Lead	0.200	0.209		mg/L		104	85 - 115

Lab Sample ID: 480-115433-1 MS  
Matrix: Water  
Analysis Batch: 350369

Client Sample ID: P-1  
Prep Type: Total/NA  
Prep Batch: 350063

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Barium	0.14		0.200	0.330		mg/L		95	70 - 130
Boron	0.055		0.200	0.263		mg/L		104	70 - 130
Calcium	149		10.0	159.2	4	mg/L		105	70 - 130
Chromium	ND		0.200	0.192		mg/L		96	70 - 130
Lead	ND		0.200	0.218		mg/L		107	70 - 130

Lab Sample ID: 480-115433-1 MSD  
Matrix: Water  
Analysis Batch: 350369

Client Sample ID: P-1  
Prep Type: Total/NA  
Prep Batch: 350063

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Barium	0.14		0.200	0.323		mg/L		92	70 - 130	2	20
Boron	0.055		0.200	0.254		mg/L		99	70 - 130	3	20
Calcium	149		10.0	150.3	4	mg/L		17	70 - 130	6	20
Chromium	ND		0.200	0.185		mg/L		93	70 - 130	3	20
Lead	ND		0.200	0.213		mg/L		105	70 - 130	3	20

## Method: 200.8 - Metals (ICP/MS)

Lab Sample ID: MB 480-349944/1-A  
Matrix: Water  
Analysis Batch: 350345

Client Sample ID: Method Blank  
Prep Type: Total/NA  
Prep Batch: 349944

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		1.0		ug/L		04/03/17 10:40	04/04/17 15:35	1
Beryllium	ND		0.70		ug/L		04/03/17 10:40	04/04/17 15:35	1

TestAmerica Buffalo



# QC Sample Results

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

TestAmerica Job ID: 480-115433-1

## Method: 200.8 - Metals (ICP/MS) (Continued)

**Lab Sample ID: MB 480-349944/1-A**  
**Matrix: Water**  
**Analysis Batch: 350345**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 349944**

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Cadmium	ND		0.50		ug/L		04/03/17 10:40	04/04/17 15:35	1
Molybdenum	ND		1.0		ug/L		04/03/17 10:40	04/04/17 15:35	1
Thallium	ND		0.20		ug/L		04/03/17 10:40	04/04/17 15:35	1

**Lab Sample ID: MB 480-349944/1-A**  
**Matrix: Water**  
**Analysis Batch: 350570**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 349944**

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Arsenic	ND		1.0		ug/L		04/03/17 10:40	04/05/17 12:38	1
Cobalt	ND		0.30		ug/L		04/03/17 10:40	04/05/17 12:38	1
Selenium	ND		1.0		ug/L		04/03/17 10:40	04/05/17 12:38	1

**Lab Sample ID: LCS 480-349944/2-A**  
**Matrix: Water**  
**Analysis Batch: 350345**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 349944**

Analyte	Spike Added	LCS	LCS	Unit	D	%Rec	%Rec.	Limits
		Result	Qualifier					
Antimony	20.0	20.64		ug/L		103		85 - 115
Beryllium	20.0	24.68	*	ug/L		123		85 - 115
Cadmium	20.0	20.17		ug/L		101		85 - 115
Molybdenum	20.0	20.25		ug/L		101		85 - 115
Thallium	20.0	19.52		ug/L		98		85 - 115

**Lab Sample ID: LCS 480-349944/2-A**  
**Matrix: Water**  
**Analysis Batch: 350570**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 349944**

Analyte	Spike Added	LCS	LCS	Unit	D	%Rec	%Rec.	Limits
		Result	Qualifier					
Arsenic	20.0	19.76		ug/L		99		85 - 115
Cobalt	20.0	19.22		ug/L		96		85 - 115
Selenium	20.0	19.90		ug/L		99		85 - 115

**Lab Sample ID: 480-115433-7 MS**  
**Matrix: Water**  
**Analysis Batch: 350345**

**Client Sample ID: P-7**  
**Prep Type: Total/NA**  
**Prep Batch: 349944**

Analyte	Sample	Sample	Spike Added	MS	MS	Unit	D	%Rec	%Rec.	Limits
	Result	Qualifier		Result	Qualifier					
Antimony	ND		20.0	21.44		ug/L		107		70 - 130
Beryllium	ND	*	20.0	17.85		ug/L		89		70 - 130
Cadmium	ND		20.0	19.95		ug/L		100		70 - 130
Molybdenum	ND		20.0	20.70		ug/L		103		70 - 130
Thallium	ND		20.0	21.34		ug/L		107		70 - 130

# QC Sample Results

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

TestAmerica Job ID: 480-115433-1

## Method: 200.8 - Metals (ICP/MS) (Continued)

**Lab Sample ID: 480-115433-7 MS**

**Matrix: Water**

**Analysis Batch: 350570**

**Client Sample ID: P-7**

**Prep Type: Total/NA**

**Prep Batch: 349944**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Arsenic	ND		20.0	20.88		ug/L		104	70 - 130
Cobalt	0.52		20.0	19.78		ug/L		96	70 - 130
Selenium	ND		20.0	20.83		ug/L		104	70 - 130

**Lab Sample ID: 480-115433-7 MSD**

**Matrix: Water**

**Analysis Batch: 350345**

**Client Sample ID: P-7**

**Prep Type: Total/NA**

**Prep Batch: 349944**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Antimony	ND		20.0	21.66		ug/L		108	70 - 130	1	20
Beryllium	ND	*	20.0	18.37		ug/L		92	70 - 130	3	20
Cadmium	ND		20.0	20.03		ug/L		100	70 - 130	0	20
Molybdenum	ND		20.0	20.65		ug/L		103	70 - 130	0	20
Thallium	ND		20.0	21.72		ug/L		109	70 - 130	2	20

**Lab Sample ID: 480-115433-7 MSD**

**Matrix: Water**

**Analysis Batch: 350570**

**Client Sample ID: P-7**

**Prep Type: Total/NA**

**Prep Batch: 349944**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Arsenic	ND		20.0	20.43		ug/L		102	70 - 130	2	20
Cobalt	0.52		20.0	19.67		ug/L		96	70 - 130	1	20
Selenium	ND		20.0	21.08		ug/L		105	70 - 130	1	20

## Method: 245.1 - Mercury (CVAA)

**Lab Sample ID: MB 480-350081/1-A**

**Matrix: Water**

**Analysis Batch: 350191**

**Client Sample ID: Method Blank**

**Prep Type: Total/NA**

**Prep Batch: 350081**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020		mg/L		04/04/17 07:55	04/04/17 12:24	1

**Lab Sample ID: LCS 480-350081/2-A**

**Matrix: Water**

**Analysis Batch: 350191**

**Client Sample ID: Lab Control Sample**

**Prep Type: Total/NA**

**Prep Batch: 350081**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Mercury	0.00667	0.00675		mg/L		101	85 - 115

**Lab Sample ID: LCSD 480-350081/3-A**

**Matrix: Water**

**Analysis Batch: 350191**

**Client Sample ID: Lab Control Sample Dup**

**Prep Type: Total/NA**

**Prep Batch: 350081**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Mercury	0.00667	0.00655		mg/L		98	85 - 115	3	20

TestAmerica Buffalo

# QC Sample Results

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

TestAmerica Job ID: 480-115433-1

## Method: 245.1 - Mercury (CVAA) (Continued)

**Lab Sample ID: 480-115433-8 MS**

**Matrix: Water**

**Analysis Batch: 350191**

**Client Sample ID: DUPLICATE**

**Prep Type: Total/NA**

**Prep Batch: 350081**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Mercury	ND		0.00667	0.00678		mg/L		102	70 - 130

**Lab Sample ID: 480-115433-8 MSD**

**Matrix: Water**

**Analysis Batch: 350191**

**Client Sample ID: DUPLICATE**

**Prep Type: Total/NA**

**Prep Batch: 350081**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Mercury	ND		0.00667	0.00668		mg/L		100	70 - 130	1	20

## Method: 300.0 - Anions, Ion Chromatography

**Lab Sample ID: MB 480-350906/28**

**Matrix: Water**

**Analysis Batch: 350906**

**Client Sample ID: Method Blank**

**Prep Type: Total/NA**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		0.50		mg/L			04/07/17 22:23	1
Fluoride	ND		0.050		mg/L			04/07/17 22:23	1
Sulfate	ND		2.0		mg/L			04/07/17 22:23	1

**Lab Sample ID: LCS 480-350906/27**

**Matrix: Water**

**Analysis Batch: 350906**

**Client Sample ID: Lab Control Sample**

**Prep Type: Total/NA**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Chloride	50.0	53.61		mg/L		107	90 - 110
Fluoride	5.00	5.25		mg/L		105	90 - 110
Sulfate	50.0	54.83		mg/L		110	90 - 110

**Lab Sample ID: MB 480-350908/28**

**Matrix: Water**

**Analysis Batch: 350908**

**Client Sample ID: Method Blank**

**Prep Type: Total/NA**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		0.50		mg/L			04/07/17 22:23	1
Fluoride	ND		0.050		mg/L			04/07/17 22:23	1
Sulfate	ND		2.0		mg/L			04/07/17 22:23	1

**Lab Sample ID: LCS 480-350908/27**

**Matrix: Water**

**Analysis Batch: 350908**

**Client Sample ID: Lab Control Sample**

**Prep Type: Total/NA**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Chloride	50.0	53.61		mg/L		107	90 - 110
Fluoride	5.00	5.25		mg/L		105	90 - 110
Sulfate	50.0	54.83		mg/L		110	90 - 110

TestAmerica Buffalo

# QC Sample Results

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

TestAmerica Job ID: 480-115433-1

## Method: 300.0 - Anions, Ion Chromatography (Continued)

**Lab Sample ID: 480-115433-6 MS**  
**Matrix: Water**  
**Analysis Batch: 350908**

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

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	81.9		500	613.7		mg/L		106	81 - 120
Fluoride	ND		50.0	52.86		mg/L		106	82 - 120

**Lab Sample ID: MB 480-351194/28**  
**Matrix: Water**  
**Analysis Batch: 351194**

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		0.50		mg/L			04/10/17 21:57	1
Fluoride	ND		0.050		mg/L			04/10/17 21:57	1
Sulfate	ND		2.0		mg/L			04/10/17 21:57	1

**Lab Sample ID: MB 480-351194/4**  
**Matrix: Water**  
**Analysis Batch: 351194**

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		0.50		mg/L			04/10/17 16:09	1
Fluoride	ND		0.050		mg/L			04/10/17 16:09	1
Sulfate	ND		2.0		mg/L			04/10/17 16:09	1

**Lab Sample ID: MB 480-351194/52**  
**Matrix: Water**  
**Analysis Batch: 351194**

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		0.50		mg/L			04/11/17 01:12	1
Fluoride	ND		0.050		mg/L			04/11/17 01:12	1
Sulfate	ND		2.0		mg/L			04/11/17 01:12	1

**Lab Sample ID: LCS 480-351194/27**  
**Matrix: Water**  
**Analysis Batch: 351194**

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	50.0	52.38		mg/L		105	90 - 110
Fluoride	5.00	5.09		mg/L		102	90 - 110
Sulfate	50.0	52.10		mg/L		104	90 - 110

**Lab Sample ID: LCS 480-351194/3**  
**Matrix: Water**  
**Analysis Batch: 351194**

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	50.0	48.07		mg/L		96	90 - 110
Fluoride	5.00	4.70		mg/L		94	90 - 110
Sulfate	50.0	48.01		mg/L		96	90 - 110

TestAmerica Buffalo

# QC Sample Results

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

TestAmerica Job ID: 480-115433-1

## Method: 300.0 - Anions, Ion Chromatography (Continued)

**Lab Sample ID: LCS 480-351194/51**  
**Matrix: Water**  
**Analysis Batch: 351194**

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	50.0	52.03		mg/L		104	90 - 110
Fluoride	5.00	5.08		mg/L		102	90 - 110
Sulfate	50.0	51.78		mg/L		104	90 - 110

**Lab Sample ID: 480-115433-6 MS**  
**Matrix: Water**  
**Analysis Batch: 351194**

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

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Sulfate	103		500	624.0		mg/L		104	80 - 120

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

**Lab Sample ID: MB 480-350237/1**  
**Matrix: Water**  
**Analysis Batch: 350237**

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	ND		10.0		mg/L			04/04/17 17:28	1

**Lab Sample ID: LCS 480-350237/2**  
**Matrix: Water**  
**Analysis Batch: 350237**

**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	529	509.0		mg/L		96	85 - 115

**Lab Sample ID: 480-115433-7 DU**  
**Matrix: Water**  
**Analysis Batch: 350237**

**Client Sample ID: P-7**  
**Prep Type: Total/NA**

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	Limit
Total Dissolved Solids	844		846.0		mg/L		0.2	10

**Lab Sample ID: MB 480-350243/1**  
**Matrix: Water**  
**Analysis Batch: 350243**

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	ND		10.0		mg/L			04/04/17 18:46	1

**Lab Sample ID: LCS 480-350243/2**  
**Matrix: Water**  
**Analysis Batch: 350243**

**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	529	540.0		mg/L		102	85 - 115

TestAmerica Buffalo

# QC Sample Results

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

TestAmerica Job ID: 480-115433-1

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

Lab Sample ID: 480-115433-8 DU  
 Matrix: Water  
 Analysis Batch: 350243

Client Sample ID: DUPLICATE  
 Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Dissolved Solids	690		670.0		mg/L		3	10

## Method: SM 4500 H+ B - pH

Lab Sample ID: LCS 480-350054/23  
 Matrix: Water  
 Analysis Batch: 350054

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

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

Lab Sample ID: LCS 480-350054/45  
 Matrix: Water  
 Analysis Batch: 350054

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

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

# QC Association Summary

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

TestAmerica Job ID: 480-115433-1

## Metals

### Prep Batch: 349944

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-115433-1	P-1	Total/NA	Water	200.8	
480-115433-2	P-2	Total/NA	Water	200.8	
480-115433-3	P-3	Total/NA	Water	200.8	
480-115433-4	P-4R	Total/NA	Water	200.8	
480-115433-5	P-5	Total/NA	Water	200.8	
480-115433-6	P-6	Total/NA	Water	200.8	
480-115433-7	P-7	Total/NA	Water	200.8	
480-115433-8	DUPLICATE	Total/NA	Water	200.8	
480-115433-9	FIELD BLANK	Total/NA	Water	200.8	
480-115433-10	EQUIP BLANK	Total/NA	Water	200.8	
MB 480-349944/1-A	Method Blank	Total/NA	Water	200.8	
LCS 480-349944/2-A	Lab Control Sample	Total/NA	Water	200.8	
480-115433-7 MS	P-7	Total/NA	Water	200.8	
480-115433-7 MSD	P-7	Total/NA	Water	200.8	

### Prep Batch: 350063

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-115433-1	P-1	Total/NA	Water	200.7	
480-115433-2	P-2	Total/NA	Water	200.7	
480-115433-3	P-3	Total/NA	Water	200.7	
480-115433-4	P-4R	Total/NA	Water	200.7	
480-115433-5	P-5	Total/NA	Water	200.7	
480-115433-6	P-6	Total/NA	Water	200.7	
480-115433-7	P-7	Total/NA	Water	200.7	
480-115433-8	DUPLICATE	Total/NA	Water	200.7	
480-115433-9	FIELD BLANK	Total/NA	Water	200.7	
480-115433-10	EQUIP BLANK	Total/NA	Water	200.7	
MB 480-350063/1-A	Method Blank	Total/NA	Water	200.7	
LCS 480-350063/2-A	Lab Control Sample	Total/NA	Water	200.7	
480-115433-1 MS	P-1	Total/NA	Water	200.7	
480-115433-1 MSD	P-1	Total/NA	Water	200.7	

### Prep Batch: 350081

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-115433-1	P-1	Total/NA	Water	245.1	
480-115433-2	P-2	Total/NA	Water	245.1	
480-115433-3	P-3	Total/NA	Water	245.1	
480-115433-4	P-4R	Total/NA	Water	245.1	
480-115433-5	P-5	Total/NA	Water	245.1	
480-115433-6	P-6	Total/NA	Water	245.1	
480-115433-7	P-7	Total/NA	Water	245.1	
480-115433-8	DUPLICATE	Total/NA	Water	245.1	
480-115433-9	FIELD BLANK	Total/NA	Water	245.1	
480-115433-10	EQUIP BLANK	Total/NA	Water	245.1	
MB 480-350081/1-A	Method Blank	Total/NA	Water	245.1	
LCS 480-350081/2-A	Lab Control Sample	Total/NA	Water	245.1	
LCSD 480-350081/3-A	Lab Control Sample Dup	Total/NA	Water	245.1	
480-115433-8 MS	DUPLICATE	Total/NA	Water	245.1	
480-115433-8 MSD	DUPLICATE	Total/NA	Water	245.1	

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# QC Association Summary

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

TestAmerica Job ID: 480-115433-1

## Metals (Continued)

### Analysis Batch: 350191

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-115433-1	P-1	Total/NA	Water	245.1	350081
480-115433-2	P-2	Total/NA	Water	245.1	350081
480-115433-3	P-3	Total/NA	Water	245.1	350081
480-115433-4	P-4R	Total/NA	Water	245.1	350081
480-115433-5	P-5	Total/NA	Water	245.1	350081
480-115433-6	P-6	Total/NA	Water	245.1	350081
480-115433-7	P-7	Total/NA	Water	245.1	350081
480-115433-8	DUPLICATE	Total/NA	Water	245.1	350081
480-115433-9	FIELD BLANK	Total/NA	Water	245.1	350081
480-115433-10	EQUIP BLANK	Total/NA	Water	245.1	350081
MB 480-350081/1-A	Method Blank	Total/NA	Water	245.1	350081
LCS 480-350081/2-A	Lab Control Sample	Total/NA	Water	245.1	350081
LCSD 480-350081/3-A	Lab Control Sample Dup	Total/NA	Water	245.1	350081
480-115433-8 MS	DUPLICATE	Total/NA	Water	245.1	350081
480-115433-8 MSD	DUPLICATE	Total/NA	Water	245.1	350081

### Analysis Batch: 350345

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-115433-1	P-1	Total/NA	Water	200.8	349944
480-115433-2	P-2	Total/NA	Water	200.8	349944
480-115433-3	P-3	Total/NA	Water	200.8	349944
480-115433-4	P-4R	Total/NA	Water	200.8	349944
480-115433-5	P-5	Total/NA	Water	200.8	349944
480-115433-6	P-6	Total/NA	Water	200.8	349944
480-115433-7	P-7	Total/NA	Water	200.8	349944
480-115433-8	DUPLICATE	Total/NA	Water	200.8	349944
480-115433-9	FIELD BLANK	Total/NA	Water	200.8	349944
480-115433-10	EQUIP BLANK	Total/NA	Water	200.8	349944
MB 480-349944/1-A	Method Blank	Total/NA	Water	200.8	349944
LCS 480-349944/2-A	Lab Control Sample	Total/NA	Water	200.8	349944
480-115433-7 MS	P-7	Total/NA	Water	200.8	349944
480-115433-7 MSD	P-7	Total/NA	Water	200.8	349944

### Analysis Batch: 350369

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-115433-1	P-1	Total/NA	Water	200.7 Rev 4.4	350063
480-115433-2	P-2	Total/NA	Water	200.7 Rev 4.4	350063
480-115433-3	P-3	Total/NA	Water	200.7 Rev 4.4	350063
480-115433-4	P-4R	Total/NA	Water	200.7 Rev 4.4	350063
480-115433-5	P-5	Total/NA	Water	200.7 Rev 4.4	350063
480-115433-6	P-6	Total/NA	Water	200.7 Rev 4.4	350063
480-115433-7	P-7	Total/NA	Water	200.7 Rev 4.4	350063
480-115433-8	DUPLICATE	Total/NA	Water	200.7 Rev 4.4	350063
480-115433-9	FIELD BLANK	Total/NA	Water	200.7 Rev 4.4	350063
480-115433-10	EQUIP BLANK	Total/NA	Water	200.7 Rev 4.4	350063
MB 480-350063/1-A	Method Blank	Total/NA	Water	200.7 Rev 4.4	350063
LCS 480-350063/2-A	Lab Control Sample	Total/NA	Water	200.7 Rev 4.4	350063
480-115433-1 MS	P-1	Total/NA	Water	200.7 Rev 4.4	350063
480-115433-1 MSD	P-1	Total/NA	Water	200.7 Rev 4.4	350063

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# QC Association Summary

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

TestAmerica Job ID: 480-115433-1

## Metals (Continued)

### Analysis Batch: 350570

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-115433-1	P-1	Total/NA	Water	200.8	349944
480-115433-2	P-2	Total/NA	Water	200.8	349944
480-115433-3	P-3	Total/NA	Water	200.8	349944
480-115433-4	P-4R	Total/NA	Water	200.8	349944
480-115433-5	P-5	Total/NA	Water	200.8	349944
480-115433-6	P-6	Total/NA	Water	200.8	349944
480-115433-7	P-7	Total/NA	Water	200.8	349944
480-115433-8	DUPLICATE	Total/NA	Water	200.8	349944
480-115433-9	FIELD BLANK	Total/NA	Water	200.8	349944
480-115433-10	EQUIP BLANK	Total/NA	Water	200.8	349944
MB 480-349944/1-A	Method Blank	Total/NA	Water	200.8	349944
LCS 480-349944/2-A	Lab Control Sample	Total/NA	Water	200.8	349944
480-115433-7 MS	P-7	Total/NA	Water	200.8	349944
480-115433-7 MSD	P-7	Total/NA	Water	200.8	349944

## General Chemistry

### Analysis Batch: 350054

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-115433-1	P-1	Total/NA	Water	SM 4500 H+ B	
480-115433-2	P-2	Total/NA	Water	SM 4500 H+ B	
480-115433-3	P-3	Total/NA	Water	SM 4500 H+ B	
480-115433-4	P-4R	Total/NA	Water	SM 4500 H+ B	
480-115433-5	P-5	Total/NA	Water	SM 4500 H+ B	
480-115433-6	P-6	Total/NA	Water	SM 4500 H+ B	
480-115433-7	P-7	Total/NA	Water	SM 4500 H+ B	
480-115433-8	DUPLICATE	Total/NA	Water	SM 4500 H+ B	
480-115433-9	FIELD BLANK	Total/NA	Water	SM 4500 H+ B	
480-115433-10	EQUIP BLANK	Total/NA	Water	SM 4500 H+ B	
LCS 480-350054/23	Lab Control Sample	Total/NA	Water	SM 4500 H+ B	
LCS 480-350054/45	Lab Control Sample	Total/NA	Water	SM 4500 H+ B	

### Analysis Batch: 350237

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-115433-1	P-1	Total/NA	Water	SM 2540C	
480-115433-2	P-2	Total/NA	Water	SM 2540C	
480-115433-3	P-3	Total/NA	Water	SM 2540C	
480-115433-4	P-4R	Total/NA	Water	SM 2540C	
480-115433-5	P-5	Total/NA	Water	SM 2540C	
480-115433-6	P-6	Total/NA	Water	SM 2540C	
480-115433-7	P-7	Total/NA	Water	SM 2540C	
MB 480-350237/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 480-350237/2	Lab Control Sample	Total/NA	Water	SM 2540C	
480-115433-7 DU	P-7	Total/NA	Water	SM 2540C	

### Analysis Batch: 350243

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-115433-8	DUPLICATE	Total/NA	Water	SM 2540C	
480-115433-9	FIELD BLANK	Total/NA	Water	SM 2540C	
480-115433-10	EQUIP BLANK	Total/NA	Water	SM 2540C	

TestAmerica Buffalo

# QC Association Summary

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

TestAmerica Job ID: 480-115433-1

## General Chemistry (Continued)

### Analysis Batch: 350243 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 480-350243/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 480-350243/2	Lab Control Sample	Total/NA	Water	SM 2540C	
480-115433-8 DU	DUPLICATE	Total/NA	Water	SM 2540C	

### Analysis Batch: 350906

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-115433-1	P-1	Total/NA	Water	300.0	
480-115433-2	P-2	Total/NA	Water	300.0	
480-115433-3	P-3	Total/NA	Water	300.0	
480-115433-4	P-4R	Total/NA	Water	300.0	
480-115433-5	P-5	Total/NA	Water	300.0	
MB 480-350906/28	Method Blank	Total/NA	Water	300.0	
LCS 480-350906/27	Lab Control Sample	Total/NA	Water	300.0	

### Analysis Batch: 350908

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-115433-6	P-6	Total/NA	Water	300.0	
MB 480-350908/28	Method Blank	Total/NA	Water	300.0	
LCS 480-350908/27	Lab Control Sample	Total/NA	Water	300.0	
480-115433-6 MS	P-6	Total/NA	Water	300.0	

### Analysis Batch: 351194

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-115433-1	P-1	Total/NA	Water	300.0	
480-115433-2	P-2	Total/NA	Water	300.0	
480-115433-3	P-3	Total/NA	Water	300.0	
480-115433-4	P-4R	Total/NA	Water	300.0	
480-115433-5	P-5	Total/NA	Water	300.0	
480-115433-6	P-6	Total/NA	Water	300.0	
480-115433-7	P-7	Total/NA	Water	300.0	
480-115433-8	DUPLICATE	Total/NA	Water	300.0	
480-115433-9	FIELD BLANK	Total/NA	Water	300.0	
480-115433-10	EQUIP BLANK	Total/NA	Water	300.0	
MB 480-351194/28	Method Blank	Total/NA	Water	300.0	
MB 480-351194/4	Method Blank	Total/NA	Water	300.0	
MB 480-351194/52	Method Blank	Total/NA	Water	300.0	
LCS 480-351194/27	Lab Control Sample	Total/NA	Water	300.0	
LCS 480-351194/3	Lab Control Sample	Total/NA	Water	300.0	
LCS 480-351194/51	Lab Control Sample	Total/NA	Water	300.0	
480-115433-6 MS	P-6	Total/NA	Water	300.0	

# Lab Chronicle

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

TestAmerica Job ID: 480-115433-1

## Client Sample ID: P-1

Date Collected: 03/30/17 08:45

Date Received: 04/01/17 09:00

## Lab Sample ID: 480-115433-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	200.7			350063	04/04/17 08:30	MVZ	TAL BUF
Total/NA	Analysis	200.7 Rev 4.4		1	350369	04/05/17 02:40	LMH	TAL BUF
Total/NA	Prep	200.8			349944	04/03/17 10:40	MVZ	TAL BUF
Total/NA	Analysis	200.8		1	350345	04/04/17 15:46	TRB	TAL BUF
Total/NA	Prep	200.8			349944	04/03/17 10:40	MVZ	TAL BUF
Total/NA	Analysis	200.8		1	350570	04/05/17 12:49	TRB	TAL BUF
Total/NA	Prep	245.1			350081	04/04/17 07:55	JRK	TAL BUF
Total/NA	Analysis	245.1		1	350191	04/04/17 12:37	JRK	TAL BUF
Total/NA	Analysis	300.0		10	350906	04/08/17 00:17	DMR	TAL BUF
Total/NA	Analysis	300.0		10	351194	04/10/17 23:51	DMR	TAL BUF
Total/NA	Analysis	SM 2540C		1	350237	04/04/17 17:28	CDC	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	350054	04/03/17 20:35	DSC	TAL BUF

## Client Sample ID: P-2

Date Collected: 03/30/17 14:40

Date Received: 04/01/17 09:00

## Lab Sample ID: 480-115433-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	200.7			350063	04/04/17 08:30	MVZ	TAL BUF
Total/NA	Analysis	200.7 Rev 4.4		1	350369	04/05/17 02:58	LMH	TAL BUF
Total/NA	Prep	200.8			349944	04/03/17 10:40	MVZ	TAL BUF
Total/NA	Analysis	200.8		1	350345	04/04/17 15:51	TRB	TAL BUF
Total/NA	Prep	200.8			349944	04/03/17 10:40	MVZ	TAL BUF
Total/NA	Analysis	200.8		1	350570	04/05/17 13:00	TRB	TAL BUF
Total/NA	Prep	245.1			350081	04/04/17 07:55	JRK	TAL BUF
Total/NA	Analysis	245.1		1	350191	04/04/17 12:38	JRK	TAL BUF
Total/NA	Analysis	300.0		5	350906	04/08/17 00:25	DMR	TAL BUF
Total/NA	Analysis	300.0		5	351194	04/10/17 23:59	DMR	TAL BUF
Total/NA	Analysis	SM 2540C		1	350237	04/04/17 17:28	CDC	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	350054	04/03/17 20:39	DSC	TAL BUF

## Client Sample ID: P-3

Date Collected: 03/30/17 09:35

Date Received: 04/01/17 09:00

## Lab Sample ID: 480-115433-3

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	200.7			350063	04/04/17 08:30	MVZ	TAL BUF
Total/NA	Analysis	200.7 Rev 4.4		1	350369	04/05/17 03:01	LMH	TAL BUF
Total/NA	Prep	200.8			349944	04/03/17 10:40	MVZ	TAL BUF
Total/NA	Analysis	200.8		1	350345	04/04/17 15:57	TRB	TAL BUF
Total/NA	Prep	200.8			349944	04/03/17 10:40	MVZ	TAL BUF
Total/NA	Analysis	200.8		1	350570	04/05/17 13:11	TRB	TAL BUF

TestAmerica Buffalo

# Lab Chronicle

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

TestAmerica Job ID: 480-115433-1

**Client Sample ID: P-3**

**Lab Sample ID: 480-115433-3**

**Date Collected: 03/30/17 09:35**

**Matrix: Water**

**Date Received: 04/01/17 09:00**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	245.1			350081	04/04/17 07:55	JRK	TAL BUF
Total/NA	Analysis	245.1		1	350191	04/04/17 12:40	JRK	TAL BUF
Total/NA	Analysis	300.0		5	350906	04/08/17 00:33	DMR	TAL BUF
Total/NA	Analysis	300.0		5	351194	04/11/17 00:07	DMR	TAL BUF
Total/NA	Analysis	SM 2540C		1	350237	04/04/17 17:28	CDC	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	350054	04/03/17 20:42	DSC	TAL BUF

**Client Sample ID: P-4R**

**Lab Sample ID: 480-115433-4**

**Date Collected: 03/30/17 11:05**

**Matrix: Water**

**Date Received: 04/01/17 09:00**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	200.7			350063	04/04/17 08:30	MVZ	TAL BUF
Total/NA	Analysis	200.7 Rev 4.4		1	350369	04/05/17 03:05	LMH	TAL BUF
Total/NA	Prep	200.8			349944	04/03/17 10:40	MVZ	TAL BUF
Total/NA	Analysis	200.8		1	350345	04/04/17 16:02	TRB	TAL BUF
Total/NA	Prep	200.8			349944	04/03/17 10:40	MVZ	TAL BUF
Total/NA	Analysis	200.8		1	350570	04/05/17 13:22	TRB	TAL BUF
Total/NA	Prep	245.1			350081	04/04/17 07:55	JRK	TAL BUF
Total/NA	Analysis	245.1		1	350191	04/04/17 12:46	JRK	TAL BUF
Total/NA	Analysis	300.0		5	350906	04/08/17 00:42	DMR	TAL BUF
Total/NA	Analysis	300.0		5	351194	04/11/17 00:15	DMR	TAL BUF
Total/NA	Analysis	SM 2540C		1	350237	04/04/17 17:28	CDC	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	350054	04/03/17 20:48	DSC	TAL BUF

**Client Sample ID: P-5**

**Lab Sample ID: 480-115433-5**

**Date Collected: 03/30/17 12:05**

**Matrix: Water**

**Date Received: 04/01/17 09:00**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	200.7			350063	04/04/17 08:30	MVZ	TAL BUF
Total/NA	Analysis	200.7 Rev 4.4		1	350369	04/05/17 03:08	LMH	TAL BUF
Total/NA	Prep	200.8			349944	04/03/17 10:40	MVZ	TAL BUF
Total/NA	Analysis	200.8		1	350345	04/04/17 16:08	TRB	TAL BUF
Total/NA	Prep	200.8			349944	04/03/17 10:40	MVZ	TAL BUF
Total/NA	Analysis	200.8		1	350570	04/05/17 13:50	TRB	TAL BUF
Total/NA	Prep	245.1			350081	04/04/17 07:55	JRK	TAL BUF
Total/NA	Analysis	245.1		1	350191	04/04/17 12:48	JRK	TAL BUF
Total/NA	Analysis	300.0		10	350906	04/08/17 00:50	DMR	TAL BUF
Total/NA	Analysis	300.0		10	351194	04/11/17 00:23	DMR	TAL BUF
Total/NA	Analysis	SM 2540C		1	350237	04/04/17 17:28	CDC	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	350054	04/03/17 20:51	DSC	TAL BUF

TestAmerica Buffalo

# Lab Chronicle

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

TestAmerica Job ID: 480-115433-1

**Client Sample ID: P-6**

**Date Collected: 03/30/17 13:05**

**Date Received: 04/01/17 09:00**

**Lab Sample ID: 480-115433-6**

**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	200.7			350063	04/04/17 08:30	MVZ	TAL BUF
Total/NA	Analysis	200.7 Rev 4.4		1	350369	04/05/17 03:22	LMH	TAL BUF
Total/NA	Prep	200.8			349944	04/03/17 10:40	MVZ	TAL BUF
Total/NA	Analysis	200.8		1	350345	04/04/17 16:13	TRB	TAL BUF
Total/NA	Prep	200.8			349944	04/03/17 10:40	MVZ	TAL BUF
Total/NA	Analysis	200.8		1	350570	04/05/17 14:01	TRB	TAL BUF
Total/NA	Prep	245.1			350081	04/04/17 07:55	JRK	TAL BUF
Total/NA	Analysis	245.1		1	350191	04/04/17 12:50	JRK	TAL BUF
Total/NA	Analysis	300.0		10	350908	04/08/17 00:58	DMR	TAL BUF
Total/NA	Analysis	300.0		10	351194	04/11/17 00:31	DMR	TAL BUF
Total/NA	Analysis	SM 2540C		1	350237	04/04/17 17:28	CDC	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	350054	04/03/17 20:55	DSC	TAL BUF

**Client Sample ID: P-7**

**Date Collected: 03/30/17 14:10**

**Date Received: 04/01/17 09:00**

**Lab Sample ID: 480-115433-7**

**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	200.7			350063	04/04/17 08:30	MVZ	TAL BUF
Total/NA	Analysis	200.7 Rev 4.4		1	350369	04/05/17 03:25	LMH	TAL BUF
Total/NA	Prep	200.8			349944	04/03/17 10:40	MVZ	TAL BUF
Total/NA	Analysis	200.8		1	350345	04/04/17 16:50	TRB	TAL BUF
Total/NA	Prep	200.8			349944	04/03/17 10:40	MVZ	TAL BUF
Total/NA	Analysis	200.8		1	350570	04/05/17 14:13	TRB	TAL BUF
Total/NA	Prep	245.1			350081	04/04/17 07:55	JRK	TAL BUF
Total/NA	Analysis	245.1		1	350191	04/04/17 12:51	JRK	TAL BUF
Total/NA	Analysis	300.0		10	351194	04/11/17 01:20	DMR	TAL BUF
Total/NA	Analysis	SM 2540C		1	350237	04/04/17 17:28	CDC	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	350054	04/03/17 20:59	DSC	TAL BUF

**Client Sample ID: DUPLICATE**

**Date Collected: 03/30/17 00:00**

**Date Received: 04/01/17 09:00**

**Lab Sample ID: 480-115433-8**

**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	200.7			350063	04/04/17 08:30	MVZ	TAL BUF
Total/NA	Analysis	200.7 Rev 4.4		1	350369	04/05/17 03:29	LMH	TAL BUF
Total/NA	Prep	200.8			349944	04/03/17 10:40	MVZ	TAL BUF
Total/NA	Analysis	200.8		1	350345	04/04/17 17:06	TRB	TAL BUF
Total/NA	Prep	200.8			349944	04/03/17 10:40	MVZ	TAL BUF
Total/NA	Analysis	200.8		1	350570	04/05/17 15:03	TRB	TAL BUF
Total/NA	Prep	245.1			350081	04/04/17 07:55	JRK	TAL BUF
Total/NA	Analysis	245.1		1	350191	04/04/17 12:53	JRK	TAL BUF

TestAmerica Buffalo

# Lab Chronicle

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

TestAmerica Job ID: 480-115433-1

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	300.0		5	351194	04/11/17 01:28	DMR	TAL BUF
Total/NA	Analysis	SM 2540C		1	350243	04/04/17 18:46	CDC	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	350054	04/03/17 21:03	DSC	TAL BUF

## Client Sample ID: FIELD BLANK

Lab Sample ID: 480-115433-9

Date Collected: 03/30/17 15:10

Matrix: Water

Date Received: 04/01/17 09:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	200.7			350063	04/04/17 08:30	MVZ	TAL BUF
Total/NA	Analysis	200.7 Rev 4.4		1	350369	04/05/17 03:32	LMH	TAL BUF
Total/NA	Prep	200.8			349944	04/03/17 10:40	MVZ	TAL BUF
Total/NA	Analysis	200.8		1	350345	04/04/17 17:12	TRB	TAL BUF
Total/NA	Prep	200.8			349944	04/03/17 10:40	MVZ	TAL BUF
Total/NA	Analysis	200.8		1	350570	04/05/17 15:14	TRB	TAL BUF
Total/NA	Prep	245.1			350081	04/04/17 07:55	JRK	TAL BUF
Total/NA	Analysis	245.1		1	350191	04/04/17 12:58	JRK	TAL BUF
Total/NA	Analysis	300.0		1	351194	04/11/17 01:36	DMR	TAL BUF
Total/NA	Analysis	SM 2540C		1	350243	04/04/17 18:46	CDC	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	350054	04/03/17 21:05	DSC	TAL BUF

## Client Sample ID: EQUIP BLANK

Lab Sample ID: 480-115433-10

Date Collected: 03/30/17 15:15

Matrix: Water

Date Received: 04/01/17 09:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	200.7			350063	04/04/17 08:30	MVZ	TAL BUF
Total/NA	Analysis	200.7 Rev 4.4		1	350369	04/05/17 03:36	LMH	TAL BUF
Total/NA	Prep	200.8			349944	04/03/17 10:40	MVZ	TAL BUF
Total/NA	Analysis	200.8		1	350345	04/04/17 17:17	TRB	TAL BUF
Total/NA	Prep	200.8			349944	04/03/17 10:40	MVZ	TAL BUF
Total/NA	Analysis	200.8		1	350570	04/05/17 15:27	TRB	TAL BUF
Total/NA	Prep	245.1			350081	04/04/17 07:55	JRK	TAL BUF
Total/NA	Analysis	245.1		1	350191	04/04/17 13:00	JRK	TAL BUF
Total/NA	Analysis	300.0		1	351194	04/11/17 01:45	DMR	TAL BUF
Total/NA	Analysis	SM 2540C		1	350243	04/04/17 18:46	CDC	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	350054	04/03/17 21:08	DSC	TAL BUF

**Laboratory References:**

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

# Accreditation/Certification Summary

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

TestAmerica Job ID: 480-115433-1

## Laboratory: TestAmerica Buffalo

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

Authority	Program	EPA Region	Identification Number	Expiration Date
Minnesota	NELAP	5	036-999-337	12-31-17

The following analytes are included in this report, but accreditation/certification is not offered by the governing authority:

Analysis Method	Prep Method	Matrix	Analyte
200.7 Rev 4.4	200.7	Water	Lithium
SM 4500 H+ B		Water	pH
SM 4500 H+ B		Water	Temperature

# Method Summary

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

TestAmerica Job ID: 480-115433-1

Method	Method Description	Protocol	Laboratory
200.7 Rev 4.4	Metals (ICP)	EPA	TAL BUF
200.8	Metals (ICP/MS)	EPA	TAL BUF
245.1	Mercury (CVAA)	EPA	TAL BUF
300.0	Anions, Ion Chromatography	MCAWW	TAL BUF
SM 2540C	Solids, Total Dissolved (TDS)	SM	TAL BUF
SM 4500 H+ B	pH	SM	TAL BUF

### Protocol References:

EPA = US Environmental Protection Agency

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

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

### Laboratory References:

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



# Sample Summary

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

TestAmerica Job ID: 480-115433-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
480-115433-1	P-1	Water	03/30/17 08:45	04/01/17 09:00
480-115433-2	P-2	Water	03/30/17 14:40	04/01/17 09:00
480-115433-3	P-3	Water	03/30/17 09:35	04/01/17 09:00
480-115433-4	P-4R	Water	03/30/17 11:05	04/01/17 09:00
480-115433-5	P-5	Water	03/30/17 12:05	04/01/17 09:00
480-115433-6	P-6	Water	03/30/17 13:05	04/01/17 09:00
480-115433-7	P-7	Water	03/30/17 14:10	04/01/17 09:00
480-115433-8	DUPLICATE	Water	03/30/17 00:00	04/01/17 09:00
480-115433-9	FIELD BLANK	Water	03/30/17 15:10	04/01/17 09:00
480-115433-10	EQUIP BLANK	Water	03/30/17 15:15	04/01/17 09:00



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



### Chain of Custody Record

480-94273-22507.1  
480-115493 COC

Page: 1 of 1  
Job #:

Lab PM: VanDette, Ryan T  
E-Mail: ryan.vandette@testamericainc.com

Sampler: N. Elmwood  
Phone: 651-792-6065

Company: Nathaniel Behrmann  
Waste Connections, Inc.

Address: 13425 Courthouse Blvd  
City: Rosemount  
State, Zip: MN, 55068  
Phone:

Email: nathanielb@wcnx.org  
Project Name: SKB Cloquet/ Event Desc: CCR Groundwater  
Site: Minnesota

Due Date Requested:  
TAT Requested (days): Standard  
Purchase Order Requested:  
PO #:  
WC #:  
Project #: 48013722  
SSOW#:

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=Water, S=Soil, O=Other)	Field Filtered Sample (Yes or No)		Performs MS/MSD (Yes or No)		90t, 1, Ra - Radium-226/228		300.0, 28D - Chloride/Sulfate		2540C, Colcd - Total Dissolved Solids		SM4500_H+ - pH		Special Instructions/Note:
					D	N	D	N	D	N	D	N	D	N	D	N	
P-1	3/10/17	9:45	G	Water	X	X	X	X	X	X	X	X	X	X	X	X	
P-2		11:10	G	Water	X	X	X	X	X	X	X	X	X	X	X	X	
P-3		9:35	G	Water	X	X	X	X	X	X	X	X	X	X	X	X	
P-4R		11:05	G	Water	X	X	X	X	X	X	X	X	X	X	X	X	
P-5		12:05	G	Water	X	X	X	X	X	X	X	X	X	X	X	X	
P-6		13:05	G	Water	X	X	X	X	X	X	X	X	X	X	X	X	
P-7		14:10	G	Water	X	X	X	X	X	X	X	X	X	X	X	X	
Duplicate				Water	X	X	X	X	X	X	X	X	X	X	X	X	
Field Blank				Water	X	X	X	X	X	X	X	X	X	X	X	X	
Equip Blank				Water	X	X	X	X	X	X	X	X	X	X	X	X	

Preservation Codes:  
A - HCl  
B - NaOH  
C - Zn Acetate  
D - Nitric Acid  
E - Nitric Acid  
F - MeOH  
G - Amchlor  
H - Acetic Acid  
I - DI Water  
J - EDTA  
K - EDTA  
L - EDA  
Other:  
M - Hexane  
N - None  
O - NaNO2  
P - Na2SO3  
Q - Na2SO3  
R - Na2SO3  
S - H2SO4  
T - TSP Dodecahydrate  
U - Acetone  
V - MeOH  
W - pH 4.5  
X - other (specify)

Analysis Requested

Special Instructions/QC Requirements:  
Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)  
 Return To Client  Disposal By Lab  Archive For \_\_\_\_\_ Months

Received by: [Signature] Date/Time: 3-31-17 12:00  
Company: TA  
Received by: [Signature] Date/Time: 3/17/17 09:00  
Company: TAS  
Received by: [Signature] Date/Time: 3/31-17 144  
Company: \_\_\_\_\_  
Custody Seal No.: #131  
Cooler Temperature(s) °C and Other Remarks:



## Login Sample Receipt Checklist

Client: Waste Connections, Inc.

Job Number: 480-115433-1

SDG Number:

**Login Number: 115433**

**List Number: 1**

**Creator: Wallace, Cameron**

**List Source: TestAmerica Buffalo**

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



# TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

## ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Buffalo

10 Hazelwood Drive

Amherst, NY 14228-2298

Tel: (716)691-2600

TestAmerica Job ID: 480-115433-2

Client Project/Site: SKB Cloquet - CCR Groundwater

Sampling Event: CCR Groundwater

For:

Waste Connections, Inc.

13425 Courthouse Blvd

Rosemount, Minnesota 55068

Attn: Nathaniel Beinemann



Authorized for release by:

4/27/2017 12:19:33 PM

Denise Giglia, Project Management Assistant II

[denise.giglia@testamericainc.com](mailto:denise.giglia@testamericainc.com)

Designee for

Ryan VanDette, Project Manager II

(716)504-9830

[ryan.vandette@testamericainc.com](mailto:ryan.vandette@testamericainc.com)

### LINKS

Review your project  
results through

TotalAccess

Have a Question?



Visit us at:

[www.testamericainc.com](http://www.testamericainc.com)

*The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.*

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

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

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# Definitions/Glossary

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

TestAmerica Job ID: 480-115433-2

## Qualifiers

### Rad

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

## Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
▫	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
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)

# Case Narrative

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

TestAmerica Job ID: 480-115433-2

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**Job ID: 480-115433-2**

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**Laboratory: TestAmerica Buffalo**

## Narrative

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**Job Narrative**  
**480-115433-2**

## Comments

No additional comments.

## Receipt

The samples were received on 4/1/2017 9:00 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 3.1° C.

## RAD

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

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# Detection Summary

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

TestAmerica Job ID: 480-115433-2

**Client Sample ID: P-1**

**Lab Sample ID: 480-115433-1**

No Detections.

**Client Sample ID: P-2**

**Lab Sample ID: 480-115433-2**

No Detections.

**Client Sample ID: P-3**

**Lab Sample ID: 480-115433-3**

No Detections.

**Client Sample ID: P-4R**

**Lab Sample ID: 480-115433-4**

No Detections.

**Client Sample ID: P-5**

**Lab Sample ID: 480-115433-5**

No Detections.

**Client Sample ID: P-6**

**Lab Sample ID: 480-115433-6**

No Detections.

**Client Sample ID: P-7**

**Lab Sample ID: 480-115433-7**

No Detections.

**Client Sample ID: DUPLICATE**

**Lab Sample ID: 480-115433-8**

No Detections.

**Client Sample ID: FIELD BLANK**

**Lab Sample ID: 480-115433-9**

No Detections.

**Client Sample ID: EQUIP BLANK**

**Lab Sample ID: 480-115433-10**

No Detections.

This Detection Summary does not include radiochemical test results.

TestAmerica Buffalo



# Client Sample Results

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

TestAmerica Job ID: 480-115433-2

**Client Sample ID: P-1**

**Date Collected: 03/30/17 08:45**

**Date Received: 04/01/17 09:00**

**Lab Sample ID: 480-115433-1**

**Matrix: Water**

**Method: 901.1 - Radium-226 & Other Gamma Emitters (GS)**

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Radium-226	4.39	U	12.5	12.5	50.0	16.6	pCi/L	04/05/17 14:52	04/26/17 14:33	1
Radium-228	7.43	U	17.6	17.6	50.0	24.2	pCi/L	04/05/17 14:52	04/26/17 14:33	1

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# Client Sample Results

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

TestAmerica Job ID: 480-115433-2

**Client Sample ID: P-2**

**Date Collected: 03/30/17 14:40**

**Date Received: 04/01/17 09:00**

**Lab Sample ID: 480-115433-2**

**Matrix: Water**

**Method: 901.1 - Radium-226 & Other Gamma Emitters (GS)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	10.4	U	9.38	9.44	50.0	43.0	pCi/L	04/05/17 14:52	04/26/17 15:21	1
<b>Radium-228</b>	<b>31.7</b>		18.9	19.2	50.0	18.7	pCi/L	04/05/17 14:52	04/26/17 15:21	1

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# Client Sample Results

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

TestAmerica Job ID: 480-115433-2

**Client Sample ID: P-3**

**Date Collected: 03/30/17 09:35**

**Date Received: 04/01/17 09:00**

**Lab Sample ID: 480-115433-3**

**Matrix: Water**

**Method: 901.1 - Radium-226 & Other Gamma Emitters (GS)**

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Radium-226	10.8	U	12.0	12.0	50.0	16.3	pCi/L	04/05/17 14:52	04/26/17 14:40	1
Radium-228	25.0	U	22.7	22.9	50.0	26.9	pCi/L	04/05/17 14:52	04/26/17 14:40	1

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# Client Sample Results

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

TestAmerica Job ID: 480-115433-2

**Client Sample ID: P-4R**  
**Date Collected: 03/30/17 11:05**  
**Date Received: 04/01/17 09:00**

**Lab Sample ID: 480-115433-4**  
**Matrix: Water**

**Method: 901.1 - Radium-226 & Other Gamma Emitters (GS)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	9.84	U	20.3	20.4	50.0	44.7	pCi/L	04/05/17 14:52	04/26/17 18:19	1
Radium-228	7.73	U	17.1	17.1	50.0	43.1	pCi/L	04/05/17 14:52	04/26/17 18:19	1

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# Client Sample Results

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

TestAmerica Job ID: 480-115433-2

**Client Sample ID: P-5**

**Date Collected: 03/30/17 12:05**

**Date Received: 04/01/17 09:00**

**Lab Sample ID: 480-115433-5**

**Matrix: Water**

**Method: 901.1 - Radium-226 & Other Gamma Emitters (GS)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
<b>Radium-226</b>	<b>25.9</b>		14.1	14.3	50.0	16.1	pCi/L	04/05/17 14:52	04/26/17 16:30	1
Radium-228	8.83	U	20.1	20.1	50.0	25.0	pCi/L	04/05/17 14:52	04/26/17 16:30	1

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# Client Sample Results

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

TestAmerica Job ID: 480-115433-2

**Client Sample ID: P-6**

**Date Collected: 03/30/17 13:05**

**Date Received: 04/01/17 09:00**

**Lab Sample ID: 480-115433-6**

**Matrix: Water**

**Method: 901.1 - Radium-226 & Other Gamma Emitters (GS)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	23.2		16.4	16.6	50.0	18.6	pCi/L	04/05/17 14:52	04/26/17 16:32	1
Radium-228	33.1		19.8	20.0	50.0	22.3	pCi/L	04/05/17 14:52	04/26/17 16:32	1

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# Client Sample Results

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

TestAmerica Job ID: 480-115433-2

**Client Sample ID: P-7**

**Date Collected: 03/30/17 14:10**

**Date Received: 04/01/17 09:00**

**Lab Sample ID: 480-115433-7**

**Matrix: Water**

**Method: 901.1 - Radium-226 & Other Gamma Emitters (GS)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
<b>Radium-226</b>	<b>20.5</b>		16.5	16.6	50.0	19.7	pCi/L	04/05/17 14:52	04/26/17 16:33	1
Radium-228	12.8	U	25.0	25.1	50.0	31.7	pCi/L	04/05/17 14:52	04/26/17 16:33	1

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# Client Sample Results

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

TestAmerica Job ID: 480-115433-2

**Client Sample ID: DUPLICATE**

**Lab Sample ID: 480-115433-8**

**Date Collected: 03/30/17 00:00**

**Matrix: Water**

**Date Received: 04/01/17 09:00**

**Method: 901.1 - Radium-226 & Other Gamma Emitters (GS)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	-14.4	U	17.5	17.5	50.0	37.2	pCi/L	04/05/17 14:52	04/26/17 16:34	1
Radium-228	5.49	U	11.5	11.5	50.0	29.1	pCi/L	04/05/17 14:52	04/26/17 16:34	1

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# Client Sample Results

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

TestAmerica Job ID: 480-115433-2

**Client Sample ID: FIELD BLANK**

**Lab Sample ID: 480-115433-9**

**Date Collected: 03/30/17 15:10**

**Matrix: Water**

**Date Received: 04/01/17 09:00**

**Method: 901.1 - Radium-226 & Other Gamma Emitters (GS)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
<b>Radium-226</b>	<b>18.7</b>		11.7	11.8	50.0	15.2	pCi/L	04/05/17 14:52	04/26/17 16:38	1
Radium-228	-8.75	U	27.2	27.2	50.0	35.1	pCi/L	04/05/17 14:52	04/26/17 16:38	1

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# Client Sample Results

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

TestAmerica Job ID: 480-115433-2

**Client Sample ID: EQUIP BLANK**

**Lab Sample ID: 480-115433-10**

**Date Collected: 03/30/17 15:15**

**Matrix: Water**

**Date Received: 04/01/17 09:00**

**Method: 901.1 - Radium-226 & Other Gamma Emitters (GS)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
<b>Radium-226</b>	<b>53.1</b>		21.3	22.0	50.0	20.8	pCi/L	04/05/17 16:15	04/26/17 21:53	1
Radium-228	13.8	U	28.8	28.8	50.0	31.7	pCi/L	04/05/17 16:15	04/26/17 21:53	1

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# QC Sample Results

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

TestAmerica Job ID: 480-115433-2

## Method: 901.1 - Radium-226 & Other Gamma Emitters (GS)

**Lab Sample ID: MB 160-301652/1-A**  
**Matrix: Water**  
**Analysis Batch: 305673**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 301652**

Analyte	MB MB		Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier	Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Radium-226	-8.164	U	20.0	20.0	50.0	33.9	pCi/L	04/05/17 14:52	04/26/17 09:20	1
Radium-228	13.30	U	14.8	14.9	50.0	21.4	pCi/L	04/05/17 14:52	04/26/17 09:20	1

**Lab Sample ID: LCS 160-301652/2-A**  
**Matrix: Water**  
**Analysis Batch: 305711**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 301652**

Analyte	Spike Added	LCS Result	LCS Qual	Total	RL	MDC	Unit	%Rec	%Rec.
				Uncert. (2σ+/-)					Limits
Americium-241	136000	133100		15400		305	pCi/L	98	90 - 111
Cesium-137	46800	44780		4480		117	pCi/L	96	90 - 111
Cobalt-60	38800	37690		3720		58.9	pCi/L	97	89 - 110

**Lab Sample ID: MB 160-301662/1-A**  
**Matrix: Water**  
**Analysis Batch: 305711**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 301662**

Analyte	MB MB		Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier	Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Radium-226	-10.05	U	23.3	23.3	50.0	38.8	pCi/L	04/05/17 16:15	04/26/17 14:25	1
Radium-228	11.95	U	24.2	24.2	50.0	34.4	pCi/L	04/05/17 16:15	04/26/17 14:25	1

**Lab Sample ID: LCS 160-301662/2-A**  
**Matrix: Water**  
**Analysis Batch: 305673**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 301662**

Analyte	Spike Added	LCS Result	LCS Qual	Total	RL	MDC	Unit	%Rec	%Rec.
				Uncert. (2σ+/-)					Limits
Americium-241	136000	134600		15500		299	pCi/L	99	90 - 111
Cesium-137	46800	45120		4520		96.2	pCi/L	96	90 - 111
Cobalt-60	38800	36660		3620		79.1	pCi/L	94	89 - 110

**Lab Sample ID: 480-115433-10 DU**  
**Matrix: Water**  
**Analysis Batch: 305745**

**Client Sample ID: EQUIP BLANK**  
**Prep Type: Total/NA**  
**Prep Batch: 301662**

Analyte	Sample Sample		DU DU		Total	RL	MDC	Unit	RER	RER
	Result	Qual	Result	Qual	Uncert. (2σ+/-)					Limit
Radium-226	53.1		24.78		16.6	50.0	19.1	pCi/L	0.73	1
Radium-228	13.8	U	14.50	U	24.7	50.0	28.9	pCi/L	0.01	1

# QC Association Summary

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

TestAmerica Job ID: 480-115433-2

## Rad

### Prep Batch: 301652

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-115433-1	P-1	Total/NA	Water	Fill_Geo-21	
480-115433-2	P-2	Total/NA	Water	Fill_Geo-21	
480-115433-3	P-3	Total/NA	Water	Fill_Geo-21	
480-115433-4	P-4R	Total/NA	Water	Fill_Geo-21	
480-115433-5	P-5	Total/NA	Water	Fill_Geo-21	
480-115433-6	P-6	Total/NA	Water	Fill_Geo-21	
480-115433-7	P-7	Total/NA	Water	Fill_Geo-21	
480-115433-8	DUPLICATE	Total/NA	Water	Fill_Geo-21	
480-115433-9	FIELD BLANK	Total/NA	Water	Fill_Geo-21	
MB 160-301652/1-A	Method Blank	Total/NA	Water	Fill_Geo-21	
LCS 160-301652/2-A	Lab Control Sample	Total/NA	Water	Fill_Geo-21	

### Prep Batch: 301662

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-115433-10	EQUIP BLANK	Total/NA	Water	Fill_Geo-21	
MB 160-301662/1-A	Method Blank	Total/NA	Water	Fill_Geo-21	
LCS 160-301662/2-A	Lab Control Sample	Total/NA	Water	Fill_Geo-21	
480-115433-10 DU	EQUIP BLANK	Total/NA	Water	Fill_Geo-21	

# Lab Chronicle

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

TestAmerica Job ID: 480-115433-2

## Client Sample ID: P-1

Date Collected: 03/30/17 08:45

Date Received: 04/01/17 09:00

Lab Sample ID: 480-115433-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Fill_Geo-21			301652	04/05/17 14:52	MFM	TAL SL
Total/NA	Analysis	901.1		1	305715	04/26/17 14:33	CDR	TAL SL

## Client Sample ID: P-2

Date Collected: 03/30/17 14:40

Date Received: 04/01/17 09:00

Lab Sample ID: 480-115433-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Fill_Geo-21			301652	04/05/17 14:52	MFM	TAL SL
Total/NA	Analysis	901.1		1	305692	04/26/17 15:21	CMA	TAL SL

## Client Sample ID: P-3

Date Collected: 03/30/17 09:35

Date Received: 04/01/17 09:00

Lab Sample ID: 480-115433-3

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Fill_Geo-21			301652	04/05/17 14:52	MFM	TAL SL
Total/NA	Analysis	901.1		1	305745	04/26/17 14:40	CMA	TAL SL

## Client Sample ID: P-4R

Date Collected: 03/30/17 11:05

Date Received: 04/01/17 09:00

Lab Sample ID: 480-115433-4

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Fill_Geo-21			301652	04/05/17 14:52	MFM	TAL SL
Total/NA	Analysis	901.1		1	305692	04/26/17 18:19	CMA	TAL SL

## Client Sample ID: P-5

Date Collected: 03/30/17 12:05

Date Received: 04/01/17 09:00

Lab Sample ID: 480-115433-5

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Fill_Geo-21			301652	04/05/17 14:52	MFM	TAL SL
Total/NA	Analysis	901.1		1	305673	04/26/17 16:30	CMA	TAL SL

## Client Sample ID: P-6

Date Collected: 03/30/17 13:05

Date Received: 04/01/17 09:00

Lab Sample ID: 480-115433-6

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Fill_Geo-21			301652	04/05/17 14:52	MFM	TAL SL
Total/NA	Analysis	901.1		1	305711	04/26/17 16:32	CDR	TAL SL

TestAmerica Buffalo

# Lab Chronicle

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

TestAmerica Job ID: 480-115433-2

**Client Sample ID: P-7**

**Date Collected: 03/30/17 14:10**

**Date Received: 04/01/17 09:00**

**Lab Sample ID: 480-115433-7**

**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Fill_Geo-21			301652	04/05/17 14:52	MFM	TAL SL
Total/NA	Analysis	901.1		1	305712	04/26/17 16:33	CDR	TAL SL

**Client Sample ID: DUPLICATE**

**Date Collected: 03/30/17 00:00**

**Date Received: 04/01/17 09:00**

**Lab Sample ID: 480-115433-8**

**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Fill_Geo-21			301652	04/05/17 14:52	MFM	TAL SL
Total/NA	Analysis	901.1		1	305714	04/26/17 16:34	CDR	TAL SL

**Client Sample ID: FIELD BLANK**

**Date Collected: 03/30/17 15:10**

**Date Received: 04/01/17 09:00**

**Lab Sample ID: 480-115433-9**

**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Fill_Geo-21			301652	04/05/17 14:52	MFM	TAL SL
Total/NA	Analysis	901.1		1	305715	04/26/17 16:38	CDR	TAL SL

**Client Sample ID: EQUIP BLANK**

**Date Collected: 03/30/17 15:15**

**Date Received: 04/01/17 09:00**

**Lab Sample ID: 480-115433-10**

**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Fill_Geo-21			301662	04/05/17 16:15	MFM	TAL SL
Total/NA	Analysis	901.1		1	305712	04/26/17 21:53	CDR	TAL SL

**Laboratory References:**

TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

# Accreditation/Certification Summary

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

TestAmerica Job ID: 480-115433-2

## Laboratory: TestAmerica Buffalo

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

Authority	Program	EPA Region	Identification Number	Expiration Date
Minnesota	NELAP	5	036-999-337	12-31-17

## Laboratory: TestAmerica St. Louis

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

Authority	Program	EPA Region	Identification Number	Expiration Date
Alaska	State Program	10	MO00054	06-30-17 *
California	State Program	9	2886	03-31-18 *
Connecticut	State Program	1	PH-0241	03-31-17 *
Florida	NELAP	4	E87689	06-30-17 *
Illinois	NELAP	5	200023	11-30-17
Iowa	State Program	7	373	02-01-18
Kansas	NELAP	7	E-10236	10-31-17
Kentucky (DW)	State Program	4	90125	12-31-17
L-A-B	DoD ELAP		L2305	04-06-19
Louisiana	NELAP	6	04080	06-30-17 *
Louisiana (DW)	NELAP	6	LA170011	12-31-17
Maryland	State Program	3	310	09-30-17
Missouri	State Program	7	780	06-30-17 *
Nevada	State Program	9	MO000542017-1	07-31-17
New Jersey	NELAP	2	MO002	06-30-17 *
New York	NELAP	2	11616	03-31-17 *
North Dakota	State Program	8	R207	06-30-17
NRC	NRC		24-24817-01	12-31-22
Oklahoma	State Program	6	9997	08-31-17
Pennsylvania	NELAP	3	68-00540	02-28-18
South Carolina	State Program	4	85002001	06-30-17
Texas	NELAP	6	T104704193-16-10	07-31-17
US Fish & Wildlife	Federal		LE058448-0	10-31-17
USDA	Federal		P330-17-0028	02-02-20
Utah	NELAP	8	MO000542016-8	07-31-17
Virginia	NELAP	3	460230	06-14-17 *
Washington	State Program	10	C592	08-30-17
West Virginia DEP	State Program	3	381	08-31-17 *

\* Accreditation/Certification renewal pending - accreditation/certification considered valid.

# Method Summary

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

TestAmerica Job ID: 480-115433-2

Method	Method Description	Protocol	Laboratory
901.1	Radium-226 & Other Gamma Emitters (GS)	EPA	TAL SL

**Protocol References:**

EPA = US Environmental Protection Agency

**Laboratory References:**

TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566





# Sample Summary

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

TestAmerica Job ID: 480-115433-2

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
480-115433-1	P-1	Water	03/30/17 08:45	04/01/17 09:00
480-115433-2	P-2	Water	03/30/17 14:40	04/01/17 09:00
480-115433-3	P-3	Water	03/30/17 09:35	04/01/17 09:00
480-115433-4	P-4R	Water	03/30/17 11:05	04/01/17 09:00
480-115433-5	P-5	Water	03/30/17 12:05	04/01/17 09:00
480-115433-6	P-6	Water	03/30/17 13:05	04/01/17 09:00
480-115433-7	P-7	Water	03/30/17 14:10	04/01/17 09:00
480-115433-8	DUPLICATE	Water	03/30/17 00:00	04/01/17 09:00
480-115433-9	FIELD BLANK	Water	03/30/17 15:10	04/01/17 09:00
480-115433-10	EQUIP BLANK	Water	03/30/17 15:15	04/01/17 09:00

TestAmerica



Chain of Custody Record

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

COC No: 480-94273-22507.1  
Page: 1 of 1  
Job #:

Lab PM: VanDette, Ryan T  
E-Mail: ryan.vandette@testamericainc.com

Sampler: N. E. M. [Signature]  
Phone: 651-792-6065

Client Information  
Nathaniel Behrmann  
Waste Connections, Inc.  
Address: 13425 Courthouse Blvd  
City: Rosemount  
State, Zip: MN, 55068  
Phone:  
Email: nathanielb@wcnx.org  
Project Name: SKB Cloquet/ Event Desc: CCR Groundwater  
Site: Minnesota

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=Water, S=Soil, O=Other)	Field Filtered Sample (Yes or No)		Performs MS/MSD (Yes or No)		90t, 1, Ra - Radium-226/228		300.0, 28D - ClF/SD4		2540C, Colcd - Total Dissolved Solids		SM4500_H+ - pH		Special Instructions/Note:
					D	N	D	N	D	N	D	N	D	N	D	N	
P-1	3/30/17	9:45	G	Water					X	X	X	X	X	X	X	X	
P-2		11:10		Water					X	X	X	X	X	X	X	X	
P-3		9:35		Water					X	X	X	X	X	X	X	X	
P-4R		11:05		Water					X	X	X	X	X	X	X	X	
P-5		12:05		Water					X	X	X	X	X	X	X	X	
P-6		13:05		Water					X	X	X	X	X	X	X	X	
P-7		14:10		Water					X	X	X	X	X	X	X	X	
Duplicate				Water					X	X	X	X	X	X	X	X	
Field Blank				Water					X	X	X	X	X	X	X	X	
Equip Blank				Water					X	X	X	X	X	X	X	X	

Analysis Requested: [Blank]

Preservation Codes:  
A - HCl, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Acetic Acid, I - DI Water, J - EDTA, K - EDTA, L - EDA, Other: [Blank]

Special Instructions/Note: [Blank]

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

Received by: [Signature] Date/Time: 3-31-17 10:00  
Received by: [Signature] Date/Time: 3-31-17 1444  
Received by: [Signature] Date/Time: 3-31-17 1200

Cooler Temperature(s) °C and Other Remarks: #131



# Chain of Custody Record



Client Contact: **Client Information (Sub Contract Lab)**  
 Shipping/Receiving  
 TestAmerica Laboratories, Inc.  
 Address: 13715 Rider Trail North,  
 City: Earth City  
 State, Zip: MO, 63045  
 Phone: 314-298-8566(Tel) 314-298-8757(Fax)  
 Email:  
 Project Name: SKB Cloquet  
 Site: Shamrock

Lab PM: VanDette, Ryan T  
 E-Mail: ryan.vandette@testame.com  
 480-115433 Chain of Custody  
 Minnesota

OC No: 180-34083-1  
 Page: Page 1 of 2  
 Job #: 480-115433-1

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=wastewater, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	901.1 Ra/Fill_Geo_21 Radium-226/228	Analysis Requested	Total Number of containers	Special Instructions/Note:
P-1 (480-115433-1)	3/30/17	08:45 Central	Water	Water	X	X			1	
P-2 (480-115433-2)	3/30/17	14:40 Central	Water	Water	X	X			1	
P-3 (480-115433-3)	3/30/17	09:35 Central	Water	Water	X	X			1	
P-4R (480-115433-4)	3/30/17	11:05 Central	Water	Water	X	X			1	
P-5 (480-115433-5)	3/30/17	12:05 Central	Water	Water	X	X			1	
P-6 (480-115433-6)	3/30/17	13:05 Central	Water	Water	X	X			1	
P-7 (480-115433-7)	3/30/17	14:10 Central	Water	Water	X	X			1	
DUPLICATE (480-115433-8)	3/30/17	Central	Water	Water	X	X			1	
FIELD BLANK (480-115433-9)	3/30/17	Central	Water	Water	X	X			1	

Preservation Codes:  
 M - Hexane  
 N - None  
 O - AsNaO2  
 P - Na2O4S  
 Q - Na2SO3  
 R - Na2SO4  
 S - H2SO4  
 T - TSP Dodecahydrate  
 U - Acetone  
 V - MCAA  
 W - pH 4-5  
 L - EDTA  
 Z - other (specify)  
 Other:

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon our subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/test/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to TestAmerica Laboratories, Inc.

**Possible Hazard Identification**  
 Unconfirmed  
 Deliverable Requested: I, II, III, IV, Other (specify)  
 Primary Deliverable Rank: 2  
 Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)  
 Return To Client  Disposal By Lab  Archive For \_\_\_\_\_ Months  
 Special Instructions/QC Requirements:

Relinquished by:	Date/Time:	Company:	Received by:	Date/Time:	Company:
<i>[Signature]</i>	3/30/17 1300	SKB	<i>[Signature]</i>	4-4-17 0905	Company



# Chain of Custody Record

<b>Client Information (Sub Contract Lab)</b>		Sampler:	Lab PM:	Carrier Tracking No(s):	COC No:
Shipping/Receiving		Phone:	VanDette, Ryan T		480-34083 2
Company:		E-Mail:	ryan.vandette@testamericainc.com	State of Origin:	Page:
TestAmerica Laboratories, Inc.		Accreditations Required (See note):	NELAP - Minnesota	Minnesota	Page 2 of 2
Address:		Due Date Requested:	Analysis Requested:		
13715 Rider Trail North,		4/12/2017	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 X - EDTA L - EDA Other:		
City:		TAT Requested (days):	Preservation Codes:		
Earth City			A - HCL B - NaOH C - Zn Acetate D - Nitric Acid E - NaHSO4 F - MeOH G - Amchlor H - Ascorbic Acid I - Ice J - DI Water K - EDTA L - EDA Other:		
State, Zip:		PO #:	Total Number of containers		
MO, 63045		WO #:	1		
Phone:		Project #:	Special Instructions/Note:		
314-298-8566(Tel) 314-298-8757(Fax)		48013722	901_1_RaFill_Geo_21 Radium-226/228		
Email:		SSOW#:	Perform MS/MSD (Yes or No)		
SKB Cloquet			Field Filtered Sample (Yes or No)		
Site:			X		
Shamrock			X		
<b>Sample Identification - Client ID (Lab ID)</b>		<b>Sample Date</b>	<b>Sample Time</b>	<b>Sample Type (C=Comp, G=grab)</b>	<b>Matrix (W=water, S=solid, O=waste/oil, BT=tissue, A=air)</b>
EQUIP BLANK (480-115433-10)		3/30/17	15:15 Central	Water	Water
<p>Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, inc. places the ownership of method, analyte &amp; accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody  </p>					
<b>Possible Hazard Identification</b>					
Unconfirmed					
Deliverable Requested: I, II, III, IV, Other (specify)					
Primary Deliverable Rank: 2					
Date:					
Empty Kit Relinquished by:					
Relinquished by: <i>[Signature]</i>					
Relinquished by:					
Relinquished by:					
Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No					
Custody Seal No.:					
Cooler Temperature(s) °C and Other Remarks:					
<p><b>Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)</b></p> <p><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>					
<p>Received by: <i>[Signature]</i> Date/Time: 4-4-17 0905 Company: <i>[Signature]</i></p> <p>Received by: _____ Date/Time: _____ Company: _____</p> <p>Received by: _____ Date/Time: _____ Company: _____</p>					



## Login Sample Receipt Checklist

Client: Waste Connections, Inc.

Job Number: 480-115433-2

SDG Number:

**Login Number: 115433**

**List Number: 1**

**Creator: Wallace, Cameron**

**List Source: TestAmerica Buffalo**

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



# Login Sample Receipt Checklist

Client: Waste Connections, Inc.

Job Number: 480-115433-2

SDG Number:

**Login Number: 115433**

**List Number: 2**

**Creator: Taylor, Kristene N**

**List Source: TestAmerica St. Louis**

**List Creation: 04/04/17 03:05 PM**

Question	Answer	Comment
Radioactivity wasn't checked or is <math>\leq</math> background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	7.5
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?	N/A	
There are no discrepancies between the containers received 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	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



# TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

## ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Buffalo

10 Hazelwood Drive

Amherst, NY 14228-2298

Tel: (716)691-2600

TestAmerica Job ID: 480-117212-1

Client Project/Site: SKB Cloquet - CCR Groundwater

Sampling Event: CCR Groundwater

For:

Waste Connections, Inc.

13425 Courthouse Blvd

Rosemount, Minnesota 55068

Attn: Nathaniel Beinemann



Authorized for release by:

5/15/2017 11:18:24 AM

Denise Giglia, Project Management Assistant II

[denise.giglia@testamericainc.com](mailto:denise.giglia@testamericainc.com)

Designee for

Ryan VanDette, Project Manager II

(716)504-9830

[ryan.vandette@testamericainc.com](mailto:ryan.vandette@testamericainc.com)

### LINKS

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*The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.*

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

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

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# Definitions/Glossary

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

TestAmerica Job ID: 480-117212-1

## Qualifiers

### 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
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)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
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)

# Case Narrative

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

TestAmerica Job ID: 480-117212-1

**Job ID: 480-117212-1**

**Laboratory: TestAmerica Buffalo**

## Narrative

**Job Narrative  
480-117212-1**

## Comments

No additional comments.

## Receipt

The samples were received on 4/29/2017 9:00 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were 2.3° C and 2.6° C.

## HPLC/IC

Method(s) 300.0: The following samples was diluted to bring the concentration of target analytes within the calibration range: P-1 (480-117212-1), P-2 (480-117212-2), P-3 (480-117212-3), P-4R (480-117212-4), P-5 (480-117212-5), P-6 (480-117212-6), P-7 (480-117212-7) and DUPLICATE WELL (480-117212-8). Elevated reporting limits (RLs) are provided.

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

## Metals

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

## General Chemistry

Method(s) 9040C, SM 4500 H+ B: This analysis is normally performed in the field and has a method-defined holding time of 15 minutes. The following samples has been qualified with the "HF" flag to indicate analysis was performed in the laboratory outside the 15 minute timeframe: P-1 (480-117212-1), P-2 (480-117212-2), P-3 (480-117212-3), P-4R (480-117212-4), P-5 (480-117212-5), P-6 (480-117212-6), P-7 (480-117212-7), DUPLICATE WELL (480-117212-8), FIELD BLANK (480-117212-9) and EQUIPMENT BLANK (480-117212-10).

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

# Detection Summary

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

TestAmerica Job ID: 480-117212-1

## Client Sample ID: P-1

## Lab Sample ID: 480-117212-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.12		0.0020		mg/L	1		200.7 Rev 4.4	Total/NA
Boron	0.054		0.020		mg/L	1		200.7 Rev 4.4	Total/NA
Calcium	128		0.50		mg/L	1		200.7 Rev 4.4	Total/NA
Cobalt	0.54		0.30		ug/L	1		200.8	Total/NA
Chloride	115		5.0		mg/L	10		300.0	Total/NA
Sulfate	35.8		20.0		mg/L	10		300.0	Total/NA
Total Dissolved Solids	581		10.0		mg/L	1		SM 2540C	Total/NA
Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
pH	7.1	HF	0.1		SU	1		SM 4500 H+ B	Total/NA
Temperature	20.4	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

## Client Sample ID: P-2

## Lab Sample ID: 480-117212-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.057		0.0020		mg/L	1		200.7 Rev 4.4	Total/NA
Boron	0.050		0.020		mg/L	1		200.7 Rev 4.4	Total/NA
Calcium	71.7		0.50		mg/L	1		200.7 Rev 4.4	Total/NA
Chromium	0.0059		0.0040		mg/L	1		200.7 Rev 4.4	Total/NA
Cobalt	1.8		0.30		ug/L	1		200.8	Total/NA
Molybdenum	1.0		1.0		ug/L	1		200.8	Total/NA
Chloride	50.1		2.5		mg/L	5		300.0	Total/NA
Sulfate	21.2		10.0		mg/L	5		300.0	Total/NA
Total Dissolved Solids	335		10.0		mg/L	1		SM 2540C	Total/NA
Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
pH	7.2	HF	0.1		SU	1		SM 4500 H+ B	Total/NA
Temperature	20.4	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

## Client Sample ID: P-3

## Lab Sample ID: 480-117212-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.19		0.0020		mg/L	1		200.7 Rev 4.4	Total/NA
Boron	0.026		0.020		mg/L	1		200.7 Rev 4.4	Total/NA
Calcium	139		0.50		mg/L	1		200.7 Rev 4.4	Total/NA
Chloride	139		2.5		mg/L	5		300.0	Total/NA
Sulfate	76.0		10.0		mg/L	5		300.0	Total/NA
Total Dissolved Solids	646		10.0		mg/L	1		SM 2540C	Total/NA
Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
pH	7.4	HF	0.1		SU	1		SM 4500 H+ B	Total/NA
Temperature	20.4	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

## Client Sample ID: P-4R

## Lab Sample ID: 480-117212-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.10		0.0020		mg/L	1		200.7 Rev 4.4	Total/NA
Boron	0.11		0.020		mg/L	1		200.7 Rev 4.4	Total/NA
Calcium	75.1		0.50		mg/L	1		200.7 Rev 4.4	Total/NA
Molybdenum	28.9		1.0		ug/L	1		200.8	Total/NA
Chloride	38.4		2.5		mg/L	5		300.0	Total/NA
Sulfate	69.2		10.0		mg/L	5		300.0	Total/NA
Total Dissolved Solids	358		10.0		mg/L	1		SM 2540C	Total/NA

This Detection Summary does not include radiochemical test results.

TestAmerica Buffalo

# Detection Summary

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

TestAmerica Job ID: 480-117212-1

## Client Sample ID: P-4R (Continued)

## Lab Sample ID: 480-117212-4

Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
pH	7.7	HF	0.1		SU	1		SM 4500 H+ B	Total/NA
Temperature	20.4	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

## Client Sample ID: P-5

## Lab Sample ID: 480-117212-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.32		0.0020		mg/L	1		200.7 Rev 4.4	Total/NA
Boron	0.040		0.020		mg/L	1		200.7 Rev 4.4	Total/NA
Calcium	160		0.50		mg/L	1		200.7 Rev 4.4	Total/NA
Lead	0.012		0.010		mg/L	1		200.7 Rev 4.4	Total/NA
Cadmium	0.59		0.50		ug/L	1		200.8	Total/NA
Cobalt	11.6		0.30		ug/L	1		200.8	Total/NA
Chloride	242		5.0		mg/L	10		300.0	Total/NA
Sulfate	43.7		20.0		mg/L	10		300.0	Total/NA
Total Dissolved Solids	879		10.0		mg/L	1		SM 2540C	Total/NA

Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
pH	7.0	HF	0.1		SU	1		SM 4500 H+ B	Total/NA
Temperature	20.5	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

## Client Sample ID: P-6

## Lab Sample ID: 480-117212-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.11		0.0020		mg/L	1		200.7 Rev 4.4	Total/NA
Boron	0.30		0.020		mg/L	1		200.7 Rev 4.4	Total/NA
Calcium	160		0.50		mg/L	1		200.7 Rev 4.4	Total/NA
Lead	0.011		0.010		mg/L	1		200.7 Rev 4.4	Total/NA
Cobalt	0.36		0.30		ug/L	1		200.8	Total/NA
Chloride	95.1		5.0		mg/L	10		300.0	Total/NA
Sulfate	120		20.0		mg/L	10		300.0	Total/NA
Total Dissolved Solids	760		10.0		mg/L	1		SM 2540C	Total/NA

Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
pH	7.1	HF	0.1		SU	1		SM 4500 H+ B	Total/NA
Temperature	20.4	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

## Client Sample ID: P-7

## Lab Sample ID: 480-117212-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.22		0.0020		mg/L	1		200.7 Rev 4.4	Total/NA
Boron	0.12		0.020		mg/L	1		200.7 Rev 4.4	Total/NA
Calcium	174		0.50		mg/L	1		200.7 Rev 4.4	Total/NA
Cobalt	0.65		0.30		ug/L	1		200.8	Total/NA
Chloride	81.4		5.0		mg/L	10		300.0	Total/NA
Sulfate	49.8		20.0		mg/L	10		300.0	Total/NA
Total Dissolved Solids	780		10.0		mg/L	1		SM 2540C	Total/NA

Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
pH	7.3	HF	0.1		SU	1		SM 4500 H+ B	Total/NA
Temperature	20.4	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

## Client Sample ID: DUPLICATE WELL

## Lab Sample ID: 480-117212-8

This Detection Summary does not include radiochemical test results.

TestAmerica Buffalo

# Detection Summary

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

TestAmerica Job ID: 480-117212-1

## Client Sample ID: DUPLICATE WELL (Continued)

Lab Sample ID: 480-117212-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.18		0.0020		mg/L	1		200.7 Rev 4.4	Total/NA
Boron	0.026		0.020		mg/L	1		200.7 Rev 4.4	Total/NA
Calcium	137		0.50		mg/L	1		200.7 Rev 4.4	Total/NA
Chloride	137		5.0		mg/L	10		300.0	Total/NA
Sulfate	77.1		20.0		mg/L	10		300.0	Total/NA
Total Dissolved Solids	637		10.0		mg/L	1		SM 2540C	Total/NA
Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
pH	7.4	HF	0.1		SU	1		SM 4500 H+ B	Total/NA
Temperature	20.4	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

## Client Sample ID: FIELD BLANK

Lab Sample ID: 480-117212-9

Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
pH	6.4	HF	0.1		SU	1		SM 4500 H+ B	Total/NA
Temperature	20.4	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

## Client Sample ID: EQUIPMENT BLANK

Lab Sample ID: 480-117212-10

Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
pH	6.0	HF	0.1		SU	1		SM 4500 H+ B	Total/NA
Temperature	20.4	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

This Detection Summary does not include radiochemical test results.

TestAmerica Buffalo

# Client Sample Results

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

TestAmerica Job ID: 480-117212-1

**Client Sample ID: P-1**

**Date Collected: 04/27/17 09:50**

**Date Received: 04/29/17 09:00**

**Lab Sample ID: 480-117212-1**

**Matrix: Water**

**Method: 200.7 Rev 4.4 - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	0.12		0.0020		mg/L		05/02/17 07:44	05/02/17 20:59	1
Boron	0.054		0.020		mg/L		05/02/17 07:44	05/02/17 20:59	1
Calcium	128		0.50		mg/L		05/02/17 07:44	05/02/17 20:59	1
Chromium	ND		0.0040		mg/L		05/02/17 07:44	05/02/17 20:59	1
Lead	ND		0.010		mg/L		05/02/17 07:44	05/02/17 20:59	1
Lithium	ND		0.030		mg/L		05/02/17 07:44	05/02/17 20:59	1

**Method: 200.8 - Metals (ICP/MS)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		1.0		ug/L		05/01/17 11:05	05/02/17 01:00	1
Arsenic	ND		1.0		ug/L		05/01/17 11:05	05/02/17 01:00	1
Beryllium	ND		0.70		ug/L		05/01/17 11:05	05/02/17 01:00	1
Cadmium	ND		0.50		ug/L		05/01/17 11:05	05/02/17 01:00	1
Cobalt	0.54		0.30		ug/L		05/01/17 11:05	05/02/17 01:00	1
Molybdenum	ND		1.0		ug/L		05/01/17 11:05	05/02/17 01:00	1
Selenium	ND		1.0		ug/L		05/01/17 11:05	05/02/17 01:00	1
Thallium	ND		0.20		ug/L		05/01/17 11:05	05/02/17 01:00	1

**Method: 245.1 - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020		mg/L		05/01/17 07:40	05/01/17 12:46	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	115		5.0		mg/L			05/12/17 12:57	10
Fluoride	ND		0.50		mg/L			05/12/17 12:57	10
Sulfate	35.8		20.0		mg/L			05/12/17 12:57	10
Total Dissolved Solids	581		10.0		mg/L			05/04/17 13:48	1
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH	7.1	HF	0.1		SU			05/04/17 20:12	1
Temperature	20.4	HF	0.001		Degrees C			05/04/17 20:12	1

# Client Sample Results

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

TestAmerica Job ID: 480-117212-1

**Client Sample ID: P-2**

**Date Collected: 04/27/17 13:30**

**Date Received: 04/29/17 09:00**

**Lab Sample ID: 480-117212-2**

**Matrix: Water**

**Method: 200.7 Rev 4.4 - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	0.057		0.0020		mg/L		05/02/17 07:44	05/02/17 21:03	1
Boron	0.050		0.020		mg/L		05/02/17 07:44	05/02/17 21:03	1
Calcium	71.7		0.50		mg/L		05/02/17 07:44	05/02/17 21:03	1
Chromium	0.0059		0.0040		mg/L		05/02/17 07:44	05/02/17 21:03	1
Lead	ND		0.010		mg/L		05/02/17 07:44	05/02/17 21:03	1
Lithium	ND		0.030		mg/L		05/02/17 07:44	05/02/17 21:03	1

**Method: 200.8 - Metals (ICP/MS)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		1.0		ug/L		05/01/17 11:05	05/02/17 01:05	1
Arsenic	ND		1.0		ug/L		05/01/17 11:05	05/02/17 01:05	1
Beryllium	ND		0.70		ug/L		05/01/17 11:05	05/02/17 01:05	1
Cadmium	ND		0.50		ug/L		05/01/17 11:05	05/02/17 01:05	1
Cobalt	1.8		0.30		ug/L		05/01/17 11:05	05/02/17 01:05	1
Molybdenum	1.0		1.0		ug/L		05/01/17 11:05	05/02/17 01:05	1
Selenium	ND		1.0		ug/L		05/01/17 11:05	05/02/17 01:05	1
Thallium	ND		0.20		ug/L		05/01/17 11:05	05/02/17 01:05	1

**Method: 245.1 - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020		mg/L		05/01/17 07:40	05/01/17 12:57	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	50.1		2.5		mg/L			05/12/17 13:05	5
Fluoride	ND		0.25		mg/L			05/12/17 13:05	5
Sulfate	21.2		10.0		mg/L			05/12/17 13:05	5
Total Dissolved Solids	335		10.0		mg/L			05/04/17 13:48	1
Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	7.2	HF	0.1		SU			05/04/17 20:15	1
Temperature	20.4	HF	0.001		Degrees C			05/04/17 20:15	1

# Client Sample Results

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

TestAmerica Job ID: 480-117212-1

**Client Sample ID: P-3**

**Date Collected: 04/27/17 10:20**

**Date Received: 04/29/17 09:00**

**Lab Sample ID: 480-117212-3**

**Matrix: Water**

### Method: 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	0.19		0.0020		mg/L		05/02/17 07:44	05/02/17 19:34	1
Boron	0.026		0.020		mg/L		05/02/17 07:44	05/02/17 19:34	1
Calcium	139		0.50		mg/L		05/02/17 07:44	05/02/17 19:34	1
Chromium	ND		0.0040		mg/L		05/02/17 07:44	05/02/17 19:34	1
Lead	ND		0.010		mg/L		05/02/17 07:44	05/02/17 19:34	1
Lithium	ND		0.030		mg/L		05/02/17 07:44	05/02/17 19:34	1

### Method: 200.8 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		1.0		ug/L		05/01/17 11:05	05/02/17 01:10	1
Arsenic	ND		1.0		ug/L		05/01/17 11:05	05/02/17 01:10	1
Beryllium	ND		0.70		ug/L		05/01/17 11:05	05/02/17 01:10	1
Cadmium	ND		0.50		ug/L		05/01/17 11:05	05/02/17 01:10	1
Cobalt	ND		0.30		ug/L		05/01/17 11:05	05/02/17 01:10	1
Molybdenum	ND		1.0		ug/L		05/01/17 11:05	05/02/17 01:10	1
Selenium	ND		1.0		ug/L		05/01/17 11:05	05/02/17 01:10	1
Thallium	ND		0.20		ug/L		05/01/17 11:05	05/02/17 01:10	1

### Method: 245.1 - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020		mg/L		05/01/17 07:40	05/01/17 12:58	1

### General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	139		2.5		mg/L			05/12/17 13:13	5
Fluoride	ND		0.25		mg/L			05/12/17 13:13	5
Sulfate	76.0		10.0		mg/L			05/12/17 13:13	5
Total Dissolved Solids	646		10.0		mg/L			05/04/17 13:48	1
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH	7.4	HF	0.1		SU			05/04/17 20:18	1
Temperature	20.4	HF	0.001		Degrees C			05/04/17 20:18	1



# Client Sample Results

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

TestAmerica Job ID: 480-117212-1

**Client Sample ID: P-4R**  
**Date Collected: 04/27/17 11:00**  
**Date Received: 04/29/17 09:00**

**Lab Sample ID: 480-117212-4**  
**Matrix: Water**

## Method: 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	0.10		0.0020		mg/L		05/02/17 07:44	05/02/17 19:51	1
Boron	0.11		0.020		mg/L		05/02/17 07:44	05/02/17 19:51	1
Calcium	75.1		0.50		mg/L		05/02/17 07:44	05/02/17 19:51	1
Chromium	ND		0.0040		mg/L		05/02/17 07:44	05/02/17 19:51	1
Lead	ND		0.010		mg/L		05/02/17 07:44	05/02/17 19:51	1
Lithium	ND		0.030		mg/L		05/02/17 07:44	05/02/17 19:51	1

## Method: 200.8 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		1.0		ug/L		05/01/17 11:05	05/02/17 01:16	1
Arsenic	ND		1.0		ug/L		05/01/17 11:05	05/02/17 01:16	1
Beryllium	ND		0.70		ug/L		05/01/17 11:05	05/02/17 01:16	1
Cadmium	ND		0.50		ug/L		05/01/17 11:05	05/02/17 01:16	1
Cobalt	ND		0.30		ug/L		05/01/17 11:05	05/02/17 01:16	1
Molybdenum	28.9		1.0		ug/L		05/01/17 11:05	05/02/17 01:16	1
Selenium	ND		1.0		ug/L		05/01/17 11:05	05/02/17 01:16	1
Thallium	ND		0.20		ug/L		05/01/17 11:05	05/02/17 01:16	1

## Method: 245.1 - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020		mg/L		05/01/17 07:40	05/01/17 13:00	1

## General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	38.4		2.5		mg/L			05/12/17 13:22	5
Fluoride	ND		0.25		mg/L			05/12/17 13:22	5
Sulfate	69.2		10.0		mg/L			05/12/17 13:22	5
Total Dissolved Solids	358		10.0		mg/L			05/04/17 13:48	1
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH	7.7	HF	0.1		SU			05/04/17 20:24	1
Temperature	20.4	HF	0.001		Degrees C			05/04/17 20:24	1

# Client Sample Results

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

TestAmerica Job ID: 480-117212-1

**Client Sample ID: P-5**

**Date Collected: 04/27/17 11:50**

**Date Received: 04/29/17 09:00**

**Lab Sample ID: 480-117212-5**

**Matrix: Water**

**Method: 200.7 Rev 4.4 - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	0.32		0.0020		mg/L		05/02/17 07:44	05/02/17 19:54	1
Boron	0.040		0.020		mg/L		05/02/17 07:44	05/02/17 19:54	1
Calcium	160		0.50		mg/L		05/02/17 07:44	05/02/17 19:54	1
Chromium	ND		0.0040		mg/L		05/02/17 07:44	05/02/17 19:54	1
Lead	0.012		0.010		mg/L		05/02/17 07:44	05/02/17 19:54	1
Lithium	ND		0.030		mg/L		05/02/17 07:44	05/02/17 19:54	1

**Method: 200.8 - Metals (ICP/MS)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		1.0		ug/L		05/01/17 11:05	05/02/17 01:21	1
Arsenic	ND		1.0		ug/L		05/01/17 11:05	05/02/17 01:21	1
Beryllium	ND		0.70		ug/L		05/01/17 11:05	05/02/17 01:21	1
Cadmium	0.59		0.50		ug/L		05/01/17 11:05	05/02/17 01:21	1
Cobalt	11.6		0.30		ug/L		05/01/17 11:05	05/02/17 01:21	1
Molybdenum	ND		1.0		ug/L		05/01/17 11:05	05/02/17 01:21	1
Selenium	ND		1.0		ug/L		05/01/17 11:05	05/02/17 01:21	1
Thallium	ND		0.20		ug/L		05/01/17 11:05	05/02/17 01:21	1

**Method: 245.1 - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020		mg/L		05/01/17 07:40	05/01/17 13:02	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	242		5.0		mg/L			05/12/17 13:30	10
Fluoride	ND		0.50		mg/L			05/12/17 13:30	10
Sulfate	43.7		20.0		mg/L			05/12/17 13:30	10
Total Dissolved Solids	879		10.0		mg/L			05/04/17 23:31	1
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH	7.0	HF	0.1		SU			05/04/17 20:30	1
Temperature	20.5	HF	0.001		Degrees C			05/04/17 20:30	1

# Client Sample Results

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

TestAmerica Job ID: 480-117212-1

**Client Sample ID: P-6**

**Date Collected: 04/27/17 12:35**

**Date Received: 04/29/17 09:00**

**Lab Sample ID: 480-117212-6**

**Matrix: Water**

## Method: 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	0.11		0.0020		mg/L		05/02/17 07:44	05/02/17 19:58	1
Boron	0.30		0.020		mg/L		05/02/17 07:44	05/02/17 19:58	1
Calcium	160		0.50		mg/L		05/02/17 07:44	05/02/17 19:58	1
Chromium	ND		0.0040		mg/L		05/02/17 07:44	05/02/17 19:58	1
Lead	0.011		0.010		mg/L		05/02/17 07:44	05/02/17 19:58	1
Lithium	ND		0.030		mg/L		05/02/17 07:44	05/02/17 19:58	1

## Method: 200.8 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		1.0		ug/L		05/01/17 11:05	05/02/17 01:27	1
Arsenic	ND		1.0		ug/L		05/01/17 11:05	05/02/17 01:27	1
Beryllium	ND		0.70		ug/L		05/01/17 11:05	05/02/17 01:27	1
Cadmium	ND		0.50		ug/L		05/01/17 11:05	05/02/17 01:27	1
Cobalt	0.36		0.30		ug/L		05/01/17 11:05	05/02/17 01:27	1
Molybdenum	ND		1.0		ug/L		05/01/17 11:05	05/02/17 01:27	1
Selenium	ND		1.0		ug/L		05/01/17 11:05	05/02/17 01:27	1
Thallium	ND		0.20		ug/L		05/01/17 11:05	05/02/17 01:27	1

## Method: 245.1 - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020		mg/L		05/01/17 07:40	05/01/17 13:04	1

## General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	95.1		5.0		mg/L			05/12/17 13:38	10
Fluoride	ND		0.50		mg/L			05/12/17 13:38	10
Sulfate	120		20.0		mg/L			05/12/17 13:38	10
Total Dissolved Solids	760		10.0		mg/L			05/04/17 23:31	1
Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	7.1	HF	0.1		SU			05/04/17 20:33	1
Temperature	20.4	HF	0.001		Degrees C			05/04/17 20:33	1

# Client Sample Results

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

TestAmerica Job ID: 480-117212-1

**Client Sample ID: P-7**

**Date Collected: 04/27/17 13:05**

**Date Received: 04/29/17 09:00**

**Lab Sample ID: 480-117212-7**

**Matrix: Water**

## Method: 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	0.22		0.0020		mg/L		05/02/17 07:44	05/02/17 20:12	1
Boron	0.12		0.020		mg/L		05/02/17 07:44	05/02/17 20:12	1
Calcium	174		0.50		mg/L		05/02/17 07:44	05/02/17 20:12	1
Chromium	ND		0.0040		mg/L		05/02/17 07:44	05/02/17 20:12	1
Lead	ND		0.010		mg/L		05/02/17 07:44	05/02/17 20:12	1
Lithium	ND		0.030		mg/L		05/02/17 07:44	05/02/17 20:12	1

## Method: 200.8 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		1.0		ug/L		05/01/17 11:05	05/02/17 01:32	1
Arsenic	ND		1.0		ug/L		05/01/17 11:05	05/02/17 01:32	1
Beryllium	ND		0.70		ug/L		05/01/17 11:05	05/02/17 01:32	1
Cadmium	ND		0.50		ug/L		05/01/17 11:05	05/02/17 01:32	1
Cobalt	0.65		0.30		ug/L		05/01/17 11:05	05/02/17 01:32	1
Molybdenum	ND		1.0		ug/L		05/01/17 11:05	05/02/17 01:32	1
Selenium	ND		1.0		ug/L		05/01/17 11:05	05/02/17 01:32	1
Thallium	ND		0.20		ug/L		05/01/17 11:05	05/02/17 01:32	1

## Method: 245.1 - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020		mg/L		05/01/17 07:40	05/01/17 13:06	1

## General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	81.4		5.0		mg/L			05/12/17 13:46	10
Fluoride	ND		0.50		mg/L			05/12/17 13:46	10
Sulfate	49.8		20.0		mg/L			05/12/17 13:46	10
Total Dissolved Solids	780		10.0		mg/L			05/04/17 23:31	1
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH	7.3	HF	0.1		SU			05/04/17 20:36	1
Temperature	20.4	HF	0.001		Degrees C			05/04/17 20:36	1

# Client Sample Results

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

TestAmerica Job ID: 480-117212-1

**Client Sample ID: DUPLICATE WELL**

**Lab Sample ID: 480-117212-8**

Date Collected: 04/27/17 00:00

Matrix: Water

Date Received: 04/29/17 09:00

## Method: 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	0.18		0.0020		mg/L		05/02/17 07:44	05/02/17 20:15	1
Boron	0.026		0.020		mg/L		05/02/17 07:44	05/02/17 20:15	1
Calcium	137		0.50		mg/L		05/02/17 07:44	05/02/17 20:15	1
Chromium	ND		0.0040		mg/L		05/02/17 07:44	05/02/17 20:15	1
Lead	ND		0.010		mg/L		05/02/17 07:44	05/02/17 20:15	1
Lithium	ND		0.030		mg/L		05/02/17 07:44	05/02/17 20:15	1

## Method: 200.8 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		1.0		ug/L		05/01/17 11:05	05/02/17 01:38	1
Arsenic	ND		1.0		ug/L		05/01/17 11:05	05/02/17 01:38	1
Beryllium	ND		0.70		ug/L		05/01/17 11:05	05/02/17 01:38	1
Cadmium	ND		0.50		ug/L		05/01/17 11:05	05/02/17 01:38	1
Cobalt	ND		0.30		ug/L		05/01/17 11:05	05/02/17 01:38	1
Molybdenum	ND		1.0		ug/L		05/01/17 11:05	05/02/17 01:38	1
Selenium	ND		1.0		ug/L		05/01/17 11:05	05/02/17 01:38	1
Thallium	ND		0.20		ug/L		05/01/17 11:05	05/02/17 01:38	1

## Method: 245.1 - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020		mg/L		05/01/17 07:40	05/01/17 13:08	1

## General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	137		5.0		mg/L			05/12/17 14:35	10
Fluoride	ND		0.50		mg/L			05/12/17 14:35	10
Sulfate	77.1		20.0		mg/L			05/12/17 14:35	10
Total Dissolved Solids	637		10.0		mg/L			05/04/17 23:31	1
Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	7.4	HF	0.1		SU			05/04/17 20:39	1
Temperature	20.4	HF	0.001		Degrees C			05/04/17 20:39	1

# Client Sample Results

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

TestAmerica Job ID: 480-117212-1

**Client Sample ID: FIELD BLANK**

**Lab Sample ID: 480-117212-9**

**Date Collected: 04/27/17 13:45**

**Matrix: Water**

**Date Received: 04/29/17 09:00**

**Method: 200.7 Rev 4.4 - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	ND		0.0020		mg/L		05/02/17 07:44	05/02/17 20:18	1
Boron	ND		0.020		mg/L		05/02/17 07:44	05/02/17 20:18	1
Calcium	ND		0.50		mg/L		05/02/17 07:44	05/02/17 20:18	1
Chromium	ND		0.0040		mg/L		05/02/17 07:44	05/02/17 20:18	1
Lead	ND		0.010		mg/L		05/02/17 07:44	05/02/17 20:18	1
Lithium	ND		0.030		mg/L		05/02/17 07:44	05/02/17 20:18	1

**Method: 200.8 - Metals (ICP/MS)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		1.0		ug/L		05/01/17 11:05	05/02/17 01:43	1
Arsenic	ND		1.0		ug/L		05/01/17 11:05	05/02/17 01:43	1
Beryllium	ND		0.70		ug/L		05/01/17 11:05	05/02/17 01:43	1
Cadmium	ND		0.50		ug/L		05/01/17 11:05	05/02/17 01:43	1
Cobalt	ND		0.30		ug/L		05/01/17 11:05	05/02/17 01:43	1
Molybdenum	ND		1.0		ug/L		05/01/17 11:05	05/02/17 01:43	1
Selenium	ND		1.0		ug/L		05/01/17 11:05	05/02/17 01:43	1
Thallium	ND		0.20		ug/L		05/01/17 11:05	05/02/17 01:43	1

**Method: 245.1 - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020		mg/L		05/01/17 07:40	05/01/17 13:10	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		0.50		mg/L			05/12/17 14:43	1
Fluoride	ND		0.050		mg/L			05/12/17 14:43	1
Sulfate	ND		2.0		mg/L			05/12/17 14:43	1
Total Dissolved Solids	ND		10.0		mg/L			05/04/17 23:31	1
Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	6.4	HF	0.1		SU			05/04/17 20:42	1
Temperature	20.4	HF	0.001		Degrees C			05/04/17 20:42	1

# Client Sample Results

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

TestAmerica Job ID: 480-117212-1

**Client Sample ID: EQUIPMENT BLANK**

**Lab Sample ID: 480-117212-10**

**Date Collected: 04/27/17 13:50**

**Matrix: Water**

**Date Received: 04/29/17 09:00**

**Method: 200.7 Rev 4.4 - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	ND		0.0020		mg/L		05/02/17 07:44	05/02/17 20:22	1
Boron	ND		0.020		mg/L		05/02/17 07:44	05/02/17 20:22	1
Calcium	ND		0.50		mg/L		05/02/17 07:44	05/02/17 20:22	1
Chromium	ND		0.0040		mg/L		05/02/17 07:44	05/02/17 20:22	1
Lead	ND		0.010		mg/L		05/02/17 07:44	05/02/17 20:22	1
Lithium	ND		0.030		mg/L		05/02/17 07:44	05/02/17 20:22	1

**Method: 200.8 - Metals (ICP/MS)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		1.0		ug/L		05/01/17 11:05	05/02/17 01:49	1
Arsenic	ND		1.0		ug/L		05/01/17 11:05	05/02/17 01:49	1
Beryllium	ND		0.70		ug/L		05/01/17 11:05	05/02/17 01:49	1
Cadmium	ND		0.50		ug/L		05/01/17 11:05	05/02/17 01:49	1
Cobalt	ND		0.30		ug/L		05/01/17 11:05	05/02/17 01:49	1
Molybdenum	ND		1.0		ug/L		05/01/17 11:05	05/02/17 01:49	1
Selenium	ND		1.0		ug/L		05/01/17 11:05	05/02/17 01:49	1
Thallium	ND		0.20		ug/L		05/01/17 11:05	05/02/17 01:49	1

**Method: 245.1 - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020		mg/L		05/01/17 07:40	05/01/17 13:12	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		0.50		mg/L			05/12/17 14:51	1
Fluoride	ND		0.050		mg/L			05/12/17 14:51	1
Sulfate	ND		2.0		mg/L			05/12/17 14:51	1
Total Dissolved Solids	ND		10.0		mg/L			05/04/17 23:31	1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH	6.0	HF	0.1		SU			05/04/17 20:44	1
Temperature	20.4	HF	0.001		Degrees C			05/04/17 20:44	1

# QC Sample Results

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

TestAmerica Job ID: 480-117212-1

## Method: 200.7 Rev 4.4 - Metals (ICP)

Lab Sample ID: MB 480-355047/1-A  
Matrix: Water  
Analysis Batch: 355319

Client Sample ID: Method Blank  
Prep Type: Total/NA  
Prep Batch: 355047

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	ND		0.0020		mg/L		05/02/17 07:44	05/02/17 19:17	1
Boron	ND		0.020		mg/L		05/02/17 07:44	05/02/17 19:17	1
Calcium	ND		0.50		mg/L		05/02/17 07:44	05/02/17 19:17	1
Chromium	ND		0.0040		mg/L		05/02/17 07:44	05/02/17 19:17	1
Lead	ND		0.010		mg/L		05/02/17 07:44	05/02/17 19:17	1
Lithium	ND		0.030		mg/L		05/02/17 07:44	05/02/17 19:17	1

Lab Sample ID: LCS 480-355047/2-A  
Matrix: Water  
Analysis Batch: 355319

Client Sample ID: Lab Control Sample  
Prep Type: Total/NA  
Prep Batch: 355047

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Barium	0.400	0.400		mg/L		100	85 - 115
Boron	0.400	0.400		mg/L		100	85 - 115
Calcium	10.0	9.88		mg/L		99	85 - 115
Chromium	0.200	0.210		mg/L		105	85 - 115
Lead	0.200	0.210		mg/L		105	85 - 115

Lab Sample ID: 480-117212-3 MS  
Matrix: Water  
Analysis Batch: 355319

Client Sample ID: P-3  
Prep Type: Total/NA  
Prep Batch: 355047

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Barium	0.19		0.200	0.376		mg/L		96	70 - 130
Boron	0.026		0.200	0.228		mg/L		101	70 - 130
Calcium	139		10.0	145.9	4	mg/L		72	70 - 130
Chromium	ND		0.200	0.211		mg/L		105	70 - 130
Lead	ND		0.200	0.220		mg/L		106	70 - 130

Lab Sample ID: 480-117212-3 MSD  
Matrix: Water  
Analysis Batch: 355319

Client Sample ID: P-3  
Prep Type: Total/NA  
Prep Batch: 355047

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Barium	0.19		0.200	0.382		mg/L		99	70 - 130	2	20
Boron	0.026		0.200	0.230		mg/L		102	70 - 130	1	20
Calcium	139		10.0	147.7	4	mg/L		90	70 - 130	1	20
Chromium	ND		0.200	0.213		mg/L		107	70 - 130	1	20
Lead	ND		0.200	0.222		mg/L		107	70 - 130	1	20

## Method: 200.8 - Metals (ICP/MS)

Lab Sample ID: MB 480-354937/1-A  
Matrix: Water  
Analysis Batch: 355132

Client Sample ID: Method Blank  
Prep Type: Total/NA  
Prep Batch: 354937

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		1.0		ug/L		05/01/17 11:05	05/01/17 23:47	1
Arsenic	ND		1.0		ug/L		05/01/17 11:05	05/01/17 23:47	1

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# QC Sample Results

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

TestAmerica Job ID: 480-117212-1

## Method: 200.8 - Metals (ICP/MS) (Continued)

**Lab Sample ID: MB 480-354937/1-A**  
**Matrix: Water**  
**Analysis Batch: 355132**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 354937**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Beryllium	ND		0.70		ug/L		05/01/17 11:05	05/01/17 23:47	1
Cadmium	ND		0.50		ug/L		05/01/17 11:05	05/01/17 23:47	1
Cobalt	ND		0.30		ug/L		05/01/17 11:05	05/01/17 23:47	1
Molybdenum	ND		1.0		ug/L		05/01/17 11:05	05/01/17 23:47	1
Selenium	ND		1.0		ug/L		05/01/17 11:05	05/01/17 23:47	1
Thallium	ND		0.20		ug/L		05/01/17 11:05	05/01/17 23:47	1

**Lab Sample ID: LCS 480-354937/2-A**  
**Matrix: Water**  
**Analysis Batch: 355132**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 354937**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Antimony	20.0	20.56		ug/L		103	85 - 115
Arsenic	20.0	20.51		ug/L		103	85 - 115
Beryllium	20.0	20.91		ug/L		105	85 - 115
Cadmium	20.0	19.80		ug/L		99	85 - 115
Cobalt	20.0	19.62		ug/L		98	85 - 115
Molybdenum	20.0	19.60		ug/L		98	85 - 115
Selenium	20.0	20.50		ug/L		103	85 - 115
Thallium	20.0	19.70		ug/L		98	85 - 115

## Method: 245.1 - Mercury (CVAA)

**Lab Sample ID: MB 480-354877/1-A**  
**Matrix: Water**  
**Analysis Batch: 354978**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 354877**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020		mg/L		05/01/17 07:40	05/01/17 12:42	1

**Lab Sample ID: LCS 480-354877/2-A**  
**Matrix: Water**  
**Analysis Batch: 354978**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 354877**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	0.00667	0.00672		mg/L		101	85 - 115

**Lab Sample ID: 480-117212-1 MS**  
**Matrix: Water**  
**Analysis Batch: 354978**

**Client Sample ID: P-1**  
**Prep Type: Total/NA**  
**Prep Batch: 354877**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	ND		0.00667	0.00692		mg/L		104	70 - 130

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# QC Sample Results

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

TestAmerica Job ID: 480-117212-1

## Method: 245.1 - Mercury (CVAA) (Continued)

**Lab Sample ID: 480-117212-1 MSD**  
**Matrix: Water**  
**Analysis Batch: 354978**

**Client Sample ID: P-1**  
**Prep Type: Total/NA**  
**Prep Batch: 354877**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Mercury	ND		0.00667	0.00692		mg/L		104	70 - 130	0	20

**Lab Sample ID: 480-117212-10 MS**  
**Matrix: Water**  
**Analysis Batch: 354978**

**Client Sample ID: EQUIPMENT BLANK**  
**Prep Type: Total/NA**  
**Prep Batch: 354877**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Mercury	ND		0.00667	0.00658		mg/L		99	70 - 130

**Lab Sample ID: 480-117212-10 MSD**  
**Matrix: Water**  
**Analysis Batch: 354978**

**Client Sample ID: EQUIPMENT BLANK**  
**Prep Type: Total/NA**  
**Prep Batch: 354877**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Mercury	ND		0.00667	0.00663		mg/L		99	70 - 130	1	20

## Method: 300.0 - Anions, Ion Chromatography

**Lab Sample ID: MB 480-357048/28**  
**Matrix: Water**  
**Analysis Batch: 357048**

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		0.50		mg/L			05/12/17 14:27	1
Fluoride	ND		0.050		mg/L			05/12/17 14:27	1
Sulfate	ND		2.0		mg/L			05/12/17 14:27	1

**Lab Sample ID: MB 480-357048/4**  
**Matrix: Water**  
**Analysis Batch: 357048**

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		0.50		mg/L			05/12/17 11:11	1
Fluoride	ND		0.050		mg/L			05/12/17 11:11	1
Sulfate	ND		2.0		mg/L			05/12/17 11:11	1

**Lab Sample ID: LCS 480-357048/27**  
**Matrix: Water**  
**Analysis Batch: 357048**

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Chloride	50.0	52.28		mg/L		105	90 - 110
Fluoride	5.00	5.09		mg/L		102	90 - 110
Sulfate	50.0	49.64		mg/L		99	90 - 110

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# QC Sample Results

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

TestAmerica Job ID: 480-117212-1

## Method: 300.0 - Anions, Ion Chromatography (Continued)

**Lab Sample ID: LCS 480-357048/3**  
**Matrix: Water**  
**Analysis Batch: 357048**

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	50.0	51.86		mg/L		104	90 - 110
Fluoride	5.00	5.14		mg/L		103	90 - 110
Sulfate	50.0	49.48		mg/L		99	90 - 110

**Lab Sample ID: 480-117212-7 MS**  
**Matrix: Water**  
**Analysis Batch: 357048**

**Client Sample ID: P-7**  
**Prep Type: Total/NA**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	81.4		500	608.8		mg/L		105	81 - 120
Fluoride	ND		50.0	52.43		mg/L		105	82 - 120
Sulfate	49.8		500	553.4		mg/L		101	80 - 120

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

**Lab Sample ID: MB 480-355700/1**  
**Matrix: Water**  
**Analysis Batch: 355700**

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	ND		10.0		mg/L			05/04/17 13:48	1

**Lab Sample ID: LCS 480-355700/2**  
**Matrix: Water**  
**Analysis Batch: 355700**

**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	531	540.0		mg/L		102	85 - 115

**Lab Sample ID: MB 480-355770/1**  
**Matrix: Water**  
**Analysis Batch: 355770**

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	ND		10.0		mg/L			05/04/17 23:31	1

**Lab Sample ID: LCS 480-355770/2**  
**Matrix: Water**  
**Analysis Batch: 355770**

**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	531	532.0		mg/L		100	85 - 115

**Lab Sample ID: 480-117212-5 DU**  
**Matrix: Water**  
**Analysis Batch: 355770**

**Client Sample ID: P-5**  
**Prep Type: Total/NA**

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Dissolved Solids	879		883.0		mg/L		0.5	10

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# QC Sample Results

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

TestAmerica Job ID: 480-117212-1

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

Lab Sample ID: 480-117212-7 DU  
 Matrix: Water  
 Analysis Batch: 355770

Client Sample ID: P-7  
 Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Dissolved Solids	780		771.0		mg/L		1	10

## Method: SM 4500 H+ B - pH

Lab Sample ID: LCS 480-355767/1  
 Matrix: Water  
 Analysis Batch: 355767

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

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

Lab Sample ID: LCS 480-355767/23  
 Matrix: Water  
 Analysis Batch: 355767

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

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

Lab Sample ID: 480-117212-4 DU  
 Matrix: Water  
 Analysis Batch: 355767

Client Sample ID: P-4R  
 Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
pH	7.7	HF	7.7		SU		0.3	5
Temperature	20.4	HF	20.5		Degrees C		0.5	10

# QC Association Summary

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

TestAmerica Job ID: 480-117212-1

## Metals

### Prep Batch: 354877

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-117212-1	P-1	Total/NA	Water	245.1	
480-117212-2	P-2	Total/NA	Water	245.1	
480-117212-3	P-3	Total/NA	Water	245.1	
480-117212-4	P-4R	Total/NA	Water	245.1	
480-117212-5	P-5	Total/NA	Water	245.1	
480-117212-6	P-6	Total/NA	Water	245.1	
480-117212-7	P-7	Total/NA	Water	245.1	
480-117212-8	DUPLICATE WELL	Total/NA	Water	245.1	
480-117212-9	FIELD BLANK	Total/NA	Water	245.1	
480-117212-10	EQUIPMENT BLANK	Total/NA	Water	245.1	
MB 480-354877/1-A	Method Blank	Total/NA	Water	245.1	
LCS 480-354877/2-A	Lab Control Sample	Total/NA	Water	245.1	
480-117212-1 MS	P-1	Total/NA	Water	245.1	
480-117212-1 MSD	P-1	Total/NA	Water	245.1	
480-117212-10 MS	EQUIPMENT BLANK	Total/NA	Water	245.1	
480-117212-10 MSD	EQUIPMENT BLANK	Total/NA	Water	245.1	

### Prep Batch: 354937

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-117212-1	P-1	Total/NA	Water	200.8	
480-117212-2	P-2	Total/NA	Water	200.8	
480-117212-3	P-3	Total/NA	Water	200.8	
480-117212-4	P-4R	Total/NA	Water	200.8	
480-117212-5	P-5	Total/NA	Water	200.8	
480-117212-6	P-6	Total/NA	Water	200.8	
480-117212-7	P-7	Total/NA	Water	200.8	
480-117212-8	DUPLICATE WELL	Total/NA	Water	200.8	
480-117212-9	FIELD BLANK	Total/NA	Water	200.8	
480-117212-10	EQUIPMENT BLANK	Total/NA	Water	200.8	
MB 480-354937/1-A	Method Blank	Total/NA	Water	200.8	
LCS 480-354937/2-A	Lab Control Sample	Total/NA	Water	200.8	

### Analysis Batch: 354978

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-117212-1	P-1	Total/NA	Water	245.1	354877
480-117212-2	P-2	Total/NA	Water	245.1	354877
480-117212-3	P-3	Total/NA	Water	245.1	354877
480-117212-4	P-4R	Total/NA	Water	245.1	354877
480-117212-5	P-5	Total/NA	Water	245.1	354877
480-117212-6	P-6	Total/NA	Water	245.1	354877
480-117212-7	P-7	Total/NA	Water	245.1	354877
480-117212-8	DUPLICATE WELL	Total/NA	Water	245.1	354877
480-117212-9	FIELD BLANK	Total/NA	Water	245.1	354877
480-117212-10	EQUIPMENT BLANK	Total/NA	Water	245.1	354877
MB 480-354877/1-A	Method Blank	Total/NA	Water	245.1	354877
LCS 480-354877/2-A	Lab Control Sample	Total/NA	Water	245.1	354877
480-117212-1 MS	P-1	Total/NA	Water	245.1	354877
480-117212-1 MSD	P-1	Total/NA	Water	245.1	354877
480-117212-10 MS	EQUIPMENT BLANK	Total/NA	Water	245.1	354877
480-117212-10 MSD	EQUIPMENT BLANK	Total/NA	Water	245.1	354877

TestAmerica Buffalo

# QC Association Summary

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

TestAmerica Job ID: 480-117212-1

## Metals (Continued)

### Prep Batch: 355047

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-117212-1	P-1	Total/NA	Water	200.7	
480-117212-2	P-2	Total/NA	Water	200.7	
480-117212-3	P-3	Total/NA	Water	200.7	
480-117212-4	P-4R	Total/NA	Water	200.7	
480-117212-5	P-5	Total/NA	Water	200.7	
480-117212-6	P-6	Total/NA	Water	200.7	
480-117212-7	P-7	Total/NA	Water	200.7	
480-117212-8	DUPLICATE WELL	Total/NA	Water	200.7	
480-117212-9	FIELD BLANK	Total/NA	Water	200.7	
480-117212-10	EQUIPMENT BLANK	Total/NA	Water	200.7	
MB 480-355047/1-A	Method Blank	Total/NA	Water	200.7	
LCS 480-355047/2-A	Lab Control Sample	Total/NA	Water	200.7	
480-117212-3 MS	P-3	Total/NA	Water	200.7	
480-117212-3 MSD	P-3	Total/NA	Water	200.7	

### Analysis Batch: 355132

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-117212-1	P-1	Total/NA	Water	200.8	354937
480-117212-2	P-2	Total/NA	Water	200.8	354937
480-117212-3	P-3	Total/NA	Water	200.8	354937
480-117212-4	P-4R	Total/NA	Water	200.8	354937
480-117212-5	P-5	Total/NA	Water	200.8	354937
480-117212-6	P-6	Total/NA	Water	200.8	354937
480-117212-7	P-7	Total/NA	Water	200.8	354937
480-117212-8	DUPLICATE WELL	Total/NA	Water	200.8	354937
480-117212-9	FIELD BLANK	Total/NA	Water	200.8	354937
480-117212-10	EQUIPMENT BLANK	Total/NA	Water	200.8	354937
MB 480-354937/1-A	Method Blank	Total/NA	Water	200.8	354937
LCS 480-354937/2-A	Lab Control Sample	Total/NA	Water	200.8	354937

### Analysis Batch: 355319

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-117212-1	P-1	Total/NA	Water	200.7 Rev 4.4	355047
480-117212-2	P-2	Total/NA	Water	200.7 Rev 4.4	355047
480-117212-3	P-3	Total/NA	Water	200.7 Rev 4.4	355047
480-117212-4	P-4R	Total/NA	Water	200.7 Rev 4.4	355047
480-117212-5	P-5	Total/NA	Water	200.7 Rev 4.4	355047
480-117212-6	P-6	Total/NA	Water	200.7 Rev 4.4	355047
480-117212-7	P-7	Total/NA	Water	200.7 Rev 4.4	355047
480-117212-8	DUPLICATE WELL	Total/NA	Water	200.7 Rev 4.4	355047
480-117212-9	FIELD BLANK	Total/NA	Water	200.7 Rev 4.4	355047
480-117212-10	EQUIPMENT BLANK	Total/NA	Water	200.7 Rev 4.4	355047
MB 480-355047/1-A	Method Blank	Total/NA	Water	200.7 Rev 4.4	355047
LCS 480-355047/2-A	Lab Control Sample	Total/NA	Water	200.7 Rev 4.4	355047
480-117212-3 MS	P-3	Total/NA	Water	200.7 Rev 4.4	355047
480-117212-3 MSD	P-3	Total/NA	Water	200.7 Rev 4.4	355047

TestAmerica Buffalo

# QC Association Summary

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

TestAmerica Job ID: 480-117212-1

## General Chemistry

### Analysis Batch: 355700

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-117212-1	P-1	Total/NA	Water	SM 2540C	
480-117212-2	P-2	Total/NA	Water	SM 2540C	
480-117212-3	P-3	Total/NA	Water	SM 2540C	
480-117212-4	P-4R	Total/NA	Water	SM 2540C	
MB 480-355700/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 480-355700/2	Lab Control Sample	Total/NA	Water	SM 2540C	

### Analysis Batch: 355767

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-117212-1	P-1	Total/NA	Water	SM 4500 H+ B	
480-117212-2	P-2	Total/NA	Water	SM 4500 H+ B	
480-117212-3	P-3	Total/NA	Water	SM 4500 H+ B	
480-117212-4	P-4R	Total/NA	Water	SM 4500 H+ B	
480-117212-5	P-5	Total/NA	Water	SM 4500 H+ B	
480-117212-6	P-6	Total/NA	Water	SM 4500 H+ B	
480-117212-7	P-7	Total/NA	Water	SM 4500 H+ B	
480-117212-8	DUPLICATE WELL	Total/NA	Water	SM 4500 H+ B	
480-117212-9	FIELD BLANK	Total/NA	Water	SM 4500 H+ B	
480-117212-10	EQUIPMENT BLANK	Total/NA	Water	SM 4500 H+ B	
LCS 480-355767/1	Lab Control Sample	Total/NA	Water	SM 4500 H+ B	
LCS 480-355767/23	Lab Control Sample	Total/NA	Water	SM 4500 H+ B	
480-117212-4 DU	P-4R	Total/NA	Water	SM 4500 H+ B	

### Analysis Batch: 355770

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-117212-5	P-5	Total/NA	Water	SM 2540C	
480-117212-6	P-6	Total/NA	Water	SM 2540C	
480-117212-7	P-7	Total/NA	Water	SM 2540C	
480-117212-8	DUPLICATE WELL	Total/NA	Water	SM 2540C	
480-117212-9	FIELD BLANK	Total/NA	Water	SM 2540C	
480-117212-10	EQUIPMENT BLANK	Total/NA	Water	SM 2540C	
MB 480-355770/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 480-355770/2	Lab Control Sample	Total/NA	Water	SM 2540C	
480-117212-5 DU	P-5	Total/NA	Water	SM 2540C	
480-117212-7 DU	P-7	Total/NA	Water	SM 2540C	

### Analysis Batch: 357048

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-117212-1	P-1	Total/NA	Water	300.0	
480-117212-2	P-2	Total/NA	Water	300.0	
480-117212-3	P-3	Total/NA	Water	300.0	
480-117212-4	P-4R	Total/NA	Water	300.0	
480-117212-5	P-5	Total/NA	Water	300.0	
480-117212-6	P-6	Total/NA	Water	300.0	
480-117212-7	P-7	Total/NA	Water	300.0	
480-117212-8	DUPLICATE WELL	Total/NA	Water	300.0	
480-117212-9	FIELD BLANK	Total/NA	Water	300.0	
480-117212-10	EQUIPMENT BLANK	Total/NA	Water	300.0	
MB 480-357048/28	Method Blank	Total/NA	Water	300.0	
MB 480-357048/4	Method Blank	Total/NA	Water	300.0	
LCS 480-357048/27	Lab Control Sample	Total/NA	Water	300.0	

TestAmerica Buffalo

# QC Association Summary

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

TestAmerica Job ID: 480-117212-1

## General Chemistry (Continued)

### Analysis Batch: 357048 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 480-357048/3	Lab Control Sample	Total/NA	Water	300.0	
480-117212-7 MS	P-7	Total/NA	Water	300.0	

- 1
- 2
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# Lab Chronicle

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

TestAmerica Job ID: 480-117212-1

## Client Sample ID: P-1

Date Collected: 04/27/17 09:50

Date Received: 04/29/17 09:00

## Lab Sample ID: 480-117212-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	200.7			355047	05/02/17 07:44	MVZ	TAL BUF
Total/NA	Analysis	200.7 Rev 4.4		1	355319	05/02/17 20:59	LMH	TAL BUF
Total/NA	Prep	200.8			354937	05/01/17 11:05	MVZ	TAL BUF
Total/NA	Analysis	200.8		1	355132	05/02/17 01:00	TRB	TAL BUF
Total/NA	Prep	245.1			354877	05/01/17 07:40	JRK	TAL BUF
Total/NA	Analysis	245.1		1	354978	05/01/17 12:46	JRK	TAL BUF
Total/NA	Analysis	300.0		10	357048	05/12/17 12:57	DMR	TAL BUF
Total/NA	Analysis	SM 2540C		1	355700	05/04/17 13:48	EKB	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	355767	05/04/17 20:12	ALZ	TAL BUF

## Client Sample ID: P-2

Date Collected: 04/27/17 13:30

Date Received: 04/29/17 09:00

## Lab Sample ID: 480-117212-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	200.7			355047	05/02/17 07:44	MVZ	TAL BUF
Total/NA	Analysis	200.7 Rev 4.4		1	355319	05/02/17 21:03	LMH	TAL BUF
Total/NA	Prep	200.8			354937	05/01/17 11:05	MVZ	TAL BUF
Total/NA	Analysis	200.8		1	355132	05/02/17 01:05	TRB	TAL BUF
Total/NA	Prep	245.1			354877	05/01/17 07:40	JRK	TAL BUF
Total/NA	Analysis	245.1		1	354978	05/01/17 12:57	JRK	TAL BUF
Total/NA	Analysis	300.0		5	357048	05/12/17 13:05	DMR	TAL BUF
Total/NA	Analysis	SM 2540C		1	355700	05/04/17 13:48	EKB	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	355767	05/04/17 20:15	ALZ	TAL BUF

## Client Sample ID: P-3

Date Collected: 04/27/17 10:20

Date Received: 04/29/17 09:00

## Lab Sample ID: 480-117212-3

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	200.7			355047	05/02/17 07:44	MVZ	TAL BUF
Total/NA	Analysis	200.7 Rev 4.4		1	355319	05/02/17 19:34	LMH	TAL BUF
Total/NA	Prep	200.8			354937	05/01/17 11:05	MVZ	TAL BUF
Total/NA	Analysis	200.8		1	355132	05/02/17 01:10	TRB	TAL BUF
Total/NA	Prep	245.1			354877	05/01/17 07:40	JRK	TAL BUF
Total/NA	Analysis	245.1		1	354978	05/01/17 12:58	JRK	TAL BUF
Total/NA	Analysis	300.0		5	357048	05/12/17 13:13	DMR	TAL BUF
Total/NA	Analysis	SM 2540C		1	355700	05/04/17 13:48	EKB	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	355767	05/04/17 20:18	ALZ	TAL BUF

# Lab Chronicle

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

TestAmerica Job ID: 480-117212-1

**Client Sample ID: P-4R**

**Lab Sample ID: 480-117212-4**

**Date Collected: 04/27/17 11:00**

**Matrix: Water**

**Date Received: 04/29/17 09:00**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	200.7			355047	05/02/17 07:44	MVZ	TAL BUF
Total/NA	Analysis	200.7 Rev 4.4		1	355319	05/02/17 19:51	LMH	TAL BUF
Total/NA	Prep	200.8			354937	05/01/17 11:05	MVZ	TAL BUF
Total/NA	Analysis	200.8		1	355132	05/02/17 01:16	TRB	TAL BUF
Total/NA	Prep	245.1			354877	05/01/17 07:40	JRK	TAL BUF
Total/NA	Analysis	245.1		1	354978	05/01/17 13:00	JRK	TAL BUF
Total/NA	Analysis	300.0		5	357048	05/12/17 13:22	DMR	TAL BUF
Total/NA	Analysis	SM 2540C		1	355700	05/04/17 13:48	EKB	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	355767	05/04/17 20:24	ALZ	TAL BUF

**Client Sample ID: P-5**

**Lab Sample ID: 480-117212-5**

**Date Collected: 04/27/17 11:50**

**Matrix: Water**

**Date Received: 04/29/17 09:00**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	200.7			355047	05/02/17 07:44	MVZ	TAL BUF
Total/NA	Analysis	200.7 Rev 4.4		1	355319	05/02/17 19:54	LMH	TAL BUF
Total/NA	Prep	200.8			354937	05/01/17 11:05	MVZ	TAL BUF
Total/NA	Analysis	200.8		1	355132	05/02/17 01:21	TRB	TAL BUF
Total/NA	Prep	245.1			354877	05/01/17 07:40	JRK	TAL BUF
Total/NA	Analysis	245.1		1	354978	05/01/17 13:02	JRK	TAL BUF
Total/NA	Analysis	300.0		10	357048	05/12/17 13:30	DMR	TAL BUF
Total/NA	Analysis	SM 2540C		1	355770	05/04/17 23:31	CDC	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	355767	05/04/17 20:30	ALZ	TAL BUF

**Client Sample ID: P-6**

**Lab Sample ID: 480-117212-6**

**Date Collected: 04/27/17 12:35**

**Matrix: Water**

**Date Received: 04/29/17 09:00**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	200.7			355047	05/02/17 07:44	MVZ	TAL BUF
Total/NA	Analysis	200.7 Rev 4.4		1	355319	05/02/17 19:58	LMH	TAL BUF
Total/NA	Prep	200.8			354937	05/01/17 11:05	MVZ	TAL BUF
Total/NA	Analysis	200.8		1	355132	05/02/17 01:27	TRB	TAL BUF
Total/NA	Prep	245.1			354877	05/01/17 07:40	JRK	TAL BUF
Total/NA	Analysis	245.1		1	354978	05/01/17 13:04	JRK	TAL BUF
Total/NA	Analysis	300.0		10	357048	05/12/17 13:38	DMR	TAL BUF
Total/NA	Analysis	SM 2540C		1	355770	05/04/17 23:31	CDC	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	355767	05/04/17 20:33	ALZ	TAL BUF

TestAmerica Buffalo

# Lab Chronicle

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

TestAmerica Job ID: 480-117212-1

## Client Sample ID: P-7

Date Collected: 04/27/17 13:05

Date Received: 04/29/17 09:00

## Lab Sample ID: 480-117212-7

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	200.7			355047	05/02/17 07:44	MVZ	TAL BUF
Total/NA	Analysis	200.7 Rev 4.4		1	355319	05/02/17 20:12	LMH	TAL BUF
Total/NA	Prep	200.8			354937	05/01/17 11:05	MVZ	TAL BUF
Total/NA	Analysis	200.8		1	355132	05/02/17 01:32	TRB	TAL BUF
Total/NA	Prep	245.1			354877	05/01/17 07:40	JRK	TAL BUF
Total/NA	Analysis	245.1		1	354978	05/01/17 13:06	JRK	TAL BUF
Total/NA	Analysis	300.0		10	357048	05/12/17 13:46	DMR	TAL BUF
Total/NA	Analysis	SM 2540C		1	355770	05/04/17 23:31	CDC	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	355767	05/04/17 20:36	ALZ	TAL BUF

## Client Sample ID: DUPLICATE WELL

Date Collected: 04/27/17 00:00

Date Received: 04/29/17 09:00

## Lab Sample ID: 480-117212-8

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	200.7			355047	05/02/17 07:44	MVZ	TAL BUF
Total/NA	Analysis	200.7 Rev 4.4		1	355319	05/02/17 20:15	LMH	TAL BUF
Total/NA	Prep	200.8			354937	05/01/17 11:05	MVZ	TAL BUF
Total/NA	Analysis	200.8		1	355132	05/02/17 01:38	TRB	TAL BUF
Total/NA	Prep	245.1			354877	05/01/17 07:40	JRK	TAL BUF
Total/NA	Analysis	245.1		1	354978	05/01/17 13:08	JRK	TAL BUF
Total/NA	Analysis	300.0		10	357048	05/12/17 14:35	DMR	TAL BUF
Total/NA	Analysis	SM 2540C		1	355770	05/04/17 23:31	CDC	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	355767	05/04/17 20:39	ALZ	TAL BUF

## Client Sample ID: FIELD BLANK

Date Collected: 04/27/17 13:45

Date Received: 04/29/17 09:00

## Lab Sample ID: 480-117212-9

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	200.7			355047	05/02/17 07:44	MVZ	TAL BUF
Total/NA	Analysis	200.7 Rev 4.4		1	355319	05/02/17 20:18	LMH	TAL BUF
Total/NA	Prep	200.8			354937	05/01/17 11:05	MVZ	TAL BUF
Total/NA	Analysis	200.8		1	355132	05/02/17 01:43	TRB	TAL BUF
Total/NA	Prep	245.1			354877	05/01/17 07:40	JRK	TAL BUF
Total/NA	Analysis	245.1		1	354978	05/01/17 13:10	JRK	TAL BUF
Total/NA	Analysis	300.0		1	357048	05/12/17 14:43	DMR	TAL BUF
Total/NA	Analysis	SM 2540C		1	355770	05/04/17 23:31	CDC	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	355767	05/04/17 20:42	ALZ	TAL BUF

# Lab Chronicle

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

TestAmerica Job ID: 480-117212-1

**Client Sample ID: EQUIPMENT BLANK**

**Lab Sample ID: 480-117212-10**

**Date Collected: 04/27/17 13:50**

**Matrix: Water**

**Date Received: 04/29/17 09:00**

<u>Prep Type</u>	<u>Batch Type</u>	<u>Batch Method</u>	<u>Run</u>	<u>Dilution Factor</u>	<u>Batch Number</u>	<u>Prepared or Analyzed</u>	<u>Analyst</u>	<u>Lab</u>
Total/NA	Prep	200.7			355047	05/02/17 07:44	MVZ	TAL BUF
Total/NA	Analysis	200.7 Rev 4.4		1	355319	05/02/17 20:22	LMH	TAL BUF
Total/NA	Prep	200.8			354937	05/01/17 11:05	MVZ	TAL BUF
Total/NA	Analysis	200.8		1	355132	05/02/17 01:49	TRB	TAL BUF
Total/NA	Prep	245.1			354877	05/01/17 07:40	JRK	TAL BUF
Total/NA	Analysis	245.1		1	354978	05/01/17 13:12	JRK	TAL BUF
Total/NA	Analysis	300.0		1	357048	05/12/17 14:51	DMR	TAL BUF
Total/NA	Analysis	SM 2540C		1	355770	05/04/17 23:31	CDC	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	355767	05/04/17 20:44	ALZ	TAL BUF

**Laboratory References:**

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

# Accreditation/Certification Summary

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

TestAmerica Job ID: 480-117212-1

## Laboratory: TestAmerica Buffalo

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

Authority	Program	EPA Region	Identification Number	Expiration Date
Minnesota	NELAP	5	036-999-337	12-31-17

The following analytes are included in this report, but accreditation/certification is not offered by the governing authority:

Analysis Method	Prep Method	Matrix	Analyte
200.7 Rev 4.4	200.7	Water	Lithium
SM 4500 H+ B		Water	pH
SM 4500 H+ B		Water	Temperature

- 1
- 2
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# Method Summary

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

TestAmerica Job ID: 480-117212-1

Method	Method Description	Protocol	Laboratory
200.7 Rev 4.4	Metals (ICP)	EPA	TAL BUF
200.8	Metals (ICP/MS)	EPA	TAL BUF
245.1	Mercury (CVAA)	EPA	TAL BUF
300.0	Anions, Ion Chromatography	MCAWW	TAL BUF
SM 2540C	Solids, Total Dissolved (TDS)	SM	TAL BUF
SM 4500 H+ B	pH	SM	TAL BUF

#### Protocol References:

EPA = US Environmental Protection Agency

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

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

#### Laboratory References:

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



# Sample Summary

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

TestAmerica Job ID: 480-117212-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
480-117212-1	P-1	Water	04/27/17 09:50	04/29/17 09:00
480-117212-2	P-2	Water	04/27/17 13:30	04/29/17 09:00
480-117212-3	P-3	Water	04/27/17 10:20	04/29/17 09:00
480-117212-4	P-4R	Water	04/27/17 11:00	04/29/17 09:00
480-117212-5	P-5	Water	04/27/17 11:50	04/29/17 09:00
480-117212-6	P-6	Water	04/27/17 12:35	04/29/17 09:00
480-117212-7	P-7	Water	04/27/17 13:05	04/29/17 09:00
480-117212-8	DUPLICATE WELL	Water	04/27/17 00:00	04/29/17 09:00
480-117212-9	FIELD BLANK	Water	04/27/17 13:45	04/29/17 09:00
480-117212-10	EQUIPMENT BLANK	Water	04/27/17 13:50	04/29/17 09:00



Regulatory Program:  DW  NPDES  RCRA  Other: \_\_\_\_\_

Project Manager: Ryan Van Dette  
Site Contact: Nathaniel Beineman Date: 4/27/17

Tel/Fax: \_\_\_\_\_

Client Contact: SKB Environmental  
13425 Courthouse Blvd  
Rosemount, MN 55068  
(651) 438-1500 Phone  
(651) 438-1518 FAX  
Project Name: Cloquet 2017 CCR GW Event 3  
Site:  
P O # 3078-17-00161

Analysis Turnaround Time  
 CALENDAR DAYS  WORKING DAYS  
TAT: if different from Below  
 2 weeks  
 1 week  
 2 days  
 1 day

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Lab Contact:							Sample Specific Notes:	
						Filtered Sample (Y/N)	Perform MS / MSD (Y/N)	Metals (totals)* + Mercury	Chloride	Fluoride	Sulfate	TDS		pH
P-1	4/27/17	9:50	Grab	Water	5		X	X	X	X	X	X		
P-2		13:30	Grab	Water	5		X	X	X	X	X	X		
P-3		10:20	Grab	Water	5		X	X	X	X	X	X		
P-4 R		11:00	Grab	Water	5		X	X	X	X	X	X		
P-5		11:30	Grab	Water	5		X	X	X	X	X	X		
P-6		12:35	Grab	Water	5		X	X	X	X	X	X		
P-7		13:05	Grab	Water	5		X	X	X	X	X	X		
DUPLICATE WELL			Grab	Water	5		X	X	X	X	X	X		
Field Blank		13:45	Grab	Water	5		X	X	X	X	X	X		
Equipment Blank		13:50	Grab	Water	5		X	X	X	X	X	X		

Preservation Used: 1= Ice, 2=HCl, 3=H2SO4, 4=HNO3, 5=NaOH, 6= Other

Possible Hazard Identification: Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

Non-Hazard  Flammable  Skin Irritant  Poison B  Unknown

Return to Client  Disposal by Lab  Archive for \_\_\_\_\_ Months

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

Copier Temp. (°C): Obs'd: \_\_\_\_\_ Corrd: 23.2°C Therm ID No.: \_\_\_\_\_

Relinquished by: *Mark Smith* Company: *SKB* Date/Time: 4/28/17 12:00  
 Relinquished by: *Thomas & Reil* Company: *T. America* Date/Time: 4/29/17 09:00  
 Relinquished by: \_\_\_\_\_ Company: \_\_\_\_\_ Date/Time: \_\_\_\_\_





# Login Sample Receipt Checklist

Client: Waste Connections, Inc.

Job Number: 480-117212-1

**Login Number: 117212**

**List Number: 1**

**Creator: Wallace, Cameron**

**List Source: TestAmerica Buffalo**

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



# TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

## ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

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

TestAmerica Job ID: 480-117212-2

Client Project/Site: SKB Cloquet - CCR Groundwater  
Sampling Event: CCR Groundwater

For:

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

Attn: Nathaniel Beinemann



Authorized for release by:  
6/1/2017 12:49:51 PM

Denise Giglia, Project Management Assistant II  
[denise.giglia@testamericainc.com](mailto:denise.giglia@testamericainc.com)

Designee for

Ryan VanDette, Project Manager II  
(716)504-9830  
[ryan.vandette@testamericainc.com](mailto:ryan.vandette@testamericainc.com)

### LINKS

Review your project  
results through  
**TotalAccess**

Have a Question?



Visit us at:  
[www.testamericainc.com](http://www.testamericainc.com)

*The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.*

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

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

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# Definitions/Glossary

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

TestAmerica Job ID: 480-117212-2

## Qualifiers

### Rad

Qualifier	Qualifier Description
U	Result is less than the sample detection limit.
G	The Sample MDC is greater than the requested RL.

## 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
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)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
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)

# Case Narrative

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

TestAmerica Job ID: 480-117212-2

**Job ID: 480-117212-2**

**Laboratory: TestAmerica Buffalo**

## Narrative

**Job Narrative  
480-117212-2**

## Comments

No additional comments.

## Receipt

The samples were received on 4/29/2017 9:00 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were 2.3° C and 2.6° C.

## RAD

Method(s) 901.1: Gamma Prep Batch 160-307095: The following samples did not meet the radium-226/radium-228 detection goals: P-4R (480-117212-4), P-5 (480-117212-5), P-6 (480-117212-6), P-7 (480-117212-7), DUPLICATE WELL (480-117212-8) and (MB 160-307095/1-A). The samples were counted for 60 minutes. The data have been qualified and reported.

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

# Detection Summary

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

TestAmerica Job ID: 480-117212-2

**Client Sample ID: P-1**

**Lab Sample ID: 480-117212-1**

No Detections.

**Client Sample ID: P-2**

**Lab Sample ID: 480-117212-2**

No Detections.

**Client Sample ID: P-3**

**Lab Sample ID: 480-117212-3**

No Detections.

**Client Sample ID: P-4R**

**Lab Sample ID: 480-117212-4**

No Detections.

**Client Sample ID: P-5**

**Lab Sample ID: 480-117212-5**

No Detections.

**Client Sample ID: P-6**

**Lab Sample ID: 480-117212-6**

No Detections.

**Client Sample ID: P-7**

**Lab Sample ID: 480-117212-7**

No Detections.

**Client Sample ID: DUPLICATE WELL**

**Lab Sample ID: 480-117212-8**

No Detections.

**Client Sample ID: FIELD BLANK**

**Lab Sample ID: 480-117212-9**

No Detections.

**Client Sample ID: EQUIPMENT BLANK**

**Lab Sample ID: 480-117212-10**

No Detections.

This Detection Summary does not include radiochemical test results.

TestAmerica Buffalo

# Client Sample Results

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

TestAmerica Job ID: 480-117212-2

**Client Sample ID: P-1**

**Date Collected: 04/27/17 09:50**

**Date Received: 04/29/17 09:00**

**Lab Sample ID: 480-117212-1**

**Matrix: Water**

**Method: 901.1 - Radium-226 & Other Gamma Emitters (GS)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
<b>Radium-226</b>	<b>42.9</b>		13.4	14.1	50.0	9.80	pCi/L	05/03/17 19:10	05/24/17 18:34	1
Radium-228	21.5	U	37.6	37.7	50.0	33.8	pCi/L	05/03/17 19:10	05/24/17 18:34	1

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# Client Sample Results

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

TestAmerica Job ID: 480-117212-2

**Client Sample ID: P-2**

**Date Collected: 04/27/17 13:30**

**Date Received: 04/29/17 09:00**

**Lab Sample ID: 480-117212-2**

**Matrix: Water**

**Method: 901.1 - Radium-226 & Other Gamma Emitters (GS)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
<b>Radium-226</b>	<b>32.8</b>		12.9	13.3	50.0	9.31	pCi/L	05/03/17 19:10	05/24/17 19:03	1
Radium-228	23.1	U	27.2	27.3	50.0	37.4	pCi/L	05/03/17 19:10	05/24/17 19:03	1

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# Client Sample Results

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

TestAmerica Job ID: 480-117212-2

**Client Sample ID: P-3**

**Date Collected: 04/27/17 10:20**

**Date Received: 04/29/17 09:00**

**Lab Sample ID: 480-117212-3**

**Matrix: Water**

**Method: 901.1 - Radium-226 & Other Gamma Emitters (GS)**

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Radium-226	6.12	U	13.2	13.2	50.0	46.1	pCi/L	05/03/17 19:10	05/24/17 19:37	1
Radium-228	6.52	U	32.7	32.7	50.0	38.4	pCi/L	05/03/17 19:10	05/24/17 19:37	1

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# Client Sample Results

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

TestAmerica Job ID: 480-117212-2

**Client Sample ID: P-4R**  
**Date Collected: 04/27/17 11:00**  
**Date Received: 04/29/17 09:00**

**Lab Sample ID: 480-117212-4**  
**Matrix: Water**

**Method: 901.1 - Radium-226 & Other Gamma Emitters (GS)**

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Radium-226	11.9	U G	9.69	9.76	50.0	58.0	pCi/L	05/03/17 19:10	05/24/17 20:08	1
Radium-228	5.70	U	40.4	40.4	50.0	49.7	pCi/L	05/03/17 19:10	05/24/17 20:08	1

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# Client Sample Results

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

TestAmerica Job ID: 480-117212-2

**Client Sample ID: P-5**

**Date Collected: 04/27/17 11:50**

**Date Received: 04/29/17 09:00**

**Lab Sample ID: 480-117212-5**

**Matrix: Water**

**Method: 901.1 - Radium-226 & Other Gamma Emitters (GS)**

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Radium-226	4.77	U G	14.9	14.9	50.0	57.7	pCi/L	05/03/17 19:10	05/24/17 20:38	1
Radium-228	15.9	U	31.1	31.1	50.0	38.4	pCi/L	05/03/17 19:10	05/24/17 20:38	1

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# Client Sample Results

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

TestAmerica Job ID: 480-117212-2

**Client Sample ID: P-6**

**Date Collected: 04/27/17 12:35**

**Date Received: 04/29/17 09:00**

**Lab Sample ID: 480-117212-6**

**Matrix: Water**

**Method: 901.1 - Radium-226 & Other Gamma Emitters (GS)**

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Radium-226	10.5	U G	18.2	18.2	50.0	60.5	pCi/L	05/03/17 19:10	05/24/17 21:17	1
Radium-228	-0.295	U G	0.666	0.666	50.0	67.1	pCi/L	05/03/17 19:10	05/24/17 21:17	1

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# Client Sample Results

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

TestAmerica Job ID: 480-117212-2

**Client Sample ID: P-7**

**Date Collected: 04/27/17 13:05**

**Date Received: 04/29/17 09:00**

**Lab Sample ID: 480-117212-7**

**Matrix: Water**

**Method: 901.1 - Radium-226 & Other Gamma Emitters (GS)**

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Radium-226	0.000	U G	14.0	14.0	50.0	50.3	pCi/L	05/03/17 19:10	05/24/17 21:40	1
Radium-228	26.1	U	26.1	26.3	50.0	28.4	pCi/L	05/03/17 19:10	05/24/17 21:40	1

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# Client Sample Results

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

TestAmerica Job ID: 480-117212-2

**Client Sample ID: DUPLICATE WELL**

**Lab Sample ID: 480-117212-8**

**Date Collected: 04/27/17 00:00**

**Matrix: Water**

**Date Received: 04/29/17 09:00**

**Method: 901.1 - Radium-226 & Other Gamma Emitters (GS)**

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Radium-226	9.52	U G	29.1	29.2	50.0	58.2	pCi/L	05/03/17 19:10	05/24/17 21:41	1
Radium-228	19.2	U	23.9	24.0	50.0	41.8	pCi/L	05/03/17 19:10	05/24/17 21:41	1

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# Client Sample Results

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

TestAmerica Job ID: 480-117212-2

**Client Sample ID: FIELD BLANK**

**Lab Sample ID: 480-117212-9**

Date Collected: 04/27/17 13:45

Matrix: Water

Date Received: 04/29/17 09:00

**Method: 901.1 - Radium-226 & Other Gamma Emitters (GS)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
<b>Radium-226</b>	<b>43.0</b>		19.7	20.2	50.0	18.2	pCi/L	05/03/17 19:10	05/24/17 22:56	1
Radium-228	18.5	U	33.0	33.1	50.0	38.4	pCi/L	05/03/17 19:10	05/24/17 22:56	1

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# Client Sample Results

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

TestAmerica Job ID: 480-117212-2

**Client Sample ID: EQUIPMENT BLANK**

**Lab Sample ID: 480-117212-10**

**Date Collected: 04/27/17 13:50**

**Matrix: Water**

**Date Received: 04/29/17 09:00**

**Method: 901.1 - Radium-226 & Other Gamma Emitters (GS)**

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Radium-226	17.1	U G	10.3	10.5	50.0	57.9	pCi/L	05/03/17 19:10	05/24/17 22:55	1
Radium-228	-16.5	U G	42.5	42.5	50.0	50.1	pCi/L	05/03/17 19:10	05/24/17 22:55	1

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# QC Sample Results

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

TestAmerica Job ID: 480-117212-2

## Method: 901.1 - Radium-226 & Other Gamma Emitters (GS)

**Lab Sample ID: MB 160-307095/1-A**  
**Matrix: Water**  
**Analysis Batch: 310246**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 307095**

Analyte	MB MB		Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier	Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Radium-226	11.87	U G	9.69	9.76	50.0	68.4	pCi/L	05/03/17 19:10	05/24/17 12:55	1
Radium-228	25.44	U	29.8	29.9	50.0	37.4	pCi/L	05/03/17 19:10	05/24/17 12:55	1

**Lab Sample ID: LCS 160-307095/2-A**  
**Matrix: Water**  
**Analysis Batch: 310243**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 307095**

Analyte	Spike Added	LCS Result	LCS Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits
				Uncert. (2σ+/-)					
Americium-241	136000	130700		15100		401	pCi/L	96	90 - 111
Cesium-137	46700	46510		4660		114	pCi/L	100	90 - 111
Cobalt-60	38400	37250		3680		69.6	pCi/L	97	89 - 110

**Lab Sample ID: 480-117212-1 DU**  
**Matrix: Water**  
**Analysis Batch: 310244**

**Client Sample ID: P-1**  
**Prep Type: Total/NA**  
**Prep Batch: 307095**

Analyte	Sample Sample		DU DU		Total	RL	MDC	Unit	RER	RER
	Result	Qual	Result	Qual	Uncert. (2σ+/-)					Limit
Radium-226	42.9		17.36	U	23.7	50.0	41.4	pCi/L	0.68	1
Radium-228	21.5	U	-1.219	U	33.7	50.0	41.8	pCi/L	0.32	1

# QC Association Summary

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

TestAmerica Job ID: 480-117212-2

## Rad

### Prep Batch: 307095

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-117212-1	P-1	Total/NA	Water	Fill_Geo-21	
480-117212-2	P-2	Total/NA	Water	Fill_Geo-21	
480-117212-3	P-3	Total/NA	Water	Fill_Geo-21	
480-117212-4	P-4R	Total/NA	Water	Fill_Geo-21	
480-117212-5	P-5	Total/NA	Water	Fill_Geo-21	
480-117212-6	P-6	Total/NA	Water	Fill_Geo-21	
480-117212-7	P-7	Total/NA	Water	Fill_Geo-21	
480-117212-8	DUPLICATE WELL	Total/NA	Water	Fill_Geo-21	
480-117212-9	FIELD BLANK	Total/NA	Water	Fill_Geo-21	
480-117212-10	EQUIPMENT BLANK	Total/NA	Water	Fill_Geo-21	
MB 160-307095/1-A	Method Blank	Total/NA	Water	Fill_Geo-21	
LCS 160-307095/2-A	Lab Control Sample	Total/NA	Water	Fill_Geo-21	
480-117212-1 DU	P-1	Total/NA	Water	Fill_Geo-21	

# Lab Chronicle

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

TestAmerica Job ID: 480-117212-2

## Client Sample ID: P-1

Date Collected: 04/27/17 09:50

Date Received: 04/29/17 09:00

## Lab Sample ID: 480-117212-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Fill_Geo-21			307095	05/03/17 19:10	CMT	TAL SL
Total/NA	Analysis	901.1		1	310243	05/24/17 18:34	KLS	TAL SL

## Client Sample ID: P-2

Date Collected: 04/27/17 13:30

Date Received: 04/29/17 09:00

## Lab Sample ID: 480-117212-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Fill_Geo-21			307095	05/03/17 19:10	CMT	TAL SL
Total/NA	Analysis	901.1		1	310246	05/24/17 19:03	KLS	TAL SL

## Client Sample ID: P-3

Date Collected: 04/27/17 10:20

Date Received: 04/29/17 09:00

## Lab Sample ID: 480-117212-3

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Fill_Geo-21			307095	05/03/17 19:10	CMT	TAL SL
Total/NA	Analysis	901.1		1	310243	05/24/17 19:37	KLS	TAL SL

## Client Sample ID: P-4R

Date Collected: 04/27/17 11:00

Date Received: 04/29/17 09:00

## Lab Sample ID: 480-117212-4

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Fill_Geo-21			307095	05/03/17 19:10	CMT	TAL SL
Total/NA	Analysis	901.1		1	310246	05/24/17 20:08	KLS	TAL SL

## Client Sample ID: P-5

Date Collected: 04/27/17 11:50

Date Received: 04/29/17 09:00

## Lab Sample ID: 480-117212-5

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Fill_Geo-21			307095	05/03/17 19:10	CMT	TAL SL
Total/NA	Analysis	901.1		1	310243	05/24/17 20:38	KLS	TAL SL

## Client Sample ID: P-6

Date Collected: 04/27/17 12:35

Date Received: 04/29/17 09:00

## Lab Sample ID: 480-117212-6

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Fill_Geo-21			307095	05/03/17 19:10	CMT	TAL SL
Total/NA	Analysis	901.1		1	310246	05/24/17 21:17	KLS	TAL SL

TestAmerica Buffalo

# Lab Chronicle

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

TestAmerica Job ID: 480-117212-2

**Client Sample ID: P-7**

**Date Collected: 04/27/17 13:05**

**Date Received: 04/29/17 09:00**

**Lab Sample ID: 480-117212-7**

**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Fill_Geo-21			307095	05/03/17 19:10	CMT	TAL SL
Total/NA	Analysis	901.1		1	310243	05/24/17 21:40	KLS	TAL SL

**Client Sample ID: DUPLICATE WELL**

**Date Collected: 04/27/17 00:00**

**Date Received: 04/29/17 09:00**

**Lab Sample ID: 480-117212-8**

**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Fill_Geo-21			307095	05/03/17 19:10	CMT	TAL SL
Total/NA	Analysis	901.1		1	310244	05/24/17 21:41	KLS	TAL SL

**Client Sample ID: FIELD BLANK**

**Date Collected: 04/27/17 13:45**

**Date Received: 04/29/17 09:00**

**Lab Sample ID: 480-117212-9**

**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Fill_Geo-21			307095	05/03/17 19:10	CMT	TAL SL
Total/NA	Analysis	901.1		1	310243	05/24/17 22:56	KLS	TAL SL

**Client Sample ID: EQUIPMENT BLANK**

**Date Collected: 04/27/17 13:50**

**Date Received: 04/29/17 09:00**

**Lab Sample ID: 480-117212-10**

**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Fill_Geo-21			307095	05/03/17 19:10	CMT	TAL SL
Total/NA	Analysis	901.1		1	310244	05/24/17 22:55	KLS	TAL SL

**Laboratory References:**

TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

# Accreditation/Certification Summary

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

TestAmerica Job ID: 480-117212-2

## Laboratory: TestAmerica Buffalo

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

Authority	Program	EPA Region	Identification Number	Expiration Date
Minnesota	NELAP	5	036-999-337	12-31-17

## Laboratory: TestAmerica St. Louis

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

Authority	Program	EPA Region	Identification Number	Expiration Date
Alaska	State Program	10	MO00054	06-30-17 *
California	State Program	9	2886	03-31-18 *
Connecticut	State Program	1	PH-0241	03-31-19
Florida	NELAP	4	E87689	06-30-17 *
Illinois	NELAP	5	200023	11-30-17
Iowa	State Program	7	373	02-01-18
Kansas	NELAP	7	E-10236	10-31-17
Kentucky (DW)	State Program	4	90125	12-31-17
L-A-B	DoD ELAP		L2305	04-06-19
Louisiana	NELAP	6	04080	06-30-17 *
Louisiana (DW)	NELAP	6	LA170011	12-31-17
Maryland	State Program	3	310	09-30-17
Missouri	State Program	7	780	06-30-17 *
Nevada	State Program	9	MO000542017-1	07-31-17 *
New Jersey	NELAP	2	MO002	06-30-17 *
New York	NELAP	2	11616	03-31-18
North Dakota	State Program	8	R207	06-30-17 *
NRC	NRC		24-24817-01	12-31-22
Oklahoma	State Program	6	9997	08-31-17
Pennsylvania	NELAP	3	68-00540	02-21-18
South Carolina	State Program	4	85002001	06-30-17 *
Texas	NELAP	6	T104704193-16-10	07-31-17 *
US Fish & Wildlife	Federal		LE058448-0	10-31-17
USDA	Federal		P330-17-0028	02-02-20
Utah	NELAP	8	MO000542016-8	07-31-17 *
Virginia	NELAP	3	460230	06-14-17 *
Washington	State Program	10	C592	08-30-17
West Virginia DEP	State Program	3	381	08-31-17 *

\* Accreditation/Certification renewal pending - accreditation/certification considered valid.

# Method Summary

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

TestAmerica Job ID: 480-117212-2

Method	Method Description	Protocol	Laboratory
901.1	Radium-226 & Other Gamma Emitters (GS)	EPA	TAL SL

**Protocol References:**

EPA = US Environmental Protection Agency

**Laboratory References:**

TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566



# Sample Summary

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

TestAmerica Job ID: 480-117212-2

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
480-117212-1	P-1	Water	04/27/17 09:50	04/29/17 09:00
480-117212-2	P-2	Water	04/27/17 13:30	04/29/17 09:00
480-117212-3	P-3	Water	04/27/17 10:20	04/29/17 09:00
480-117212-4	P-4R	Water	04/27/17 11:00	04/29/17 09:00
480-117212-5	P-5	Water	04/27/17 11:50	04/29/17 09:00
480-117212-6	P-6	Water	04/27/17 12:35	04/29/17 09:00
480-117212-7	P-7	Water	04/27/17 13:05	04/29/17 09:00
480-117212-8	DUPLICATE WELL	Water	04/27/17 00:00	04/29/17 09:00
480-117212-9	FIELD BLANK	Water	04/27/17 13:45	04/29/17 09:00
480-117212-10	EQUIPMENT BLANK	Water	04/27/17 13:50	04/29/17 09:00





Regulatory Program:  DW  NPDES  RCRA  Other:

Project Manager: Ryan Van Dette  
Site Contact: Nathaniel Beineman Date: 4/27/17  
Carrier: \_\_\_\_\_

Tel/Fax: \_\_\_\_\_  
Analysis Turnaround Time  
 CALENDAR DAYS  WORKING DAYS  
TAT: if different from Below  
 2 weeks  
 1 week  
 2 days  
 1 day

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS / MSD (Y/N)	Metals (totals)* + Mercury	Chloride	Fluoride	Sulfate	TDS	pH	Radium 226 & 228 combined	Sample Specific Notes:
P-1	4/27/17	9:50	Grab	Water	5		X	X	X	X	X	X	X		
P-2		13:30	Grab	Water	5		X	X	X	X	X	X	X		
P-3		10:20	Grab	Water	5		X	X	X	X	X	X	X		
P-4 R		11:00	Grab	Water	5		X	X	X	X	X	X	X		
P-5		11:50	Grab	Water	5		X	X	X	X	X	X	X		
P-6		12:35	Grab	Water	5		X	X	X	X	X	X	X		
P-7		13:05	Grab	Water	5		X	X	X	X	X	X	X		
DUPLICATE WELL			Grab	Water	5		X	X	X	X	X	X	X		
Field Blank		13:45	Grab	Water	5		X	X	X	X	X	X	X		
Equipment Blank		13:50	Grab	Water	5		X	X	X	X	X	X	X		

Preservation Used: 1= Ice, 2=HCl, 3=H2SO4, 4=HNO3, 5=NaOH, 6= Other  
Possible Hazard Identification: \_\_\_\_\_  
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.  
 Non-Hazard  Flammable  Skin Irritant  Poison B  Unknown  
 Return to Client  Disposal by Lab  Archive for \_\_\_\_\_ Months

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)  
Custody Seal No.: \_\_\_\_\_  
Relinquished by: \_\_\_\_\_  
Relinquished by: Thomas & Reid  
Relinquished by: \_\_\_\_\_

Company	Date/Time	Company	Date/Time	Company	Date/Time
Company: GES	Date/Time: 4/28/17 12:00	Company: Thomas & Reid	Date/Time: 4/28-17 12:00	Company: T.A.S.	Date/Time: 4/29/17 0900
Company: T.America	Date/Time: 4-28-17 16:05	Company: T.America	Date/Time: _____	Company: _____	Date/Time: _____



# Chain of Custody Record



**Client Information (Sub Contract Lab)**  
 Client Contact: **VanDette, Ryan T**  
 Shipping/Receiving: **ryan.vandette@testamericainc.com**  
 Company: **TestAmerica Laboratories, Inc.**  
 Address: **13715 Rider Trail North, Minnesota**  
 City: **Earth City**  
 State, Zip: **MO, 63045**  
 Phone: **314-298-8566(Tel) 314-298-8757(Fax)**  
 Email:   
 Project Name: **SKB Cloquet**  
 Site: **Shamrock**

Lab PM: **VanDette, Ryan T**  
 E-Mail: **ryan.vandette@testamericainc.com**  
 Accreditations Required (See note): **NELAP - Minnesota**

COC No: **480-34705-1**  
 Page: **Page 1 of 2**  
 Job #: **480-117212-1**

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=wast/oil, BT=Tissue, A=air)	Preservation Code:	Field Filtered Sample (Yes or No)		Perform MS/MSD (Yes or No)		901.1 Ra/Fill_Geo_21 Radium-226/228	Analysis Requested	Total Number of containers	Special Instructions/Note:
						Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)				
P-1 (480-117212-1)	4/27/17	09:50 Central	Water	Water		X	X					1	
P-2 (480-117212-2)	4/27/17	13:30 Central	Water	Water		X	X					1	
P-3 (480-117212-3)	4/27/17	10:20 Central	Water	Water		X	X					1	
P-4R (480-117212-4)	4/27/17	11:00 Central	Water	Water		X	X					1	
P-5 (480-117212-5)	4/27/17	11:50 Central	Water	Water		X	X					1	
P-6 (480-117212-6)	4/27/17	12:35 Central	Water	Water		X	X					1	
P-7 (480-117212-7)	4/27/17	13:05 Central	Water	Water		X	X					1	
DUPLICATE WELL (480-117212-8)	4/27/17	Central	Water	Water		X	X					1	
FIELD BLANK (480-117212-9)	4/27/17	13:45 Central	Water	Water		X	X					1	

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/test/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to TestAmerica Laboratories, Inc.

**Possible Hazard Identification**  
 Unconfirmed  
 Deliverable Requested: I, II, III, IV, Other (specify) **Primary Deliverable Rank: 2**  
 Empty Kit Relinquished by:  Date:   
 Relinquished by: **Chavala** Date/Time: **5/1/17 8:00** Company: **Company**  
 Relinquished by: **B.J.** Date/Time: **5/2/17 09:40** Company: **Company**  
 Relinquished by:  Date/Time:  Company: **Company**

**Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)**  
 Return To Client  Disposal By Lab  Archive For **Months**  
 Special Instructions/QC Requirements:   
 Method of Shipment:   
 Date:   
 Primary Deliverable Rank: **2**  
 Empty Kit Relinquished by:  Date:   
 Relinquished by: **Chavala** Date/Time: **5/1/17 8:00** Company: **Company**  
 Relinquished by: **B.J.** Date/Time: **5/2/17 09:40** Company: **Company**  
 Relinquished by:  Date/Time:  Company: **Company**





## Login Sample Receipt Checklist

Client: Waste Connections, Inc.

Job Number: 480-117212-2

**Login Number: 117212**

**List Number: 1**

**Creator: Wallace, Cameron**

**List Source: TestAmerica Buffalo**

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

# Login Sample Receipt Checklist

Client: Waste Connections, Inc.

Job Number: 480-117212-2

**Login Number: 117212**  
**List Number: 2**  
**Creator: Daniels, Brian J**

**List Source: TestAmerica St. Louis**  
**List Creation: 05/02/17 01:26 PM**

Question	Answer	Comment
Radioactivity wasn't checked or is <math>\leq</math> background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	15.1,8,3
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?	False	
There are no discrepancies between the containers received 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	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



# TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

## ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Buffalo

10 Hazelwood Drive

Amherst, NY 14228-2298

Tel: (716)691-2600

TestAmerica Job ID: 480-118334-1

Client Project/Site: SKB Cloquet - CCR Groundwater

Sampling Event: CCR Groundwater

For:

Waste Connections, Inc.

13425 Courthouse Blvd

Rosemount, Minnesota 55068

Attn: Nathaniel Beinemann



Authorized for release by:

6/6/2017 12:03:04 PM

Denise Giglia, Project Management Assistant II

[denise.giglia@testamericainc.com](mailto:denise.giglia@testamericainc.com)

Designee for

Ryan VanDette, Project Manager II

(716)504-9830

[ryan.vandette@testamericainc.com](mailto:ryan.vandette@testamericainc.com)

### LINKS

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results through

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

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

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# Definitions/Glossary

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

TestAmerica Job ID: 480-118334-1

## Qualifiers

### 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
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)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
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)

# Case Narrative

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

TestAmerica Job ID: 480-118334-1

**Job ID: 480-118334-1**

**Laboratory: TestAmerica Buffalo**

## Narrative

### Job Narrative 480-118334-1

#### Comments

No additional comments.

#### Receipt

The samples were received on 5/20/2017 9:30 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were 2.1° C and 2.4° C.

#### HPLC/IC

Method(s) 300.0: The following samples was diluted to bring the concentration of target analytes within the calibration range: P-2 (480-118334-2), P-3 (480-118334-3), P-5 (480-118334-4), P-6 (480-118334-5), P-7 (480-118334-6) and DUP-1 (480-118334-7). Elevated reporting limits (RLs) are provided.

Method(s) 300.0: The following sample was diluted due to the nature of the sample matrix: FIELD BLANK (480-118334-8). Elevated reporting limits (RLs) are provided.

Method(s) 300.0: The following sample was diluted due to the nature of the sample matrix: P-1 (480-118334-1). Elevated reporting limits (RLs) are provided.

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

#### Metals

Method(s) 200.7 Rev 4.4: The Total Boron and Calcium results reported for the following sample do not concur with results previously reported for this site: P-1 (480-118334-1). Reanalysis was performed, and the result(s) confirmed.

Method(s) 200.8: The Total Molybdenum results reported for the following sample do not concur with results previously reported for this site: P-2 (480-118334-2). Reanalysis was performed, and the result(s) confirmed.

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

#### General Chemistry

Method(s) SM 4500 H+ B: This analysis is normally performed in the field and has a method-defined holding time of 15 minutes. The following samples has been qualified with the "HF" flag to indicate analysis was performed in the laboratory outside the 15 minute timeframe: P-1 (480-118334-1), P-2 (480-118334-2), P-3 (480-118334-3), P-5 (480-118334-4), P-6 (480-118334-5), DUP-1 (480-118334-7), FIELD BLANK (480-118334-8) and EQUIP BLANK (480-118334-9).

Method(s) SM 4500 H+ B: This analysis is normally performed in the field and has a method-defined holding time of 15 minutes. The following sample has been qualified with the "HF" flag to indicate analysis was performed in the laboratory outside the 15 minute timeframe: P-7 (480-118334-6).

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



# Detection Summary

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

TestAmerica Job ID: 480-118334-1

## Client Sample ID: P-1

## Lab Sample ID: 480-118334-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.10		0.0020		mg/L	1		200.7 Rev 4.4	Total/NA
Boron	0.071		0.020		mg/L	1		200.7 Rev 4.4	Total/NA
Calcium	98.4		0.50		mg/L	1		200.7 Rev 4.4	Total/NA
Cobalt	0.49		0.30		ug/L	1		200.8	Total/NA
Chloride	50.3		5.0		mg/L	10		300.0	Total/NA
Total Dissolved Solids	456		10.0		mg/L	1		SM 2540C	Total/NA
Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
pH	6.6	HF	0.1		SU	1		SM 4500 H+ B	Total/NA
Temperature	18.6	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

## Client Sample ID: P-2

## Lab Sample ID: 480-118334-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.068		0.0020		mg/L	1		200.7 Rev 4.4	Total/NA
Boron	0.054		0.020		mg/L	1		200.7 Rev 4.4	Total/NA
Calcium	66.7		0.50		mg/L	1		200.7 Rev 4.4	Total/NA
Cobalt	0.97		0.30		ug/L	1		200.8	Total/NA
Molybdenum	2.8		1.0		ug/L	1		200.8	Total/NA
Chloride	56.1		2.5		mg/L	5		300.0	Total/NA
Sulfate	13.0		10.0		mg/L	5		300.0	Total/NA
Total Dissolved Solids	310		10.0		mg/L	1		SM 2540C	Total/NA
Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
pH	6.8	HF	0.1		SU	1		SM 4500 H+ B	Total/NA
Temperature	18.3	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

## Client Sample ID: P-3

## Lab Sample ID: 480-118334-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.19		0.0020		mg/L	1		200.7 Rev 4.4	Total/NA
Boron	0.031		0.020		mg/L	1		200.7 Rev 4.4	Total/NA
Calcium	140		0.50		mg/L	1		200.7 Rev 4.4	Total/NA
Cobalt	0.41		0.30		ug/L	1		200.8	Total/NA
Chloride	127		2.5		mg/L	5		300.0	Total/NA
Sulfate	90.7		10.0		mg/L	5		300.0	Total/NA
Total Dissolved Solids	683		10.0		mg/L	1		SM 2540C	Total/NA
Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
pH	7.2	HF	0.1		SU	1		SM 4500 H+ B	Total/NA
Temperature	18.2	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

## Client Sample ID: P-5

## Lab Sample ID: 480-118334-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.32		0.0020		mg/L	1		200.7 Rev 4.4	Total/NA
Boron	0.042		0.020		mg/L	1		200.7 Rev 4.4	Total/NA
Calcium	163		0.50		mg/L	1		200.7 Rev 4.4	Total/NA
Lead	0.011		0.010		mg/L	1		200.7 Rev 4.4	Total/NA
Cadmium	0.51		0.50		ug/L	1		200.8	Total/NA
Cobalt	10.8		0.30		ug/L	1		200.8	Total/NA
Chloride	229		5.0		mg/L	10		300.0	Total/NA
Sulfate	43.4		20.0		mg/L	10		300.0	Total/NA

This Detection Summary does not include radiochemical test results.

TestAmerica Buffalo

# Detection Summary

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

TestAmerica Job ID: 480-118334-1

## Client Sample ID: P-5 (Continued)

## Lab Sample ID: 480-118334-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Total Dissolved Solids	866		10.0		mg/L	1		SM 2540C	Total/NA
Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
pH	6.7	HF	0.1		SU	1		SM 4500 H+ B	Total/NA
Temperature	19.1	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

## Client Sample ID: P-6

## Lab Sample ID: 480-118334-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.11		0.0020		mg/L	1		200.7 Rev 4.4	Total/NA
Boron	0.31		0.020		mg/L	1		200.7 Rev 4.4	Total/NA
Calcium	164		0.50		mg/L	1		200.7 Rev 4.4	Total/NA
Cobalt	0.48		0.30		ug/L	1		200.8	Total/NA
Chloride	107		5.0		mg/L	10		300.0	Total/NA
Sulfate	125		20.0		mg/L	10		300.0	Total/NA
Total Dissolved Solids	799		10.0		mg/L	1		SM 2540C	Total/NA
Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
pH	6.8	HF	0.1		SU	1		SM 4500 H+ B	Total/NA
Temperature	19.2	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

## Client Sample ID: P-7

## Lab Sample ID: 480-118334-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.23		0.0020		mg/L	1		200.7 Rev 4.4	Total/NA
Boron	0.11		0.020		mg/L	1		200.7 Rev 4.4	Total/NA
Calcium	172		0.50		mg/L	1		200.7 Rev 4.4	Total/NA
Cobalt	0.64		0.30		ug/L	1		200.8	Total/NA
Chloride	72.9		5.0		mg/L	10		300.0	Total/NA
Sulfate	44.8		20.0		mg/L	10		300.0	Total/NA
Total Dissolved Solids	735		10.0		mg/L	1		SM 2540C	Total/NA
Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
pH	7.0	HF	0.1		SU	1		SM 4500 H+ B	Total/NA
Temperature	19.6	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

## Client Sample ID: DUP-1

## Lab Sample ID: 480-118334-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.19		0.0020		mg/L	1		200.7 Rev 4.4	Total/NA
Boron	0.031		0.020		mg/L	1		200.7 Rev 4.4	Total/NA
Calcium	142		0.50		mg/L	1		200.7 Rev 4.4	Total/NA
Cobalt	0.42		0.30		ug/L	1		200.8	Total/NA
Chloride	133		2.5		mg/L	5		300.0	Total/NA
Sulfate	92.6		10.0		mg/L	5		300.0	Total/NA
Total Dissolved Solids	618		10.0		mg/L	1		SM 2540C	Total/NA
Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
pH	7.2	HF	0.1		SU	1		SM 4500 H+ B	Total/NA
Temperature	18.8	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

## Client Sample ID: FIELD BLANK

## Lab Sample ID: 480-118334-8

This Detection Summary does not include radiochemical test results.

TestAmerica Buffalo

# Detection Summary

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

TestAmerica Job ID: 480-118334-1

## Client Sample ID: FIELD BLANK (Continued)

Lab Sample ID: 480-118334-8

Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
pH	5.8	HF	0.1		SU	1		SM 4500 H+ B	Total/NA
Temperature	18.7	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

## Client Sample ID: EQUIP BLANK

Lab Sample ID: 480-118334-9

Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
pH	5.3	HF	0.1		SU	1		SM 4500 H+ B	Total/NA
Temperature	18.7	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

This Detection Summary does not include radiochemical test results.

TestAmerica Buffalo

# Client Sample Results

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

TestAmerica Job ID: 480-118334-1

**Client Sample ID: P-1**

**Date Collected: 05/17/17 08:30**

**Date Received: 05/20/17 09:30**

**Lab Sample ID: 480-118334-1**

**Matrix: Water**

**Method: 200.7 Rev 4.4 - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	0.10		0.0020		mg/L		05/22/17 09:48	05/25/17 17:51	1
Boron	0.071		0.020		mg/L		05/22/17 09:48	05/25/17 17:51	1
Calcium	98.4		0.50		mg/L		05/22/17 09:48	05/25/17 17:51	1
Chromium	ND		0.0040		mg/L		05/22/17 09:48	05/25/17 17:51	1
Lead	ND		0.010		mg/L		05/22/17 09:48	05/25/17 17:51	1
Lithium	ND		0.030		mg/L		05/22/17 09:48	05/25/17 17:51	1

**Method: 200.8 - Metals (ICP/MS)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		1.0		ug/L		05/23/17 10:40	05/24/17 01:09	1
Arsenic	ND		1.0		ug/L		05/23/17 10:40	05/24/17 01:09	1
Beryllium	ND		0.70		ug/L		05/23/17 10:40	05/24/17 01:09	1
Cadmium	ND		0.50		ug/L		05/23/17 10:40	05/24/17 01:09	1
Cobalt	0.49		0.30		ug/L		05/23/17 10:40	05/24/17 01:09	1
Molybdenum	ND		1.0		ug/L		05/23/17 10:40	05/24/17 01:09	1
Selenium	ND		1.0		ug/L		05/23/17 10:40	05/24/17 01:09	1
Thallium	ND		0.20		ug/L		05/23/17 10:40	05/24/17 01:09	1

**Method: 245.1 - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020		mg/L		05/22/17 07:30	05/22/17 12:34	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	50.3		5.0		mg/L			06/02/17 19:42	10
Fluoride	ND		0.50		mg/L			06/02/17 19:42	10
Sulfate	ND		20.0		mg/L			06/02/17 19:42	10
Total Dissolved Solids	456		10.0		mg/L			05/23/17 02:33	1
Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	6.6	HF	0.1		SU			05/22/17 15:04	1
Temperature	18.6	HF	0.001		Degrees C			05/22/17 15:04	1

# Client Sample Results

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

TestAmerica Job ID: 480-118334-1

**Client Sample ID: P-2**

**Date Collected: 05/17/17 11:05**

**Date Received: 05/20/17 09:30**

**Lab Sample ID: 480-118334-2**

**Matrix: Water**

**Method: 200.7 Rev 4.4 - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	0.068		0.0020		mg/L		05/22/17 09:48	05/25/17 18:18	1
Boron	0.054		0.020		mg/L		05/22/17 09:48	05/25/17 18:18	1
Calcium	66.7		0.50		mg/L		05/22/17 09:48	05/25/17 18:18	1
Chromium	ND		0.0040		mg/L		05/22/17 09:48	05/25/17 18:18	1
Lead	ND		0.010		mg/L		05/22/17 09:48	05/25/17 18:18	1
Lithium	ND		0.030		mg/L		05/22/17 09:48	05/25/17 18:18	1

**Method: 200.8 - Metals (ICP/MS)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		1.0		ug/L		05/23/17 10:40	05/24/17 01:14	1
Arsenic	ND		1.0		ug/L		05/23/17 10:40	05/24/17 01:14	1
Beryllium	ND		0.70		ug/L		05/23/17 10:40	05/24/17 01:14	1
Cadmium	ND		0.50		ug/L		05/23/17 10:40	05/24/17 01:14	1
Cobalt	0.97		0.30		ug/L		05/23/17 10:40	05/24/17 01:14	1
Molybdenum	2.8		1.0		ug/L		05/23/17 10:40	05/24/17 01:14	1
Selenium	ND		1.0		ug/L		05/23/17 10:40	05/24/17 01:14	1
Thallium	ND		0.20		ug/L		05/23/17 10:40	05/24/17 01:14	1

**Method: 245.1 - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020		mg/L		05/22/17 07:30	05/22/17 12:41	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	56.1		2.5		mg/L			06/02/17 23:45	5
Fluoride	ND		0.25		mg/L			06/02/17 23:45	5
Sulfate	13.0		10.0		mg/L			06/02/17 23:45	5
Total Dissolved Solids	310		10.0		mg/L			05/23/17 02:33	1
Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	6.8	HF	0.1		SU			05/22/17 15:07	1
Temperature	18.3	HF	0.001		Degrees C			05/22/17 15:07	1

# Client Sample Results

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

TestAmerica Job ID: 480-118334-1

**Client Sample ID: P-3**

**Date Collected: 05/17/17 09:00**

**Date Received: 05/20/17 09:30**

**Lab Sample ID: 480-118334-3**

**Matrix: Water**

### Method: 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	0.19		0.0020		mg/L		05/22/17 09:48	05/25/17 18:21	1
Boron	0.031		0.020		mg/L		05/22/17 09:48	05/25/17 18:21	1
Calcium	140		0.50		mg/L		05/22/17 09:48	05/25/17 18:21	1
Chromium	ND		0.0040		mg/L		05/22/17 09:48	05/25/17 18:21	1
Lead	ND		0.010		mg/L		05/22/17 09:48	05/25/17 18:21	1
Lithium	ND		0.030		mg/L		05/22/17 09:48	05/25/17 18:21	1

### Method: 200.8 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		1.0		ug/L		05/23/17 10:40	05/24/17 01:20	1
Arsenic	ND		1.0		ug/L		05/23/17 10:40	05/24/17 01:20	1
Beryllium	ND		0.70		ug/L		05/23/17 10:40	05/24/17 01:20	1
Cadmium	ND		0.50		ug/L		05/23/17 10:40	05/24/17 01:20	1
Cobalt	0.41		0.30		ug/L		05/23/17 10:40	05/24/17 01:20	1
Molybdenum	ND		1.0		ug/L		05/23/17 10:40	05/24/17 01:20	1
Selenium	ND		1.0		ug/L		05/23/17 10:40	05/24/17 01:20	1
Thallium	ND		0.20		ug/L		05/23/17 10:40	05/24/17 01:20	1

### Method: 245.1 - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020		mg/L		05/22/17 07:30	05/22/17 12:42	1

### General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	127		2.5		mg/L			06/03/17 00:00	5
Fluoride	ND		0.25		mg/L			06/03/17 00:00	5
Sulfate	90.7		10.0		mg/L			06/03/17 00:00	5
Total Dissolved Solids	683		10.0		mg/L			05/23/17 02:33	1
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH	7.2	HF	0.1		SU			05/22/17 15:10	1
Temperature	18.2	HF	0.001		Degrees C			05/22/17 15:10	1

# Client Sample Results

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

TestAmerica Job ID: 480-118334-1

**Client Sample ID: P-5**

**Date Collected: 05/17/17 09:35**

**Date Received: 05/20/17 09:30**

**Lab Sample ID: 480-118334-4**

**Matrix: Water**

### Method: 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	0.32		0.0020		mg/L		05/22/17 09:48	05/25/17 18:25	1
Boron	0.042		0.020		mg/L		05/22/17 09:48	05/25/17 18:25	1
Calcium	163		0.50		mg/L		05/22/17 09:48	05/25/17 18:25	1
Chromium	ND		0.0040		mg/L		05/22/17 09:48	05/25/17 18:25	1
Lead	0.011		0.010		mg/L		05/22/17 09:48	05/25/17 18:25	1
Lithium	ND		0.030		mg/L		05/22/17 09:48	05/25/17 18:25	1

### Method: 200.8 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		1.0		ug/L		05/23/17 10:40	05/24/17 01:25	1
Arsenic	ND		1.0		ug/L		05/23/17 10:40	05/24/17 01:25	1
Beryllium	ND		0.70		ug/L		05/23/17 10:40	05/24/17 01:25	1
Cadmium	0.51		0.50		ug/L		05/23/17 10:40	05/24/17 01:25	1
Cobalt	10.8		0.30		ug/L		05/23/17 10:40	05/24/17 01:25	1
Molybdenum	ND		1.0		ug/L		05/23/17 10:40	05/24/17 01:25	1
Selenium	ND		1.0		ug/L		05/23/17 10:40	05/24/17 01:25	1
Thallium	ND		0.20		ug/L		05/23/17 10:40	05/24/17 01:25	1

### Method: 245.1 - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020		mg/L		05/22/17 07:30	05/22/17 12:47	1

### General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	229		5.0		mg/L			06/03/17 00:14	10
Fluoride	ND		0.50		mg/L			06/03/17 00:14	10
Sulfate	43.4		20.0		mg/L			06/03/17 00:14	10
Total Dissolved Solids	866		10.0		mg/L			05/23/17 02:33	1
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH	6.7	HF	0.1		SU			05/22/17 15:19	1
Temperature	19.1	HF	0.001		Degrees C			05/22/17 15:19	1

# Client Sample Results

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

TestAmerica Job ID: 480-118334-1

**Client Sample ID: P-6**

**Date Collected: 05/17/17 10:10**

**Date Received: 05/20/17 09:30**

**Lab Sample ID: 480-118334-5**

**Matrix: Water**

**Method: 200.7 Rev 4.4 - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	0.11		0.0020		mg/L		05/22/17 09:48	05/25/17 18:28	1
Boron	0.31		0.020		mg/L		05/22/17 09:48	05/25/17 18:28	1
Calcium	164		0.50		mg/L		05/22/17 09:48	05/25/17 18:28	1
Chromium	ND		0.0040		mg/L		05/22/17 09:48	05/25/17 18:28	1
Lead	ND		0.010		mg/L		05/22/17 09:48	05/25/17 18:28	1
Lithium	ND		0.030		mg/L		05/22/17 09:48	05/25/17 18:28	1

**Method: 200.8 - Metals (ICP/MS)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		1.0		ug/L		05/23/17 10:40	05/24/17 01:30	1
Arsenic	ND		1.0		ug/L		05/23/17 10:40	05/24/17 01:30	1
Beryllium	ND		0.70		ug/L		05/23/17 10:40	05/24/17 01:30	1
Cadmium	ND		0.50		ug/L		05/23/17 10:40	05/24/17 01:30	1
Cobalt	0.48		0.30		ug/L		05/23/17 10:40	05/24/17 01:30	1
Molybdenum	ND		1.0		ug/L		05/23/17 10:40	05/24/17 01:30	1
Selenium	ND		1.0		ug/L		05/23/17 10:40	05/24/17 01:30	1
Thallium	ND		0.20		ug/L		05/23/17 10:40	05/24/17 01:30	1

**Method: 245.1 - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020		mg/L		05/22/17 07:30	05/22/17 12:49	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	107		5.0		mg/L			06/03/17 01:27	10
Fluoride	ND		0.50		mg/L			06/03/17 01:27	10
Sulfate	125		20.0		mg/L			06/03/17 01:27	10
Total Dissolved Solids	799		10.0		mg/L			05/23/17 02:33	1
Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	6.8	HF	0.1		SU			05/22/17 15:22	1
Temperature	19.2	HF	0.001		Degrees C			05/22/17 15:22	1



# Client Sample Results

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

TestAmerica Job ID: 480-118334-1

**Client Sample ID: P-7**

**Date Collected: 05/17/17 10:40**

**Date Received: 05/20/17 09:30**

**Lab Sample ID: 480-118334-6**

**Matrix: Water**

**Method: 200.7 Rev 4.4 - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	0.23		0.0020		mg/L		05/22/17 09:48	05/25/17 18:32	1
Boron	0.11		0.020		mg/L		05/22/17 09:48	05/25/17 18:32	1
Calcium	172		0.50		mg/L		05/22/17 09:48	05/25/17 18:32	1
Chromium	ND		0.0040		mg/L		05/22/17 09:48	05/25/17 18:32	1
Lead	ND		0.010		mg/L		05/22/17 09:48	05/25/17 18:32	1
Lithium	ND		0.030		mg/L		05/22/17 09:48	05/25/17 18:32	1

**Method: 200.8 - Metals (ICP/MS)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		1.0		ug/L		05/23/17 10:40	05/24/17 01:36	1
Arsenic	ND		1.0		ug/L		05/23/17 10:40	05/24/17 01:36	1
Beryllium	ND		0.70		ug/L		05/23/17 10:40	05/24/17 01:36	1
Cadmium	ND		0.50		ug/L		05/23/17 10:40	05/24/17 01:36	1
Cobalt	0.64		0.30		ug/L		05/23/17 10:40	05/24/17 01:36	1
Molybdenum	ND		1.0		ug/L		05/23/17 10:40	05/24/17 01:36	1
Selenium	ND		1.0		ug/L		05/23/17 10:40	05/24/17 01:36	1
Thallium	ND		0.20		ug/L		05/23/17 10:40	05/24/17 01:36	1

**Method: 245.1 - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020		mg/L		05/23/17 08:15	05/23/17 12:54	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	72.9		5.0		mg/L			06/03/17 01:42	10
Fluoride	ND		0.50		mg/L			06/03/17 01:42	10
Sulfate	44.8		20.0		mg/L			06/03/17 01:42	10
Total Dissolved Solids	735		10.0		mg/L			05/23/17 13:48	1
Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	7.0	HF	0.1		SU			05/22/17 19:59	1
Temperature	19.6	HF	0.001		Degrees C			05/22/17 19:59	1

# Client Sample Results

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

TestAmerica Job ID: 480-118334-1

**Client Sample ID: DUP-1**

**Date Collected: 05/17/17 00:00**

**Date Received: 05/20/17 09:30**

**Lab Sample ID: 480-118334-7**

**Matrix: Water**

**Method: 200.7 Rev 4.4 - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	0.19		0.0020		mg/L		05/22/17 09:48	05/25/17 18:35	1
Boron	0.031		0.020		mg/L		05/22/17 09:48	05/25/17 18:35	1
Calcium	142		0.50		mg/L		05/22/17 09:48	05/25/17 18:35	1
Chromium	ND		0.0040		mg/L		05/22/17 09:48	05/25/17 18:35	1
Lead	ND		0.010		mg/L		05/22/17 09:48	05/25/17 18:35	1
Lithium	ND		0.030		mg/L		05/22/17 09:48	05/25/17 18:35	1

**Method: 200.8 - Metals (ICP/MS)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		1.0		ug/L		05/23/17 10:40	05/24/17 01:41	1
Arsenic	ND		1.0		ug/L		05/23/17 10:40	05/24/17 01:41	1
Beryllium	ND		0.70		ug/L		05/23/17 10:40	05/24/17 01:41	1
Cadmium	ND		0.50		ug/L		05/23/17 10:40	05/24/17 01:41	1
Cobalt	0.42		0.30		ug/L		05/23/17 10:40	05/24/17 01:41	1
Molybdenum	ND		1.0		ug/L		05/23/17 10:40	05/24/17 01:41	1
Selenium	ND		1.0		ug/L		05/23/17 10:40	05/24/17 01:41	1
Thallium	ND		0.20		ug/L		05/23/17 10:40	05/24/17 01:41	1

**Method: 245.1 - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020		mg/L		05/22/17 07:30	05/22/17 12:51	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	133		2.5		mg/L			06/03/17 01:57	5
Fluoride	ND		0.25		mg/L			06/03/17 01:57	5
Sulfate	92.6		10.0		mg/L			06/03/17 01:57	5
Total Dissolved Solids	618		10.0		mg/L			05/23/17 13:48	1
Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	7.2	HF	0.1		SU			05/22/17 15:25	1
Temperature	18.8	HF	0.001		Degrees C			05/22/17 15:25	1

# Client Sample Results

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

TestAmerica Job ID: 480-118334-1

**Client Sample ID: FIELD BLANK**

**Lab Sample ID: 480-118334-8**

**Date Collected: 05/17/17 11:20**

**Matrix: Water**

**Date Received: 05/20/17 09:30**

### Method: 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	ND		0.0020		mg/L		05/22/17 09:48	05/25/17 18:49	1
Boron	ND		0.020		mg/L		05/22/17 09:48	05/25/17 18:49	1
Calcium	ND		0.50		mg/L		05/22/17 09:48	05/25/17 18:49	1
Chromium	ND		0.0040		mg/L		05/22/17 09:48	05/25/17 18:49	1
Lead	ND		0.010		mg/L		05/22/17 09:48	05/25/17 18:49	1
Lithium	ND		0.030		mg/L		05/22/17 09:48	05/25/17 18:49	1

### Method: 200.8 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		1.0		ug/L		05/23/17 10:40	05/24/17 01:47	1
Arsenic	ND		1.0		ug/L		05/23/17 10:40	05/24/17 01:47	1
Beryllium	ND		0.70		ug/L		05/23/17 10:40	05/24/17 01:47	1
Cadmium	ND		0.50		ug/L		05/23/17 10:40	05/24/17 01:47	1
Cobalt	ND		0.30		ug/L		05/23/17 10:40	05/24/17 01:47	1
Molybdenum	ND		1.0		ug/L		05/23/17 10:40	05/24/17 01:47	1
Selenium	ND		1.0		ug/L		05/23/17 10:40	05/24/17 01:47	1
Thallium	ND		0.20		ug/L		05/23/17 10:40	05/24/17 01:47	1

### Method: 245.1 - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020		mg/L		05/22/17 07:30	05/22/17 12:54	1

### General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		5.0		mg/L			06/03/17 02:11	10
Fluoride	ND		0.50		mg/L			06/03/17 02:11	10
Sulfate	ND		20.0		mg/L			06/03/17 02:11	10
Total Dissolved Solids	ND		10.0		mg/L			05/23/17 02:33	1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH	5.8	HF	0.1		SU			05/22/17 15:28	1
Temperature	18.7	HF	0.001		Degrees C			05/22/17 15:28	1

# Client Sample Results

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

TestAmerica Job ID: 480-118334-1

**Client Sample ID: EQUIP BLANK**

**Lab Sample ID: 480-118334-9**

**Date Collected: 05/17/17 11:25**

**Matrix: Water**

**Date Received: 05/20/17 09:30**

**Method: 200.7 Rev 4.4 - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	ND		0.0020		mg/L		05/22/17 09:48	05/25/17 18:53	1
Boron	ND		0.020		mg/L		05/22/17 09:48	05/25/17 18:53	1
Calcium	ND		0.50		mg/L		05/22/17 09:48	05/25/17 18:53	1
Chromium	ND		0.0040		mg/L		05/22/17 09:48	05/25/17 18:53	1
Lead	ND		0.010		mg/L		05/22/17 09:48	05/25/17 18:53	1
Lithium	ND		0.030		mg/L		05/22/17 09:48	05/25/17 18:53	1

**Method: 200.8 - Metals (ICP/MS)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		1.0		ug/L		05/23/17 10:40	05/24/17 01:52	1
Arsenic	ND		1.0		ug/L		05/23/17 10:40	05/24/17 01:52	1
Beryllium	ND		0.70		ug/L		05/23/17 10:40	05/24/17 01:52	1
Cadmium	ND		0.50		ug/L		05/23/17 10:40	05/24/17 01:52	1
Cobalt	ND		0.30		ug/L		05/23/17 10:40	05/24/17 01:52	1
Molybdenum	ND		1.0		ug/L		05/23/17 10:40	05/24/17 01:52	1
Selenium	ND		1.0		ug/L		05/23/17 10:40	05/24/17 01:52	1
Thallium	ND		0.20		ug/L		05/23/17 10:40	05/24/17 01:52	1

**Method: 245.1 - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020		mg/L		05/22/17 07:30	05/22/17 12:55	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		0.50		mg/L			06/03/17 02:26	1
Fluoride	ND		0.050		mg/L			06/03/17 02:26	1
Sulfate	ND		2.0		mg/L			06/03/17 02:26	1
Total Dissolved Solids	ND		10.0		mg/L			05/23/17 13:48	1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH	5.3	HF	0.1		SU			05/22/17 15:31	1
Temperature	18.7	HF	0.001		Degrees C			05/22/17 15:31	1

# QC Sample Results

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

TestAmerica Job ID: 480-118334-1

## Method: 200.7 Rev 4.4 - Metals (ICP)

**Lab Sample ID: MB 480-358585/1-A**  
**Matrix: Water**  
**Analysis Batch: 359313**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 358585**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	ND		0.0020		mg/L		05/22/17 09:48	05/25/17 17:44	1
Boron	ND		0.020		mg/L		05/22/17 09:48	05/25/17 17:44	1
Calcium	ND		0.50		mg/L		05/22/17 09:48	05/25/17 17:44	1
Chromium	ND		0.0040		mg/L		05/22/17 09:48	05/25/17 17:44	1
Lead	ND		0.010		mg/L		05/22/17 09:48	05/25/17 17:44	1
Lithium	ND		0.030		mg/L		05/22/17 09:48	05/25/17 17:44	1

**Lab Sample ID: LCS 480-358585/2-A**  
**Matrix: Water**  
**Analysis Batch: 359313**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 358585**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Barium	0.200	0.217		mg/L		109	85 - 115
Boron	0.200	0.210		mg/L		105	85 - 115
Calcium	10.0	10.35		mg/L		103	85 - 115
Chromium	0.200	0.207		mg/L		103	85 - 115
Lead	0.200	0.208		mg/L		104	85 - 115

**Lab Sample ID: 480-118334-1 MS**  
**Matrix: Water**  
**Analysis Batch: 359313**

**Client Sample ID: P-1**  
**Prep Type: Total/NA**  
**Prep Batch: 358585**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Barium	0.10		0.200	0.313		mg/L		105	70 - 130
Boron	0.071		0.200	0.276		mg/L		102	70 - 130
Calcium	98.4		10.0	109.1	4	mg/L		106	70 - 130
Chromium	ND		0.200	0.201		mg/L		101	70 - 130
Lead	ND		0.200	0.215		mg/L		103	70 - 130

**Lab Sample ID: 480-118334-1 MSD**  
**Matrix: Water**  
**Analysis Batch: 359313**

**Client Sample ID: P-1**  
**Prep Type: Total/NA**  
**Prep Batch: 358585**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Barium	0.10		0.200	0.307		mg/L		102	70 - 130	2	20
Boron	0.071		0.200	0.273		mg/L		101	70 - 130	1	20
Calcium	98.4		10.0	106.0	4	mg/L		76	70 - 130	3	20
Chromium	ND		0.200	0.198		mg/L		99	70 - 130	1	20
Lead	ND		0.200	0.213		mg/L		102	70 - 130	1	20

## Method: 200.8 - Metals (ICP/MS)

**Lab Sample ID: MB 480-358661/1-A**  
**Matrix: Water**  
**Analysis Batch: 358888**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 358661**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		1.0		ug/L		05/23/17 10:40	05/23/17 23:56	1
Arsenic	ND		1.0		ug/L		05/23/17 10:40	05/23/17 23:56	1

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# QC Sample Results

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

TestAmerica Job ID: 480-118334-1

## Method: 200.8 - Metals (ICP/MS) (Continued)

**Lab Sample ID: MB 480-358661/1-A**  
**Matrix: Water**  
**Analysis Batch: 358888**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 358661**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Beryllium	ND		0.70		ug/L		05/23/17 10:40	05/23/17 23:56	1
Cadmium	ND		0.50		ug/L		05/23/17 10:40	05/23/17 23:56	1
Cobalt	ND		0.30		ug/L		05/23/17 10:40	05/23/17 23:56	1
Molybdenum	ND		1.0		ug/L		05/23/17 10:40	05/23/17 23:56	1
Selenium	ND		1.0		ug/L		05/23/17 10:40	05/23/17 23:56	1
Thallium	ND		0.20		ug/L		05/23/17 10:40	05/23/17 23:56	1

**Lab Sample ID: LCS 480-358661/2-A**  
**Matrix: Water**  
**Analysis Batch: 358888**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 358661**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Antimony	20.0	20.79		ug/L		104	85 - 115
Arsenic	20.0	20.74		ug/L		104	85 - 115
Beryllium	20.0	20.09		ug/L		100	85 - 115
Cadmium	20.0	19.92		ug/L		100	85 - 115
Cobalt	20.0	19.63		ug/L		98	85 - 115
Molybdenum	20.0	19.71		ug/L		99	85 - 115
Selenium	20.0	20.94		ug/L		105	85 - 115
Thallium	20.0	19.72		ug/L		99	85 - 115

## Method: 245.1 - Mercury (CVAA)

**Lab Sample ID: MB 480-358431/1-A**  
**Matrix: Water**  
**Analysis Batch: 358577**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 358431**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020		mg/L		05/22/17 07:30	05/22/17 12:30	1

**Lab Sample ID: LCS 480-358431/2-A**  
**Matrix: Water**  
**Analysis Batch: 358577**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 358431**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	0.00667	0.00695		mg/L		104	85 - 115

**Lab Sample ID: 480-118334-1 MS**  
**Matrix: Water**  
**Analysis Batch: 358577**

**Client Sample ID: P-1**  
**Prep Type: Total/NA**  
**Prep Batch: 358431**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	ND		0.00667	0.00695		mg/L		104	70 - 130

TestAmerica Buffalo

# QC Sample Results

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

TestAmerica Job ID: 480-118334-1

## Method: 245.1 - Mercury (CVAA) (Continued)

**Lab Sample ID: 480-118334-1 MSD**  
**Matrix: Water**  
**Analysis Batch: 358577**

**Client Sample ID: P-1**  
**Prep Type: Total/NA**  
**Prep Batch: 358431**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	Limit
Mercury	ND		0.00667	0.00705		mg/L		106	70 - 130	1	20

**Lab Sample ID: MB 480-358613/1-A**  
**Matrix: Water**  
**Analysis Batch: 358740**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 358613**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020		mg/L		05/23/17 08:15	05/23/17 12:37	1

**Lab Sample ID: LCS 480-358613/2-A**  
**Matrix: Water**  
**Analysis Batch: 358740**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 358613**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	0.00667	0.00637		mg/L		95	85 - 115

**Lab Sample ID: LCSD 480-358613/3-A**  
**Matrix: Water**  
**Analysis Batch: 358740**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 358613**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	Limit
Mercury	0.00667	0.00595		mg/L		89	85 - 115	7	20

**Lab Sample ID: 480-118334-6 MS**  
**Matrix: Water**  
**Analysis Batch: 358740**

**Client Sample ID: P-7**  
**Prep Type: Total/NA**  
**Prep Batch: 358613**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	ND		0.00667	0.00662		mg/L		99	70 - 130

**Lab Sample ID: 480-118334-6 MSD**  
**Matrix: Water**  
**Analysis Batch: 358740**

**Client Sample ID: P-7**  
**Prep Type: Total/NA**  
**Prep Batch: 358613**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	Limit
Mercury	ND		0.00667	0.00660		mg/L		99	70 - 130	0	20

## Method: 300.0 - Anions, Ion Chromatography

**Lab Sample ID: MB 480-360217/28**  
**Matrix: Water**  
**Analysis Batch: 360217**

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		0.50		mg/L			06/02/17 17:07	1
Fluoride	ND		0.050		mg/L			06/02/17 17:07	1
Sulfate	ND		2.0		mg/L			06/02/17 17:07	1

TestAmerica Buffalo

# QC Sample Results

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

TestAmerica Job ID: 480-118334-1

## Method: 300.0 - Anions, Ion Chromatography (Continued)

**Lab Sample ID: LCS 480-360217/27**

**Matrix: Water**  
**Analysis Batch: 360217**

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	50.0	51.36		mg/L		103	90 - 110
Fluoride	5.00	4.89		mg/L		98	90 - 110
Sulfate	50.0	53.02		mg/L		106	90 - 110

**Lab Sample ID: 480-118334-1 MS**

**Matrix: Water**  
**Analysis Batch: 360217**

**Client Sample ID: P-1**  
**Prep Type: Total/NA**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	50.3		500	569.1		mg/L		104	81 - 120
Fluoride	ND		50.0	49.74		mg/L		99	82 - 120
Sulfate	ND		500	563.6		mg/L		109	80 - 120

**Lab Sample ID: MB 480-360222/28**

**Matrix: Water**  
**Analysis Batch: 360222**

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		0.50		mg/L			06/02/17 22:47	1
Fluoride	ND		0.050		mg/L			06/02/17 22:47	1
Sulfate	ND		2.0		mg/L			06/02/17 22:47	1

**Lab Sample ID: LCS 480-360222/27**

**Matrix: Water**  
**Analysis Batch: 360222**

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	50.0	51.98		mg/L		104	90 - 110
Fluoride	5.00	5.17		mg/L		103	90 - 110
Sulfate	50.0	52.42		mg/L		105	90 - 110

**Lab Sample ID: 480-118334-4 MS**

**Matrix: Water**  
**Analysis Batch: 360222**

**Client Sample ID: P-5**  
**Prep Type: Total/NA**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	229		500	736.4		mg/L		101	81 - 120
Fluoride	ND		50.0	51.71		mg/L		103	82 - 120
Sulfate	43.4		500	564.5		mg/L		104	80 - 120

**Lab Sample ID: 480-118334-4 MSD**

**Matrix: Water**  
**Analysis Batch: 360222**

**Client Sample ID: P-5**  
**Prep Type: Total/NA**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	229		500	734.6		mg/L		101	81 - 120	0	20
Fluoride	ND		50.0	51.55		mg/L		103	82 - 120	0	20
Sulfate	43.4		500	561.5		mg/L		104	80 - 120	1	20

TestAmerica Buffalo



# QC Sample Results

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

TestAmerica Job ID: 480-118334-1

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

**Lab Sample ID: MB 480-358608/1**  
**Matrix: Water**  
**Analysis Batch: 358608**

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	ND		10.0		mg/L			05/23/17 02:33	1

**Lab Sample ID: LCS 480-358608/2**  
**Matrix: Water**  
**Analysis Batch: 358608**

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Dissolved Solids	504	488.0		mg/L		97	85 - 115

**Lab Sample ID: 480-118334-1 DU**  
**Matrix: Water**  
**Analysis Batch: 358608**

**Client Sample ID: P-1**  
**Prep Type: Total/NA**

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Dissolved Solids	456		440.0		mg/L		4	10

**Lab Sample ID: MB 480-358733/1**  
**Matrix: Water**  
**Analysis Batch: 358733**

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	ND		10.0		mg/L			05/23/17 13:48	1

**Lab Sample ID: LCS 480-358733/2**  
**Matrix: Water**  
**Analysis Batch: 358733**

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Dissolved Solids	504	467.0		mg/L		93	85 - 115

**Lab Sample ID: 480-118334-9 DU**  
**Matrix: Water**  
**Analysis Batch: 358733**

**Client Sample ID: EQUIP BLANK**  
**Prep Type: Total/NA**

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Dissolved Solids	ND		ND		mg/L		NC	10

## Method: SM 4500 H+ B - pH

**Lab Sample ID: LCS 480-358583/1**  
**Matrix: Water**  
**Analysis Batch: 358583**

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

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

TestAmerica Buffalo

# QC Sample Results

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

TestAmerica Job ID: 480-118334-1

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

**Lab Sample ID: LCS 480-358583/23**  
**Matrix: Water**  
**Analysis Batch: 358583**

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

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

**Lab Sample ID: 480-118334-3 DU**  
**Matrix: Water**  
**Analysis Batch: 358583**

**Client Sample ID: P-3**  
**Prep Type: Total/NA**

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
pH	7.2	HF	7.2		SU		0.4	5
Temperature	18.2	HF	18.3		Degrees C		0.8	10

**Lab Sample ID: LCS 480-358601/23**  
**Matrix: Water**  
**Analysis Batch: 358601**

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

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

- 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

TestAmerica Job ID: 480-118334-1

## Metals

### Prep Batch: 358431

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-118334-1	P-1	Total/NA	Water	245.1	
480-118334-2	P-2	Total/NA	Water	245.1	
480-118334-3	P-3	Total/NA	Water	245.1	
480-118334-4	P-5	Total/NA	Water	245.1	
480-118334-5	P-6	Total/NA	Water	245.1	
480-118334-7	DUP-1	Total/NA	Water	245.1	
480-118334-8	FIELD BLANK	Total/NA	Water	245.1	
480-118334-9	EQUIP BLANK	Total/NA	Water	245.1	
MB 480-358431/1-A	Method Blank	Total/NA	Water	245.1	
LCS 480-358431/2-A	Lab Control Sample	Total/NA	Water	245.1	
480-118334-1 MS	P-1	Total/NA	Water	245.1	
480-118334-1 MSD	P-1	Total/NA	Water	245.1	

### Analysis Batch: 358577

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-118334-1	P-1	Total/NA	Water	245.1	358431
480-118334-2	P-2	Total/NA	Water	245.1	358431
480-118334-3	P-3	Total/NA	Water	245.1	358431
480-118334-4	P-5	Total/NA	Water	245.1	358431
480-118334-5	P-6	Total/NA	Water	245.1	358431
480-118334-7	DUP-1	Total/NA	Water	245.1	358431
480-118334-8	FIELD BLANK	Total/NA	Water	245.1	358431
480-118334-9	EQUIP BLANK	Total/NA	Water	245.1	358431
MB 480-358431/1-A	Method Blank	Total/NA	Water	245.1	358431
LCS 480-358431/2-A	Lab Control Sample	Total/NA	Water	245.1	358431
480-118334-1 MS	P-1	Total/NA	Water	245.1	358431
480-118334-1 MSD	P-1	Total/NA	Water	245.1	358431

### Prep Batch: 358585

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-118334-1	P-1	Total/NA	Water	200.7	
480-118334-2	P-2	Total/NA	Water	200.7	
480-118334-3	P-3	Total/NA	Water	200.7	
480-118334-4	P-5	Total/NA	Water	200.7	
480-118334-5	P-6	Total/NA	Water	200.7	
480-118334-6	P-7	Total/NA	Water	200.7	
480-118334-7	DUP-1	Total/NA	Water	200.7	
480-118334-8	FIELD BLANK	Total/NA	Water	200.7	
480-118334-9	EQUIP BLANK	Total/NA	Water	200.7	
MB 480-358585/1-A	Method Blank	Total/NA	Water	200.7	
LCS 480-358585/2-A	Lab Control Sample	Total/NA	Water	200.7	
480-118334-1 MS	P-1	Total/NA	Water	200.7	
480-118334-1 MSD	P-1	Total/NA	Water	200.7	

### Prep Batch: 358613

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-118334-6	P-7	Total/NA	Water	245.1	
MB 480-358613/1-A	Method Blank	Total/NA	Water	245.1	
LCS 480-358613/2-A	Lab Control Sample	Total/NA	Water	245.1	
LCSD 480-358613/3-A	Lab Control Sample Dup	Total/NA	Water	245.1	
480-118334-6 MS	P-7	Total/NA	Water	245.1	

TestAmerica Buffalo

# QC Association Summary

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

TestAmerica Job ID: 480-118334-1

## Metals (Continued)

### Prep Batch: 358613 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-118334-6 MSD	P-7	Total/NA	Water	245.1	

### Prep Batch: 358661

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-118334-1	P-1	Total/NA	Water	200.8	
480-118334-2	P-2	Total/NA	Water	200.8	
480-118334-3	P-3	Total/NA	Water	200.8	
480-118334-4	P-5	Total/NA	Water	200.8	
480-118334-5	P-6	Total/NA	Water	200.8	
480-118334-6	P-7	Total/NA	Water	200.8	
480-118334-7	DUP-1	Total/NA	Water	200.8	
480-118334-8	FIELD BLANK	Total/NA	Water	200.8	
480-118334-9	EQUIP BLANK	Total/NA	Water	200.8	
MB 480-358661/1-A	Method Blank	Total/NA	Water	200.8	
LCS 480-358661/2-A	Lab Control Sample	Total/NA	Water	200.8	

### Analysis Batch: 358740

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-118334-6	P-7	Total/NA	Water	245.1	358613
MB 480-358613/1-A	Method Blank	Total/NA	Water	245.1	358613
LCS 480-358613/2-A	Lab Control Sample	Total/NA	Water	245.1	358613
LCSD 480-358613/3-A	Lab Control Sample Dup	Total/NA	Water	245.1	358613
480-118334-6 MS	P-7	Total/NA	Water	245.1	358613
480-118334-6 MSD	P-7	Total/NA	Water	245.1	358613

### Analysis Batch: 358888

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-118334-1	P-1	Total/NA	Water	200.8	358661
480-118334-2	P-2	Total/NA	Water	200.8	358661
480-118334-3	P-3	Total/NA	Water	200.8	358661
480-118334-4	P-5	Total/NA	Water	200.8	358661
480-118334-5	P-6	Total/NA	Water	200.8	358661
480-118334-6	P-7	Total/NA	Water	200.8	358661
480-118334-7	DUP-1	Total/NA	Water	200.8	358661
480-118334-8	FIELD BLANK	Total/NA	Water	200.8	358661
480-118334-9	EQUIP BLANK	Total/NA	Water	200.8	358661
MB 480-358661/1-A	Method Blank	Total/NA	Water	200.8	358661
LCS 480-358661/2-A	Lab Control Sample	Total/NA	Water	200.8	358661

### Analysis Batch: 359313

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-118334-1	P-1	Total/NA	Water	200.7 Rev 4.4	358585
480-118334-2	P-2	Total/NA	Water	200.7 Rev 4.4	358585
480-118334-3	P-3	Total/NA	Water	200.7 Rev 4.4	358585
480-118334-4	P-5	Total/NA	Water	200.7 Rev 4.4	358585
480-118334-5	P-6	Total/NA	Water	200.7 Rev 4.4	358585
480-118334-6	P-7	Total/NA	Water	200.7 Rev 4.4	358585
480-118334-7	DUP-1	Total/NA	Water	200.7 Rev 4.4	358585
480-118334-8	FIELD BLANK	Total/NA	Water	200.7 Rev 4.4	358585
480-118334-9	EQUIP BLANK	Total/NA	Water	200.7 Rev 4.4	358585
MB 480-358585/1-A	Method Blank	Total/NA	Water	200.7 Rev 4.4	358585

TestAmerica Buffalo

# QC Association Summary

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

TestAmerica Job ID: 480-118334-1

## Metals (Continued)

### Analysis Batch: 359313 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 480-358585/2-A	Lab Control Sample	Total/NA	Water	200.7 Rev 4.4	358585
480-118334-1 MS	P-1	Total/NA	Water	200.7 Rev 4.4	358585
480-118334-1 MSD	P-1	Total/NA	Water	200.7 Rev 4.4	358585

## General Chemistry

### Analysis Batch: 358583

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-118334-1	P-1	Total/NA	Water	SM 4500 H+ B	
480-118334-2	P-2	Total/NA	Water	SM 4500 H+ B	
480-118334-3	P-3	Total/NA	Water	SM 4500 H+ B	
480-118334-4	P-5	Total/NA	Water	SM 4500 H+ B	
480-118334-5	P-6	Total/NA	Water	SM 4500 H+ B	
480-118334-7	DUP-1	Total/NA	Water	SM 4500 H+ B	
480-118334-8	FIELD BLANK	Total/NA	Water	SM 4500 H+ B	
480-118334-9	EQUIP BLANK	Total/NA	Water	SM 4500 H+ B	
LCS 480-358583/1	Lab Control Sample	Total/NA	Water	SM 4500 H+ B	
LCS 480-358583/23	Lab Control Sample	Total/NA	Water	SM 4500 H+ B	
480-118334-3 DU	P-3	Total/NA	Water	SM 4500 H+ B	

### Analysis Batch: 358601

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-118334-6	P-7	Total/NA	Water	SM 4500 H+ B	
LCS 480-358601/23	Lab Control Sample	Total/NA	Water	SM 4500 H+ B	

### Analysis Batch: 358608

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-118334-1	P-1	Total/NA	Water	SM 2540C	
480-118334-2	P-2	Total/NA	Water	SM 2540C	
480-118334-3	P-3	Total/NA	Water	SM 2540C	
480-118334-4	P-5	Total/NA	Water	SM 2540C	
480-118334-5	P-6	Total/NA	Water	SM 2540C	
480-118334-8	FIELD BLANK	Total/NA	Water	SM 2540C	
MB 480-358608/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 480-358608/2	Lab Control Sample	Total/NA	Water	SM 2540C	
480-118334-1 DU	P-1	Total/NA	Water	SM 2540C	

### Analysis Batch: 358733

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-118334-6	P-7	Total/NA	Water	SM 2540C	
480-118334-7	DUP-1	Total/NA	Water	SM 2540C	
480-118334-9	EQUIP BLANK	Total/NA	Water	SM 2540C	
MB 480-358733/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 480-358733/2	Lab Control Sample	Total/NA	Water	SM 2540C	
480-118334-9 DU	EQUIP BLANK	Total/NA	Water	SM 2540C	

### Analysis Batch: 360217

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-118334-1	P-1	Total/NA	Water	300.0	
MB 480-360217/28	Method Blank	Total/NA	Water	300.0	

TestAmerica Buffalo

# QC Association Summary

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

TestAmerica Job ID: 480-118334-1

## General Chemistry (Continued)

### Analysis Batch: 360217 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 480-360217/27	Lab Control Sample	Total/NA	Water	300.0	
480-118334-1 MS	P-1	Total/NA	Water	300.0	

### Analysis Batch: 360222

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-118334-2	P-2	Total/NA	Water	300.0	
480-118334-3	P-3	Total/NA	Water	300.0	
480-118334-4	P-5	Total/NA	Water	300.0	
480-118334-5	P-6	Total/NA	Water	300.0	
480-118334-6	P-7	Total/NA	Water	300.0	
480-118334-7	DUP-1	Total/NA	Water	300.0	
480-118334-8	FIELD BLANK	Total/NA	Water	300.0	
480-118334-9	EQUIP BLANK	Total/NA	Water	300.0	
MB 480-360222/28	Method Blank	Total/NA	Water	300.0	
LCS 480-360222/27	Lab Control Sample	Total/NA	Water	300.0	
480-118334-4 MS	P-5	Total/NA	Water	300.0	
480-118334-4 MSD	P-5	Total/NA	Water	300.0	

# Lab Chronicle

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

TestAmerica Job ID: 480-118334-1

## Client Sample ID: P-1

Date Collected: 05/17/17 08:30

Date Received: 05/20/17 09:30

## Lab Sample ID: 480-118334-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	200.7			358585	05/22/17 09:48	MJW	TAL BUF
Total/NA	Analysis	200.7 Rev 4.4		1	359313	05/25/17 17:51	LMH	TAL BUF
Total/NA	Prep	200.8			358661	05/23/17 10:40	MVZ	TAL BUF
Total/NA	Analysis	200.8		1	358888	05/24/17 01:09	TRB	TAL BUF
Total/NA	Prep	245.1			358431	05/22/17 07:30	JRK	TAL BUF
Total/NA	Analysis	245.1		1	358577	05/22/17 12:34	JRK	TAL BUF
Total/NA	Analysis	300.0		10	360217	06/02/17 19:42	DMR	TAL BUF
Total/NA	Analysis	SM 2540C		1	358608	05/23/17 02:33	KMB	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	358583	05/22/17 15:04	DSC	TAL BUF

## Client Sample ID: P-2

Date Collected: 05/17/17 11:05

Date Received: 05/20/17 09:30

## Lab Sample ID: 480-118334-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	200.7			358585	05/22/17 09:48	MJW	TAL BUF
Total/NA	Analysis	200.7 Rev 4.4		1	359313	05/25/17 18:18	LMH	TAL BUF
Total/NA	Prep	200.8			358661	05/23/17 10:40	MVZ	TAL BUF
Total/NA	Analysis	200.8		1	358888	05/24/17 01:14	TRB	TAL BUF
Total/NA	Prep	245.1			358431	05/22/17 07:30	JRK	TAL BUF
Total/NA	Analysis	245.1		1	358577	05/22/17 12:41	JRK	TAL BUF
Total/NA	Analysis	300.0		5	360222	06/02/17 23:45	DMR	TAL BUF
Total/NA	Analysis	SM 2540C		1	358608	05/23/17 02:33	KMB	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	358583	05/22/17 15:07	DSC	TAL BUF

## Client Sample ID: P-3

Date Collected: 05/17/17 09:00

Date Received: 05/20/17 09:30

## Lab Sample ID: 480-118334-3

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	200.7			358585	05/22/17 09:48	MJW	TAL BUF
Total/NA	Analysis	200.7 Rev 4.4		1	359313	05/25/17 18:21	LMH	TAL BUF
Total/NA	Prep	200.8			358661	05/23/17 10:40	MVZ	TAL BUF
Total/NA	Analysis	200.8		1	358888	05/24/17 01:20	TRB	TAL BUF
Total/NA	Prep	245.1			358431	05/22/17 07:30	JRK	TAL BUF
Total/NA	Analysis	245.1		1	358577	05/22/17 12:42	JRK	TAL BUF
Total/NA	Analysis	300.0		5	360222	06/03/17 00:00	DMR	TAL BUF
Total/NA	Analysis	SM 2540C		1	358608	05/23/17 02:33	KMB	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	358583	05/22/17 15:10	DSC	TAL BUF

# Lab Chronicle

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

TestAmerica Job ID: 480-118334-1

## Client Sample ID: P-5

Date Collected: 05/17/17 09:35

Date Received: 05/20/17 09:30

## Lab Sample ID: 480-118334-4

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	200.7			358585	05/22/17 09:48	MJW	TAL BUF
Total/NA	Analysis	200.7 Rev 4.4		1	359313	05/25/17 18:25	LMH	TAL BUF
Total/NA	Prep	200.8			358661	05/23/17 10:40	MVZ	TAL BUF
Total/NA	Analysis	200.8		1	358888	05/24/17 01:25	TRB	TAL BUF
Total/NA	Prep	245.1			358431	05/22/17 07:30	JRK	TAL BUF
Total/NA	Analysis	245.1		1	358577	05/22/17 12:47	JRK	TAL BUF
Total/NA	Analysis	300.0		10	360222	06/03/17 00:14	DMR	TAL BUF
Total/NA	Analysis	SM 2540C		1	358608	05/23/17 02:33	KMB	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	358583	05/22/17 15:19	DSC	TAL BUF

## Client Sample ID: P-6

Date Collected: 05/17/17 10:10

Date Received: 05/20/17 09:30

## Lab Sample ID: 480-118334-5

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	200.7			358585	05/22/17 09:48	MJW	TAL BUF
Total/NA	Analysis	200.7 Rev 4.4		1	359313	05/25/17 18:28	LMH	TAL BUF
Total/NA	Prep	200.8			358661	05/23/17 10:40	MVZ	TAL BUF
Total/NA	Analysis	200.8		1	358888	05/24/17 01:30	TRB	TAL BUF
Total/NA	Prep	245.1			358431	05/22/17 07:30	JRK	TAL BUF
Total/NA	Analysis	245.1		1	358577	05/22/17 12:49	JRK	TAL BUF
Total/NA	Analysis	300.0		10	360222	06/03/17 01:27	DMR	TAL BUF
Total/NA	Analysis	SM 2540C		1	358608	05/23/17 02:33	KMB	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	358583	05/22/17 15:22	DSC	TAL BUF

## Client Sample ID: P-7

Date Collected: 05/17/17 10:40

Date Received: 05/20/17 09:30

## Lab Sample ID: 480-118334-6

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	200.7			358585	05/22/17 09:48	MJW	TAL BUF
Total/NA	Analysis	200.7 Rev 4.4		1	359313	05/25/17 18:32	LMH	TAL BUF
Total/NA	Prep	200.8			358661	05/23/17 10:40	MVZ	TAL BUF
Total/NA	Analysis	200.8		1	358888	05/24/17 01:36	TRB	TAL BUF
Total/NA	Prep	245.1			358613	05/23/17 08:15	MVZ	TAL BUF
Total/NA	Analysis	245.1		1	358740	05/23/17 12:54	JRK	TAL BUF
Total/NA	Analysis	300.0		10	360222	06/03/17 01:42	DMR	TAL BUF
Total/NA	Analysis	SM 2540C		1	358733	05/23/17 13:48	EKB	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	358601	05/22/17 19:59	ALZ	TAL BUF



# Lab Chronicle

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

TestAmerica Job ID: 480-118334-1

**Client Sample ID: DUP-1**

**Lab Sample ID: 480-118334-7**

**Date Collected: 05/17/17 00:00**

**Matrix: Water**

**Date Received: 05/20/17 09:30**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	200.7			358585	05/22/17 09:48	MJW	TAL BUF
Total/NA	Analysis	200.7 Rev 4.4		1	359313	05/25/17 18:35	LMH	TAL BUF
Total/NA	Prep	200.8			358661	05/23/17 10:40	MVZ	TAL BUF
Total/NA	Analysis	200.8		1	358888	05/24/17 01:41	TRB	TAL BUF
Total/NA	Prep	245.1			358431	05/22/17 07:30	JRK	TAL BUF
Total/NA	Analysis	245.1		1	358577	05/22/17 12:51	JRK	TAL BUF
Total/NA	Analysis	300.0		5	360222	06/03/17 01:57	DMR	TAL BUF
Total/NA	Analysis	SM 2540C		1	358733	05/23/17 13:48	EKB	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	358583	05/22/17 15:25	DSC	TAL BUF

**Client Sample ID: FIELD BLANK**

**Lab Sample ID: 480-118334-8**

**Date Collected: 05/17/17 11:20**

**Matrix: Water**

**Date Received: 05/20/17 09:30**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	200.7			358585	05/22/17 09:48	MJW	TAL BUF
Total/NA	Analysis	200.7 Rev 4.4		1	359313	05/25/17 18:49	LMH	TAL BUF
Total/NA	Prep	200.8			358661	05/23/17 10:40	MVZ	TAL BUF
Total/NA	Analysis	200.8		1	358888	05/24/17 01:47	TRB	TAL BUF
Total/NA	Prep	245.1			358431	05/22/17 07:30	JRK	TAL BUF
Total/NA	Analysis	245.1		1	358577	05/22/17 12:54	JRK	TAL BUF
Total/NA	Analysis	300.0		10	360222	06/03/17 02:11	DMR	TAL BUF
Total/NA	Analysis	SM 2540C		1	358608	05/23/17 02:33	KMB	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	358583	05/22/17 15:28	DSC	TAL BUF

**Client Sample ID: EQUIP BLANK**

**Lab Sample ID: 480-118334-9**

**Date Collected: 05/17/17 11:25**

**Matrix: Water**

**Date Received: 05/20/17 09:30**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	200.7			358585	05/22/17 09:48	MJW	TAL BUF
Total/NA	Analysis	200.7 Rev 4.4		1	359313	05/25/17 18:53	LMH	TAL BUF
Total/NA	Prep	200.8			358661	05/23/17 10:40	MVZ	TAL BUF
Total/NA	Analysis	200.8		1	358888	05/24/17 01:52	TRB	TAL BUF
Total/NA	Prep	245.1			358431	05/22/17 07:30	JRK	TAL BUF
Total/NA	Analysis	245.1		1	358577	05/22/17 12:55	JRK	TAL BUF
Total/NA	Analysis	300.0		1	360222	06/03/17 02:26	DMR	TAL BUF
Total/NA	Analysis	SM 2540C		1	358733	05/23/17 13:48	EKB	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	358583	05/22/17 15:31	DSC	TAL BUF

**Laboratory References:**

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

# Accreditation/Certification Summary

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

TestAmerica Job ID: 480-118334-1

## Laboratory: TestAmerica Buffalo

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

Authority	Program	EPA Region	Identification Number	Expiration Date
Minnesota	NELAP	5	036-999-337	12-31-17

The following analytes are included in this report, but accreditation/certification is not offered by the governing authority:

Analysis Method	Prep Method	Matrix	Analyte
200.7 Rev 4.4	200.7	Water	Lithium
SM 4500 H+ B		Water	pH
SM 4500 H+ B		Water	Temperature

- 1
- 2
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- 4
- 5
- 6
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- 12
- 13
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# Method Summary

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

TestAmerica Job ID: 480-118334-1

Method	Method Description	Protocol	Laboratory
200.7 Rev 4.4	Metals (ICP)	EPA	TAL BUF
200.8	Metals (ICP/MS)	EPA	TAL BUF
245.1	Mercury (CVAA)	EPA	TAL BUF
300.0	Anions, Ion Chromatography	MCAWW	TAL BUF
SM 2540C	Solids, Total Dissolved (TDS)	SM	TAL BUF
SM 4500 H+ B	pH	SM	TAL BUF

#### Protocol References:

EPA = US Environmental Protection Agency

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

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

#### Laboratory References:

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

# Sample Summary

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

TestAmerica Job ID: 480-118334-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
480-118334-1	P-1	Water	05/17/17 08:30	05/20/17 09:30
480-118334-2	P-2	Water	05/17/17 11:05	05/20/17 09:30
480-118334-3	P-3	Water	05/17/17 09:00	05/20/17 09:30
480-118334-4	P-5	Water	05/17/17 09:35	05/20/17 09:30
480-118334-5	P-6	Water	05/17/17 10:10	05/20/17 09:30
480-118334-6	P-7	Water	05/17/17 10:40	05/20/17 09:30
480-118334-7	DUP-1	Water	05/17/17 00:00	05/20/17 09:30
480-118334-8	FIELD BLANK	Water	05/17/17 11:20	05/20/17 09:30
480-118334-9	EQUIP BLANK	Water	05/17/17 11:25	05/20/17 09:30



**TestAmerica Buffalo**

10 Hazelwood Drive  
Amherst, NY 14228-2298  
Phone (716) 691-2600 Fax (716) 691-7991

**Chain of Custody Record**



THE LEADER IN ENVIRONMENTAL TESTING

<b>Client Information</b> Client Contact: Nathaniel Beinmann Company: Waste Connections, Inc. Address: 13425 Courthouse Blvd City: Rosemount State, Zip: MN, 55068 Phone: Email: nathanielb@wcnx.org Project Name: SKB Cloquet/ Event Desc: CCR Groundwater Site: Minnesota		Lab PM: VanDette, Ryan T E-Mail: ryan.vandette@testamericainc.com Carrier Tracking No(s): Lab No: 480-97154-22507.1 Page: Page 1 of 1 Job #:								
Due Date Requested: TAT Requested (days): Standard PO #: Purchase Order Requested WO #:		<b>Analysis Requested</b> Perform MSMSD (Yes or No) <input checked="" type="checkbox"/> Field Filtered Sample (Yes or No) <input checked="" type="checkbox"/> 901.1 Ra - Radium-226/228 D N D N N 308.0, 28D - Cl/F/SO4 X X X X X 200.7, 200.8, 245.1 X X X X X 2540C Calcd - Total Dissolved Solids X X X X X SM4500_H+ - pH X X X X X Total Number of Containers								
Sample Identification Sample Date Sample Time Sample Type (C=comp, G=grab) Matrix (W=water, G=soil, O=organic, BT=titania, A=air) Preservation Code:		Special Instructions/Note: Did not collect P-4R due to being inaccessible from water out top of well.								
P-1	5/17/17	8:30	G	Water						
P-2		11:15	G	Water						
P-3		9:00	G	Water						
P-4R				Water						
P-5		9:35	G	Water						
P-6		10:10	G	Water						
P-7		10:40	G	Water						
Duplicate			G	Water						
Field Blank		11:20	G	Water						
Equip Blank		11:25	G	Water						
<b>Possible Hazard Identification</b> <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 B/ Lab <input type="checkbox"/> Archive For _____ Months								
Empty Kit Relinquished by: [Signature] Relinquished by: [Signature] Relinquished by: [Signature]		Date: 5-18-17-1316 Date/Time: 5-15-17 19w Date/Time:								
Relinquished by: [Signature] Relinquished by: [Signature]		Date/Time: 5-18-17 1316 Date/Time: 5/20/17 0930 Date/Time:								
Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No Custody Seal No.:		Cooler Temperature(s) °C and Other Remarks: 24, 21								



## Login Sample Receipt Checklist

Client: Waste Connections, Inc.

Job Number: 480-118334-1

**Login Number: 118334**

**List Number: 1**

**Creator: Janish, Carl M**

**List Source: TestAmerica Buffalo**

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

# TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

## ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Buffalo

10 Hazelwood Drive

Amherst, NY 14228-2298

Tel: (716)691-2600

TestAmerica Job ID: 480-118334-2

Client Project/Site: SKB Cloquet - CCR Groundwater

Sampling Event: CCR Groundwater

For:

Waste Connections, Inc.

13425 Courthouse Blvd

Rosemount, Minnesota 55068

Attn: Nathaniel Beinemann



Authorized for release by:

6/22/2017 8:23:00 PM

Denise Giglia, Project Management Assistant II

[denise.giglia@testamericainc.com](mailto:denise.giglia@testamericainc.com)

Designee for

Ryan VanDette, Project Manager II

(716)504-9830

[ryan.vandette@testamericainc.com](mailto:ryan.vandette@testamericainc.com)

### LINKS

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results through

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*The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.*

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

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

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# Definitions/Glossary

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

TestAmerica Job ID: 480-118334-2

## Qualifiers

### Rad

Qualifier	Qualifier Description
*	RPD of the LCS and LCSD exceeds the control limits
U	Result is less than the sample detection limit.

## 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
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)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
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)

# Case Narrative

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

TestAmerica Job ID: 480-118334-2

**Job ID: 480-118334-2**

**Laboratory: TestAmerica Buffalo**

## Narrative

### Job Narrative 480-118334-2

#### Comments

No additional comments.

#### Receipt

The samples were received on 5/20/2017 9:30 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were 2.1° C and 2.4° C.

#### RAD

Method(s) 904.0, 9320: Radium-228 Prep Batch: 160-311350: The LCSD (Laboratory Control Sample Duplicate) associated with the following samples has an RER (replicate error ratio) result outside of the acceptance criteria of 1 (1.25) for Ra-228. Duplicate precision is demonstrated by acceptable relative percent difference (RPD), within the limit of 40% (26%). The data have been qualified and reported. P-1 (480-118334-1), P-2 (480-118334-2), P-3 (480-118334-3), P-5 (480-118334-4), P-6 (480-118334-5), P-7 (480-118334-6), DUP-1 (480-118334-7), FIELD BLANK (480-118334-8), EQUIP BLANK (480-118334-9), (LCS 160-311350/2-A), (LCSD 160-311350/3-A) and (MB 160-311350/1-A)

Method(s) PrecSep\_0: Radium Prep Batch 311350: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate/sample duplicate (MS/MSD/DUP) associated with preparation batch 160-311350 and 160-311350. An LCS/ LCSD were prepared to demonstrate batch precision.

Method(s) PrecSep-21: Radium 226 Prep Batch 311318: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate/sample duplicate (MS/MSD/DUP) associated with preparation batch 160-311318 and 160-311318. An LCS/ LCSD were prepared to demonstrate batch precision.

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

# Detection Summary

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

TestAmerica Job ID: 480-118334-2

**Client Sample ID: P-1**

**Lab Sample ID: 480-118334-1**

No Detections.

**Client Sample ID: P-2**

**Lab Sample ID: 480-118334-2**

No Detections.

**Client Sample ID: P-3**

**Lab Sample ID: 480-118334-3**

No Detections.

**Client Sample ID: P-5**

**Lab Sample ID: 480-118334-4**

No Detections.

**Client Sample ID: P-6**

**Lab Sample ID: 480-118334-5**

No Detections.

**Client Sample ID: P-7**

**Lab Sample ID: 480-118334-6**

No Detections.

**Client Sample ID: DUP-1**

**Lab Sample ID: 480-118334-7**

No Detections.

**Client Sample ID: FIELD BLANK**

**Lab Sample ID: 480-118334-8**

No Detections.

**Client Sample ID: EQUIP BLANK**

**Lab Sample ID: 480-118334-9**

No Detections.

This Detection Summary does not include radiochemical test results.

TestAmerica Buffalo

# Client Sample Results

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

TestAmerica Job ID: 480-118334-2

**Client Sample ID: P-1**

**Lab Sample ID: 480-118334-1**

**Date Collected: 05/17/17 08:30**

**Matrix: Water**

**Date Received: 05/20/17 09:30**

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.112	U	0.0878	0.0884	1.00	0.127	pCi/L	05/31/17 10:26	06/22/17 10:40	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	82.9		40 - 110					05/31/17 10:26	06/22/17 10:40	1

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.0464	U*	0.240	0.240	1.00	0.426	pCi/L	05/31/17 12:45	06/13/17 10:56	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	82.9		40 - 110					05/31/17 12:45	06/13/17 10:56	1
Y Carrier	79.3		40 - 110					05/31/17 12:45	06/13/17 10:56	1

**Method: Ra226\_Ra228 - Combined Radium-226 and Radium-228**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.159	U	0.256	0.256	5.00	0.426	pCi/L		06/22/17 12:52	1

# Client Sample Results

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

TestAmerica Job ID: 480-118334-2

**Client Sample ID: P-2**

**Lab Sample ID: 480-118334-2**

**Date Collected: 05/17/17 11:05**

**Matrix: Water**

**Date Received: 05/20/17 09:30**

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.00362	U	0.0684	0.0684	1.00	0.138	pCi/L	05/31/17 10:26	06/22/17 10:40	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	85.0		40 - 110					05/31/17 10:26	06/22/17 10:40	1

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.237	U*	0.245	0.246	1.00	0.398	pCi/L	05/31/17 12:45	06/13/17 10:56	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	85.0		40 - 110					05/31/17 12:45	06/13/17 10:56	1
Y Carrier	82.6		40 - 110					05/31/17 12:45	06/13/17 10:56	1

## Method: Ra226\_Ra228 - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.241	U	0.254	0.255	5.00	0.398	pCi/L		06/22/17 12:52	1

# Client Sample Results

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

TestAmerica Job ID: 480-118334-2

**Client Sample ID: P-3**

**Date Collected: 05/17/17 09:00**

**Date Received: 05/20/17 09:30**

**Lab Sample ID: 480-118334-3**

**Matrix: Water**

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.213		0.103	0.105	1.00	0.115	pCi/L	05/31/17 10:26	06/22/17 10:40	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	88.5		40 - 110					05/31/17 10:26	06/22/17 10:40	1

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.305	U *	0.270	0.272	1.00	0.433	pCi/L	05/31/17 12:45	06/13/17 10:56	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	88.5		40 - 110					05/31/17 12:45	06/13/17 10:56	1
Y Carrier	80.7		40 - 110					05/31/17 12:45	06/13/17 10:56	1

**Method: Ra226\_Ra228 - Combined Radium-226 and Radium-228**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.519		0.289	0.291	5.00	0.433	pCi/L		06/22/17 12:52	1

# Client Sample Results

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

TestAmerica Job ID: 480-118334-2

**Client Sample ID: P-5**

**Date Collected: 05/17/17 09:35**

**Date Received: 05/20/17 09:30**

**Lab Sample ID: 480-118334-4**

**Matrix: Water**

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.794		0.173	0.187	1.00	0.104	pCi/L	05/31/17 10:26	06/22/17 10:40	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	91.7		40 - 110					05/31/17 10:26	06/22/17 10:40	1

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.975	*	0.316	0.329	1.00	0.412	pCi/L	05/31/17 12:45	06/13/17 10:56	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	91.7		40 - 110					05/31/17 12:45	06/13/17 10:56	1
Y Carrier	78.1		40 - 110					05/31/17 12:45	06/13/17 10:56	1

## Method: Ra226\_Ra228 - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	1.77		0.360	0.378	5.00	0.412	pCi/L		06/22/17 12:52	1

# Client Sample Results

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

TestAmerica Job ID: 480-118334-2

**Client Sample ID: P-6**  
**Date Collected: 05/17/17 10:10**  
**Date Received: 05/20/17 09:30**

**Lab Sample ID: 480-118334-5**  
**Matrix: Water**

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.161		0.0930	0.0941	1.00	0.120	pCi/L	05/31/17 10:26	06/22/17 10:40	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	91.4		40 - 110					05/31/17 10:26	06/22/17 10:40	1

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.278	U *	0.218	0.219	1.00	0.340	pCi/L	05/31/17 12:45	06/13/17 10:56	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	91.4		40 - 110					05/31/17 12:45	06/13/17 10:56	1
Y Carrier	84.1		40 - 110					05/31/17 12:45	06/13/17 10:56	1

### Method: Ra226\_Ra228 - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.439		0.237	0.239	5.00	0.340	pCi/L		06/22/17 12:52	1



# Client Sample Results

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

TestAmerica Job ID: 480-118334-2

**Client Sample ID: P-7**

**Lab Sample ID: 480-118334-6**

**Date Collected: 05/17/17 10:40**

**Matrix: Water**

**Date Received: 05/20/17 09:30**

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
<b>Radium-226</b>	<b>0.210</b>		0.0947	0.0966	1.00	0.103	pCi/L	05/31/17 10:26	06/22/17 10:40	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	98.2		40 - 110					05/31/17 10:26	06/22/17 10:40	1

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.151	U*	0.209	0.210	1.00	0.350	pCi/L	05/31/17 12:45	06/13/17 10:56	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	98.2		40 - 110					05/31/17 12:45	06/13/17 10:56	1
Y Carrier	84.1		40 - 110					05/31/17 12:45	06/13/17 10:56	1

**Method: Ra226\_Ra228 - Combined Radium-226 and Radium-228**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
<b>Combined Radium 226 + 228</b>	<b>0.361</b>		0.230	0.231	5.00	0.350	pCi/L		06/22/17 12:52	1

# Client Sample Results

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

TestAmerica Job ID: 480-118334-2

**Client Sample ID: DUP-1**

**Lab Sample ID: 480-118334-7**

**Date Collected: 05/17/17 00:00**

**Matrix: Water**

**Date Received: 05/20/17 09:30**

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.269		0.102	0.105	1.00	0.0932	pCi/L	05/31/17 10:26	06/22/17 10:40	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	92.9		40 - 110					05/31/17 10:26	06/22/17 10:40	1

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.280	U *	0.247	0.248	1.00	0.397	pCi/L	05/31/17 12:45	06/13/17 10:56	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	92.9		40 - 110					05/31/17 12:45	06/13/17 10:56	1
Y Carrier	89.0		40 - 110					05/31/17 12:45	06/13/17 10:56	1

### Method: Ra226\_Ra228 - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.549		0.268	0.270	5.00	0.397	pCi/L		06/22/17 12:52	1

# Client Sample Results

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

TestAmerica Job ID: 480-118334-2

**Client Sample ID: FIELD BLANK**

**Lab Sample ID: 480-118334-8**

Date Collected: 05/17/17 11:20

Matrix: Water

Date Received: 05/20/17 09:30

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	-0.00409	U	0.0666	0.0666	1.00	0.136	pCi/L	05/31/17 10:26	06/22/17 10:41	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	93.2		40 - 110					05/31/17 10:26	06/22/17 10:41	1

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.274	U *	0.294	0.295	1.00	0.480	pCi/L	05/31/17 12:45	06/13/17 10:56	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	93.2		40 - 110					05/31/17 12:45	06/13/17 10:56	1
Y Carrier	77.4		40 - 110					05/31/17 12:45	06/13/17 10:56	1

**Method: Ra226\_Ra228 - Combined Radium-226 and Radium-228**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.270	U	0.301	0.302	5.00	0.480	pCi/L		06/22/17 12:52	1

# Client Sample Results

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

TestAmerica Job ID: 480-118334-2

**Client Sample ID: EQUIP BLANK**

**Lab Sample ID: 480-118334-9**

Date Collected: 05/17/17 11:25

Matrix: Water

Date Received: 05/20/17 09:30

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0761	U	0.0780	0.0783	1.00	0.122	pCi/L	05/31/17 12:39	06/22/17 10:41	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	84.1		40 - 110					05/31/17 12:39	06/22/17 10:41	1

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	-0.0281	U *	0.233	0.233	1.00	0.427	pCi/L	05/31/17 12:45	06/13/17 10:56	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	84.1		40 - 110					05/31/17 12:45	06/13/17 10:56	1
Y Carrier	80.0		40 - 110					05/31/17 12:45	06/13/17 10:56	1

**Method: Ra226\_Ra228 - Combined Radium-226 and Radium-228**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.0480	U	0.246	0.246	5.00	0.427	pCi/L		06/22/17 12:52	1

# Tracer/Carrier Summary

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

TestAmerica Job ID: 480-118334-2

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

Matrix: Water

Prep Type: Total/NA

		Percent Yield (Acceptance Limits)	
Lab Sample ID	Client Sample ID	Ba (40-110)	
480-118334-1	P-1	82.9	
480-118334-2	P-2	85.0	
480-118334-3	P-3	88.5	
480-118334-4	P-5	91.7	
480-118334-5	P-6	91.4	
480-118334-6	P-7	98.2	
480-118334-7	DUP-1	92.9	
480-118334-8	FIELD BLANK	93.2	
480-118334-9	EQUIP BLANK	84.1	
LCS 160-311318/2-A	Lab Control Sample	89.4	
LCSD 160-311318/3-A	Lab Control Sample Dup	98.5	
MB 160-311318/1-A	Method Blank	88.5	

**Tracer/Carrier Legend**

Ba = Ba Carrier

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

Matrix: Water

Prep Type: Total/NA

		Percent Yield (Acceptance Limits)	
Lab Sample ID	Client Sample ID	Ba (40-110)	Y (40-110)
480-118334-1	P-1	82.9	79.3
480-118334-2	P-2	85.0	82.6
480-118334-3	P-3	88.5	80.7
480-118334-4	P-5	91.7	78.1
480-118334-5	P-6	91.4	84.1
480-118334-6	P-7	98.2	84.1
480-118334-7	DUP-1	92.9	89.0
480-118334-8	FIELD BLANK	93.2	77.4
480-118334-9	EQUIP BLANK	84.1	80.0
LCS 160-311350/2-A	Lab Control Sample	89.4	78.9
LCSD 160-311350/3-A	Lab Control Sample Dup	98.5	88.6
MB 160-311350/1-A	Method Blank	88.5	82.2

**Tracer/Carrier Legend**

Ba = Ba Carrier

Y = Y Carrier

# QC Sample Results

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

TestAmerica Job ID: 480-118334-2

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

**Lab Sample ID: MB 160-311318/1-A**  
**Matrix: Water**  
**Analysis Batch: 314643**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 311318**

Analyte	MB MB		Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier	Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Radium-226	0.08402	U	0.0673	0.0677	1.00	0.0971	pCi/L	05/31/17 10:26	06/22/17 08:32	1
Carrier	MB MB		Limits		Prepared	Analyzed	Dil Fac			
Ba Carrier	%Yield	Qualifier	Limits							
Ba Carrier	88.5		40 - 110		05/31/17 10:26	06/22/17 08:32	1			

**Lab Sample ID: LCS 160-311318/2-A**  
**Matrix: Water**  
**Analysis Batch: 314643**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 311318**

Analyte	Spike Added	LCS Result	LCS Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits
				Uncert. (2σ+/-)					
Radium-226	11.4	9.507		1.00	1.00	0.0970	pCi/L	84	68 - 137
Carrier	LCS LCS		Limits		Prepared	Analyzed	Dil Fac		
Ba Carrier	%Yield	Qualifier	Limits						
Ba Carrier	89.4		40 - 110						

**Lab Sample ID: LCSD 160-311318/3-A**  
**Matrix: Water**  
**Analysis Batch: 314643**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 311318**

Analyte	Spike Added	LCSD Result	LCSD Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
				Uncert. (2σ+/-)							
Radium-226	11.4	9.388		0.983	1.00	0.0829	pCi/L	83	68 - 137	0.06	1
Carrier	LCSD LCSD		Limits		Prepared	Analyzed	Dil Fac				
Ba Carrier	%Yield	Qualifier	Limits								
Ba Carrier	98.5		40 - 110								

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

**Lab Sample ID: MB 160-311350/1-A**  
**Matrix: Water**  
**Analysis Batch: 313171**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 311350**

Analyte	MB MB		Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier	Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Radium-228	0.2384	U	0.247	0.248	1.00	0.403	pCi/L	05/31/17 12:45	06/13/17 10:53	1
Carrier	MB MB		Limits		Prepared	Analyzed	Dil Fac			
Ba Carrier	%Yield	Qualifier	Limits							
Ba Carrier	88.5		40 - 110		05/31/17 12:45	06/13/17 10:53	1			
Y Carrier	%Yield	Qualifier	Limits		Prepared	Analyzed	Dil Fac			
Y Carrier	82.2		40 - 110					05/31/17 12:45	06/13/17 10:53	1

TestAmerica Buffalo

# QC Sample Results

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

TestAmerica Job ID: 480-118334-2

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

**Lab Sample ID: LCS 160-311350/2-A**  
**Matrix: Water**  
**Analysis Batch: 313171**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 311350**

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-228	13.3	18.22		1.93	1.00	0.412	pCi/L	137	56 - 140

Carrier	LCS %Yield	LCS Qualifier	Limits
Ba Carrier	89.4		40 - 110
Y Carrier	78.9		40 - 110

**Lab Sample ID: LCSD 160-311350/3-A**  
**Matrix: Water**  
**Analysis Batch: 313171**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 311350**

Analyte	Spike Added	LCSD Result	LCSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-228	13.3	13.97	*	1.49	1.00	0.346	pCi/L	105	56 - 140	1.25	1

Carrier	LCSD %Yield	LCSD Qualifier	Limits
Ba Carrier	98.5		40 - 110
Y Carrier	88.6		40 - 110



# QC Association Summary

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

TestAmerica Job ID: 480-118334-2

## Rad

### Prep Batch: 311318

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-118334-1	P-1	Total/NA	Water	PrecSep-21	
480-118334-2	P-2	Total/NA	Water	PrecSep-21	
480-118334-3	P-3	Total/NA	Water	PrecSep-21	
480-118334-4	P-5	Total/NA	Water	PrecSep-21	
480-118334-5	P-6	Total/NA	Water	PrecSep-21	
480-118334-6	P-7	Total/NA	Water	PrecSep-21	
480-118334-7	DUP-1	Total/NA	Water	PrecSep-21	
480-118334-8	FIELD BLANK	Total/NA	Water	PrecSep-21	
480-118334-9	EQUIP BLANK	Total/NA	Water	PrecSep-21	
MB 160-311318/1-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-311318/2-A	Lab Control Sample	Total/NA	Water	PrecSep-21	
LCSD 160-311318/3-A	Lab Control Sample Dup	Total/NA	Water	PrecSep-21	

### Prep Batch: 311350

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-118334-1	P-1	Total/NA	Water	PrecSep_0	
480-118334-2	P-2	Total/NA	Water	PrecSep_0	
480-118334-3	P-3	Total/NA	Water	PrecSep_0	
480-118334-4	P-5	Total/NA	Water	PrecSep_0	
480-118334-5	P-6	Total/NA	Water	PrecSep_0	
480-118334-6	P-7	Total/NA	Water	PrecSep_0	
480-118334-7	DUP-1	Total/NA	Water	PrecSep_0	
480-118334-8	FIELD BLANK	Total/NA	Water	PrecSep_0	
480-118334-9	EQUIP BLANK	Total/NA	Water	PrecSep_0	
MB 160-311350/1-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-311350/2-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
LCSD 160-311350/3-A	Lab Control Sample Dup	Total/NA	Water	PrecSep_0	



# Lab Chronicle

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

TestAmerica Job ID: 480-118334-2

## Client Sample ID: P-1

Date Collected: 05/17/17 08:30

Date Received: 05/20/17 09:30

## Lab Sample ID: 480-118334-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			311318	05/31/17 10:26	LDE	TAL SL
Total/NA	Analysis	903.0		1	314733	06/22/17 10:40	ALD	TAL SL
Total/NA	Prep	PrecSep_0			311350	05/31/17 12:45	LDE	TAL SL
Total/NA	Analysis	904.0		1	313171	06/13/17 10:56	RTM	TAL SL
Total/NA	Analysis	Ra226_Ra228		1	314773	06/22/17 12:52	RTM	TAL SL

## Client Sample ID: P-2

Date Collected: 05/17/17 11:05

Date Received: 05/20/17 09:30

## Lab Sample ID: 480-118334-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			311318	05/31/17 10:26	LDE	TAL SL
Total/NA	Analysis	903.0		1	314733	06/22/17 10:40	ALD	TAL SL
Total/NA	Prep	PrecSep_0			311350	05/31/17 12:45	LDE	TAL SL
Total/NA	Analysis	904.0		1	313171	06/13/17 10:56	RTM	TAL SL
Total/NA	Analysis	Ra226_Ra228		1	314773	06/22/17 12:52	RTM	TAL SL

## Client Sample ID: P-3

Date Collected: 05/17/17 09:00

Date Received: 05/20/17 09:30

## Lab Sample ID: 480-118334-3

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			311318	05/31/17 10:26	LDE	TAL SL
Total/NA	Analysis	903.0		1	314733	06/22/17 10:40	ALD	TAL SL
Total/NA	Prep	PrecSep_0			311350	05/31/17 12:45	LDE	TAL SL
Total/NA	Analysis	904.0		1	313171	06/13/17 10:56	RTM	TAL SL
Total/NA	Analysis	Ra226_Ra228		1	314773	06/22/17 12:52	RTM	TAL SL

## Client Sample ID: P-5

Date Collected: 05/17/17 09:35

Date Received: 05/20/17 09:30

## Lab Sample ID: 480-118334-4

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			311318	05/31/17 10:26	LDE	TAL SL
Total/NA	Analysis	903.0		1	314733	06/22/17 10:40	ALD	TAL SL
Total/NA	Prep	PrecSep_0			311350	05/31/17 12:45	LDE	TAL SL
Total/NA	Analysis	904.0		1	313171	06/13/17 10:56	RTM	TAL SL
Total/NA	Analysis	Ra226_Ra228		1	314773	06/22/17 12:52	RTM	TAL SL

# Lab Chronicle

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

TestAmerica Job ID: 480-118334-2

## Client Sample ID: P-6

Date Collected: 05/17/17 10:10

Date Received: 05/20/17 09:30

## Lab Sample ID: 480-118334-5

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			311318	05/31/17 10:26	LDE	TAL SL
Total/NA	Analysis	903.0		1	314733	06/22/17 10:40	ALD	TAL SL
Total/NA	Prep	PrecSep_0			311350	05/31/17 12:45	LDE	TAL SL
Total/NA	Analysis	904.0		1	313171	06/13/17 10:56	RTM	TAL SL
Total/NA	Analysis	Ra226_Ra228		1	314773	06/22/17 12:52	RTM	TAL SL

## Client Sample ID: P-7

Date Collected: 05/17/17 10:40

Date Received: 05/20/17 09:30

## Lab Sample ID: 480-118334-6

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			311318	05/31/17 10:26	LDE	TAL SL
Total/NA	Analysis	903.0		1	314733	06/22/17 10:40	ALD	TAL SL
Total/NA	Prep	PrecSep_0			311350	05/31/17 12:45	LDE	TAL SL
Total/NA	Analysis	904.0		1	313171	06/13/17 10:56	RTM	TAL SL
Total/NA	Analysis	Ra226_Ra228		1	314773	06/22/17 12:52	RTM	TAL SL

## Client Sample ID: DUP-1

Date Collected: 05/17/17 00:00

Date Received: 05/20/17 09:30

## Lab Sample ID: 480-118334-7

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			311318	05/31/17 10:26	LDE	TAL SL
Total/NA	Analysis	903.0		1	314733	06/22/17 10:40	ALD	TAL SL
Total/NA	Prep	PrecSep_0			311350	05/31/17 12:45	LDE	TAL SL
Total/NA	Analysis	904.0		1	313171	06/13/17 10:56	RTM	TAL SL
Total/NA	Analysis	Ra226_Ra228		1	314773	06/22/17 12:52	RTM	TAL SL

## Client Sample ID: FIELD BLANK

Date Collected: 05/17/17 11:20

Date Received: 05/20/17 09:30

## Lab Sample ID: 480-118334-8

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			311318	05/31/17 10:26	LDE	TAL SL
Total/NA	Analysis	903.0		1	314733	06/22/17 10:41	ALD	TAL SL
Total/NA	Prep	PrecSep_0			311350	05/31/17 12:45	LDE	TAL SL
Total/NA	Analysis	904.0		1	313171	06/13/17 10:56	RTM	TAL SL
Total/NA	Analysis	Ra226_Ra228		1	314773	06/22/17 12:52	RTM	TAL SL

# Lab Chronicle

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

TestAmerica Job ID: 480-118334-2

**Client Sample ID: EQUIP BLANK**

**Lab Sample ID: 480-118334-9**

**Date Collected: 05/17/17 11:25**

**Matrix: Water**

**Date Received: 05/20/17 09:30**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			311318	05/31/17 12:39	LDE	TAL SL
Total/NA	Analysis	903.0		1	314733	06/22/17 10:41	ALD	TAL SL
Total/NA	Prep	PrecSep_0			311350	05/31/17 12:45	LDE	TAL SL
Total/NA	Analysis	904.0		1	313171	06/13/17 10:56	RTM	TAL SL
Total/NA	Analysis	Ra226_Ra228		1	314773	06/22/17 12:52	RTM	TAL SL

#### Laboratory References:

TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

# Accreditation/Certification Summary

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

TestAmerica Job ID: 480-118334-2

## Laboratory: TestAmerica Buffalo

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

Authority	Program	EPA Region	Identification Number	Expiration Date
Minnesota	NELAP	5	036-999-337	12-31-17

## Laboratory: TestAmerica St. Louis

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

Authority	Program	EPA Region	Identification Number	Expiration Date
Alaska	State Program	10	MO00054	06-30-17 *
California	State Program	9	2886	03-31-18 *
Connecticut	State Program	1	PH-0241	03-31-19
Florida	NELAP	4	E87689	06-30-18
Illinois	NELAP	5	200023	11-30-17
Iowa	State Program	7	373	02-01-18
Kansas	NELAP	7	E-10236	10-31-17
Kentucky (DW)	State Program	4	90125	12-31-17
L-A-B	DoD ELAP		L2305	04-06-19
Louisiana	NELAP	6	04080	06-30-17 *
Louisiana (DW)	NELAP	6	LA170011	12-31-17
Maryland	State Program	3	310	09-30-17
Missouri	State Program	7	780	06-30-17 *
Nevada	State Program	9	MO000542017-1	07-31-17 *
New Jersey	NELAP	2	MO002	06-30-17 *
New York	NELAP	2	11616	03-31-18
North Dakota	State Program	8	R207	06-30-17 *
NRC	NRC		24-24817-01	12-31-22
Oklahoma	State Program	6	9997	08-31-17
Pennsylvania	NELAP	3	68-00540	02-21-18
South Carolina	State Program	4	85002001	06-30-17 *
Texas	NELAP	6	T104704193-16-10	07-31-17 *
US Fish & Wildlife	Federal		LE058448-0	10-31-17
USDA	Federal		P330-17-0028	02-02-20
Utah	NELAP	8	MO000542016-8	07-31-17 *
Virginia	NELAP	3	460230	06-14-18
Washington	State Program	10	C592	08-30-17
West Virginia DEP	State Program	3	381	08-31-17 *

\* Accreditation/Certification renewal pending - accreditation/certification considered valid.

# Method Summary

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

TestAmerica Job ID: 480-118334-2

Method	Method Description	Protocol	Laboratory
903.0	Radium-226 (GFPC)	EPA	TAL SL
904.0	Radium-228 (GFPC)	EPA	TAL SL
Ra226_Ra228	Combined Radium-226 and Radium-228	TAL-STL	TAL SL

**Protocol References:**

EPA = US Environmental Protection Agency

TAL-STL = TestAmerica Laboratories, St. Louis, Facility Standard Operating Procedure.

**Laboratory References:**

TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566



# Sample Summary

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

TestAmerica Job ID: 480-118334-2

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
480-118334-1	P-1	Water	05/17/17 08:30	05/20/17 09:30
480-118334-2	P-2	Water	05/17/17 11:05	05/20/17 09:30
480-118334-3	P-3	Water	05/17/17 09:00	05/20/17 09:30
480-118334-4	P-5	Water	05/17/17 09:35	05/20/17 09:30
480-118334-5	P-6	Water	05/17/17 10:10	05/20/17 09:30
480-118334-6	P-7	Water	05/17/17 10:40	05/20/17 09:30
480-118334-7	DUP-1	Water	05/17/17 00:00	05/20/17 09:30
480-118334-8	FIELD BLANK	Water	05/17/17 11:20	05/20/17 09:30
480-118334-9	EQUIP BLANK	Water	05/17/17 11:25	05/20/17 09:30



**TestAmerica Buffalo**

10 Hazelwood Drive  
Amherst, NY 14226-2298  
Phone (716) 691-2600 Fax (716) 691-7991

**Chain of Custody Record**

**TestAmerica**  
THE LEADER IN ENVIRONMENTAL TESTING

<b>Client Information</b>		Lab PM: VanDette, Ryan T		Carrier Tracking No(s):										
Client Contact: Nathaniel Beinmann		E-Mail: ryan.vandette@testamericainc.com		COC No: 480-97154-22507.1										
Company: Waste Connections, Inc.		Phone: 657-792-6085		Page: 1 of 1										
Address: 13425 Courthouse Blvd		Due Date Requested:		Job #:										
City: Rosemount		TAT Requested (days): Standard		Preservation Codes:										
State, Zip: MN, 55068		PO #: Purchase Order Requested		A - HCL B - NaOH C - Zn Acetal D - Nitric Acid E - NaHSO4 F - MeOH G - Amchlor H - Ascorbic I - Ice J - DI Water K - EDTA L - EDA Other:										
Phone:		WO #:		480-118334 COC #16										
Email: nathanielb@wcnx.org		Project #: 48013722		W - pH 4-5 Z - other (specify)										
SKB Cloquet/ Event Desc: CCR Groundwater		SSOW#:		Total Number of Containers										
Site: Minnesota		Sample Date		Special Instructions/Note:										
Sample Identification		Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, G=grab, O=organic, C=chemical, B=biological, A=air)	Field Filtered Sample (Yes or No)	Perform MSMSD (Yes or No)	901.1 Ra - Radium-226/228	308.0_28D - Cl/F/SO4	200.7, 200.8, 245.1	2540C Calcd - Total Dissolved Solids	SM4500_H+ - pH		
P-1		5/17/17	8:30	G	Water	X	X	X	X	X	X	X		
P-2			11:15	G	Water	X	X	X	X	X	X	X		
P-3			9:00	G	Water	X	X	X	X	X	X	X		
P-4					water	X	X	X	X	X	X	X		
P-5			9:35	G	Water	X	X	X	X	X	X	X		Did not collect P-4
P-6			10:10	G	Water	X	X	X	X	X	X	X		due to being inaccessible from
P-7			10:40	G	Water	X	X	X	X	X	X	X		wrote out top of well.
Duplicate				G	Water	X	X	X	X	X	X	X		
Field Blank			11:20	G	Water	X	X	X	X	X	X	X		
Equip Blank			11:25	G	Water	X	X	X	X	X	X	X		
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)														
Empty Kit Relinquished by: _____ Date: _____ Relinquished by: _____ Date/Time: 5-18-17 1316 Company: GES Relinquished by: _____ Date/Time: 5-15-17 19w Company: T4 Relinquished by: _____ Date/Time: _____ Company: _____ Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No Custody Seal No.: _____ Cooler Temperature(s) °C and Other Remarks: 24, 21														

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### Chain of Custody Record



Client Information (Sub Contract Lab)		Lab P.M.	Sampler:								
Company: TestAmerica Laboratories, Inc.		VanDette, Ryan T	480-118334 Chain of Custody								
Address: 13715 Rider Trail North, Earth City, MO, 63045		E-Mail: ryan.vandette@testamericainc.com	Minnesota								
Phone: 314-298-8566(Tel) 314-298-8757(Fax)		Accreditations Required (See note): NELAP - Minnesota									
Email:		Job #: 480-118334-1									
Project Name: SKB Cloquet		Preservation Codes:									
Site: Shamrock		A - HCL B - NaOH C - Zn Acetate D - Nitric Acid E - NaHSO4 F - MeOH G - Amchlor H - Ascorbic Acid I - Ice J - DI Water K - EDTA L - EDA Other:									
Sample Identification - Client ID (Lab ID)		Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (Water, Solid, On-wastewater, etc.)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	901-1-Ra/Fill_Geo_21 Radium-226/228	Analysis Requested	Total Number of Containers	Special Instructions/Note:
P-1 (480-118334-1)		5/17/17	08:30 Central	Water	Water	X	X			1	
P-2 (480-118334-2)		5/17/17	11:05 Central	Water	Water	X	X			1	
P-3 (480-118334-3)		5/17/17	09:00 Central	Water	Water	X	X			1	
P-5 (480-118334-4)		5/17/17	09:35 Central	Water	Water	X	X			1	
P-6 (480-118334-5)		5/17/17	10:10 Central	Water	Water	X	X			1	
DUP-1 (480-118334-7)		5/17/17	Central	Water	Water	X	X			1	
FIELD BLANK (480-118334-8)		5/17/17	11:20 Central	Water	Water	X	X			1	
EQUIP BLANK (480-118334-9)		5/17/17	11:25 Central	Water	Water	X	X			1	

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/test/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to TestAmerica Laboratories, Inc.

**Possible Hazard Identification**  
 Unconfirmed  
 Deliverable Requested: I, II, III, IV, Other (specify) \_\_\_\_\_

Primary Deliverable Rank: 2

Special Instructions/QC Requirements: \_\_\_\_\_

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

Empty Kit Relinquished by:		Date:	Time:	Method of Shipment:
Relinquished by: <i>Willie</i>	Company: <i>TAS</i>	5/20/17	1300	
Relinquished by:	Company:			
Relinquished by:	Company:			

Custody Seal No. : \_\_\_\_\_  
 Custody Seals Intact  
 Δ Yes Δ No

Cooler Temperature(s) \*C and Other Remarks:







## Login Sample Receipt Checklist

Client: Waste Connections, Inc.

Job Number: 480-118334-2

**Login Number: 118334**

**List Number: 1**

**Creator: Janish, Carl M**

**List Source: TestAmerica Buffalo**

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

## Login Sample Receipt Checklist

Client: Waste Connections, Inc.

Job Number: 480-118334-2

**Login Number: 118334**

**List Number: 2**

**Creator: Clarke, Jill C**

**List Source: TestAmerica St. Louis**

**List Creation: 05/23/17 12:03 PM**

Question	Answer	Comment
Radioactivity wasn't checked or is <math>\leq</math> background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	N/A	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	20.0, 20.0
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?	False	
There are no discrepancies between the containers received 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	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



# TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

## ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Buffalo

10 Hazelwood Drive

Amherst, NY 14228-2298

Tel: (716)691-2600

TestAmerica Job ID: 480-120432-1

Client Project/Site: SKB Cloquet - CCR Groundwater

Sampling Event: CCR Groundwater

For:

Waste Connections, Inc.

13425 Courthouse Blvd

Rosemount, Minnesota 55068

Attn: Nathaniel Beinemann



Authorized for release by:

7/19/2017 3:52:37 PM

Denise Giglia, Project Management Assistant II

[denise.giglia@testamericainc.com](mailto:denise.giglia@testamericainc.com)

Designee for

Ryan VanDette, Project Manager II

(716)504-9830

[ryan.vandette@testamericainc.com](mailto:ryan.vandette@testamericainc.com)

### LINKS

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results through

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*The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.*

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

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

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# Definitions/Glossary

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

TestAmerica Job ID: 480-120432-1

## Qualifiers

### Metals

Qualifier	Qualifier Description
F1	MS and/or MSD Recovery is outside acceptance limits.
F2	MS/MSD RPD exceeds control limits
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.
E	Result exceeded calibration range.
H	Sample was prepped or analyzed beyond the specified holding 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
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)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
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)

# Case Narrative

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

TestAmerica Job ID: 480-120432-1

**Job ID: 480-120432-1**

**Laboratory: TestAmerica Buffalo**

## Narrative

### Job Narrative 480-120432-1

#### Comments

No additional comments.

#### Receipt

The samples were received on 6/30/2017 9:30 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 3 coolers at receipt time were 2.7° C, 3.0° C and 3.5° C.

#### HPLC/IC

Method(s) 300.0: The following samples was diluted to bring the concentration of target analytes within the calibration range: P-2 (480-120432-2), P-3 (480-120432-3), P-4R (480-120432-4), P-6 (480-120432-6) and DUP-1 (480-120432-8). Elevated reporting limits (RLs) are provided.

Method(s) 300.0: The following samples was reported with elevated reporting limits for all analytes: P-1 (480-120432-1), P-5 (480-120432-5) and P-7 (480-120432-7). The sample was analyzed at a dilution based on screening results.

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

#### Metals

Method(s) 200.7 Rev 4.4: The Total Barium, Boron, and Calcium results reported for the following sample do not concur with results previously reported for this site: P-2 (480-120432-2). Reanalysis was performed, and the result(s) confirmed.

Method(s) 200.7 Rev 4.4: The Total Barium and Calcium results reported for the following sample do not concur with results previously reported for this site: P-4R (480-120432-4). Reanalysis was performed, and the result(s) confirmed.

Method(s) 200.8: The total Cobalt results reported for the following sample do not concur with results previously reported for this site: P-1 (480-120432-1). Reanalysis was performed, and the result(s) confirmed.

Method(s) 200.8: The total Arsenic results reported for the following sample do not concur with results previously reported for this site: P-2 (480-120432-2). Reanalysis was performed, and the result(s) confirmed.

Method(s) 200.8: The total Cobalt results reported for the following sample do not concur with results previously reported for this site: P-4R (480-120432-4). Reanalysis was performed, and the result(s) confirmed.

Method(s) 200.8: The following sample was diluted for total Selenium due to the nature of the sample matrix: P-2 (480-120432-2). 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.

#### General Chemistry

Method(s) SM 2540C: Due to the matrix, the initial volume(s) used for the following sample deviated from the standard procedure: P-2 (480-120432-2). The reporting limits (RLs) have been adjusted proportionately.

Method(s) SM 2540C: Reanalysis of the following sample(s) was performed outside of the analytical holding time due to initial results exceeding the method residue limit. Sample was reanalyzed at a reduced volume, both results are reported.: P-2 (480-120432-2).

Method(s) SM 4500 H+ B: This analysis is normally performed in the field and has a method-defined holding time of 15 minutes. The following samples has been qualified with the "HF" flag to indicate analysis was performed in the laboratory outside the 15 minute timeframe: P-1 (480-120432-1), P-2 (480-120432-2), P-3 (480-120432-3), P-4R (480-120432-4), P-5 (480-120432-5), P-6 (480-120432-6), P-7 (480-120432-7), DUP-1 (480-120432-8), FIELD BLANK (480-120432-9) and EQUIPMENT (480-120432-10).

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

# Detection Summary

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

TestAmerica Job ID: 480-120432-1

## Client Sample ID: P-1

## Lab Sample ID: 480-120432-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.10		0.0020		mg/L	1		200.7 Rev 4.4	Total/NA
Boron	0.085		0.020		mg/L	1		200.7 Rev 4.4	Total/NA
Calcium	110		0.50		mg/L	1		200.7 Rev 4.4	Total/NA
Cobalt	0.67		0.30		ug/L	1		200.8	Total/NA
Chloride	59.8		1.0		mg/L	2		300.0	Total/NA
Sulfate	42.1		4.0		mg/L	2		300.0	Total/NA
Total Dissolved Solids	498		10.0		mg/L	1		SM 2540C	Total/NA
Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
pH	6.8	HF	0.1		SU	1		SM 4500 H+ B	Total/NA
Temperature	20.3	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

## Client Sample ID: P-2

## Lab Sample ID: 480-120432-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.34		0.0020		mg/L	1		200.7 Rev 4.4	Total/NA
Boron	0.12		0.020		mg/L	1		200.7 Rev 4.4	Total/NA
Calcium	367		0.50		mg/L	1		200.7 Rev 4.4	Total/NA
Arsenic	7.0		1.0		ug/L	1		200.8	Total/NA
Cobalt	1.0		0.30		ug/L	1		200.8	Total/NA
Molybdenum	1.6		1.0		ug/L	1		200.8	Total/NA
Chloride	763		5.0		mg/L	10		300.0	Total/NA
Sulfate	23.1		20.0		mg/L	10		300.0	Total/NA
Total Dissolved Solids	2300	E	10.0		mg/L	1		SM 2540C	Total/NA
Total Dissolved Solids	2330	H	20.0		mg/L	1		SM 2540C	Total/NA
Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
pH	6.1	HF	0.1		SU	1		SM 4500 H+ B	Total/NA
Temperature	20.6	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

## Client Sample ID: P-3

## Lab Sample ID: 480-120432-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.18		0.0020		mg/L	1		200.7 Rev 4.4	Total/NA
Boron	0.036		0.020		mg/L	1		200.7 Rev 4.4	Total/NA
Calcium	131		0.50		mg/L	1		200.7 Rev 4.4	Total/NA
Chloride	79.4		1.0		mg/L	2		300.0	Total/NA
Sulfate	90.3		4.0		mg/L	2		300.0	Total/NA
Total Dissolved Solids	626		10.0		mg/L	1		SM 2540C	Total/NA
Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
pH	7.2	HF	0.1		SU	1		SM 4500 H+ B	Total/NA
Temperature	20.7	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

## Client Sample ID: P-4R

## Lab Sample ID: 480-120432-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.20		0.0020		mg/L	1		200.7 Rev 4.4	Total/NA
Boron	0.11		0.020		mg/L	1		200.7 Rev 4.4	Total/NA
Calcium	134		0.50		mg/L	1		200.7 Rev 4.4	Total/NA
Cobalt	0.66		0.30		ug/L	1		200.8	Total/NA
Molybdenum	4.7		1.0		ug/L	1		200.8	Total/NA
Chloride	107		1.0		mg/L	2		300.0	Total/NA

This Detection Summary does not include radiochemical test results.

TestAmerica Buffalo



# Detection Summary

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

TestAmerica Job ID: 480-120432-1

## Client Sample ID: P-4R (Continued)

## Lab Sample ID: 480-120432-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Sulfate	46.4		4.0		mg/L	2		300.0	Total/NA
Total Dissolved Solids	617		10.0		mg/L	1		SM 2540C	Total/NA
Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
pH	7.3	HF	0.1		SU	1		SM 4500 H+ B	Total/NA
Temperature	20.4	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

## Client Sample ID: P-5

## Lab Sample ID: 480-120432-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.30		0.0020		mg/L	1		200.7 Rev 4.4	Total/NA
Boron	0.073		0.020		mg/L	1		200.7 Rev 4.4	Total/NA
Calcium	151		0.50		mg/L	1		200.7 Rev 4.4	Total/NA
Cobalt	8.5		0.30		ug/L	1		200.8	Total/NA
Chloride	54.0		2.5		mg/L	5		300.0	Total/NA
Sulfate	50.8		10.0		mg/L	5		300.0	Total/NA
Total Dissolved Solids	767		10.0		mg/L	1		SM 2540C	Total/NA
Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
pH	6.7	HF	0.1		SU	1		SM 4500 H+ B	Total/NA
Temperature	20.3	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

## Client Sample ID: P-6

## Lab Sample ID: 480-120432-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.11		0.0020		mg/L	1		200.7 Rev 4.4	Total/NA
Boron	0.29		0.020		mg/L	1		200.7 Rev 4.4	Total/NA
Calcium	146		0.50		mg/L	1		200.7 Rev 4.4	Total/NA
Chloride	130		2.5		mg/L	5		300.0	Total/NA
Sulfate	139		10.0		mg/L	5		300.0	Total/NA
Total Dissolved Solids	782		10.0		mg/L	1		SM 2540C	Total/NA
Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
pH	6.9	HF	0.1		SU	1		SM 4500 H+ B	Total/NA
Temperature	20.6	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

## Client Sample ID: P-7

## Lab Sample ID: 480-120432-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.23		0.0020		mg/L	1		200.7 Rev 4.4	Total/NA
Boron	0.13		0.020		mg/L	1		200.7 Rev 4.4	Total/NA
Calcium	167		0.50		mg/L	1		200.7 Rev 4.4	Total/NA
Cobalt	0.46		0.30		ug/L	1		200.8	Total/NA
Chloride	38.3		2.5		mg/L	5		300.0	Total/NA
Sulfate	61.1		10.0		mg/L	5		300.0	Total/NA
Total Dissolved Solids	767		10.0		mg/L	1		SM 2540C	Total/NA
Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
pH	6.9	HF	0.1		SU	1		SM 4500 H+ B	Total/NA
Temperature	21.2	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

## Client Sample ID: DUP-1

## Lab Sample ID: 480-120432-8

This Detection Summary does not include radiochemical test results.

TestAmerica Buffalo

## Detection Summary

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

TestAmerica Job ID: 480-120432-1

### Client Sample ID: DUP-1 (Continued)

### Lab Sample ID: 480-120432-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.19		0.0020		mg/L	1		200.7 Rev 4.4	Total/NA
Boron	0.041		0.020		mg/L	1		200.7 Rev 4.4	Total/NA
Calcium	132		0.50		mg/L	1		200.7 Rev 4.4	Total/NA
Cobalt	0.49		0.30		ug/L	1		200.8	Total/NA
Chloride	77.3		2.5		mg/L	5		300.0	Total/NA
Sulfate	92.5		10.0		mg/L	5		300.0	Total/NA
Total Dissolved Solids	620		10.0		mg/L	1		SM 2540C	Total/NA
Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
pH	7.2	HF	0.1		SU	1		SM 4500 H+ B	Total/NA
Temperature	21.4	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

### Client Sample ID: FIELD BLANK

### Lab Sample ID: 480-120432-9

Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
pH	5.8	HF	0.1		SU	1		SM 4500 H+ B	Total/NA
Temperature	21.1	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

### Client Sample ID: EQUIPMENT

### Lab Sample ID: 480-120432-10

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Total Dissolved Solids	21.0		10.0		mg/L	1		SM 2540C	Total/NA
Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
pH	5.6	HF	0.1		SU	1		SM 4500 H+ B	Total/NA
Temperature	20.9	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

This Detection Summary does not include radiochemical test results.

TestAmerica Buffalo

# Client Sample Results

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

TestAmerica Job ID: 480-120432-1

**Client Sample ID: P-1**

**Date Collected: 06/29/17 09:20**

**Date Received: 06/30/17 09:30**

**Lab Sample ID: 480-120432-1**

**Matrix: Water**

**Method: 200.7 Rev 4.4 - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	0.10		0.0020		mg/L		07/05/17 10:32	07/07/17 00:42	1
Boron	0.085		0.020		mg/L		07/05/17 10:32	07/07/17 00:42	1
Calcium	110		0.50		mg/L		07/05/17 10:32	07/07/17 00:42	1
Chromium	ND		0.0040		mg/L		07/05/17 10:32	07/07/17 00:42	1
Lead	ND		0.010		mg/L		07/05/17 10:32	07/07/17 00:42	1
Lithium	ND		0.030		mg/L		07/05/17 10:32	07/07/17 00:42	1

**Method: 200.8 - Metals (ICP/MS)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		1.0		ug/L		07/07/17 12:00	07/12/17 05:28	1
Arsenic	ND		1.0		ug/L		07/07/17 12:00	07/12/17 05:28	1
Beryllium	ND		0.70		ug/L		07/07/17 12:00	07/12/17 05:28	1
Cadmium	ND		0.50		ug/L		07/07/17 12:00	07/12/17 05:28	1
Cobalt	0.67		0.30		ug/L		07/07/17 12:00	07/12/17 05:28	1
Molybdenum	ND		1.0		ug/L		07/07/17 12:00	07/12/17 05:28	1
Selenium	ND		1.0		ug/L		07/07/17 12:00	07/12/17 05:28	1
Thallium	ND		0.20		ug/L		07/07/17 12:00	07/12/17 05:28	1

**Method: 245.1 - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020		mg/L		07/03/17 11:30	07/03/17 15:46	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	59.8		1.0		mg/L			07/12/17 22:16	2
Fluoride	ND		0.10		mg/L			07/12/17 22:16	2
Sulfate	42.1		4.0		mg/L			07/12/17 22:16	2
Total Dissolved Solids	498		10.0		mg/L			07/06/17 04:42	1
Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	6.8	HF	0.1		SU			07/02/17 12:51	1
Temperature	20.3	HF	0.001		Degrees C			07/02/17 12:51	1

# Client Sample Results

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

TestAmerica Job ID: 480-120432-1

**Client Sample ID: P-2**

**Date Collected: 06/29/17 13:20**

**Date Received: 06/30/17 09:30**

**Lab Sample ID: 480-120432-2**

**Matrix: Water**

### Method: 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	0.34		0.0020		mg/L		07/05/17 10:32	07/07/17 00:46	1
Boron	0.12		0.020		mg/L		07/05/17 10:32	07/07/17 00:46	1
Calcium	367		0.50		mg/L		07/05/17 10:32	07/07/17 00:46	1
Chromium	ND		0.0040		mg/L		07/05/17 10:32	07/07/17 00:46	1
Lead	ND		0.010		mg/L		07/05/17 10:32	07/07/17 00:46	1
Lithium	ND		0.030		mg/L		07/05/17 10:32	07/07/17 00:46	1

### Method: 200.8 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		1.0		ug/L		07/07/17 12:00	07/12/17 05:34	1
Arsenic	7.0		1.0		ug/L		07/07/17 12:00	07/12/17 05:34	1
Beryllium	ND		0.70		ug/L		07/07/17 12:00	07/12/17 05:34	1
Cadmium	ND		0.50		ug/L		07/07/17 12:00	07/12/17 05:34	1
Cobalt	1.0		0.30		ug/L		07/07/17 12:00	07/12/17 05:34	1
Molybdenum	1.6		1.0		ug/L		07/07/17 12:00	07/12/17 05:34	1
Selenium	ND		2.0		ug/L		07/18/17 06:58	07/19/17 12:28	2
Thallium	ND		0.20		ug/L		07/07/17 12:00	07/12/17 05:34	1

### Method: 245.1 - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020		mg/L		07/03/17 11:30	07/03/17 15:51	1

### General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	763		5.0		mg/L			07/12/17 22:24	10
Fluoride	ND		0.50		mg/L			07/12/17 22:24	10
Sulfate	23.1		20.0		mg/L			07/12/17 22:24	10
Total Dissolved Solids	2300	E	10.0		mg/L			07/06/17 11:43	1
Total Dissolved Solids	2330	H	20.0		mg/L			07/11/17 15:10	1
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH	6.1	HF	0.1		SU			07/02/17 12:53	1
Temperature	20.6	HF	0.001		Degrees C			07/02/17 12:53	1

# Client Sample Results

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

TestAmerica Job ID: 480-120432-1

**Client Sample ID: P-3**

**Date Collected: 06/29/17 09:55**

**Date Received: 06/30/17 09:30**

**Lab Sample ID: 480-120432-3**

**Matrix: Water**

**Method: 200.7 Rev 4.4 - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	0.18		0.0020		mg/L		07/05/17 10:32	07/07/17 00:49	1
Boron	0.036		0.020		mg/L		07/05/17 10:32	07/17/17 10:53	1
Calcium	131		0.50		mg/L		07/05/17 10:32	07/07/17 00:49	1
Chromium	ND		0.0040		mg/L		07/05/17 10:32	07/07/17 00:49	1
Lead	ND		0.010		mg/L		07/05/17 10:32	07/07/17 00:49	1
Lithium	ND		0.030		mg/L		07/05/17 10:32	07/07/17 00:49	1

**Method: 200.8 - Metals (ICP/MS)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND	F1	1.0		ug/L		07/07/17 12:00	07/12/17 05:39	1
Arsenic	ND	F1 F2	1.0		ug/L		07/07/17 12:00	07/12/17 05:39	1
Beryllium	ND	F1 F2	0.70		ug/L		07/07/17 12:00	07/12/17 05:39	1
Cadmium	ND	F1	0.50		ug/L		07/07/17 12:00	07/12/17 05:39	1
Cobalt	ND	F1 F2	0.30		ug/L		07/07/17 12:00	07/12/17 05:39	1
Molybdenum	ND	F1	1.0		ug/L		07/07/17 12:00	07/12/17 05:39	1
Selenium	ND	F1 F2	1.0		ug/L		07/07/17 12:00	07/12/17 05:39	1
Thallium	ND	F1 F2	0.20		ug/L		07/07/17 12:00	07/12/17 05:39	1

**Method: 245.1 - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020		mg/L		07/03/17 11:30	07/03/17 15:53	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	79.4		1.0		mg/L			07/12/17 22:32	2
Fluoride	ND		0.10		mg/L			07/12/17 22:32	2
Sulfate	90.3		4.0		mg/L			07/12/17 22:32	2
Total Dissolved Solids	626		10.0		mg/L			07/06/17 11:43	1
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH	7.2	HF	0.1		SU			07/02/17 12:56	1
Temperature	20.7	HF	0.001		Degrees C			07/02/17 12:56	1

# Client Sample Results

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

TestAmerica Job ID: 480-120432-1

**Client Sample ID: P-4R**

**Date Collected: 06/29/17 10:45**

**Date Received: 06/30/17 09:30**

**Lab Sample ID: 480-120432-4**

**Matrix: Water**

**Method: 200.7 Rev 4.4 - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	0.20		0.0020		mg/L		07/05/17 10:32	07/07/17 00:53	1
Boron	0.11		0.020		mg/L		07/05/17 10:32	07/07/17 00:53	1
Calcium	134		0.50		mg/L		07/05/17 10:32	07/07/17 00:53	1
Chromium	ND		0.0040		mg/L		07/05/17 10:32	07/07/17 00:53	1
Lead	ND		0.010		mg/L		07/05/17 10:32	07/07/17 00:53	1
Lithium	ND		0.030		mg/L		07/05/17 10:32	07/07/17 00:53	1

**Method: 200.8 - Metals (ICP/MS)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		1.0		ug/L		07/18/17 06:58	07/18/17 16:23	1
Arsenic	ND		1.0		ug/L		07/18/17 06:58	07/18/17 16:23	1
Beryllium	ND		0.70		ug/L		07/18/17 06:58	07/18/17 16:23	1
Cadmium	ND		0.50		ug/L		07/18/17 06:58	07/18/17 16:23	1
Cobalt	0.66		0.30		ug/L		07/18/17 06:58	07/18/17 16:23	1
Molybdenum	4.7		1.0		ug/L		07/18/17 06:58	07/18/17 16:23	1
Selenium	ND		1.0		ug/L		07/18/17 06:58	07/18/17 16:23	1
Thallium	ND		0.20		ug/L		07/18/17 06:58	07/18/17 16:23	1

**Method: 245.1 - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020		mg/L		07/03/17 11:30	07/03/17 15:55	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	107		1.0		mg/L			07/12/17 22:40	2
Fluoride	ND		0.10		mg/L			07/12/17 22:40	2
Sulfate	46.4		4.0		mg/L			07/12/17 22:40	2
Total Dissolved Solids	617		10.0		mg/L			07/06/17 11:43	1
Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	7.3	HF	0.1		SU			07/02/17 12:58	1
Temperature	20.4	HF	0.001		Degrees C			07/02/17 12:58	1

# Client Sample Results

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

TestAmerica Job ID: 480-120432-1

**Client Sample ID: P-5**

**Date Collected: 06/29/17 11:25**

**Date Received: 06/30/17 09:30**

**Lab Sample ID: 480-120432-5**

**Matrix: Water**

**Method: 200.7 Rev 4.4 - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	0.30		0.0020		mg/L		07/05/17 10:32	07/07/17 00:56	1
Boron	0.073		0.020		mg/L		07/05/17 10:32	07/07/17 00:56	1
Calcium	151		0.50		mg/L		07/05/17 10:32	07/07/17 00:56	1
Chromium	ND		0.0040		mg/L		07/05/17 10:32	07/07/17 00:56	1
Lead	ND		0.010		mg/L		07/05/17 10:32	07/07/17 00:56	1
Lithium	ND		0.030		mg/L		07/05/17 10:32	07/07/17 00:56	1

**Method: 200.8 - Metals (ICP/MS)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		1.0		ug/L		07/07/17 12:00	07/13/17 17:14	1
Arsenic	ND		1.0		ug/L		07/07/17 12:00	07/17/17 14:52	1
Beryllium	ND		0.70		ug/L		07/07/17 12:00	07/17/17 14:52	1
Cadmium	ND		0.50		ug/L		07/07/17 12:00	07/13/17 17:14	1
Cobalt	8.5		0.30		ug/L		07/07/17 12:00	07/17/17 14:52	1
Molybdenum	ND		1.0		ug/L		07/07/17 12:00	07/13/17 17:14	1
Selenium	ND		1.0		ug/L		07/07/17 12:00	07/17/17 14:52	1
Thallium	ND		0.20		ug/L		07/07/17 12:00	07/13/17 17:14	1

**Method: 245.1 - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020		mg/L		07/03/17 11:30	07/03/17 15:57	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	54.0		2.5		mg/L			07/12/17 22:48	5
Fluoride	ND		0.25		mg/L			07/12/17 22:48	5
Sulfate	50.8		10.0		mg/L			07/12/17 22:48	5
Total Dissolved Solids	767		10.0		mg/L			07/06/17 11:43	1
Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	6.7	HF	0.1		SU			07/02/17 13:01	1
Temperature	20.3	HF	0.001		Degrees C			07/02/17 13:01	1

# Client Sample Results

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

TestAmerica Job ID: 480-120432-1

**Client Sample ID: P-6**

**Date Collected: 06/29/17 12:15**

**Date Received: 06/30/17 09:30**

**Lab Sample ID: 480-120432-6**

**Matrix: Water**

**Method: 200.7 Rev 4.4 - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	0.11		0.0020		mg/L		07/05/17 10:32	07/07/17 01:00	1
Boron	0.29		0.020		mg/L		07/05/17 10:32	07/07/17 01:00	1
Calcium	146		0.50		mg/L		07/05/17 10:32	07/07/17 01:00	1
Chromium	ND		0.0040		mg/L		07/05/17 10:32	07/07/17 01:00	1
Lead	ND		0.010		mg/L		07/05/17 10:32	07/07/17 01:00	1
Lithium	ND		0.030		mg/L		07/05/17 10:32	07/07/17 01:00	1

**Method: 200.8 - Metals (ICP/MS)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		1.0		ug/L		07/07/17 12:00	07/13/17 17:48	1
Arsenic	ND		1.0		ug/L		07/07/17 12:00	07/14/17 16:30	1
Beryllium	ND		0.70		ug/L		07/07/17 12:00	07/14/17 16:30	1
Cadmium	ND		0.50		ug/L		07/07/17 12:00	07/13/17 17:48	1
Cobalt	ND		0.30		ug/L		07/07/17 12:00	07/14/17 16:30	1
Molybdenum	ND		1.0		ug/L		07/07/17 12:00	07/14/17 16:30	1
Selenium	ND		1.0		ug/L		07/07/17 12:00	07/14/17 16:30	1
Thallium	ND		0.20		ug/L		07/07/17 12:00	07/13/17 17:48	1

**Method: 245.1 - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020		mg/L		07/03/17 11:30	07/03/17 15:59	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	130		2.5		mg/L			07/12/17 22:56	5
Fluoride	ND		0.25		mg/L			07/12/17 22:56	5
Sulfate	139		10.0		mg/L			07/12/17 22:56	5
Total Dissolved Solids	782		10.0		mg/L			07/06/17 11:43	1
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH	6.9	HF	0.1		SU			07/02/17 13:06	1
Temperature	20.6	HF	0.001		Degrees C			07/02/17 13:06	1



# Client Sample Results

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

TestAmerica Job ID: 480-120432-1

**Client Sample ID: P-7**

**Date Collected: 06/29/17 12:50**

**Date Received: 06/30/17 09:30**

**Lab Sample ID: 480-120432-7**

**Matrix: Water**

### Method: 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	0.23		0.0020		mg/L		07/05/17 10:32	07/07/17 01:03	1
Boron	0.13		0.020		mg/L		07/05/17 10:32	07/07/17 01:03	1
Calcium	167		0.50		mg/L		07/05/17 10:32	07/07/17 01:03	1
Chromium	ND		0.0040		mg/L		07/05/17 10:32	07/07/17 01:03	1
Lead	ND		0.010		mg/L		07/05/17 10:32	07/07/17 01:03	1
Lithium	ND		0.030		mg/L		07/05/17 10:32	07/07/17 01:03	1

### Method: 200.8 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		1.0		ug/L		07/07/17 12:00	07/13/17 17:54	1
Arsenic	ND		1.0		ug/L		07/07/17 12:00	07/14/17 16:35	1
Beryllium	ND		0.70		ug/L		07/07/17 12:00	07/14/17 16:35	1
Cadmium	ND		0.50		ug/L		07/07/17 12:00	07/13/17 17:54	1
Cobalt	0.46		0.30		ug/L		07/07/17 12:00	07/14/17 16:35	1
Molybdenum	ND		1.0		ug/L		07/07/17 12:00	07/14/17 16:35	1
Selenium	ND		1.0		ug/L		07/07/17 12:00	07/14/17 16:35	1
Thallium	ND		0.20		ug/L		07/07/17 12:00	07/13/17 17:54	1

### Method: 245.1 - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020		mg/L		07/03/17 11:30	07/03/17 16:01	1

### General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	38.3		2.5		mg/L			07/12/17 23:04	5
Fluoride	ND		0.25		mg/L			07/12/17 23:04	5
Sulfate	61.1		10.0		mg/L			07/12/17 23:04	5
Total Dissolved Solids	767		10.0		mg/L			07/06/17 11:43	1
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH	6.9	HF	0.1		SU			07/02/17 13:09	1
Temperature	21.2	HF	0.001		Degrees C			07/02/17 13:09	1

# Client Sample Results

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

TestAmerica Job ID: 480-120432-1

**Client Sample ID: DUP-1**

**Date Collected: 06/29/17 00:00**

**Date Received: 06/30/17 09:30**

**Lab Sample ID: 480-120432-8**

**Matrix: Water**

### Method: 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	0.19		0.0020		mg/L		07/05/17 10:32	07/07/17 01:07	1
Boron	0.041		0.020		mg/L		07/05/17 10:32	07/07/17 01:07	1
Calcium	132		0.50		mg/L		07/05/17 10:32	07/07/17 01:07	1
Chromium	ND		0.0040		mg/L		07/05/17 10:32	07/07/17 01:07	1
Lead	ND		0.010		mg/L		07/05/17 10:32	07/07/17 01:07	1
Lithium	ND		0.030		mg/L		07/05/17 10:32	07/07/17 01:07	1

### Method: 200.8 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		1.0		ug/L		07/07/17 12:00	07/13/17 18:05	1
Arsenic	ND		1.0		ug/L		07/07/17 12:00	07/14/17 16:41	1
Beryllium	ND		0.70		ug/L		07/07/17 12:00	07/12/17 07:08	1
Cadmium	ND		0.50		ug/L		07/07/17 12:00	07/13/17 18:05	1
Cobalt	0.49		0.30		ug/L		07/07/17 12:00	07/14/17 16:41	1
Molybdenum	ND		1.0		ug/L		07/07/17 12:00	07/14/17 16:41	1
Selenium	ND		1.0		ug/L		07/07/17 12:00	07/14/17 16:41	1
Thallium	ND		0.20		ug/L		07/07/17 12:00	07/12/17 07:08	1

### Method: 245.1 - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020		mg/L		07/03/17 11:30	07/03/17 16:03	1

### General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	77.3		2.5		mg/L			07/12/17 23:13	5
Fluoride	ND		0.25		mg/L			07/12/17 23:13	5
Sulfate	92.5		10.0		mg/L			07/12/17 23:13	5
Total Dissolved Solids	620		10.0		mg/L			07/06/17 11:43	1
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH	7.2	HF	0.1		SU			07/02/17 13:11	1
Temperature	21.4	HF	0.001		Degrees C			07/02/17 13:11	1

# Client Sample Results

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

TestAmerica Job ID: 480-120432-1

**Client Sample ID: FIELD BLANK**

**Lab Sample ID: 480-120432-9**

**Date Collected: 06/29/17 13:45**

**Matrix: Water**

**Date Received: 06/30/17 09:30**

**Method: 200.7 Rev 4.4 - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	ND		0.0020		mg/L		07/05/17 10:32	07/07/17 01:28	1
Boron	ND		0.020		mg/L		07/05/17 10:32	07/07/17 01:28	1
Calcium	ND		0.50		mg/L		07/05/17 10:32	07/07/17 01:28	1
Chromium	ND		0.0040		mg/L		07/05/17 10:32	07/07/17 01:28	1
Lead	ND		0.010		mg/L		07/05/17 10:32	07/07/17 01:28	1
Lithium	ND		0.030		mg/L		07/05/17 10:32	07/07/17 01:28	1

**Method: 200.8 - Metals (ICP/MS)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		1.0		ug/L		07/07/17 12:00	07/13/17 18:10	1
Arsenic	ND		1.0		ug/L		07/07/17 12:00	07/14/17 16:46	1
Beryllium	ND		0.70		ug/L		07/07/17 12:00	07/12/17 07:25	1
Cadmium	ND		0.50		ug/L		07/07/17 12:00	07/13/17 18:10	1
Cobalt	ND		0.30		ug/L		07/07/17 12:00	07/14/17 16:46	1
Molybdenum	ND		1.0		ug/L		07/07/17 12:00	07/14/17 16:46	1
Selenium	ND		1.0		ug/L		07/07/17 12:00	07/14/17 16:46	1
Thallium	ND		0.20		ug/L		07/07/17 12:00	07/12/17 07:25	1

**Method: 245.1 - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020		mg/L		07/03/17 11:30	07/03/17 16:05	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		0.50		mg/L			07/13/17 18:42	1
Fluoride	ND		0.050		mg/L			07/13/17 18:42	1
Sulfate	ND		2.0		mg/L			07/13/17 18:42	1
Total Dissolved Solids	ND		10.0		mg/L			07/06/17 11:43	1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH	5.8	HF	0.1		SU			07/02/17 13:14	1
Temperature	21.1	HF	0.001		Degrees C			07/02/17 13:14	1

# Client Sample Results

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

TestAmerica Job ID: 480-120432-1

**Client Sample ID: EQUIPMENT**

**Lab Sample ID: 480-120432-10**

**Date Collected: 06/29/17 13:50**

**Matrix: Water**

**Date Received: 06/30/17 09:30**

**Method: 200.7 Rev 4.4 - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	ND		0.0020		mg/L		07/05/17 10:32	07/07/17 01:31	1
Boron	ND		0.020		mg/L		07/05/17 10:32	07/07/17 01:31	1
Calcium	ND		0.50		mg/L		07/05/17 10:32	07/07/17 01:31	1
Chromium	ND		0.0040		mg/L		07/05/17 10:32	07/07/17 01:31	1
Lead	ND		0.010		mg/L		07/05/17 10:32	07/07/17 01:31	1
Lithium	ND		0.030		mg/L		07/05/17 10:32	07/07/17 01:31	1

**Method: 200.8 - Metals (ICP/MS)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		1.0		ug/L		07/07/17 12:00	07/13/17 18:16	1
Arsenic	ND		1.0		ug/L		07/07/17 12:00	07/14/17 16:51	1
Beryllium	ND		0.70		ug/L		07/07/17 12:00	07/12/17 07:30	1
Cadmium	ND		0.50		ug/L		07/07/17 12:00	07/13/17 18:16	1
Cobalt	ND		0.30		ug/L		07/07/17 12:00	07/14/17 16:51	1
Molybdenum	ND		1.0		ug/L		07/07/17 12:00	07/14/17 16:51	1
Selenium	ND		1.0		ug/L		07/07/17 12:00	07/14/17 16:51	1
Thallium	ND		0.20		ug/L		07/07/17 12:00	07/12/17 07:30	1

**Method: 245.1 - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.0010		mg/L		07/03/17 11:30	07/03/17 16:07	5

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		0.50		mg/L			07/13/17 19:30	1
Fluoride	ND		0.050		mg/L			07/13/17 19:30	1
Sulfate	ND		2.0		mg/L			07/13/17 19:30	1
<b>Total Dissolved Solids</b>	<b>21.0</b>		10.0		mg/L			07/06/17 11:43	1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>pH</b>	<b>5.6</b>	<b>HF</b>	0.1		SU			07/02/17 13:16	1
<b>Temperature</b>	<b>20.9</b>	<b>HF</b>	0.001		Degrees C			07/02/17 13:16	1

# QC Sample Results

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

TestAmerica Job ID: 480-120432-1

## Method: 200.7 Rev 4.4 - Metals (ICP)

**Lab Sample ID: MB 480-365397/1-A**  
**Matrix: Water**  
**Analysis Batch: 365830**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 365397**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		0.020		mg/L		07/05/17 10:32	07/06/17 23:27	1
Calcium	ND		0.50		mg/L		07/05/17 10:32	07/06/17 23:27	1
Chromium	ND		0.0040		mg/L		07/05/17 10:32	07/06/17 23:27	1
Lead	ND		0.010		mg/L		07/05/17 10:32	07/06/17 23:27	1
Lithium	ND		0.030		mg/L		07/05/17 10:32	07/06/17 23:27	1

**Lab Sample ID: MB 480-365397/1-A**  
**Matrix: Water**  
**Analysis Batch: 366102**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 365397**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	ND		0.0020		mg/L		07/05/17 10:32	07/07/17 14:57	1

**Lab Sample ID: LCS 480-365397/2-A**  
**Matrix: Water**  
**Analysis Batch: 365830**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 365397**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Boron	0.200	0.201		mg/L		101	85 - 115
Calcium	10.0	9.33		mg/L		93	85 - 115
Chromium	0.200	0.196		mg/L		98	85 - 115
Lead	0.200	0.200		mg/L		100	85 - 115

**Lab Sample ID: LCS 480-365397/2-A**  
**Matrix: Water**  
**Analysis Batch: 366102**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 365397**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Barium	0.200	0.203		mg/L		102	85 - 115

**Lab Sample ID: 480-120432-8 MS**  
**Matrix: Water**  
**Analysis Batch: 365830**

**Client Sample ID: DUP-1**  
**Prep Type: Total/NA**  
**Prep Batch: 365397**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Barium	0.19		0.200	0.400		mg/L		105	70 - 130
Boron	0.041		0.200	0.257		mg/L		108	70 - 130
Calcium	132		10.0	143.2	4	mg/L		114	70 - 130
Chromium	ND		0.200	0.208		mg/L		103	70 - 130
Lead	ND		0.200	0.217		mg/L		107	70 - 130

**Lab Sample ID: 480-120432-8 MSD**  
**Matrix: Water**  
**Analysis Batch: 365830**

**Client Sample ID: DUP-1**  
**Prep Type: Total/NA**  
**Prep Batch: 365397**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Barium	0.19		0.200	0.396		mg/L		103	70 - 130	1	20
Boron	0.041		0.200	0.253		mg/L		106	70 - 130	2	20
Calcium	132		10.0	142.9	4	mg/L		111	70 - 130	0	20

TestAmerica Buffalo

# QC Sample Results

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

TestAmerica Job ID: 480-120432-1

## Method: 200.7 Rev 4.4 - Metals (ICP) (Continued)

**Lab Sample ID: 480-120432-8 MSD**  
**Matrix: Water**  
**Analysis Batch: 365830**

**Client Sample ID: DUP-1**  
**Prep Type: Total/NA**  
**Prep Batch: 365397**  
**%Rec. RPD**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Chromium	ND		0.200	0.203		mg/L		101	70 - 130	2	20
Lead	ND		0.200	0.218		mg/L		107	70 - 130	1	20

## Method: 200.8 - Metals (ICP/MS)

**Lab Sample ID: MB 480-365888/1-A**  
**Matrix: Water**  
**Analysis Batch: 366582**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 365888**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		1.0		ug/L		07/07/17 12:00	07/12/17 03:31	1
Arsenic	ND		1.0		ug/L		07/07/17 12:00	07/12/17 03:31	1
Beryllium	ND		0.70		ug/L		07/07/17 12:00	07/12/17 03:31	1
Cadmium	ND		0.50		ug/L		07/07/17 12:00	07/12/17 03:31	1
Cobalt	ND		0.30		ug/L		07/07/17 12:00	07/12/17 03:31	1
Molybdenum	ND		1.0		ug/L		07/07/17 12:00	07/12/17 03:31	1
Selenium	ND		1.0		ug/L		07/07/17 12:00	07/12/17 03:31	1
Thallium	ND		0.20		ug/L		07/07/17 12:00	07/12/17 03:31	1

**Lab Sample ID: LCS 480-365888/2-A**  
**Matrix: Water**  
**Analysis Batch: 366582**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 365888**  
**%Rec.**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Antimony	20.0	19.98		ug/L		100	85 - 115
Arsenic	20.0	20.49		ug/L		102	85 - 115
Beryllium	20.0	19.89		ug/L		99	85 - 115
Cadmium	20.0	19.81		ug/L		99	85 - 115
Cobalt	20.0	19.08		ug/L		95	85 - 115
Molybdenum	20.0	19.01		ug/L		95	85 - 115
Selenium	20.0	20.53		ug/L		103	85 - 115
Thallium	20.0	19.91		ug/L		100	85 - 115

**Lab Sample ID: 480-120432-3 MS**  
**Matrix: Water**  
**Analysis Batch: 366951**

**Client Sample ID: P-3**  
**Prep Type: Total/NA**  
**Prep Batch: 365888**  
**%Rec.**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Antimony	ND	F1	20.0	21.53		ug/L		108	70 - 130
Cadmium	ND	F1	20.0	20.00		ug/L		100	70 - 130
Molybdenum	ND	F1	20.0	21.03		ug/L		103	70 - 130
Thallium	ND	F1 F2	20.0	20.93		ug/L		105	70 - 130

**Lab Sample ID: 480-120432-3 MS**  
**Matrix: Water**  
**Analysis Batch: 367237**

**Client Sample ID: P-3**  
**Prep Type: Total/NA**  
**Prep Batch: 365888**  
**%Rec.**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Arsenic	ND	F1 F2	20.0	20.93		ug/L		105	70 - 130

TestAmerica Buffalo

# QC Sample Results

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

TestAmerica Job ID: 480-120432-1

## Method: 200.8 - Metals (ICP/MS) (Continued)

**Lab Sample ID: 480-120432-3 MS**  
**Matrix: Water**  
**Analysis Batch: 367237**

**Client Sample ID: P-3**  
**Prep Type: Total/NA**  
**Prep Batch: 365888**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Beryllium	ND	F1 F2	20.0	20.26		ug/L		101	70 - 130
Cobalt	ND	F1 F2	20.0	19.81		ug/L		98	70 - 130
Selenium	ND	F1 F2	20.0	20.73		ug/L		104	70 - 130

**Lab Sample ID: 480-120432-3 MSD**  
**Matrix: Water**  
**Analysis Batch: 366951**

**Client Sample ID: P-3**  
**Prep Type: Total/NA**  
**Prep Batch: 365888**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	Limit
Antimony	ND	F1	20.0	21.66		ug/L		108	70 - 130	1	20
Cadmium	ND	F1	20.0	20.11		ug/L		101	70 - 130	1	20
Molybdenum	ND	F1	20.0	21.13		ug/L		103	70 - 130	0	20
Thallium	ND	F1 F2	20.0	21.54		ug/L		108	70 - 130	3	20

**Lab Sample ID: 480-120432-3 MSD**  
**Matrix: Water**  
**Analysis Batch: 367237**

**Client Sample ID: P-3**  
**Prep Type: Total/NA**  
**Prep Batch: 365888**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	Limit
Arsenic	ND	F1 F2	20.0	21.11		ug/L		106	70 - 130	1	20
Beryllium	ND	F1 F2	20.0	20.41		ug/L		102	70 - 130	1	20
Cobalt	ND	F1 F2	20.0	20.01		ug/L		99	70 - 130	1	20
Selenium	ND	F1 F2	20.0	20.50		ug/L		103	70 - 130	1	20

**Lab Sample ID: MB 480-367270/1-A**  
**Matrix: Water**  
**Analysis Batch: 367636**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 367270**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		1.0		ug/L		07/18/17 06:58	07/18/17 17:01	1
Arsenic	ND		1.0		ug/L		07/18/17 06:58	07/18/17 17:01	1
Beryllium	ND		0.70		ug/L		07/18/17 06:58	07/18/17 17:01	1
Cadmium	ND		0.50		ug/L		07/18/17 06:58	07/18/17 17:01	1
Cobalt	ND		0.30		ug/L		07/18/17 06:58	07/18/17 17:01	1
Molybdenum	ND		1.0		ug/L		07/18/17 06:58	07/18/17 17:01	1
Selenium	ND		1.0		ug/L		07/18/17 06:58	07/18/17 17:01	1
Thallium	ND		0.20		ug/L		07/18/17 06:58	07/18/17 17:01	1

**Lab Sample ID: LCS 480-367270/2-A**  
**Matrix: Water**  
**Analysis Batch: 367636**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 367270**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Antimony	20.0	20.11		ug/L		101	85 - 115
Arsenic	20.0	19.89		ug/L		99	85 - 115
Beryllium	20.0	19.90		ug/L		100	85 - 115
Cadmium	20.0	19.26		ug/L		96	85 - 115
Cobalt	20.0	19.48		ug/L		97	85 - 115
Molybdenum	20.0	19.10		ug/L		95	85 - 115

TestAmerica Buffalo

# QC Sample Results

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

TestAmerica Job ID: 480-120432-1

## Method: 200.8 - Metals (ICP/MS) (Continued)

**Lab Sample ID: LCS 480-367270/2-A**  
**Matrix: Water**  
**Analysis Batch: 367636**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 367270**  
**%Rec.**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Selenium	20.0	19.33		ug/L		97	85 - 115
Thallium	20.0	20.05		ug/L		100	85 - 115

## Method: 245.1 - Mercury (CVAA)

**Lab Sample ID: MB 480-365220/1-A**  
**Matrix: Water**  
**Analysis Batch: 365327**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 365220**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020		mg/L		07/03/17 11:30	07/03/17 15:30	1

**Lab Sample ID: LCS 480-365220/2-A**  
**Matrix: Water**  
**Analysis Batch: 365327**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 365220**  
**%Rec.**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Mercury	0.00667	0.00592		mg/L		89	85 - 115

**Lab Sample ID: 480-120432-10 MS**  
**Matrix: Water**  
**Analysis Batch: 365327**

**Client Sample ID: EQUIPMENT**  
**Prep Type: Total/NA**  
**Prep Batch: 365220**  
**%Rec.**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Mercury	ND		0.00667	0.00600		mg/L		90	70 - 130

**Lab Sample ID: 480-120432-10 MSD**  
**Matrix: Water**  
**Analysis Batch: 365327**

**Client Sample ID: EQUIPMENT**  
**Prep Type: Total/NA**  
**Prep Batch: 365220**  
**%Rec.**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Mercury	ND		0.00667	0.00588		mg/L		88	70 - 130	2	20

## Method: 300.0 - Anions, Ion Chromatography

**Lab Sample ID: MB 480-366627/28**  
**Matrix: Water**  
**Analysis Batch: 366627**

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		0.50		mg/L			07/12/17 20:38	1
Fluoride	ND		0.050		mg/L			07/12/17 20:38	1
Sulfate	ND		2.0		mg/L			07/12/17 20:38	1

TestAmerica Buffalo



# QC Sample Results

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

TestAmerica Job ID: 480-120432-1

## Method: 300.0 - Anions, Ion Chromatography (Continued)

**Lab Sample ID: LCS 480-366627/27**

**Matrix: Water**

**Analysis Batch: 366627**

**Client Sample ID: Lab Control Sample**

**Prep Type: Total/NA**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	50.0	51.83		mg/L		104	90 - 110
Fluoride	5.00	4.97		mg/L		99	90 - 110
Sulfate	50.0	51.04		mg/L		102	90 - 110

**Lab Sample ID: 480-120432-8 MS**

**Matrix: Water**

**Analysis Batch: 366627**

**Client Sample ID: DUP-1**

**Prep Type: Total/NA**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	77.3		250	346.6		mg/L		108	81 - 120
Fluoride	ND		25.0	26.14		mg/L		105	82 - 120
Sulfate	92.5		250	355.4		mg/L		105	80 - 120

**Lab Sample ID: MB 480-366814/28**

**Matrix: Water**

**Analysis Batch: 366814**

**Client Sample ID: Method Blank**

**Prep Type: Total/NA**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		0.50		mg/L			07/13/17 19:22	1
Fluoride	ND		0.050		mg/L			07/13/17 19:22	1
Sulfate	ND		2.0		mg/L			07/13/17 19:22	1

**Lab Sample ID: MB 480-366814/4**

**Matrix: Water**

**Analysis Batch: 366814**

**Client Sample ID: Method Blank**

**Prep Type: Total/NA**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		0.50		mg/L			07/13/17 16:07	1
Fluoride	ND		0.050		mg/L			07/13/17 16:07	1
Sulfate	ND		2.0		mg/L			07/13/17 16:07	1

**Lab Sample ID: LCS 480-366814/27**

**Matrix: Water**

**Analysis Batch: 366814**

**Client Sample ID: Lab Control Sample**

**Prep Type: Total/NA**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	50.0	52.23		mg/L		104	90 - 110
Fluoride	5.00	5.05		mg/L		101	90 - 110
Sulfate	50.0	52.05		mg/L		104	90 - 110

**Lab Sample ID: LCS 480-366814/3**

**Matrix: Water**

**Analysis Batch: 366814**

**Client Sample ID: Lab Control Sample**

**Prep Type: Total/NA**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	50.0	51.82		mg/L		104	90 - 110
Fluoride	5.00	5.01		mg/L		100	90 - 110
Sulfate	50.0	52.52		mg/L		105	90 - 110

TestAmerica Buffalo

# QC Sample Results

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

TestAmerica Job ID: 480-120432-1

## Method: 300.0 - Anions, Ion Chromatography (Continued)

**Lab Sample ID: 480-120432-9 MS**  
**Matrix: Water**  
**Analysis Batch: 366814**

**Client Sample ID: FIELD BLANK**  
**Prep Type: Total/NA**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	ND		50.0	52.53		mg/L		105	81 - 120
Fluoride	ND		5.00	5.06		mg/L		101	82 - 120
Sulfate	ND		50.0	52.62		mg/L		105	80 - 120

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

**Lab Sample ID: MB 480-365564/1**  
**Matrix: Water**  
**Analysis Batch: 365564**

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	ND		10.0		mg/L			07/06/17 04:42	1

**Lab Sample ID: LCS 480-365564/2**  
**Matrix: Water**  
**Analysis Batch: 365564**

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Dissolved Solids	504	495.0		mg/L		98	85 - 115

**Lab Sample ID: 480-120432-1 DU**  
**Matrix: Water**  
**Analysis Batch: 365564**

**Client Sample ID: P-1**  
**Prep Type: Total/NA**

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Dissolved Solids	498		508.0		mg/L		2	10

**Lab Sample ID: MB 480-365651/1**  
**Matrix: Water**  
**Analysis Batch: 365651**

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	ND		10.0		mg/L			07/06/17 11:43	1

**Lab Sample ID: LCS 480-365651/2**  
**Matrix: Water**  
**Analysis Batch: 365651**

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Dissolved Solids	504	495.0		mg/L		98	85 - 115

**Lab Sample ID: 480-120432-9 DU**  
**Matrix: Water**  
**Analysis Batch: 365651**

**Client Sample ID: FIELD BLANK**  
**Prep Type: Total/NA**

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Dissolved Solids	ND		ND		mg/L		NC	10

TestAmerica Buffalo

# QC Sample Results

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

TestAmerica Job ID: 480-120432-1

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

**Lab Sample ID: MB 480-366388/1**  
**Matrix: Water**  
**Analysis Batch: 366388**

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	ND		10.0		mg/L			07/11/17 15:10	1

**Lab Sample ID: LCS 480-366388/2**  
**Matrix: Water**  
**Analysis Batch: 366388**

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Dissolved Solids	504	474.0		mg/L		94	85 - 115

## Method: SM 4500 H+ B - pH

**Lab Sample ID: LCS 480-365149/1**  
**Matrix: Water**  
**Analysis Batch: 365149**

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

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

- 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

TestAmerica Job ID: 480-120432-1

## Metals

### Prep Batch: 365220

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-120432-1	P-1	Total/NA	Water	245.1	
480-120432-2	P-2	Total/NA	Water	245.1	
480-120432-3	P-3	Total/NA	Water	245.1	
480-120432-4	P-4R	Total/NA	Water	245.1	
480-120432-5	P-5	Total/NA	Water	245.1	
480-120432-6	P-6	Total/NA	Water	245.1	
480-120432-7	P-7	Total/NA	Water	245.1	
480-120432-8	DUP-1	Total/NA	Water	245.1	
480-120432-9	FIELD BLANK	Total/NA	Water	245.1	
480-120432-10	EQUIPMENT	Total/NA	Water	245.1	
MB 480-365220/1-A	Method Blank	Total/NA	Water	245.1	
LCS 480-365220/2-A	Lab Control Sample	Total/NA	Water	245.1	
480-120432-10 MS	EQUIPMENT	Total/NA	Water	245.1	
480-120432-10 MSD	EQUIPMENT	Total/NA	Water	245.1	

### Analysis Batch: 365327

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-120432-1	P-1	Total/NA	Water	245.1	365220
480-120432-2	P-2	Total/NA	Water	245.1	365220
480-120432-3	P-3	Total/NA	Water	245.1	365220
480-120432-4	P-4R	Total/NA	Water	245.1	365220
480-120432-5	P-5	Total/NA	Water	245.1	365220
480-120432-6	P-6	Total/NA	Water	245.1	365220
480-120432-7	P-7	Total/NA	Water	245.1	365220
480-120432-8	DUP-1	Total/NA	Water	245.1	365220
480-120432-9	FIELD BLANK	Total/NA	Water	245.1	365220
480-120432-10	EQUIPMENT	Total/NA	Water	245.1	365220
MB 480-365220/1-A	Method Blank	Total/NA	Water	245.1	365220
LCS 480-365220/2-A	Lab Control Sample	Total/NA	Water	245.1	365220
480-120432-10 MS	EQUIPMENT	Total/NA	Water	245.1	365220
480-120432-10 MSD	EQUIPMENT	Total/NA	Water	245.1	365220

### Prep Batch: 365397

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-120432-1	P-1	Total/NA	Water	200.7	
480-120432-2	P-2	Total/NA	Water	200.7	
480-120432-3	P-3	Total/NA	Water	200.7	
480-120432-4	P-4R	Total/NA	Water	200.7	
480-120432-5	P-5	Total/NA	Water	200.7	
480-120432-6	P-6	Total/NA	Water	200.7	
480-120432-7	P-7	Total/NA	Water	200.7	
480-120432-8	DUP-1	Total/NA	Water	200.7	
480-120432-9	FIELD BLANK	Total/NA	Water	200.7	
480-120432-10	EQUIPMENT	Total/NA	Water	200.7	
MB 480-365397/1-A	Method Blank	Total/NA	Water	200.7	
LCS 480-365397/2-A	Lab Control Sample	Total/NA	Water	200.7	
480-120432-8 MS	DUP-1	Total/NA	Water	200.7	
480-120432-8 MSD	DUP-1	Total/NA	Water	200.7	

# QC Association Summary

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

TestAmerica Job ID: 480-120432-1

## Metals (Continued)

### Analysis Batch: 365830

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-120432-1	P-1	Total/NA	Water	200.7 Rev 4.4	365397
480-120432-2	P-2	Total/NA	Water	200.7 Rev 4.4	365397
480-120432-3	P-3	Total/NA	Water	200.7 Rev 4.4	365397
480-120432-4	P-4R	Total/NA	Water	200.7 Rev 4.4	365397
480-120432-5	P-5	Total/NA	Water	200.7 Rev 4.4	365397
480-120432-6	P-6	Total/NA	Water	200.7 Rev 4.4	365397
480-120432-7	P-7	Total/NA	Water	200.7 Rev 4.4	365397
480-120432-8	DUP-1	Total/NA	Water	200.7 Rev 4.4	365397
480-120432-9	FIELD BLANK	Total/NA	Water	200.7 Rev 4.4	365397
480-120432-10	EQUIPMENT	Total/NA	Water	200.7 Rev 4.4	365397
MB 480-365397/1-A	Method Blank	Total/NA	Water	200.7 Rev 4.4	365397
LCS 480-365397/2-A	Lab Control Sample	Total/NA	Water	200.7 Rev 4.4	365397
480-120432-8 MS	DUP-1	Total/NA	Water	200.7 Rev 4.4	365397
480-120432-8 MSD	DUP-1	Total/NA	Water	200.7 Rev 4.4	365397

### Prep Batch: 365888

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-120432-1	P-1	Total/NA	Water	200.8	
480-120432-2	P-2	Total/NA	Water	200.8	
480-120432-3	P-3	Total/NA	Water	200.8	
480-120432-5	P-5	Total/NA	Water	200.8	
480-120432-6	P-6	Total/NA	Water	200.8	
480-120432-7	P-7	Total/NA	Water	200.8	
480-120432-8	DUP-1	Total/NA	Water	200.8	
480-120432-9	FIELD BLANK	Total/NA	Water	200.8	
480-120432-10	EQUIPMENT	Total/NA	Water	200.8	
MB 480-365888/1-A	Method Blank	Total/NA	Water	200.8	
LCS 480-365888/2-A	Lab Control Sample	Total/NA	Water	200.8	
480-120432-3 MS	P-3	Total/NA	Water	200.8	
480-120432-3 MSD	P-3	Total/NA	Water	200.8	

### Analysis Batch: 366102

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 480-365397/1-A	Method Blank	Total/NA	Water	200.7 Rev 4.4	365397
LCS 480-365397/2-A	Lab Control Sample	Total/NA	Water	200.7 Rev 4.4	365397

### Analysis Batch: 366582

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-120432-1	P-1	Total/NA	Water	200.8	365888
480-120432-2	P-2	Total/NA	Water	200.8	365888
480-120432-3	P-3	Total/NA	Water	200.8	365888
480-120432-8	DUP-1	Total/NA	Water	200.8	365888
480-120432-9	FIELD BLANK	Total/NA	Water	200.8	365888
480-120432-10	EQUIPMENT	Total/NA	Water	200.8	365888
MB 480-365888/1-A	Method Blank	Total/NA	Water	200.8	365888
LCS 480-365888/2-A	Lab Control Sample	Total/NA	Water	200.8	365888

### Analysis Batch: 366951

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-120432-5	P-5	Total/NA	Water	200.8	365888
480-120432-6	P-6	Total/NA	Water	200.8	365888

TestAmerica Buffalo

# QC Association Summary

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

TestAmerica Job ID: 480-120432-1

## Metals (Continued)

### Analysis Batch: 366951 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-120432-7	P-7	Total/NA	Water	200.8	365888
480-120432-8	DUP-1	Total/NA	Water	200.8	365888
480-120432-9	FIELD BLANK	Total/NA	Water	200.8	365888
480-120432-10	EQUIPMENT	Total/NA	Water	200.8	365888
480-120432-3 MS	P-3	Total/NA	Water	200.8	365888
480-120432-3 MSD	P-3	Total/NA	Water	200.8	365888

### Analysis Batch: 367237

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-120432-6	P-6	Total/NA	Water	200.8	365888
480-120432-7	P-7	Total/NA	Water	200.8	365888
480-120432-8	DUP-1	Total/NA	Water	200.8	365888
480-120432-9	FIELD BLANK	Total/NA	Water	200.8	365888
480-120432-10	EQUIPMENT	Total/NA	Water	200.8	365888
480-120432-3 MS	P-3	Total/NA	Water	200.8	365888
480-120432-3 MSD	P-3	Total/NA	Water	200.8	365888

### Prep Batch: 367270

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-120432-2	P-2	Total/NA	Water	200.8	
480-120432-4	P-4R	Total/NA	Water	200.8	
MB 480-367270/1-A	Method Blank	Total/NA	Water	200.8	
LCS 480-367270/2-A	Lab Control Sample	Total/NA	Water	200.8	

### Analysis Batch: 367328

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-120432-3	P-3	Total/NA	Water	200.7 Rev 4.4	365397

### Analysis Batch: 367483

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-120432-5	P-5	Total/NA	Water	200.8	365888

### Analysis Batch: 367636

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-120432-4	P-4R	Total/NA	Water	200.8	367270
MB 480-367270/1-A	Method Blank	Total/NA	Water	200.8	367270
LCS 480-367270/2-A	Lab Control Sample	Total/NA	Water	200.8	367270

### Analysis Batch: 367731

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-120432-2	P-2	Total/NA	Water	200.8	367270

## General Chemistry

### Analysis Batch: 365149

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-120432-1	P-1	Total/NA	Water	SM 4500 H+ B	
480-120432-2	P-2	Total/NA	Water	SM 4500 H+ B	
480-120432-3	P-3	Total/NA	Water	SM 4500 H+ B	
480-120432-4	P-4R	Total/NA	Water	SM 4500 H+ B	

TestAmerica Buffalo

# QC Association Summary

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

TestAmerica Job ID: 480-120432-1

## General Chemistry (Continued)

### Analysis Batch: 365149 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-120432-5	P-5	Total/NA	Water	SM 4500 H+ B	
480-120432-6	P-6	Total/NA	Water	SM 4500 H+ B	
480-120432-7	P-7	Total/NA	Water	SM 4500 H+ B	
480-120432-8	DUP-1	Total/NA	Water	SM 4500 H+ B	
480-120432-9	FIELD BLANK	Total/NA	Water	SM 4500 H+ B	
480-120432-10	EQUIPMENT	Total/NA	Water	SM 4500 H+ B	
LCS 480-365149/1	Lab Control Sample	Total/NA	Water	SM 4500 H+ B	

### Analysis Batch: 365564

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-120432-1	P-1	Total/NA	Water	SM 2540C	
MB 480-365564/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 480-365564/2	Lab Control Sample	Total/NA	Water	SM 2540C	
480-120432-1 DU	P-1	Total/NA	Water	SM 2540C	

### Analysis Batch: 365651

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-120432-2	P-2	Total/NA	Water	SM 2540C	
480-120432-3	P-3	Total/NA	Water	SM 2540C	
480-120432-4	P-4R	Total/NA	Water	SM 2540C	
480-120432-5	P-5	Total/NA	Water	SM 2540C	
480-120432-6	P-6	Total/NA	Water	SM 2540C	
480-120432-7	P-7	Total/NA	Water	SM 2540C	
480-120432-8	DUP-1	Total/NA	Water	SM 2540C	
480-120432-9	FIELD BLANK	Total/NA	Water	SM 2540C	
480-120432-10	EQUIPMENT	Total/NA	Water	SM 2540C	
MB 480-365651/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 480-365651/2	Lab Control Sample	Total/NA	Water	SM 2540C	
480-120432-9 DU	FIELD BLANK	Total/NA	Water	SM 2540C	

### Analysis Batch: 366388

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-120432-2	P-2	Total/NA	Water	SM 2540C	
MB 480-366388/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 480-366388/2	Lab Control Sample	Total/NA	Water	SM 2540C	

### Analysis Batch: 366627

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-120432-1	P-1	Total/NA	Water	300.0	
480-120432-2	P-2	Total/NA	Water	300.0	
480-120432-3	P-3	Total/NA	Water	300.0	
480-120432-4	P-4R	Total/NA	Water	300.0	
480-120432-5	P-5	Total/NA	Water	300.0	
480-120432-6	P-6	Total/NA	Water	300.0	
480-120432-7	P-7	Total/NA	Water	300.0	
480-120432-8	DUP-1	Total/NA	Water	300.0	
MB 480-366627/28	Method Blank	Total/NA	Water	300.0	
LCS 480-366627/27	Lab Control Sample	Total/NA	Water	300.0	
480-120432-8 MS	DUP-1	Total/NA	Water	300.0	

TestAmerica Buffalo

# QC Association Summary

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

TestAmerica Job ID: 480-120432-1

## General Chemistry (Continued)

### Analysis Batch: 366814

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-120432-9	FIELD BLANK	Total/NA	Water	300.0	
480-120432-10	EQUIPMENT	Total/NA	Water	300.0	
MB 480-366814/28	Method Blank	Total/NA	Water	300.0	
MB 480-366814/4	Method Blank	Total/NA	Water	300.0	
LCS 480-366814/27	Lab Control Sample	Total/NA	Water	300.0	
LCS 480-366814/3	Lab Control Sample	Total/NA	Water	300.0	
480-120432-9 MS	FIELD BLANK	Total/NA	Water	300.0	



# Lab Chronicle

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

TestAmerica Job ID: 480-120432-1

## Client Sample ID: P-1

Date Collected: 06/29/17 09:20

Date Received: 06/30/17 09:30

## Lab Sample ID: 480-120432-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	200.7			365397	07/05/17 10:32	EMB	TAL BUF
Total/NA	Analysis	200.7 Rev 4.4		1	365830	07/07/17 00:42	LMH	TAL BUF
Total/NA	Prep	200.8			365888	07/07/17 12:00	MJW	TAL BUF
Total/NA	Analysis	200.8		1	366582	07/12/17 05:28	JRK	TAL BUF
Total/NA	Prep	245.1			365220	07/03/17 11:30	MVZ	TAL BUF
Total/NA	Analysis	245.1		1	365327	07/03/17 15:46	MVZ	TAL BUF
Total/NA	Analysis	300.0		2	366627	07/12/17 22:16	RJS	TAL BUF
Total/NA	Analysis	SM 2540C		1	365564	07/06/17 04:42	KMB	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	365149	07/02/17 12:51	DSC	TAL BUF

## Client Sample ID: P-2

Date Collected: 06/29/17 13:20

Date Received: 06/30/17 09:30

## Lab Sample ID: 480-120432-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	200.7			365397	07/05/17 10:32	EMB	TAL BUF
Total/NA	Analysis	200.7 Rev 4.4		1	365830	07/07/17 00:46	LMH	TAL BUF
Total/NA	Prep	200.8			365888	07/07/17 12:00	MJW	TAL BUF
Total/NA	Analysis	200.8		1	366582	07/12/17 05:34	JRK	TAL BUF
Total/NA	Prep	200.8			367270	07/18/17 06:58	EMB	TAL BUF
Total/NA	Analysis	200.8		2	367731	07/19/17 12:28	JRK	TAL BUF
Total/NA	Prep	245.1			365220	07/03/17 11:30	MVZ	TAL BUF
Total/NA	Analysis	245.1		1	365327	07/03/17 15:51	MVZ	TAL BUF
Total/NA	Analysis	300.0		10	366627	07/12/17 22:24	RJS	TAL BUF
Total/NA	Analysis	SM 2540C		1	365651	07/06/17 11:43	BEV	TAL BUF
Total/NA	Analysis	SM 2540C		1	366388	07/11/17 15:10	BEV	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	365149	07/02/17 12:53	DSC	TAL BUF

## Client Sample ID: P-3

Date Collected: 06/29/17 09:55

Date Received: 06/30/17 09:30

## Lab Sample ID: 480-120432-3

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	200.7			365397	07/05/17 10:32	EMB	TAL BUF
Total/NA	Analysis	200.7 Rev 4.4		1	365830	07/07/17 00:49	LMH	TAL BUF
Total/NA	Prep	200.7			365397	07/05/17 10:32	EMB	TAL BUF
Total/NA	Analysis	200.7 Rev 4.4		1	367328	07/17/17 10:53	AMH	TAL BUF
Total/NA	Prep	200.8			365888	07/07/17 12:00	MJW	TAL BUF
Total/NA	Analysis	200.8		1	366582	07/12/17 05:39	JRK	TAL BUF
Total/NA	Prep	245.1			365220	07/03/17 11:30	MVZ	TAL BUF
Total/NA	Analysis	245.1		1	365327	07/03/17 15:53	MVZ	TAL BUF
Total/NA	Analysis	300.0		2	366627	07/12/17 22:32	RJS	TAL BUF

TestAmerica Buffalo

# Lab Chronicle

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

TestAmerica Job ID: 480-120432-1

## Client Sample ID: P-3

Date Collected: 06/29/17 09:55

Date Received: 06/30/17 09:30

## Lab Sample ID: 480-120432-3

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	SM 2540C		1	365651	07/06/17 11:43	BEV	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	365149	07/02/17 12:56	DSC	TAL BUF

## Client Sample ID: P-4R

Date Collected: 06/29/17 10:45

Date Received: 06/30/17 09:30

## Lab Sample ID: 480-120432-4

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	200.7			365397	07/05/17 10:32	EMB	TAL BUF
Total/NA	Analysis	200.7 Rev 4.4		1	365830	07/07/17 00:53	LMH	TAL BUF
Total/NA	Prep	200.8			367270	07/18/17 06:58	EMB	TAL BUF
Total/NA	Analysis	200.8		1	367636	07/18/17 16:23	JRK	TAL BUF
Total/NA	Prep	245.1			365220	07/03/17 11:30	MVZ	TAL BUF
Total/NA	Analysis	245.1		1	365327	07/03/17 15:55	MVZ	TAL BUF
Total/NA	Analysis	300.0		2	366627	07/12/17 22:40	RJS	TAL BUF
Total/NA	Analysis	SM 2540C		1	365651	07/06/17 11:43	BEV	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	365149	07/02/17 12:58	DSC	TAL BUF

## Client Sample ID: P-5

Date Collected: 06/29/17 11:25

Date Received: 06/30/17 09:30

## Lab Sample ID: 480-120432-5

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	200.7			365397	07/05/17 10:32	EMB	TAL BUF
Total/NA	Analysis	200.7 Rev 4.4		1	365830	07/07/17 00:56	LMH	TAL BUF
Total/NA	Prep	200.8			365888	07/07/17 12:00	MJW	TAL BUF
Total/NA	Analysis	200.8		1	366951	07/13/17 17:14	JRK	TAL BUF
Total/NA	Prep	200.8			365888	07/07/17 12:00	MJW	TAL BUF
Total/NA	Analysis	200.8		1	367483	07/17/17 14:52	JRK	TAL BUF
Total/NA	Prep	245.1			365220	07/03/17 11:30	MVZ	TAL BUF
Total/NA	Analysis	245.1		1	365327	07/03/17 15:57	MVZ	TAL BUF
Total/NA	Analysis	300.0		5	366627	07/12/17 22:48	RJS	TAL BUF
Total/NA	Analysis	SM 2540C		1	365651	07/06/17 11:43	BEV	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	365149	07/02/17 13:01	DSC	TAL BUF

## Client Sample ID: P-6

Date Collected: 06/29/17 12:15

Date Received: 06/30/17 09:30

## Lab Sample ID: 480-120432-6

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	200.7			365397	07/05/17 10:32	EMB	TAL BUF
Total/NA	Analysis	200.7 Rev 4.4		1	365830	07/07/17 01:00	LMH	TAL BUF

TestAmerica Buffalo

# Lab Chronicle

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

TestAmerica Job ID: 480-120432-1

**Client Sample ID: P-6**

**Lab Sample ID: 480-120432-6**

**Date Collected: 06/29/17 12:15**

**Matrix: Water**

**Date Received: 06/30/17 09:30**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	200.8			365888	07/07/17 12:00	MJW	TAL BUF
Total/NA	Analysis	200.8		1	366951	07/13/17 17:48	JRK	TAL BUF
Total/NA	Prep	200.8			365888	07/07/17 12:00	MJW	TAL BUF
Total/NA	Analysis	200.8		1	367237	07/14/17 16:30	JRK	TAL BUF
Total/NA	Prep	245.1			365220	07/03/17 11:30	MVZ	TAL BUF
Total/NA	Analysis	245.1		1	365327	07/03/17 15:59	MVZ	TAL BUF
Total/NA	Analysis	300.0		5	366627	07/12/17 22:56	RJS	TAL BUF
Total/NA	Analysis	SM 2540C		1	365651	07/06/17 11:43	BEV	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	365149	07/02/17 13:06	DSC	TAL BUF

**Client Sample ID: P-7**

**Lab Sample ID: 480-120432-7**

**Date Collected: 06/29/17 12:50**

**Matrix: Water**

**Date Received: 06/30/17 09:30**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	200.7			365397	07/05/17 10:32	EMB	TAL BUF
Total/NA	Analysis	200.7 Rev 4.4		1	365830	07/07/17 01:03	LMH	TAL BUF
Total/NA	Prep	200.8			365888	07/07/17 12:00	MJW	TAL BUF
Total/NA	Analysis	200.8		1	366951	07/13/17 17:54	JRK	TAL BUF
Total/NA	Prep	200.8			365888	07/07/17 12:00	MJW	TAL BUF
Total/NA	Analysis	200.8		1	367237	07/14/17 16:35	JRK	TAL BUF
Total/NA	Prep	245.1			365220	07/03/17 11:30	MVZ	TAL BUF
Total/NA	Analysis	245.1		1	365327	07/03/17 16:01	MVZ	TAL BUF
Total/NA	Analysis	300.0		5	366627	07/12/17 23:04	RJS	TAL BUF
Total/NA	Analysis	SM 2540C		1	365651	07/06/17 11:43	BEV	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	365149	07/02/17 13:09	DSC	TAL BUF

**Client Sample ID: DUP-1**

**Lab Sample ID: 480-120432-8**

**Date Collected: 06/29/17 00:00**

**Matrix: Water**

**Date Received: 06/30/17 09:30**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	200.7			365397	07/05/17 10:32	EMB	TAL BUF
Total/NA	Analysis	200.7 Rev 4.4		1	365830	07/07/17 01:07	LMH	TAL BUF
Total/NA	Prep	200.8			365888	07/07/17 12:00	MJW	TAL BUF
Total/NA	Analysis	200.8		1	366582	07/12/17 07:08	JRK	TAL BUF
Total/NA	Prep	200.8			365888	07/07/17 12:00	MJW	TAL BUF
Total/NA	Analysis	200.8		1	366951	07/13/17 18:05	JRK	TAL BUF
Total/NA	Prep	200.8			365888	07/07/17 12:00	MJW	TAL BUF
Total/NA	Analysis	200.8		1	367237	07/14/17 16:41	JRK	TAL BUF
Total/NA	Prep	245.1			365220	07/03/17 11:30	MVZ	TAL BUF
Total/NA	Analysis	245.1		1	365327	07/03/17 16:03	MVZ	TAL BUF
Total/NA	Analysis	300.0		5	366627	07/12/17 23:13	RJS	TAL BUF

TestAmerica Buffalo

# Lab Chronicle

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

TestAmerica Job ID: 480-120432-1

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	SM 2540C		1	365651	07/06/17 11:43	BEV	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	365149	07/02/17 13:11	DSC	TAL BUF

## Client Sample ID: FIELD BLANK

Lab Sample ID: 480-120432-9

Date Collected: 06/29/17 13:45

Matrix: Water

Date Received: 06/30/17 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	200.7			365397	07/05/17 10:32	EMB	TAL BUF
Total/NA	Analysis	200.7 Rev 4.4		1	365830	07/07/17 01:28	LMH	TAL BUF
Total/NA	Prep	200.8			365888	07/07/17 12:00	MJW	TAL BUF
Total/NA	Analysis	200.8		1	366582	07/12/17 07:25	JRK	TAL BUF
Total/NA	Prep	200.8			365888	07/07/17 12:00	MJW	TAL BUF
Total/NA	Analysis	200.8		1	366951	07/13/17 18:10	JRK	TAL BUF
Total/NA	Prep	200.8			365888	07/07/17 12:00	MJW	TAL BUF
Total/NA	Analysis	200.8		1	367237	07/14/17 16:46	JRK	TAL BUF
Total/NA	Prep	245.1			365220	07/03/17 11:30	MVZ	TAL BUF
Total/NA	Analysis	245.1		1	365327	07/03/17 16:05	MVZ	TAL BUF
Total/NA	Analysis	300.0		1	366814	07/13/17 18:42	RJS	TAL BUF
Total/NA	Analysis	SM 2540C		1	365651	07/06/17 11:43	BEV	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	365149	07/02/17 13:14	DSC	TAL BUF

## Client Sample ID: EQUIPMENT

Lab Sample ID: 480-120432-10

Date Collected: 06/29/17 13:50

Matrix: Water

Date Received: 06/30/17 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	200.7			365397	07/05/17 10:32	EMB	TAL BUF
Total/NA	Analysis	200.7 Rev 4.4		1	365830	07/07/17 01:31	LMH	TAL BUF
Total/NA	Prep	200.8			365888	07/07/17 12:00	MJW	TAL BUF
Total/NA	Analysis	200.8		1	366582	07/12/17 07:30	JRK	TAL BUF
Total/NA	Prep	200.8			365888	07/07/17 12:00	MJW	TAL BUF
Total/NA	Analysis	200.8		1	366951	07/13/17 18:16	JRK	TAL BUF
Total/NA	Prep	200.8			365888	07/07/17 12:00	MJW	TAL BUF
Total/NA	Analysis	200.8		1	367237	07/14/17 16:51	JRK	TAL BUF
Total/NA	Prep	245.1			365220	07/03/17 11:30	MVZ	TAL BUF
Total/NA	Analysis	245.1		5	365327	07/03/17 16:07	MVZ	TAL BUF
Total/NA	Analysis	300.0		1	366814	07/13/17 19:30	RJS	TAL BUF
Total/NA	Analysis	SM 2540C		1	365651	07/06/17 11:43	BEV	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	365149	07/02/17 13:16	DSC	TAL BUF

**Laboratory References:**

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

# Accreditation/Certification Summary

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

TestAmerica Job ID: 480-120432-1

## Laboratory: TestAmerica Buffalo

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

Authority	Program	EPA Region	Identification Number	Expiration Date
Minnesota	NELAP	5	036-999-337	12-31-17

The following analytes are included in this report, but accreditation/certification is not offered by the governing authority:

Analysis Method	Prep Method	Matrix	Analyte
200.7 Rev 4.4	200.7	Water	Lithium
SM 4500 H+ B		Water	pH
SM 4500 H+ B		Water	Temperature

- 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

TestAmerica Job ID: 480-120432-1

Method	Method Description	Protocol	Laboratory
200.7 Rev 4.4	Metals (ICP)	EPA	TAL BUF
200.8	Metals (ICP/MS)	EPA	TAL BUF
245.1	Mercury (CVAA)	EPA	TAL BUF
300.0	Anions, Ion Chromatography	MCAWW	TAL BUF
SM 2540C	Solids, Total Dissolved (TDS)	SM	TAL BUF
SM 4500 H+ B	pH	SM	TAL BUF

#### Protocol References:

EPA = US Environmental Protection Agency

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

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

#### Laboratory References:

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



# Sample Summary

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

TestAmerica Job ID: 480-120432-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
480-120432-1	P-1	Water	06/29/17 09:20	06/30/17 09:30
480-120432-2	P-2	Water	06/29/17 13:20	06/30/17 09:30
480-120432-3	P-3	Water	06/29/17 09:55	06/30/17 09:30
480-120432-4	P-4R	Water	06/29/17 10:45	06/30/17 09:30
480-120432-5	P-5	Water	06/29/17 11:25	06/30/17 09:30
480-120432-6	P-6	Water	06/29/17 12:15	06/30/17 09:30
480-120432-7	P-7	Water	06/29/17 12:50	06/30/17 09:30
480-120432-8	DUP-1	Water	06/29/17 00:00	06/30/17 09:30
480-120432-9	FIELD BLANK	Water	06/29/17 13:45	06/30/17 09:30
480-120432-10	EQUIPMENT	Water	06/29/17 13:50	06/30/17 09:30




Client Contact  
SKB Environmental  
13425 Courthouse Blvd  
Rosemount, MN 55068  
(651) 438-1500 Phone  
(651) 438-1518 FAX  
Project Name: Cloquet 2017 CCR GW Event 5  
Site:  
P O # 3078-17-00253

Regulatory Program:  DW  NPDES  RCRA  Other:

Project Manager: Ryan Van Dette  
Tel/Fax:  
Analysis Turnaround Time  
CALENDAR DAYS WORKING DAYS  
TAT if different from Below  
2 weeks  
1 week  
2 days  
1 day

Site Contact: Nathaniel Beineman  
Lab Contact:  
Date: 6/29/17  
Carrier:

TestAmerica Laboratories, Inc.  
COC No: 1 of 1 COCs

Sample Identification	Sample Date	Sample Time	Sample Type (C-Comp, G-Grab)	Matrix	# of Cont.	Analytical Parameters							Sample Specific Notes:		
						Filtered Sample (Y/N)	Perform MS / MSD (Y/N)	Metals (totals) + Mercury	Chloride	Fluoride	Sulfate	TDS		pH	Radium 226 & 228 combined
P-1	6/29/17	9:20	Grab	Water	7	X	X	X	X	X	X	X	X	X	 480-120432 COC
P-2	6/29/17	13:20	Grab	Water	7	X	X	X	X	X	X	X	X	X	
P-3	6/29/17	9:55	Grab	Water	7	X	X	X	X	X	X	X	X	X	
P-4	6/29/17	10:45	Grab	Water	7	X	X	X	X	X	X	X	X	X	
P-5	6/29/17	11:25	Grab	Water	7	X	X	X	X	X	X	X	X	X	
P-6	6/29/17	12:15	Grab	Water	7	X	X	X	X	X	X	X	X	X	
P-7	6/29/17	12:50	Grab	Water	7	X	X	X	X	X	X	X	X	X	
DUPLICATE WELL	6/29/17	-	Grab	Water	7	X	X	X	X	X	X	X	X	X	
Field Blank	6/29/17	13:45	Grab	Water	7	X	X	X	X	X	X	X	X	X	
Equipment Blank	6/29/17	13:50	Grab	Water	7	X	X	X	X	X	X	X	X	X	

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other  
Possible Hazard Identification: Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

Return to Client:  Disposal by Lab:  Archive for: \_\_\_\_\_ Months  
Non-Hazard:  Flammable:  Skin Irritant:  Poison B:  Unknown:

\*Metals - Boron, Calcium, Antimony, Arsenic, Barium, Beryllium, Cadmium, Chromium, Cobalt, Lead, Lithium, Molybdenum, Selenium, Thallium

Custody Seals Intact: Yes  No   
Relinquished by: *Anna Selman* Company: *GES* Date/Time: *6/29/17 18:00*  
Relinquished by: \_\_\_\_\_ Company: \_\_\_\_\_ Date/Time: \_\_\_\_\_  
Relinquished by: \_\_\_\_\_ Company: \_\_\_\_\_ Date/Time: \_\_\_\_\_

Therm ID No.: \_\_\_\_\_  
Cooler Temp. (°C): Obs'd: \_\_\_\_\_  
Received by: *[Signature]* Company: \_\_\_\_\_ Date/Time: *7.5.17 3:01:27*  
Received by: \_\_\_\_\_ Company: \_\_\_\_\_ Date/Time: \_\_\_\_\_  
Received in Laboratory by: \_\_\_\_\_ Company: \_\_\_\_\_ Date/Time: \_\_\_\_\_





# Login Sample Receipt Checklist

Client: Waste Connections, Inc.

Job Number: 480-120432-1

**Login Number: 120432**

**List Number: 1**

**Creator: Janish, Carl M**

**List Source: TestAmerica Buffalo**

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



# TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

## ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Buffalo

10 Hazelwood Drive

Amherst, NY 14228-2298

Tel: (716)691-2600

TestAmerica Job ID: 480-120432-2

Client Project/Site: SKB Cloquet - CCR Groundwater

Sampling Event: CCR Groundwater

For:

Waste Connections, Inc.

13425 Courthouse Blvd

Rosemount, Minnesota 55068

Attn: Nathaniel Beinemann



Authorized for release by:

7/31/2017 1:51:35 PM

Ryan VanDette, Project Manager II

(716)504-9830

[ryan.vandette@testamericainc.com](mailto:ryan.vandette@testamericainc.com)



### LINKS

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results through

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Have a Question?



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[www.testamericainc.com](http://www.testamericainc.com)

*The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.*

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

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

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# Definitions/Glossary

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

TestAmerica Job ID: 480-120432-2

## Qualifiers

### Rad

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

## Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
□	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
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)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
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)

# Case Narrative

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

TestAmerica Job ID: 480-120432-2

**Job ID: 480-120432-2**

**Laboratory: TestAmerica Buffalo**

## Narrative

**Job Narrative  
480-120432-2**

## Comments

No additional comments.

## Receipt

The samples were received on 6/30/2017 9:30 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 3 coolers at receipt time were 2.7° C, 3.0° C and 3.5° C.

## RAD

Method(s) PrecSep\_0: Radium 228 Prep Batch 160-316563

The following samples had a pH :

120432-1 : 1

120432-1 DU: 6

120432-5: 5

There was a difference in pH between samples 120432-1 and 120432-1 DU.

P-1 (480-120432-1), P-5 (480-120432-5) and (480-120432-C-1 DU)

Method(s) PrecSep-21: Radium 226 Prep Batch 160-316561

The following samples had a pH :

120432-1 : 1

120432-1 DU: 6

120432-5: 5

There was a difference in pH between samples 120432-1 and 120432-1 DU.

P-1 (480-120432-1), P-5 (480-120432-5) and (480-120432-C-1 DU)

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

## Detection Summary

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

TestAmerica Job ID: 480-120432-2

---

**Client Sample ID: P-1****Lab Sample ID: 480-120432-1**

No Detections.

---

**Client Sample ID: P-2****Lab Sample ID: 480-120432-2**

No Detections.

---

**Client Sample ID: P-3****Lab Sample ID: 480-120432-3**

No Detections.

---

**Client Sample ID: P-4R****Lab Sample ID: 480-120432-4**

No Detections.

---

**Client Sample ID: P-5****Lab Sample ID: 480-120432-5**

No Detections.

---

**Client Sample ID: P-6****Lab Sample ID: 480-120432-6**

No Detections.

---

**Client Sample ID: P-7****Lab Sample ID: 480-120432-7**

No Detections.

---

**Client Sample ID: DUP-1****Lab Sample ID: 480-120432-8**

No Detections.

---

**Client Sample ID: FIELD BLANK****Lab Sample ID: 480-120432-9**

No Detections.

---

**Client Sample ID: EQUIPMENT****Lab Sample ID: 480-120432-10**

No Detections.

This Detection Summary does not include radiochemical test results.

TestAmerica Buffalo

# Client Sample Results

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

TestAmerica Job ID: 480-120432-2

**Client Sample ID: P-1**

**Lab Sample ID: 480-120432-1**

Date Collected: 06/29/17 09:20

Matrix: Water

Date Received: 06/30/17 09:30

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0876	U	0.0635	0.0640	1.00	0.0879	pCi/L	07/07/17 09:40	07/31/17 06:01	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	92.0		40 - 110					07/07/17 09:40	07/31/17 06:01	1

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	-0.134	U	0.170	0.170	1.00	0.326	pCi/L	07/07/17 10:04	07/19/17 14:34	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	92.0		40 - 110					07/07/17 10:04	07/19/17 14:34	1
Y Carrier	110		40 - 110					07/07/17 10:04	07/19/17 14:34	1

# Client Sample Results

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

TestAmerica Job ID: 480-120432-2

**Client Sample ID: P-2**

**Lab Sample ID: 480-120432-2**

Date Collected: 06/29/17 13:20

Matrix: Water

Date Received: 06/30/17 09:30

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.300		0.0968	0.100	1.00	0.0822	pCi/L	07/07/17 09:40	07/31/17 06:01	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	92.6		40 - 110					07/07/17 09:40	07/31/17 06:01	1

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.355		0.213	0.215	1.00	0.323	pCi/L	07/07/17 10:04	07/19/17 14:34	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	92.6		40 - 110					07/07/17 10:04	07/19/17 14:34	1
Y Carrier	102		40 - 110					07/07/17 10:04	07/19/17 14:34	1



# Client Sample Results

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

TestAmerica Job ID: 480-120432-2

**Client Sample ID: P-3**

**Lab Sample ID: 480-120432-3**

Date Collected: 06/29/17 09:55

Matrix: Water

Date Received: 06/30/17 09:30

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.204		0.0799	0.0820	1.00	0.0822	pCi/L	07/07/17 09:40	07/31/17 06:02	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	95.9		40 - 110					07/07/17 09:40	07/31/17 06:02	1

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.332		0.192	0.194	1.00	0.289	pCi/L	07/07/17 10:04	07/19/17 14:34	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	95.9		40 - 110					07/07/17 10:04	07/19/17 14:34	1
Y Carrier	107		40 - 110					07/07/17 10:04	07/19/17 14:34	1

# Client Sample Results

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

TestAmerica Job ID: 480-120432-2

**Client Sample ID: P-4R**  
**Date Collected: 06/29/17 10:45**  
**Date Received: 06/30/17 09:30**

**Lab Sample ID: 480-120432-4**  
**Matrix: Water**

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.298		0.0939	0.0977	1.00	0.0737	pCi/L	07/07/17 09:40	07/31/17 06:02	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	94.7		40 - 110					07/07/17 09:40	07/31/17 06:02	1

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	-0.0226	U	0.157	0.157	1.00	0.288	pCi/L	07/07/17 10:04	07/19/17 14:34	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	94.7		40 - 110					07/07/17 10:04	07/19/17 14:34	1
Y Carrier	110		40 - 110					07/07/17 10:04	07/19/17 14:34	1

# Client Sample Results

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

TestAmerica Job ID: 480-120432-2

**Client Sample ID: P-5**

**Lab Sample ID: 480-120432-5**

Date Collected: 06/29/17 11:25

Matrix: Water

Date Received: 06/30/17 09:30

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.447		0.113	0.120	1.00	0.0887	pCi/L	07/07/17 09:40	07/31/17 06:02	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	97.9		40 - 110					07/07/17 09:40	07/31/17 06:02	1

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.547		0.221	0.227	1.00	0.309	pCi/L	07/07/17 10:04	07/19/17 14:34	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	97.9		40 - 110					07/07/17 10:04	07/19/17 14:34	1
Y Carrier	99.6		40 - 110					07/07/17 10:04	07/19/17 14:34	1

# Client Sample Results

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

TestAmerica Job ID: 480-120432-2

**Client Sample ID: P-6**

**Lab Sample ID: 480-120432-6**

Date Collected: 06/29/17 12:15

Matrix: Water

Date Received: 06/30/17 09:30

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0968		0.0676	0.0681	1.00	0.0950	pCi/L	07/07/17 09:40	07/31/17 06:02	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	101		40 - 110					07/07/17 09:40	07/31/17 06:02	1

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.0734	U	0.174	0.174	1.00	0.300	pCi/L	07/07/17 10:04	07/19/17 14:34	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	101		40 - 110					07/07/17 10:04	07/19/17 14:34	1
Y Carrier	99.6		40 - 110					07/07/17 10:04	07/19/17 14:34	1

# Client Sample Results

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

TestAmerica Job ID: 480-120432-2

**Client Sample ID: P-7**

**Lab Sample ID: 480-120432-7**

Date Collected: 06/29/17 12:50

Matrix: Water

Date Received: 06/30/17 09:30

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.234		0.0856	0.0881	1.00	0.0777	pCi/L	07/07/17 09:40	07/31/17 06:03	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	96.8		40 - 110					07/07/17 09:40	07/31/17 06:03	1

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.0979	U	0.164	0.164	1.00	0.278	pCi/L	07/07/17 10:04	07/19/17 14:31	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	96.8		40 - 110					07/07/17 10:04	07/19/17 14:31	1
Y Carrier	104		40 - 110					07/07/17 10:04	07/19/17 14:31	1

# Client Sample Results

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

TestAmerica Job ID: 480-120432-2

**Client Sample ID: DUP-1**

**Lab Sample ID: 480-120432-8**

Date Collected: 06/29/17 00:00

Matrix: Water

Date Received: 06/30/17 09:30

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.169		0.0794	0.0808	1.00	0.0846	pCi/L	07/07/17 09:40	07/31/17 06:03	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	84.4		40 - 110					07/07/17 09:40	07/31/17 06:03	1

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.344		0.213	0.215	1.00	0.322	pCi/L	07/07/17 10:04	07/19/17 14:32	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	84.4		40 - 110					07/07/17 10:04	07/19/17 14:32	1
Y Carrier	102		40 - 110					07/07/17 10:04	07/19/17 14:32	1

# Client Sample Results

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

TestAmerica Job ID: 480-120432-2

**Client Sample ID: FIELD BLANK**

**Lab Sample ID: 480-120432-9**

**Date Collected: 06/29/17 13:45**

**Matrix: Water**

**Date Received: 06/30/17 09:30**

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0271	U	0.0410	0.0411	1.00	0.0709	pCi/L	07/07/17 09:40	07/31/17 06:04	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	98.2		40 - 110					07/07/17 09:40	07/31/17 06:04	1

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	-0.133	U	0.191	0.191	1.00	0.356	pCi/L	07/07/17 10:04	07/19/17 14:32	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	98.2		40 - 110					07/07/17 10:04	07/19/17 14:32	1
Y Carrier	109		40 - 110					07/07/17 10:04	07/19/17 14:32	1

# Client Sample Results

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

TestAmerica Job ID: 480-120432-2

**Client Sample ID: EQUIPMENT**

**Lab Sample ID: 480-120432-10**

**Date Collected: 06/29/17 13:50**

**Matrix: Water**

**Date Received: 06/30/17 09:30**

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0640	U	0.0491	0.0494	1.00	0.0646	pCi/L	07/07/17 09:40	07/31/17 06:04	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	97.6		40 - 110					07/07/17 09:40	07/31/17 06:04	1

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	-0.0960	U	0.148	0.149	1.00	0.286	pCi/L	07/07/17 10:04	07/19/17 14:32	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	97.6		40 - 110					07/07/17 10:04	07/19/17 14:32	1
Y Carrier	106		40 - 110					07/07/17 10:04	07/19/17 14:32	1



# Tracer/Carrier Summary

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

TestAmerica Job ID: 480-120432-2

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

Matrix: Water

Prep Type: Total/NA

		Percent Yield (Acceptance Limits)	
Lab Sample ID	Client Sample ID	Ba (40-110)	
480-120432-1	P-1	92.0	
480-120432-1 DU	P-1	93.5	
480-120432-2	P-2	92.6	
480-120432-3	P-3	95.9	
480-120432-4	P-4R	94.7	
480-120432-5	P-5	97.9	
480-120432-6	P-6	101	
480-120432-7	P-7	96.8	
480-120432-8	DUP-1	84.4	
480-120432-9	FIELD BLANK	98.2	
480-120432-10	EQUIPMENT	97.6	
LCS 160-316561/2-A	Lab Control Sample	103	
MB 160-316561/1-A	Method Blank	101	

**Tracer/Carrier Legend**  
 Ba = Ba Carrier

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

Matrix: Water

Prep Type: Total/NA

		Percent Yield (Acceptance Limits)	
Lab Sample ID	Client Sample ID	Ba (40-110)	Y (40-110)
480-120432-1	P-1	92.0	110
480-120432-1 DU	P-1	93.5	106
480-120432-2	P-2	92.6	102
480-120432-3	P-3	95.9	107
480-120432-4	P-4R	94.7	110
480-120432-5	P-5	97.9	99.6
480-120432-6	P-6	101	99.6
480-120432-7	P-7	96.8	104
480-120432-8	DUP-1	84.4	102
480-120432-9	FIELD BLANK	98.2	109
480-120432-10	EQUIPMENT	97.6	106
LCS 160-316563/2-A	Lab Control Sample	103	97.0
MB 160-316563/1-A	Method Blank	101	101

**Tracer/Carrier Legend**  
 Ba = Ba Carrier  
 Y = Y Carrier

# QC Sample Results

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

TestAmerica Job ID: 480-120432-2

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

**Lab Sample ID: MB 160-316561/1-A**  
**Matrix: Water**  
**Analysis Batch: 319922**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 316561**

Analyte	MB MB		Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier	Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Radium-226	0.01230	U	0.0404	0.0404	1.00	0.0784	pCi/L	07/07/17 09:40	07/31/17 05:57	1
Carrier	MB MB		Limits		Prepared	Analyzed	Dil Fac			
Ba Carrier	%Yield	Qualifier	Limits							
Ba Carrier	101		40 - 110		07/07/17 09:40	07/31/17 05:57	1			

**Lab Sample ID: LCS 160-316561/2-A**  
**Matrix: Water**  
**Analysis Batch: 319922**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 316561**

Analyte	Spike Added	LCS Result	LCS Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits
				Uncert. (2σ+/-)					
Radium-226	11.4	8.869		0.926	1.00	0.0871	pCi/L	78	68 - 137
Carrier	LCS LCS		Limits		Prepared	Analyzed	Dil Fac		
Ba Carrier	%Yield	Qualifier	Limits						
Ba Carrier	103		40 - 110		07/07/17 09:40	07/31/17 05:57	1		

**Lab Sample ID: 480-120432-1 DU**  
**Matrix: Water**  
**Analysis Batch: 319922**

**Client Sample ID: P-1**  
**Prep Type: Total/NA**  
**Prep Batch: 316561**

Analyte	Sample Sample		DU	DU	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qual	Result	Qual	Uncert. (2σ+/-)						
Radium-226	0.0876	U	0.09139		0.0607	1.00	0.0768	pCi/L	07/07/17 10:04	07/19/17 14:33	1
Carrier	DU DU		Limits		Prepared	Analyzed	Dil Fac				
Ba Carrier	%Yield	Qualifier	Limits								
Ba Carrier	93.5		40 - 110		07/07/17 10:04	07/19/17 14:33	1				

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

**Lab Sample ID: MB 160-316563/1-A**  
**Matrix: Water**  
**Analysis Batch: 318053**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 316563**

Analyte	MB MB		Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier	Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Radium-228	-0.2309	U	0.157	0.159	1.00	0.320	pCi/L	07/07/17 10:04	07/19/17 14:33	1
Carrier	MB MB		Limits		Prepared	Analyzed	Dil Fac			
Ba Carrier	%Yield	Qualifier	Limits							
Ba Carrier	101		40 - 110		07/07/17 10:04	07/19/17 14:33	1			
Y Carrier	MB MB		Limits		Prepared	Analyzed	Dil Fac			
Y Carrier	%Yield	Qualifier	Limits							
Y Carrier	101		40 - 110		07/07/17 10:04	07/19/17 14:33	1			

TestAmerica Buffalo

# QC Sample Results

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

TestAmerica Job ID: 480-120432-2

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

**Lab Sample ID: LCS 160-316563/2-A**

**Matrix: Water**

**Analysis Batch: 318053**

**Client Sample ID: Lab Control Sample**

**Prep Type: Total/NA**

**Prep Batch: 316563**

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-228	13.2	11.79		1.27	1.00	0.299	pCi/L	90	56 - 140

Carrier	LCS %Yield	LCS Qualifier	Limits
Ba Carrier	103		40 - 110
Y Carrier	97.0		40 - 110

**Lab Sample ID: 480-120432-1 DU**

**Matrix: Water**

**Analysis Batch: 318053**

**Client Sample ID: P-1**

**Prep Type: Total/NA**

**Prep Batch: 316563**

Analyte	Sample Result	Sample Qual	DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	RER	RER Limit
Radium-228	-0.134	U	-0.07817	U	0.138	1.00	0.269	pCi/L	0.18	1

Carrier	DU %Yield	DU Qualifier	Limits
Ba Carrier	93.5		40 - 110
Y Carrier	106		40 - 110

# QC Association Summary

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

TestAmerica Job ID: 480-120432-2

## Rad

### Prep Batch: 316561

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-120432-1	P-1	Total/NA	Water	PrecSep-21	
480-120432-2	P-2	Total/NA	Water	PrecSep-21	
480-120432-3	P-3	Total/NA	Water	PrecSep-21	
480-120432-4	P-4R	Total/NA	Water	PrecSep-21	
480-120432-5	P-5	Total/NA	Water	PrecSep-21	
480-120432-6	P-6	Total/NA	Water	PrecSep-21	
480-120432-7	P-7	Total/NA	Water	PrecSep-21	
480-120432-8	DUP-1	Total/NA	Water	PrecSep-21	
480-120432-9	FIELD BLANK	Total/NA	Water	PrecSep-21	
480-120432-10	EQUIPMENT	Total/NA	Water	PrecSep-21	
MB 160-316561/1-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-316561/2-A	Lab Control Sample	Total/NA	Water	PrecSep-21	
480-120432-1 DU	P-1	Total/NA	Water	PrecSep-21	

### Prep Batch: 316563

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-120432-1	P-1	Total/NA	Water	PrecSep_0	
480-120432-2	P-2	Total/NA	Water	PrecSep_0	
480-120432-3	P-3	Total/NA	Water	PrecSep_0	
480-120432-4	P-4R	Total/NA	Water	PrecSep_0	
480-120432-5	P-5	Total/NA	Water	PrecSep_0	
480-120432-6	P-6	Total/NA	Water	PrecSep_0	
480-120432-7	P-7	Total/NA	Water	PrecSep_0	
480-120432-8	DUP-1	Total/NA	Water	PrecSep_0	
480-120432-9	FIELD BLANK	Total/NA	Water	PrecSep_0	
480-120432-10	EQUIPMENT	Total/NA	Water	PrecSep_0	
MB 160-316563/1-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-316563/2-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
480-120432-1 DU	P-1	Total/NA	Water	PrecSep_0	

# Lab Chronicle

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

TestAmerica Job ID: 480-120432-2

## Client Sample ID: P-1

Lab Sample ID: 480-120432-1

Date Collected: 06/29/17 09:20

Matrix: Water

Date Received: 06/30/17 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			316561	07/07/17 09:40	LDE	TAL SL
Total/NA	Analysis	903.0		1	319922	07/31/17 06:01	RTM	TAL SL
Total/NA	Prep	PrecSep_0			316563	07/07/17 10:04	LDE	TAL SL
Total/NA	Analysis	904.0		1	318053	07/19/17 14:34	RTM	TAL SL

## Client Sample ID: P-2

Lab Sample ID: 480-120432-2

Date Collected: 06/29/17 13:20

Matrix: Water

Date Received: 06/30/17 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			316561	07/07/17 09:40	LDE	TAL SL
Total/NA	Analysis	903.0		1	319922	07/31/17 06:01	RTM	TAL SL
Total/NA	Prep	PrecSep_0			316563	07/07/17 10:04	LDE	TAL SL
Total/NA	Analysis	904.0		1	318053	07/19/17 14:34	RTM	TAL SL

## Client Sample ID: P-3

Lab Sample ID: 480-120432-3

Date Collected: 06/29/17 09:55

Matrix: Water

Date Received: 06/30/17 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			316561	07/07/17 09:40	LDE	TAL SL
Total/NA	Analysis	903.0		1	319922	07/31/17 06:02	RTM	TAL SL
Total/NA	Prep	PrecSep_0			316563	07/07/17 10:04	LDE	TAL SL
Total/NA	Analysis	904.0		1	318053	07/19/17 14:34	RTM	TAL SL

## Client Sample ID: P-4R

Lab Sample ID: 480-120432-4

Date Collected: 06/29/17 10:45

Matrix: Water

Date Received: 06/30/17 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			316561	07/07/17 09:40	LDE	TAL SL
Total/NA	Analysis	903.0		1	319922	07/31/17 06:02	RTM	TAL SL
Total/NA	Prep	PrecSep_0			316563	07/07/17 10:04	LDE	TAL SL
Total/NA	Analysis	904.0		1	318053	07/19/17 14:34	RTM	TAL SL

## Client Sample ID: P-5

Lab Sample ID: 480-120432-5

Date Collected: 06/29/17 11:25

Matrix: Water

Date Received: 06/30/17 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			316561	07/07/17 09:40	LDE	TAL SL
Total/NA	Analysis	903.0		1	319922	07/31/17 06:02	RTM	TAL SL
Total/NA	Prep	PrecSep_0			316563	07/07/17 10:04	LDE	TAL SL

TestAmerica Buffalo

# Lab Chronicle

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

TestAmerica Job ID: 480-120432-2

## Client Sample ID: P-5

Lab Sample ID: 480-120432-5

Date Collected: 06/29/17 11:25

Matrix: Water

Date Received: 06/30/17 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	904.0		1	318053	07/19/17 14:34	RTM	TAL SL

## Client Sample ID: P-6

Lab Sample ID: 480-120432-6

Date Collected: 06/29/17 12:15

Matrix: Water

Date Received: 06/30/17 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			316561	07/07/17 09:40	LDE	TAL SL
Total/NA	Analysis	903.0		1	319922	07/31/17 06:02	RTM	TAL SL
Total/NA	Prep	PrecSep_0			316563	07/07/17 10:04	LDE	TAL SL
Total/NA	Analysis	904.0		1	318053	07/19/17 14:34	RTM	TAL SL

## Client Sample ID: P-7

Lab Sample ID: 480-120432-7

Date Collected: 06/29/17 12:50

Matrix: Water

Date Received: 06/30/17 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			316561	07/07/17 09:40	LDE	TAL SL
Total/NA	Analysis	903.0		1	319922	07/31/17 06:03	RTM	TAL SL
Total/NA	Prep	PrecSep_0			316563	07/07/17 10:04	LDE	TAL SL
Total/NA	Analysis	904.0		1	318055	07/19/17 14:31	RTM	TAL SL

## Client Sample ID: DUP-1

Lab Sample ID: 480-120432-8

Date Collected: 06/29/17 00:00

Matrix: Water

Date Received: 06/30/17 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			316561	07/07/17 09:40	LDE	TAL SL
Total/NA	Analysis	903.0		1	319922	07/31/17 06:03	RTM	TAL SL
Total/NA	Prep	PrecSep_0			316563	07/07/17 10:04	LDE	TAL SL
Total/NA	Analysis	904.0		1	318055	07/19/17 14:32	RTM	TAL SL

## Client Sample ID: FIELD BLANK

Lab Sample ID: 480-120432-9

Date Collected: 06/29/17 13:45

Matrix: Water

Date Received: 06/30/17 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			316561	07/07/17 09:40	LDE	TAL SL
Total/NA	Analysis	903.0		1	319923	07/31/17 06:04	RTM	TAL SL
Total/NA	Prep	PrecSep_0			316563	07/07/17 10:04	LDE	TAL SL
Total/NA	Analysis	904.0		1	318055	07/19/17 14:32	RTM	TAL SL

# Lab Chronicle

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

TestAmerica Job ID: 480-120432-2

**Client Sample ID: EQUIPMENT**

**Lab Sample ID: 480-120432-10**

**Date Collected: 06/29/17 13:50**

**Matrix: Water**

**Date Received: 06/30/17 09:30**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			316561	07/07/17 09:40	LDE	TAL SL
Total/NA	Analysis	903.0		1	319923	07/31/17 06:04	RTM	TAL SL
Total/NA	Prep	PrecSep_0			316563	07/07/17 10:04	LDE	TAL SL
Total/NA	Analysis	904.0		1	318055	07/19/17 14:32	RTM	TAL SL

**Laboratory References:**

TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566



## Accreditation/Certification Summary

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

TestAmerica Job ID: 480-120432-2

### Laboratory: TestAmerica Buffalo

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

Authority	Program	EPA Region	Identification Number	Expiration Date
Minnesota	NELAP	5	036-999-337	12-31-17

### Laboratory: TestAmerica St. Louis

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

Authority	Program	EPA Region	Identification Number	Expiration Date
Alaska	State Program	10	MO00054	06-30-18
California	State Program	9	2886	03-31-18 *
Connecticut	State Program	1	PH-0241	03-31-19
Florida	NELAP	4	E87689	06-30-18
Illinois	NELAP	5	200023	11-30-17
Iowa	State Program	7	373	02-01-18
Kansas	NELAP	7	E-10236	10-31-17
Kentucky (DW)	State Program	4	90125	12-31-17
L-A-B	DoD ELAP		L2305	04-06-19
Louisiana	NELAP	6	04080	06-30-18
Louisiana (DW)	NELAP	6	LA170011	12-31-17
Maryland	State Program	3	310	09-30-18
Missouri	State Program	7	780	06-30-17 *
Nevada	State Program	9	MO000542017-1	07-31-18
New Jersey	NELAP	2	MO002	06-30-18
New York	NELAP	2	11616	03-31-18
North Dakota	State Program	8	R207	06-30-17 *
NRC	NRC		24-24817-01	12-31-22
Oklahoma	State Program	6	9997	08-31-17 *
Pennsylvania	NELAP	3	68-00540	02-21-18
South Carolina	State Program	4	85002001	06-30-17 *
Texas	NELAP	6	T104704193-16-10	07-31-17 *
US Fish & Wildlife	Federal		LE058448-0	10-31-17
USDA	Federal		P330-17-0028	02-02-20
Utah	NELAP	8	MO000542016-8	07-31-17 *
Virginia	NELAP	3	460230	06-14-18
Washington	State Program	10	C592	08-30-17 *
West Virginia DEP	State Program	3	381	08-31-17 *

\* Accreditation/Certification renewal pending - accreditation/certification considered valid.



# Method Summary

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

TestAmerica Job ID: 480-120432-2

Method	Method Description	Protocol	Laboratory
903.0	Radium-226 (GFPC)	EPA	TAL SL
904.0	Radium-228 (GFPC)	EPA	TAL SL

**Protocol References:**

EPA = US Environmental Protection Agency

**Laboratory References:**

TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566



# Sample Summary

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

TestAmerica Job ID: 480-120432-2

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
480-120432-1	P-1	Water	06/29/17 09:20	06/30/17 09:30
480-120432-2	P-2	Water	06/29/17 13:20	06/30/17 09:30
480-120432-3	P-3	Water	06/29/17 09:55	06/30/17 09:30
480-120432-4	P-4R	Water	06/29/17 10:45	06/30/17 09:30
480-120432-5	P-5	Water	06/29/17 11:25	06/30/17 09:30
480-120432-6	P-6	Water	06/29/17 12:15	06/30/17 09:30
480-120432-7	P-7	Water	06/29/17 12:50	06/30/17 09:30
480-120432-8	DUP-1	Water	06/29/17 00:00	06/30/17 09:30
480-120432-9	FIELD BLANK	Water	06/29/17 13:45	06/30/17 09:30
480-120432-10	EQUIPMENT	Water	06/29/17 13:50	06/30/17 09:30

Client Contact  
SKB Environmental  
13425 Courthouse Blvd  
Rosemount, MN 55068  
(651) 438-1500 Phone  
(651) 438-1518 FAX  
Project Name: Cloquet 2017 CCR GW Event 5  
Site:  
P O # 3078-17-00253

Regulatory Program:  DW  NPDES  RCRA  Other:

Project Manager: Ryan Van Dette  
Tel/Fax:  
Analysis Turnaround Time  
CALENDAR DAYS WORKING DAYS  
TAT if different from Below  
2 weeks  
1 week  
2 days  
1 day

Site Contact: Nathaniel Beineman  
Lab Contact:  
Carrier: 6/29/17  
Date: 6/29/17  
COC No: 1 of 1 COCs

Sample Identification	Sample Date	Sample Time	Sample Type (C-Comp, G-Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS / MSD (Y/N)	Metals (totals) + Mercury	Chloride	Fluoride	Sulfate	TDS	pH	Radium 226 & 228 combined	Sample Specific Notes:
P-1	6/29/17	9:20	Grab	Water	7			X	X	X	X	X	X	X	
P-2	6/29/17	13:20	Grab	Water	7			X	X	X	X	X	X	X	
P-3	6/29/17	9:55	Grab	Water	7			X	X	X	X	X	X	X	
P-4	6/29/17	10:45	Grab	Water	7			X	X	X	X	X	X	X	
P-5	6/29/17	11:25	Grab	Water	7			X	X	X	X	X	X	X	
P-6	6/29/17	12:15	Grab	Water	7			X	X	X	X	X	X	X	
P-7	8/29/17	12:50	Grab	Water	7			X	X	X	X	X	X	X	
DUPLICATE WELL	6/29/17	-	Grab	Water	7			X	X	X	X	X	X	X	
Field Blank	6/29/17	13:45	Grab	water	7			X	X	X	X	X	X	X	
Equipment Blank	6/29/17	13:50	Grab	water	7			X	X	X	X	X	X	X	

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4= HNO3; 5= NaOH; 6= Other

Possible Hazard Identification:  
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

Non-Hazard  Flammable  Skin Irritant  Unknown   
Return to Client  Disposal by Lab  Archive for \_\_\_\_\_ Months

Cooler Temp. (°C): Obs'd: \_\_\_\_\_  
Received by: \_\_\_\_\_  
Received by: \_\_\_\_\_  
Received in Laboratory by: \_\_\_\_\_

Therm ID No.: \_\_\_\_\_  
Date/Time: 6/30/17 09:30  
Company: \_\_\_\_\_  
Date/Time: \_\_\_\_\_  
Company: \_\_\_\_\_  
Date/Time: \_\_\_\_\_  
Company: \_\_\_\_\_







## Login Sample Receipt Checklist

Client: Waste Connections, Inc.

Job Number: 480-120432-2

**Login Number: 120432**

**List Number: 1**

**Creator: Janish, Carl M**

**List Source: TestAmerica Buffalo**

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



## Login Sample Receipt Checklist

Client: Waste Connections, Inc.

Job Number: 480-120432-2

**Login Number: 120432**

**List Number: 2**

**Creator: Taylor, Kristene N**

**List Source: TestAmerica St. Louis**

**List Creation: 07/01/17 10:40 AM**

Question	Answer	Comment
Radioactivity wasn't checked or is <math>\leq</math> background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	N/A	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	19.0,19.0,19.0
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?	False	
There are no discrepancies between the containers received 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	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



# TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

## ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Buffalo

10 Hazelwood Drive

Amherst, NY 14228-2298

Tel: (716)691-2600

TestAmerica Job ID: 480-121858-1

Client Project/Site: SKB Cloquet - CCR Groundwater

Sampling Event: CCR Groundwater

For:

Waste Connections, Inc.

13425 Courthouse Blvd

Rosemount, Minnesota 55068

Attn: Nathaniel Beinemann



Authorized for release by:

8/22/2017 10:22:23 AM

Denise Giglia, Project Management Assistant II

[denise.giglia@testamericainc.com](mailto:denise.giglia@testamericainc.com)

Designee for

Ryan VanDette, Project Manager II

(716)504-9830

[ryan.vandette@testamericainc.com](mailto:ryan.vandette@testamericainc.com)

### LINKS

Review your project  
results through

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Have a Question?



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*The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.*

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

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

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# Definitions/Glossary

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

TestAmerica Job ID: 480-121858-1

## Qualifiers

### 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
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)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
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)

# Case Narrative

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

TestAmerica Job ID: 480-121858-1

**Job ID: 480-121858-1**

**Laboratory: TestAmerica Buffalo**

## Narrative

### Job Narrative 480-121858-1

#### Comments

No additional comments.

#### Receipt

The samples were received on 7/28/2017 7:55 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 3 coolers at receipt time were 2.1° C, 3.0° C and 3.3° C.

#### HPLC/IC

Method(s) 300.0: The following samples was reported with elevated reporting limits for all analytes: P-1 (480-121858-1), P-3 (480-121858-3), P-7 (480-121858-7) and DUP-1 (480-121858-8). The sample was analyzed at a dilution based on screening results.

Method(s) 300.0: The following samples was diluted to bring the concentration of target analytes within the calibration range: P-2 (480-121858-2), P-4R (480-121858-4), P-5 (480-121858-5) and P-6 (480-121858-6). Elevated reporting limits (RLs) are provided.

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

#### Metals

Method(s) 200.8: The total Cobalt results reported for the following sample do not concur with results previously reported for this site: P-4R (480-121858-4). Reanalysis was performed, and the result(s) confirmed.

Method(s) 200.8: The following sample was diluted for total Arsenic due to the nature of the sample matrix: EQUIPMENT BLANK (480-121858-10). Elevated reporting limits (RLs) are provided.

Method(s) 200.8: The following sample was diluted for total Selenium due to the nature of the sample matrix: P-2 (480-121858-2). 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.

#### General Chemistry

Method(s) 9040C, SM 4500 H+ B: This analysis is normally performed in the field and has a method-defined holding time of 15 minutes. The following samples has been qualified with the "HF" flag to indicate analysis was performed in the laboratory outside the 15 minute timeframe: P-1 (480-121858-1), P-2 (480-121858-2), P-3 (480-121858-3), P-4R (480-121858-4), P-5 (480-121858-5), P-6 (480-121858-6), P-7 (480-121858-7), DUP-1 (480-121858-8) and EQUIPMENT BLANK (480-121858-10).

Method(s) SM 4500 H+ B: This analysis is normally performed in the field and has a method-defined holding time of 15 minutes. The following sample has been qualified with the "HF" flag to indicate analysis was performed in the laboratory outside the 15 minute timeframe: FIELD BLANK (480-121858-9).

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

# Detection Summary

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

TestAmerica Job ID: 480-121858-1

## Client Sample ID: P-1

## Lab Sample ID: 480-121858-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.11		0.0020		mg/L	1		200.7 Rev 4.4	Total/NA
Boron	0.052		0.020		mg/L	1		200.7 Rev 4.4	Total/NA
Calcium	115		0.50		mg/L	1		200.7 Rev 4.4	Total/NA
Cobalt	0.67		0.30		ug/L	1		200.8	Total/NA
Chloride	70.7		2.5		mg/L	5		300.0	Total/NA
Sulfate	50.5		10.0		mg/L	5		300.0	Total/NA
Total Dissolved Solids	518		10.0		mg/L	1		SM 2540C	Total/NA
Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
pH	7.0	HF	0.1		SU	1		SM 4500 H+ B	Total/NA
Temperature	25.0	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

## Client Sample ID: P-2

## Lab Sample ID: 480-121858-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.23		0.0020		mg/L	1		200.7 Rev 4.4	Total/NA
Boron	0.077		0.020		mg/L	1		200.7 Rev 4.4	Total/NA
Calcium	296		0.50		mg/L	1		200.7 Rev 4.4	Total/NA
Arsenic	6.0		1.0		ug/L	1		200.8	Total/NA
Cobalt	1.2		0.30		ug/L	1		200.8	Total/NA
Chloride	601		5.0		mg/L	10		300.0	Total/NA
Total Dissolved Solids	1930		10.0		mg/L	1		SM 2540C	Total/NA
Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
pH	6.5	HF	0.1		SU	1		SM 4500 H+ B	Total/NA
Temperature	25.1	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

## Client Sample ID: P-3

## Lab Sample ID: 480-121858-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.16		0.0020		mg/L	1		200.7 Rev 4.4	Total/NA
Boron	0.038		0.020		mg/L	1		200.7 Rev 4.4	Total/NA
Calcium	124		0.50		mg/L	1		200.7 Rev 4.4	Total/NA
Cobalt	0.37		0.30		ug/L	1		200.8	Total/NA
Chloride	72.5		2.5		mg/L	5		300.0	Total/NA
Sulfate	63.2		10.0		mg/L	5		300.0	Total/NA
Total Dissolved Solids	551		10.0		mg/L	1		SM 2540C	Total/NA
Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
pH	7.4	HF	0.1		SU	1		SM 4500 H+ B	Total/NA
Temperature	25.1	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

## Client Sample ID: P-4R

## Lab Sample ID: 480-121858-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.19		0.0020		mg/L	1		200.7 Rev 4.4	Total/NA
Boron	0.080		0.020		mg/L	1		200.7 Rev 4.4	Total/NA
Calcium	111		0.50		mg/L	1		200.7 Rev 4.4	Total/NA
Chromium	0.0091		0.0040		mg/L	1		200.7 Rev 4.4	Total/NA
Cobalt	1.8		0.30		ug/L	1		200.8	Total/NA
Molybdenum	2.9		1.0		ug/L	1		200.8	Total/NA
Chloride	133		2.5		mg/L	5		300.0	Total/NA
Sulfate	38.6		10.0		mg/L	5		300.0	Total/NA

This Detection Summary does not include radiochemical test results.

TestAmerica Buffalo

# Detection Summary

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

TestAmerica Job ID: 480-121858-1

## Client Sample ID: P-4R (Continued)

## Lab Sample ID: 480-121858-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Total Dissolved Solids	649		10.0		mg/L	1		SM 2540C	Total/NA
Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
pH	7.5	HF	0.1		SU	1		SM 4500 H+ B	Total/NA
Temperature	25.2	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

## Client Sample ID: P-5

## Lab Sample ID: 480-121858-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.32		0.0020		mg/L	1		200.7 Rev 4.4	Total/NA
Boron	0.057		0.020		mg/L	1		200.7 Rev 4.4	Total/NA
Calcium	167		0.50		mg/L	1		200.7 Rev 4.4	Total/NA
Cadmium	0.57		0.50		ug/L	1		200.8	Total/NA
Cobalt	11.3		0.30		ug/L	1		200.8	Total/NA
Chloride	187		2.5		mg/L	5		300.0	Total/NA
Sulfate	34.9		10.0		mg/L	5		300.0	Total/NA
Total Dissolved Solids	913		10.0		mg/L	1		SM 2540C	Total/NA
Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
pH	6.9	HF	0.1		SU	1		SM 4500 H+ B	Total/NA
Temperature	25.3	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

## Client Sample ID: P-6

## Lab Sample ID: 480-121858-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.12		0.0020		mg/L	1		200.7 Rev 4.4	Total/NA
Boron	0.38		0.020		mg/L	1		200.7 Rev 4.4	Total/NA
Calcium	152		0.50		mg/L	1		200.7 Rev 4.4	Total/NA
Cobalt	0.47		0.30		ug/L	1		200.8	Total/NA
Chloride	114		2.5		mg/L	5		300.0	Total/NA
Sulfate	143		10.0		mg/L	5		300.0	Total/NA
Total Dissolved Solids	801		10.0		mg/L	1		SM 2540C	Total/NA
Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
pH	7.0	HF	0.1		SU	1		SM 4500 H+ B	Total/NA
Temperature	25.5	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

## Client Sample ID: P-7

## Lab Sample ID: 480-121858-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.23		0.0020		mg/L	1		200.7 Rev 4.4	Total/NA
Boron	0.13		0.020		mg/L	1		200.7 Rev 4.4	Total/NA
Calcium	164		0.50		mg/L	1		200.7 Rev 4.4	Total/NA
Cobalt	0.59		0.30		ug/L	1		200.8	Total/NA
Chloride	36.7		2.5		mg/L	5		300.0	Total/NA
Sulfate	66.2		10.0		mg/L	5		300.0	Total/NA
Total Dissolved Solids	772		10.0		mg/L	1		SM 2540C	Total/NA
Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
pH	7.1	HF	0.1		SU	1		SM 4500 H+ B	Total/NA
Temperature	25.4	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

## Client Sample ID: DUP-1

## Lab Sample ID: 480-121858-8

This Detection Summary does not include radiochemical test results.

TestAmerica Buffalo

## Detection Summary

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

TestAmerica Job ID: 480-121858-1

### Client Sample ID: DUP-1 (Continued)

### Lab Sample ID: 480-121858-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.16		0.0020		mg/L	1		200.7 Rev 4.4	Total/NA
Boron	0.038		0.020		mg/L	1		200.7 Rev 4.4	Total/NA
Calcium	118		0.50		mg/L	1		200.7 Rev 4.4	Total/NA
Cobalt	0.35		0.30		ug/L	1		200.8	Total/NA
Chloride	72.9		2.5		mg/L	5		300.0	Total/NA
Sulfate	64.3		10.0		mg/L	5		300.0	Total/NA
Total Dissolved Solids	548		10.0		mg/L	1		SM 2540C	Total/NA
Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
pH	7.4	HF	0.1		SU	1		SM 4500 H+ B	Total/NA
Temperature	25.5	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

### Client Sample ID: FIELD BLANK

### Lab Sample ID: 480-121858-9

Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
pH	7.4	HF	0.1		SU	1		SM 4500 H+ B	Total/NA
Temperature	22.7	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

### Client Sample ID: EQUIPMENT BLANK

### Lab Sample ID: 480-121858-10

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Total Dissolved Solids	16.0		10.0		mg/L	1		SM 2540C	Total/NA
Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
pH	5.8	HF	0.1		SU	1		SM 4500 H+ B	Total/NA
Temperature	25.5	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

This Detection Summary does not include radiochemical test results.

TestAmerica Buffalo

# Client Sample Results

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

TestAmerica Job ID: 480-121858-1

**Client Sample ID: P-1**

**Date Collected: 07/27/17 09:05**

**Date Received: 07/28/17 07:55**

**Lab Sample ID: 480-121858-1**

**Matrix: Water**

**Method: 200.7 Rev 4.4 - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	0.11		0.0020		mg/L		07/31/17 08:34	08/01/17 00:50	1
Boron	0.052		0.020		mg/L		07/31/17 08:34	08/01/17 00:50	1
Calcium	115		0.50		mg/L		07/31/17 08:34	08/01/17 00:50	1
Chromium	ND		0.0040		mg/L		07/31/17 08:34	08/01/17 00:50	1
Lead	ND		0.010		mg/L		07/31/17 08:34	08/01/17 00:50	1
Lithium	ND		0.030		mg/L		07/31/17 08:34	08/01/17 00:50	1

**Method: 200.8 - Metals (ICP/MS)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		1.0		ug/L		08/04/17 08:57	08/10/17 03:25	1
Arsenic	ND		1.0		ug/L		08/04/17 08:57	08/10/17 03:25	1
Beryllium	ND		0.70		ug/L		08/04/17 08:57	08/10/17 03:25	1
Cadmium	ND		0.50		ug/L		08/04/17 08:57	08/10/17 03:25	1
Cobalt	0.67		0.30		ug/L		08/04/17 08:57	08/10/17 03:25	1
Molybdenum	ND		1.0		ug/L		08/04/17 08:57	08/10/17 03:25	1
Selenium	ND		1.0		ug/L		08/04/17 08:57	08/10/17 03:25	1
Thallium	ND		0.20		ug/L		08/04/17 08:57	08/10/17 03:25	1

**Method: 245.1 - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020		mg/L		07/31/17 10:40	07/31/17 14:51	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	70.7		2.5		mg/L			08/10/17 14:58	5
Fluoride	ND		0.25		mg/L			08/10/17 14:58	5
Sulfate	50.5		10.0		mg/L			08/10/17 14:58	5
Total Dissolved Solids	518		10.0		mg/L			08/01/17 09:49	1
Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	7.0	HF	0.1		SU			07/28/17 19:53	1
Temperature	25.0	HF	0.001		Degrees C			07/28/17 19:53	1

# Client Sample Results

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

TestAmerica Job ID: 480-121858-1

**Client Sample ID: P-2**

**Date Collected: 07/27/17 15:20**

**Date Received: 07/28/17 07:55**

**Lab Sample ID: 480-121858-2**

**Matrix: Water**

### Method: 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	0.23		0.0020		mg/L		07/31/17 08:34	08/01/17 01:05	1
Boron	0.077		0.020		mg/L		07/31/17 08:34	08/01/17 01:05	1
Calcium	296		0.50		mg/L		07/31/17 08:34	08/01/17 01:05	1
Chromium	ND		0.0040		mg/L		07/31/17 08:34	08/01/17 01:05	1
Lead	ND		0.010		mg/L		07/31/17 08:34	08/01/17 01:05	1
Lithium	ND		0.030		mg/L		07/31/17 08:34	08/01/17 01:05	1

### Method: 200.8 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		1.0		ug/L		08/04/17 08:57	08/10/17 03:30	1
Arsenic	6.0		1.0		ug/L		08/04/17 08:57	08/10/17 03:30	1
Beryllium	ND		0.70		ug/L		08/04/17 08:57	08/10/17 03:30	1
Cadmium	ND		0.50		ug/L		08/04/17 08:57	08/10/17 03:30	1
Cobalt	1.2		0.30		ug/L		08/04/17 08:57	08/10/17 03:30	1
Molybdenum	ND		1.0		ug/L		08/04/17 08:57	08/10/17 03:30	1
Selenium	ND		5.0		ug/L		08/04/17 08:57	08/20/17 20:30	5
Thallium	ND		0.20		ug/L		08/04/17 08:57	08/10/17 03:30	1

### Method: 245.1 - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020		mg/L		07/31/17 10:40	07/31/17 14:54	1

### General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	601		5.0		mg/L			08/10/17 15:48	10
Fluoride	ND		0.50		mg/L			08/10/17 15:48	10
Sulfate	ND		20.0		mg/L			08/10/17 15:48	10
Total Dissolved Solids	1930		10.0		mg/L			08/01/17 09:49	1
Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	6.5	HF	0.1		SU			07/28/17 19:56	1
Temperature	25.1	HF	0.001		Degrees C			07/28/17 19:56	1



# Client Sample Results

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

TestAmerica Job ID: 480-121858-1

**Client Sample ID: P-3**

**Date Collected: 07/27/17 10:05**

**Date Received: 07/28/17 07:55**

**Lab Sample ID: 480-121858-3**

**Matrix: Water**

**Method: 200.7 Rev 4.4 - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	0.16		0.0020		mg/L		07/31/17 08:34	08/01/17 01:22	1
Boron	0.038		0.020		mg/L		07/31/17 08:34	08/01/17 01:22	1
Calcium	124		0.50		mg/L		07/31/17 08:34	08/01/17 01:22	1
Chromium	ND		0.0040		mg/L		07/31/17 08:34	08/01/17 01:22	1
Lead	ND		0.010		mg/L		07/31/17 08:34	08/01/17 01:22	1
Lithium	ND		0.030		mg/L		07/31/17 08:34	08/01/17 01:22	1

**Method: 200.8 - Metals (ICP/MS)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		1.0		ug/L		08/04/17 08:57	08/10/17 03:36	1
Arsenic	ND		1.0		ug/L		08/04/17 08:57	08/10/17 03:36	1
Beryllium	ND		0.70		ug/L		08/04/17 08:57	08/10/17 03:36	1
Cadmium	ND		0.50		ug/L		08/04/17 08:57	08/10/17 03:36	1
Cobalt	0.37		0.30		ug/L		08/04/17 08:57	08/10/17 03:36	1
Molybdenum	ND		1.0		ug/L		08/04/17 08:57	08/10/17 03:36	1
Selenium	ND		1.0		ug/L		08/04/17 08:57	08/10/17 03:36	1
Thallium	ND		0.20		ug/L		08/04/17 08:57	08/10/17 03:36	1

**Method: 245.1 - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020		mg/L		07/31/17 10:40	07/31/17 15:00	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	72.5		2.5		mg/L			08/10/17 15:56	5
Fluoride	ND		0.25		mg/L			08/10/17 15:56	5
Sulfate	63.2		10.0		mg/L			08/10/17 15:56	5
Total Dissolved Solids	551		10.0		mg/L			08/01/17 09:49	1
Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	7.4	HF	0.1		SU			07/28/17 19:58	1
Temperature	25.1	HF	0.001		Degrees C			07/28/17 19:58	1

# Client Sample Results

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

TestAmerica Job ID: 480-121858-1

**Client Sample ID: P-4R**  
**Date Collected: 07/27/17 11:25**  
**Date Received: 07/28/17 07:55**

**Lab Sample ID: 480-121858-4**  
**Matrix: Water**

### Method: 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	0.19		0.0020		mg/L		07/31/17 08:34	08/01/17 01:26	1
Boron	0.080		0.020		mg/L		07/31/17 08:34	08/01/17 01:26	1
Calcium	111		0.50		mg/L		07/31/17 08:34	08/01/17 01:26	1
Chromium	0.0091		0.0040		mg/L		07/31/17 08:34	08/01/17 01:26	1
Lead	ND		0.010		mg/L		07/31/17 08:34	08/01/17 01:26	1
Lithium	ND		0.030		mg/L		07/31/17 08:34	08/01/17 01:26	1

### Method: 200.8 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		1.0		ug/L		08/04/17 08:57	08/10/17 03:41	1
Arsenic	ND		1.0		ug/L		08/04/17 08:57	08/10/17 03:41	1
Beryllium	ND		0.70		ug/L		08/04/17 08:57	08/10/17 03:41	1
Cadmium	ND		0.50		ug/L		08/04/17 08:57	08/10/17 03:41	1
Cobalt	1.8		0.30		ug/L		08/04/17 08:57	08/10/17 03:41	1
Molybdenum	2.9		1.0		ug/L		08/04/17 08:57	08/10/17 03:41	1
Selenium	ND		1.0		ug/L		08/04/17 08:57	08/10/17 03:41	1
Thallium	ND		0.20		ug/L		08/04/17 08:57	08/10/17 03:41	1

### Method: 245.1 - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020		mg/L		07/31/17 10:40	07/31/17 15:08	1

### General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	133		2.5		mg/L			08/10/17 16:04	5
Fluoride	ND		0.25		mg/L			08/10/17 16:04	5
Sulfate	38.6		10.0		mg/L			08/10/17 16:04	5
Total Dissolved Solids	649		10.0		mg/L			08/01/17 09:49	1
Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	7.5	HF	0.1		SU			07/28/17 20:01	1
Temperature	25.2	HF	0.001		Degrees C			07/28/17 20:01	1

# Client Sample Results

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

TestAmerica Job ID: 480-121858-1

**Client Sample ID: P-5**

**Date Collected: 07/27/17 12:25**

**Date Received: 07/28/17 07:55**

**Lab Sample ID: 480-121858-5**

**Matrix: Water**

**Method: 200.7 Rev 4.4 - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	0.32		0.0020		mg/L		07/31/17 08:34	08/01/17 01:29	1
Boron	0.057		0.020		mg/L		07/31/17 08:34	08/01/17 01:29	1
Calcium	167		0.50		mg/L		07/31/17 08:34	08/01/17 01:29	1
Chromium	ND		0.0040		mg/L		07/31/17 08:34	08/01/17 01:29	1
Lead	ND		0.010		mg/L		07/31/17 08:34	08/01/17 01:29	1
Lithium	ND		0.030		mg/L		07/31/17 08:34	08/01/17 01:29	1

**Method: 200.8 - Metals (ICP/MS)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		1.0		ug/L		08/04/17 08:57	08/10/17 03:47	1
Arsenic	ND		1.0		ug/L		08/04/17 08:57	08/10/17 03:47	1
Beryllium	ND		0.70		ug/L		08/04/17 08:57	08/10/17 03:47	1
Cadmium	0.57		0.50		ug/L		08/04/17 08:57	08/10/17 03:47	1
Cobalt	11.3		0.30		ug/L		08/04/17 08:57	08/10/17 03:47	1
Molybdenum	ND		1.0		ug/L		08/04/17 08:57	08/10/17 03:47	1
Selenium	ND		1.0		ug/L		08/04/17 08:57	08/10/17 03:47	1
Thallium	ND		0.20		ug/L		08/04/17 08:57	08/10/17 03:47	1

**Method: 245.1 - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020		mg/L		07/31/17 10:40	07/31/17 15:10	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	187		2.5		mg/L			08/10/17 16:12	5
Fluoride	ND		0.25		mg/L			08/10/17 16:12	5
Sulfate	34.9		10.0		mg/L			08/10/17 16:12	5
Total Dissolved Solids	913		10.0		mg/L			08/01/17 09:49	1
Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	6.9	HF	0.1		SU			07/28/17 20:04	1
Temperature	25.3	HF	0.001		Degrees C			07/28/17 20:04	1

# Client Sample Results

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

TestAmerica Job ID: 480-121858-1

**Client Sample ID: P-6**

**Date Collected: 07/27/17 13:30**

**Date Received: 07/28/17 07:55**

**Lab Sample ID: 480-121858-6**

**Matrix: Water**

### Method: 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	0.12		0.0020		mg/L		07/31/17 08:34	08/01/17 01:33	1
Boron	0.38		0.020		mg/L		07/31/17 08:34	08/01/17 01:33	1
Calcium	152		0.50		mg/L		07/31/17 08:34	08/01/17 01:33	1
Chromium	ND		0.0040		mg/L		07/31/17 08:34	08/01/17 01:33	1
Lead	ND		0.010		mg/L		07/31/17 08:34	08/01/17 01:33	1
Lithium	ND		0.030		mg/L		07/31/17 08:34	08/01/17 01:33	1

### Method: 200.8 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		1.0		ug/L		08/04/17 08:57	08/10/17 03:52	1
Arsenic	ND		1.0		ug/L		08/04/17 08:57	08/17/17 18:32	1
Beryllium	ND		0.70		ug/L		08/04/17 08:57	08/10/17 03:52	1
Cadmium	ND		0.50		ug/L		08/04/17 08:57	08/10/17 03:52	1
Cobalt	0.47		0.30		ug/L		08/04/17 08:57	08/10/17 03:52	1
Molybdenum	ND		1.0		ug/L		08/04/17 08:57	08/10/17 03:52	1
Selenium	ND		1.0		ug/L		08/04/17 08:57	08/10/17 03:52	1
Thallium	ND		0.20		ug/L		08/04/17 08:57	08/10/17 03:52	1

### Method: 245.1 - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020		mg/L		07/31/17 10:40	07/31/17 15:12	1

### General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	114		2.5		mg/L			08/10/17 16:20	5
Fluoride	ND		0.25		mg/L			08/10/17 16:20	5
Sulfate	143		10.0		mg/L			08/10/17 16:20	5
Total Dissolved Solids	801		10.0		mg/L			08/01/17 09:49	1
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH	7.0	HF	0.1		SU			07/28/17 20:12	1
Temperature	25.5	HF	0.001		Degrees C			07/28/17 20:12	1

# Client Sample Results

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

TestAmerica Job ID: 480-121858-1

**Client Sample ID: P-7**

**Date Collected: 07/27/17 14:35**

**Date Received: 07/28/17 07:55**

**Lab Sample ID: 480-121858-7**

**Matrix: Water**

**Method: 200.7 Rev 4.4 - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	0.23		0.0020		mg/L		07/31/17 08:34	08/01/17 01:47	1
Boron	0.13		0.020		mg/L		07/31/17 08:34	08/01/17 01:47	1
Calcium	164		0.50		mg/L		07/31/17 08:34	08/01/17 01:47	1
Chromium	ND		0.0040		mg/L		07/31/17 08:34	08/01/17 01:47	1
Lead	ND		0.010		mg/L		07/31/17 08:34	08/01/17 01:47	1
Lithium	ND		0.030		mg/L		07/31/17 08:34	08/01/17 01:47	1

**Method: 200.8 - Metals (ICP/MS)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		1.0		ug/L		08/04/17 08:57	08/10/17 03:58	1
Arsenic	ND		1.0		ug/L		08/04/17 08:57	08/17/17 18:37	1
Beryllium	ND		0.70		ug/L		08/04/17 08:57	08/10/17 03:58	1
Cadmium	ND		0.50		ug/L		08/04/17 08:57	08/10/17 03:58	1
Cobalt	0.59		0.30		ug/L		08/04/17 08:57	08/10/17 03:58	1
Molybdenum	ND		1.0		ug/L		08/04/17 08:57	08/10/17 03:58	1
Selenium	ND		1.0		ug/L		08/04/17 08:57	08/10/17 03:58	1
Thallium	ND		0.20		ug/L		08/04/17 08:57	08/10/17 03:58	1

**Method: 245.1 - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020		mg/L		07/31/17 10:40	07/31/17 15:13	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	36.7		2.5		mg/L			08/10/17 16:28	5
Fluoride	ND		0.25		mg/L			08/10/17 16:28	5
Sulfate	66.2		10.0		mg/L			08/10/17 16:28	5
Total Dissolved Solids	772		10.0		mg/L			08/01/17 09:49	1
Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	7.1	HF	0.1		SU			07/28/17 20:15	1
Temperature	25.4	HF	0.001		Degrees C			07/28/17 20:15	1

# Client Sample Results

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

TestAmerica Job ID: 480-121858-1

**Client Sample ID: DUP-1**

**Date Collected: 07/27/17 00:00**

**Date Received: 07/28/17 07:55**

**Lab Sample ID: 480-121858-8**

**Matrix: Water**

**Method: 200.7 Rev 4.4 - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	0.16		0.0020		mg/L		07/31/17 08:34	08/01/17 01:51	1
Boron	0.038		0.020		mg/L		07/31/17 08:34	08/01/17 01:51	1
Calcium	118		0.50		mg/L		07/31/17 08:34	08/01/17 01:51	1
Chromium	ND		0.0040		mg/L		07/31/17 08:34	08/01/17 01:51	1
Lead	ND		0.010		mg/L		07/31/17 08:34	08/01/17 01:51	1
Lithium	ND		0.030		mg/L		07/31/17 08:34	08/01/17 01:51	1

**Method: 200.8 - Metals (ICP/MS)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		1.0		ug/L		08/04/17 08:57	08/10/17 04:03	1
Arsenic	ND		1.0		ug/L		08/04/17 08:57	08/10/17 04:03	1
Beryllium	ND		0.70		ug/L		08/04/17 08:57	08/10/17 04:03	1
Cadmium	ND		0.50		ug/L		08/04/17 08:57	08/10/17 04:03	1
Cobalt	0.35		0.30		ug/L		08/04/17 08:57	08/10/17 04:03	1
Molybdenum	ND		1.0		ug/L		08/04/17 08:57	08/10/17 04:03	1
Selenium	ND		1.0		ug/L		08/04/17 08:57	08/10/17 04:03	1
Thallium	ND		0.20		ug/L		08/04/17 08:57	08/10/17 04:03	1

**Method: 245.1 - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020		mg/L		07/31/17 10:40	07/31/17 15:15	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	72.9		2.5		mg/L			08/10/17 16:36	5
Fluoride	ND		0.25		mg/L			08/10/17 16:36	5
Sulfate	64.3		10.0		mg/L			08/10/17 16:36	5
Total Dissolved Solids	548		10.0		mg/L			08/01/17 09:49	1
Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	7.4	HF	0.1		SU			07/28/17 20:18	1
Temperature	25.5	HF	0.001		Degrees C			07/28/17 20:18	1

# Client Sample Results

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

TestAmerica Job ID: 480-121858-1

**Client Sample ID: FIELD BLANK**

**Lab Sample ID: 480-121858-9**

**Date Collected: 07/27/17 16:00**

**Matrix: Water**

**Date Received: 07/28/17 07:55**

**Method: 200.7 Rev 4.4 - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	ND		0.0020		mg/L		07/31/17 08:34	08/01/17 01:54	1
Boron	ND		0.020		mg/L		07/31/17 08:34	08/01/17 01:54	1
Calcium	ND		0.50		mg/L		07/31/17 08:34	08/01/17 01:54	1
Chromium	ND		0.0040		mg/L		07/31/17 08:34	08/01/17 01:54	1
Lead	ND		0.010		mg/L		07/31/17 08:34	08/01/17 01:54	1
Lithium	ND		0.030		mg/L		07/31/17 08:34	08/01/17 01:54	1

**Method: 200.8 - Metals (ICP/MS)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		1.0		ug/L		08/04/17 08:57	08/10/17 04:26	1
Arsenic	ND		1.0		ug/L		08/04/17 08:57	08/17/17 19:00	1
Beryllium	ND		0.70		ug/L		08/04/17 08:57	08/10/17 04:26	1
Cadmium	ND		0.50		ug/L		08/04/17 08:57	08/10/17 04:26	1
Cobalt	ND		0.30		ug/L		08/04/17 08:57	08/10/17 04:26	1
Molybdenum	ND		1.0		ug/L		08/04/17 08:57	08/10/17 04:26	1
Selenium	ND		1.0		ug/L		08/04/17 08:57	08/10/17 04:26	1
Thallium	ND		0.20		ug/L		08/04/17 08:57	08/10/17 04:26	1

**Method: 245.1 - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020		mg/L		07/31/17 10:40	07/31/17 15:17	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		0.50		mg/L			08/10/17 16:45	1
Fluoride	ND		0.050		mg/L			08/10/17 16:45	1
Sulfate	ND		2.0		mg/L			08/10/17 16:45	1
Total Dissolved Solids	ND		10.0		mg/L			08/01/17 09:49	1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH	7.4	HF	0.1		SU			07/30/17 09:48	1
Temperature	22.7	HF	0.001		Degrees C			07/30/17 09:48	1

# Client Sample Results

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

TestAmerica Job ID: 480-121858-1

**Client Sample ID: EQUIPMENT BLANK**

**Lab Sample ID: 480-121858-10**

**Date Collected: 07/27/17 16:05**

**Matrix: Water**

**Date Received: 07/28/17 07:55**

**Method: 200.7 Rev 4.4 - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	ND		0.0020		mg/L		07/31/17 08:34	08/01/17 01:58	1
Boron	ND		0.020		mg/L		07/31/17 08:34	08/01/17 01:58	1
Calcium	ND		0.50		mg/L		07/31/17 08:34	08/01/17 01:58	1
Chromium	ND		0.0040		mg/L		07/31/17 08:34	08/01/17 01:58	1
Lead	ND		0.010		mg/L		07/31/17 08:34	08/01/17 01:58	1
Lithium	ND		0.030		mg/L		07/31/17 08:34	08/01/17 01:58	1

**Method: 200.8 - Metals (ICP/MS)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		1.0		ug/L		08/04/17 08:57	08/10/17 04:43	1
Arsenic	ND		2.0		ug/L		08/04/17 08:57	08/20/17 20:53	2
Beryllium	ND		0.70		ug/L		08/04/17 08:57	08/10/17 04:43	1
Cadmium	ND		0.50		ug/L		08/04/17 08:57	08/10/17 04:43	1
Cobalt	ND		0.30		ug/L		08/04/17 08:57	08/10/17 04:43	1
Molybdenum	ND		1.0		ug/L		08/04/17 08:57	08/10/17 04:43	1
Selenium	ND		1.0		ug/L		08/04/17 08:57	08/10/17 04:43	1
Thallium	ND		0.20		ug/L		08/04/17 08:57	08/10/17 04:43	1

**Method: 245.1 - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020		mg/L		07/31/17 10:40	07/31/17 15:22	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		0.50		mg/L			08/10/17 16:53	1
Fluoride	ND		0.050		mg/L			08/10/17 16:53	1
Sulfate	ND		2.0		mg/L			08/10/17 16:53	1
<b>Total Dissolved Solids</b>	<b>16.0</b>		10.0		mg/L			08/01/17 09:49	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
<b>pH</b>	<b>5.8</b>	<b>HF</b>	0.1		SU			07/28/17 20:29	1
<b>Temperature</b>	<b>25.5</b>	<b>HF</b>	0.001		Degrees C			07/28/17 20:29	1



# QC Sample Results

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

TestAmerica Job ID: 480-121858-1

## Method: 200.7 Rev 4.4 - Metals (ICP)

**Lab Sample ID: MB 480-369356/1-A**  
**Matrix: Water**  
**Analysis Batch: 369784**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 369356**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	ND		0.0020		mg/L		07/31/17 08:34	08/01/17 00:43	1
Boron	ND		0.020		mg/L		07/31/17 08:34	08/01/17 00:43	1
Calcium	ND		0.50		mg/L		07/31/17 08:34	08/01/17 00:43	1
Chromium	ND		0.0040		mg/L		07/31/17 08:34	08/01/17 00:43	1
Lead	ND		0.010		mg/L		07/31/17 08:34	08/01/17 00:43	1
Lithium	ND		0.030		mg/L		07/31/17 08:34	08/01/17 00:43	1

**Lab Sample ID: LCS 480-369356/2-A**  
**Matrix: Water**  
**Analysis Batch: 369784**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 369356**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Barium	0.200	0.209		mg/L		104	85 - 115
Boron	0.200	0.205		mg/L		103	85 - 115
Calcium	10.0	9.65		mg/L		97	85 - 115
Chromium	0.200	0.195		mg/L		98	85 - 115
Lead	0.200	0.200		mg/L		100	85 - 115

**Lab Sample ID: 480-121858-2 MS**  
**Matrix: Water**  
**Analysis Batch: 369784**

**Client Sample ID: P-2**  
**Prep Type: Total/NA**  
**Prep Batch: 369356**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Barium	0.23		0.200	0.418		mg/L		97	70 - 130
Boron	0.077		0.200	0.284		mg/L		104	70 - 130
Calcium	296		10.0	290.6	4	mg/L		-51	70 - 130
Chromium	ND		0.200	0.191		mg/L		96	70 - 130
Lead	ND		0.200	0.211		mg/L		103	70 - 130

**Lab Sample ID: 480-121858-2 MSD**  
**Matrix: Water**  
**Analysis Batch: 369784**

**Client Sample ID: P-2**  
**Prep Type: Total/NA**  
**Prep Batch: 369356**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Barium	0.23		0.200	0.426		mg/L		100	70 - 130	2	20
Boron	0.077		0.200	0.286		mg/L		105	70 - 130	1	20
Calcium	296		10.0	298.8	4	mg/L		31	70 - 130	3	20
Chromium	ND		0.200	0.190		mg/L		95	70 - 130	1	20
Lead	ND		0.200	0.209		mg/L		102	70 - 130	1	20

**Lab Sample ID: 480-121858-10 MS**  
**Matrix: Water**  
**Analysis Batch: 369784**

**Client Sample ID: EQUIPMENT BLANK**  
**Prep Type: Total/NA**  
**Prep Batch: 369356**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Barium	ND		0.200	0.210		mg/L		105	70 - 130
Boron	ND		0.200	0.208		mg/L		104	70 - 130
Calcium	ND		10.0	9.85		mg/L		98	70 - 130
Chromium	ND		0.200	0.199		mg/L		99	70 - 130

TestAmerica Buffalo

# QC Sample Results

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

TestAmerica Job ID: 480-121858-1

## Method: 200.7 Rev 4.4 - Metals (ICP) (Continued)

**Lab Sample ID: 480-121858-10 MS**  
**Matrix: Water**  
**Analysis Batch: 369784**

**Client Sample ID: EQUIPMENT BLANK**  
**Prep Type: Total/NA**  
**Prep Batch: 369356**  
**%Rec.**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Lead	ND		0.200	0.201		mg/L		100	70 - 130

**Lab Sample ID: 480-121858-10 MSD**  
**Matrix: Water**  
**Analysis Batch: 369784**

**Client Sample ID: EQUIPMENT BLANK**  
**Prep Type: Total/NA**  
**Prep Batch: 369356**  
**%Rec.**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Barium	ND		0.200	0.207		mg/L		103	70 - 130	2	20
Boron	ND		0.200	0.203		mg/L		101	70 - 130	2	20
Calcium	ND		10.0	9.64		mg/L		96	70 - 130	2	20
Chromium	ND		0.200	0.194		mg/L		97	70 - 130	3	20
Lead	ND		0.200	0.200		mg/L		100	70 - 130	0	20

## Method: 200.8 - Metals (ICP/MS)

**Lab Sample ID: MB 480-370466/1-A**  
**Matrix: Water**  
**Analysis Batch: 371508**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 370466**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		1.0		ug/L		08/04/17 08:57	08/10/17 02:23	1
Arsenic	ND		1.0		ug/L		08/04/17 08:57	08/10/17 02:23	1
Beryllium	ND		0.70		ug/L		08/04/17 08:57	08/10/17 02:23	1
Cadmium	ND		0.50		ug/L		08/04/17 08:57	08/10/17 02:23	1
Cobalt	ND		0.30		ug/L		08/04/17 08:57	08/10/17 02:23	1
Molybdenum	ND		1.0		ug/L		08/04/17 08:57	08/10/17 02:23	1
Selenium	ND		1.0		ug/L		08/04/17 08:57	08/10/17 02:23	1
Thallium	ND		0.20		ug/L		08/04/17 08:57	08/10/17 02:23	1

**Lab Sample ID: LCS 480-370466/2-A**  
**Matrix: Water**  
**Analysis Batch: 371508**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 370466**  
**%Rec.**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Antimony	20.0	22.28		ug/L		111	85 - 115
Arsenic	20.0	21.38		ug/L		107	85 - 115
Beryllium	20.0	21.33		ug/L		107	85 - 115
Cadmium	20.0	22.13		ug/L		111	85 - 115
Cobalt	20.0	21.06		ug/L		105	85 - 115
Molybdenum	20.0	22.12		ug/L		111	85 - 115
Selenium	20.0	22.16		ug/L		111	85 - 115
Thallium	20.0	22.21		ug/L		111	85 - 115

**Lab Sample ID: 480-121858-9 MS**  
**Matrix: Water**  
**Analysis Batch: 371508**

**Client Sample ID: FIELD BLANK**  
**Prep Type: Total/NA**  
**Prep Batch: 370466**  
**%Rec.**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Antimony	ND		20.0	21.32		ug/L		107	70 - 130

TestAmerica Buffalo

# QC Sample Results

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

TestAmerica Job ID: 480-121858-1

## Method: 200.8 - Metals (ICP/MS) (Continued)

**Lab Sample ID: 480-121858-9 MS**  
**Matrix: Water**  
**Analysis Batch: 371508**

**Client Sample ID: FIELD BLANK**  
**Prep Type: Total/NA**  
**Prep Batch: 370466**

Analyte	Sample	Sample	Spike	MS		Unit	D	%Rec	%Rec.	Limits
	Result	Qualifier		Result	Qualifier					
Arsenic	ND	L	20.0	20.04		ug/L		100	70 - 130	
Beryllium	ND		20.0	20.23		ug/L		101	70 - 130	
Cadmium	ND		20.0	20.64		ug/L		103	70 - 130	
Cobalt	ND		20.0	18.62		ug/L		93	70 - 130	
Molybdenum	ND		20.0	19.81		ug/L		99	70 - 130	
Selenium	ND		20.0	20.40		ug/L		102	70 - 130	
Thallium	ND		20.0	20.83		ug/L		104	70 - 130	

**Lab Sample ID: 480-121858-9 MS**  
**Matrix: Water**  
**Analysis Batch: 372924**

**Client Sample ID: FIELD BLANK**  
**Prep Type: Total/NA**  
**Prep Batch: 370466**

Analyte	Sample	Sample	Spike	MS		Unit	D	%Rec	%Rec.	Limits
	Result	Qualifier		Result	Qualifier					
Antimony	ND		20.0	21.70		ug/L		108	70 - 130	
Arsenic	ND		20.0	19.81		ug/L		99	70 - 130	
Beryllium	ND		20.0	20.24		ug/L		101	70 - 130	
Cadmium	ND		20.0	20.47		ug/L		102	70 - 130	
Cobalt	ND		20.0	21.59		ug/L		108	70 - 130	
Molybdenum	ND		20.0	20.98		ug/L		105	70 - 130	
Selenium	ND		20.0	20.20		ug/L		101	70 - 130	
Thallium	ND		20.0	18.97		ug/L		95	70 - 130	

**Lab Sample ID: 480-121858-9 MSD**  
**Matrix: Water**  
**Analysis Batch: 371508**

**Client Sample ID: FIELD BLANK**  
**Prep Type: Total/NA**  
**Prep Batch: 370466**

Analyte	Sample	Sample	Spike	MSD		Unit	D	%Rec	%Rec.	Limits	RPD	
	Result	Qualifier		Result	Qualifier						RPD	Limit
Antimony	ND		20.0	21.50		ug/L		108	70 - 130	1	20	
Arsenic	ND	L	20.0	20.56		ug/L		103	70 - 130	3	20	
Beryllium	ND		20.0	20.75		ug/L		104	70 - 130	3	20	
Cadmium	ND		20.0	21.35		ug/L		107	70 - 130	3	20	
Cobalt	ND		20.0	20.38		ug/L		102	70 - 130	9	20	
Molybdenum	ND		20.0	20.41		ug/L		102	70 - 130	3	20	
Selenium	ND		20.0	23.08		ug/L		115	70 - 130	12	20	
Thallium	ND		20.0	20.64		ug/L		103	70 - 130	1	20	

**Lab Sample ID: 480-121858-9 MSD**  
**Matrix: Water**  
**Analysis Batch: 372924**

**Client Sample ID: FIELD BLANK**  
**Prep Type: Total/NA**  
**Prep Batch: 370466**

Analyte	Sample	Sample	Spike	MSD		Unit	D	%Rec	%Rec.	Limits	RPD	
	Result	Qualifier		Result	Qualifier						RPD	Limit
Antimony	ND		20.0	21.57		ug/L		108	70 - 130	1	20	
Arsenic	ND		20.0	20.04		ug/L		100	70 - 130	1	20	
Beryllium	ND		20.0	20.30		ug/L		101	70 - 130	0	20	
Cadmium	ND		20.0	20.96		ug/L		105	70 - 130	2	20	
Cobalt	ND		20.0	21.68		ug/L		108	70 - 130	0	20	
Molybdenum	ND		20.0	20.71		ug/L		104	70 - 130	1	20	
Selenium	ND		20.0	20.64		ug/L		103	70 - 130	2	20	

TestAmerica Buffalo

# QC Sample Results

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

TestAmerica Job ID: 480-121858-1

## Method: 245.1 - Mercury (CVAA)

**Lab Sample ID: MB 480-369513/1-A**  
**Matrix: Water**  
**Analysis Batch: 369699**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 369513**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020		mg/L		07/31/17 10:40	07/31/17 14:46	1

**Lab Sample ID: LCS 480-369513/2-A**  
**Matrix: Water**  
**Analysis Batch: 369699**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 369513**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Mercury	0.00667	0.00648		mg/L		97	85 - 115

**Lab Sample ID: 480-121858-3 MS**  
**Matrix: Water**  
**Analysis Batch: 369699**

**Client Sample ID: P-3**  
**Prep Type: Total/NA**  
**Prep Batch: 369513**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Mercury	ND		0.00667	0.00652		mg/L		98	70 - 130

**Lab Sample ID: 480-121858-3 MSD**  
**Matrix: Water**  
**Analysis Batch: 369699**

**Client Sample ID: P-3**  
**Prep Type: Total/NA**  
**Prep Batch: 369513**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Mercury	ND		0.00667	0.00655		mg/L		98	70 - 130	1	20

## Method: 300.0 - Anions, Ion Chromatography

**Lab Sample ID: MB 480-371460/28**  
**Matrix: Water**  
**Analysis Batch: 371460**

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		0.50		mg/L			08/10/17 14:10	1
Fluoride	ND		0.050		mg/L			08/10/17 14:10	1
Sulfate	ND		2.0		mg/L			08/10/17 14:10	1

**Lab Sample ID: LCS 480-371460/27**  
**Matrix: Water**  
**Analysis Batch: 371460**

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Chloride	50.0	48.01		mg/L		96	90 - 110
Fluoride	5.00	4.96		mg/L		99	90 - 110
Sulfate	50.0	49.41		mg/L		99	90 - 110

**Lab Sample ID: 480-121858-1 MS**  
**Matrix: Water**  
**Analysis Batch: 371460**

**Client Sample ID: P-1**  
**Prep Type: Total/NA**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Chloride	70.7		250	306.7		mg/L		94	81 - 120

TestAmerica Buffalo

# QC Sample Results

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

TestAmerica Job ID: 480-121858-1

## Method: 300.0 - Anions, Ion Chromatography (Continued)

**Lab Sample ID: 480-121858-1 MS**  
**Matrix: Water**  
**Analysis Batch: 371460**

**Client Sample ID: P-1**  
**Prep Type: Total/NA**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Fluoride	ND		25.0	24.87		mg/L		99	82 - 120
Sulfate	50.5		250	295.3		mg/L		98	80 - 120

**Lab Sample ID: 480-121858-1 MSD**  
**Matrix: Water**  
**Analysis Batch: 371460**

**Client Sample ID: P-1**  
**Prep Type: Total/NA**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	70.7		250	309.3		mg/L		95	81 - 120	1	20
Fluoride	ND		25.0	24.96		mg/L		100	82 - 120	0	20
Sulfate	50.5		250	297.3		mg/L		99	80 - 120	1	20

**Lab Sample ID: 480-121858-10 MS**  
**Matrix: Water**  
**Analysis Batch: 371460**

**Client Sample ID: EQUIPMENT BLANK**  
**Prep Type: Total/NA**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	ND		50.0	47.65		mg/L		95	81 - 120
Fluoride	ND		5.00	4.93		mg/L		99	82 - 120
Sulfate	ND		50.0	48.85		mg/L		98	80 - 120

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

**Lab Sample ID: MB 480-369774/1**  
**Matrix: Water**  
**Analysis Batch: 369774**

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	ND		10.0		mg/L			08/01/17 09:49	1

**Lab Sample ID: LCS 480-369774/2**  
**Matrix: Water**  
**Analysis Batch: 369774**

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Dissolved Solids	508	517.0		mg/L		102	85 - 115

## Method: SM 4500 H+ B - pH

**Lab Sample ID: LCS 480-369394/23**  
**Matrix: Water**  
**Analysis Batch: 369394**

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

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

TestAmerica Buffalo

# QC Sample Results

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

TestAmerica Job ID: 480-121858-1

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

Lab Sample ID: LCS 480-369394/45  
Matrix: Water  
Analysis Batch: 369394

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

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

Lab Sample ID: LCS 480-369467/1  
Matrix: Water  
Analysis Batch: 369467

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

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

# QC Association Summary

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

TestAmerica Job ID: 480-121858-1

## Metals

### Prep Batch: 369356

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-121858-1	P-1	Total/NA	Water	200.7	
480-121858-2	P-2	Total/NA	Water	200.7	
480-121858-3	P-3	Total/NA	Water	200.7	
480-121858-4	P-4R	Total/NA	Water	200.7	
480-121858-5	P-5	Total/NA	Water	200.7	
480-121858-6	P-6	Total/NA	Water	200.7	
480-121858-7	P-7	Total/NA	Water	200.7	
480-121858-8	DUP-1	Total/NA	Water	200.7	
480-121858-9	FIELD BLANK	Total/NA	Water	200.7	
480-121858-10	EQUIPMENT BLANK	Total/NA	Water	200.7	
MB 480-369356/1-A	Method Blank	Total/NA	Water	200.7	
LCS 480-369356/2-A	Lab Control Sample	Total/NA	Water	200.7	
480-121858-2 MS	P-2	Total/NA	Water	200.7	
480-121858-2 MSD	P-2	Total/NA	Water	200.7	
480-121858-10 MS	EQUIPMENT BLANK	Total/NA	Water	200.7	
480-121858-10 MSD	EQUIPMENT BLANK	Total/NA	Water	200.7	

### Prep Batch: 369513

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-121858-1	P-1	Total/NA	Water	245.1	
480-121858-2	P-2	Total/NA	Water	245.1	
480-121858-3	P-3	Total/NA	Water	245.1	
480-121858-4	P-4R	Total/NA	Water	245.1	
480-121858-5	P-5	Total/NA	Water	245.1	
480-121858-6	P-6	Total/NA	Water	245.1	
480-121858-7	P-7	Total/NA	Water	245.1	
480-121858-8	DUP-1	Total/NA	Water	245.1	
480-121858-9	FIELD BLANK	Total/NA	Water	245.1	
480-121858-10	EQUIPMENT BLANK	Total/NA	Water	245.1	
MB 480-369513/1-A	Method Blank	Total/NA	Water	245.1	
LCS 480-369513/2-A	Lab Control Sample	Total/NA	Water	245.1	
480-121858-3 MS	P-3	Total/NA	Water	245.1	
480-121858-3 MSD	P-3	Total/NA	Water	245.1	

### Analysis Batch: 369699

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-121858-1	P-1	Total/NA	Water	245.1	369513
480-121858-2	P-2	Total/NA	Water	245.1	369513
480-121858-3	P-3	Total/NA	Water	245.1	369513
480-121858-4	P-4R	Total/NA	Water	245.1	369513
480-121858-5	P-5	Total/NA	Water	245.1	369513
480-121858-6	P-6	Total/NA	Water	245.1	369513
480-121858-7	P-7	Total/NA	Water	245.1	369513
480-121858-8	DUP-1	Total/NA	Water	245.1	369513
480-121858-9	FIELD BLANK	Total/NA	Water	245.1	369513
480-121858-10	EQUIPMENT BLANK	Total/NA	Water	245.1	369513
MB 480-369513/1-A	Method Blank	Total/NA	Water	245.1	369513
LCS 480-369513/2-A	Lab Control Sample	Total/NA	Water	245.1	369513
480-121858-3 MS	P-3	Total/NA	Water	245.1	369513
480-121858-3 MSD	P-3	Total/NA	Water	245.1	369513

TestAmerica Buffalo

# QC Association Summary

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

TestAmerica Job ID: 480-121858-1

## Metals (Continued)

### Analysis Batch: 369784

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-121858-1	P-1	Total/NA	Water	200.7 Rev 4.4	369356
480-121858-2	P-2	Total/NA	Water	200.7 Rev 4.4	369356
480-121858-3	P-3	Total/NA	Water	200.7 Rev 4.4	369356
480-121858-4	P-4R	Total/NA	Water	200.7 Rev 4.4	369356
480-121858-5	P-5	Total/NA	Water	200.7 Rev 4.4	369356
480-121858-6	P-6	Total/NA	Water	200.7 Rev 4.4	369356
480-121858-7	P-7	Total/NA	Water	200.7 Rev 4.4	369356
480-121858-8	DUP-1	Total/NA	Water	200.7 Rev 4.4	369356
480-121858-9	FIELD BLANK	Total/NA	Water	200.7 Rev 4.4	369356
480-121858-10	EQUIPMENT BLANK	Total/NA	Water	200.7 Rev 4.4	369356
MB 480-369356/1-A	Method Blank	Total/NA	Water	200.7 Rev 4.4	369356
LCS 480-369356/2-A	Lab Control Sample	Total/NA	Water	200.7 Rev 4.4	369356
480-121858-2 MS	P-2	Total/NA	Water	200.7 Rev 4.4	369356
480-121858-2 MSD	P-2	Total/NA	Water	200.7 Rev 4.4	369356
480-121858-10 MS	EQUIPMENT BLANK	Total/NA	Water	200.7 Rev 4.4	369356
480-121858-10 MSD	EQUIPMENT BLANK	Total/NA	Water	200.7 Rev 4.4	369356

### Prep Batch: 370466

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-121858-1	P-1	Total/NA	Water	200.8	
480-121858-2	P-2	Total/NA	Water	200.8	
480-121858-3	P-3	Total/NA	Water	200.8	
480-121858-4	P-4R	Total/NA	Water	200.8	
480-121858-5	P-5	Total/NA	Water	200.8	
480-121858-6	P-6	Total/NA	Water	200.8	
480-121858-7	P-7	Total/NA	Water	200.8	
480-121858-8	DUP-1	Total/NA	Water	200.8	
480-121858-9	FIELD BLANK	Total/NA	Water	200.8	
480-121858-10	EQUIPMENT BLANK	Total/NA	Water	200.8	
MB 480-370466/1-A	Method Blank	Total/NA	Water	200.8	
LCS 480-370466/2-A	Lab Control Sample	Total/NA	Water	200.8	
480-121858-9 MS	FIELD BLANK	Total/NA	Water	200.8	
480-121858-9 MSD	FIELD BLANK	Total/NA	Water	200.8	

### Analysis Batch: 371508

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-121858-1	P-1	Total/NA	Water	200.8	370466
480-121858-2	P-2	Total/NA	Water	200.8	370466
480-121858-3	P-3	Total/NA	Water	200.8	370466
480-121858-4	P-4R	Total/NA	Water	200.8	370466
480-121858-5	P-5	Total/NA	Water	200.8	370466
480-121858-6	P-6	Total/NA	Water	200.8	370466
480-121858-7	P-7	Total/NA	Water	200.8	370466
480-121858-8	DUP-1	Total/NA	Water	200.8	370466
480-121858-9	FIELD BLANK	Total/NA	Water	200.8	370466
480-121858-10	EQUIPMENT BLANK	Total/NA	Water	200.8	370466
MB 480-370466/1-A	Method Blank	Total/NA	Water	200.8	370466
LCS 480-370466/2-A	Lab Control Sample	Total/NA	Water	200.8	370466
480-121858-9 MS	FIELD BLANK	Total/NA	Water	200.8	370466
480-121858-9 MSD	FIELD BLANK	Total/NA	Water	200.8	370466

TestAmerica Buffalo



# QC Association Summary

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

TestAmerica Job ID: 480-121858-1

## Metals (Continued)

### Analysis Batch: 372924

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-121858-6	P-6	Total/NA	Water	200.8	370466
480-121858-7	P-7	Total/NA	Water	200.8	370466
480-121858-9	FIELD BLANK	Total/NA	Water	200.8	370466
480-121858-9 MS	FIELD BLANK	Total/NA	Water	200.8	370466
480-121858-9 MSD	FIELD BLANK	Total/NA	Water	200.8	370466

### Analysis Batch: 373099

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-121858-2	P-2	Total/NA	Water	200.8	370466
480-121858-10	EQUIPMENT BLANK	Total/NA	Water	200.8	370466

## General Chemistry

### Analysis Batch: 369394

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-121858-1	P-1	Total/NA	Water	SM 4500 H+ B	
480-121858-2	P-2	Total/NA	Water	SM 4500 H+ B	
480-121858-3	P-3	Total/NA	Water	SM 4500 H+ B	
480-121858-4	P-4R	Total/NA	Water	SM 4500 H+ B	
480-121858-5	P-5	Total/NA	Water	SM 4500 H+ B	
480-121858-6	P-6	Total/NA	Water	SM 4500 H+ B	
480-121858-7	P-7	Total/NA	Water	SM 4500 H+ B	
480-121858-8	DUP-1	Total/NA	Water	SM 4500 H+ B	
480-121858-10	EQUIPMENT BLANK	Total/NA	Water	SM 4500 H+ B	
LCS 480-369394/23	Lab Control Sample	Total/NA	Water	SM 4500 H+ B	
LCS 480-369394/45	Lab Control Sample	Total/NA	Water	SM 4500 H+ B	

### Analysis Batch: 369467

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-121858-9	FIELD BLANK	Total/NA	Water	SM 4500 H+ B	
LCS 480-369467/1	Lab Control Sample	Total/NA	Water	SM 4500 H+ B	

### Analysis Batch: 369774

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-121858-1	P-1	Total/NA	Water	SM 2540C	
480-121858-2	P-2	Total/NA	Water	SM 2540C	
480-121858-3	P-3	Total/NA	Water	SM 2540C	
480-121858-4	P-4R	Total/NA	Water	SM 2540C	
480-121858-5	P-5	Total/NA	Water	SM 2540C	
480-121858-6	P-6	Total/NA	Water	SM 2540C	
480-121858-7	P-7	Total/NA	Water	SM 2540C	
480-121858-8	DUP-1	Total/NA	Water	SM 2540C	
480-121858-9	FIELD BLANK	Total/NA	Water	SM 2540C	
480-121858-10	EQUIPMENT BLANK	Total/NA	Water	SM 2540C	
MB 480-369774/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 480-369774/2	Lab Control Sample	Total/NA	Water	SM 2540C	

### Analysis Batch: 371460

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-121858-1	P-1	Total/NA	Water	300.0	

TestAmerica Buffalo

# QC Association Summary

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

TestAmerica Job ID: 480-121858-1

## General Chemistry (Continued)

### Analysis Batch: 371460 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-121858-2	P-2	Total/NA	Water	300.0	
480-121858-3	P-3	Total/NA	Water	300.0	
480-121858-4	P-4R	Total/NA	Water	300.0	
480-121858-5	P-5	Total/NA	Water	300.0	
480-121858-6	P-6	Total/NA	Water	300.0	
480-121858-7	P-7	Total/NA	Water	300.0	
480-121858-8	DUP-1	Total/NA	Water	300.0	
480-121858-9	FIELD BLANK	Total/NA	Water	300.0	
480-121858-10	EQUIPMENT BLANK	Total/NA	Water	300.0	
MB 480-371460/28	Method Blank	Total/NA	Water	300.0	
LCS 480-371460/27	Lab Control Sample	Total/NA	Water	300.0	
480-121858-1 MS	P-1	Total/NA	Water	300.0	
480-121858-1 MSD	P-1	Total/NA	Water	300.0	
480-121858-10 MS	EQUIPMENT BLANK	Total/NA	Water	300.0	

# Lab Chronicle

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

TestAmerica Job ID: 480-121858-1

## Client Sample ID: P-1

Date Collected: 07/27/17 09:05

Date Received: 07/28/17 07:55

## Lab Sample ID: 480-121858-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	200.7			369356	07/31/17 08:34	EMB	TAL BUF
Total/NA	Analysis	200.7 Rev 4.4		1	369784	08/01/17 00:50	LMH	TAL BUF
Total/NA	Prep	200.8			370466	08/04/17 08:57	EMB	TAL BUF
Total/NA	Analysis	200.8		1	371508	08/10/17 03:25	JRK	TAL BUF
Total/NA	Prep	245.1			369513	07/31/17 10:40	BMB	TAL BUF
Total/NA	Analysis	245.1		1	369699	07/31/17 14:51	BMB	TAL BUF
Total/NA	Analysis	300.0		5	371460	08/10/17 14:58	RJS	TAL BUF
Total/NA	Analysis	SM 2540C		1	369774	08/01/17 09:49	EKB	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	369394	07/28/17 19:53	ALZ	TAL BUF

## Client Sample ID: P-2

Date Collected: 07/27/17 15:20

Date Received: 07/28/17 07:55

## Lab Sample ID: 480-121858-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	200.7			369356	07/31/17 08:34	EMB	TAL BUF
Total/NA	Analysis	200.7 Rev 4.4		1	369784	08/01/17 01:05	LMH	TAL BUF
Total/NA	Prep	200.8			370466	08/04/17 08:57	EMB	TAL BUF
Total/NA	Analysis	200.8		1	371508	08/10/17 03:30	JRK	TAL BUF
Total/NA	Prep	200.8			370466	08/04/17 08:57	EMB	TAL BUF
Total/NA	Analysis	200.8		5	373099	08/20/17 20:30	JRK	TAL BUF
Total/NA	Prep	245.1			369513	07/31/17 10:40	BMB	TAL BUF
Total/NA	Analysis	245.1		1	369699	07/31/17 14:54	BMB	TAL BUF
Total/NA	Analysis	300.0		10	371460	08/10/17 15:48	RJS	TAL BUF
Total/NA	Analysis	SM 2540C		1	369774	08/01/17 09:49	EKB	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	369394	07/28/17 19:56	ALZ	TAL BUF

## Client Sample ID: P-3

Date Collected: 07/27/17 10:05

Date Received: 07/28/17 07:55

## Lab Sample ID: 480-121858-3

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	200.7			369356	07/31/17 08:34	EMB	TAL BUF
Total/NA	Analysis	200.7 Rev 4.4		1	369784	08/01/17 01:22	LMH	TAL BUF
Total/NA	Prep	200.8			370466	08/04/17 08:57	EMB	TAL BUF
Total/NA	Analysis	200.8		1	371508	08/10/17 03:36	JRK	TAL BUF
Total/NA	Prep	245.1			369513	07/31/17 10:40	BMB	TAL BUF
Total/NA	Analysis	245.1		1	369699	07/31/17 15:00	BMB	TAL BUF
Total/NA	Analysis	300.0		5	371460	08/10/17 15:56	RJS	TAL BUF
Total/NA	Analysis	SM 2540C		1	369774	08/01/17 09:49	EKB	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	369394	07/28/17 19:58	ALZ	TAL BUF

TestAmerica Buffalo

# Lab Chronicle

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

TestAmerica Job ID: 480-121858-1

## Client Sample ID: P-4R

Date Collected: 07/27/17 11:25

Date Received: 07/28/17 07:55

## Lab Sample ID: 480-121858-4

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	200.7			369356	07/31/17 08:34	EMB	TAL BUF
Total/NA	Analysis	200.7 Rev 4.4		1	369784	08/01/17 01:26	LMH	TAL BUF
Total/NA	Prep	200.8			370466	08/04/17 08:57	EMB	TAL BUF
Total/NA	Analysis	200.8		1	371508	08/10/17 03:41	JRK	TAL BUF
Total/NA	Prep	245.1			369513	07/31/17 10:40	BMB	TAL BUF
Total/NA	Analysis	245.1		1	369699	07/31/17 15:08	BMB	TAL BUF
Total/NA	Analysis	300.0		5	371460	08/10/17 16:04	RJS	TAL BUF
Total/NA	Analysis	SM 2540C		1	369774	08/01/17 09:49	EKB	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	369394	07/28/17 20:01	ALZ	TAL BUF

## Client Sample ID: P-5

Date Collected: 07/27/17 12:25

Date Received: 07/28/17 07:55

## Lab Sample ID: 480-121858-5

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	200.7			369356	07/31/17 08:34	EMB	TAL BUF
Total/NA	Analysis	200.7 Rev 4.4		1	369784	08/01/17 01:29	LMH	TAL BUF
Total/NA	Prep	200.8			370466	08/04/17 08:57	EMB	TAL BUF
Total/NA	Analysis	200.8		1	371508	08/10/17 03:47	JRK	TAL BUF
Total/NA	Prep	245.1			369513	07/31/17 10:40	BMB	TAL BUF
Total/NA	Analysis	245.1		1	369699	07/31/17 15:10	BMB	TAL BUF
Total/NA	Analysis	300.0		5	371460	08/10/17 16:12	RJS	TAL BUF
Total/NA	Analysis	SM 2540C		1	369774	08/01/17 09:49	EKB	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	369394	07/28/17 20:04	ALZ	TAL BUF

## Client Sample ID: P-6

Date Collected: 07/27/17 13:30

Date Received: 07/28/17 07:55

## Lab Sample ID: 480-121858-6

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	200.7			369356	07/31/17 08:34	EMB	TAL BUF
Total/NA	Analysis	200.7 Rev 4.4		1	369784	08/01/17 01:33	LMH	TAL BUF
Total/NA	Prep	200.8			370466	08/04/17 08:57	EMB	TAL BUF
Total/NA	Analysis	200.8		1	371508	08/10/17 03:52	JRK	TAL BUF
Total/NA	Prep	200.8			370466	08/04/17 08:57	EMB	TAL BUF
Total/NA	Analysis	200.8		1	372924	08/17/17 18:32	JRK	TAL BUF
Total/NA	Prep	245.1			369513	07/31/17 10:40	BMB	TAL BUF
Total/NA	Analysis	245.1		1	369699	07/31/17 15:12	BMB	TAL BUF
Total/NA	Analysis	300.0		5	371460	08/10/17 16:20	RJS	TAL BUF
Total/NA	Analysis	SM 2540C		1	369774	08/01/17 09:49	EKB	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	369394	07/28/17 20:12	ALZ	TAL BUF

# Lab Chronicle

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

TestAmerica Job ID: 480-121858-1

**Client Sample ID: P-7**

**Lab Sample ID: 480-121858-7**

**Date Collected: 07/27/17 14:35**

**Matrix: Water**

**Date Received: 07/28/17 07:55**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	200.7			369356	07/31/17 08:34	EMB	TAL BUF
Total/NA	Analysis	200.7 Rev 4.4		1	369784	08/01/17 01:47	LMH	TAL BUF
Total/NA	Prep	200.8			370466	08/04/17 08:57	EMB	TAL BUF
Total/NA	Analysis	200.8		1	371508	08/10/17 03:58	JRK	TAL BUF
Total/NA	Prep	200.8			370466	08/04/17 08:57	EMB	TAL BUF
Total/NA	Analysis	200.8		1	372924	08/17/17 18:37	JRK	TAL BUF
Total/NA	Prep	245.1			369513	07/31/17 10:40	BMB	TAL BUF
Total/NA	Analysis	245.1		1	369699	07/31/17 15:13	BMB	TAL BUF
Total/NA	Analysis	300.0		5	371460	08/10/17 16:28	RJS	TAL BUF
Total/NA	Analysis	SM 2540C		1	369774	08/01/17 09:49	EKB	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	369394	07/28/17 20:15	ALZ	TAL BUF

**Client Sample ID: DUP-1**

**Lab Sample ID: 480-121858-8**

**Date Collected: 07/27/17 00:00**

**Matrix: Water**

**Date Received: 07/28/17 07:55**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	200.7			369356	07/31/17 08:34	EMB	TAL BUF
Total/NA	Analysis	200.7 Rev 4.4		1	369784	08/01/17 01:51	LMH	TAL BUF
Total/NA	Prep	200.8			370466	08/04/17 08:57	EMB	TAL BUF
Total/NA	Analysis	200.8		1	371508	08/10/17 04:03	JRK	TAL BUF
Total/NA	Prep	245.1			369513	07/31/17 10:40	BMB	TAL BUF
Total/NA	Analysis	245.1		1	369699	07/31/17 15:15	BMB	TAL BUF
Total/NA	Analysis	300.0		5	371460	08/10/17 16:36	RJS	TAL BUF
Total/NA	Analysis	SM 2540C		1	369774	08/01/17 09:49	EKB	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	369394	07/28/17 20:18	ALZ	TAL BUF

**Client Sample ID: FIELD BLANK**

**Lab Sample ID: 480-121858-9**

**Date Collected: 07/27/17 16:00**

**Matrix: Water**

**Date Received: 07/28/17 07:55**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	200.7			369356	07/31/17 08:34	EMB	TAL BUF
Total/NA	Analysis	200.7 Rev 4.4		1	369784	08/01/17 01:54	LMH	TAL BUF
Total/NA	Prep	200.8			370466	08/04/17 08:57	EMB	TAL BUF
Total/NA	Analysis	200.8		1	371508	08/10/17 04:26	JRK	TAL BUF
Total/NA	Prep	200.8			370466	08/04/17 08:57	EMB	TAL BUF
Total/NA	Analysis	200.8		1	372924	08/17/17 19:00	JRK	TAL BUF
Total/NA	Prep	245.1			369513	07/31/17 10:40	BMB	TAL BUF
Total/NA	Analysis	245.1		1	369699	07/31/17 15:17	BMB	TAL BUF
Total/NA	Analysis	300.0		1	371460	08/10/17 16:45	RJS	TAL BUF
Total/NA	Analysis	SM 2540C		1	369774	08/01/17 09:49	EKB	TAL BUF

TestAmerica Buffalo

# Lab Chronicle

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

TestAmerica Job ID: 480-121858-1

**Client Sample ID: FIELD BLANK**

**Lab Sample ID: 480-121858-9**

**Date Collected: 07/27/17 16:00**

**Matrix: Water**

**Date Received: 07/28/17 07:55**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	SM 4500 H+ B		1	369467	07/30/17 09:48	DSC	TAL BUF

**Client Sample ID: EQUIPMENT BLANK**

**Lab Sample ID: 480-121858-10**

**Date Collected: 07/27/17 16:05**

**Matrix: Water**

**Date Received: 07/28/17 07:55**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	200.7			369356	07/31/17 08:34	EMB	TAL BUF
Total/NA	Analysis	200.7 Rev 4.4		1	369784	08/01/17 01:58	LMH	TAL BUF
Total/NA	Prep	200.8			370466	08/04/17 08:57	EMB	TAL BUF
Total/NA	Analysis	200.8		1	371508	08/10/17 04:43	JRK	TAL BUF
Total/NA	Prep	200.8			370466	08/04/17 08:57	EMB	TAL BUF
Total/NA	Analysis	200.8		2	373099	08/20/17 20:53	JRK	TAL BUF
Total/NA	Prep	245.1			369513	07/31/17 10:40	BMB	TAL BUF
Total/NA	Analysis	245.1		1	369699	07/31/17 15:22	BMB	TAL BUF
Total/NA	Analysis	300.0		1	371460	08/10/17 16:53	RJS	TAL BUF
Total/NA	Analysis	SM 2540C		1	369774	08/01/17 09:49	EKB	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	369394	07/28/17 20:29	ALZ	TAL BUF

**Laboratory References:**

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

# Accreditation/Certification Summary

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

TestAmerica Job ID: 480-121858-1

## Laboratory: TestAmerica Buffalo

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

Authority	Program	EPA Region	Identification Number	Expiration Date
Minnesota	NELAP	5	036-999-337	12-31-17

The following analytes are included in this report, but accreditation/certification is not offered by the governing authority:

Analysis Method	Prep Method	Matrix	Analyte
200.7 Rev 4.4	200.7	Water	Lithium
SM 4500 H+ B		Water	pH
SM 4500 H+ B		Water	Temperature

# Method Summary

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

TestAmerica Job ID: 480-121858-1

Method	Method Description	Protocol	Laboratory
200.7 Rev 4.4	Metals (ICP)	EPA	TAL BUF
200.8	Metals (ICP/MS)	EPA	TAL BUF
245.1	Mercury (CVAA)	EPA	TAL BUF
300.0	Anions, Ion Chromatography	MCAWW	TAL BUF
SM 2540C	Solids, Total Dissolved (TDS)	SM	TAL BUF
SM 4500 H+ B	pH	SM	TAL BUF

#### Protocol References:

EPA = US Environmental Protection Agency

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

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

#### Laboratory References:

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



# Sample Summary

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

TestAmerica Job ID: 480-121858-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
480-121858-1	P-1	Water	07/27/17 09:05	07/28/17 07:55
480-121858-2	P-2	Water	07/27/17 15:20	07/28/17 07:55
480-121858-3	P-3	Water	07/27/17 10:05	07/28/17 07:55
480-121858-4	P-4R	Water	07/27/17 11:25	07/28/17 07:55
480-121858-5	P-5	Water	07/27/17 12:25	07/28/17 07:55
480-121858-6	P-6	Water	07/27/17 13:30	07/28/17 07:55
480-121858-7	P-7	Water	07/27/17 14:35	07/28/17 07:55
480-121858-8	DUP-1	Water	07/27/17 00:00	07/28/17 07:55
480-121858-9	FIELD BLANK	Water	07/27/17 16:00	07/28/17 07:55
480-121858-10	EQUIPMENT BLANK	Water	07/27/17 16:05	07/28/17 07:55



Amherst, NY 14228-2223  
phone 716.691.2600 fax 716.691.7991

Regulatory Program:  DW  NPDES  RCRA  Other: \_\_\_\_\_

Project Manager: Ryan Van Dette

Site Contact: Nathaniel Beineman

TestAmerica Laboratories, Inc.

SKB Environmental 13425 Courthouse Blvd Rosemount, MN 55068 (651) 438-1500 Phone (651) 438-1518 FAX Project Name: Cloquet 2017 CCR GW Event 6 Site: P O #	Tell/Fax: Analysis Turnaround Time CALENDAR DAYS WORKING DAYS TAT if different from Below 2 weeks 1 week 2 days 1 day	Project Manager: Ryan Van Dette	Site Contact: Nathaniel Beineman	Date: 7/27/17	COC No: _____ of _____ COCs
--	--	---------------------------------	----------------------------------	---------------	-----------------------------

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Performs MS/MSD (Y/N)	Metals (totals)* + Mercury	Chloride	Fluoride	Sulfate	TDS	pH	Radium 226 & 228 combined	Sample Specific Notes:
P-1	7/27/17	9:05	Grab	Water	7			X	X	X	X	X	X	X	
P-2		15:30	Grab	Water	7			X	X	X	X	X	X	X	
P-3		11:05	Grab	Water	7			X	X	X	X	X	X	X	
P-4 <i>P</i>		11:25	Grab	Water	7			X	X	X	X	X	X	X	
P-5		12:25	Grab	Water	7			X	X	X	X	X	X	X	
P-6		13:30	Grab	Water	7			X	X	X	X	X	X	X	
P-7		14:35	Grab	Water	7			X	X	X	X	X	X	X	
DUPLICATE WELL			Grab	Water	7			X	X	X	X	X	X	X	
Field Blank		16:00	Grab	Water	7			X	X	X	X	X	X	X	
Equipment Blank		16:05	Grab	Water	7			X	X	X	X	X	X	X	

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other

Possible Hazard Identification: Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

Non-Hazard  Flammable  Skin Irritant  Poison B  Unknown

Return to Client \_\_\_\_\_ Disposal by Lab \_\_\_\_\_ Archive for \_\_\_\_\_ Months

Cooler Temp. (°C): Obs'd: \_\_\_\_\_

Therm ID No.: \_\_\_\_\_

Relinquished by: *Matt Smith* Company: \_\_\_\_\_ Date/Time: 7/27/17 19:00

Relinquished by: \_\_\_\_\_ Company: \_\_\_\_\_ Date/Time: \_\_\_\_\_

Relinquished by: \_\_\_\_\_ Company: \_\_\_\_\_ Date/Time: \_\_\_\_\_



# Login Sample Receipt Checklist

Client: Waste Connections, Inc.

Job Number: 480-121858-1

**Login Number: 121858**

**List Source: TestAmerica Buffalo**

**List Number: 1**

**Creator: Janish, Carl M**

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



# TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

## ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Buffalo

10 Hazelwood Drive

Amherst, NY 14228-2298

Tel: (716)691-2600

TestAmerica Job ID: 480-121858-2

Client Project/Site: SKB Cloquet - CCR Groundwater

Sampling Event: CCR Groundwater

For:

Waste Connections, Inc.

13425 Courthouse Blvd

Rosemount, Minnesota 55068

Attn: Nathaniel Beinemann



Authorized for release by:

8/28/2017 4:38:15 PM

Ryan VanDette, Project Manager II

(716)504-9830

[ryan.vandette@testamericainc.com](mailto:ryan.vandette@testamericainc.com)



### LINKS

Review your project  
results through  
**TotalAccess**

Have a Question?



Visit us at:  
[www.testamericainc.com](http://www.testamericainc.com)

*The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.*

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

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

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# Definitions/Glossary

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

TestAmerica Job ID: 480-121858-2

## Qualifiers

### Rad

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

## Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
▫	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
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)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
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)

# Case Narrative

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

TestAmerica Job ID: 480-121858-2

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**Job ID: 480-121858-2**

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**Laboratory: TestAmerica Buffalo**

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**Narrative**

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**Job Narrative  
480-121858-2**

**Comments**

No additional comments.

**Receipt**

The samples were received on 7/28/2017 7:55 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 3 coolers at receipt time were 2.1° C, 3.0° C and 3.3° C.

**RAD**

Method(s) PrecSep\_0: Radium 228 Prep Batch 160-320648. The following sample was reduced due to heavy amounts of sediment making sample murky and brown. P-2 (480-121858-2)

Method(s) PrecSep-21: Radium 226 Prep Batch 160-320646. The following sample was reduced due to heavy amounts of sediment making sample murky and brown. P-2 (480-121858-2)

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



# Detection Summary

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

TestAmerica Job ID: 480-121858-2

**Client Sample ID: P-1** **Lab Sample ID: 480-121858-1**

No Detections.

**Client Sample ID: P-2** **Lab Sample ID: 480-121858-2**

No Detections.

**Client Sample ID: P-3** **Lab Sample ID: 480-121858-3**

No Detections.

**Client Sample ID: P-4R** **Lab Sample ID: 480-121858-4**

No Detections.

**Client Sample ID: P-5** **Lab Sample ID: 480-121858-5**

No Detections.

**Client Sample ID: P-6** **Lab Sample ID: 480-121858-6**

No Detections.

**Client Sample ID: P-7** **Lab Sample ID: 480-121858-7**

No Detections.

**Client Sample ID: DUP-1** **Lab Sample ID: 480-121858-8**

No Detections.

**Client Sample ID: FIELD BLANK** **Lab Sample ID: 480-121858-9**

No Detections.

**Client Sample ID: EQUIPMENT BLANK** **Lab Sample ID: 480-121858-10**

No Detections.

This Detection Summary does not include radiochemical test results.

TestAmerica Buffalo





# Client Sample Results

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

TestAmerica Job ID: 480-121858-2

**Client Sample ID: P-1**

**Lab Sample ID: 480-121858-1**

Date Collected: 07/27/17 09:05

Matrix: Water

Date Received: 07/28/17 07:55

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.104		0.0616	0.0623	1.00	0.0747	pCi/L	08/03/17 10:35	08/28/17 06:14	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	95.0		40 - 110					08/03/17 10:35	08/28/17 06:14	1

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.206	U	0.221	0.221	1.00	0.361	pCi/L	08/03/17 10:52	08/09/17 14:04	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	95.0		40 - 110					08/03/17 10:52	08/09/17 14:04	1
Y Carrier	87.9		40 - 110					08/03/17 10:52	08/09/17 14:04	1

# Client Sample Results

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

TestAmerica Job ID: 480-121858-2

**Client Sample ID: P-2**

**Lab Sample ID: 480-121858-2**

Date Collected: 07/27/17 15:20

Matrix: Water

Date Received: 07/28/17 07:55

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.548		0.165	0.172	1.00	0.134	pCi/L	08/03/17 10:35	08/28/17 06:14	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	69.9		40 - 110					08/03/17 10:35	08/28/17 06:14	1

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.894		0.414	0.422	1.00	0.586	pCi/L	08/03/17 10:52	08/09/17 14:04	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	69.9		40 - 110					08/03/17 10:52	08/09/17 14:04	1
Y Carrier	89.0		40 - 110					08/03/17 10:52	08/09/17 14:04	1

# Client Sample Results

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

TestAmerica Job ID: 480-121858-2

**Client Sample ID: P-3**

**Lab Sample ID: 480-121858-3**

Date Collected: 07/27/17 10:05

Matrix: Water

Date Received: 07/28/17 07:55

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.178		0.0744	0.0761	1.00	0.0769	pCi/L	08/03/17 10:35	08/28/17 06:14	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	101		40 - 110					08/03/17 10:35	08/28/17 06:14	1

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.221	U	0.219	0.220	1.00	0.356	pCi/L	08/03/17 10:52	08/09/17 14:04	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	101		40 - 110					08/03/17 10:52	08/09/17 14:04	1
Y Carrier	87.5		40 - 110					08/03/17 10:52	08/09/17 14:04	1

# Client Sample Results

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

TestAmerica Job ID: 480-121858-2

**Client Sample ID: P-4R**

**Lab Sample ID: 480-121858-4**

Date Collected: 07/27/17 11:25

Matrix: Water

Date Received: 07/28/17 07:55

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.248		0.0864	0.0892	1.00	0.0758	pCi/L	08/03/17 10:35	08/28/17 06:14	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	98.2		40 - 110					08/03/17 10:35	08/28/17 06:14	1

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.296	U	0.230	0.232	1.00	0.363	pCi/L	08/03/17 10:52	08/09/17 14:05	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	98.2		40 - 110					08/03/17 10:52	08/09/17 14:05	1
Y Carrier	87.9		40 - 110					08/03/17 10:52	08/09/17 14:05	1

# Client Sample Results

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

TestAmerica Job ID: 480-121858-2

**Client Sample ID: P-5**

**Lab Sample ID: 480-121858-5**

Date Collected: 07/27/17 12:25

Matrix: Water

Date Received: 07/28/17 07:55

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.569		0.117	0.128	1.00	0.0681	pCi/L	08/03/17 10:35	08/28/17 06:16	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	99.7		40 - 110					08/03/17 10:35	08/28/17 06:16	1

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.504		0.218	0.223	1.00	0.303	pCi/L	08/03/17 10:52	08/09/17 14:05	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	99.7		40 - 110					08/03/17 10:52	08/09/17 14:05	1
Y Carrier	92.0		40 - 110					08/03/17 10:52	08/09/17 14:05	1

# Client Sample Results

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

TestAmerica Job ID: 480-121858-2

**Client Sample ID: P-6**

**Lab Sample ID: 480-121858-6**

Date Collected: 07/27/17 13:30

Matrix: Water

Date Received: 07/28/17 07:55

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.141		0.0648	0.0660	1.00	0.0667	pCi/L	08/03/17 10:35	08/28/17 06:17	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	98.5		40 - 110					08/03/17 10:35	08/28/17 06:17	1

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	-0.145	U	0.169	0.170	1.00	0.336	pCi/L	08/03/17 10:52	08/09/17 14:05	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	98.5		40 - 110					08/03/17 10:52	08/09/17 14:05	1
Y Carrier	89.0		40 - 110					08/03/17 10:52	08/09/17 14:05	1

# Client Sample Results

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

TestAmerica Job ID: 480-121858-2

**Client Sample ID: P-7**

**Lab Sample ID: 480-121858-7**

Date Collected: 07/27/17 14:35

Matrix: Water

Date Received: 07/28/17 07:55

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.205		0.0790	0.0811	1.00	0.0782	pCi/L	08/03/17 10:35	08/28/17 06:17	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	100		40 - 110					08/03/17 10:35	08/28/17 06:17	1

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.471		0.235	0.239	1.00	0.341	pCi/L	08/03/17 10:52	08/09/17 14:05	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	100		40 - 110					08/03/17 10:52	08/09/17 14:05	1
Y Carrier	88.2		40 - 110					08/03/17 10:52	08/09/17 14:05	1

# Client Sample Results

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

TestAmerica Job ID: 480-121858-2

**Client Sample ID: DUP-1**

**Lab Sample ID: 480-121858-8**

Date Collected: 07/27/17 00:00

Matrix: Water

Date Received: 07/28/17 07:55

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.178		0.0778	0.0794	1.00	0.0850	pCi/L	08/03/17 10:35	08/28/17 06:18	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	93.5		40 - 110					08/03/17 10:35	08/28/17 06:18	1

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.319	U	0.243	0.245	1.00	0.382	pCi/L	08/03/17 10:52	08/09/17 14:06	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	93.5		40 - 110					08/03/17 10:52	08/09/17 14:06	1
Y Carrier	86.4		40 - 110					08/03/17 10:52	08/09/17 14:06	1



# Client Sample Results

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

TestAmerica Job ID: 480-121858-2

**Client Sample ID: FIELD BLANK**

**Lab Sample ID: 480-121858-9**

**Date Collected: 07/27/17 16:00**

**Matrix: Water**

**Date Received: 07/28/17 07:55**

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0446	U	0.0525	0.0527	1.00	0.0855	pCi/L	08/03/17 10:35	08/28/17 06:18	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	96.2		40 - 110					08/03/17 10:35	08/28/17 06:18	1

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	-0.0269	U	0.199	0.199	1.00	0.366	pCi/L	08/03/17 10:52	08/09/17 14:06	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	96.2		40 - 110					08/03/17 10:52	08/09/17 14:06	1
Y Carrier	86.0		40 - 110					08/03/17 10:52	08/09/17 14:06	1

# Client Sample Results

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

TestAmerica Job ID: 480-121858-2

**Client Sample ID: EQUIPMENT BLANK**

**Lab Sample ID: 480-121858-10**

Date Collected: 07/27/17 16:05

Matrix: Water

Date Received: 07/28/17 07:55

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0389	U	0.0435	0.0436	1.00	0.0691	pCi/L	08/03/17 10:35	08/28/17 06:18	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	97.3		40 - 110					08/03/17 10:35	08/28/17 06:18	1

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	-0.0543	U	0.206	0.206	1.00	0.378	pCi/L	08/03/17 10:52	08/09/17 14:06	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	97.3		40 - 110					08/03/17 10:52	08/09/17 14:06	1
Y Carrier	89.3		40 - 110					08/03/17 10:52	08/09/17 14:06	1

# Tracer/Carrier Summary

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

TestAmerica Job ID: 480-121858-2

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

Matrix: Water

Prep Type: Total/NA

### Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	Ba (40-110)
480-121858-1	P-1	95.0
480-121858-1 DU	P-1	105
480-121858-2	P-2	69.9
480-121858-3	P-3	101
480-121858-4	P-4R	98.2
480-121858-5	P-5	99.7
480-121858-6	P-6	98.5
480-121858-7	P-7	100
480-121858-8	DUP-1	93.5
480-121858-9	FIELD BLANK	96.2
480-121858-10	EQUIPMENT BLANK	97.3
LCS 160-320646/2-A	Lab Control Sample	104
MB 160-320646/1-A	Method Blank	104

#### Tracer/Carrier Legend

Ba = Ba Carrier

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

Matrix: Water

Prep Type: Total/NA

### Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	Ba (40-110)	Y (40-110)
480-121858-1	P-1	95.0	87.9
480-121858-1 DU	P-1	105	88.2
480-121858-2	P-2	69.9	89.0
480-121858-3	P-3	101	87.5
480-121858-4	P-4R	98.2	87.9
480-121858-5	P-5	99.7	92.0
480-121858-6	P-6	98.5	89.0
480-121858-7	P-7	100	88.2
480-121858-8	DUP-1	93.5	86.4
480-121858-9	FIELD BLANK	96.2	86.0
480-121858-10	EQUIPMENT BLANK	97.3	89.3
LCS 160-320648/2-A	Lab Control Sample	104	95.3
MB 160-320648/1-A	Method Blank	104	87.1

#### Tracer/Carrier Legend

Ba = Ba Carrier

Y = Y Carrier

# QC Sample Results

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

TestAmerica Job ID: 480-121858-2

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

Lab Sample ID: MB 160-320646/1-A  
Matrix: Water  
Analysis Batch: 324696

Client Sample ID: Method Blank  
Prep Type: Total/NA  
Prep Batch: 320646

Analyte	MB MB		Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier	Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Radium-226	0.1061		0.0581	0.0589	1.00	0.0667	pCi/L	08/03/17 10:35	08/28/17 06:12	1
Carrier	MB MB		Limits		Prepared	Analyzed	Dil Fac			
Ba Carrier	%Yield	Qualifier	Limits							
Ba Carrier	104		40 - 110		08/03/17 10:35	08/28/17 06:12	1			

Lab Sample ID: LCS 160-320646/2-A  
Matrix: Water  
Analysis Batch: 324696

Client Sample ID: Lab Control Sample  
Prep Type: Total/NA  
Prep Batch: 320646

Analyte	Spike Added	LCS Result	LCS Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits
				Uncert. (2σ+/-)					
Radium-226	11.4	10.02		1.02	1.00	0.0678	pCi/L	88	68 - 137
Carrier	LCS LCS		Limits		Prepared	Analyzed	Dil Fac		
Ba Carrier	%Yield	Qualifier	Limits						
Ba Carrier	104		40 - 110		08/03/17 10:35	08/28/17 06:12	1		

Lab Sample ID: 480-121858-1 DU  
Matrix: Water  
Analysis Batch: 324696

Client Sample ID: P-1  
Prep Type: Total/NA  
Prep Batch: 320646

Analyte	Sample Sample		DU DU		Total	RL	MDC	Unit	RER	RER Limit
	Result	Qual	Result	Qual	Uncert. (2σ+/-)					
Radium-226	0.104		0.1212		0.0659	1.00	0.0796	pCi/L	0.13	1
Carrier	DU DU		Limits		Prepared	Analyzed	Dil Fac			
Ba Carrier	%Yield	Qualifier	Limits							
Ba Carrier	105		40 - 110		08/03/17 10:52	08/09/17 14:03	1			

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

Lab Sample ID: MB 160-320648/1-A  
Matrix: Water  
Analysis Batch: 321490

Client Sample ID: Method Blank  
Prep Type: Total/NA  
Prep Batch: 320648

Analyte	MB MB		Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier	Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Radium-228	-0.06264	U	0.172	0.172	1.00	0.323	pCi/L	08/03/17 10:52	08/09/17 14:03	1
Carrier	MB MB		Limits		Prepared	Analyzed	Dil Fac			
Ba Carrier	%Yield	Qualifier	Limits							
Ba Carrier	104		40 - 110		08/03/17 10:52	08/09/17 14:03	1			
Y Carrier	MB MB		Limits		Prepared	Analyzed	Dil Fac			
Y Carrier	%Yield	Qualifier	Limits							
Y Carrier	87.1		40 - 110		08/03/17 10:52	08/09/17 14:03	1			

TestAmerica Buffalo

# QC Sample Results

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

TestAmerica Job ID: 480-121858-2

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

**Lab Sample ID: LCS 160-320648/2-A**

**Matrix: Water**

**Analysis Batch: 321490**

**Client Sample ID: Lab Control Sample**

**Prep Type: Total/NA**

**Prep Batch: 320648**

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	
Radium-228	13.1	14.79		1.55	1.00	0.260	pCi/L	113	56 - 140	
<b>Carrier</b>	<b>%Yield</b>	<b>LCS Qualifier</b>	<b>Limits</b>							
Ba Carrier	104		40 - 110							
Y Carrier	95.3		40 - 110							

**Lab Sample ID: 480-121858-1 DU**

**Matrix: Water**

**Analysis Batch: 321490**

**Client Sample ID: P-1**

**Prep Type: Total/NA**

**Prep Batch: 320648**

Analyte	Sample Result	Sample Qual	DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	RER	RER Limit
Radium-228	0.206	U	0.1758	U	0.191	1.00	0.310	pCi/L	0.07	1
<b>Carrier</b>	<b>%Yield</b>	<b>DU Qualifier</b>	<b>Limits</b>							
Ba Carrier	105		40 - 110							
Y Carrier	88.2		40 - 110							

# QC Association Summary

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

TestAmerica Job ID: 480-121858-2

## Rad

### Prep Batch: 320646

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-121858-1	P-1	Total/NA	Water	PrecSep-21	
480-121858-2	P-2	Total/NA	Water	PrecSep-21	
480-121858-3	P-3	Total/NA	Water	PrecSep-21	
480-121858-4	P-4R	Total/NA	Water	PrecSep-21	
480-121858-5	P-5	Total/NA	Water	PrecSep-21	
480-121858-6	P-6	Total/NA	Water	PrecSep-21	
480-121858-7	P-7	Total/NA	Water	PrecSep-21	
480-121858-8	DUP-1	Total/NA	Water	PrecSep-21	
480-121858-9	FIELD BLANK	Total/NA	Water	PrecSep-21	
480-121858-10	EQUIPMENT BLANK	Total/NA	Water	PrecSep-21	
MB 160-320646/1-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-320646/2-A	Lab Control Sample	Total/NA	Water	PrecSep-21	
480-121858-1 DU	P-1	Total/NA	Water	PrecSep-21	

### Prep Batch: 320648

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-121858-1	P-1	Total/NA	Water	PrecSep_0	
480-121858-2	P-2	Total/NA	Water	PrecSep_0	
480-121858-3	P-3	Total/NA	Water	PrecSep_0	
480-121858-4	P-4R	Total/NA	Water	PrecSep_0	
480-121858-5	P-5	Total/NA	Water	PrecSep_0	
480-121858-6	P-6	Total/NA	Water	PrecSep_0	
480-121858-7	P-7	Total/NA	Water	PrecSep_0	
480-121858-8	DUP-1	Total/NA	Water	PrecSep_0	
480-121858-9	FIELD BLANK	Total/NA	Water	PrecSep_0	
480-121858-10	EQUIPMENT BLANK	Total/NA	Water	PrecSep_0	
MB 160-320648/1-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-320648/2-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
480-121858-1 DU	P-1	Total/NA	Water	PrecSep_0	

# Lab Chronicle

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

TestAmerica Job ID: 480-121858-2

## Client Sample ID: P-1

Lab Sample ID: 480-121858-1

Date Collected: 07/27/17 09:05

Matrix: Water

Date Received: 07/28/17 07:55

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			320646	08/03/17 10:35	LDE	TAL SL
Total/NA	Analysis	903.0		1	324696	08/28/17 06:14	RTM	TAL SL
Total/NA	Prep	PrecSep_0			320648	08/03/17 10:52	LDE	TAL SL
Total/NA	Analysis	904.0		1	321490	08/09/17 14:04	ALD	TAL SL

## Client Sample ID: P-2

Lab Sample ID: 480-121858-2

Date Collected: 07/27/17 15:20

Matrix: Water

Date Received: 07/28/17 07:55

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			320646	08/03/17 10:35	LDE	TAL SL
Total/NA	Analysis	903.0		1	324696	08/28/17 06:14	RTM	TAL SL
Total/NA	Prep	PrecSep_0			320648	08/03/17 10:52	LDE	TAL SL
Total/NA	Analysis	904.0		1	321490	08/09/17 14:04	ALD	TAL SL

## Client Sample ID: P-3

Lab Sample ID: 480-121858-3

Date Collected: 07/27/17 10:05

Matrix: Water

Date Received: 07/28/17 07:55

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			320646	08/03/17 10:35	LDE	TAL SL
Total/NA	Analysis	903.0		1	324696	08/28/17 06:14	RTM	TAL SL
Total/NA	Prep	PrecSep_0			320648	08/03/17 10:52	LDE	TAL SL
Total/NA	Analysis	904.0		1	321490	08/09/17 14:04	ALD	TAL SL

## Client Sample ID: P-4R

Lab Sample ID: 480-121858-4

Date Collected: 07/27/17 11:25

Matrix: Water

Date Received: 07/28/17 07:55

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			320646	08/03/17 10:35	LDE	TAL SL
Total/NA	Analysis	903.0		1	324696	08/28/17 06:14	RTM	TAL SL
Total/NA	Prep	PrecSep_0			320648	08/03/17 10:52	LDE	TAL SL
Total/NA	Analysis	904.0		1	321490	08/09/17 14:05	ALD	TAL SL

## Client Sample ID: P-5

Lab Sample ID: 480-121858-5

Date Collected: 07/27/17 12:25

Matrix: Water

Date Received: 07/28/17 07:55

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			320646	08/03/17 10:35	LDE	TAL SL
Total/NA	Analysis	903.0		1	324697	08/28/17 06:16	RTM	TAL SL
Total/NA	Prep	PrecSep_0			320648	08/03/17 10:52	LDE	TAL SL

TestAmerica Buffalo

# Lab Chronicle

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

TestAmerica Job ID: 480-121858-2

## Client Sample ID: P-5

Lab Sample ID: 480-121858-5

Date Collected: 07/27/17 12:25

Matrix: Water

Date Received: 07/28/17 07:55

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	904.0		1	321490	08/09/17 14:05	ALD	TAL SL

## Client Sample ID: P-6

Lab Sample ID: 480-121858-6

Date Collected: 07/27/17 13:30

Matrix: Water

Date Received: 07/28/17 07:55

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			320646	08/03/17 10:35	LDE	TAL SL
Total/NA	Analysis	903.0		1	324697	08/28/17 06:17	RTM	TAL SL
Total/NA	Prep	PrecSep_0			320648	08/03/17 10:52	LDE	TAL SL
Total/NA	Analysis	904.0		1	321490	08/09/17 14:05	ALD	TAL SL

## Client Sample ID: P-7

Lab Sample ID: 480-121858-7

Date Collected: 07/27/17 14:35

Matrix: Water

Date Received: 07/28/17 07:55

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			320646	08/03/17 10:35	LDE	TAL SL
Total/NA	Analysis	903.0		1	324697	08/28/17 06:17	RTM	TAL SL
Total/NA	Prep	PrecSep_0			320648	08/03/17 10:52	LDE	TAL SL
Total/NA	Analysis	904.0		1	321490	08/09/17 14:05	ALD	TAL SL

## Client Sample ID: DUP-1

Lab Sample ID: 480-121858-8

Date Collected: 07/27/17 00:00

Matrix: Water

Date Received: 07/28/17 07:55

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			320646	08/03/17 10:35	LDE	TAL SL
Total/NA	Analysis	903.0		1	324697	08/28/17 06:18	RTM	TAL SL
Total/NA	Prep	PrecSep_0			320648	08/03/17 10:52	LDE	TAL SL
Total/NA	Analysis	904.0		1	321490	08/09/17 14:06	ALD	TAL SL

## Client Sample ID: FIELD BLANK

Lab Sample ID: 480-121858-9

Date Collected: 07/27/17 16:00

Matrix: Water

Date Received: 07/28/17 07:55

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			320646	08/03/17 10:35	LDE	TAL SL
Total/NA	Analysis	903.0		1	324697	08/28/17 06:18	RTM	TAL SL
Total/NA	Prep	PrecSep_0			320648	08/03/17 10:52	LDE	TAL SL
Total/NA	Analysis	904.0		1	321490	08/09/17 14:06	ALD	TAL SL



# Lab Chronicle

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

TestAmerica Job ID: 480-121858-2

**Client Sample ID: EQUIPMENT BLANK**

**Lab Sample ID: 480-121858-10**

**Date Collected: 07/27/17 16:05**

**Matrix: Water**

**Date Received: 07/28/17 07:55**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			320646	08/03/17 10:35	LDE	TAL SL
Total/NA	Analysis	903.0		1	324697	08/28/17 06:18	RTM	TAL SL
Total/NA	Prep	PrecSep_0			320648	08/03/17 10:52	LDE	TAL SL
Total/NA	Analysis	904.0		1	321490	08/09/17 14:06	ALD	TAL SL

**Laboratory References:**

TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566



# Accreditation/Certification Summary

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

TestAmerica Job ID: 480-121858-2

## Laboratory: TestAmerica Buffalo

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

Authority	Program	EPA Region	Identification Number	Expiration Date
Minnesota	NELAP	5	036-999-337	12-31-17

## Laboratory: TestAmerica St. Louis

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

Authority	Program	EPA Region	Identification Number	Expiration Date
Alaska	State Program	10	MO00054	06-30-18
California	State Program	9	2886	03-31-18 *
Connecticut	State Program	1	PH-0241	03-31-19
Florida	NELAP	4	E87689	06-30-18
Illinois	NELAP	5	200023	11-30-17
Iowa	State Program	7	373	02-01-18
Kansas	NELAP	7	E-10236	10-31-17 *
Kentucky (DW)	State Program	4	90125	12-31-17
L-A-B	DoD ELAP		L2305	04-06-19
Louisiana	NELAP	6	04080	06-30-18
Louisiana (DW)	NELAP	6	LA170011	12-31-17
Maryland	State Program	3	310	09-30-18
Missouri	State Program	7	780	06-30-18
Nevada	State Program	9	MO000542017-1	07-31-18
New Jersey	NELAP	2	MO002	06-30-18
New York	NELAP	2	11616	03-31-18
North Dakota	State Program	8	R207	06-30-17 *
NRC	NRC		24-24817-01	12-31-22
Oklahoma	State Program	6	9997	08-31-17 *
Pennsylvania	NELAP	3	68-00540	02-21-18
South Carolina	State Program	4	85002001	06-30-17 *
Texas	NELAP	6	T104704193-17-11	07-31-18
US Fish & Wildlife	Federal		058448	08-31-18
USDA	Federal		P330-17-0028	02-02-20
Utah	NELAP	8	MO000542016-8	07-31-17 *
Virginia	NELAP	3	460230	06-14-18
Washington	State Program	10	C592	08-30-17 *
West Virginia DEP	State Program	3	381	08-31-17 *

\* Accreditation/Certification renewal pending - accreditation/certification considered valid.

# Method Summary

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

TestAmerica Job ID: 480-121858-2

Method	Method Description	Protocol	Laboratory
903.0	Radium-226 (GFPC)	EPA	TAL SL
904.0	Radium-228 (GFPC)	EPA	TAL SL

**Protocol References:**

EPA = US Environmental Protection Agency

**Laboratory References:**

TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566



# Sample Summary

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

TestAmerica Job ID: 480-121858-2

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
480-121858-1	P-1	Water	07/27/17 09:05	07/28/17 07:55
480-121858-2	P-2	Water	07/27/17 15:20	07/28/17 07:55
480-121858-3	P-3	Water	07/27/17 10:05	07/28/17 07:55
480-121858-4	P-4R	Water	07/27/17 11:25	07/28/17 07:55
480-121858-5	P-5	Water	07/27/17 12:25	07/28/17 07:55
480-121858-6	P-6	Water	07/27/17 13:30	07/28/17 07:55
480-121858-7	P-7	Water	07/27/17 14:35	07/28/17 07:55
480-121858-8	DUP-1	Water	07/27/17 00:00	07/28/17 07:55
480-121858-9	FIELD BLANK	Water	07/27/17 16:00	07/28/17 07:55
480-121858-10	EQUIPMENT BLANK	Water	07/27/17 16:05	07/28/17 07:55



Amherst, NY 14228-2223  
phone 716.691.2600 fax 716.691.7991

Regulatory Program:  DW  NPDES  RCRA  Other: \_\_\_\_\_

Project Manager: Ryan Van Dette

Site Contact: Nathaniel Beineman

Date: 7/27/17

COC No: \_\_\_\_\_ of \_\_\_\_\_ COCs

SKB Environmental 13425 Courthouse Blvd Rosemount, MN 55068 (651) 438-1500 Phone (651) 438-1518 FAX Project Name: Cloquet 2017 CCR GW Event 6 Site: P O #	Client Contact	Tel/Fax:	Project Manager: Ryan Van Dette	Site Contact: Nathaniel Beineman	Date: 7/27/17	COC No: _____ of _____ COCs
Analysis Turnaround Time		CALENDAR DAYS		WORKING DAYS		
TAT if different from Below		2 weeks		1 week		
2 days		1 day				

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Performs MS/MSD (Y/N)	Metals (totals) + Mercury	Chloride	Fluoride	Sulfate	TDS	pH	Radium 226 & 228 combined	Sample Specific Notes:
P-1	7/27/17	9:05	Grab	Water	7			X	X	X	X	X	X	X	
P-2		15:30	Grab	Water	7			X	X	X	X	X	X	X	
P-3		11:05	Grab	Water	7			X	X	X	X	X	X	X	
P-4 <i>P</i>		11:25	Grab	Water	7			X	X	X	X	X	X	X	
P-5		12:25	Grab	Water	7			X	X	X	X	X	X	X	
P-6		13:30	Grab	Water	7			X	X	X	X	X	X	X	
P-7		14:35	Grab	Water	7			X	X	X	X	X	X	X	
DUPLICATE WELL			Grab	Water	7			X	X	X	X	X	X	X	
Field Blank		16:00	Grab	Water	7			X	X	X	X	X	X	X	
Equipment Blank		16:05	Grab	Water	7			X	X	X	X	X	X	X	

**Preservation Used:** 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other

**Possible Hazard Identification:** Please List any EPA Hazardous Waste for the sample in the Comments Section if the lab is to dispose of the sample.

Non-Hazard  Flammable  Skin Irritant  Poison B  Unknown

\*Metals - Boron, Calcium, Antimony, Arsenic, Barium, Beryllium, Cadmium, Chromium, Cobalt, Lead, Lithium, Molybdenum, Selenium, Thallium

Return to Client \_\_\_\_\_ Disposal by Lab \_\_\_\_\_ Archive for \_\_\_\_\_ Months

Therm ID No.: \_\_\_\_\_

Cooler Temp. (°C): Obs'd: \_\_\_\_\_

Received by: *[Signature]* Company: \_\_\_\_\_ Date/Time: 7/27/17 19:00

Received by: \_\_\_\_\_ Company: \_\_\_\_\_ Date/Time: \_\_\_\_\_

Received in Laboratory by: \_\_\_\_\_ Company: \_\_\_\_\_ Date/Time: \_\_\_\_\_



# Chain of Custody Record



<b>Client Information (Sub Contract Lab)</b>		Lab PM: VanDette, Ryan T	Carrier Tracking No(s): 480-36327.1					
Client Contact Shipping/Receiving		E-Mail: ryan.vandette@testamericainc.com	Page: Page 1 of 2					
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): NELAP - Minnesota	Job #: 480-121858-1					
Address: 13715 Rider Trail North,		Due Date Requested: 8/9/2017	<b>Preservation Codes:</b> 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 Z - other (specify) Other:					
City: Earth City		TAT Requested (days):						
State, Zip: MO, 63045		PO #:	<b>Analysis Requested</b>					
Phone: 314-298-8566(Tel) 314-298-8757(Fax)		WO #:						
Email:		Project #: 48013722	<input checked="" type="checkbox"/> Perform MS/MSD (Yes or No) <input checked="" type="checkbox"/> 903.0/PreSep_21 Standard Target List <input checked="" type="checkbox"/> 904.0/PreSep_0 Standard Target List					
Site: Shamrock		SOW#:						
<b>Sample Identification - Client ID (Lab ID)</b>	<b>Sample Date</b>	<b>Sample Time</b>	<b>Sample Type (C=Comp, G=grab)</b>	<b>Matrix (W=Water, S=solid, O=waste/oil, BT=Tissue, A=Air)</b>	<b>Preservation Code:</b>	<b>Field Filtered Sample (Yes or No)</b>	<b>Total Number of containers</b>	<b>Special Instructions/Note:</b>
P-1 (480-121858-1)	7/27/17	09:05 Central	Water	Water		X	3	
P-2 (480-121858-2)	7/27/17	15:20 Central	Water	Water		X	3	
P-3 (480-121858-3)	7/27/17	10:05 Central	Water	Water		X	3	
P-4R (480-121858-4)	7/27/17	11:25 Central	Water	Water		X	3	
P-5 (480-121858-5)	7/27/17	12:25 Central	Water	Water		X	3	
P-6 (480-121858-6)	7/27/17	13:30 Central	Water	Water		X	3	
P-7 (480-121858-7)	7/27/17	14:35 Central	Water	Water		X	3	
DUP-1 (480-121858-8)	7/27/17	Central	Water	Water		X	3	
FIELD BLANK (480-121858-9)	7/27/17	16:00 Central	Water	Water		X	3	

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon our subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to TestAmerica Laboratories, Inc.

**Possible Hazard Identification**  
 Unconfirmed  
 Deliverable Requested: I, II, III, IV, Other (specify) \_\_\_\_\_ Primary Deliverable Rank: 2  
 Empty Kit Relinquished by: \_\_\_\_\_ Date: \_\_\_\_\_  
 Relinquished by: *[Signature]* Date/Time: 7/31/17 1300 Company: TAB  
 Relinquished by: \_\_\_\_\_ Date/Time: \_\_\_\_\_ Company: \_\_\_\_\_  
 Relinquished by: \_\_\_\_\_ Date/Time: \_\_\_\_\_ Company: \_\_\_\_\_

**Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)**  
 Return To Client  Disposal By Lab  Archive For \_\_\_\_\_ Months  
 Special Instructions/QC Requirements:



<b>Client Information (Sub Contract Lab)</b> Client Contact: VanDette, Ryan T Shipping/Receiving: ryan.vandette@testamericainc.com Company: TestAmerica Laboratories, Inc. Address: 13715 Rider Trail North, Earth City, MO, 63045 Phone: 314-298-8566(Tel) 314-298-8757(Fax) Email: Project Name: SKB Cloquet Site: Shamrock		Lab PM: VanDette, Ryan T E-Mail: Carrier Tracking No(s): 480-36327.2 State of Origin: Minnesota Page 2 of 2 Job #: 480-121858-1	
Due Date Requested: 8/9/2017 TAT Requested (days): PO #: WO #: Project #: 48013722 SSOW#:		Accreditations Required (See note): NELAP - Minnesota Preservation Codes: A - HCL B - NaOH C - Zn Acetate D - Nitric Acid E - NaHSO4 F - MeOH G - Amchlor H - Ascorbic Acid I - Ice J - DI Water K - EDTA L - EDA Other: M - Hexane N - None O - AsNaO2 P - Na2O4S Q - Na2SO3 R - Na2S2O3 S - H2SO4 T - TSP Dodecahydrate U - Acetone V - MCAA W - pH 4-5 Z - other (specify)	
<b>Sample Identification - Client ID (Lab ID)</b> EQUIPMENT BLANK (480-121858-10)		Analysis Requested: Perform MS/MSD (Yes or No) <input checked="" type="checkbox"/> Field Filtered Sample (Yes or No) <input checked="" type="checkbox"/> 903.0/PreSep_21 Standard Target List <input checked="" type="checkbox"/> 904.0/PreSep_0 Standard Target List <input checked="" type="checkbox"/> Total Number of Containers: 3	
Sample Date: 7/27/17 Sample Time: 16:05 Central Sample Type (C=Comp, G=grab): Matrix (W=Water, S=solid, O=wastewat, BT=Tissue, A=Air): Preservation Code: Water	Special Instructions/Note: Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon our subcontract laboratories. This sample shipment is forwarded under chain-of-custody.		
<b>Possible Hazard Identification</b> Unconfirmed Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2			
Empty Kit Relinquished by: Relinquished by: [Signature] Date: 7/31/17 1500 Company: TAB Company Relinquished by: [Signature] Date/Time: 8/1/17 0810 Company: [Signature] Company Relinquished by: Date/Time: Company:			
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:			
Custody Seals Intact: Δ Yes Δ No Cooler Temperature(s) °C and Other Remarks:			



## Login Sample Receipt Checklist

Client: Waste Connections, Inc.

Job Number: 480-121858-2

**Login Number: 121858**

**List Source: TestAmerica Buffalo**

**List Number: 1**

**Creator: Janish, Carl M**

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





## Login Sample Receipt Checklist

Client: Waste Connections, Inc.

Job Number: 480-121858-2

**Login Number: 121858**

**List Number: 2**

**Creator: Taylor, Kristene N**

**List Source: TestAmerica St. Louis**

**List Creation: 08/01/17 04:15 PM**

Question	Answer	Comment
Radioactivity wasn't checked or is <=/ background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	N/A	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	19.0,19.0,19.0,19.0,19.0
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?	False	
There are no discrepancies between the containers received 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	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



# TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

## ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Buffalo

10 Hazelwood Drive

Amherst, NY 14228-2298

Tel: (716)691-2600

TestAmerica Job ID: 480-123040-1

Client Project/Site: SKB Cloquet - CCR Groundwater

Sampling Event: CCR Groundwater

For:

Waste Connections, Inc.

13425 Courthouse Blvd

Rosemount, Minnesota 55068

Attn: Nathaniel Beinemann



Authorized for release by:

8/30/2017 2:15:34 PM

Denise Giglia, Project Management Assistant II

[denise.giglia@testamericainc.com](mailto:denise.giglia@testamericainc.com)

Designee for

Ryan VanDette, Project Manager II

(716)504-9830

[ryan.vandette@testamericainc.com](mailto:ryan.vandette@testamericainc.com)

### LINKS

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*The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.*

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

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

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# Definitions/Glossary

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

TestAmerica Job ID: 480-123040-1

## Qualifiers

### 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
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)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
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)

# Case Narrative

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

TestAmerica Job ID: 480-123040-1

**Job ID: 480-123040-1**

**Laboratory: TestAmerica Buffalo**

## Narrative

### Job Narrative 480-123040-1

#### Comments

No additional comments.

#### Receipt

The samples were received on 8/22/2017 9:45 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 3 coolers at receipt time were 2.7° C, 3.0° C and 3.2° C.

#### HPLC/IC

Method(s) 300.0: The following samples was diluted to bring the concentration of target analytes within the calibration range: P-2 (480-123040-2), P-4R (480-123040-4), P-5 (480-123040-5) and P-6 (480-123040-6). Elevated reporting limits (RLs) are provided.

Method(s) 300.0: The following samples was reported with elevated reporting limits for all analytes: P-1 (480-123040-1), P-3 (480-123040-3), P-7 (480-123040-7) and DUPLICATE (480-123040-8). The sample was analyzed at a dilution based on screening results.

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

#### Metals

Method(s) 200.8: The following sample was diluted for total Selenium due to the nature of the sample matrix: P-2 (480-123040-2). 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.

#### General Chemistry

Method(s) SM 2540C: Due to the matrix, the initial volume(s) used for the following sample deviated from the standard procedure: P-2 (480-123040-2). The reporting limits (RLs) have been adjusted proportionately.

Method(s) 9040C, SM 4500 H+ B: This analysis is normally performed in the field and has a method-defined holding time of 15 minutes. The following samples has been qualified with the "HF" flag to indicate analysis was performed in the laboratory outside the 15 minute timeframe: P-1 (480-123040-1), P-2 (480-123040-2), P-3 (480-123040-3), P-4R (480-123040-4), P-5 (480-123040-5), P-6 (480-123040-6), P-7 (480-123040-7), DUPLICATE (480-123040-8), FIELD BLANK (480-123040-9) and EQUIPMENT BLANK (480-123040-10).

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

# Detection Summary

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

TestAmerica Job ID: 480-123040-1

## Client Sample ID: P-1

## Lab Sample ID: 480-123040-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.10		0.0020		mg/L	1		200.7 Rev 4.4	Total/NA
Boron	0.054		0.020		mg/L	1		200.7 Rev 4.4	Total/NA
Calcium	126		0.50		mg/L	1		200.7 Rev 4.4	Total/NA
Cobalt	0.45		0.30		ug/L	1		200.8	Total/NA
Chloride	89.0		2.5		mg/L	5		300.0	Total/NA
Sulfate	53.3		10.0		mg/L	5		300.0	Total/NA
Total Dissolved Solids	553		10.0		mg/L	1		SM 2540C	Total/NA
Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
pH	7.0	HF	0.1		SU	1		SM 4500 H+ B	Total/NA
Temperature	22.6	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

## Client Sample ID: P-2

## Lab Sample ID: 480-123040-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.15		0.0020		mg/L	1		200.7 Rev 4.4	Total/NA
Boron	0.097		0.020		mg/L	1		200.7 Rev 4.4	Total/NA
Calcium	235		0.50		mg/L	1		200.7 Rev 4.4	Total/NA
Arsenic	1.2		1.0		ug/L	1		200.8	Total/NA
Cobalt	0.91		0.30		ug/L	1		200.8	Total/NA
Molybdenum	1.0		1.0		ug/L	1		200.8	Total/NA
Chloride	344		2.5		mg/L	5		300.0	Total/NA
Sulfate	15.1		10.0		mg/L	5		300.0	Total/NA
Total Dissolved Solids	1200		20.0		mg/L	1		SM 2540C	Total/NA
Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
pH	6.7	HF	0.1		SU	1		SM 4500 H+ B	Total/NA
Temperature	23.1	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

## Client Sample ID: P-3

## Lab Sample ID: 480-123040-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.15		0.0020		mg/L	1		200.7 Rev 4.4	Total/NA
Boron	0.038		0.020		mg/L	1		200.7 Rev 4.4	Total/NA
Calcium	120		0.50		mg/L	1		200.7 Rev 4.4	Total/NA
Chloride	64.9		2.5		mg/L	5		300.0	Total/NA
Sulfate	64.1		10.0		mg/L	5		300.0	Total/NA
Total Dissolved Solids	529		10.0		mg/L	1		SM 2540C	Total/NA
Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
pH	7.4	HF	0.1		SU	1		SM 4500 H+ B	Total/NA
Temperature	23.3	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

## Client Sample ID: P-4R

## Lab Sample ID: 480-123040-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.18		0.0020		mg/L	1		200.7 Rev 4.4	Total/NA
Boron	0.085		0.020		mg/L	1		200.7 Rev 4.4	Total/NA
Calcium	129		0.50		mg/L	1		200.7 Rev 4.4	Total/NA
Chromium	0.0040		0.0040		mg/L	1		200.7 Rev 4.4	Total/NA
Cobalt	0.82		0.30		ug/L	1		200.8	Total/NA
Molybdenum	3.9		1.0		ug/L	1		200.8	Total/NA
Chloride	120		2.5		mg/L	5		300.0	Total/NA

This Detection Summary does not include radiochemical test results.

TestAmerica Buffalo

# Detection Summary

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

TestAmerica Job ID: 480-123040-1

## Client Sample ID: P-4R (Continued)

## Lab Sample ID: 480-123040-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Sulfate	43.1		10.0		mg/L	5		300.0	Total/NA
Total Dissolved Solids	594		10.0		mg/L	1		SM 2540C	Total/NA
Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
pH	7.4	HF	0.1		SU	1		SM 4500 H+ B	Total/NA
Temperature	23.4	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

## Client Sample ID: P-5

## Lab Sample ID: 480-123040-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.31		0.0020		mg/L	1		200.7 Rev 4.4	Total/NA
Boron	0.050		0.020		mg/L	1		200.7 Rev 4.4	Total/NA
Calcium	174		0.50		mg/L	1		200.7 Rev 4.4	Total/NA
Cadmium	0.57		0.50		ug/L	1		200.8	Total/NA
Cobalt	10.3		0.30		ug/L	1		200.8	Total/NA
Chloride	194		2.5		mg/L	5		300.0	Total/NA
Sulfate	39.5		10.0		mg/L	5		300.0	Total/NA
Total Dissolved Solids	869		10.0		mg/L	1		SM 2540C	Total/NA
Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
pH	6.9	HF	0.1		SU	1		SM 4500 H+ B	Total/NA
Temperature	23.5	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

## Client Sample ID: P-6

## Lab Sample ID: 480-123040-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.11		0.0020		mg/L	1		200.7 Rev 4.4	Total/NA
Boron	0.37		0.020		mg/L	1		200.7 Rev 4.4	Total/NA
Calcium	157		0.50		mg/L	1		200.7 Rev 4.4	Total/NA
Chloride	94.8		2.5		mg/L	5		300.0	Total/NA
Sulfate	137		10.0		mg/L	5		300.0	Total/NA
Total Dissolved Solids	779		10.0		mg/L	1		SM 2540C	Total/NA
Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
pH	7.0	HF	0.1		SU	1		SM 4500 H+ B	Total/NA
Temperature	23.7	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

## Client Sample ID: P-7

## Lab Sample ID: 480-123040-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.23		0.0020		mg/L	1		200.7 Rev 4.4	Total/NA
Boron	0.14		0.020		mg/L	1		200.7 Rev 4.4	Total/NA
Calcium	183		0.50		mg/L	1		200.7 Rev 4.4	Total/NA
Cobalt	0.73		0.30		ug/L	1		200.8	Total/NA
Chloride	37.3		2.5		mg/L	5		300.0	Total/NA
Sulfate	71.1		10.0		mg/L	5		300.0	Total/NA
Total Dissolved Solids	794		10.0		mg/L	1		SM 2540C	Total/NA
Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
pH	7.0	HF	0.1		SU	1		SM 4500 H+ B	Total/NA
Temperature	23.8	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

## Client Sample ID: DUPLICATE

## Lab Sample ID: 480-123040-8

This Detection Summary does not include radiochemical test results.

TestAmerica Buffalo

# Detection Summary

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

TestAmerica Job ID: 480-123040-1

## Client Sample ID: DUPLICATE (Continued)

## Lab Sample ID: 480-123040-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.15		0.0020		mg/L	1		200.7 Rev 4.4	Total/NA
Boron	0.037		0.020		mg/L	1		200.7 Rev 4.4	Total/NA
Calcium	119		0.50		mg/L	1		200.7 Rev 4.4	Total/NA
Chloride	58.3		2.5		mg/L	5		300.0	Total/NA
Sulfate	56.3		10.0		mg/L	5		300.0	Total/NA
Total Dissolved Solids	515		10.0		mg/L	1		SM 2540C	Total/NA
Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
pH	7.4	HF	0.1		SU	1		SM 4500 H+ B	Total/NA
Temperature	23.9	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

## Client Sample ID: FIELD BLANK

## Lab Sample ID: 480-123040-9

Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
pH	6.0	HF	0.1		SU	1		SM 4500 H+ B	Total/NA
Temperature	24.1	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

## Client Sample ID: EQUIPMENT BLANK

## Lab Sample ID: 480-123040-10

Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
pH	5.9	HF	0.1		SU	1		SM 4500 H+ B	Total/NA
Temperature	24.3	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

This Detection Summary does not include radiochemical test results.

TestAmerica Buffalo



# Client Sample Results

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

TestAmerica Job ID: 480-123040-1

**Client Sample ID: P-1**

**Date Collected: 08/21/17 08:40**

**Date Received: 08/22/17 09:45**

**Lab Sample ID: 480-123040-1**

**Matrix: Water**

**Method: 200.7 Rev 4.4 - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	0.10		0.0020		mg/L		08/23/17 08:33	08/24/17 15:36	1
Boron	0.054		0.020		mg/L		08/23/17 08:33	08/24/17 15:36	1
Calcium	126		0.50		mg/L		08/23/17 08:33	08/24/17 15:36	1
Chromium	ND		0.0040		mg/L		08/23/17 08:33	08/24/17 15:36	1
Lead	ND		0.010		mg/L		08/23/17 08:33	08/24/17 15:36	1
Lithium	ND		0.030		mg/L		08/23/17 08:33	08/24/17 15:36	1

**Method: 200.8 - Metals (ICP/MS)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		1.0		ug/L		08/23/17 08:20	08/24/17 01:46	1
Arsenic	ND		1.0		ug/L		08/23/17 08:20	08/24/17 01:46	1
Beryllium	ND		0.70		ug/L		08/23/17 08:20	08/24/17 01:46	1
Cadmium	ND		0.50		ug/L		08/23/17 08:20	08/24/17 01:46	1
Cobalt	0.45		0.30		ug/L		08/23/17 08:20	08/24/17 01:46	1
Molybdenum	ND		1.0		ug/L		08/23/17 08:20	08/24/17 01:46	1
Selenium	ND		1.0		ug/L		08/23/17 08:20	08/24/17 01:46	1
Thallium	ND		0.20		ug/L		08/23/17 08:20	08/24/17 01:46	1

**Method: 245.1 - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020		mg/L		08/23/17 09:20	08/23/17 13:03	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	89.0		2.5		mg/L			08/28/17 16:44	5
Fluoride	ND		0.25		mg/L			08/28/17 16:44	5
Sulfate	53.3		10.0		mg/L			08/28/17 16:44	5
Total Dissolved Solids	553		10.0		mg/L			08/23/17 09:14	1
Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	7.0	HF	0.1		SU			08/24/17 15:06	1
Temperature	22.6	HF	0.001		Degrees C			08/24/17 15:06	1

# Client Sample Results

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

TestAmerica Job ID: 480-123040-1

**Client Sample ID: P-2**

**Date Collected: 08/21/17 11:56**

**Date Received: 08/22/17 09:45**

**Lab Sample ID: 480-123040-2**

**Matrix: Water**

### Method: 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	0.15		0.0020		mg/L		08/23/17 08:33	08/24/17 15:46	1
Boron	0.097		0.020		mg/L		08/23/17 08:33	08/24/17 15:46	1
Calcium	235		0.50		mg/L		08/23/17 08:33	08/24/17 15:46	1
Chromium	ND		0.0040		mg/L		08/23/17 08:33	08/24/17 15:46	1
Lead	ND		0.010		mg/L		08/23/17 08:33	08/24/17 15:46	1
Lithium	ND		0.030		mg/L		08/23/17 08:33	08/24/17 15:46	1

### Method: 200.8 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		1.0		ug/L		08/23/17 08:20	08/24/17 01:52	1
Arsenic	1.2		1.0		ug/L		08/23/17 08:20	08/24/17 01:52	1
Beryllium	ND		0.70		ug/L		08/23/17 08:20	08/24/17 01:52	1
Cadmium	ND		0.50		ug/L		08/23/17 08:20	08/24/17 01:52	1
Cobalt	0.91		0.30		ug/L		08/23/17 08:20	08/24/17 01:52	1
Molybdenum	1.0		1.0		ug/L		08/23/17 08:20	08/24/17 01:52	1
Selenium	ND		5.0		ug/L		08/23/17 08:20	08/24/17 17:18	5
Thallium	ND		0.20		ug/L		08/23/17 08:20	08/24/17 01:52	1

### Method: 245.1 - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020		mg/L		08/23/17 09:20	08/23/17 13:05	1

### General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	344		2.5		mg/L			08/28/17 16:52	5
Fluoride	ND		0.25		mg/L			08/28/17 16:52	5
Sulfate	15.1		10.0		mg/L			08/28/17 16:52	5
Total Dissolved Solids	1200		20.0		mg/L			08/23/17 09:14	1
Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	6.7	HF	0.1		SU			08/24/17 15:09	1
Temperature	23.1	HF	0.001		Degrees C			08/24/17 15:09	1

# Client Sample Results

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

TestAmerica Job ID: 480-123040-1

**Client Sample ID: P-3**

**Date Collected: 08/21/17 09:05**

**Date Received: 08/22/17 09:45**

**Lab Sample ID: 480-123040-3**

**Matrix: Water**

### Method: 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	0.15		0.0020		mg/L		08/23/17 08:33	08/24/17 15:50	1
Boron	0.038		0.020		mg/L		08/23/17 08:33	08/24/17 15:50	1
Calcium	120		0.50		mg/L		08/23/17 08:33	08/24/17 15:50	1
Chromium	ND		0.0040		mg/L		08/23/17 08:33	08/24/17 15:50	1
Lead	ND		0.010		mg/L		08/23/17 08:33	08/24/17 15:50	1
Lithium	ND		0.030		mg/L		08/23/17 08:33	08/24/17 15:50	1

### Method: 200.8 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		1.0		ug/L		08/23/17 08:20	08/24/17 02:15	1
Arsenic	ND		1.0		ug/L		08/23/17 08:20	08/24/17 02:15	1
Beryllium	ND		0.70		ug/L		08/23/17 08:20	08/24/17 02:15	1
Cadmium	ND		0.50		ug/L		08/23/17 08:20	08/24/17 02:15	1
Cobalt	ND		0.30		ug/L		08/23/17 08:20	08/24/17 02:15	1
Molybdenum	ND		1.0		ug/L		08/23/17 08:20	08/24/17 02:15	1
Selenium	ND		1.0		ug/L		08/23/17 08:20	08/24/17 02:15	1
Thallium	ND		0.20		ug/L		08/23/17 08:20	08/24/17 02:15	1

### Method: 245.1 - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020		mg/L		08/23/17 09:20	08/23/17 13:10	1

### General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	64.9		2.5		mg/L			08/28/17 17:00	5
Fluoride	ND		0.25		mg/L			08/28/17 17:00	5
Sulfate	64.1		10.0		mg/L			08/28/17 17:00	5
Total Dissolved Solids	529		10.0		mg/L			08/23/17 09:14	1
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH	7.4	HF	0.1		SU			08/24/17 15:11	1
Temperature	23.3	HF	0.001		Degrees C			08/24/17 15:11	1

# Client Sample Results

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

TestAmerica Job ID: 480-123040-1

**Client Sample ID: P-4R**  
**Date Collected: 08/21/17 09:45**  
**Date Received: 08/22/17 09:45**

**Lab Sample ID: 480-123040-4**  
**Matrix: Water**

### Method: 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	0.18		0.0020		mg/L		08/23/17 08:33	08/24/17 15:53	1
Boron	0.085		0.020		mg/L		08/23/17 08:33	08/24/17 15:53	1
Calcium	129		0.50		mg/L		08/23/17 08:33	08/24/17 15:53	1
Chromium	0.0040		0.0040		mg/L		08/23/17 08:33	08/24/17 15:53	1
Lead	ND		0.010		mg/L		08/23/17 08:33	08/24/17 15:53	1
Lithium	ND		0.030		mg/L		08/23/17 08:33	08/24/17 15:53	1

### Method: 200.8 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		1.0		ug/L		08/23/17 08:20	08/24/17 02:20	1
Arsenic	ND		1.0		ug/L		08/23/17 08:20	08/24/17 02:20	1
Beryllium	ND		0.70		ug/L		08/23/17 08:20	08/24/17 02:20	1
Cadmium	ND		0.50		ug/L		08/23/17 08:20	08/24/17 02:20	1
Cobalt	0.82		0.30		ug/L		08/23/17 08:20	08/24/17 02:20	1
Molybdenum	3.9		1.0		ug/L		08/23/17 08:20	08/24/17 02:20	1
Selenium	ND		1.0		ug/L		08/23/17 08:20	08/24/17 02:20	1
Thallium	ND		0.20		ug/L		08/23/17 08:20	08/24/17 02:20	1

### Method: 245.1 - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020		mg/L		08/23/17 09:20	08/23/17 13:12	1

### General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	120		2.5		mg/L			08/28/17 17:08	5
Fluoride	ND		0.25		mg/L			08/28/17 17:08	5
Sulfate	43.1		10.0		mg/L			08/28/17 17:08	5
Total Dissolved Solids	594		10.0		mg/L			08/23/17 09:14	1
Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	7.4	HF	0.1		SU			08/24/17 15:14	1
Temperature	23.4	HF	0.001		Degrees C			08/24/17 15:14	1

# Client Sample Results

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

TestAmerica Job ID: 480-123040-1

**Client Sample ID: P-5**

**Date Collected: 08/21/17 10:15**

**Date Received: 08/22/17 09:45**

**Lab Sample ID: 480-123040-5**

**Matrix: Water**

### Method: 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	0.31		0.0020		mg/L		08/23/17 08:33	08/24/17 15:57	1
Boron	0.050		0.020		mg/L		08/23/17 08:33	08/24/17 15:57	1
Calcium	174		0.50		mg/L		08/23/17 08:33	08/24/17 15:57	1
Chromium	ND		0.0040		mg/L		08/23/17 08:33	08/24/17 15:57	1
Lead	ND		0.010		mg/L		08/23/17 08:33	08/24/17 15:57	1
Lithium	ND		0.030		mg/L		08/23/17 08:33	08/24/17 15:57	1

### Method: 200.8 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		1.0		ug/L		08/23/17 08:20	08/24/17 02:26	1
Arsenic	ND		1.0		ug/L		08/23/17 08:20	08/24/17 02:26	1
Beryllium	ND		0.70		ug/L		08/23/17 08:20	08/24/17 02:26	1
Cadmium	0.57		0.50		ug/L		08/23/17 08:20	08/24/17 02:26	1
Cobalt	10.3		0.30		ug/L		08/23/17 08:20	08/24/17 02:26	1
Molybdenum	ND		1.0		ug/L		08/23/17 08:20	08/24/17 02:26	1
Selenium	ND		1.0		ug/L		08/23/17 08:20	08/24/17 02:26	1
Thallium	ND		0.20		ug/L		08/23/17 08:20	08/24/17 02:26	1

### Method: 245.1 - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020		mg/L		08/23/17 09:20	08/23/17 13:14	1

### General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	194		2.5		mg/L			08/28/17 17:16	5
Fluoride	ND		0.25		mg/L			08/28/17 17:16	5
Sulfate	39.5		10.0		mg/L			08/28/17 17:16	5
Total Dissolved Solids	869		10.0		mg/L			08/23/17 09:14	1
Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	6.9	HF	0.1		SU			08/24/17 15:17	1
Temperature	23.5	HF	0.001		Degrees C			08/24/17 15:17	1

# Client Sample Results

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

TestAmerica Job ID: 480-123040-1

**Client Sample ID: P-6**

**Date Collected: 08/21/17 10:30**

**Date Received: 08/22/17 09:45**

**Lab Sample ID: 480-123040-6**

**Matrix: Water**

**Method: 200.7 Rev 4.4 - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	0.11		0.0020		mg/L		08/23/17 08:33	08/24/17 16:01	1
Boron	0.37		0.020		mg/L		08/23/17 08:33	08/24/17 16:01	1
Calcium	157		0.50		mg/L		08/23/17 08:33	08/24/17 16:01	1
Chromium	ND		0.0040		mg/L		08/23/17 08:33	08/24/17 16:01	1
Lead	ND		0.010		mg/L		08/23/17 08:33	08/24/17 16:01	1
Lithium	ND		0.030		mg/L		08/23/17 08:33	08/24/17 16:01	1

**Method: 200.8 - Metals (ICP/MS)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		1.0		ug/L		08/23/17 08:20	08/24/17 02:31	1
Arsenic	ND		1.0		ug/L		08/23/17 08:20	08/24/17 02:31	1
Beryllium	ND		0.70		ug/L		08/23/17 08:20	08/24/17 02:31	1
Cadmium	ND		0.50		ug/L		08/23/17 08:20	08/24/17 02:31	1
Cobalt	ND		0.30		ug/L		08/23/17 08:20	08/24/17 02:31	1
Molybdenum	ND		1.0		ug/L		08/23/17 08:20	08/24/17 02:31	1
Selenium	ND		1.0		ug/L		08/23/17 08:20	08/24/17 02:31	1
Thallium	ND		0.20		ug/L		08/23/17 08:20	08/24/17 02:31	1

**Method: 245.1 - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020		mg/L		08/23/17 09:20	08/23/17 13:16	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	94.8		2.5		mg/L			08/28/17 17:24	5
Fluoride	ND		0.25		mg/L			08/28/17 17:24	5
Sulfate	137		10.0		mg/L			08/28/17 17:24	5
Total Dissolved Solids	779		10.0		mg/L			08/23/17 09:14	1
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH	7.0	HF	0.1		SU			08/24/17 15:20	1
Temperature	23.7	HF	0.001		Degrees C			08/24/17 15:20	1

# Client Sample Results

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

TestAmerica Job ID: 480-123040-1

**Client Sample ID: P-7**

**Date Collected: 08/21/17 11:20**

**Date Received: 08/22/17 09:45**

**Lab Sample ID: 480-123040-7**

**Matrix: Water**

### Method: 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	0.23		0.0020		mg/L		08/23/17 08:33	08/24/17 16:15	1
Boron	0.14		0.020		mg/L		08/23/17 08:33	08/24/17 16:15	1
Calcium	183		0.50		mg/L		08/23/17 08:33	08/24/17 16:15	1
Chromium	ND		0.0040		mg/L		08/23/17 08:33	08/24/17 16:15	1
Lead	ND		0.010		mg/L		08/23/17 08:33	08/24/17 16:15	1
Lithium	ND		0.030		mg/L		08/23/17 08:33	08/24/17 16:15	1

### Method: 200.8 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		1.0		ug/L		08/23/17 08:20	08/24/17 02:37	1
Arsenic	ND		1.0		ug/L		08/23/17 08:20	08/24/17 02:37	1
Beryllium	ND		0.70		ug/L		08/23/17 08:20	08/24/17 02:37	1
Cadmium	ND		0.50		ug/L		08/23/17 08:20	08/24/17 02:37	1
Cobalt	0.73		0.30		ug/L		08/23/17 08:20	08/24/17 02:37	1
Molybdenum	ND		1.0		ug/L		08/23/17 08:20	08/24/17 02:37	1
Selenium	ND		1.0		ug/L		08/23/17 08:20	08/24/17 02:37	1
Thallium	ND		0.20		ug/L		08/23/17 08:20	08/24/17 02:37	1

### Method: 245.1 - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020		mg/L		08/23/17 09:20	08/23/17 13:17	1

### General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	37.3		2.5		mg/L			08/28/17 17:32	5
Fluoride	ND		0.25		mg/L			08/28/17 17:32	5
Sulfate	71.1		10.0		mg/L			08/28/17 17:32	5
Total Dissolved Solids	794		10.0		mg/L			08/23/17 09:14	1
Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	7.0	HF	0.1		SU			08/24/17 15:23	1
Temperature	23.8	HF	0.001		Degrees C			08/24/17 15:23	1

# Client Sample Results

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

TestAmerica Job ID: 480-123040-1

**Client Sample ID: DUPLICATE**

**Lab Sample ID: 480-123040-8**

**Date Collected: 08/21/17 00:00**

**Matrix: Water**

**Date Received: 08/22/17 09:45**

**Method: 200.7 Rev 4.4 - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	0.15		0.0020		mg/L		08/23/17 08:33	08/24/17 16:18	1
Boron	0.037		0.020		mg/L		08/23/17 08:33	08/24/17 16:18	1
Calcium	119		0.50		mg/L		08/23/17 08:33	08/24/17 16:18	1
Chromium	ND		0.0040		mg/L		08/23/17 08:33	08/24/17 16:18	1
Lead	ND		0.010		mg/L		08/23/17 08:33	08/24/17 16:18	1
Lithium	ND		0.030		mg/L		08/23/17 08:33	08/24/17 16:18	1

**Method: 200.8 - Metals (ICP/MS)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		1.0		ug/L		08/23/17 08:20	08/24/17 02:42	1
Arsenic	ND		1.0		ug/L		08/23/17 08:20	08/24/17 02:42	1
Beryllium	ND		0.70		ug/L		08/23/17 08:20	08/24/17 02:42	1
Cadmium	ND		0.50		ug/L		08/23/17 08:20	08/24/17 02:42	1
Cobalt	ND		0.30		ug/L		08/23/17 08:20	08/24/17 02:42	1
Molybdenum	ND		1.0		ug/L		08/23/17 08:20	08/24/17 02:42	1
Selenium	ND		1.0		ug/L		08/23/17 08:20	08/24/17 02:42	1
Thallium	ND		0.20		ug/L		08/23/17 08:20	08/24/17 02:42	1

**Method: 245.1 - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020		mg/L		08/23/17 09:20	08/23/17 13:19	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	58.3		2.5		mg/L			08/28/17 18:21	5
Fluoride	ND		0.25		mg/L			08/28/17 18:21	5
Sulfate	56.3		10.0		mg/L			08/28/17 18:21	5
Total Dissolved Solids	515		10.0		mg/L			08/23/17 09:14	1
Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	7.4	HF	0.1		SU			08/24/17 15:25	1
Temperature	23.9	HF	0.001		Degrees C			08/24/17 15:25	1



# Client Sample Results

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

TestAmerica Job ID: 480-123040-1

**Client Sample ID: FIELD BLANK**

**Lab Sample ID: 480-123040-9**

**Date Collected: 08/21/17 12:25**

**Matrix: Water**

**Date Received: 08/22/17 09:45**

**Method: 200.7 Rev 4.4 - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	ND		0.0020		mg/L		08/23/17 08:33	08/24/17 16:22	1
Boron	ND		0.020		mg/L		08/23/17 08:33	08/24/17 16:22	1
Calcium	ND		0.50		mg/L		08/23/17 08:33	08/24/17 16:22	1
Chromium	ND		0.0040		mg/L		08/23/17 08:33	08/24/17 16:22	1
Lead	ND		0.010		mg/L		08/23/17 08:33	08/24/17 16:22	1
Lithium	ND		0.030		mg/L		08/23/17 08:33	08/24/17 16:22	1

**Method: 200.8 - Metals (ICP/MS)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		1.0		ug/L		08/23/17 08:20	08/24/17 02:48	1
Arsenic	ND		1.0		ug/L		08/23/17 08:20	08/24/17 02:48	1
Beryllium	ND		0.70		ug/L		08/23/17 08:20	08/24/17 02:48	1
Cadmium	ND		0.50		ug/L		08/23/17 08:20	08/24/17 02:48	1
Cobalt	ND		0.30		ug/L		08/23/17 08:20	08/24/17 02:48	1
Molybdenum	ND		1.0		ug/L		08/23/17 08:20	08/24/17 02:48	1
Selenium	ND		1.0		ug/L		08/23/17 08:20	08/24/17 02:48	1
Thallium	ND		0.20		ug/L		08/23/17 08:20	08/24/17 02:48	1

**Method: 245.1 - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020		mg/L		08/23/17 09:20	08/23/17 14:55	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		0.50		mg/L			08/28/17 18:29	1
Fluoride	ND		0.050		mg/L			08/28/17 18:29	1
Sulfate	ND		2.0		mg/L			08/28/17 18:29	1
Total Dissolved Solids	ND		10.0		mg/L			08/23/17 09:14	1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH	6.0	HF	0.1		SU			08/24/17 15:28	1
Temperature	24.1	HF	0.001		Degrees C			08/24/17 15:28	1

# Client Sample Results

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

TestAmerica Job ID: 480-123040-1

**Client Sample ID: EQUIPMENT BLANK**

**Lab Sample ID: 480-123040-10**

**Date Collected: 08/21/17 12:30**

**Matrix: Water**

**Date Received: 08/22/17 09:45**

**Method: 200.7 Rev 4.4 - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	ND		0.0020		mg/L		08/23/17 08:33	08/24/17 16:26	1
Boron	ND		0.020		mg/L		08/23/17 08:33	08/24/17 16:26	1
Calcium	ND		0.50		mg/L		08/23/17 08:33	08/24/17 16:26	1
Chromium	ND		0.0040		mg/L		08/23/17 08:33	08/24/17 16:26	1
Lead	ND		0.010		mg/L		08/23/17 08:33	08/24/17 16:26	1
Lithium	ND		0.030		mg/L		08/23/17 08:33	08/24/17 16:26	1

**Method: 200.8 - Metals (ICP/MS)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		1.0		ug/L		08/23/17 08:20	08/24/17 02:53	1
Arsenic	ND		1.0		ug/L		08/23/17 08:20	08/24/17 02:53	1
Beryllium	ND		0.70		ug/L		08/23/17 08:20	08/24/17 02:53	1
Cadmium	ND		0.50		ug/L		08/23/17 08:20	08/24/17 02:53	1
Cobalt	ND		0.30		ug/L		08/23/17 08:20	08/24/17 02:53	1
Molybdenum	ND		1.0		ug/L		08/23/17 08:20	08/24/17 02:53	1
Selenium	ND		1.0		ug/L		08/23/17 08:20	08/24/17 02:53	1
Thallium	ND		0.20		ug/L		08/23/17 08:20	08/24/17 02:53	1

**Method: 245.1 - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020		mg/L		08/23/17 09:20	08/23/17 13:23	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		0.50		mg/L			08/28/17 18:38	1
Fluoride	ND		0.050		mg/L			08/28/17 18:38	1
Sulfate	ND		2.0		mg/L			08/28/17 18:38	1
Total Dissolved Solids	ND		10.0		mg/L			08/23/17 09:14	1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH	5.9	HF	0.1		SU			08/24/17 15:31	1
Temperature	24.3	HF	0.001		Degrees C			08/24/17 15:31	1

# QC Sample Results

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

TestAmerica Job ID: 480-123040-1

## Method: 200.7 Rev 4.4 - Metals (ICP)

**Lab Sample ID: MB 480-373433/1-A**  
**Matrix: Water**  
**Analysis Batch: 373928**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 373433**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	ND		0.0020		mg/L		08/23/17 08:33	08/24/17 14:20	1
Boron	ND		0.020		mg/L		08/23/17 08:33	08/24/17 14:20	1
Calcium	ND		0.50		mg/L		08/23/17 08:33	08/24/17 14:20	1
Chromium	ND		0.0040		mg/L		08/23/17 08:33	08/24/17 14:20	1
Lead	ND		0.010		mg/L		08/23/17 08:33	08/24/17 14:20	1
Lithium	ND		0.030		mg/L		08/23/17 08:33	08/24/17 14:20	1

**Lab Sample ID: LCS 480-373433/2-A**  
**Matrix: Water**  
**Analysis Batch: 373928**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 373433**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Barium	0.200	0.200		mg/L		100	85 - 115
Boron	0.200	0.205		mg/L		102	85 - 115
Calcium	10.0	10.19		mg/L		102	85 - 115
Chromium	0.200	0.200		mg/L		100	85 - 115
Lead	0.200	0.206		mg/L		103	85 - 115

**Lab Sample ID: 480-123040-1 MS**  
**Matrix: Water**  
**Analysis Batch: 373928**

**Client Sample ID: P-1**  
**Prep Type: Total/NA**  
**Prep Batch: 373433**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Barium	0.10		0.200	0.294		mg/L		94	70 - 130
Boron	0.054		0.200	0.257		mg/L		101	70 - 130
Calcium	126		10.0	129.0	4	mg/L		27	70 - 130
Chromium	ND		0.200	0.198		mg/L		99	70 - 130
Lead	ND		0.200	0.213		mg/L		107	70 - 130

**Lab Sample ID: 480-123040-1 MSD**  
**Matrix: Water**  
**Analysis Batch: 373928**

**Client Sample ID: P-1**  
**Prep Type: Total/NA**  
**Prep Batch: 373433**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Barium	0.10		0.200	0.296		mg/L		96	70 - 130	1	20
Boron	0.054		0.200	0.256		mg/L		101	70 - 130	0	20
Calcium	126		10.0	132.2	4	mg/L		59	70 - 130	2	20
Chromium	ND		0.200	0.197		mg/L		98	70 - 130	1	20
Lead	ND		0.200	0.212		mg/L		106	70 - 130	1	20

## Method: 200.8 - Metals (ICP/MS)

**Lab Sample ID: MB 480-373431/1-A**  
**Matrix: Water**  
**Analysis Batch: 373697**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 373431**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		1.0		ug/L		08/23/17 08:20	08/24/17 01:02	1
Arsenic	ND		1.0		ug/L		08/23/17 08:20	08/24/17 01:02	1

TestAmerica Buffalo

# QC Sample Results

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

TestAmerica Job ID: 480-123040-1

## Method: 200.8 - Metals (ICP/MS) (Continued)

**Lab Sample ID: MB 480-373431/1-A**  
**Matrix: Water**  
**Analysis Batch: 373697**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 373431**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Beryllium	ND		0.70		ug/L		08/23/17 08:20	08/24/17 01:02	1
Cadmium	ND		0.50		ug/L		08/23/17 08:20	08/24/17 01:02	1
Cobalt	ND		0.30		ug/L		08/23/17 08:20	08/24/17 01:02	1
Molybdenum	ND		1.0		ug/L		08/23/17 08:20	08/24/17 01:02	1
Selenium	ND		1.0		ug/L		08/23/17 08:20	08/24/17 01:02	1
Thallium	ND		0.20		ug/L		08/23/17 08:20	08/24/17 01:02	1

**Lab Sample ID: LCS 480-373431/2-A**  
**Matrix: Water**  
**Analysis Batch: 373697**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 373431**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Antimony	20.0	20.53		ug/L		103	85 - 115
Arsenic	20.0	20.46		ug/L		102	85 - 115
Beryllium	20.0	20.51		ug/L		103	85 - 115
Cadmium	20.0	20.10		ug/L		100	85 - 115
Cobalt	20.0	20.11		ug/L		101	85 - 115
Molybdenum	20.0	20.08		ug/L		100	85 - 115
Selenium	20.0	19.86		ug/L		99	85 - 115
Thallium	20.0	20.02		ug/L		100	85 - 115

## Method: 245.1 - Mercury (CVAA)

**Lab Sample ID: MB 480-373466/1-A**  
**Matrix: Water**  
**Analysis Batch: 373591**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 373466**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020		mg/L		08/23/17 09:20	08/23/17 12:49	1

**Lab Sample ID: LCS 480-373466/2-A**  
**Matrix: Water**  
**Analysis Batch: 373591**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 373466**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Mercury	0.00667	0.00612		mg/L		92	85 - 115

## Method: 300.0 - Anions, Ion Chromatography

**Lab Sample ID: MB 480-374239/28**  
**Matrix: Water**  
**Analysis Batch: 374239**

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		0.50		mg/L			08/28/17 18:13	1
Fluoride	ND		0.050		mg/L			08/28/17 18:13	1
Sulfate	ND		2.0		mg/L			08/28/17 18:13	1

TestAmerica Buffalo

# QC Sample Results

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

TestAmerica Job ID: 480-123040-1

## Method: 300.0 - Anions, Ion Chromatography (Continued)

**Lab Sample ID: MB 480-374239/4**  
**Matrix: Water**  
**Analysis Batch: 374239**

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		0.50		mg/L			08/28/17 14:58	1
Fluoride	ND		0.050		mg/L			08/28/17 14:58	1
Sulfate	ND		2.0		mg/L			08/28/17 14:58	1

**Lab Sample ID: LCS 480-374239/27**  
**Matrix: Water**  
**Analysis Batch: 374239**

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	50.0	48.83		mg/L		98	90 - 110
Fluoride	5.00	4.91		mg/L		98	90 - 110
Sulfate	50.0	50.52		mg/L		101	90 - 110

**Lab Sample ID: LCS 480-374239/3**  
**Matrix: Water**  
**Analysis Batch: 374239**

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	50.0	48.90		mg/L		98	90 - 110
Fluoride	5.00	4.92		mg/L		98	90 - 110
Sulfate	50.0	50.95		mg/L		102	90 - 110

**Lab Sample ID: 480-123040-7 MS**  
**Matrix: Water**  
**Analysis Batch: 374239**

**Client Sample ID: P-7**  
**Prep Type: Total/NA**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	37.3		250	284.1		mg/L		99	81 - 120
Fluoride	ND		25.0	25.15		mg/L		101	82 - 120
Sulfate	71.1		250	325.4		mg/L		102	80 - 120

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

**Lab Sample ID: MB 480-373478/1**  
**Matrix: Water**  
**Analysis Batch: 373478**

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	ND		10.0		mg/L			08/23/17 09:14	1

**Lab Sample ID: LCS 480-373478/2**  
**Matrix: Water**  
**Analysis Batch: 373478**

**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	516	490.0		mg/L		95	85 - 115

TestAmerica Buffalo

# QC Sample Results

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

TestAmerica Job ID: 480-123040-1

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

Lab Sample ID: 480-123040-4 DU  
 Matrix: Water  
 Analysis Batch: 373478

Client Sample ID: P-4R  
 Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Dissolved Solids	594		600.0		mg/L		1	10

## Method: SM 4500 H+ B - pH

Lab Sample ID: LCS 480-373838/1  
 Matrix: Water  
 Analysis Batch: 373838

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

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

- 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

TestAmerica Job ID: 480-123040-1

## Metals

### Prep Batch: 373431

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-123040-1	P-1	Total/NA	Water	200.8	
480-123040-2	P-2	Total/NA	Water	200.8	
480-123040-3	P-3	Total/NA	Water	200.8	
480-123040-4	P-4R	Total/NA	Water	200.8	
480-123040-5	P-5	Total/NA	Water	200.8	
480-123040-6	P-6	Total/NA	Water	200.8	
480-123040-7	P-7	Total/NA	Water	200.8	
480-123040-8	DUPLICATE	Total/NA	Water	200.8	
480-123040-9	FIELD BLANK	Total/NA	Water	200.8	
480-123040-10	EQUIPMENT BLANK	Total/NA	Water	200.8	
MB 480-373431/1-A	Method Blank	Total/NA	Water	200.8	
LCS 480-373431/2-A	Lab Control Sample	Total/NA	Water	200.8	

### Prep Batch: 373433

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-123040-1	P-1	Total/NA	Water	200.7	
480-123040-2	P-2	Total/NA	Water	200.7	
480-123040-3	P-3	Total/NA	Water	200.7	
480-123040-4	P-4R	Total/NA	Water	200.7	
480-123040-5	P-5	Total/NA	Water	200.7	
480-123040-6	P-6	Total/NA	Water	200.7	
480-123040-7	P-7	Total/NA	Water	200.7	
480-123040-8	DUPLICATE	Total/NA	Water	200.7	
480-123040-9	FIELD BLANK	Total/NA	Water	200.7	
480-123040-10	EQUIPMENT BLANK	Total/NA	Water	200.7	
MB 480-373433/1-A	Method Blank	Total/NA	Water	200.7	
LCS 480-373433/2-A	Lab Control Sample	Total/NA	Water	200.7	
480-123040-1 MS	P-1	Total/NA	Water	200.7	
480-123040-1 MSD	P-1	Total/NA	Water	200.7	

### Prep Batch: 373466

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-123040-1	P-1	Total/NA	Water	245.1	
480-123040-2	P-2	Total/NA	Water	245.1	
480-123040-3	P-3	Total/NA	Water	245.1	
480-123040-4	P-4R	Total/NA	Water	245.1	
480-123040-5	P-5	Total/NA	Water	245.1	
480-123040-6	P-6	Total/NA	Water	245.1	
480-123040-7	P-7	Total/NA	Water	245.1	
480-123040-8	DUPLICATE	Total/NA	Water	245.1	
480-123040-9	FIELD BLANK	Total/NA	Water	245.1	
480-123040-10	EQUIPMENT BLANK	Total/NA	Water	245.1	
MB 480-373466/1-A	Method Blank	Total/NA	Water	245.1	
LCS 480-373466/2-A	Lab Control Sample	Total/NA	Water	245.1	

### Analysis Batch: 373591

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-123040-1	P-1	Total/NA	Water	245.1	373466
480-123040-2	P-2	Total/NA	Water	245.1	373466
480-123040-3	P-3	Total/NA	Water	245.1	373466
480-123040-4	P-4R	Total/NA	Water	245.1	373466

TestAmerica Buffalo

# QC Association Summary

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

TestAmerica Job ID: 480-123040-1

## Metals (Continued)

### Analysis Batch: 373591 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-123040-5	P-5	Total/NA	Water	245.1	373466
480-123040-6	P-6	Total/NA	Water	245.1	373466
480-123040-7	P-7	Total/NA	Water	245.1	373466
480-123040-8	DUPLICATE	Total/NA	Water	245.1	373466
480-123040-9	FIELD BLANK	Total/NA	Water	245.1	373466
480-123040-10	EQUIPMENT BLANK	Total/NA	Water	245.1	373466
MB 480-373466/1-A	Method Blank	Total/NA	Water	245.1	373466
LCS 480-373466/2-A	Lab Control Sample	Total/NA	Water	245.1	373466

### Analysis Batch: 373697

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-123040-1	P-1	Total/NA	Water	200.8	373431
480-123040-2	P-2	Total/NA	Water	200.8	373431
480-123040-3	P-3	Total/NA	Water	200.8	373431
480-123040-4	P-4R	Total/NA	Water	200.8	373431
480-123040-5	P-5	Total/NA	Water	200.8	373431
480-123040-6	P-6	Total/NA	Water	200.8	373431
480-123040-7	P-7	Total/NA	Water	200.8	373431
480-123040-8	DUPLICATE	Total/NA	Water	200.8	373431
480-123040-9	FIELD BLANK	Total/NA	Water	200.8	373431
480-123040-10	EQUIPMENT BLANK	Total/NA	Water	200.8	373431
MB 480-373431/1-A	Method Blank	Total/NA	Water	200.8	373431
LCS 480-373431/2-A	Lab Control Sample	Total/NA	Water	200.8	373431

### Analysis Batch: 373928

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-123040-1	P-1	Total/NA	Water	200.7 Rev 4.4	373433
480-123040-2	P-2	Total/NA	Water	200.7 Rev 4.4	373433
480-123040-3	P-3	Total/NA	Water	200.7 Rev 4.4	373433
480-123040-4	P-4R	Total/NA	Water	200.7 Rev 4.4	373433
480-123040-5	P-5	Total/NA	Water	200.7 Rev 4.4	373433
480-123040-6	P-6	Total/NA	Water	200.7 Rev 4.4	373433
480-123040-7	P-7	Total/NA	Water	200.7 Rev 4.4	373433
480-123040-8	DUPLICATE	Total/NA	Water	200.7 Rev 4.4	373433
480-123040-9	FIELD BLANK	Total/NA	Water	200.7 Rev 4.4	373433
480-123040-10	EQUIPMENT BLANK	Total/NA	Water	200.7 Rev 4.4	373433
MB 480-373433/1-A	Method Blank	Total/NA	Water	200.7 Rev 4.4	373433
LCS 480-373433/2-A	Lab Control Sample	Total/NA	Water	200.7 Rev 4.4	373433
480-123040-1 MS	P-1	Total/NA	Water	200.7 Rev 4.4	373433
480-123040-1 MSD	P-1	Total/NA	Water	200.7 Rev 4.4	373433

### Analysis Batch: 373964

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-123040-2	P-2	Total/NA	Water	200.8	373431

## General Chemistry

### Analysis Batch: 373478

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-123040-1	P-1	Total/NA	Water	SM 2540C	

TestAmerica Buffalo



# QC Association Summary

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

TestAmerica Job ID: 480-123040-1

## General Chemistry (Continued)

### Analysis Batch: 373478 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-123040-2	P-2	Total/NA	Water	SM 2540C	
480-123040-3	P-3	Total/NA	Water	SM 2540C	
480-123040-4	P-4R	Total/NA	Water	SM 2540C	
480-123040-5	P-5	Total/NA	Water	SM 2540C	
480-123040-6	P-6	Total/NA	Water	SM 2540C	
480-123040-7	P-7	Total/NA	Water	SM 2540C	
480-123040-8	DUPLICATE	Total/NA	Water	SM 2540C	
480-123040-9	FIELD BLANK	Total/NA	Water	SM 2540C	
480-123040-10	EQUIPMENT BLANK	Total/NA	Water	SM 2540C	
MB 480-373478/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 480-373478/2	Lab Control Sample	Total/NA	Water	SM 2540C	
480-123040-4 DU	P-4R	Total/NA	Water	SM 2540C	

### Analysis Batch: 373838

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-123040-1	P-1	Total/NA	Water	SM 4500 H+ B	
480-123040-2	P-2	Total/NA	Water	SM 4500 H+ B	
480-123040-3	P-3	Total/NA	Water	SM 4500 H+ B	
480-123040-4	P-4R	Total/NA	Water	SM 4500 H+ B	
480-123040-5	P-5	Total/NA	Water	SM 4500 H+ B	
480-123040-6	P-6	Total/NA	Water	SM 4500 H+ B	
480-123040-7	P-7	Total/NA	Water	SM 4500 H+ B	
480-123040-8	DUPLICATE	Total/NA	Water	SM 4500 H+ B	
480-123040-9	FIELD BLANK	Total/NA	Water	SM 4500 H+ B	
480-123040-10	EQUIPMENT BLANK	Total/NA	Water	SM 4500 H+ B	
LCS 480-373838/1	Lab Control Sample	Total/NA	Water	SM 4500 H+ B	

### Analysis Batch: 374239

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-123040-1	P-1	Total/NA	Water	300.0	
480-123040-2	P-2	Total/NA	Water	300.0	
480-123040-3	P-3	Total/NA	Water	300.0	
480-123040-4	P-4R	Total/NA	Water	300.0	
480-123040-5	P-5	Total/NA	Water	300.0	
480-123040-6	P-6	Total/NA	Water	300.0	
480-123040-7	P-7	Total/NA	Water	300.0	
480-123040-8	DUPLICATE	Total/NA	Water	300.0	
480-123040-9	FIELD BLANK	Total/NA	Water	300.0	
480-123040-10	EQUIPMENT BLANK	Total/NA	Water	300.0	
MB 480-374239/28	Method Blank	Total/NA	Water	300.0	
MB 480-374239/4	Method Blank	Total/NA	Water	300.0	
LCS 480-374239/27	Lab Control Sample	Total/NA	Water	300.0	
LCS 480-374239/3	Lab Control Sample	Total/NA	Water	300.0	
480-123040-7 MS	P-7	Total/NA	Water	300.0	

# Lab Chronicle

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

TestAmerica Job ID: 480-123040-1

## Client Sample ID: P-1

Date Collected: 08/21/17 08:40

Date Received: 08/22/17 09:45

## Lab Sample ID: 480-123040-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	200.7			373433	08/23/17 08:33	EMB	TAL BUF
Total/NA	Analysis	200.7 Rev 4.4		1	373928	08/24/17 15:36	LMH	TAL BUF
Total/NA	Prep	200.8			373431	08/23/17 08:20	EMB	TAL BUF
Total/NA	Analysis	200.8		1	373697	08/24/17 01:46	JRK	TAL BUF
Total/NA	Prep	245.1			373466	08/23/17 09:20	MVZ	TAL BUF
Total/NA	Analysis	245.1		1	373591	08/23/17 13:03	MVZ	TAL BUF
Total/NA	Analysis	300.0		5	374239	08/28/17 16:44	RJS	TAL BUF
Total/NA	Analysis	SM 2540C		1	373478	08/23/17 09:14	EKB	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	373838	08/24/17 15:06	DSC	TAL BUF

## Client Sample ID: P-2

Date Collected: 08/21/17 11:56

Date Received: 08/22/17 09:45

## Lab Sample ID: 480-123040-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	200.7			373433	08/23/17 08:33	EMB	TAL BUF
Total/NA	Analysis	200.7 Rev 4.4		1	373928	08/24/17 15:46	LMH	TAL BUF
Total/NA	Prep	200.8			373431	08/23/17 08:20	EMB	TAL BUF
Total/NA	Analysis	200.8		1	373697	08/24/17 01:52	JRK	TAL BUF
Total/NA	Prep	200.8			373431	08/23/17 08:20	EMB	TAL BUF
Total/NA	Analysis	200.8		5	373964	08/24/17 17:18	JRK	TAL BUF
Total/NA	Prep	245.1			373466	08/23/17 09:20	MVZ	TAL BUF
Total/NA	Analysis	245.1		1	373591	08/23/17 13:05	MVZ	TAL BUF
Total/NA	Analysis	300.0		5	374239	08/28/17 16:52	RJS	TAL BUF
Total/NA	Analysis	SM 2540C		1	373478	08/23/17 09:14	EKB	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	373838	08/24/17 15:09	DSC	TAL BUF

## Client Sample ID: P-3

Date Collected: 08/21/17 09:05

Date Received: 08/22/17 09:45

## Lab Sample ID: 480-123040-3

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	200.7			373433	08/23/17 08:33	EMB	TAL BUF
Total/NA	Analysis	200.7 Rev 4.4		1	373928	08/24/17 15:50	LMH	TAL BUF
Total/NA	Prep	200.8			373431	08/23/17 08:20	EMB	TAL BUF
Total/NA	Analysis	200.8		1	373697	08/24/17 02:15	JRK	TAL BUF
Total/NA	Prep	245.1			373466	08/23/17 09:20	MVZ	TAL BUF
Total/NA	Analysis	245.1		1	373591	08/23/17 13:10	MVZ	TAL BUF
Total/NA	Analysis	300.0		5	374239	08/28/17 17:00	RJS	TAL BUF
Total/NA	Analysis	SM 2540C		1	373478	08/23/17 09:14	EKB	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	373838	08/24/17 15:11	DSC	TAL BUF

TestAmerica Buffalo

# Lab Chronicle

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

TestAmerica Job ID: 480-123040-1

## Client Sample ID: P-4R

Date Collected: 08/21/17 09:45

Date Received: 08/22/17 09:45

## Lab Sample ID: 480-123040-4

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	200.7			373433	08/23/17 08:33	EMB	TAL BUF
Total/NA	Analysis	200.7 Rev 4.4		1	373928	08/24/17 15:53	LMH	TAL BUF
Total/NA	Prep	200.8			373431	08/23/17 08:20	EMB	TAL BUF
Total/NA	Analysis	200.8		1	373697	08/24/17 02:20	JRK	TAL BUF
Total/NA	Prep	245.1			373466	08/23/17 09:20	MVZ	TAL BUF
Total/NA	Analysis	245.1		1	373591	08/23/17 13:12	MVZ	TAL BUF
Total/NA	Analysis	300.0		5	374239	08/28/17 17:08	RJS	TAL BUF
Total/NA	Analysis	SM 2540C		1	373478	08/23/17 09:14	EKB	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	373838	08/24/17 15:14	DSC	TAL BUF

## Client Sample ID: P-5

Date Collected: 08/21/17 10:15

Date Received: 08/22/17 09:45

## Lab Sample ID: 480-123040-5

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	200.7			373433	08/23/17 08:33	EMB	TAL BUF
Total/NA	Analysis	200.7 Rev 4.4		1	373928	08/24/17 15:57	LMH	TAL BUF
Total/NA	Prep	200.8			373431	08/23/17 08:20	EMB	TAL BUF
Total/NA	Analysis	200.8		1	373697	08/24/17 02:26	JRK	TAL BUF
Total/NA	Prep	245.1			373466	08/23/17 09:20	MVZ	TAL BUF
Total/NA	Analysis	245.1		1	373591	08/23/17 13:14	MVZ	TAL BUF
Total/NA	Analysis	300.0		5	374239	08/28/17 17:16	RJS	TAL BUF
Total/NA	Analysis	SM 2540C		1	373478	08/23/17 09:14	EKB	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	373838	08/24/17 15:17	DSC	TAL BUF

## Client Sample ID: P-6

Date Collected: 08/21/17 10:30

Date Received: 08/22/17 09:45

## Lab Sample ID: 480-123040-6

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	200.7			373433	08/23/17 08:33	EMB	TAL BUF
Total/NA	Analysis	200.7 Rev 4.4		1	373928	08/24/17 16:01	LMH	TAL BUF
Total/NA	Prep	200.8			373431	08/23/17 08:20	EMB	TAL BUF
Total/NA	Analysis	200.8		1	373697	08/24/17 02:31	JRK	TAL BUF
Total/NA	Prep	245.1			373466	08/23/17 09:20	MVZ	TAL BUF
Total/NA	Analysis	245.1		1	373591	08/23/17 13:16	MVZ	TAL BUF
Total/NA	Analysis	300.0		5	374239	08/28/17 17:24	RJS	TAL BUF
Total/NA	Analysis	SM 2540C		1	373478	08/23/17 09:14	EKB	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	373838	08/24/17 15:20	DSC	TAL BUF

# Lab Chronicle

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

TestAmerica Job ID: 480-123040-1

**Client Sample ID: P-7**

**Lab Sample ID: 480-123040-7**

**Date Collected: 08/21/17 11:20**

**Matrix: Water**

**Date Received: 08/22/17 09:45**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	200.7			373433	08/23/17 08:33	EMB	TAL BUF
Total/NA	Analysis	200.7 Rev 4.4		1	373928	08/24/17 16:15	LMH	TAL BUF
Total/NA	Prep	200.8			373431	08/23/17 08:20	EMB	TAL BUF
Total/NA	Analysis	200.8		1	373697	08/24/17 02:37	JRK	TAL BUF
Total/NA	Prep	245.1			373466	08/23/17 09:20	MVZ	TAL BUF
Total/NA	Analysis	245.1		1	373591	08/23/17 13:17	MVZ	TAL BUF
Total/NA	Analysis	300.0		5	374239	08/28/17 17:32	RJS	TAL BUF
Total/NA	Analysis	SM 2540C		1	373478	08/23/17 09:14	EKB	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	373838	08/24/17 15:23	DSC	TAL BUF

**Client Sample ID: DUPLICATE**

**Lab Sample ID: 480-123040-8**

**Date Collected: 08/21/17 00:00**

**Matrix: Water**

**Date Received: 08/22/17 09:45**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	200.7			373433	08/23/17 08:33	EMB	TAL BUF
Total/NA	Analysis	200.7 Rev 4.4		1	373928	08/24/17 16:18	LMH	TAL BUF
Total/NA	Prep	200.8			373431	08/23/17 08:20	EMB	TAL BUF
Total/NA	Analysis	200.8		1	373697	08/24/17 02:42	JRK	TAL BUF
Total/NA	Prep	245.1			373466	08/23/17 09:20	MVZ	TAL BUF
Total/NA	Analysis	245.1		1	373591	08/23/17 13:19	MVZ	TAL BUF
Total/NA	Analysis	300.0		5	374239	08/28/17 18:21	RJS	TAL BUF
Total/NA	Analysis	SM 2540C		1	373478	08/23/17 09:14	EKB	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	373838	08/24/17 15:25	DSC	TAL BUF

**Client Sample ID: FIELD BLANK**

**Lab Sample ID: 480-123040-9**

**Date Collected: 08/21/17 12:25**

**Matrix: Water**

**Date Received: 08/22/17 09:45**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	200.7			373433	08/23/17 08:33	EMB	TAL BUF
Total/NA	Analysis	200.7 Rev 4.4		1	373928	08/24/17 16:22	LMH	TAL BUF
Total/NA	Prep	200.8			373431	08/23/17 08:20	EMB	TAL BUF
Total/NA	Analysis	200.8		1	373697	08/24/17 02:48	JRK	TAL BUF
Total/NA	Prep	245.1			373466	08/23/17 09:20	MVZ	TAL BUF
Total/NA	Analysis	245.1		1	373591	08/23/17 14:55	MVZ	TAL BUF
Total/NA	Analysis	300.0		1	374239	08/28/17 18:29	RJS	TAL BUF
Total/NA	Analysis	SM 2540C		1	373478	08/23/17 09:14	EKB	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	373838	08/24/17 15:28	DSC	TAL BUF

# Lab Chronicle

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

TestAmerica Job ID: 480-123040-1

**Client Sample ID: EQUIPMENT BLANK**

**Lab Sample ID: 480-123040-10**

**Date Collected: 08/21/17 12:30**

**Matrix: Water**

**Date Received: 08/22/17 09:45**

<u>Prep Type</u>	<u>Batch Type</u>	<u>Batch Method</u>	<u>Run</u>	<u>Dilution Factor</u>	<u>Batch Number</u>	<u>Prepared or Analyzed</u>	<u>Analyst</u>	<u>Lab</u>
Total/NA	Prep	200.7			373433	08/23/17 08:33	EMB	TAL BUF
Total/NA	Analysis	200.7 Rev 4.4		1	373928	08/24/17 16:26	LMH	TAL BUF
Total/NA	Prep	200.8			373431	08/23/17 08:20	EMB	TAL BUF
Total/NA	Analysis	200.8		1	373697	08/24/17 02:53	JRK	TAL BUF
Total/NA	Prep	245.1			373466	08/23/17 09:20	MVZ	TAL BUF
Total/NA	Analysis	245.1		1	373591	08/23/17 13:23	MVZ	TAL BUF
Total/NA	Analysis	300.0		1	374239	08/28/17 18:38	RJS	TAL BUF
Total/NA	Analysis	SM 2540C		1	373478	08/23/17 09:14	EKB	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	373838	08/24/17 15:31	DSC	TAL BUF

**Laboratory References:**

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

# Accreditation/Certification Summary

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

TestAmerica Job ID: 480-123040-1

## Laboratory: TestAmerica Buffalo

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

Authority	Program	EPA Region	Identification Number	Expiration Date
Minnesota	NELAP	5	036-999-337	12-31-17

The following analytes are included in this report, but accreditation/certification is not offered by the governing authority:

Analysis Method	Prep Method	Matrix	Analyte
200.7 Rev 4.4	200.7	Water	Lithium
SM 4500 H+ B		Water	pH
SM 4500 H+ B		Water	Temperature

# Method Summary

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

TestAmerica Job ID: 480-123040-1

Method	Method Description	Protocol	Laboratory
200.7 Rev 4.4	Metals (ICP)	EPA	TAL BUF
200.8	Metals (ICP/MS)	EPA	TAL BUF
245.1	Mercury (CVAA)	EPA	TAL BUF
300.0	Anions, Ion Chromatography	MCAWW	TAL BUF
SM 2540C	Solids, Total Dissolved (TDS)	SM	TAL BUF
SM 4500 H+ B	pH	SM	TAL BUF

#### Protocol References:

EPA = US Environmental Protection Agency

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

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

#### Laboratory References:

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

# Sample Summary

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

TestAmerica Job ID: 480-123040-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
480-123040-1	P-1	Water	08/21/17 08:40	08/22/17 09:45
480-123040-2	P-2	Water	08/21/17 11:56	08/22/17 09:45
480-123040-3	P-3	Water	08/21/17 09:05	08/22/17 09:45
480-123040-4	P-4R	Water	08/21/17 09:45	08/22/17 09:45
480-123040-5	P-5	Water	08/21/17 10:15	08/22/17 09:45
480-123040-6	P-6	Water	08/21/17 10:30	08/22/17 09:45
480-123040-7	P-7	Water	08/21/17 11:20	08/22/17 09:45
480-123040-8	DUPLICATE	Water	08/21/17 00:00	08/22/17 09:45
480-123040-9	FIELD BLANK	Water	08/21/17 12:25	08/22/17 09:45
480-123040-10	EQUIPMENT BLANK	Water	08/21/17 12:30	08/22/17 09:45





Regulatory Program:  DW  NPDES  RCRA  Other:

Project Manager: Ryan Van Dette

Site Contact: Nathaniel Beineman Date: 9/19/17

Test# 480-123040 COC

Client Contact  
SKB Environmental  
13425 Courthouse Blvd  
Rosemount, MN 55068  
(651) 438-1500 Phone  
(651) 438-1518 FAX  
Project Name: Cloquet 2017 CCR GW Event 7  
Site:  
P O # 3078-17-00306

Tel/Fax:  
Analysis Turnaround Time  
CALENDAR DAYS WORKING DAYS  
TAT if different from Below  
2 weeks  
1 week  
2 days  
1 day

Lab Contact:  
Carrier:  
COC N of COCs  
Sampler:  
For Lab Use Only:  
Walk-in Client:  
Lab Sampling:  
Job / SDG No.:

Sample Specific Notes:

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS / MSD (Y/N)	Metals (totals) + Mercury	Chloride	Sulfate	TDS	pH	Radium 226 & 228 combined
P-1	8:40		Grab	Water	7			X	X	X	X	X	
P-2	11:55		Grab	Water	7			X	X	X	X	X	
P-3	9:05		Grab	Water	7			X	X	X	X	X	
P-4R	9:45		Grab	Water	7			X	X	X	X	X	
P-5	10:15		Grab	Water	7			X	X	X	X	X	
P-6	10:50		Grab	Water	7			X	X	X	X	X	
P-7	11:20		Grab	Water	7			X	X	X	X	X	
DUPLICATE WATER			Grab	Water	7			X	X	X	X	X	
Field Blank	12:25		Grab	Water	7			X	X	X	X	X	
Equipment Blank	12:30		Grab	Water	7			X	X	X	X	X	

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other

Possible Hazard Identification: Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

Non-Hazard  Flammable  Skin Irritant  Poison B  Unknown

\*Metals - Boron, Calcium, Antimony, Arsenic, Barium, Beryllium, Cadmium, Chromium, Cobalt, Lead, Lithium, Molybdenum, Selenium, Thallium

Custody Seal No.:  
Relinquished by: [Signature]  
Relinquished by: [Signature]  
Relinquished by: [Signature]

Company: [Signature]  
Company: [Signature]  
Company: [Signature]

Date/Time: 8/21/17  
Date/Time: 8/21/17  
Date/Time: 8/21/17

Received by: [Signature]  
Received by: [Signature]  
Received in Laboratory by: [Signature]

Company: [Signature]  
Company: [Signature]  
Company: [Signature]

Date/Time: 8/21/17  
Date/Time: 8/21/17  
Date/Time: 8/21/17

Therm ID No.:  
Cooler Temp (°C):  
Obs'd: 27, 30, 32  
Corr'd: #1



# Login Sample Receipt Checklist

Client: Waste Connections, Inc.

Job Number: 480-123040-1

SDG Number:

**Login Number: 123040**

**List Number: 1**

**Creator: Wallace, Cameron**

**List Source: TestAmerica Buffalo**

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



# TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

## ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Buffalo

10 Hazelwood Drive

Amherst, NY 14228-2298

Tel: (716)691-2600

TestAmerica Job ID: 480-123040-2

Client Project/Site: SKB Cloquet - CCR Groundwater

Sampling Event: CCR Groundwater

For:

Waste Connections, Inc.

13425 Courthouse Blvd

Rosemount, Minnesota 55068

Attn: Nathaniel Beinemann



Authorized for release by:

9/15/2017 3:50:11 PM

Ryan VanDette, Project Manager II

(716)504-9830

[ryan.vandette@testamericainc.com](mailto:ryan.vandette@testamericainc.com)



### LINKS

Review your project  
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[www.testamericainc.com](http://www.testamericainc.com)

*The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.*

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

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

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# Definitions/Glossary

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

TestAmerica Job ID: 480-123040-2

## Qualifiers

### Rad

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

## Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
▫	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
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)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
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)

# Case Narrative

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

TestAmerica Job ID: 480-123040-2

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**Job ID: 480-123040-2**

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**Laboratory: TestAmerica Buffalo**

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**Narrative**

**Job Narrative  
480-123040-2**

**Comments**

No additional comments.

**Receipt**

The samples were received on 8/22/2017 9:45 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 3 coolers at receipt time were 2.7° C, 3.0° C and 3.2° C.

**RAD**

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

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## Detection Summary

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

TestAmerica Job ID: 480-123040-2

**Client Sample ID: P-1**

**Lab Sample ID: 480-123040-1**

No Detections.

**Client Sample ID: P-2**

**Lab Sample ID: 480-123040-2**

No Detections.

**Client Sample ID: P-3**

**Lab Sample ID: 480-123040-3**

No Detections.

**Client Sample ID: P-4R**

**Lab Sample ID: 480-123040-4**

No Detections.

**Client Sample ID: P-5**

**Lab Sample ID: 480-123040-5**

No Detections.

**Client Sample ID: P-6**

**Lab Sample ID: 480-123040-6**

No Detections.

**Client Sample ID: P-7**

**Lab Sample ID: 480-123040-7**

No Detections.

**Client Sample ID: DUPLICATE**

**Lab Sample ID: 480-123040-8**

No Detections.

**Client Sample ID: FIELD BLANK**

**Lab Sample ID: 480-123040-9**

No Detections.

**Client Sample ID: EQUIPMENT BLANK**

**Lab Sample ID: 480-123040-10**

No Detections.

This Detection Summary does not include radiochemical test results.

TestAmerica Buffalo

# Client Sample Results

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

TestAmerica Job ID: 480-123040-2

**Client Sample ID: P-1**

**Lab Sample ID: 480-123040-1**

Date Collected: 08/21/17 08:40

Matrix: Water

Date Received: 08/22/17 09:45

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.127		0.0745	0.0754	1.00	0.0982	pCi/L	08/24/17 07:47	09/15/17 05:52	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	96.8		40 - 110					08/24/17 07:47	09/15/17 05:52	1

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.141	U	0.264	0.264	1.00	0.446	pCi/L	08/24/17 08:20	09/01/17 11:03	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	96.8		40 - 110					08/24/17 08:20	09/01/17 11:03	1
Y Carrier	87.5		40 - 110					08/24/17 08:20	09/01/17 11:03	1



# Client Sample Results

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

TestAmerica Job ID: 480-123040-2

**Client Sample ID: P-2**

**Lab Sample ID: 480-123040-2**

Date Collected: 08/21/17 11:56

Matrix: Water

Date Received: 08/22/17 09:45

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.247		0.0899	0.0926	1.00	0.0811	pCi/L	08/24/17 07:47	09/15/17 05:52	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	89.4		40 - 110					08/24/17 07:47	09/15/17 05:52	1

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.756		0.321	0.328	1.00	0.464	pCi/L	08/24/17 08:20	09/01/17 11:04	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	89.4		40 - 110					08/24/17 08:20	09/01/17 11:04	1
Y Carrier	80.7		40 - 110					08/24/17 08:20	09/01/17 11:04	1

# Client Sample Results

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

TestAmerica Job ID: 480-123040-2

**Client Sample ID: P-3**

**Lab Sample ID: 480-123040-3**

Date Collected: 08/21/17 09:05

Matrix: Water

Date Received: 08/22/17 09:45

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.223		0.0818	0.0842	1.00	0.0750	pCi/L	08/24/17 07:47	09/15/17 05:52	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	101		40 - 110					08/24/17 07:47	09/15/17 05:52	1

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.143	U	0.219	0.219	1.00	0.368	pCi/L	08/24/17 08:20	09/01/17 11:04	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	101		40 - 110					08/24/17 08:20	09/01/17 11:04	1
Y Carrier	84.9		40 - 110					08/24/17 08:20	09/01/17 11:04	1

# Client Sample Results

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

TestAmerica Job ID: 480-123040-2

**Client Sample ID: P-4R**  
**Date Collected: 08/21/17 09:45**  
**Date Received: 08/22/17 09:45**

**Lab Sample ID: 480-123040-4**  
**Matrix: Water**

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.262		0.0939	0.0968	1.00	0.0824	pCi/L	08/24/17 07:47	09/15/17 05:52	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	88.8		40 - 110					08/24/17 07:47	09/15/17 05:52	1

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.573		0.292	0.297	1.00	0.436	pCi/L	08/24/17 08:20	09/01/17 11:04	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	88.8		40 - 110					08/24/17 08:20	09/01/17 11:04	1
Y Carrier	85.6		40 - 110					08/24/17 08:20	09/01/17 11:04	1

# Client Sample Results

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

TestAmerica Job ID: 480-123040-2

**Client Sample ID: P-5**  
**Date Collected: 08/21/17 10:15**  
**Date Received: 08/22/17 09:45**

**Lab Sample ID: 480-123040-5**  
**Matrix: Water**

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.697		0.133	0.147	1.00	0.0735	pCi/L	08/24/17 07:47	09/15/17 05:54	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	97.1		40 - 110					08/24/17 07:47	09/15/17 05:54	1

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.532		0.240	0.245	1.00	0.345	pCi/L	08/24/17 08:20	09/01/17 11:04	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	97.1		40 - 110					08/24/17 08:20	09/01/17 11:04	1
Y Carrier	87.5		40 - 110					08/24/17 08:20	09/01/17 11:04	1

# Client Sample Results

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

TestAmerica Job ID: 480-123040-2

**Client Sample ID: P-6**  
**Date Collected: 08/21/17 10:30**  
**Date Received: 08/22/17 09:45**

**Lab Sample ID: 480-123040-6**  
**Matrix: Water**

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0747	U	0.0553	0.0557	1.00	0.0763	pCi/L	08/24/17 07:47	09/15/17 05:54	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	98.8		40 - 110					08/24/17 07:47	09/15/17 05:54	1

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.192	U	0.209	0.210	1.00	0.342	pCi/L	08/24/17 08:20	09/01/17 11:04	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	98.8		40 - 110					08/24/17 08:20	09/01/17 11:04	1
Y Carrier	87.1		40 - 110					08/24/17 08:20	09/01/17 11:04	1

# Client Sample Results

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

TestAmerica Job ID: 480-123040-2

**Client Sample ID: P-7**  
**Date Collected: 08/21/17 11:20**  
**Date Received: 08/22/17 09:45**

**Lab Sample ID: 480-123040-7**  
**Matrix: Water**

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.343		0.0997	0.104	1.00	0.0784	pCi/L	08/24/17 07:47	09/15/17 05:54	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	98.2		40 - 110					08/24/17 07:47	09/15/17 05:54	1

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.293	U	0.233	0.234	1.00	0.369	pCi/L	08/24/17 08:20	09/01/17 11:04	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	98.2		40 - 110					08/24/17 08:20	09/01/17 11:04	1
Y Carrier	83.4		40 - 110					08/24/17 08:20	09/01/17 11:04	1

# Client Sample Results

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

TestAmerica Job ID: 480-123040-2

**Client Sample ID: DUPLICATE**

**Lab Sample ID: 480-123040-8**

Date Collected: 08/21/17 00:00

Matrix: Water

Date Received: 08/22/17 09:45

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.112		0.0657	0.0665	1.00	0.0821	pCi/L	08/24/17 07:47	09/15/17 05:54	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	95.9		40 - 110					08/24/17 07:47	09/15/17 05:54	1

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.556		0.289	0.293	1.00	0.432	pCi/L	08/24/17 08:20	09/01/17 11:34	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	95.9		40 - 110					08/24/17 08:20	09/01/17 11:34	1
Y Carrier	83.0		40 - 110					08/24/17 08:20	09/01/17 11:34	1

# Client Sample Results

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

TestAmerica Job ID: 480-123040-2

**Client Sample ID: FIELD BLANK**

**Lab Sample ID: 480-123040-9**

**Date Collected: 08/21/17 12:25**

**Matrix: Water**

**Date Received: 08/22/17 09:45**

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0524	U	0.0568	0.0570	1.00	0.0904	pCi/L	08/24/17 07:47	09/15/17 05:54	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	91.4		40 - 110					08/24/17 07:47	09/15/17 05:54	1

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.671		0.331	0.337	1.00	0.499	pCi/L	08/24/17 08:20	09/01/17 11:09	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	91.4		40 - 110					08/24/17 08:20	09/01/17 11:09	1
Y Carrier	84.5		40 - 110					08/24/17 08:20	09/01/17 11:09	1



# Client Sample Results

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

TestAmerica Job ID: 480-123040-2

**Client Sample ID: EQUIPMENT BLANK**

**Lab Sample ID: 480-123040-10**

Date Collected: 08/21/17 12:30

Matrix: Water

Date Received: 08/22/17 09:45

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0737	U	0.0565	0.0569	1.00	0.0800	pCi/L	08/24/17 07:47	09/15/17 05:54	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	99.1		40 - 110					08/24/17 07:47	09/15/17 05:54	1

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.315	U	0.277	0.279	1.00	0.446	pCi/L	08/24/17 08:20	09/01/17 11:09	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	99.1		40 - 110					08/24/17 08:20	09/01/17 11:09	1
Y Carrier	81.9		40 - 110					08/24/17 08:20	09/01/17 11:09	1

# Tracer/Carrier Summary

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

TestAmerica Job ID: 480-123040-2

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

Matrix: Water

Prep Type: Total/NA

		Percent Yield (Acceptance Limits)	
Lab Sample ID	Client Sample ID	Ba (40-110)	
480-123040-1	P-1	96.8	
480-123040-1 DU	P-1	96.5	
480-123040-2	P-2	89.4	
480-123040-3	P-3	101	
480-123040-4	P-4R	88.8	
480-123040-5	P-5	97.1	
480-123040-6	P-6	98.8	
480-123040-7	P-7	98.2	
480-123040-8	DUPLICATE	95.9	
480-123040-9	FIELD BLANK	91.4	
480-123040-10	EQUIPMENT BLANK	99.1	
LCS 160-323904/2-A	Lab Control Sample	102	
MB 160-323904/1-A	Method Blank	97.6	

**Tracer/Carrier Legend**  
 Ba = Ba Carrier

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

Matrix: Water

Prep Type: Total/NA

		Percent Yield (Acceptance Limits)	
Lab Sample ID	Client Sample ID	Ba (40-110)	Y (40-110)
480-123040-1	P-1	96.8	87.5
480-123040-1 DU	P-1	96.5	84.9
480-123040-2	P-2	89.4	80.7
480-123040-3	P-3	101	84.9
480-123040-4	P-4R	88.8	85.6
480-123040-5	P-5	97.1	87.5
480-123040-6	P-6	98.8	87.1
480-123040-7	P-7	98.2	83.4
480-123040-8	DUPLICATE	95.9	83.0
480-123040-9	FIELD BLANK	91.4	84.5
480-123040-10	EQUIPMENT BLANK	99.1	81.9
LCS 160-323920/2-A	Lab Control Sample	102	91.6
MB 160-323920/1-A	Method Blank	97.6	92.3

**Tracer/Carrier Legend**  
 Ba = Ba Carrier  
 Y = Y Carrier

# QC Sample Results

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

TestAmerica Job ID: 480-123040-2

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

**Lab Sample ID: MB 160-323904/1-A**  
**Matrix: Water**  
**Analysis Batch: 327362**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 323904**

Analyte	MB MB		Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier	Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Radium-226	0.1632		0.0728	0.0743	1.00	0.0733	pCi/L	08/24/17 07:47	09/15/17 05:50	1
Carrier	MB MB		Limits		Prepared	Analyzed	Dil Fac			
Ba Carrier	%Yield	Qualifier	Limits							
Ba Carrier	97.6		40 - 110		08/24/17 07:47	09/15/17 05:50	1			

**Lab Sample ID: LCS 160-323904/2-A**  
**Matrix: Water**  
**Analysis Batch: 327362**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 323904**

Analyte	Spike Added	LCS Result	LCS Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits
				Uncert. (2σ+/-)					
Radium-226	9.60	9.417		0.978	1.00	0.0868	pCi/L	98	68 - 137
Carrier	LCS LCS		Limits		Prepared	Analyzed	Dil Fac		
Ba Carrier	%Yield	Qualifier	Limits						
Ba Carrier	102		40 - 110						

**Lab Sample ID: 480-123040-1 DU**  
**Matrix: Water**  
**Analysis Batch: 327362**

**Client Sample ID: P-1**  
**Prep Type: Total/NA**  
**Prep Batch: 323904**

Analyte	Sample Sample		DU DU		Total	RL	MDC	Unit	RER	RER Limit
	Result	Qual	Result	Qual	Uncert. (2σ+/-)					
Radium-226	0.127		0.1471		0.0752	1.00	0.0869	pCi/L	0.13	1
Carrier	DU DU		Limits		Prepared	Analyzed	Dil Fac			
Ba Carrier	%Yield	Qualifier	Limits							
Ba Carrier	96.5		40 - 110							

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

**Lab Sample ID: MB 160-323920/1-A**  
**Matrix: Water**  
**Analysis Batch: 325358**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 323920**

Analyte	MB MB		Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier	Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Radium-228	0.07089	U	0.178	0.178	1.00	0.308	pCi/L	08/24/17 08:20	09/01/17 10:58	1
Carrier	MB MB		Limits		Prepared	Analyzed	Dil Fac			
Ba Carrier	%Yield	Qualifier	Limits							
Ba Carrier	97.6		40 - 110		08/24/17 08:20	09/01/17 10:58	1			
Y Carrier	MB MB		Limits		Prepared	Analyzed	Dil Fac			
Y Carrier	%Yield	Qualifier	Limits							
Y Carrier	92.3		40 - 110		08/24/17 08:20	09/01/17 10:58	1			

TestAmerica Buffalo

# QC Sample Results

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

TestAmerica Job ID: 480-123040-2

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

**Lab Sample ID: LCS 160-323920/2-A**

**Matrix: Water**

**Analysis Batch: 325358**

**Client Sample ID: Lab Control Sample**

**Prep Type: Total/NA**

**Prep Batch: 323920**

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	
Radium-228	13.0	15.56		1.62	1.00	0.311	pCi/L	120	56 - 140	
<b>Carrier</b>	<b>%Yield</b>	<b>LCS Qualifier</b>	<b>Limits</b>							
Ba Carrier	102		40 - 110							
Y Carrier	91.6		40 - 110							

**Lab Sample ID: 480-123040-1 DU**

**Matrix: Water**

**Analysis Batch: 325357**

**Client Sample ID: P-1**

**Prep Type: Total/NA**

**Prep Batch: 323920**

Analyte	Sample Result	Sample Qual	DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	RER	RER Limit
Radium-228	0.141	U	0.5429		0.285	1.00	0.423	pCi/L	0.73	1
<b>Carrier</b>	<b>%Yield</b>	<b>DU Qualifier</b>	<b>Limits</b>							
Ba Carrier	96.5		40 - 110							
Y Carrier	84.9		40 - 110							

# QC Association Summary

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

TestAmerica Job ID: 480-123040-2

## Rad

### Prep Batch: 323904

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-123040-1	P-1	Total/NA	Water	PrecSep-21	
480-123040-2	P-2	Total/NA	Water	PrecSep-21	
480-123040-3	P-3	Total/NA	Water	PrecSep-21	
480-123040-4	P-4R	Total/NA	Water	PrecSep-21	
480-123040-5	P-5	Total/NA	Water	PrecSep-21	
480-123040-6	P-6	Total/NA	Water	PrecSep-21	
480-123040-7	P-7	Total/NA	Water	PrecSep-21	
480-123040-8	DUPLICATE	Total/NA	Water	PrecSep-21	
480-123040-9	FIELD BLANK	Total/NA	Water	PrecSep-21	
480-123040-10	EQUIPMENT BLANK	Total/NA	Water	PrecSep-21	
MB 160-323904/1-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-323904/2-A	Lab Control Sample	Total/NA	Water	PrecSep-21	
480-123040-1 DU	P-1	Total/NA	Water	PrecSep-21	

### Prep Batch: 323920

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-123040-1	P-1	Total/NA	Water	PrecSep_0	
480-123040-2	P-2	Total/NA	Water	PrecSep_0	
480-123040-3	P-3	Total/NA	Water	PrecSep_0	
480-123040-4	P-4R	Total/NA	Water	PrecSep_0	
480-123040-5	P-5	Total/NA	Water	PrecSep_0	
480-123040-6	P-6	Total/NA	Water	PrecSep_0	
480-123040-7	P-7	Total/NA	Water	PrecSep_0	
480-123040-8	DUPLICATE	Total/NA	Water	PrecSep_0	
480-123040-9	FIELD BLANK	Total/NA	Water	PrecSep_0	
480-123040-10	EQUIPMENT BLANK	Total/NA	Water	PrecSep_0	
MB 160-323920/1-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-323920/2-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
480-123040-1 DU	P-1	Total/NA	Water	PrecSep_0	

# Lab Chronicle

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

TestAmerica Job ID: 480-123040-2

## Client Sample ID: P-1

Lab Sample ID: 480-123040-1

Date Collected: 08/21/17 08:40

Matrix: Water

Date Received: 08/22/17 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			323904	08/24/17 07:47	LDE	TAL SL
Total/NA	Analysis	903.0		1	327362	09/15/17 05:52	ALD	TAL SL
Total/NA	Prep	PrecSep_0			323920	08/24/17 08:20	LDE	TAL SL
Total/NA	Analysis	904.0		1	325357	09/01/17 11:03	ALD	TAL SL

## Client Sample ID: P-2

Lab Sample ID: 480-123040-2

Date Collected: 08/21/17 11:56

Matrix: Water

Date Received: 08/22/17 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			323904	08/24/17 07:47	LDE	TAL SL
Total/NA	Analysis	903.0		1	327362	09/15/17 05:52	ALD	TAL SL
Total/NA	Prep	PrecSep_0			323920	08/24/17 08:20	LDE	TAL SL
Total/NA	Analysis	904.0		1	325357	09/01/17 11:04	ALD	TAL SL

## Client Sample ID: P-3

Lab Sample ID: 480-123040-3

Date Collected: 08/21/17 09:05

Matrix: Water

Date Received: 08/22/17 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			323904	08/24/17 07:47	LDE	TAL SL
Total/NA	Analysis	903.0		1	327362	09/15/17 05:52	ALD	TAL SL
Total/NA	Prep	PrecSep_0			323920	08/24/17 08:20	LDE	TAL SL
Total/NA	Analysis	904.0		1	325357	09/01/17 11:04	ALD	TAL SL

## Client Sample ID: P-4R

Lab Sample ID: 480-123040-4

Date Collected: 08/21/17 09:45

Matrix: Water

Date Received: 08/22/17 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			323904	08/24/17 07:47	LDE	TAL SL
Total/NA	Analysis	903.0		1	327362	09/15/17 05:52	ALD	TAL SL
Total/NA	Prep	PrecSep_0			323920	08/24/17 08:20	LDE	TAL SL
Total/NA	Analysis	904.0		1	325357	09/01/17 11:04	ALD	TAL SL

## Client Sample ID: P-5

Lab Sample ID: 480-123040-5

Date Collected: 08/21/17 10:15

Matrix: Water

Date Received: 08/22/17 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			323904	08/24/17 07:47	LDE	TAL SL
Total/NA	Analysis	903.0		1	327361	09/15/17 05:54	ALD	TAL SL
Total/NA	Prep	PrecSep_0			323920	08/24/17 08:20	LDE	TAL SL

TestAmerica Buffalo

# Lab Chronicle

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

TestAmerica Job ID: 480-123040-2

## Client Sample ID: P-5

Lab Sample ID: 480-123040-5

Date Collected: 08/21/17 10:15

Matrix: Water

Date Received: 08/22/17 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	904.0		1	325357	09/01/17 11:04	ALD	TAL SL

## Client Sample ID: P-6

Lab Sample ID: 480-123040-6

Date Collected: 08/21/17 10:30

Matrix: Water

Date Received: 08/22/17 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			323904	08/24/17 07:47	LDE	TAL SL
Total/NA	Analysis	903.0		1	327361	09/15/17 05:54	ALD	TAL SL
Total/NA	Prep	PrecSep_0			323920	08/24/17 08:20	LDE	TAL SL
Total/NA	Analysis	904.0		1	325357	09/01/17 11:04	ALD	TAL SL

## Client Sample ID: P-7

Lab Sample ID: 480-123040-7

Date Collected: 08/21/17 11:20

Matrix: Water

Date Received: 08/22/17 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			323904	08/24/17 07:47	LDE	TAL SL
Total/NA	Analysis	903.0		1	327361	09/15/17 05:54	ALD	TAL SL
Total/NA	Prep	PrecSep_0			323920	08/24/17 08:20	LDE	TAL SL
Total/NA	Analysis	904.0		1	325357	09/01/17 11:04	ALD	TAL SL

## Client Sample ID: DUPLICATE

Lab Sample ID: 480-123040-8

Date Collected: 08/21/17 00:00

Matrix: Water

Date Received: 08/22/17 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			323904	08/24/17 07:47	LDE	TAL SL
Total/NA	Analysis	903.0		1	327361	09/15/17 05:54	ALD	TAL SL
Total/NA	Prep	PrecSep_0			323920	08/24/17 08:20	LDE	TAL SL
Total/NA	Analysis	904.0		1	325493	09/01/17 11:34	ALD	TAL SL

## Client Sample ID: FIELD BLANK

Lab Sample ID: 480-123040-9

Date Collected: 08/21/17 12:25

Matrix: Water

Date Received: 08/22/17 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			323904	08/24/17 07:47	LDE	TAL SL
Total/NA	Analysis	903.0		1	327361	09/15/17 05:54	ALD	TAL SL
Total/NA	Prep	PrecSep_0			323920	08/24/17 08:20	LDE	TAL SL
Total/NA	Analysis	904.0		1	325493	09/01/17 11:09	ALD	TAL SL

TestAmerica Buffalo

# Lab Chronicle

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

TestAmerica Job ID: 480-123040-2

**Client Sample ID: EQUIPMENT BLANK**

**Lab Sample ID: 480-123040-10**

**Date Collected: 08/21/17 12:30**

**Matrix: Water**

**Date Received: 08/22/17 09:45**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			323904	08/24/17 07:47	LDE	TAL SL
Total/NA	Analysis	903.0		1	327361	09/15/17 05:54	ALD	TAL SL
Total/NA	Prep	PrecSep_0			323920	08/24/17 08:20	LDE	TAL SL
Total/NA	Analysis	904.0		1	325493	09/01/17 11:09	ALD	TAL SL

**Laboratory References:**

TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566





## Accreditation/Certification Summary

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

TestAmerica Job ID: 480-123040-2

### Laboratory: TestAmerica Buffalo

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

Authority	Program	EPA Region	Identification Number	Expiration Date
Minnesota	NELAP	5	036-999-337	12-31-17

### Laboratory: TestAmerica St. Louis

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

Authority	Program	EPA Region	Identification Number	Expiration Date
Alaska	State Program	10	MO00054	06-30-18
California	State Program	9	2886	03-31-18 *
Connecticut	State Program	1	PH-0241	03-31-19
Florida	NELAP	4	E87689	06-30-18
Illinois	NELAP	5	200023	11-30-17
Iowa	State Program	7	373	02-01-18
Kansas	NELAP	7	E-10236	10-31-17 *
Kentucky (DW)	State Program	4	90125	12-31-17
L-A-B	DoD ELAP		L2305	04-06-19
Louisiana	NELAP	6	04080	06-30-18
Louisiana (DW)	NELAP	6	LA170011	12-31-17
Maryland	State Program	3	310	09-30-18
Missouri	State Program	7	780	06-30-18
Nevada	State Program	9	MO000542017-1	07-31-18
New Jersey	NELAP	2	MO002	06-30-18
New York	NELAP	2	11616	03-31-18
North Dakota	State Program	8	R207	06-30-17 *
NRC	NRC		24-24817-01	12-31-22
Oklahoma	State Program	6	9997	08-31-18
Pennsylvania	NELAP	3	68-00540	02-21-18
South Carolina	State Program	4	85002001	06-30-17 *
Texas	NELAP	6	T104704193-17-11	07-31-18
US Fish & Wildlife	Federal		058448	08-31-18
USDA	Federal		P330-17-0028	02-02-20
Utah	NELAP	8	MO000542016-8	07-31-18
Virginia	NELAP	3	460230	06-14-18
Washington	State Program	10	C592	08-30-18
West Virginia DEP	State Program	3	381	08-31-18

\* Accreditation/Certification renewal pending - accreditation/certification considered valid.

# Method Summary

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

TestAmerica Job ID: 480-123040-2

Method	Method Description	Protocol	Laboratory
903.0	Radium-226 (GFPC)	EPA	TAL SL
904.0	Radium-228 (GFPC)	EPA	TAL SL

**Protocol References:**

EPA = US Environmental Protection Agency

**Laboratory References:**

TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566



# Sample Summary

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

TestAmerica Job ID: 480-123040-2

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
480-123040-1	P-1	Water	08/21/17 08:40	08/22/17 09:45
480-123040-2	P-2	Water	08/21/17 11:56	08/22/17 09:45
480-123040-3	P-3	Water	08/21/17 09:05	08/22/17 09:45
480-123040-4	P-4R	Water	08/21/17 09:45	08/22/17 09:45
480-123040-5	P-5	Water	08/21/17 10:15	08/22/17 09:45
480-123040-6	P-6	Water	08/21/17 10:30	08/22/17 09:45
480-123040-7	P-7	Water	08/21/17 11:20	08/22/17 09:45
480-123040-8	DUPLICATE	Water	08/21/17 00:00	08/22/17 09:45
480-123040-9	FIELD BLANK	Water	08/21/17 12:25	08/22/17 09:45
480-123040-10	EQUIPMENT BLANK	Water	08/21/17 12:30	08/22/17 09:45





Regulatory Program:  DW  NPDES  RCRA  Other:

Project Manager: Ryan Van Dette

Site Contact: Nathaniel Beineman Date: 9/19/17

Test# 480-123040 COC

SKB Environmental 13425 Courthouse Blvd Rosemount, MN 55068 (651) 438-1500 Phone (651) 438-1518 FAX Project Name: Cloquet 2017 CCR GW Event 7 Site: P O # 3078-17-00306	Client Contact	Regulatory Program: <input type="checkbox"/> DW <input type="checkbox"/> NPDES <input type="checkbox"/> RCRA <input type="checkbox"/> Other:	Project Manager: Ryan Van Dette	Site Contact: Nathaniel Beineman Date: 9/19/17	Test# 480-123040 COC
Tel/Fax:		Analysis Turnaround Time		Carrier:	COC N of COCs
CALENDAR DAYS WORKING DAYS		TAT if different from Below		Sampler:	For Lab Use Only:
2 weeks		2 weeks		Walk-in Client:	Lab Sampling:
1 week		1 week		Job / SDG No.:	
2 days		2 days			
1 day		1 day			

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS / MSD (Y/N)	Metals (totals) + Mercury	Chloride	Sulfate	TDS	pH	Radium 226 & 228 combined	Sample Specific Notes:
P-1	8:40		Grab	Water	7		X	X	X	X	X	X		
P-2	11:55		Grab	Water	7		X	X	X	X	X	X		
P-3	9:05		Grab	Water	7		X	X	X	X	X	X		
P-4	9:45		Grab	Water	7		X	X	X	X	X	X		
P-5	10:15		Grab	Water	7		X	X	X	X	X	X		
P-6	10:50		Grab	Water	7		X	X	X	X	X	X		
P-7	11:20		Grab	Water	7		X	X	X	X	X	X		
DUPLICATE <del>WATER</del>			Grab	Water	7		X	X	X	X	X	X		
Field Blank	12:25		Grab	Water	7		X	X	X	X	X	X		
Equipment Blank	12:30		Grab	Water	7		X	X	X	X	X	X		

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other

Possible Hazard Identification: Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

Non-Hazard  Flammable  Skin Irritant  Poison B  Unknown

\*Metals - Boron, Calcium, Antimony, Arsenic, Barium, Beryllium, Cadmium, Chromium, Cobalt, Lead, Lithium, Molybdenum, Selenium, Thallium

Custody Seals Intact: Yes <input type="checkbox"/> No <input type="checkbox"/>	Custody Seal No.:	Company: <i>SKB</i>	Received by: <i>ABM</i>	Company: <i>SKB</i>	Received in Laboratory by:	Company: <i>SKB</i>	Received by: <i>ABM</i>	Company: <i>SKB</i>	Received in Laboratory by:	Company: <i>SKB</i>	Received by: <i>ABM</i>	Company: <i>SKB</i>	Received in Laboratory by:	Company: <i>SKB</i>
Relinquished by: <i>ABM</i>	Date/Time: 8/21/17	Company: <i>SKB</i>	Date/Time: 8/21/17	Company: <i>SKB</i>	Date/Time: 8/21/17	Company: <i>SKB</i>	Date/Time: 8/21/17	Company: <i>SKB</i>	Date/Time: 8/21/17	Company: <i>SKB</i>	Date/Time: 8/21/17	Company: <i>SKB</i>	Date/Time: 8/21/17	Company: <i>SKB</i>
Relinquished by: <i>ABM</i>	Date/Time: 8-21-17	Company: <i>SKB</i>	Date/Time: 8-21-17	Company: <i>SKB</i>	Date/Time: 8-21-17	Company: <i>SKB</i>	Date/Time: 8-21-17	Company: <i>SKB</i>	Date/Time: 8-21-17	Company: <i>SKB</i>	Date/Time: 8-21-17	Company: <i>SKB</i>	Date/Time: 8-21-17	Company: <i>SKB</i>

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# Chain of Custody Record



<b>Client Information (Sub Contract Lab)</b>		Lab PM: VanDette, Ryan T	Carrier Tracking No(s):	COC No: 480-36751-1
Client Contact: Shipping/Receiving		E-Mail: ryan.vandette@testamericainc.com	State of Origin: Minnesota	Page: Page 1 of 2
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): NELAP - Minnesota	Job #: 480-123040-1	
Address: 13715 Rider Trail North,		Due Date Requested: 9/1/2017	Preservation Codes: M - Hexane N - None O - AshNaO2 P - Na2O4S Q - Na2SO3 R - Na2S2O3 S - H2SO4 T - TSP Dodecahydrate U - Acetone V - MCAA W - pH 4-5 X - EDTA Y - EDA Z - other (specify)	
City: Earth City	State, Zip: MO, 63045	TAT Requested (days):	Analysis Requested	
Phone: 314-298-8566(Tel) 314-298-8757(Fax)	PO #:	Matrix (W=water, S=solid, O=waste/oil, B=Tissue, A=Air)	Total Number of Containers	
Email:	WO #:	Sample Type (C=Comp, G=grab)	Perform MS/MSD (Yes or No)	
Project Name: SKB Cloquet	Project #: 48013722	Sample Time	903.0/PreSep_21 Standard Target List	
Site: Shamrock	SSOW#:	Sample Date	904.0/PreSep_0 Standard Target List	
<b>Sample Identification - Client ID (Lab ID)</b>		Sample Date	Field Filtered Sample (Yes or No)	
P-1 (480-123040-1)	8/21/17	08:40 Central	X	X
P-2 (480-123040-2)	8/21/17	11:56 Central	X	X
P-3 (480-123040-3)	8/21/17	09:05 Central	X	X
P-4R (480-123040-4)	8/21/17	09:45 Central	X	X
P-5 (480-123040-5)	8/21/17	10:15 Central	X	X
P-6 (480-123040-6)	8/21/17	10:30 Central	X	X
P-7 (480-123040-7)	8/21/17	11:20 Central	X	X
DUPLICATE (480-123040-8)	8/21/17	Central	X	X
FIELD BLANK (480-123040-9)	8/21/17	12:25 Central	X	X

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/test/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to TestAmerica Laboratories, Inc.

**Possible Hazard Identification**  
 Unconfirmed  
 Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2  
 Empty Kit Relinquished by: Date: \_\_\_\_\_  
 Relinquished by: Date/Time: 8/22/17 1600 Company: TAB  
 Relinquished by: Date/Time: \_\_\_\_\_ Company: TASA  
 Relinquished by: Date/Time: \_\_\_\_\_ Company: \_\_\_\_\_

**Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)**  
 Return To Client  Disposal By Lab  Archive For \_\_\_\_\_ Months  
 Special Instructions/QC Requirements:





## Login Sample Receipt Checklist

Client: Waste Connections, Inc.

Job Number: 480-123040-2

SDG Number:

**Login Number: 123040**

**List Number: 1**

**Creator: Wallace, Cameron**

**List Source: TestAmerica Buffalo**

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

## Login Sample Receipt Checklist

Client: Waste Connections, Inc.

Job Number: 480-123040-2

SDG Number:

**Login Number: 123040**

**List Number: 2**

**Creator: Clarke, Jill C**

**List Source: TestAmerica St. Louis**

**List Creation: 08/23/17 11:11 AM**

Question	Answer	Comment
Radioactivity wasn't checked or is <=/ background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	N/A	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	20.0, 20.0, 20.0
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?	False	
There are no discrepancies between the containers received 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	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	





# TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

## ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Buffalo

10 Hazelwood Drive

Amherst, NY 14228-2298

Tel: (716)691-2600

TestAmerica Job ID: 480-123927-1

Client Project/Site: SKB Cloquet - CCR Groundwater

Sampling Event: CCR Groundwater

For:

Waste Connections, Inc.

13425 Courthouse Blvd

Rosemount, Minnesota 55068

Attn: Nathaniel Beinemann



Authorized for release by:

9/19/2017 12:49:37 PM

Denise Giglia, Project Management Assistant II

[denise.giglia@testamericainc.com](mailto:denise.giglia@testamericainc.com)

Designee for

Ryan VanDette, Project Manager II

(716)504-9830

[ryan.vandette@testamericainc.com](mailto:ryan.vandette@testamericainc.com)

### LINKS

Review your project  
results through

**TotalAccess**

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[www.testamericainc.com](http://www.testamericainc.com)

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

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

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# Definitions/Glossary

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

TestAmerica Job ID: 480-123927-1

## Qualifiers

### Metals

Qualifier	Qualifier Description
*	LCS or LCSD is outside acceptance limits.
^	ICV,CCV,ICB,CCB, ISA, ISB, CRI, CRA, DLCK or MRL standard: Instrument related QC is outside acceptance limits.

### General Chemistry

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

## 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
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)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
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)

# Case Narrative

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

TestAmerica Job ID: 480-123927-1

## Job ID: 480-123927-1

### Laboratory: TestAmerica Buffalo

#### Narrative

#### Job Narrative 480-123927-1

#### Comments

No additional comments.

#### Receipt

The samples were received on 9/9/2017 9:00 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 4 coolers at receipt time were 2.8° C, 2.9° C, 3.1° C and 3.4° C.

#### HPLC/IC

Method(s) 300.0: The following samples was reported with elevated reporting limits for all analytes: P-3 (480-123927-3), P-7 (480-123927-7) and DUPLICATE WELL (480-123927-8). The sample was analyzed at a dilution based on screening results.

Method(s) 300.0: The following samples was diluted to bring the concentration of target analytes within the calibration range: P-1 (480-123927-1), P-2 (480-123927-2), P-4R (480-123927-4), P-5 (480-123927-5) and P-6 (480-123927-6). Elevated reporting limits (RLs) are provided.

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

#### Metals

Method(s) 200.8: The continuing calibration verification (CCV 480-376752/42) associated with batch 376752 recovered above the upper control limit for total Beryllium. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported. The following samples are impacted: P-4R (480-123927-4), P-5 (480-123927-5), P-6 (480-123927-6), P-7 (480-123927-7), DUPLICATE WELL (480-123927-8), FIELD BLANK (480-123927-9) and EQUIPMENT BLANK (480-123927-10).

Method(s) 200.8: The following sample was diluted for total Selenium due to the nature of the sample matrix: P-2 (480-123927-2). 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.

#### General Chemistry

Method(s) SM 2540C: Due to the matrix, the initial volume(s) used for the following sample deviated from the standard procedure: P-2 (480-123927-2). The reporting limits (RLs) have been adjusted proportionately.

Method(s) 9040C, SM 4500 H+ B: This analysis is normally performed in the field and has a method-defined holding time of 15 minutes. The following samples has been qualified with the "HF" flag to indicate analysis was performed in the laboratory outside the 15 minute timeframe: P-1 (480-123927-1), P-2 (480-123927-2), P-3 (480-123927-3), P-4R (480-123927-4), P-5 (480-123927-5), P-6 (480-123927-6), P-7 (480-123927-7), DUPLICATE WELL (480-123927-8), FIELD BLANK (480-123927-9) and EQUIPMENT BLANK (480-123927-10).

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

# Detection Summary

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

TestAmerica Job ID: 480-123927-1

## Client Sample ID: P-1

## Lab Sample ID: 480-123927-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.12		0.0020		mg/L	1		200.7 Rev 4.4	Total/NA
Boron	0.058		0.020		mg/L	1		200.7 Rev 4.4	Total/NA
Calcium	127		0.50		mg/L	1		200.7 Rev 4.4	Total/NA
Cobalt	0.50	*	0.30		ug/L	1		200.8	Total/NA
Chloride	109		2.5		mg/L	5		300.0	Total/NA
Sulfate	50.3		10.0		mg/L	5		300.0	Total/NA
Total Dissolved Solids	634		10.0		mg/L	1		SM 2540C	Total/NA
Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
pH	7.0	HF	0.1		SU	1		SM 4500 H+ B	Total/NA
Temperature	23.9	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

## Client Sample ID: P-2

## Lab Sample ID: 480-123927-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.19		0.0020		mg/L	1		200.7 Rev 4.4	Total/NA
Boron	0.085		0.020		mg/L	1		200.7 Rev 4.4	Total/NA
Calcium	207		0.50		mg/L	1		200.7 Rev 4.4	Total/NA
Chromium	0.018		0.0040		mg/L	1		200.7 Rev 4.4	Total/NA
Lead	0.015		0.010		mg/L	1		200.7 Rev 4.4	Total/NA
Arsenic	3.6	*	1.0		ug/L	1		200.8	Total/NA
Cobalt	6.0	*	0.30		ug/L	1		200.8	Total/NA
Molybdenum	1.3		1.0		ug/L	1		200.8	Total/NA
Chloride	408		2.5		mg/L	5		300.0	Total/NA
Sulfate	18.0		10.0		mg/L	5		300.0	Total/NA
Total Dissolved Solids	1590		20.0		mg/L	1		SM 2540C	Total/NA
Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
pH	6.7	HF	0.1		SU	1		SM 4500 H+ B	Total/NA
Temperature	24.3	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

## Client Sample ID: P-3

## Lab Sample ID: 480-123927-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.16		0.0020		mg/L	1		200.7 Rev 4.4	Total/NA
Boron	0.039		0.020		mg/L	1		200.7 Rev 4.4	Total/NA
Calcium	115		0.50		mg/L	1		200.7 Rev 4.4	Total/NA
Chloride	74.8		2.5		mg/L	5		300.0	Total/NA
Sulfate	59.8		10.0		mg/L	5		300.0	Total/NA
Total Dissolved Solids	570		10.0		mg/L	1		SM 2540C	Total/NA
Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
pH	7.4	HF	0.1		SU	1		SM 4500 H+ B	Total/NA
Temperature	24.5	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

## Client Sample ID: P-4R

## Lab Sample ID: 480-123927-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.20		0.0020		mg/L	1		200.7 Rev 4.4	Total/NA
Boron	0.076		0.020		mg/L	1		200.7 Rev 4.4	Total/NA
Calcium	138		0.50		mg/L	1		200.7 Rev 4.4	Total/NA
Cobalt	0.55	*	0.30		ug/L	1		200.8	Total/NA
Molybdenum	4.1		1.0		ug/L	1		200.8	Total/NA

This Detection Summary does not include radiochemical test results.

TestAmerica Buffalo

# Detection Summary

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

TestAmerica Job ID: 480-123927-1

## Client Sample ID: P-4R (Continued)

## Lab Sample ID: 480-123927-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	135		2.5		mg/L	5		300.0	Total/NA
Sulfate	42.8		10.0		mg/L	5		300.0	Total/NA
Total Dissolved Solids	686		10.0		mg/L	1		SM 2540C	Total/NA
Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
pH	7.6	HF	0.1		SU	1		SM 4500 H+ B	Total/NA
Temperature	24.6	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

## Client Sample ID: P-5

## Lab Sample ID: 480-123927-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.27		0.0020		mg/L	1		200.7 Rev 4.4	Total/NA
Boron	0.041		0.020		mg/L	1		200.7 Rev 4.4	Total/NA
Calcium	143		0.50		mg/L	1		200.7 Rev 4.4	Total/NA
Cadmium	0.53		0.50		ug/L	1		200.8	Total/NA
Cobalt	9.2 *		0.30		ug/L	1		200.8	Total/NA
Chloride	218		2.5		mg/L	5		300.0	Total/NA
Sulfate	36.0		10.0		mg/L	5		300.0	Total/NA
Total Dissolved Solids	942		10.0		mg/L	1		SM 2540C	Total/NA
Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
pH	7.0	HF	0.1		SU	1		SM 4500 H+ B	Total/NA
Temperature	24.8	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

## Client Sample ID: P-6

## Lab Sample ID: 480-123927-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.10		0.0020		mg/L	1		200.7 Rev 4.4	Total/NA
Boron	0.33		0.020		mg/L	1		200.7 Rev 4.4	Total/NA
Calcium	139		0.50		mg/L	1		200.7 Rev 4.4	Total/NA
Chloride	85.9		2.5		mg/L	5		300.0	Total/NA
Sulfate	109		10.0		mg/L	5		300.0	Total/NA
Total Dissolved Solids	795		10.0		mg/L	1		SM 2540C	Total/NA
Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
pH	7.1	HF	0.1		SU	1		SM 4500 H+ B	Total/NA
Temperature	24.9	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

## Client Sample ID: P-7

## Lab Sample ID: 480-123927-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.23		0.0020		mg/L	1		200.7 Rev 4.4	Total/NA
Boron	0.14		0.020		mg/L	1		200.7 Rev 4.4	Total/NA
Calcium	171		0.50		mg/L	1		200.7 Rev 4.4	Total/NA
Cobalt	0.64 *		0.30		ug/L	1		200.8	Total/NA
Chloride	63.9		2.5		mg/L	5		300.0	Total/NA
Sulfate	68.0		10.0		mg/L	5		300.0	Total/NA
Total Dissolved Solids	796		10.0		mg/L	1		SM 2540C	Total/NA
Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
pH	7.1	HF	0.1		SU	1		SM 4500 H+ B	Total/NA
Temperature	25.1	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

This Detection Summary does not include radiochemical test results.

TestAmerica Buffalo

# Detection Summary

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

TestAmerica Job ID: 480-123927-1

## Client Sample ID: DUPLICATE WELL

## Lab Sample ID: 480-123927-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.16		0.0020		mg/L	1		200.7 Rev 4.4	Total/NA
Boron	0.041		0.020		mg/L	1		200.7 Rev 4.4	Total/NA
Calcium	119		0.50		mg/L	1		200.7 Rev 4.4	Total/NA
Chloride	76.2		2.5		mg/L	5		300.0	Total/NA
Sulfate	61.4		10.0		mg/L	5		300.0	Total/NA
Total Dissolved Solids	573		10.0		mg/L	1		SM 2540C	Total/NA
Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
pH	7.4	HF	0.1		SU	1		SM 4500 H+ B	Total/NA
Temperature	25.1	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

## Client Sample ID: FIELD BLANK

## Lab Sample ID: 480-123927-9

Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
pH	6.1	HF	0.1		SU	1		SM 4500 H+ B	Total/NA
Temperature	25.2	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

## Client Sample ID: EQUIPMENT BLANK

## Lab Sample ID: 480-123927-10

Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
pH	6.6	HF	0.1		SU	1		SM 4500 H+ B	Total/NA
Temperature	25.4	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

This Detection Summary does not include radiochemical test results.

TestAmerica Buffalo

# Client Sample Results

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

TestAmerica Job ID: 480-123927-1

**Client Sample ID: P-1**

**Date Collected: 09/08/17 08:35**

**Date Received: 09/09/17 09:00**

**Lab Sample ID: 480-123927-1**

**Matrix: Water**

### Method: 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	0.12		0.0020		mg/L		09/13/17 08:35	09/14/17 10:35	1
Boron	0.058		0.020		mg/L		09/13/17 08:35	09/14/17 10:35	1
Calcium	127		0.50		mg/L		09/13/17 08:35	09/14/17 10:35	1
Chromium	ND		0.0040		mg/L		09/13/17 08:35	09/14/17 10:35	1
Lead	ND		0.010		mg/L		09/13/17 08:35	09/14/17 10:35	1
Lithium	ND		0.030		mg/L		09/13/17 08:35	09/14/17 10:35	1

### Method: 200.8 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		1.0		ug/L		09/13/17 08:00	09/13/17 16:24	1
Arsenic	ND	*	1.0		ug/L		09/13/17 08:00	09/13/17 16:24	1
Beryllium	ND		0.70		ug/L		09/13/17 08:00	09/13/17 16:24	1
Cadmium	ND		0.50		ug/L		09/13/17 08:00	09/13/17 16:24	1
Cobalt	0.50	*	0.30		ug/L		09/13/17 08:00	09/13/17 16:24	1
Molybdenum	ND		1.0		ug/L		09/13/17 08:00	09/13/17 16:24	1
Selenium	ND	*	1.0		ug/L		09/13/17 08:00	09/13/17 16:24	1
Thallium	ND		0.20		ug/L		09/13/17 08:00	09/13/17 16:24	1

### Method: 245.1 - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020		mg/L		09/12/17 11:20	09/12/17 15:25	1

### General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	109		2.5		mg/L			09/14/17 16:48	5
Fluoride	ND		0.25		mg/L			09/14/17 16:48	5
Sulfate	50.3		10.0		mg/L			09/14/17 16:48	5
Total Dissolved Solids	634		10.0		mg/L			09/12/17 09:43	1
Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	7.0	HF	0.1		SU			09/12/17 16:41	1
Temperature	23.9	HF	0.001		Degrees C			09/12/17 16:41	1



# Client Sample Results

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

TestAmerica Job ID: 480-123927-1

**Client Sample ID: P-2**

**Date Collected: 09/08/17 12:00**

**Date Received: 09/09/17 09:00**

**Lab Sample ID: 480-123927-2**

**Matrix: Water**

**Method: 200.7 Rev 4.4 - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	0.19		0.0020		mg/L		09/13/17 08:35	09/14/17 10:39	1
Boron	0.085		0.020		mg/L		09/13/17 08:35	09/14/17 10:39	1
Calcium	207		0.50		mg/L		09/13/17 08:35	09/14/17 10:39	1
Chromium	0.018		0.0040		mg/L		09/13/17 08:35	09/14/17 10:39	1
Lead	0.015		0.010		mg/L		09/13/17 08:35	09/14/17 10:39	1
Lithium	ND		0.030		mg/L		09/13/17 08:35	09/14/17 10:39	1

**Method: 200.8 - Metals (ICP/MS)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		1.0		ug/L		09/13/17 08:00	09/13/17 16:30	1
Arsenic	3.6	*	1.0		ug/L		09/13/17 08:00	09/13/17 16:30	1
Beryllium	ND		0.70		ug/L		09/13/17 08:00	09/13/17 16:30	1
Cadmium	ND		0.50		ug/L		09/13/17 08:00	09/13/17 16:30	1
Cobalt	6.0	*	0.30		ug/L		09/13/17 08:00	09/13/17 16:30	1
Molybdenum	1.3		1.0		ug/L		09/13/17 08:00	09/13/17 16:30	1
Selenium	ND		5.0		ug/L		09/13/17 08:00	09/14/17 17:27	5
Thallium	ND		0.20		ug/L		09/13/17 08:00	09/13/17 16:30	1

**Method: 245.1 - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020		mg/L		09/12/17 11:20	09/12/17 15:26	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	408		2.5		mg/L			09/14/17 16:56	5
Fluoride	ND		0.25		mg/L			09/14/17 16:56	5
Sulfate	18.0		10.0		mg/L			09/14/17 16:56	5
Total Dissolved Solids	1590		20.0		mg/L			09/12/17 09:43	1
Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	6.7	HF	0.1		SU			09/12/17 16:47	1
Temperature	24.3	HF	0.001		Degrees C			09/12/17 16:47	1

# Client Sample Results

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

TestAmerica Job ID: 480-123927-1

**Client Sample ID: P-3**

**Date Collected: 09/08/17 09:00**

**Date Received: 09/09/17 09:00**

**Lab Sample ID: 480-123927-3**

**Matrix: Water**

**Method: 200.7 Rev 4.4 - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	0.16		0.0020		mg/L		09/13/17 08:35	09/14/17 10:42	1
Boron	0.039		0.020		mg/L		09/13/17 08:35	09/14/17 10:42	1
Calcium	115		0.50		mg/L		09/13/17 08:35	09/14/17 10:42	1
Chromium	ND		0.0040		mg/L		09/13/17 08:35	09/14/17 10:42	1
Lead	ND		0.010		mg/L		09/13/17 08:35	09/14/17 10:42	1
Lithium	ND		0.030		mg/L		09/13/17 08:35	09/14/17 10:42	1

**Method: 200.8 - Metals (ICP/MS)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		1.0		ug/L		09/13/17 08:00	09/13/17 16:35	1
Arsenic	ND	*	1.0		ug/L		09/13/17 08:00	09/13/17 16:35	1
Beryllium	ND		0.70		ug/L		09/13/17 08:00	09/13/17 16:35	1
Cadmium	ND		0.50		ug/L		09/13/17 08:00	09/13/17 16:35	1
Cobalt	ND	*	0.30		ug/L		09/13/17 08:00	09/13/17 16:35	1
Molybdenum	ND		1.0		ug/L		09/13/17 08:00	09/13/17 16:35	1
Selenium	ND	*	1.0		ug/L		09/13/17 08:00	09/13/17 16:35	1
Thallium	ND		0.20		ug/L		09/13/17 08:00	09/13/17 16:35	1

**Method: 245.1 - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020		mg/L		09/12/17 11:20	09/12/17 15:28	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	74.8		2.5		mg/L			09/14/17 17:36	5
Fluoride	ND		0.25		mg/L			09/14/17 17:36	5
Sulfate	59.8		10.0		mg/L			09/14/17 17:36	5
Total Dissolved Solids	570		10.0		mg/L			09/12/17 09:43	1
Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	7.4	HF	0.1		SU			09/12/17 16:50	1
Temperature	24.5	HF	0.001		Degrees C			09/12/17 16:50	1

# Client Sample Results

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

TestAmerica Job ID: 480-123927-1

**Client Sample ID: P-4R**

**Date Collected: 09/08/17 09:45**

**Date Received: 09/09/17 09:00**

**Lab Sample ID: 480-123927-4**

**Matrix: Water**

### Method: 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	0.20		0.0020		mg/L		09/13/17 08:35	09/14/17 10:46	1
Boron	0.076		0.020		mg/L		09/13/17 08:35	09/14/17 10:46	1
Calcium	138		0.50		mg/L		09/13/17 08:35	09/14/17 10:46	1
Chromium	ND		0.0040		mg/L		09/13/17 08:35	09/14/17 10:46	1
Lead	ND		0.010		mg/L		09/13/17 08:35	09/14/17 10:46	1
Lithium	ND		0.030		mg/L		09/13/17 08:35	09/14/17 10:46	1

### Method: 200.8 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		1.0		ug/L		09/13/17 08:00	09/13/17 16:58	1
Arsenic	ND	*	1.0		ug/L		09/13/17 08:00	09/13/17 16:58	1
Beryllium	ND	^	0.70		ug/L		09/13/17 08:00	09/13/17 16:58	1
Cadmium	ND		0.50		ug/L		09/13/17 08:00	09/13/17 16:58	1
Cobalt	0.55	*	0.30		ug/L		09/13/17 08:00	09/13/17 16:58	1
Molybdenum	4.1		1.0		ug/L		09/13/17 08:00	09/13/17 16:58	1
Selenium	ND	*	1.0		ug/L		09/13/17 08:00	09/13/17 16:58	1
Thallium	ND		0.20		ug/L		09/13/17 08:00	09/13/17 16:58	1

### Method: 245.1 - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020		mg/L		09/12/17 11:20	09/12/17 15:30	1

### General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	135		2.5		mg/L			09/14/17 17:45	5
Fluoride	ND		0.25		mg/L			09/14/17 17:45	5
Sulfate	42.8		10.0		mg/L			09/14/17 17:45	5
Total Dissolved Solids	686		10.0		mg/L			09/12/17 09:43	1
Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	7.6	HF	0.1		SU			09/12/17 16:53	1
Temperature	24.6	HF	0.001		Degrees C			09/12/17 16:53	1

# Client Sample Results

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

TestAmerica Job ID: 480-123927-1

**Client Sample ID: P-5**

**Date Collected: 09/08/17 10:15**

**Date Received: 09/09/17 09:00**

**Lab Sample ID: 480-123927-5**

**Matrix: Water**

**Method: 200.7 Rev 4.4 - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	0.27		0.0020		mg/L		09/13/17 08:35	09/14/17 10:49	1
Boron	0.041		0.020		mg/L		09/13/17 08:35	09/14/17 10:49	1
Calcium	143		0.50		mg/L		09/13/17 08:35	09/14/17 10:49	1
Chromium	ND		0.0040		mg/L		09/13/17 08:35	09/14/17 10:49	1
Lead	ND		0.010		mg/L		09/13/17 08:35	09/14/17 10:49	1
Lithium	ND		0.030		mg/L		09/13/17 08:35	09/14/17 10:49	1

**Method: 200.8 - Metals (ICP/MS)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		1.0		ug/L		09/13/17 08:00	09/13/17 17:04	1
Arsenic	ND	*	1.0		ug/L		09/13/17 08:00	09/13/17 17:04	1
Beryllium	ND	^	0.70		ug/L		09/13/17 08:00	09/13/17 17:04	1
Cadmium	0.53		0.50		ug/L		09/13/17 08:00	09/13/17 17:04	1
Cobalt	9.2	*	0.30		ug/L		09/13/17 08:00	09/13/17 17:04	1
Molybdenum	ND		1.0		ug/L		09/13/17 08:00	09/13/17 17:04	1
Selenium	ND	*	1.0		ug/L		09/13/17 08:00	09/13/17 17:04	1
Thallium	ND		0.20		ug/L		09/13/17 08:00	09/13/17 17:04	1

**Method: 245.1 - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020		mg/L		09/12/17 11:20	09/12/17 15:32	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	218		2.5		mg/L			09/14/17 17:53	5
Fluoride	ND		0.25		mg/L			09/14/17 17:53	5
Sulfate	36.0		10.0		mg/L			09/14/17 17:53	5
Total Dissolved Solids	942		10.0		mg/L			09/12/17 09:43	1
Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	7.0	HF	0.1		SU			09/12/17 16:55	1
Temperature	24.8	HF	0.001		Degrees C			09/12/17 16:55	1

# Client Sample Results

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

TestAmerica Job ID: 480-123927-1

**Client Sample ID: P-6**

**Date Collected: 09/08/17 11:00**

**Date Received: 09/09/17 09:00**

**Lab Sample ID: 480-123927-6**

**Matrix: Water**

**Method: 200.7 Rev 4.4 - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	0.10		0.0020		mg/L		09/13/17 08:35	09/14/17 10:53	1
Boron	0.33		0.020		mg/L		09/13/17 08:35	09/14/17 10:53	1
Calcium	139		0.50		mg/L		09/13/17 08:35	09/14/17 10:53	1
Chromium	ND		0.0040		mg/L		09/13/17 08:35	09/14/17 10:53	1
Lead	ND		0.010		mg/L		09/13/17 08:35	09/14/17 10:53	1
Lithium	ND		0.030		mg/L		09/13/17 08:35	09/14/17 10:53	1

**Method: 200.8 - Metals (ICP/MS)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		1.0		ug/L		09/13/17 08:00	09/13/17 17:09	1
Arsenic	ND	*	1.0		ug/L		09/13/17 08:00	09/13/17 17:09	1
Beryllium	ND	^	0.70		ug/L		09/13/17 08:00	09/13/17 17:09	1
Cadmium	ND		0.50		ug/L		09/13/17 08:00	09/13/17 17:09	1
Cobalt	ND	*	0.30		ug/L		09/13/17 08:00	09/13/17 17:09	1
Molybdenum	ND		1.0		ug/L		09/13/17 08:00	09/13/17 17:09	1
Selenium	ND	*	1.0		ug/L		09/13/17 08:00	09/13/17 17:09	1
Thallium	ND		0.20		ug/L		09/13/17 08:00	09/13/17 17:09	1

**Method: 245.1 - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020		mg/L		09/12/17 11:20	09/12/17 15:37	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	85.9		2.5		mg/L			09/14/17 18:01	5
Fluoride	ND		0.25		mg/L			09/14/17 18:01	5
Sulfate	109		10.0		mg/L			09/14/17 18:01	5
Total Dissolved Solids	795		10.0		mg/L			09/12/17 09:43	1
Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	7.1	HF	0.1		SU			09/12/17 16:58	1
Temperature	24.9	HF	0.001		Degrees C			09/12/17 16:58	1

# Client Sample Results

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

TestAmerica Job ID: 480-123927-1

**Client Sample ID: P-7**

**Date Collected: 09/08/17 11:35**

**Date Received: 09/09/17 09:00**

**Lab Sample ID: 480-123927-7**

**Matrix: Water**

### Method: 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	0.23		0.0020		mg/L		09/13/17 08:35	09/14/17 10:57	1
Boron	0.14		0.020		mg/L		09/13/17 08:35	09/14/17 10:57	1
Calcium	171		0.50		mg/L		09/13/17 08:35	09/14/17 10:57	1
Chromium	ND		0.0040		mg/L		09/13/17 08:35	09/14/17 10:57	1
Lead	ND		0.010		mg/L		09/13/17 08:35	09/14/17 10:57	1
Lithium	ND		0.030		mg/L		09/13/17 08:35	09/14/17 10:57	1

### Method: 200.8 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		1.0		ug/L		09/13/17 08:00	09/13/17 17:15	1
Arsenic	ND	*	1.0		ug/L		09/13/17 08:00	09/13/17 17:15	1
Beryllium	ND	^	0.70		ug/L		09/13/17 08:00	09/13/17 17:15	1
Cadmium	ND		0.50		ug/L		09/13/17 08:00	09/13/17 17:15	1
Cobalt	0.64	*	0.30		ug/L		09/13/17 08:00	09/13/17 17:15	1
Molybdenum	ND		1.0		ug/L		09/13/17 08:00	09/13/17 17:15	1
Selenium	ND	*	1.0		ug/L		09/13/17 08:00	09/13/17 17:15	1
Thallium	ND		0.20		ug/L		09/13/17 08:00	09/13/17 17:15	1

### Method: 245.1 - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020		mg/L		09/12/17 11:20	09/12/17 15:40	1

### General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	63.9		2.5		mg/L			09/14/17 18:17	5
Fluoride	ND		0.25		mg/L			09/14/17 18:17	5
Sulfate	68.0		10.0		mg/L			09/14/17 18:17	5
Total Dissolved Solids	796		10.0		mg/L			09/12/17 09:43	1
Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	7.1	HF	0.1		SU			09/12/17 17:01	1
Temperature	25.1	HF	0.001		Degrees C			09/12/17 17:01	1

# Client Sample Results

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

TestAmerica Job ID: 480-123927-1

**Client Sample ID: DUPLICATE WELL**

**Lab Sample ID: 480-123927-8**

**Date Collected: 09/08/17 00:00**

**Matrix: Water**

**Date Received: 09/09/17 09:00**

### Method: 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	0.16		0.0020		mg/L		09/13/17 08:35	09/14/17 11:11	1
Boron	0.041		0.020		mg/L		09/13/17 08:35	09/14/17 11:11	1
Calcium	119		0.50		mg/L		09/13/17 08:35	09/14/17 11:11	1
Chromium	ND		0.0040		mg/L		09/13/17 08:35	09/14/17 11:11	1
Lead	ND		0.010		mg/L		09/13/17 08:35	09/14/17 11:11	1
Lithium	ND		0.030		mg/L		09/13/17 08:35	09/14/17 11:11	1

### Method: 200.8 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		1.0		ug/L		09/13/17 08:00	09/13/17 17:20	1
Arsenic	ND	*	1.0		ug/L		09/13/17 08:00	09/13/17 17:20	1
Beryllium	ND	^	0.70		ug/L		09/13/17 08:00	09/13/17 17:20	1
Cadmium	ND		0.50		ug/L		09/13/17 08:00	09/13/17 17:20	1
Cobalt	ND	*	0.30		ug/L		09/13/17 08:00	09/13/17 17:20	1
Molybdenum	ND		1.0		ug/L		09/13/17 08:00	09/13/17 17:20	1
Selenium	ND	*	1.0		ug/L		09/13/17 08:00	09/13/17 17:20	1
Thallium	ND		0.20		ug/L		09/13/17 08:00	09/13/17 17:20	1

### Method: 245.1 - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020		mg/L		09/12/17 11:20	09/12/17 15:42	1

### General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	76.2		2.5		mg/L			09/14/17 18:25	5
Fluoride	ND		0.25		mg/L			09/14/17 18:25	5
Sulfate	61.4		10.0		mg/L			09/14/17 18:25	5
Total Dissolved Solids	573		10.0		mg/L			09/12/17 09:43	1
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH	7.4	HF	0.1		SU			09/12/17 17:04	1
Temperature	25.1	HF	0.001		Degrees C			09/12/17 17:04	1

# Client Sample Results

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

TestAmerica Job ID: 480-123927-1

**Client Sample ID: FIELD BLANK**

**Lab Sample ID: 480-123927-9**

**Date Collected: 09/08/17 12:35**

**Matrix: Water**

**Date Received: 09/09/17 09:00**

**Method: 200.7 Rev 4.4 - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	ND		0.0020		mg/L		09/13/17 08:35	09/14/17 11:15	1
Boron	ND		0.020		mg/L		09/13/17 08:35	09/14/17 11:15	1
Calcium	ND		0.50		mg/L		09/13/17 08:35	09/14/17 11:15	1
Chromium	ND		0.0040		mg/L		09/13/17 08:35	09/14/17 11:15	1
Lead	ND		0.010		mg/L		09/13/17 08:35	09/14/17 11:15	1
Lithium	ND		0.030		mg/L		09/13/17 08:35	09/14/17 11:15	1

**Method: 200.8 - Metals (ICP/MS)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		1.0		ug/L		09/13/17 08:00	09/13/17 17:37	1
Arsenic	ND	*	1.0		ug/L		09/13/17 08:00	09/13/17 17:37	1
Beryllium	ND	^	0.70		ug/L		09/13/17 08:00	09/13/17 17:37	1
Cadmium	ND		0.50		ug/L		09/13/17 08:00	09/13/17 17:37	1
Cobalt	ND	*	0.30		ug/L		09/13/17 08:00	09/13/17 17:37	1
Molybdenum	ND		1.0		ug/L		09/13/17 08:00	09/13/17 17:37	1
Selenium	ND	*	1.0		ug/L		09/13/17 08:00	09/13/17 17:37	1
Thallium	ND		0.20		ug/L		09/13/17 08:00	09/13/17 17:37	1

**Method: 245.1 - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020		mg/L		09/12/17 11:20	09/12/17 15:43	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		0.50		mg/L			09/14/17 18:33	1
Fluoride	ND		0.050		mg/L			09/14/17 18:33	1
Sulfate	ND		2.0		mg/L			09/14/17 18:33	1
Total Dissolved Solids	ND		10.0		mg/L			09/12/17 09:43	1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH	6.1	HF	0.1		SU			09/12/17 17:07	1
Temperature	25.2	HF	0.001		Degrees C			09/12/17 17:07	1



# Client Sample Results

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

TestAmerica Job ID: 480-123927-1

**Client Sample ID: EQUIPMENT BLANK**

**Lab Sample ID: 480-123927-10**

**Date Collected: 09/08/17 12:40**

**Matrix: Water**

**Date Received: 09/09/17 09:00**

**Method: 200.7 Rev 4.4 - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	ND		0.0020		mg/L		09/13/17 08:35	09/14/17 11:18	1
Boron	ND		0.020		mg/L		09/13/17 08:35	09/14/17 11:18	1
Calcium	ND		0.50		mg/L		09/13/17 08:35	09/14/17 11:18	1
Chromium	ND		0.0040		mg/L		09/13/17 08:35	09/14/17 11:18	1
Lead	ND		0.010		mg/L		09/13/17 08:35	09/14/17 11:18	1
Lithium	ND		0.030		mg/L		09/13/17 08:35	09/14/17 11:18	1

**Method: 200.8 - Metals (ICP/MS)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		1.0		ug/L		09/13/17 08:00	09/13/17 17:42	1
Arsenic	ND	*	1.0		ug/L		09/13/17 08:00	09/13/17 17:42	1
Beryllium	ND	^	0.70		ug/L		09/13/17 08:00	09/13/17 17:42	1
Cadmium	ND		0.50		ug/L		09/13/17 08:00	09/13/17 17:42	1
Cobalt	ND	*	0.30		ug/L		09/13/17 08:00	09/13/17 17:42	1
Molybdenum	ND		1.0		ug/L		09/13/17 08:00	09/13/17 17:42	1
Selenium	ND	*	1.0		ug/L		09/13/17 08:00	09/13/17 17:42	1
Thallium	ND		0.20		ug/L		09/13/17 08:00	09/13/17 17:42	1

**Method: 245.1 - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020		mg/L		09/12/17 11:20	09/12/17 15:45	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		0.50		mg/L			09/14/17 18:42	1
Fluoride	ND		0.050		mg/L			09/14/17 18:42	1
Sulfate	ND		2.0		mg/L			09/14/17 18:42	1
Total Dissolved Solids	ND		10.0		mg/L			09/12/17 09:43	1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH	6.6	HF	0.1		SU			09/12/17 17:12	1
Temperature	25.4	HF	0.001		Degrees C			09/12/17 17:12	1

# QC Sample Results

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

TestAmerica Job ID: 480-123927-1

## Method: 200.7 Rev 4.4 - Metals (ICP)

**Lab Sample ID: MB 480-376477/1-A**  
**Matrix: Water**  
**Analysis Batch: 376878**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 376477**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	ND		0.0020		mg/L		09/13/17 08:35	09/14/17 09:52	1
Calcium	ND		0.50		mg/L		09/13/17 08:35	09/14/17 09:52	1
Chromium	ND		0.0040		mg/L		09/13/17 08:35	09/14/17 09:52	1
Lead	ND		0.010		mg/L		09/13/17 08:35	09/14/17 09:52	1
Lithium	ND		0.030		mg/L		09/13/17 08:35	09/14/17 09:52	1

**Lab Sample ID: LCS 480-376477/2-A**  
**Matrix: Water**  
**Analysis Batch: 376878**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 376477**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Barium	0.200	0.207		mg/L		104	85 - 115
Boron	0.200	0.219		mg/L		110	85 - 115
Calcium	10.0	10.01		mg/L		100	85 - 115
Chromium	0.200	0.200		mg/L		100	85 - 115
Lead	0.200	0.205		mg/L		103	85 - 115

## Method: 200.8 - Metals (ICP/MS)

**Lab Sample ID: MB 480-376372/1-A**  
**Matrix: Water**  
**Analysis Batch: 376752**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 376372**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		1.0		ug/L		09/13/17 08:00	09/13/17 15:06	1
Arsenic	ND		1.0		ug/L		09/13/17 08:00	09/13/17 15:06	1
Beryllium	ND		0.70		ug/L		09/13/17 08:00	09/13/17 15:06	1
Cadmium	ND		0.50		ug/L		09/13/17 08:00	09/13/17 15:06	1
Cobalt	ND		0.30		ug/L		09/13/17 08:00	09/13/17 15:06	1
Molybdenum	ND		1.0		ug/L		09/13/17 08:00	09/13/17 15:06	1
Selenium	ND		1.0		ug/L		09/13/17 08:00	09/13/17 15:06	1
Thallium	ND		0.20		ug/L		09/13/17 08:00	09/13/17 15:06	1

**Lab Sample ID: LCS 480-376372/2-A**  
**Matrix: Water**  
**Analysis Batch: 376752**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 376372**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Antimony	20.0	21.08		ug/L		105	85 - 115
Beryllium	20.0	21.20		ug/L		106	85 - 115
Cadmium	20.0	20.09		ug/L		100	85 - 115
Molybdenum	20.0	20.49		ug/L		102	85 - 115
Thallium	20.0	19.63		ug/L		98	85 - 115

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# QC Sample Results

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

TestAmerica Job ID: 480-123927-1

## Method: 200.8 - Metals (ICP/MS) (Continued)

**Lab Sample ID: LCS 480-376372/2-A**  
**Matrix: Water**  
**Analysis Batch: 377022**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 376372**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Arsenic	20.0	20.32		ug/L		102	85 - 115
Cobalt	20.0	19.46		ug/L		97	85 - 115
Selenium	20.0	20.86		ug/L		104	85 - 115

**Lab Sample ID: 480-123927-8 MS**  
**Matrix: Water**  
**Analysis Batch: 376752**

**Client Sample ID: DUPLICATE WELL**  
**Prep Type: Total/NA**  
**Prep Batch: 376372**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Antimony	ND		20.0	20.72		ug/L		104	70 - 130
Arsenic	ND	*	20.0	19.61		ug/L		98	70 - 130
Cadmium	ND		20.0	19.77		ug/L		99	70 - 130
Cobalt	ND	*	20.0	19.41		ug/L		96	70 - 130
Molybdenum	ND		20.0	21.38		ug/L		103	70 - 130
Selenium	ND	*	20.0	19.61		ug/L		98	70 - 130
Thallium	ND		20.0	19.81		ug/L		99	70 - 130

**Lab Sample ID: 480-123927-8 MS**  
**Matrix: Water**  
**Analysis Batch: 377022**

**Client Sample ID: DUPLICATE WELL**  
**Prep Type: Total/NA**  
**Prep Batch: 376372**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Beryllium	ND	^	20.0	22.88		ug/L		114	70 - 130

**Lab Sample ID: 480-123927-8 MSD**  
**Matrix: Water**  
**Analysis Batch: 376752**

**Client Sample ID: DUPLICATE WELL**  
**Prep Type: Total/NA**  
**Prep Batch: 376372**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Antimony	ND		20.0	21.25		ug/L		106	70 - 130	3	20
Arsenic	ND	*	20.0	20.18		ug/L		101	70 - 130	3	20
Cadmium	ND		20.0	20.51		ug/L		103	70 - 130	4	20
Cobalt	ND	*	20.0	20.30		ug/L		100	70 - 130	5	20
Molybdenum	ND		20.0	21.79		ug/L		105	70 - 130	2	20
Selenium	ND	*	20.0	19.99		ug/L		100	70 - 130	2	20
Thallium	ND		20.0	19.56		ug/L		98	70 - 130	1	20

**Lab Sample ID: 480-123927-8 MSD**  
**Matrix: Water**  
**Analysis Batch: 377022**

**Client Sample ID: DUPLICATE WELL**  
**Prep Type: Total/NA**  
**Prep Batch: 376372**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Beryllium	ND	^	20.0	22.82		ug/L		114	70 - 130	0	20

# QC Sample Results

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

TestAmerica Job ID: 480-123927-1

## Method: 245.1 - Mercury (CVAA)

**Lab Sample ID: MB 480-376212/1-A**  
**Matrix: Water**  
**Analysis Batch: 376440**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 376212**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020		mg/L		09/12/17 11:20	09/12/17 14:53	1

**Lab Sample ID: LCS 480-376212/2-A**  
**Matrix: Water**  
**Analysis Batch: 376440**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 376212**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	0.00667	0.00617		mg/L		92	85 - 115

## Method: 300.0 - Anions, Ion Chromatography

**Lab Sample ID: MB 480-376889/28**  
**Matrix: Water**  
**Analysis Batch: 376889**

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		0.50		mg/L			09/14/17 16:07	1
Fluoride	ND		0.050		mg/L			09/14/17 16:07	1
Sulfate	ND		2.0		mg/L			09/14/17 16:07	1

**Lab Sample ID: LCS 480-376889/27**  
**Matrix: Water**  
**Analysis Batch: 376889**

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	50.0	49.05		mg/L		98	90 - 110
Fluoride	5.00	4.79		mg/L		96	90 - 110
Sulfate	50.0	46.17		mg/L		92	90 - 110

**Lab Sample ID: 480-123927-2 MS**  
**Matrix: Water**  
**Analysis Batch: 376889**

**Client Sample ID: P-2**  
**Prep Type: Total/NA**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	408		250	635.6	E	mg/L		91	81 - 120
Fluoride	ND		25.0	24.83		mg/L		99	82 - 120
Sulfate	18.0		250	257.0		mg/L		96	80 - 120

**Lab Sample ID: 480-123927-2 MSD**  
**Matrix: Water**  
**Analysis Batch: 376889**

**Client Sample ID: P-2**  
**Prep Type: Total/NA**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	408		250	637.0	E	mg/L		92	81 - 120	0	20
Fluoride	ND		25.0	24.85		mg/L		99	82 - 120	0	20
Sulfate	18.0		250	259.7		mg/L		97	80 - 120	1	20

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# QC Sample Results

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

TestAmerica Job ID: 480-123927-1

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

**Lab Sample ID: MB 480-376305/1**  
**Matrix: Water**  
**Analysis Batch: 376305**

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	ND		10.0		mg/L			09/12/17 09:43	1

**Lab Sample ID: LCS 480-376305/2**  
**Matrix: Water**  
**Analysis Batch: 376305**

**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	513	510.0		mg/L		99	85 - 115

**Lab Sample ID: 480-123927-7 DU**  
**Matrix: Water**  
**Analysis Batch: 376305**

**Client Sample ID: P-7**  
**Prep Type: Total/NA**

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Dissolved Solids	796		834.0		mg/L		5	10

## Method: SM 4500 H+ B - pH

**Lab Sample ID: LCS 480-376446/1**  
**Matrix: Water**  
**Analysis Batch: 376446**

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

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

**Lab Sample ID: 480-123927-1 DU**  
**Matrix: Water**  
**Analysis Batch: 376446**

**Client Sample ID: P-1**  
**Prep Type: Total/NA**

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
pH	7.0	HF	7.0		SU		0.4	5
Temperature	23.9	HF	24.2		Degrees C		1	10

# QC Association Summary

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

TestAmerica Job ID: 480-123927-1

## Metals

### Prep Batch: 376212

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-123927-1	P-1	Total/NA	Water	245.1	
480-123927-2	P-2	Total/NA	Water	245.1	
480-123927-3	P-3	Total/NA	Water	245.1	
480-123927-4	P-4R	Total/NA	Water	245.1	
480-123927-5	P-5	Total/NA	Water	245.1	
480-123927-6	P-6	Total/NA	Water	245.1	
480-123927-7	P-7	Total/NA	Water	245.1	
480-123927-8	DUPLICATE WELL	Total/NA	Water	245.1	
480-123927-9	FIELD BLANK	Total/NA	Water	245.1	
480-123927-10	EQUIPMENT BLANK	Total/NA	Water	245.1	
MB 480-376212/1-A	Method Blank	Total/NA	Water	245.1	
LCS 480-376212/2-A	Lab Control Sample	Total/NA	Water	245.1	

### Prep Batch: 376372

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-123927-1	P-1	Total/NA	Water	200.8	
480-123927-2	P-2	Total/NA	Water	200.8	
480-123927-3	P-3	Total/NA	Water	200.8	
480-123927-4	P-4R	Total/NA	Water	200.8	
480-123927-5	P-5	Total/NA	Water	200.8	
480-123927-6	P-6	Total/NA	Water	200.8	
480-123927-7	P-7	Total/NA	Water	200.8	
480-123927-8	DUPLICATE WELL	Total/NA	Water	200.8	
480-123927-9	FIELD BLANK	Total/NA	Water	200.8	
480-123927-10	EQUIPMENT BLANK	Total/NA	Water	200.8	
MB 480-376372/1-A	Method Blank	Total/NA	Water	200.8	
LCS 480-376372/2-A	Lab Control Sample	Total/NA	Water	200.8	
480-123927-8 MS	DUPLICATE WELL	Total/NA	Water	200.8	
480-123927-8 MSD	DUPLICATE WELL	Total/NA	Water	200.8	

### Analysis Batch: 376440

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-123927-1	P-1	Total/NA	Water	245.1	376212
480-123927-2	P-2	Total/NA	Water	245.1	376212
480-123927-3	P-3	Total/NA	Water	245.1	376212
480-123927-4	P-4R	Total/NA	Water	245.1	376212
480-123927-5	P-5	Total/NA	Water	245.1	376212
480-123927-6	P-6	Total/NA	Water	245.1	376212
480-123927-7	P-7	Total/NA	Water	245.1	376212
480-123927-8	DUPLICATE WELL	Total/NA	Water	245.1	376212
480-123927-9	FIELD BLANK	Total/NA	Water	245.1	376212
480-123927-10	EQUIPMENT BLANK	Total/NA	Water	245.1	376212
MB 480-376212/1-A	Method Blank	Total/NA	Water	245.1	376212
LCS 480-376212/2-A	Lab Control Sample	Total/NA	Water	245.1	376212

### Prep Batch: 376477

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-123927-1	P-1	Total/NA	Water	200.7	
480-123927-2	P-2	Total/NA	Water	200.7	
480-123927-3	P-3	Total/NA	Water	200.7	
480-123927-4	P-4R	Total/NA	Water	200.7	

TestAmerica Buffalo

# QC Association Summary

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

TestAmerica Job ID: 480-123927-1

## Metals (Continued)

### Prep Batch: 376477 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-123927-5	P-5	Total/NA	Water	200.7	
480-123927-6	P-6	Total/NA	Water	200.7	
480-123927-7	P-7	Total/NA	Water	200.7	
480-123927-8	DUPLICATE WELL	Total/NA	Water	200.7	
480-123927-9	FIELD BLANK	Total/NA	Water	200.7	
480-123927-10	EQUIPMENT BLANK	Total/NA	Water	200.7	
MB 480-376477/1-A	Method Blank	Total/NA	Water	200.7	
LCS 480-376477/2-A	Lab Control Sample	Total/NA	Water	200.7	

### Analysis Batch: 376752

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-123927-1	P-1	Total/NA	Water	200.8	376372
480-123927-2	P-2	Total/NA	Water	200.8	376372
480-123927-3	P-3	Total/NA	Water	200.8	376372
480-123927-4	P-4R	Total/NA	Water	200.8	376372
480-123927-5	P-5	Total/NA	Water	200.8	376372
480-123927-6	P-6	Total/NA	Water	200.8	376372
480-123927-7	P-7	Total/NA	Water	200.8	376372
480-123927-8	DUPLICATE WELL	Total/NA	Water	200.8	376372
480-123927-9	FIELD BLANK	Total/NA	Water	200.8	376372
480-123927-10	EQUIPMENT BLANK	Total/NA	Water	200.8	376372
MB 480-376372/1-A	Method Blank	Total/NA	Water	200.8	376372
LCS 480-376372/2-A	Lab Control Sample	Total/NA	Water	200.8	376372
480-123927-8 MS	DUPLICATE WELL	Total/NA	Water	200.8	376372
480-123927-8 MSD	DUPLICATE WELL	Total/NA	Water	200.8	376372

### Analysis Batch: 376878

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-123927-1	P-1	Total/NA	Water	200.7 Rev 4.4	376477
480-123927-2	P-2	Total/NA	Water	200.7 Rev 4.4	376477
480-123927-3	P-3	Total/NA	Water	200.7 Rev 4.4	376477
480-123927-4	P-4R	Total/NA	Water	200.7 Rev 4.4	376477
480-123927-5	P-5	Total/NA	Water	200.7 Rev 4.4	376477
480-123927-6	P-6	Total/NA	Water	200.7 Rev 4.4	376477
480-123927-7	P-7	Total/NA	Water	200.7 Rev 4.4	376477
480-123927-8	DUPLICATE WELL	Total/NA	Water	200.7 Rev 4.4	376477
480-123927-9	FIELD BLANK	Total/NA	Water	200.7 Rev 4.4	376477
480-123927-10	EQUIPMENT BLANK	Total/NA	Water	200.7 Rev 4.4	376477
MB 480-376477/1-A	Method Blank	Total/NA	Water	200.7 Rev 4.4	376477
LCS 480-376477/2-A	Lab Control Sample	Total/NA	Water	200.7 Rev 4.4	376477

### Analysis Batch: 377022

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-123927-2	P-2	Total/NA	Water	200.8	376372
LCS 480-376372/2-A	Lab Control Sample	Total/NA	Water	200.8	376372
480-123927-8 MS	DUPLICATE WELL	Total/NA	Water	200.8	376372
480-123927-8 MSD	DUPLICATE WELL	Total/NA	Water	200.8	376372

# QC Association Summary

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

TestAmerica Job ID: 480-123927-1

## General Chemistry

### Analysis Batch: 376305

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-123927-1	P-1	Total/NA	Water	SM 2540C	
480-123927-2	P-2	Total/NA	Water	SM 2540C	
480-123927-3	P-3	Total/NA	Water	SM 2540C	
480-123927-4	P-4R	Total/NA	Water	SM 2540C	
480-123927-5	P-5	Total/NA	Water	SM 2540C	
480-123927-6	P-6	Total/NA	Water	SM 2540C	
480-123927-7	P-7	Total/NA	Water	SM 2540C	
480-123927-8	DUPLICATE WELL	Total/NA	Water	SM 2540C	
480-123927-9	FIELD BLANK	Total/NA	Water	SM 2540C	
480-123927-10	EQUIPMENT BLANK	Total/NA	Water	SM 2540C	
MB 480-376305/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 480-376305/2	Lab Control Sample	Total/NA	Water	SM 2540C	
480-123927-7 DU	P-7	Total/NA	Water	SM 2540C	

### Analysis Batch: 376446

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-123927-1	P-1	Total/NA	Water	SM 4500 H+ B	
480-123927-2	P-2	Total/NA	Water	SM 4500 H+ B	
480-123927-3	P-3	Total/NA	Water	SM 4500 H+ B	
480-123927-4	P-4R	Total/NA	Water	SM 4500 H+ B	
480-123927-5	P-5	Total/NA	Water	SM 4500 H+ B	
480-123927-6	P-6	Total/NA	Water	SM 4500 H+ B	
480-123927-7	P-7	Total/NA	Water	SM 4500 H+ B	
480-123927-8	DUPLICATE WELL	Total/NA	Water	SM 4500 H+ B	
480-123927-9	FIELD BLANK	Total/NA	Water	SM 4500 H+ B	
480-123927-10	EQUIPMENT BLANK	Total/NA	Water	SM 4500 H+ B	
LCS 480-376446/1	Lab Control Sample	Total/NA	Water	SM 4500 H+ B	
480-123927-1 DU	P-1	Total/NA	Water	SM 4500 H+ B	

### Analysis Batch: 376889

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-123927-1	P-1	Total/NA	Water	300.0	
480-123927-2	P-2	Total/NA	Water	300.0	
480-123927-3	P-3	Total/NA	Water	300.0	
480-123927-4	P-4R	Total/NA	Water	300.0	
480-123927-5	P-5	Total/NA	Water	300.0	
480-123927-6	P-6	Total/NA	Water	300.0	
480-123927-7	P-7	Total/NA	Water	300.0	
480-123927-8	DUPLICATE WELL	Total/NA	Water	300.0	
480-123927-9	FIELD BLANK	Total/NA	Water	300.0	
480-123927-10	EQUIPMENT BLANK	Total/NA	Water	300.0	
MB 480-376889/28	Method Blank	Total/NA	Water	300.0	
LCS 480-376889/27	Lab Control Sample	Total/NA	Water	300.0	
480-123927-2 MS	P-2	Total/NA	Water	300.0	
480-123927-2 MSD	P-2	Total/NA	Water	300.0	



# Lab Chronicle

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

TestAmerica Job ID: 480-123927-1

## Client Sample ID: P-1

Date Collected: 09/08/17 08:35

Date Received: 09/09/17 09:00

## Lab Sample ID: 480-123927-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	200.7			376477	09/13/17 08:35	EMB	TAL BUF
Total/NA	Analysis	200.7 Rev 4.4		1	376878	09/14/17 10:35	AMH	TAL BUF
Total/NA	Prep	200.8			376372	09/13/17 08:00	EMB	TAL BUF
Total/NA	Analysis	200.8		1	376752	09/13/17 16:24	JRK	TAL BUF
Total/NA	Prep	245.1			376212	09/12/17 11:20	MVZ	TAL BUF
Total/NA	Analysis	245.1		1	376440	09/12/17 15:25	BMB	TAL BUF
Total/NA	Analysis	300.0		5	376889	09/14/17 16:48	RJS	TAL BUF
Total/NA	Analysis	SM 2540C		1	376305	09/12/17 09:43	EKB	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	376446	09/12/17 16:41	ALZ	TAL BUF

## Client Sample ID: P-2

Date Collected: 09/08/17 12:00

Date Received: 09/09/17 09:00

## Lab Sample ID: 480-123927-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	200.7			376477	09/13/17 08:35	EMB	TAL BUF
Total/NA	Analysis	200.7 Rev 4.4		1	376878	09/14/17 10:39	AMH	TAL BUF
Total/NA	Prep	200.8			376372	09/13/17 08:00	EMB	TAL BUF
Total/NA	Analysis	200.8		1	376752	09/13/17 16:30	JRK	TAL BUF
Total/NA	Prep	200.8			376372	09/13/17 08:00	EMB	TAL BUF
Total/NA	Analysis	200.8		5	377022	09/14/17 17:27	JRK	TAL BUF
Total/NA	Prep	245.1			376212	09/12/17 11:20	MVZ	TAL BUF
Total/NA	Analysis	245.1		1	376440	09/12/17 15:26	BMB	TAL BUF
Total/NA	Analysis	300.0		5	376889	09/14/17 16:56	RJS	TAL BUF
Total/NA	Analysis	SM 2540C		1	376305	09/12/17 09:43	EKB	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	376446	09/12/17 16:47	ALZ	TAL BUF

## Client Sample ID: P-3

Date Collected: 09/08/17 09:00

Date Received: 09/09/17 09:00

## Lab Sample ID: 480-123927-3

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	200.7			376477	09/13/17 08:35	EMB	TAL BUF
Total/NA	Analysis	200.7 Rev 4.4		1	376878	09/14/17 10:42	AMH	TAL BUF
Total/NA	Prep	200.8			376372	09/13/17 08:00	EMB	TAL BUF
Total/NA	Analysis	200.8		1	376752	09/13/17 16:35	JRK	TAL BUF
Total/NA	Prep	245.1			376212	09/12/17 11:20	MVZ	TAL BUF
Total/NA	Analysis	245.1		1	376440	09/12/17 15:28	BMB	TAL BUF
Total/NA	Analysis	300.0		5	376889	09/14/17 17:36	RJS	TAL BUF
Total/NA	Analysis	SM 2540C		1	376305	09/12/17 09:43	EKB	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	376446	09/12/17 16:50	ALZ	TAL BUF

TestAmerica Buffalo

# Lab Chronicle

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

TestAmerica Job ID: 480-123927-1

## Client Sample ID: P-4R

Date Collected: 09/08/17 09:45

Date Received: 09/09/17 09:00

## Lab Sample ID: 480-123927-4

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	200.7			376477	09/13/17 08:35	EMB	TAL BUF
Total/NA	Analysis	200.7 Rev 4.4		1	376878	09/14/17 10:46	AMH	TAL BUF
Total/NA	Prep	200.8			376372	09/13/17 08:00	EMB	TAL BUF
Total/NA	Analysis	200.8		1	376752	09/13/17 16:58	JRK	TAL BUF
Total/NA	Prep	245.1			376212	09/12/17 11:20	MVZ	TAL BUF
Total/NA	Analysis	245.1		1	376440	09/12/17 15:30	BMB	TAL BUF
Total/NA	Analysis	300.0		5	376889	09/14/17 17:45	RJS	TAL BUF
Total/NA	Analysis	SM 2540C		1	376305	09/12/17 09:43	EKB	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	376446	09/12/17 16:53	ALZ	TAL BUF

## Client Sample ID: P-5

Date Collected: 09/08/17 10:15

Date Received: 09/09/17 09:00

## Lab Sample ID: 480-123927-5

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	200.7			376477	09/13/17 08:35	EMB	TAL BUF
Total/NA	Analysis	200.7 Rev 4.4		1	376878	09/14/17 10:49	AMH	TAL BUF
Total/NA	Prep	200.8			376372	09/13/17 08:00	EMB	TAL BUF
Total/NA	Analysis	200.8		1	376752	09/13/17 17:04	JRK	TAL BUF
Total/NA	Prep	245.1			376212	09/12/17 11:20	MVZ	TAL BUF
Total/NA	Analysis	245.1		1	376440	09/12/17 15:32	BMB	TAL BUF
Total/NA	Analysis	300.0		5	376889	09/14/17 17:53	RJS	TAL BUF
Total/NA	Analysis	SM 2540C		1	376305	09/12/17 09:43	EKB	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	376446	09/12/17 16:55	ALZ	TAL BUF

## Client Sample ID: P-6

Date Collected: 09/08/17 11:00

Date Received: 09/09/17 09:00

## Lab Sample ID: 480-123927-6

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	200.7			376477	09/13/17 08:35	EMB	TAL BUF
Total/NA	Analysis	200.7 Rev 4.4		1	376878	09/14/17 10:53	AMH	TAL BUF
Total/NA	Prep	200.8			376372	09/13/17 08:00	EMB	TAL BUF
Total/NA	Analysis	200.8		1	376752	09/13/17 17:09	JRK	TAL BUF
Total/NA	Prep	245.1			376212	09/12/17 11:20	MVZ	TAL BUF
Total/NA	Analysis	245.1		1	376440	09/12/17 15:37	BMB	TAL BUF
Total/NA	Analysis	300.0		5	376889	09/14/17 18:01	RJS	TAL BUF
Total/NA	Analysis	SM 2540C		1	376305	09/12/17 09:43	EKB	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	376446	09/12/17 16:58	ALZ	TAL BUF

# Lab Chronicle

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

TestAmerica Job ID: 480-123927-1

## Client Sample ID: P-7

Date Collected: 09/08/17 11:35

Date Received: 09/09/17 09:00

## Lab Sample ID: 480-123927-7

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	200.7			376477	09/13/17 08:35	EMB	TAL BUF
Total/NA	Analysis	200.7 Rev 4.4		1	376878	09/14/17 10:57	AMH	TAL BUF
Total/NA	Prep	200.8			376372	09/13/17 08:00	EMB	TAL BUF
Total/NA	Analysis	200.8		1	376752	09/13/17 17:15	JRK	TAL BUF
Total/NA	Prep	245.1			376212	09/12/17 11:20	MVZ	TAL BUF
Total/NA	Analysis	245.1		1	376440	09/12/17 15:40	BMB	TAL BUF
Total/NA	Analysis	300.0		5	376889	09/14/17 18:17	RJS	TAL BUF
Total/NA	Analysis	SM 2540C		1	376305	09/12/17 09:43	EKB	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	376446	09/12/17 17:01	ALZ	TAL BUF

## Client Sample ID: DUPLICATE WELL

Date Collected: 09/08/17 00:00

Date Received: 09/09/17 09:00

## Lab Sample ID: 480-123927-8

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	200.7			376477	09/13/17 08:35	EMB	TAL BUF
Total/NA	Analysis	200.7 Rev 4.4		1	376878	09/14/17 11:11	AMH	TAL BUF
Total/NA	Prep	200.8			376372	09/13/17 08:00	EMB	TAL BUF
Total/NA	Analysis	200.8		1	376752	09/13/17 17:20	JRK	TAL BUF
Total/NA	Prep	245.1			376212	09/12/17 11:20	MVZ	TAL BUF
Total/NA	Analysis	245.1		1	376440	09/12/17 15:42	BMB	TAL BUF
Total/NA	Analysis	300.0		5	376889	09/14/17 18:25	RJS	TAL BUF
Total/NA	Analysis	SM 2540C		1	376305	09/12/17 09:43	EKB	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	376446	09/12/17 17:04	ALZ	TAL BUF

## Client Sample ID: FIELD BLANK

Date Collected: 09/08/17 12:35

Date Received: 09/09/17 09:00

## Lab Sample ID: 480-123927-9

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	200.7			376477	09/13/17 08:35	EMB	TAL BUF
Total/NA	Analysis	200.7 Rev 4.4		1	376878	09/14/17 11:15	AMH	TAL BUF
Total/NA	Prep	200.8			376372	09/13/17 08:00	EMB	TAL BUF
Total/NA	Analysis	200.8		1	376752	09/13/17 17:37	JRK	TAL BUF
Total/NA	Prep	245.1			376212	09/12/17 11:20	MVZ	TAL BUF
Total/NA	Analysis	245.1		1	376440	09/12/17 15:43	BMB	TAL BUF
Total/NA	Analysis	300.0		1	376889	09/14/17 18:33	RJS	TAL BUF
Total/NA	Analysis	SM 2540C		1	376305	09/12/17 09:43	EKB	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	376446	09/12/17 17:07	ALZ	TAL BUF

# Lab Chronicle

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

TestAmerica Job ID: 480-123927-1

**Client Sample ID: EQUIPMENT BLANK**

**Lab Sample ID: 480-123927-10**

**Date Collected: 09/08/17 12:40**

**Matrix: Water**

**Date Received: 09/09/17 09:00**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	200.7			376477	09/13/17 08:35	EMB	TAL BUF
Total/NA	Analysis	200.7 Rev 4.4		1	376878	09/14/17 11:18	AMH	TAL BUF
Total/NA	Prep	200.8			376372	09/13/17 08:00	EMB	TAL BUF
Total/NA	Analysis	200.8		1	376752	09/13/17 17:42	JRK	TAL BUF
Total/NA	Prep	245.1			376212	09/12/17 11:20	MVZ	TAL BUF
Total/NA	Analysis	245.1		1	376440	09/12/17 15:45	BMB	TAL BUF
Total/NA	Analysis	300.0		1	376889	09/14/17 18:42	RJS	TAL BUF
Total/NA	Analysis	SM 2540C		1	376305	09/12/17 09:43	EKB	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	376446	09/12/17 17:12	ALZ	TAL BUF

#### Laboratory References:

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

# Accreditation/Certification Summary

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

TestAmerica Job ID: 480-123927-1

## Laboratory: TestAmerica Buffalo

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

Authority	Program	EPA Region	Identification Number	Expiration Date
Minnesota	NELAP	5	036-999-337	12-31-17

The following analytes are included in this report, but accreditation/certification is not offered by the governing authority:

Analysis Method	Prep Method	Matrix	Analyte
200.7 Rev 4.4	200.7	Water	Lithium
SM 4500 H+ B		Water	pH
SM 4500 H+ B		Water	Temperature

- 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

TestAmerica Job ID: 480-123927-1

Method	Method Description	Protocol	Laboratory
200.7 Rev 4.4	Metals (ICP)	EPA	TAL BUF
200.8	Metals (ICP/MS)	EPA	TAL BUF
245.1	Mercury (CVAA)	EPA	TAL BUF
300.0	Anions, Ion Chromatography	MCAWW	TAL BUF
SM 2540C	Solids, Total Dissolved (TDS)	SM	TAL BUF
SM 4500 H+ B	pH	SM	TAL BUF

#### Protocol References:

EPA = US Environmental Protection Agency

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

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

#### Laboratory References:

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

# Sample Summary

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

TestAmerica Job ID: 480-123927-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
480-123927-1	P-1	Water	09/08/17 08:35	09/09/17 09:00
480-123927-2	P-2	Water	09/08/17 12:00	09/09/17 09:00
480-123927-3	P-3	Water	09/08/17 09:00	09/09/17 09:00
480-123927-4	P-4R	Water	09/08/17 09:45	09/09/17 09:00
480-123927-5	P-5	Water	09/08/17 10:15	09/09/17 09:00
480-123927-6	P-6	Water	09/08/17 11:00	09/09/17 09:00
480-123927-7	P-7	Water	09/08/17 11:35	09/09/17 09:00
480-123927-8	DUPLICATE WELL	Water	09/08/17 00:00	09/09/17 09:00
480-123927-9	FIELD BLANK	Water	09/08/17 12:35	09/09/17 09:00
480-123927-10	EQUIPMENT BLANK	Water	09/08/17 12:40	09/09/17 09:00

Regulatory Program:  DW  NPDES  RCRA  Other:

Project Manager: Ryan Van Dette  
Site Contact: Nathaniel Beineman  
Date: 9/17  
Carrier:

Client Contact  
SKB Environmental  
13425 Courthouse Blvd  
Rosemount, MN 55068  
(651) 438-1500 Phone  
(651) 438-1518 FAX  
Project Name: Cloquet 2017 CCR GW Event 8  
Site:  
P O # 3078-17-10345

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Analysis Turnaround Time							Sample Specific Notes:
						Filtered Sample (Y/N)	Perform MS/MSD (Y/N)	Metals (totals) + Mercury	Chloride	Sulfate	TDS	pH	
P-1	9/18/17	8:35	Grab	Water	7	X	X	X	X	X	X	X	
P-2		12:00	Grab	Water	7	X	X	X	X	X	X	X	
P-3		9:00	Grab	Water	7	X	X	X	X	X	X	X	
P-4 <i>R</i>		9:45	Grab	Water	7	X	X	X	X	X	X	X	
P-5		10:15	Grab	Water	7	X	X	X	X	X	X	X	
P-6		11:00	Grab	Water	7	X	X	X	X	X	X	X	
P-7		11:35	Grab	Water	7	X	X	X	X	X	X	X	
DUPLICATE WELL			Grab	Water	7	X	X	X	X	X	X	X	
Field Blank		12:35	Grab	Water	7	X	X	X	X	X	X	X	
Equipment Blank		12:40	Grab	Water	7	X	X	X	X	X	X	X	

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4= HNO3; 5= NaOH; 6= Other  
Possible Hazard Identification: Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

Non-Hazard  Flammable  Skin Irritant  Unknown   
\*Metals - Boron, Calcium, Antimony, Arsenic, Barium, Beryllium, Cadmium, Chromium, Cobalt, Lead, Lithium, Molybdenum, Selenium, Thallium

Return to Client  Disposal by Lab  Archive for \_\_\_\_\_ Months  
Cooler Temp. (°C): Obs'd: \_\_\_\_\_  
Received by: *AB* Date/Time: 9/18/17 15:00  
Received by: *TA* Date/Time: 9/19/17 08:00  
Received in Laboratory by: \_\_\_\_\_ Date/Time: \_\_\_\_\_

Custody Seal No.: \_\_\_\_\_  
Relinquished by: *AMM Dyer* Yes  No   
Relinquished by: *JW* Date/Time: 9/17 15:00  
Relinquished by: \_\_\_\_\_ Date/Time: \_\_\_\_\_

Therm ID No.: \_\_\_\_\_  
Date/Time: 9/18/17 16:00  
Company: *TA*  
Date/Time: 9/19/17 08:00  
Company: *TA*

#1 2, 9, 3, 1, 3, 4, 2, 8

Form No. CA-C-WI-002, Rev. 4.9, dated 2/2/2016





# Login Sample Receipt Checklist

Client: Waste Connections, Inc.

Job Number: 480-123927-1

**Login Number: 123927**

**List Source: TestAmerica Buffalo**

**List Number: 1**

**Creator: Wallace, Cameron**

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



# TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

## ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Buffalo

10 Hazelwood Drive

Amherst, NY 14228-2298

Tel: (716)691-2600

TestAmerica Job ID: 480-123927-2

Client Project/Site: SKB Cloquet - CCR Groundwater

Sampling Event: CCR Groundwater

For:

Waste Connections, Inc.

13425 Courthouse Blvd

Rosemount, Minnesota 55068

Attn: Nathaniel Beinemann



Authorized for release by:

10/9/2017 3:30:42 PM

Denise Giglia, Project Management Assistant II

[denise.giglia@testamericainc.com](mailto:denise.giglia@testamericainc.com)

Designee for

Ryan VanDette, Project Manager II

(716)504-9830

[ryan.vandette@testamericainc.com](mailto:ryan.vandette@testamericainc.com)

### LINKS

Review your project  
results through

**TotalAccess**

Have a Question?



Visit us at:

[www.testamericainc.com](http://www.testamericainc.com)

*The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.*

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

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

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# Definitions/Glossary

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

TestAmerica Job ID: 480-123927-2

## Qualifiers

### Rad

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

## Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
▫	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
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)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
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)

# Case Narrative

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

TestAmerica Job ID: 480-123927-2

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**Job ID: 480-123927-2**

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**Laboratory: TestAmerica Buffalo**

## Narrative

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### Job Narrative 480-123927-2

#### Comments

No additional comments.

#### Receipt

The samples were received on 9/9/2017 9:00 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 4 coolers at receipt time were 2.8° C, 2.9° C, 3.1° C and 3.4° C.

#### RAD

Method(s) PrecSep\_0: Radium 228 Prep Batch 160-32714: The following sample was reduced due to heavy amounts of sediment making sample murky and brown: P-2 (480-123927-2).

Method(s) PrecSep-21: Radium 228 Prep Batch 160-327144: The following sample was reduced due to heavy amounts of sediment making sample murky and brown: P-2 (480-123927-2).

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

# Detection Summary

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

TestAmerica Job ID: 480-123927-2

**Client Sample ID: P-1**

**Lab Sample ID: 480-123927-1**

No Detections.

**Client Sample ID: P-2**

**Lab Sample ID: 480-123927-2**

No Detections.

**Client Sample ID: P-3**

**Lab Sample ID: 480-123927-3**

No Detections.

**Client Sample ID: P-4R**

**Lab Sample ID: 480-123927-4**

No Detections.

**Client Sample ID: P-5**

**Lab Sample ID: 480-123927-5**

No Detections.

**Client Sample ID: P-6**

**Lab Sample ID: 480-123927-6**

No Detections.

**Client Sample ID: P-7**

**Lab Sample ID: 480-123927-7**

No Detections.

**Client Sample ID: DUPLICATE WELL**

**Lab Sample ID: 480-123927-8**

No Detections.

**Client Sample ID: FIELD BLANK**

**Lab Sample ID: 480-123927-9**

No Detections.

**Client Sample ID: EQUIPMENT BLANK**

**Lab Sample ID: 480-123927-10**

No Detections.

This Detection Summary does not include radiochemical test results.

TestAmerica Buffalo



# Client Sample Results

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

TestAmerica Job ID: 480-123927-2

**Client Sample ID: P-1**

**Lab Sample ID: 480-123927-1**

**Date Collected: 09/08/17 08:35**

**Matrix: Water**

**Date Received: 09/09/17 09:00**

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.213		0.0795	0.0818	1.00	0.0581	pCi/L	09/14/17 08:55	10/09/17 06:17	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	103		40 - 110					09/14/17 08:55	10/09/17 06:17	1

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.228	U	0.273	0.274	1.00	0.451	pCi/L	09/14/17 09:05	09/20/17 17:28	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	103		40 - 110					09/14/17 09:05	09/20/17 17:28	1
Y Carrier	77.4		40 - 110					09/14/17 09:05	09/20/17 17:28	1

# Client Sample Results

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

TestAmerica Job ID: 480-123927-2

**Client Sample ID: P-2**

**Lab Sample ID: 480-123927-2**

**Date Collected: 09/08/17 12:00**

**Matrix: Water**

**Date Received: 09/09/17 09:00**

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.567		0.191	0.197	1.00	0.174	pCi/L	09/14/17 08:55	10/09/17 06:18	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	94.4		40 - 110					09/14/17 08:55	10/09/17 06:18	1

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.348	U	0.536	0.537	1.00	0.901	pCi/L	09/14/17 09:05	09/20/17 17:27	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	94.4		40 - 110					09/14/17 09:05	09/20/17 17:27	1
Y Carrier	81.1		40 - 110					09/14/17 09:05	09/20/17 17:27	1



# Client Sample Results

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

TestAmerica Job ID: 480-123927-2

**Client Sample ID: P-3**

**Lab Sample ID: 480-123927-3**

**Date Collected: 09/08/17 09:00**

**Matrix: Water**

**Date Received: 09/09/17 09:00**

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.274		0.0891	0.0925	1.00	0.0549	pCi/L	09/14/17 08:55	10/09/17 06:18	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	103		40 - 110					09/14/17 08:55	10/09/17 06:18	1

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.601		0.273	0.278	1.00	0.393	pCi/L	09/14/17 09:05	09/20/17 17:28	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	103		40 - 110					09/14/17 09:05	09/20/17 17:28	1
Y Carrier	80.4		40 - 110					09/14/17 09:05	09/20/17 17:28	1

# Client Sample Results

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

TestAmerica Job ID: 480-123927-2

**Client Sample ID: P-4R**  
**Date Collected: 09/08/17 09:45**  
**Date Received: 09/09/17 09:00**

**Lab Sample ID: 480-123927-4**  
**Matrix: Water**

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.254		0.0884	0.0913	1.00	0.0680	pCi/L	09/14/17 08:55	10/09/17 06:18	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	97.6		40 - 110					09/14/17 08:55	10/09/17 06:18	1

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.231	U	0.235	0.236	1.00	0.383	pCi/L	09/14/17 09:05	09/20/17 16:41	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	97.6		40 - 110					09/14/17 09:05	09/20/17 16:41	1
Y Carrier	80.7		40 - 110					09/14/17 09:05	09/20/17 16:41	1

# Client Sample Results

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

TestAmerica Job ID: 480-123927-2

**Client Sample ID: P-5**

**Lab Sample ID: 480-123927-5**

**Date Collected: 09/08/17 10:15**

**Matrix: Water**

**Date Received: 09/09/17 09:00**

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.485		0.113	0.121	1.00	0.0705	pCi/L	09/14/17 08:55	10/09/17 08:35	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	102		40 - 110					09/14/17 08:55	10/09/17 08:35	1

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.530		0.249	0.253	1.00	0.359	pCi/L	09/14/17 09:05	09/20/17 16:41	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	102		40 - 110					09/14/17 09:05	09/20/17 16:41	1
Y Carrier	78.9		40 - 110					09/14/17 09:05	09/20/17 16:41	1

# Client Sample Results

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

TestAmerica Job ID: 480-123927-2

**Client Sample ID: P-6**

**Lab Sample ID: 480-123927-6**

**Date Collected: 09/08/17 11:00**

**Matrix: Water**

**Date Received: 09/09/17 09:00**

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.140		0.0719	0.0730	1.00	0.0857	pCi/L	09/14/17 08:55	10/09/17 08:35	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	97.3		40 - 110					09/14/17 08:55	10/09/17 08:35	1

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.00650	U	0.204	0.204	1.00	0.367	pCi/L	09/14/17 09:05	09/20/17 16:41	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	97.3		40 - 110					09/14/17 09:05	09/20/17 16:41	1
Y Carrier	79.6		40 - 110					09/14/17 09:05	09/20/17 16:41	1

# Client Sample Results

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

TestAmerica Job ID: 480-123927-2

**Client Sample ID: P-7**

**Date Collected: 09/08/17 11:35**

**Date Received: 09/09/17 09:00**

**Lab Sample ID: 480-123927-7**

**Matrix: Water**

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.177		0.0729	0.0746	1.00	0.0714	pCi/L	09/14/17 08:55	10/09/17 08:35	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	106		40 - 110					09/14/17 08:55	10/09/17 08:35	1

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.349	U	0.246	0.248	1.00	0.385	pCi/L	09/14/17 09:05	09/20/17 16:41	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	106		40 - 110					09/14/17 09:05	09/20/17 16:41	1
Y Carrier	77.0		40 - 110					09/14/17 09:05	09/20/17 16:41	1

# Client Sample Results

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

TestAmerica Job ID: 480-123927-2

**Client Sample ID: DUPLICATE WELL**

**Lab Sample ID: 480-123927-8**

Date Collected: 09/08/17 00:00

Matrix: Water

Date Received: 09/09/17 09:00

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.244		0.0841	0.0869	1.00	0.0722	pCi/L	09/14/17 08:55	10/09/17 08:35	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	101		40 - 110					09/14/17 08:55	10/09/17 08:35	1

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.482		0.279	0.283	1.00	0.428	pCi/L	09/14/17 09:05	09/20/17 16:42	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	101		40 - 110					09/14/17 09:05	09/20/17 16:42	1
Y Carrier	81.1		40 - 110					09/14/17 09:05	09/20/17 16:42	1

# Client Sample Results

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

TestAmerica Job ID: 480-123927-2

**Client Sample ID: FIELD BLANK**

**Lab Sample ID: 480-123927-9**

**Date Collected: 09/08/17 12:35**

**Matrix: Water**

**Date Received: 09/09/17 09:00**

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0180	U	0.0265	0.0265	1.00	0.0451	pCi/L	09/14/17 08:55	10/09/17 08:35	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	104		40 - 110					09/14/17 08:55	10/09/17 08:35	1

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.116	U	0.215	0.216	1.00	0.367	pCi/L	09/14/17 09:05	09/20/17 17:29	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	104		40 - 110					09/14/17 09:05	09/20/17 17:29	1
Y Carrier	79.6		40 - 110					09/14/17 09:05	09/20/17 17:29	1

# Client Sample Results

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

TestAmerica Job ID: 480-123927-2

**Client Sample ID: EQUIPMENT BLANK**

**Lab Sample ID: 480-123927-10**

**Date Collected: 09/08/17 12:40**

**Matrix: Water**

**Date Received: 09/09/17 09:00**

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0277	U	0.0383	0.0384	1.00	0.0645	pCi/L	09/14/17 08:55	10/09/17 08:35	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	101		40 - 110					09/14/17 08:55	10/09/17 08:35	1

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.215	U	0.239	0.240	1.00	0.392	pCi/L	09/14/17 09:05	09/20/17 17:29	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	101		40 - 110					09/14/17 09:05	09/20/17 17:29	1
Y Carrier	80.0		40 - 110					09/14/17 09:05	09/20/17 17:29	1



# Tracer/Carrier Summary

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

TestAmerica Job ID: 480-123927-2

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

Matrix: Water

Prep Type: Total/NA

### Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	Ba (40-110)
480-123927-1	P-1	103
480-123927-1 DU	P-1	99.1
480-123927-2	P-2	94.4
480-123927-3	P-3	103
480-123927-4	P-4R	97.6
480-123927-5	P-5	102
480-123927-6	P-6	97.3
480-123927-7	P-7	106
480-123927-8	DUPLICATE WELL	101
480-123927-9	FIELD BLANK	104
480-123927-10	EQUIPMENT BLANK	101
LCS 160-327141/2-A	Lab Control Sample	104
MB 160-327141/1-A	Method Blank	104

#### Tracer/Carrier Legend

Ba = Ba Carrier

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

Matrix: Water

Prep Type: Total/NA

### Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	Ba (40-110)	Y (40-110)
480-123927-1	P-1	103	77.4
480-123927-1 DU	P-1	99.1	79.3
480-123927-2	P-2	94.4	81.1
480-123927-3	P-3	103	80.4
480-123927-4	P-4R	97.6	80.7
480-123927-5	P-5	102	78.9
480-123927-6	P-6	97.3	79.6
480-123927-7	P-7	106	77.0
480-123927-8	DUPLICATE WELL	101	81.1
480-123927-9	FIELD BLANK	104	79.6
480-123927-10	EQUIPMENT BLANK	101	80.0
LCS 160-327144/2-A	Lab Control Sample	104	78.1
MB 160-327144/1-A	Method Blank	104	77.8

#### Tracer/Carrier Legend

Ba = Ba Carrier

Y = Y Carrier

# QC Sample Results

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

TestAmerica Job ID: 480-123927-2

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

**Lab Sample ID: MB 160-327141/1-A**  
**Matrix: Water**  
**Analysis Batch: 330839**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 327141**

Analyte	MB MB		Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier	Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Radium-226	0.01790	U	0.0314	0.0314	1.00	0.0567	pCi/L	09/14/17 08:55	10/09/17 06:17	1
Carrier	MB MB		Limits		Prepared	Analyzed	Dil Fac			
Ba Carrier	%Yield	Qualifier	Limits							
Ba Carrier	104		40 - 110		09/14/17 08:55	10/09/17 06:17	1			

**Lab Sample ID: LCS 160-327141/2-A**  
**Matrix: Water**  
**Analysis Batch: 330839**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 327141**

Analyte	Spike Added	LCS Result	LCS Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits
				Uncert. (2σ+/-)					
Radium-226	9.60	8.108		0.846	1.00	0.0501	pCi/L	84	68 - 137
Carrier	LCS LCS		Limits		Prepared	Analyzed	Dil Fac		
Ba Carrier	%Yield	Qualifier	Limits						
Ba Carrier	104		40 - 110						

**Lab Sample ID: 480-123927-1 DU**  
**Matrix: Water**  
**Analysis Batch: 330839**

**Client Sample ID: P-1**  
**Prep Type: Total/NA**  
**Prep Batch: 327141**

Analyte	Sample Sample		DU	DU	Total	RL	MDC	Unit	RER	RER
	Result	Qual	Result	Qual	Uncert. (2σ+/-)					Limit
Radium-226	0.213		0.2696		0.0900	1.00	0.0653	pCi/L	0.33	1
Carrier	DU DU		Limits		Prepared	Analyzed	Dil Fac			
Ba Carrier	%Yield	Qualifier	Limits							
Ba Carrier	99.1		40 - 110							

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

**Lab Sample ID: MB 160-327144/1-A**  
**Matrix: Water**  
**Analysis Batch: 328086**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 327144**

Analyte	MB MB		Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier	Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Radium-228	0.1430	U	0.215	0.216	1.00	0.362	pCi/L	09/14/17 09:05	09/20/17 17:28	1
Carrier	MB MB		Limits		Prepared	Analyzed	Dil Fac			
Ba Carrier	%Yield	Qualifier	Limits							
Ba Carrier	104		40 - 110		09/14/17 09:05	09/20/17 17:28	1			
Y Carrier	%Yield	Qualifier	Limits		Prepared	Analyzed	Dil Fac			
Y Carrier	77.8		40 - 110					09/14/17 09:05	09/20/17 17:28	1

TestAmerica Buffalo

# QC Sample Results

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

TestAmerica Job ID: 480-123927-2

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

**Lab Sample ID: LCS 160-327144/2-A**  
**Matrix: Water**  
**Analysis Batch: 328086**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 327144**

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-228	12.9	13.99		1.53	1.00	0.399	pCi/L	109	56 - 140

Carrier	LCS %Yield	LCS Qualifier	Limits
Ba Carrier	104		40 - 110
Y Carrier	78.1		40 - 110

**Lab Sample ID: 480-123927-1 DU**  
**Matrix: Water**  
**Analysis Batch: 328086**

**Client Sample ID: P-1**  
**Prep Type: Total/NA**  
**Prep Batch: 327144**

Analyte	Sample Result	Sample Qual	DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	RER	RER Limit
Radium-228	0.228	U	0.07919	U	0.235	1.00	0.408	pCi/L	0.29	1

Carrier	DU %Yield	DU Qualifier	Limits
Ba Carrier	99.1		40 - 110
Y Carrier	79.3		40 - 110

# QC Association Summary

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

TestAmerica Job ID: 480-123927-2

## Rad

### Prep Batch: 327141

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-123927-1	P-1	Total/NA	Water	PrecSep-21	
480-123927-2	P-2	Total/NA	Water	PrecSep-21	
480-123927-3	P-3	Total/NA	Water	PrecSep-21	
480-123927-4	P-4R	Total/NA	Water	PrecSep-21	
480-123927-5	P-5	Total/NA	Water	PrecSep-21	
480-123927-6	P-6	Total/NA	Water	PrecSep-21	
480-123927-7	P-7	Total/NA	Water	PrecSep-21	
480-123927-8	DUPLICATE WELL	Total/NA	Water	PrecSep-21	
480-123927-9	FIELD BLANK	Total/NA	Water	PrecSep-21	
480-123927-10	EQUIPMENT BLANK	Total/NA	Water	PrecSep-21	
MB 160-327141/1-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-327141/2-A	Lab Control Sample	Total/NA	Water	PrecSep-21	
480-123927-1 DU	P-1	Total/NA	Water	PrecSep-21	

### Prep Batch: 327144

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-123927-1	P-1	Total/NA	Water	PrecSep_0	
480-123927-2	P-2	Total/NA	Water	PrecSep_0	
480-123927-3	P-3	Total/NA	Water	PrecSep_0	
480-123927-4	P-4R	Total/NA	Water	PrecSep_0	
480-123927-5	P-5	Total/NA	Water	PrecSep_0	
480-123927-6	P-6	Total/NA	Water	PrecSep_0	
480-123927-7	P-7	Total/NA	Water	PrecSep_0	
480-123927-8	DUPLICATE WELL	Total/NA	Water	PrecSep_0	
480-123927-9	FIELD BLANK	Total/NA	Water	PrecSep_0	
480-123927-10	EQUIPMENT BLANK	Total/NA	Water	PrecSep_0	
MB 160-327144/1-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-327144/2-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
480-123927-1 DU	P-1	Total/NA	Water	PrecSep_0	

# Lab Chronicle

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

TestAmerica Job ID: 480-123927-2

## Client Sample ID: P-1

Date Collected: 09/08/17 08:35

Date Received: 09/09/17 09:00

## Lab Sample ID: 480-123927-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			327141	09/14/17 08:55	LDE	TAL SL
Total/NA	Analysis	903.0		1	330839	10/09/17 06:17	RTM	TAL SL
Total/NA	Prep	PrecSep_0			327144	09/14/17 09:05	LDE	TAL SL
Total/NA	Analysis	904.0		1	328086	09/20/17 17:28	ALD	TAL SL

## Client Sample ID: P-2

Date Collected: 09/08/17 12:00

Date Received: 09/09/17 09:00

## Lab Sample ID: 480-123927-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			327141	09/14/17 08:55	LDE	TAL SL
Total/NA	Analysis	903.0		1	330839	10/09/17 06:18	RTM	TAL SL
Total/NA	Prep	PrecSep_0			327144	09/14/17 09:05	LDE	TAL SL
Total/NA	Analysis	904.0		1	328086	09/20/17 17:27	ALD	TAL SL

## Client Sample ID: P-3

Date Collected: 09/08/17 09:00

Date Received: 09/09/17 09:00

## Lab Sample ID: 480-123927-3

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			327141	09/14/17 08:55	LDE	TAL SL
Total/NA	Analysis	903.0		1	330839	10/09/17 06:18	RTM	TAL SL
Total/NA	Prep	PrecSep_0			327144	09/14/17 09:05	LDE	TAL SL
Total/NA	Analysis	904.0		1	328086	09/20/17 17:28	ALD	TAL SL

## Client Sample ID: P-4R

Date Collected: 09/08/17 09:45

Date Received: 09/09/17 09:00

## Lab Sample ID: 480-123927-4

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			327141	09/14/17 08:55	LDE	TAL SL
Total/NA	Analysis	903.0		1	330839	10/09/17 06:18	RTM	TAL SL
Total/NA	Prep	PrecSep_0			327144	09/14/17 09:05	LDE	TAL SL
Total/NA	Analysis	904.0		1	328088	09/20/17 16:41	ALD	TAL SL

## Client Sample ID: P-5

Date Collected: 09/08/17 10:15

Date Received: 09/09/17 09:00

## Lab Sample ID: 480-123927-5

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			327141	09/14/17 08:55	LDE	TAL SL
Total/NA	Analysis	903.0		1	330837	10/09/17 08:35	RTM	TAL SL
Total/NA	Prep	PrecSep_0			327144	09/14/17 09:05	LDE	TAL SL

TestAmerica Buffalo

# Lab Chronicle

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

TestAmerica Job ID: 480-123927-2

## Client Sample ID: P-5

Date Collected: 09/08/17 10:15  
Date Received: 09/09/17 09:00

## Lab Sample ID: 480-123927-5

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	904.0		1	328088	09/20/17 16:41	ALD	TAL SL

## Client Sample ID: P-6

Date Collected: 09/08/17 11:00  
Date Received: 09/09/17 09:00

## Lab Sample ID: 480-123927-6

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			327141	09/14/17 08:55	LDE	TAL SL
Total/NA	Analysis	903.0		1	330837	10/09/17 08:35	RTM	TAL SL
Total/NA	Prep	PrecSep_0			327144	09/14/17 09:05	LDE	TAL SL
Total/NA	Analysis	904.0		1	328088	09/20/17 16:41	ALD	TAL SL

## Client Sample ID: P-7

Date Collected: 09/08/17 11:35  
Date Received: 09/09/17 09:00

## Lab Sample ID: 480-123927-7

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			327141	09/14/17 08:55	LDE	TAL SL
Total/NA	Analysis	903.0		1	330837	10/09/17 08:35	RTM	TAL SL
Total/NA	Prep	PrecSep_0			327144	09/14/17 09:05	LDE	TAL SL
Total/NA	Analysis	904.0		1	328088	09/20/17 16:41	ALD	TAL SL

## Client Sample ID: DUPLICATE WELL

Date Collected: 09/08/17 00:00  
Date Received: 09/09/17 09:00

## Lab Sample ID: 480-123927-8

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			327141	09/14/17 08:55	LDE	TAL SL
Total/NA	Analysis	903.0		1	330837	10/09/17 08:35	RTM	TAL SL
Total/NA	Prep	PrecSep_0			327144	09/14/17 09:05	LDE	TAL SL
Total/NA	Analysis	904.0		1	328088	09/20/17 16:42	ALD	TAL SL

## Client Sample ID: FIELD BLANK

Date Collected: 09/08/17 12:35  
Date Received: 09/09/17 09:00

## Lab Sample ID: 480-123927-9

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			327141	09/14/17 08:55	LDE	TAL SL
Total/NA	Analysis	903.0		1	330837	10/09/17 08:35	RTM	TAL SL
Total/NA	Prep	PrecSep_0			327144	09/14/17 09:05	LDE	TAL SL
Total/NA	Analysis	904.0		1	328087	09/20/17 17:29	ALD	TAL SL

TestAmerica Buffalo

# Lab Chronicle

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

TestAmerica Job ID: 480-123927-2

**Client Sample ID: EQUIPMENT BLANK**

**Lab Sample ID: 480-123927-10**

**Date Collected: 09/08/17 12:40**

**Matrix: Water**

**Date Received: 09/09/17 09:00**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			327141	09/14/17 08:55	LDE	TAL SL
Total/NA	Analysis	903.0		1	330837	10/09/17 08:35	RTM	TAL SL
Total/NA	Prep	PrecSep_0			327144	09/14/17 09:05	LDE	TAL SL
Total/NA	Analysis	904.0		1	328087	09/20/17 17:29	ALD	TAL SL

**Laboratory References:**

TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

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# Accreditation/Certification Summary

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

TestAmerica Job ID: 480-123927-2

## Laboratory: TestAmerica Buffalo

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

Authority	Program	EPA Region	Identification Number	Expiration Date
Minnesota	NELAP	5	036-999-337	12-31-17

## Laboratory: TestAmerica St. Louis

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

Authority	Program	EPA Region	Identification Number	Expiration Date
Alaska	State Program	10	MO00054	06-30-18
California	State Program	9	2886	03-31-18 *
Connecticut	State Program	1	PH-0241	03-31-19
Florida	NELAP	4	E87689	06-30-18
Illinois	NELAP	5	200023	11-30-17
Iowa	State Program	7	373	02-01-18
Kansas	NELAP	7	E-10236	10-31-17 *
Kentucky (DW)	State Program	4	90125	12-31-17
L-A-B	DoD ELAP		L2305	04-06-19
Louisiana	NELAP	6	04080	06-30-18
Louisiana (DW)	NELAP	6	LA170011	12-31-17
Maryland	State Program	3	310	09-30-18
Missouri	State Program	7	780	06-30-18
Nevada	State Program	9	MO000542017-1	07-31-18
New Jersey	NELAP	2	MO002	06-30-18
New York	NELAP	2	11616	03-31-18
North Dakota	State Program	8	R207	06-30-18
NRC	NRC		24-24817-01	12-31-22
Oklahoma	State Program	6	9997	08-31-18
Pennsylvania	NELAP	3	68-00540	02-21-18
South Carolina	State Program	4	85002001	06-30-17 *
Texas	NELAP	6	T104704193-17-11	07-31-18
US Fish & Wildlife	Federal		058448	08-31-18
USDA	Federal		P330-17-0028	02-02-20
Utah	NELAP	8	MO000542016-8	07-31-18
Virginia	NELAP	3	460230	06-14-18
Washington	State Program	10	C592	08-30-18
West Virginia DEP	State Program	3	381	08-31-18

\* Accreditation/Certification renewal pending - accreditation/certification considered valid.



# Method Summary

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

TestAmerica Job ID: 480-123927-2

Method	Method Description	Protocol	Laboratory
903.0	Radium-226 (GFPC)	EPA	TAL SL
904.0	Radium-228 (GFPC)	EPA	TAL SL

**Protocol References:**

EPA = US Environmental Protection Agency

**Laboratory References:**

TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566



# Sample Summary

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

TestAmerica Job ID: 480-123927-2

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
480-123927-1	P-1	Water	09/08/17 08:35	09/09/17 09:00
480-123927-2	P-2	Water	09/08/17 12:00	09/09/17 09:00
480-123927-3	P-3	Water	09/08/17 09:00	09/09/17 09:00
480-123927-4	P-4R	Water	09/08/17 09:45	09/09/17 09:00
480-123927-5	P-5	Water	09/08/17 10:15	09/09/17 09:00
480-123927-6	P-6	Water	09/08/17 11:00	09/09/17 09:00
480-123927-7	P-7	Water	09/08/17 11:35	09/09/17 09:00
480-123927-8	DUPLICATE WELL	Water	09/08/17 00:00	09/09/17 09:00
480-123927-9	FIELD BLANK	Water	09/08/17 12:35	09/09/17 09:00
480-123927-10	EQUIPMENT BLANK	Water	09/08/17 12:40	09/09/17 09:00

**Chain of Custody Record**



TestAmerica

COC No: 480-123927 COC

Regulatory Program:  DW  NPDES  RCRA  Other:  
Project Manager: Ryan Van Dette  
Site Contact: Nathaniel Beineman  
Date: 9/17/17  
Carrier:

Client Contact  
SKB Environmental  
13425 Courthouse Blvd  
Rosemount, MN 55068  
(651) 438-1500 Phone  
(651) 438-1518 FAX  
Project Name: Cloquet 2017 CCR GW Event 8  
Site:  
PO# 3078-17-00345

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Analytical Parameters							Sample Specific Notes:
						Filtered Sample (Y/N)	Perform MS/MSD (Y/N)	Metals (totals) + Mercury	Chloride	Sulfate	TDS	pH	
P-1	9/18/17	8:35	Grab	Water	7	X	X	X	X	X	X	X	
P-2		12:00	Grab	Water	7	X	X	X	X	X	X	X	
P-3		9:00	Grab	Water	7	X	X	X	X	X	X	X	
P-4 <i>R</i>		9:45	Grab	Water	7	X	X	X	X	X	X	X	
P-5		10:15	Grab	Water	7	X	X	X	X	X	X	X	
P-6		11:00	Grab	Water	7	X	X	X	X	X	X	X	
P-7		11:35	Grab	Water	7	X	X	X	X	X	X	X	
DUPLICATE WELL			Grab	Water	7	X	X	X	X	X	X	X	
Field Blank		12:35	Grab	Water	7	X	X	X	X	X	X	X	
Equipment Blank		12:40	Grab	Water	7	X	X	X	X	X	X	X	

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4= HNO3; 5= NaOH; 6= Other  
Possible Hazard Identification: Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

Non-Hazard  Flammable  Skin Irritant  Unknown   
 \*Metals - Boron, Calcium, Antimony, Arsenic, Barium, Beryllium, Cadmium, Chromium, Cobalt, Lead, Lithium, Molybdenum, Selenium, Thallium

Return to Client  Archive for \_\_\_\_\_ Months  
 Disposal by Lab  Return to Client

Therm ID No.: \_\_\_\_\_  
 Date/Time: 7/8/17 1600  
 Company: TAB  
 Date/Time: 9/17/17 0900  
 Company: TAB

Cooler Temp. (°C): Obs'd: \_\_\_\_\_  
 Received by: *[Signature]*  
 Received in Laboratory by: *[Signature]*

Custody Seal No.: \_\_\_\_\_  
 Company: *DES*  
 Date/Time: 9/18/17 15:00  
 Relinquished by: *[Signature]*  
 Company: *TAB*  
 Date/Time: 9/18/17 1000  
 Relinquished by: *[Signature]*  
 Company: \_\_\_\_\_  
 Date/Time: \_\_\_\_\_

#1 2, 9, 3, 1, 3, 4, 2, 8



<b>Client Information (Sub Contract Lab)</b>		Lab PM: VanDette, Ryan T	Carrier Tracking No(s): 480-37129.1								
Shipping/Receiving		E-Mail: ryan.vandette@testamericainc.com	State of Origin: Minnesota								
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): NELAP - Minnesota									
Address: 13715 Rider Trail North,		Due Date Requested: 10/6/2017	Job #: 480-123927-2								
City: Earth City	Slate, Zip: MO, 63045	TAT Requested (days):	Preservation Codes: M - Hexane N - None O - AsNaO2 P - Na2O4S Q - NaHSO3 R - Na2SO3 S - H2SO4 T - TSP Dodecahydrate U - Acetone V - MCAA W - pH 4-5 Z - other (Specify)  Other:								
Phone: 314-298-8566(Tel) 314-298-8757(Fax)	Email:	PO #:									
Project Name: SKB Cloquet - CCR Groundwater	Project #: 48013722	WO #:	Analysis Requested								
Site: Shamrock	SSOW#:										
<b>Sample Identification - Client ID (Lab ID)</b>		<b>Sample Date</b>	<b>Sample Time</b>	<b>Sample Type (C=Comp, G=grab)</b>	<b>Matrix (W=water, S=solid, O=waste/oil, BT=tissue, A=air)</b>	<b>Field Filtered Sample (Yes or No)</b>	<b>Perform MS/MSD (Yes or No)</b>	<b>903.0/PreSep_21 Standard Target List</b>	<b>904.0/PreSep_0 Standard Target List</b>	<b>Total Number of Containers</b>	<b>Special Instructions/Note:</b>
P-1 (480-123927-1)	9/8/17	08:35 Central	Water	X	X	X	X	X	3		
P-2 (480-123927-2)	9/8/17	12:00 Central	Water	X	X	X	X	X	3		
P-3 (480-123927-3)	9/8/17	09:00 Central	Water	X	X	X	X	X	3		
P-4R (480-123927-4)	9/8/17	09:45 Central	Water	X	X	X	X	X	3		
P-5 (480-123927-5)	9/8/17	10:15 Central	Water	X	X	X	X	X	3		
P-6 (480-123927-6)	9/8/17	11:00 Central	Water	X	X	X	X	X	3		
P-7 (480-123927-7)	9/8/17	11:35 Central	Water	X	X	X	X	X	3		
DUPLICATE WELL (480-123927-8)	9/8/17	Central	Water	X	X	X	X	X	3		
FIELD BLANK (480-123927-9)	9/8/17	12:35 Central	Water	X	X	X	X	X	3		
<p>Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte &amp; accreditation compliance upon our subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/test/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to TestAmerica Laboratories, Inc.</p>											
<b>Possible Hazard Identification</b>											
Unconfirmed Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2 Empty Kit Relinquished by: _____ Date: _____ Relinquished by: <i>Carroll</i> Date: 9/12/17 Time: 1:00 Relinquished by: <i>Carroll</i> Date: 9/13/17 Time: 0930 Relinquished by: _____ Date: _____ Relinquished by: _____ Date: _____											
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:											





## Login Sample Receipt Checklist

Client: Waste Connections, Inc.

Job Number: 480-123927-2

**Login Number: 123927**

**List Source: TestAmerica Buffalo**

**List Number: 1**

**Creator: Wallace, Cameron**

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

# Login Sample Receipt Checklist

Client: Waste Connections, Inc.

Job Number: 480-123927-2

**Login Number: 123927**

**List Number: 2**

**Creator: Taylor, Kristene N**

**List Source: TestAmerica St. Louis**

**List Creation: 09/13/17 03:13 PM**

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	N/A	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	20.0,20.0,20.0
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?	False	
There are no discrepancies between the containers received 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	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	





## Appendix C – Statistical Evaluation Data

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	A	B	C	D	E	F	G	H	I	J	K	L
1	<b>Background Statistics for Uncensored Full Data Sets</b>											
2	<b>User Selected Options</b>											
3	Date/Time of Computation			12/6/2017 8:18:53 AM								
4	From File			C:\Users\bjanowiak\Desktop\CCR sampling Brian Horan\Shamrock source file.xlsx								
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	<b>P-1 Antimony T^report_result_value</b>											
12												
13	<b>General Statistics</b>											
14	Total Number of Observations				48		Number of Distinct Observations				1	
15							Number of Missing Observations				1	
16	Minimum				1		First Quartile				1	
17	Second Largest				1		Median				1	
18	Maximum				1		Third Quartile				1	
19	Mean				1		SD				0	
20	Coefficient of Variation				0		Skewness				N/A	
21												
22	<b>Warning: There is only one distinct observation value in this data set - resulting in '0' variance!</b>											
23	<b>ProUCL (or any other software) should not be used on such a data set!</b>											
24	<b>The data set for variable P-1 Antimony T^report_result_value was not processed!</b>											
25												
26	<b>If possible, compute and collect Data Quality Objectives (DQOs) based sample size and analytical results.</b>											
27	<b>The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).</b>											
28												
29												
30	<b>P-1 Arsenic T^report_result_value</b>											
31												
32	<b>General Statistics</b>											
33	Total Number of Observations				48		Number of Distinct Observations				3	
34							Number of Missing Observations				1	
35	Minimum				1		First Quartile				1	
36	Second Largest				1.8		Median				1	
37	Maximum				7		Third Quartile				1	
38	Mean				1.142		SD				0.871	
39	Coefficient of Variation				0.763		Skewness				6.755	
40	Mean of logged Data				0.0528		SD of logged Data				0.292	
41												
42	<b>Critical Values for Background Threshold Values (BTVs)</b>											
43	Tolerance Factor K (For UTL)				2.069		d2max (for USL)				2.941	
44												
45	<b>Normal GOF Test</b>											
46	Shapiro Wilk Test Statistic				0.173		<b>Shapiro Wilk GOF Test</b>					
47	5% Shapiro Wilk Critical Value				0.947		Data Not Normal at 5% Significance Level					
48	Lilliefors Test Statistic				0.523		<b>Lilliefors GOF Test</b>					
49	5% Lilliefors Critical Value				0.128		Data Not Normal at 5% Significance Level					
50	<b>Data Not Normal at 5% Significance Level</b>											
51												
52	<b>Background Statistics Assuming Normal Distribution</b>											
53	95% UTL with 95% Coverage				2.944		90% Percentile (z)				2.258	
54	95% UPL (t)				2.619		95% Percentile (z)				2.575	
55	95% USL				3.704		99% Percentile (z)				3.168	
56												
57	<b>Gamma GOF Test</b>											
58	A-D Test Statistic				17.13		<b>Anderson-Darling Gamma GOF Test</b>					

	A	B	C	D	E	F	G	H	I	J	K	L
59	5% A-D Critical Value					0.752	Data Not Gamma Distributed at 5% Significance Level					
60	K-S Test Statistic					0.536	<b>Kolmogrov-Smirnoff Gamma GOF Test</b>					
61	5% K-S Critical Value					0.128	Data Not Gamma Distributed at 5% Significance Level					
62	<b>Data Not Gamma Distributed at 5% Significance Level</b>											
63												
64	<b>Gamma Statistics</b>											
65	k hat (MLE)					6.435	k star (bias corrected MLE)					6.047
66	Theta hat (MLE)					0.177	Theta star (bias corrected MLE)					0.189
67	nu hat (MLE)					617.8	nu star (bias corrected)					580.5
68	MLE Mean (bias corrected)					1.142	MLE Sd (bias corrected)					0.464
69												
70	<b>Background Statistics Assuming Gamma Distribution</b>											
71	95% Wilson Hilferty (WH) Approx. Gamma UPL					1.963	90% Percentile					1.762
72	95% Hawkins Wixley (HW) Approx. Gamma UPL					1.898	95% Percentile					1.997
73	95% WH Approx. Gamma UTL with 95% Coverage					2.209	99% Percentile					2.488
74	95% HW Approx. Gamma UTL with 95% Coverage					2.132						
75	95% WH USL					2.863	95% HW USL					2.763
76												
77	<b>Lognormal GOF Test</b>											
78	Shapiro Wilk Test Statistic					0.198	<b>Shapiro Wilk Lognormal GOF Test</b>					
79	5% Shapiro Wilk Critical Value					0.947	Data Not Lognormal at 5% Significance Level					
80	Lilliefors Test Statistic					0.53	<b>Lilliefors Lognormal GOF Test</b>					
81	5% Lilliefors Critical Value					0.128	Data Not Lognormal at 5% Significance Level					
82	<b>Data Not Lognormal at 5% Significance Level</b>											
83												
84	<b>Background Statistics assuming Lognormal Distribution</b>											
85	95% UTL with 95% Coverage					1.927	90% Percentile (z)					1.532
86	95% UPL (t)					1.729	95% Percentile (z)					1.703
87	95% USL					2.486	99% Percentile (z)					2.078
88												
89	<b>Nonparametric Distribution Free Background Statistics</b>											
90	<b>Data do not follow a Discernible Distribution (0.05)</b>											
91												
92	<b>Nonparametric Upper Limits for Background Threshold Values</b>											
93	Order of Statistic, r					47	95% UTL with 95% Coverage					1.8
94	Approximate f					1.237	Confidence Coefficient (CC) achieved by UTL					0.699
95	95% Percentile Bootstrap UTL with 95% Coverage					N/A	95% BCA Bootstrap UTL with 95% Coverage					N/A
96	95% UPL					1.44	90% Percentile					1
97	90% Chebyshev UPL					3.783	95% Percentile					1
98	95% Chebyshev UPL					4.979	99% Percentile					4.556
99	95% USL					7						
100												
101	Note: The use of USL to estimate a BTV is recommended only when the data set represents a background											
102	data set free of outliers and consists of observations collected from clean unimpacted locations.											
103	The use of USL tends to provide a balance between false positives and false negatives provided the data											
104	represents a background data set and when many onsite observations need to be compared with the BTV.											
105												

	A	B	C	D	E	F	G	H	I	J	K	L
106	P-1 Barium T^report_result_value											
107												
108	<b>General Statistics</b>											
109	Total Number of Observations					47	Number of Distinct Observations					18
110							Number of Missing Observations					2
111	Minimum					57	First Quartile					110
112	Second Largest					320	Median					160
113	Maximum					340	Third Quartile					230
114	Mean					179	SD					77.79
115	Coefficient of Variation					0.434	Skewness					0.574
116	Mean of logged Data					5.093	SD of logged Data					0.446
117												
118	<b>Critical Values for Background Threshold Values (BTVs)</b>											
119	Tolerance Factor K (For UTL)					2.074	d2max (for USL)					2.933
120												
121	<b>Normal GOF Test</b>											
122	Shapiro Wilk Test Statistic					0.907	<b>Shapiro Wilk GOF Test</b>					
123	5% Shapiro Wilk Critical Value					0.946	Data Not Normal at 5% Significance Level					
124	Lilliefors Test Statistic					0.159	<b>Lilliefors GOF Test</b>					
125	5% Lilliefors Critical Value					0.129	Data Not Normal at 5% Significance Level					
126	<b>Data Not Normal at 5% Significance Level</b>											
127												
128	<b>Background Statistics Assuming Normal Distribution</b>											
129	95% UTL with 95% Coverage					340.4	90% Percentile (z)					278.7
130	95% UPL (t)					311	95% Percentile (z)					307
131	95% USL					407.2	99% Percentile (z)					360
132												
133	<b>Gamma GOF Test</b>											
134	A-D Test Statistic					0.922	<b>Anderson-Darling Gamma GOF Test</b>					
135	5% A-D Critical Value					0.753	Data Not Gamma Distributed at 5% Significance Level					
136	K-S Test Statistic					0.15	<b>Kolmogrov-Smirnoff Gamma GOF Test</b>					
137	5% K-S Critical Value					0.129	Data Not Gamma Distributed at 5% Significance Level					
138	<b>Data Not Gamma Distributed at 5% Significance Level</b>											
139												
140	<b>Gamma Statistics</b>											
141	k hat (MLE)					5.449	k star (bias corrected MLE)					5.115
142	Theta hat (MLE)					32.86	Theta star (bias corrected MLE)					35
143	nu hat (MLE)					512.2	nu star (bias corrected)					480.8
144	MLE Mean (bias corrected)					179	MLE Sd (bias corrected)					79.16
145												
146	<b>Background Statistics Assuming Gamma Distribution</b>											
147	95% Wilson Hilferty (WH) Approx. Gamma UPL					328.7	90% Percentile					285
148	95% Hawkins Wixley (HW) Approx. Gamma UPL					332.5	95% Percentile					325.9
149	95% WH Approx. Gamma UTL with 95% Coverage					374.6	99% Percentile					412.3
150	95% HW Approx. Gamma UTL with 95% Coverage					381.8						
151	95% WH USL					494.6	95% HW USL					514.5
152												
153	<b>Lognormal GOF Test</b>											
154	Shapiro Wilk Test Statistic					0.942	<b>Shapiro Wilk Lognormal GOF Test</b>					
155	5% Shapiro Wilk Critical Value					0.946	Data Not Lognormal at 5% Significance Level					
156	Lilliefors Test Statistic					0.136	<b>Lilliefors Lognormal GOF Test</b>					
157	5% Lilliefors Critical Value					0.129	Data Not Lognormal at 5% Significance Level					
158	<b>Data Not Lognormal at 5% Significance Level</b>											
159												
160	<b>Background Statistics assuming Lognormal Distribution</b>											
161	95% UTL with 95% Coverage					410.9	90% Percentile (z)					288.5
162	95% UPL (t)					347.2	95% Percentile (z)					339.3
163	95% USL					602.7	99% Percentile (z)					459.8

	A	B	C	D	E	F	G	H	I	J	K	L
164												
165	<b>Nonparametric Distribution Free Background Statistics</b>											
166	<b>Data do not follow a Discernible Distribution (0.05)</b>											
167												
168	<b>Nonparametric Upper Limits for Background Threshold Values</b>											
169	Order of Statistic, r				46		95% UTL with 95% Coverage				320	
170	Approximate f				1.211		Confidence Coefficient (CC) achieved by UTL				0.688	
171	95% Percentile Bootstrap UTL with 95% Coverage				334		95% BCA Bootstrap UTL with 95% Coverage				320	
172	95% UPL				320		90% Percentile				314	
173	90% Chebyshev UPL				414.9		95% Percentile				320	
174	95% Chebyshev UPL				521.7		99% Percentile				330.8	
175	95% USL				340							
176												
177	Note: The use of USL to estimate a BTV is recommended only when the data set represents a background											
178	data set free of outliers and consists of observations collected from clean unimpacted locations.											
179	The use of USL tends to provide a balance between false positives and false negatives provided the data											
180	represents a background data set and when many onsite observations need to be compared with the BTV.											
181												
182	<b>P-1 Beryllium T^report_result_value</b>											
183												
184	<b>General Statistics</b>											
185	Total Number of Observations				48		Number of Distinct Observations				1	
186							Number of Missing Observations				1	
187	Minimum				0.7		First Quartile				0.7	
188	Second Largest				0.7		Median				0.7	
189	Maximum				0.7		Third Quartile				0.7	
190	Mean				0.7		SD				2.244E-16	
191	Coefficient of Variation				3.206E-16		Skewness				1.033	
192												
193	<b>Warning: There is only one distinct observation value in this data set - resulting in '0' variance!</b>											
194	<b>ProUCL (or any other software) should not be used on such a data set!</b>											
195	<b>The data set for variable P-1 Beryllium T^report_result_value was not processed!</b>											
196												
197	<b>If possible, compute and collect Data Quality Objectives (DQOs) based sample size and analytical results.</b>											
198	<b>The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).</b>											
199												
200												
201	<b>P-1 Boron T^report_result_value</b>											
202												
203	<b>General Statistics</b>											
204	Total Number of Observations				47		Number of Distinct Observations				35	
205							Number of Missing Observations				2	
206	Minimum				25		First Quartile				48	
207	Second Largest				370		Median				73	
208	Maximum				380		Third Quartile				120	
209	Mean				109.1		SD				96.41	
210	Coefficient of Variation				0.884		Skewness				1.705	
211	Mean of logged Data				4.4		SD of logged Data				0.733	
212												
213	<b>Critical Values for Background Threshold Values (BTVs)</b>											
214	Tolerance Factor K (For UTL)				2.074		d2max (for USL)				2.933	
215												
216	<b>Normal GOF Test</b>											
217	Shapiro Wilk Test Statistic				0.73		<b>Shapiro Wilk GOF Test</b>					
218	5% Shapiro Wilk Critical Value				0.946		Data Not Normal at 5% Significance Level					
219	Lilliefors Test Statistic				0.225		<b>Lilliefors GOF Test</b>					
220	5% Lilliefors Critical Value				0.129		Data Not Normal at 5% Significance Level					
221	<b>Data Not Normal at 5% Significance Level</b>											

	A	B	C	D	E	F	G	H	I	J	K	L	
222													
223	<b>Background Statistics Assuming Normal Distribution</b>												
224	95% UTL with 95% Coverage				309					90% Percentile (z)	232.6		
225	95% UPL (t)				272.6					95% Percentile (z)	267.6		
226	95% USL				391.8					99% Percentile (z)	333.3		
227													
228	<b>Gamma GOF Test</b>												
229	A-D Test Statistic				2.018					<b>Anderson-Darling Gamma GOF Test</b>			
230	5% A-D Critical Value				0.763					Data Not Gamma Distributed at 5% Significance Level			
231	K-S Test Statistic				0.147					<b>Kolmogrov-Smirnoff Gamma GOF Test</b>			
232	5% K-S Critical Value				0.131					Data Not Gamma Distributed at 5% Significance Level			
233	<b>Data Not Gamma Distributed at 5% Significance Level</b>												
234													
235	<b>Gamma Statistics</b>												
236	k hat (MLE)				1.864					k star (bias corrected MLE)	1.76		
237	Theta hat (MLE)				58.5					Theta star (bias corrected MLE)	61.98		
238	nu hat (MLE)				175.3					nu star (bias corrected)	165.4		
239	MLE Mean (bias corrected)				109.1					MLE Sd (bias corrected)	82.22		
240													
241	<b>Background Statistics Assuming Gamma Distribution</b>												
242	95% Wilson Hilferty (WH) Approx. Gamma UPL				270.2					90% Percentile	218.7		
243	95% Hawkins Wixley (HW) Approx. Gamma UPL				271.9					95% Percentile	269.5		
244	95% WH Approx. Gamma UTL with 95% Coverage				329.8					99% Percentile	383.3		
245	95% HW Approx. Gamma UTL with 95% Coverage				336.9								
246	95% WH USL				496.5					95% HW USL	527.6		
247													
248	<b>Lognormal GOF Test</b>												
249	Shapiro Wilk Test Statistic				0.925					<b>Shapiro Wilk Lognormal GOF Test</b>			
250	5% Shapiro Wilk Critical Value				0.946					Data Not Lognormal at 5% Significance Level			
251	Lilliefors Test Statistic				0.125					<b>Lilliefors Lognormal GOF Test</b>			
252	5% Lilliefors Critical Value				0.129					Data appear Lognormal at 5% Significance Level			
253	<b>Data appear Approximate Lognormal at 5% Significance Level</b>												
254													
255	<b>Background Statistics assuming Lognormal Distribution</b>												
256	95% UTL with 95% Coverage				372.6					90% Percentile (z)	208.5		
257	95% UPL (t)				282.6					95% Percentile (z)	272.1		
258	95% USL				699.4					99% Percentile (z)	448.4		
259													
260	<b>Nonparametric Distribution Free Background Statistics</b>												
261	<b>Data appear Approximate Lognormal at 5% Significance Level</b>												
262													
263	<b>Nonparametric Upper Limits for Background Threshold Values</b>												
264	Order of Statistic, r				46					95% UTL with 95% Coverage	370		
265	Approximate f				1.211					Confidence Coefficient (CC) achieved by UTL	0.688		
266	95% Percentile Bootstrap UTL with 95% Coverage				370					95% BCA Bootstrap UTL with 95% Coverage	370		
267	95% UPL				354					90% Percentile	294		
268	90% Chebyshev UPL				401.3					95% Percentile	324		
269	95% Chebyshev UPL				533.7					99% Percentile	375.4		
270	95% USL				380								
271													
272	Note: The use of USL to estimate a BTV is recommended only when the data set represents a background												
273	data set free of outliers and consists of observations collected from clean unimpacted locations.												
274	The use of USL tends to provide a balance between false positives and false negatives provided the data												
275	represents a background data set and when many onsite observations need to be compared with the BTV.												
276													
277	P-1 Cadmium T^report_result_value												
278													
279	<b>General Statistics</b>												

	A	B	C	D	E	F	G	H	I	J	K	L
280	Total Number of Observations					46	Number of Distinct Observations					6
281							Number of Missing Observations					3
282	Minimum					0.5	First Quartile					0.5
283	Second Largest					0.58	Median					0.5
284	Maximum					0.59	Third Quartile					0.5
285	Mean					0.508	SD					0.0224
286	Coefficient of Variation					0.0442	Skewness					2.92
287	Mean of logged Data					-0.679	SD of logged Data					0.0417
288												
289	<b>Critical Values for Background Threshold Values (BTVs)</b>											
290	Tolerance Factor K (For UTL)					2.079	d2max (for USL)					2.924
291												
292	<b>Normal GOF Test</b>											
293	Shapiro Wilk Test Statistic					0.385	<b>Shapiro Wilk GOF Test</b>					
294	5% Shapiro Wilk Critical Value					0.945	Data Not Normal at 5% Significance Level					
295	Lilliefors Test Statistic					0.502	<b>Lilliefors GOF Test</b>					
296	5% Lilliefors Critical Value					0.131	Data Not Normal at 5% Significance Level					
297	<b>Data Not Normal at 5% Significance Level</b>											
298												
299	<b>Background Statistics Assuming Normal Distribution</b>											
300	95% UTL with 95% Coverage					0.554	90% Percentile (z)					0.536
301	95% UPL (t)					0.546	95% Percentile (z)					0.545
302	95% USL					0.573	99% Percentile (z)					0.56
303												
304	<b>Gamma GOF Test</b>											
305	A-D Test Statistic					13.76	<b>Anderson-Darling Gamma GOF Test</b>					
306	5% A-D Critical Value					0.747	Data Not Gamma Distributed at 5% Significance Level					
307	K-S Test Statistic					0.504	<b>Kolmogrov-Smirnoff Gamma GOF Test</b>					
308	5% K-S Critical Value					0.13	Data Not Gamma Distributed at 5% Significance Level					
309	<b>Data Not Gamma Distributed at 5% Significance Level</b>											
310												
311	<b>Gamma Statistics</b>											
312	k hat (MLE)					565.8	k star (bias corrected MLE)					528.9
313	Theta hat (MLE)					8.9721E-4	Theta star (bias corrected MLE)					9.5978E-4
314	nu hat (MLE)					52050	nu star (bias corrected)					48657
315	MLE Mean (bias corrected)					0.508	MLE Sd (bias corrected)					0.0221
316												
317	<b>Background Statistics Assuming Gamma Distribution</b>											
318	95% Wilson Hilferty (WH) Approx. Gamma UPL					0.545	90% Percentile					0.536
319	95% Hawkins Wixley (HW) Approx. Gamma UPL					0.545	95% Percentile					0.544
320	95% WH Approx. Gamma UTL with 95% Coverage					0.553	99% Percentile					0.56
321	95% HW Approx. Gamma UTL with 95% Coverage					0.553						
322	95% WH USL					0.573	95% HW USL					0.573
323												
324	<b>Lognormal GOF Test</b>											
325	Shapiro Wilk Test Statistic					0.386	<b>Shapiro Wilk Lognormal GOF Test</b>					
326	5% Shapiro Wilk Critical Value					0.945	Data Not Lognormal at 5% Significance Level					
327	Lilliefors Test Statistic					0.503	<b>Lilliefors Lognormal GOF Test</b>					
328	5% Lilliefors Critical Value					0.131	Data Not Lognormal at 5% Significance Level					
329	<b>Data Not Lognormal at 5% Significance Level</b>											
330												
331	<b>Background Statistics assuming Lognormal Distribution</b>											
332	95% UTL with 95% Coverage					0.553	90% Percentile (z)					0.535
333	95% UPL (t)					0.544	95% Percentile (z)					0.543
334	95% USL					0.573	99% Percentile (z)					0.559
335												
336	<b>Nonparametric Distribution Free Background Statistics</b>											
337	<b>Data do not follow a Discernible Distribution (0.05)</b>											

	A	B	C	D	E	F	G	H	I	J	K	L	
338													
339	<b>Nonparametric Upper Limits for Background Threshold Values</b>												
340	Order of Statistic, r				45	95% UTL with 95% Coverage				0.58			
341	Approximate f				1.184	Confidence Coefficient (CC) achieved by UTL				0.677			
342	95% Percentile Bootstrap UTL with 95% Coverage				0.588	95% BCA Bootstrap UTL with 95% Coverage				0.58			
343	95% UPL				0.577	90% Percentile				0.52			
344	90% Chebyshev UPL				0.576	95% Percentile				0.57			
345	95% Chebyshev UPL				0.606	99% Percentile				0.586			
346	95% USL				0.59								
347													
348	Note: The use of USL to estimate a BTV is recommended only when the data set represents a background												
349	data set free of outliers and consists of observations collected from clean unimpacted locations.												
350	The use of USL tends to provide a balance between false positives and false negatives provided the data												
351	represents a background data set and when many onsite observations need to be compared with the BTV.												
352													
353	<b>P-1 Calcium T^report_result_value</b>												
354													
355	<b>General Statistics</b>												
356	Total Number of Observations				46	Number of Distinct Observations				42			
357						Number of Missing Observations				3			
358	Minimum				16000	First Quartile				126250			
359	Second Largest				235000	Median				144500			
360	Maximum				296000	Third Quartile				166750			
361	Mean				143987	SD				45524			
362	Coefficient of Variation				0.316	Skewness				0.254			
363	Mean of logged Data				11.81	SD of logged Data				0.433			
364													
365	<b>Critical Values for Background Threshold Values (BTVs)</b>												
366	Tolerance Factor K (For UTL)				2.079	d2max (for USL)				2.924			
367													
368	<b>Normal GOF Test</b>												
369	Shapiro Wilk Test Statistic				0.956	<b>Shapiro Wilk GOF Test</b>							
370	5% Shapiro Wilk Critical Value				0.945	Data appear Normal at 5% Significance Level							

	A	B	C	D	E	F	G	H	I	J	K	L
371	Lilliefors Test Statistic					0.124	Lilliefors GOF Test					
372	5% Lilliefors Critical Value					0.131	Data appear Normal at 5% Significance Level					
373	Data appear Normal at 5% Significance Level											
374												
375	Background Statistics Assuming Normal Distribution											
376	95% UTL with 95% Coverage					238648	90 Percentile (z)					202328
377	95% UPL (t)					221268	95 Percentile (z)					218867
378	95% USL					277103	99 Percentile (z)					249892
379												
380	Gamma GOF Test											
381	A-D Test Statistic					1.705	Anderson-Darling Gamma GOF Test					
382	5% A-D Critical Value					0.751	Data Not Gamma Distributed at 5% Significance Level					
383	K-S Test Statistic					0.174	Kolmogrov-Smirnoff Gamma GOF Test					
384	5% K-S Critical Value					0.131	Data Not Gamma Distributed at 5% Significance Level					
385	Data Not Gamma Distributed at 5% Significance Level											
386												
387	Gamma Statistics											
388	k hat (MLE)					7.5	k star (bias corrected MLE)					7.025
389	Theta hat (MLE)					19198	Theta star (bias corrected MLE)					20495
390	nu hat (MLE)					690	nu star (bias corrected)					646.3
391	MLE Mean (bias corrected)					143987	MLE Sd (bias corrected)					54323
392												
393	Background Statistics Assuming Gamma Distribution											
394	95% Wilson Hilferty (WH) Approx. Gamma UPL					244318	90 Percentile					216506
395	95% Hawkins Wixley (HW) Approx. Gamma UPL					250596	95 Percentile					243397
396	95% WH Approx. Gamma UTL with 95% Coverage					273951	99 Percentile					299379
397	95% HW Approx. Gamma UTL with 95% Coverage					283572						
398	95% WH USL					347831	95% HW USL					368020
399												
400	Lognormal GOF Test											
401	Shapiro Wilk Test Statistic					0.778	Shapiro Wilk Lognormal GOF Test					
402	5% Shapiro Wilk Critical Value					0.945	Data Not Lognormal at 5% Significance Level					
403	Lilliefors Test Statistic					0.208	Lilliefors Lognormal GOF Test					
404	5% Lilliefors Critical Value					0.131	Data Not Lognormal at 5% Significance Level					
405	Data Not Lognormal at 5% Significance Level											
406												
407	Background Statistics assuming Lognormal Distribution											
408	95% UTL with 95% Coverage					330971	90 Percentile (z)					234287
409	95% UPL (t)					280537	95 Percentile (z)					274204
410	95% USL					477151	99 Percentile (z)					368333
411												
412	Nonparametric Distribution Free Background Statistics											
413	Data appear Normal at 5% Significance Level											
414												
415	Nonparametric Upper Limits for Background Threshold Values											
416	Order of Statistic, r					45	95% UTL with 95% Coverage					235000
417	Approximate f					1.184	Confidence Coefficient (CC) achieved by UTL					0.677
418	95% Percentile Bootstrap UTL with 95% Coverage					280750	95% BCA Bootstrap UTL with 95% Coverage					273750
419	95% UPL					225200	90 Percentile					182000
420	90% Chebyshev UPL					282035	95 Percentile					202750
421	95% Chebyshev UPL					344567	99 Percentile					268550
422	95% USL					296000						
423												
424	Note: The use of USL to estimate a BTV is recommended only when the data set represents a background											
425	data set free of outliers and consists of observations collected from clean unimpacted locations.											
426	The use of USL tends to provide a balance between false positives and false negatives provided the data											
427	represents a background data set and when many onsite observations need to be compared with the BTV.											
428												



	A	B	C	D	E	F	G	H	I	J	K	L
429	P-1 Chloride T^report_result_value											
430												
431	<b>General Statistics</b>											
432	Total Number of Observations					46	Number of Distinct Observations					45
433							Number of Missing Observations					3
434	Minimum					16800	First Quartile					65600
435	Second Largest					408000	Median					90700
436	Maximum					601000	Third Quartile					133750
437	Mean					124261	SD					106477
438	Coefficient of Variation					0.857	Skewness					2.692
439	Mean of logged Data					11.49	SD of logged Data					0.681
440												
441	<b>Critical Values for Background Threshold Values (BTVs)</b>											
442	Tolerance Factor K (For UTL)					2.079	d2max (for USL)					2.924
443												
444	<b>Normal GOF Test</b>											
445	Shapiro Wilk Test Statistic					0.725	<b>Shapiro Wilk GOF Test</b>					
446	5% Shapiro Wilk Critical Value					0.945	Data Not Normal at 5% Significance Level					
447	Lilliefors Test Statistic					0.235	<b>Lilliefors GOF Test</b>					
448	5% Lilliefors Critical Value					0.131	Data Not Normal at 5% Significance Level					
449	<b>Data Not Normal at 5% Significance Level</b>											
450												
451	<b>Background Statistics Assuming Normal Distribution</b>											
452	95% UTL with 95% Coverage					345664	90% Percentile (z)					260716
453	95% UPL (t)					305014	95% Percentile (z)					299399
454	95% USL					435607	99% Percentile (z)					371962
455												
456	<b>Gamma GOF Test</b>											
457	A-D Test Statistic					1.101	<b>Anderson-Darling Gamma GOF Test</b>					
458	5% A-D Critical Value					0.76	Data Not Gamma Distributed at 5% Significance Level					
459	K-S Test Statistic					0.138	<b>Kolmogrov-Smirnoff Gamma GOF Test</b>					
460	5% K-S Critical Value					0.132	Data Not Gamma Distributed at 5% Significance Level					
461	<b>Data Not Gamma Distributed at 5% Significance Level</b>											
462												
463	<b>Gamma Statistics</b>											
464	k hat (MLE)					2.194	k star (bias corrected MLE)					2.066
465	Theta hat (MLE)					56630	Theta star (bias corrected MLE)					60156
466	nu hat (MLE)					201.9	nu star (bias corrected)					190
467	MLE Mean (bias corrected)					124261	MLE Sd (bias corrected)					86458
468												
469	<b>Background Statistics Assuming Gamma Distribution</b>											
470	95% Wilson Hilferty (WH) Approx. Gamma UPL					291997	90% Percentile					239846
471	95% Hawkins Wixley (HW) Approx. Gamma UPL					293858	95% Percentile					291753
472	95% WH Approx. Gamma UTL with 95% Coverage					352632	99% Percentile					406660
473	95% HW Approx. Gamma UTL with 95% Coverage					359680						
474	95% WH USL					515423	95% HW USL					544101
475												
476	<b>Lognormal GOF Test</b>											
477	Shapiro Wilk Test Statistic					0.982	<b>Shapiro Wilk Lognormal GOF Test</b>					
478	5% Shapiro Wilk Critical Value					0.945	Data appear Lognormal at 5% Significance Level					
479	Lilliefors Test Statistic					0.0902	<b>Lilliefors Lognormal GOF Test</b>					
480	5% Lilliefors Critical Value					0.131	Data appear Lognormal at 5% Significance Level					
481	<b>Data appear Lognormal at 5% Significance Level</b>											
482												
483	<b>Background Statistics assuming Lognormal Distribution</b>											
484	95% UTL with 95% Coverage					401012	90% Percentile (z)					232881
485	95% UPL (t)					309181	95% Percentile (z)					298272
486	95% USL					712951	99% Percentile (z)					474489

	A	B	C	D	E	F	G	H	I	J	K	L
487												
488	<b>Nonparametric Distribution Free Background Statistics</b>											
489	<b>Data appear Lognormal at 5% Significance Level</b>											
490												
491	<b>Nonparametric Upper Limits for Background Threshold Values</b>											
492	Order of Statistic, r	45	95% UTL with 95% Coverage									408000
493	Approximate f	1.184	Confidence Coefficient (CC) achieved by UTL									0.677
494	95% Percentile Bootstrap UTL with 95% Coverage	552750	95% BCA Bootstrap UTL with 95% Coverage									536750
495	95% UPL	385600	90% Percentile									228000
496	90% Chebyshev UPL	447144	95% Percentile									318500
497	95% Chebyshev UPL	593399	99% Percentile									514150
498	95% USL	601000										
499												
500	Note: The use of USL to estimate a BTV is recommended only when the data set represents a background											
501	data set free of outliers and consists of observations collected from clean unimpacted locations.											
502	The use of USL tends to provide a balance between false positives and false negatives provided the data											
503	represents a background data set and when many onsite observations need to be compared with the BTV.											
504												
505	<b>P-1 Chromium T^report_result_value</b>											
506												
507	<b>General Statistics</b>											
508	Total Number of Observations	46	Number of Distinct Observations									3
509			Number of Missing Observations									3
510	Minimum	4	First Quartile									4
511	Second Largest	5.9	Median									4
512	Maximum	15	Third Quartile									4
513	Mean	4.28	SD									1.64
514	Coefficient of Variation	0.383	Skewness									6.508
515	Mean of logged Data	1.423	SD of logged Data									0.202
516												
517	<b>Critical Values for Background Threshold Values (BTVs)</b>											
518	Tolerance Factor K (For UTL)	2.079	d2max (for USL)									2.924
519												
520	<b>Normal GOF Test</b>											
521	Shapiro Wilk Test Statistic	0.184	<b>Shapiro Wilk GOF Test</b>									
522	5% Shapiro Wilk Critical Value	0.945	Data Not Normal at 5% Significance Level									
523	Lilliefors Test Statistic	0.524	<b>Lilliefors GOF Test</b>									
524	5% Lilliefors Critical Value	0.131	Data Not Normal at 5% Significance Level									
525	<b>Data Not Normal at 5% Significance Level</b>											
526												
527	<b>Background Statistics Assuming Normal Distribution</b>											
528	95% UTL with 95% Coverage	7.69	90% Percentile (z)									6.382
529	95% UPL (t)	7.064	95% Percentile (z)									6.978
530	95% USL	9.075	99% Percentile (z)									8.095
531												
532	<b>Gamma GOF Test</b>											
533	A-D Test Statistic	16.26	<b>Anderson-Darling Gamma GOF Test</b>									
534	5% A-D Critical Value	0.748	Data Not Gamma Distributed at 5% Significance Level									
535	K-S Test Statistic	0.532	<b>Kolmogrov-Smirnoff Gamma GOF Test</b>									
536	5% K-S Critical Value	0.13	Data Not Gamma Distributed at 5% Significance Level									
537	<b>Data Not Gamma Distributed at 5% Significance Level</b>											
538												
539	<b>Gamma Statistics</b>											
540	k hat (MLE)	16.52	k star (bias corrected MLE)									15.45
541	Theta hat (MLE)	0.259	Theta star (bias corrected MLE)									0.277
542	nu hat (MLE)	1520	nu star (bias corrected)									1422
543	MLE Mean (bias corrected)	4.28	MLE Sd (bias corrected)									1.089
544												

	A	B	C	D	E	F	G	H	I	J	K	L	
545	<b>Background Statistics Assuming Gamma Distribution</b>												
546	95% Wilson Hilferty (WH) Approx. Gamma UPL					6.197						90% Percentile	5.722
547	95% Hawkins Wixley (HW) Approx. Gamma UPL					6.104						95% Percentile	6.215
548	95% WH Approx. Gamma UTL with 95% Coverage					6.725						99% Percentile	7.211
549	95% HW Approx. Gamma UTL with 95% Coverage					6.617							
550	95% WH USL					7.997						95% HW USL	7.867
551													
552	<b>Lognormal GOF Test</b>												
553	Shapiro Wilk Test Statistic					0.202						<b>Shapiro Wilk Lognormal GOF Test</b>	
554	5% Shapiro Wilk Critical Value					0.945						Data Not Lognormal at 5% Significance Level	
555	Lilliefors Test Statistic					0.53						<b>Lilliefors Lognormal GOF Test</b>	
556	5% Lilliefors Critical Value					0.131						Data Not Lognormal at 5% Significance Level	
557	<b>Data Not Lognormal at 5% Significance Level</b>												
558													
559	<b>Background Statistics assuming Lognormal Distribution</b>												
560	95% UTL with 95% Coverage					6.317						90% Percentile (z)	5.378
561	95% UPL (t)					5.849						95% Percentile (z)	5.787
562	95% USL					7.492						99% Percentile (z)	6.64
563													
564	<b>Nonparametric Distribution Free Background Statistics</b>												
565	<b>Data do not follow a Discernible Distribution (0.05)</b>												
566													
567	<b>Nonparametric Upper Limits for Background Threshold Values</b>												
568	Order of Statistic, r				45						95% UTL with 95% Coverage	5.9	
569	Approximate f				1.184						Confidence Coefficient (CC) achieved by UTL	0.677	
570	95% Percentile Bootstrap UTL with 95% Coverage					N/A						95% BCA Bootstrap UTL with 95% Coverage	N/A
571	95% UPL					5.235						90% Percentile	4
572	90% Chebyshev UPL					9.253						95% Percentile	4
573	95% Chebyshev UPL					11.51						99% Percentile	10.91
574	95% USL					15							
575													
576	Note: The use of USL to estimate a BTV is recommended only when the data set represents a background												
577	data set free of outliers and consists of observations collected from clean unimpacted locations.												
578	The use of USL tends to provide a balance between false positives and false negatives provided the data												
579	represents a background data set and when many onsite observations need to be compared with the BTV.												
580													
581	P-1 Cobalt T^report_result_value												
582													
583	<b>General Statistics</b>												
584	Total Number of Observations					47						Number of Distinct Observations	35
585												Number of Missing Observations	2
586	Minimum					0.3						First Quartile	0.365
587	Second Largest					11.6						Median	0.55
588	Maximum					11.8						Third Quartile	0.985
589	Mean					2.263						SD	3.677
590	Coefficient of Variation					1.625						Skewness	1.836
591	Mean of logged Data					-0.13						SD of logged Data	1.227
592													
593	<b>Critical Values for Background Threshold Values (BTVs)</b>												
594	Tolerance Factor K (For UTL)					2.074						d2max (for USL)	2.933
595													
596	<b>Normal GOF Test</b>												
597	Shapiro Wilk Test Statistic					0.559						<b>Shapiro Wilk GOF Test</b>	
598	5% Shapiro Wilk Critical Value					0.946						Data Not Normal at 5% Significance Level	
599	Lilliefors Test Statistic					0.401						<b>Lilliefors GOF Test</b>	
600	5% Lilliefors Critical Value					0.129						Data Not Normal at 5% Significance Level	
601	<b>Data Not Normal at 5% Significance Level</b>												
602													

	A	B	C	D	E	F	G	H	I	J	K	L
603	<b>Background Statistics Assuming Normal Distribution</b>											
604	95% UTL with 95% Coverage					9.89	90% Percentile (z)					6.976
605	95% UPL (t)					8.502	95% Percentile (z)					8.312
606	95% USL					13.05	99% Percentile (z)					10.82
607												
608	<b>Gamma GOF Test</b>											
609	A-D Test Statistic					6.653	<b>Anderson-Darling Gamma GOF Test</b>					
610	5% A-D Critical Value					0.801	Data Not Gamma Distributed at 5% Significance Level					
611	K-S Test Statistic					0.322	<b>Kolmogrov-Smirnoff Gamma GOF Test</b>					
612	5% K-S Critical Value					0.135	Data Not Gamma Distributed at 5% Significance Level					
613	<b>Data Not Gamma Distributed at 5% Significance Level</b>											
614												
615	<b>Gamma Statistics</b>											
616	k hat (MLE)					0.646	k star (bias corrected MLE)					0.619
617	Theta hat (MLE)					3.505	Theta star (bias corrected MLE)					3.658
618	nu hat (MLE)					60.7	nu star (bias corrected)					58.16
619	MLE Mean (bias corrected)					2.263	MLE Sd (bias corrected)					2.878
620												
621	<b>Background Statistics Assuming Gamma Distribution</b>											
622	95% Wilson Hilferty (WH) Approx. Gamma UPL					7.499	90% Percentile					5.846
623	95% Hawkins Wixley (HW) Approx. Gamma UPL					7.365	95% Percentile					8.055
624	95% WH Approx. Gamma UTL with 95% Coverage					10.06	99% Percentile					13.38
625	95% HW Approx. Gamma UTL with 95% Coverage					10.2						
626	95% WH USL					17.91	95% HW USL					19.64
627												
628	<b>Lognormal GOF Test</b>											
629	Shapiro Wilk Test Statistic					0.752	<b>Shapiro Wilk Lognormal GOF Test</b>					
630	5% Shapiro Wilk Critical Value					0.946	Data Not Lognormal at 5% Significance Level					
631	Lilliefors Test Statistic					0.247	<b>Lilliefors Lognormal GOF Test</b>					
632	5% Lilliefors Critical Value					0.129	Data Not Lognormal at 5% Significance Level					
633	<b>Data Not Lognormal at 5% Significance Level</b>											
634												
635	<b>Background Statistics assuming Lognormal Distribution</b>											
636	95% UTL with 95% Coverage					11.19	90% Percentile (z)					4.234
637	95% UPL (t)					7.044	95% Percentile (z)					6.612
638	95% USL					32.12	99% Percentile (z)					15.26
639												
640	<b>Nonparametric Distribution Free Background Statistics</b>											
641	<b>Data do not follow a Discernible Distribution (0.05)</b>											
642												
643	<b>Nonparametric Upper Limits for Background Threshold Values</b>											
644	Order of Statistic, r					46	95% UTL with 95% Coverage					11.6
645	Approximate f					1.211	Confidence Coefficient (CC) achieved by UTL					0.688
646	95% Percentile Bootstrap UTL with 95% Coverage					11.74	95% BCA Bootstrap UTL with 95% Coverage					11.74
647	95% UPL					11.48	90% Percentile					9.64
648	90% Chebyshev UPL					13.41	95% Percentile					11.15
649	95% Chebyshev UPL					18.46	99% Percentile					11.71
650	95% USL					11.8						
651												
652	Note: The use of USL to estimate a BTV is recommended only when the data set represents a background											
653	data set free of outliers and consists of observations collected from clean unimpacted locations.											
654	The use of USL tends to provide a balance between false positives and false negatives provided the data											
655	represents a background data set and when many onsite observations need to be compared with the BTV.											
656												

	A	B	C	D	E	F	G	H	I	J	K	L
657	P-1 Fluoride T^report_result_value											
658												
659	<b>General Statistics</b>											
660	Total Number of Observations					47	Number of Distinct Observations					3
661							Number of Missing Observations					2
662	Minimum					100	First Quartile					250
663	Second Largest					500	Median					250
664	Maximum					500	Third Quartile					500
665	Mean					314.9	SD					127.2
666	Coefficient of Variation					0.404	Skewness					0.56
667	Mean of logged Data					5.669	SD of logged Data					0.423
668												
669	<b>Critical Values for Background Threshold Values (BTVs)</b>											
670	Tolerance Factor K (For UTL)					2.074	d2max (for USL)					2.933
671												
672	<b>Normal GOF Test</b>											
673	Shapiro Wilk Test Statistic					0.695	<b>Shapiro Wilk GOF Test</b>					
674	5% Shapiro Wilk Critical Value					0.946	Data Not Normal at 5% Significance Level					
675	Lilliefors Test Statistic					0.397	<b>Lilliefors GOF Test</b>					
676	5% Lilliefors Critical Value					0.129	Data Not Normal at 5% Significance Level					
677	<b>Data Not Normal at 5% Significance Level</b>											
678												
679	<b>Background Statistics Assuming Normal Distribution</b>											
680	95% UTL with 95% Coverage					578.7	90% Percentile (z)					477.9
681	95% UPL (t)					530.7	95% Percentile (z)					524.2
682	95% USL					688	99% Percentile (z)					610.9
683												
684	<b>Gamma GOF Test</b>											
685	A-D Test Statistic					6.519	<b>Anderson-Darling Gamma GOF Test</b>					
686	5% A-D Critical Value					0.752	Data Not Gamma Distributed at 5% Significance Level					
687	K-S Test Statistic					0.364	<b>Kolmogrov-Smirnoff Gamma GOF Test</b>					
688	5% K-S Critical Value					0.129	Data Not Gamma Distributed at 5% Significance Level					
689	<b>Data Not Gamma Distributed at 5% Significance Level</b>											
690												
691	<b>Gamma Statistics</b>											
692	k hat (MLE)					6.201	k star (bias corrected MLE)					5.82
693	Theta hat (MLE)					50.78	Theta star (bias corrected MLE)					54.11
694	nu hat (MLE)					582.9	nu star (bias corrected)					547
695	MLE Mean (bias corrected)					314.9	MLE Sd (bias corrected)					130.5
696												
697	<b>Background Statistics Assuming Gamma Distribution</b>											
698	95% Wilson Hilferty (WH) Approx. Gamma UPL					559.9	90% Percentile					489.4
699	95% Hawkins Wixley (HW) Approx. Gamma UPL					566.5	95% Percentile					555.7
700	95% WH Approx. Gamma UTL with 95% Coverage					633.7	99% Percentile					694.8
701	95% HW Approx. Gamma UTL with 95% Coverage					645.8						
702	95% WH USL					825.1	95% HW USL					857
703												
704	<b>Lognormal GOF Test</b>											
705	Shapiro Wilk Test Statistic					0.719	<b>Shapiro Wilk Lognormal GOF Test</b>					
706	5% Shapiro Wilk Critical Value					0.946	Data Not Lognormal at 5% Significance Level					
707	Lilliefors Test Statistic					0.339	<b>Lilliefors Lognormal GOF Test</b>					
708	5% Lilliefors Critical Value					0.129	Data Not Lognormal at 5% Significance Level					
709	<b>Data Not Lognormal at 5% Significance Level</b>											
710												
711	<b>Background Statistics assuming Lognormal Distribution</b>											
712	95% UTL with 95% Coverage					696.4	90% Percentile (z)					498.2
713	95% UPL (t)					593.7	95% Percentile (z)					580.9
714	95% USL					1001	99% Percentile (z)					774.8

	A	B	C	D	E	F	G	H	I	J	K	L
715												
716	<b>Nonparametric Distribution Free Background Statistics</b>											
717	<b>Data do not follow a Discernible Distribution (0.05)</b>											
718												
719	<b>Nonparametric Upper Limits for Background Threshold Values</b>											
720	Order of Statistic, r		46		95% UTL with 95% Coverage				500			
721	Approximate f		1.211		Confidence Coefficient (CC) achieved by UTL				0.688			
722	95% Percentile Bootstrap UTL with 95% Coverage		N/A		95% BCA Bootstrap UTL with 95% Coverage				N/A			
723	95% UPL		500		90% Percentile				500			
724	90% Chebyshev UPL		700.6		95% Percentile				500			
725	95% Chebyshev UPL		875.3		99% Percentile				500			
726	95% USL		500									
727												
728	Note: The use of USL to estimate a BTV is recommended only when the data set represents a background											
729	data set free of outliers and consists of observations collected from clean unimpacted locations.											
730	The use of USL tends to provide a balance between false positives and false negatives provided the data											
731	represents a background data set and when many onsite observations need to be compared with the BTV.											
732												
733	<b>P-1 Lead T^report_result_value</b>											
734												
735	<b>General Statistics</b>											
736	Total Number of Observations		47		Number of Distinct Observations				4			
737					Number of Missing Observations				2			
738	Minimum		10		First Quartile				10			
739	Second Largest		15		Median				10			
740	Maximum		15		Third Quartile				10			
741	Mean		10.3		SD				1.061			
742	Coefficient of Variation		0.103		Skewness				4.033			
743	Mean of logged Data		2.328		SD of logged Data				0.0873			
744												
745	<b>Critical Values for Background Threshold Values (BTVs)</b>											
746	Tolerance Factor K (For UTL)		2.074		d2max (for USL)				2.933			
747												
748	<b>Normal GOF Test</b>											
749	Shapiro Wilk Test Statistic		0.319		<b>Shapiro Wilk GOF Test</b>							
750	5% Shapiro Wilk Critical Value		0.946		Data Not Normal at 5% Significance Level							
751	Lilliefors Test Statistic		0.504		<b>Lilliefors GOF Test</b>							
752	5% Lilliefors Critical Value		0.129		Data Not Normal at 5% Significance Level							
753	<b>Data Not Normal at 5% Significance Level</b>											
754												
755	<b>Background Statistics Assuming Normal Distribution</b>											
756	95% UTL with 95% Coverage		12.5		90% Percentile (z)				11.66			
757	95% UPL (t)		12.1		95% Percentile (z)				12.04			
758	95% USL		13.41		99% Percentile (z)				12.77			
759												
760	<b>Gamma GOF Test</b>											
761	A-D Test Statistic		14.29		<b>Anderson-Darling Gamma GOF Test</b>							
762	5% A-D Critical Value		0.748		Data Not Gamma Distributed at 5% Significance Level							
763	K-S Test Statistic		0.508		<b>Kolmogrov-Smirnoff Gamma GOF Test</b>							
764	5% K-S Critical Value		0.129		Data Not Gamma Distributed at 5% Significance Level							
765	<b>Data Not Gamma Distributed at 5% Significance Level</b>											
766												
767	<b>Gamma Statistics</b>											
768	k hat (MLE)		120.3		k star (bias corrected MLE)				112.6			
769	Theta hat (MLE)		0.0856		Theta star (bias corrected MLE)				0.0915			
770	nu hat (MLE)		11304		nu star (bias corrected)				10584			
771	MLE Mean (bias corrected)		10.3		MLE Sd (bias corrected)				0.97			
772												

	A	B	C	D	E	F	G	H	I	J	K	L	
773	<b>Background Statistics Assuming Gamma Distribution</b>												
774	95% Wilson Hilferty (WH) Approx. Gamma UPL					11.96						90% Percentile	11.56
775	95% Hawkins Wixley (HW) Approx. Gamma UPL					11.94						95% Percentile	11.94
776	95% WH Approx. Gamma UTL with 95% Coverage					12.36						99% Percentile	12.69
777	95% HW Approx. Gamma UTL with 95% Coverage					12.34							
778	95% WH USL					13.3						95% HW USL	13.29
779													
780	<b>Lognormal GOF Test</b>												
781	Shapiro Wilk Test Statistic					0.329						<b>Shapiro Wilk Lognormal GOF Test</b>	
782	5% Shapiro Wilk Critical Value					0.946						Data Not Lognormal at 5% Significance Level	
783	Lilliefors Test Statistic					0.507						<b>Lilliefors Lognormal GOF Test</b>	
784	5% Lilliefors Critical Value					0.129						Data Not Lognormal at 5% Significance Level	
785	<b>Data Not Lognormal at 5% Significance Level</b>												
786													
787	<b>Background Statistics assuming Lognormal Distribution</b>												
788	95% UTL with 95% Coverage					12.29						90% Percentile (z)	11.47
789	95% UPL (t)					11.89						95% Percentile (z)	11.84
790	95% USL					13.25						99% Percentile (z)	12.56
791													
792	<b>Nonparametric Distribution Free Background Statistics</b>												
793	<b>Data do not follow a Discernible Distribution (0.05)</b>												
794													
795	<b>Nonparametric Upper Limits for Background Threshold Values</b>												
796	Order of Statistic, r					46						95% UTL with 95% Coverage	15
797	Approximate f					1.211						Confidence Coefficient (CC) achieved by UTL	0.688
798	95% Percentile Bootstrap UTL with 95% Coverage					15						95% BCA Bootstrap UTL with 95% Coverage	15
799	95% UPL					13.8						90% Percentile	10.4
800	90% Chebyshev UPL					13.52						95% Percentile	11.7
801	95% Chebyshev UPL					14.97						99% Percentile	15
802	95% USL					15							
803													
804	Note: The use of USL to estimate a BTV is recommended only when the data set represents a background												
805	data set free of outliers and consists of observations collected from clean unimpacted locations.												
806	The use of USL tends to provide a balance between false positives and false negatives provided the data												
807	represents a background data set and when many onsite observations need to be compared with the BTV.												
808													
809	P-1 Lithium T^report_result_value												
810													
811	<b>General Statistics</b>												
812	Total Number of Observations					48						Number of Distinct Observations	1
813												Number of Missing Observations	1
814	Minimum					30						First Quartile	30
815	Second Largest					30						Median	30
816	Maximum					30						Third Quartile	30
817	Mean					30						SD	0
818	Coefficient of Variation					0						Skewness	N/A
819													
820	<b>Warning: There is only one distinct observation value in this data set - resulting in '0' variance!</b>												
821	<b>ProUCL (or any other software) should not be used on such a data set!</b>												
822	<b>The data set for variable P-1 Lithium T^report_result_value was not processed!</b>												
823													
824	<b>If possible, compute and collect Data Quality Objectives (DQOs) based sample size and analytical results.</b>												
825	<b>The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).</b>												
826													
827													

	A	B	C	D	E	F	G	H	I	J	K	L
828	P-1 Mercury T^report_result_value											
829												
830	<b>General Statistics</b>											
831	Total Number of Observations				47		Number of Distinct Observations				1	
832							Number of Missing Observations				2	
833	Minimum				0.2		First Quartile				0.2	
834	Second Largest				0.2		Median				0.2	
835	Maximum				0.2		Third Quartile				0.2	
836	Mean				0.2		SD				2.806E-17	
837	Coefficient of Variation				1.403E-16		Skewness				1.033	
838												
839	<b>Warning: There is only one distinct observation value in this data set - resulting in '0' variance!</b>											
840	<b>ProUCL (or any other software) should not be used on such a data set!</b>											
841	<b>The data set for variable P-1 Mercury T^report_result_value was not processed!</b>											
842												
843	<b>If possible, compute and collect Data Quality Objectives (DQOs) based sample size and analytical results.</b>											
844	<b>The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).</b>											
845												
846												
847	P-1 MOLYBDENUM T^report_result_value											
848												
849	<b>General Statistics</b>											
850	Total Number of Observations				46		Number of Distinct Observations				9	
851							Number of Missing Observations				3	
852	Minimum				1		First Quartile				1	
853	Second Largest				4.7		Median				1	
854	Maximum				18.2		Third Quartile				1	
855	Mean				1.659		SD				2.632	
856	Coefficient of Variation				1.587		Skewness				5.823	
857	Mean of logged Data				0.207		SD of logged Data				0.564	
858												
859	<b>Critical Values for Background Threshold Values (BTVs)</b>											
860	Tolerance Factor K (For UTL)				2.079		d2max (for USL)				2.924	
861												
862	<b>Normal GOF Test</b>											
863	Shapiro Wilk Test Statistic				0.287		<b>Shapiro Wilk GOF Test</b>					
864	5% Shapiro Wilk Critical Value				0.945		Data Not Normal at 5% Significance Level					
865	Lilliefors Test Statistic				0.425		<b>Lilliefors GOF Test</b>					
866	5% Lilliefors Critical Value				0.131		Data Not Normal at 5% Significance Level					
867	<b>Data Not Normal at 5% Significance Level</b>											
868												
869	<b>Background Statistics Assuming Normal Distribution</b>											
870	95% UTL with 95% Coverage		7.132		90% Percentile (z)				5.032			
871	95% UPL (t)		6.127		95% Percentile (z)				5.988			
872	95% USL		9.355		99% Percentile (z)				7.782			
873												
874	<b>Gamma GOF Test</b>											
875	A-D Test Statistic				12.1		<b>Anderson-Darling Gamma GOF Test</b>					
876	5% A-D Critical Value				0.763		Data Not Gamma Distributed at 5% Significance Level					
877	K-S Test Statistic				0.471		<b>Kolmogrov-Smirnoff Gamma GOF Test</b>					
878	5% K-S Critical Value				0.132		Data Not Gamma Distributed at 5% Significance Level					
879	<b>Data Not Gamma Distributed at 5% Significance Level</b>											
880												
881	<b>Gamma Statistics</b>											
882	k hat (MLE)				1.82		k star (bias corrected MLE)				1.716	
883	Theta hat (MLE)				0.911		Theta star (bias corrected MLE)				0.967	
884	nu hat (MLE)				167.4		nu star (bias corrected)				157.9	
885	MLE Mean (bias corrected)				1.659		MLE Sd (bias corrected)				1.266	



	A	B	C	D	E	F	G	H	I	J	K	L		
886														
887	<b>Background Statistics Assuming Gamma Distribution</b>													
888	95% Wilson Hilferty (WH) Approx. Gamma UPL					3.922						90% Percentile	3.346	
889	95% Hawkins Wixley (HW) Approx. Gamma UPL					3.717						95% Percentile	4.133	
890	95% WH Approx. Gamma UTL with 95% Coverage					4.788						99% Percentile	5.896	
891	95% HW Approx. Gamma UTL with 95% Coverage					4.559								
892	95% WH USL					7.14						95% HW USL	6.924	
893														
894	<b>Lognormal GOF Test</b>													
895	Shapiro Wilk Test Statistic					0.442						<b>Shapiro Wilk Lognormal GOF Test</b>		
896	5% Shapiro Wilk Critical Value					0.945						Data Not Lognormal at 5% Significance Level		
897	Lilliefors Test Statistic					0.469						<b>Lilliefors Lognormal GOF Test</b>		
898	5% Lilliefors Critical Value					0.131						Data Not Lognormal at 5% Significance Level		
899	<b>Data Not Lognormal at 5% Significance Level</b>													
900														
901	<b>Background Statistics assuming Lognormal Distribution</b>													
902	95% UTL with 95% Coverage					3.974						90% Percentile (z)	2.534	
903	95% UPL (t)					3.204						95% Percentile (z)	3.11	
904	95% USL					6.4						99% Percentile (z)	4.568	
905														
906	<b>Nonparametric Distribution Free Background Statistics</b>													
907	<b>Data do not follow a Discernible Distribution (0.05)</b>													
908														
909	<b>Nonparametric Upper Limits for Background Threshold Values</b>													
910	Order of Statistic, r					45						95% UTL with 95% Coverage	4.7	
911	Approximate f					1.184						Confidence Coefficient (CC) achieved by UTL		0.677
912	95% Percentile Bootstrap UTL with 95% Coverage					14.83						95% BCA Bootstrap UTL with 95% Coverage	14.68	
913	95% UPL					4.49						90% Percentile	2.25	
914	90% Chebyshev UPL					9.641						95% Percentile	4.05	
915	95% Chebyshev UPL					13.26						99% Percentile	12.13	
916	95% USL					18.2								
917														
918	Note: The use of USL to estimate a BTV is recommended only when the data set represents a background													
919	data set free of outliers and consists of observations collected from clean unimpacted locations.													
920	The use of USL tends to provide a balance between false positives and false negatives provided the data													
921	represents a background data set and when many onsite observations need to be compared with the BTV.													
922														
923	<b>P-1 pH T^report_result_value</b>													
924														
925	<b>General Statistics</b>													
926	Total Number of Observations					46						Number of Distinct Observations	13	
927												Number of Missing Observations	3	
928	Minimum					6.1						First Quartile	6.9	
929	Second Largest					7.6						Median	7	
930	Maximum					7.7						Third Quartile	7.275	
931	Mean					7.054						SD	0.291	
932	Coefficient of Variation					0.0413						Skewness	-0.394	
933	Mean of logged Data					1.953						SD of logged Data	0.0417	
934														
935	<b>Critical Values for Background Threshold Values (BTVs)</b>													
936	Tolerance Factor K (For UTL)					2.079						d2max (for USL)	2.924	
937														
938	<b>Normal GOF Test</b>													
939	Shapiro Wilk Test Statistic					0.966						<b>Shapiro Wilk GOF Test</b>		
940	5% Shapiro Wilk Critical Value					0.945						Data appear Normal at 5% Significance Level		
941	Lilliefors Test Statistic					0.118						<b>Lilliefors GOF Test</b>		
942	5% Lilliefors Critical Value					0.131						Data appear Normal at 5% Significance Level		
943	<b>Data appear Normal at 5% Significance Level</b>													

	A	B	C	D	E	F	G	H	I	J	K	L
944												
945	<b>Background Statistics Assuming Normal Distribution</b>											
946	95% UTL with 95% Coverage					7.66	90% Percentile (z)					7.427
947	95% UPL (t)					7.549	95% Percentile (z)					7.533
948	95% USL					7.906	99% Percentile (z)					7.732
949												
950	<b>Gamma GOF Test</b>											
951	A-D Test Statistic					0.572	<b>Anderson-Darling Gamma GOF Test</b>					
952	5% A-D Critical Value					0.747	Detected data appear Gamma Distributed at 5% Significance Level					
953	K-S Test Statistic					0.113	<b>Kolmogrov-Smirnoff Gamma GOF Test</b>					
954	5% K-S Critical Value					0.13	Detected data appear Gamma Distributed at 5% Significance Level					
955	<b>Detected data appear Gamma Distributed at 5% Significance Level</b>											
956												
957	<b>Gamma Statistics</b>											
958	k hat (MLE)					592	k star (bias corrected MLE)					553.4
959	Theta hat (MLE)					0.0119	Theta star (bias corrected MLE)					0.0127
960	nu hat (MLE)					54463	nu star (bias corrected)					50912
961	MLE Mean (bias corrected)					7.054	MLE Sd (bias corrected)					0.3
962												
963	<b>Background Statistics Assuming Gamma Distribution</b>											
964	95% Wilson Hilferty (WH) Approx. Gamma UPL					7.56	90% Percentile					7.441
965	95% Hawkins Wixley (HW) Approx. Gamma UPL					7.561	95% Percentile					7.555
966	95% WH Approx. Gamma UTL with 95% Coverage					7.677	99% Percentile					7.771
967	95% HW Approx. Gamma UTL with 95% Coverage					7.68						
968	95% WH USL					7.942	95% HW USL					7.947
969												
970	<b>Lognormal GOF Test</b>											
971	Shapiro Wilk Test Statistic					0.958	<b>Shapiro Wilk Lognormal GOF Test</b>					
972	5% Shapiro Wilk Critical Value					0.945	Data appear Lognormal at 5% Significance Level					
973	Lilliefors Test Statistic					0.109	<b>Lilliefors Lognormal GOF Test</b>					
974	5% Lilliefors Critical Value					0.131	Data appear Lognormal at 5% Significance Level					
975	<b>Data appear Lognormal at 5% Significance Level</b>											
976												
977	<b>Background Statistics assuming Lognormal Distribution</b>											
978	95% UTL with 95% Coverage					7.687	90% Percentile (z)					7.436
979	95% UPL (t)					7.566	95% Percentile (z)					7.549
980	95% USL					7.963	99% Percentile (z)					7.767
981												
982	<b>Nonparametric Distribution Free Background Statistics</b>											
983	<b>Data appear Normal at 5% Significance Level</b>											
984												
985	<b>Nonparametric Upper Limits for Background Threshold Values</b>											
986	Order of Statistic, r					45	95% UTL with 95% Coverage					7.6
987	Approximate f					1.184	Confidence Coefficient (CC) achieved by UTL					0.677
988	95% Percentile Bootstrap UTL with 95% Coverage					7.675	95% BCA Bootstrap UTL with 95% Coverage					7.6
989	95% UPL					7.565	90% Percentile					7.4
990	90% Chebyshev UPL					7.937	95% Percentile					7.475
991	95% Chebyshev UPL					8.337	99% Percentile					7.655
992	95% USL					7.7						
993												
994	Note: The use of USL to estimate a BTV is recommended only when the data set represents a background											
995	data set free of outliers and consists of observations collected from clean unimpacted locations.											
996	The use of USL tends to provide a balance between false positives and false negatives provided the data											
997	represents a background data set and when many onsite observations need to be compared with the BTV.											
998												

	A	B	C	D	E	F	G	H	I	J	K	L
999	P-1 Selenium T^report_result_value											
1000												
1001	<b>General Statistics</b>											
1002	Total Number of Observations				47		Number of Distinct Observations				1	
1003							Number of Missing Observations				2	
1004	Minimum				1		First Quartile				1	
1005	Second Largest				1		Median				1	
1006	Maximum				1		Third Quartile				1	
1007	Mean				1		SD				0	
1008	Coefficient of Variation				0		Skewness				N/A	
1009												
1010	<b>Warning: There is only one distinct observation value in this data set - resulting in '0' variance!</b>											
1011	<b>ProUCL (or any other software) should not be used on such a data set!</b>											
1012	<b>The data set for variable P-1 Selenium T^report_result_value was not processed!</b>											
1013												
1014	<b>If possible, compute and collect Data Quality Objectives (DQOs) based sample size and analytical results.</b>											
1015	<b>The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).</b>											
1016												
1017												
1018	P-1 Sulfate as SO4 T^report_result_value											
1019												
1020	<b>General Statistics</b>											
1021	Total Number of Observations				47		Number of Distinct Observations				45	
1022							Number of Missing Observations				2	
1023	Minimum				13000		First Quartile				35900	
1024	Second Largest				137000		Median				47100	
1025	Maximum				139000		Third Quartile				67100	
1026	Mean				55123		SD				32175	
1027	Coefficient of Variation				0.584		Skewness				1.099	
1028	Mean of logged Data				10.75		SD of logged Data				0.601	
1029												
1030	<b>Critical Values for Background Threshold Values (BTVs)</b>											
1031	Tolerance Factor K (For UTL)				2.074		d2max (for USL)				2.933	
1032												
1033	<b>Normal GOF Test</b>											
1034	Shapiro Wilk Test Statistic				0.887		<b>Shapiro Wilk GOF Test</b>					
1035	5% Shapiro Wilk Critical Value				0.946		Data Not Normal at 5% Significance Level					
1036	Lilliefors Test Statistic				0.17		<b>Lilliefors GOF Test</b>					
1037	5% Lilliefors Critical Value				0.129		Data Not Normal at 5% Significance Level					
1038	<b>Data Not Normal at 5% Significance Level</b>											
1039												
1040	<b>Background Statistics Assuming Normal Distribution</b>											
1041	95% UTL with 95% Coverage		121851		90% Percentile (z)				96358			
1042	95% UPL (t)		109707		95% Percentile (z)				108047			
1043	95% USL		149482		99% Percentile (z)				129975			
1044												
1045	<b>Gamma GOF Test</b>											
1046	A-D Test Statistic				0.556		<b>Anderson-Darling Gamma GOF Test</b>					
1047	5% A-D Critical Value				0.756		Detected data appear Gamma Distributed at 5% Significance Level					
1048	K-S Test Statistic				0.0984		<b>Kolmogrov-Smirnoff Gamma GOF Test</b>					
1049	5% K-S Critical Value				0.13		Detected data appear Gamma Distributed at 5% Significance Level					
1050	<b>Detected data appear Gamma Distributed at 5% Significance Level</b>											
1051												
1052	<b>Gamma Statistics</b>											
1053	k hat (MLE)				3.158		k star (bias corrected MLE)				2.971	
1054	Theta hat (MLE)				17454		Theta star (bias corrected MLE)				18555	
1055	nu hat (MLE)				296.9		nu star (bias corrected)				279.3	
1056	MLE Mean (bias corrected)				55123		MLE Sd (bias corrected)				31981	

	A	B	C	D	E	F	G	H	I	J	K	L	
1057													
1058	<b>Background Statistics Assuming Gamma Distribution</b>												
1059	95% Wilson Hilferty (WH) Approx. Gamma UPL					117165						90% Percentile	98003
1060	95% Hawkins Wixley (HW) Approx. Gamma UPL					119335						95% Percentile	116007
1061	95% WH Approx. Gamma UTL with 95% Coverage					137817						99% Percentile	155054
1062	95% HW Approx. Gamma UTL with 95% Coverage					142103							
1063	95% WH USL					193546						95% HW USL	205934
1064													
1065	<b>Lognormal GOF Test</b>												
1066	Shapiro Wilk Test Statistic					0.955						<b>Shapiro Wilk Lognormal GOF Test</b>	
1067	5% Shapiro Wilk Critical Value					0.946						Data appear Lognormal at 5% Significance Level	
1068	Lilliefors Test Statistic					0.123						<b>Lilliefors Lognormal GOF Test</b>	
1069	5% Lilliefors Critical Value					0.129						Data appear Lognormal at 5% Significance Level	
1070	<b>Data appear Lognormal at 5% Significance Level</b>												
1071													
1072	<b>Background Statistics assuming Lognormal Distribution</b>												
1073	95% UTL with 95% Coverage					162237						90% Percentile (z)	100786
1074	95% UPL (t)					129318						95% Percentile (z)	125372
1075	95% USL					271793						99% Percentile (z)	188814
1076													
1077	<b>Nonparametric Distribution Free Background Statistics</b>												
1078	<b>Data appear Gamma Distributed at 5% Significance Level</b>												
1079													
1080	<b>Nonparametric Upper Limits for Background Threshold Values</b>												
1081	Order of Statistic, r					46						95% UTL with 95% Coverage	137000
1082	Approximate f					1.211						Confidence Coefficient (CC) achieved by UTL	0.688
1083	95% Percentile Bootstrap UTL with 95% Coverage					138400						95% BCA Bootstrap UTL with 95% Coverage	137000
1084	95% UPL					132200						90% Percentile	105400
1085	90% Chebyshev UPL					152671						95% Percentile	123500
1086	95% Chebyshev UPL					196857						99% Percentile	138080
1087	95% USL					139000							
1088													
1089	Note: The use of USL to estimate a BTV is recommended only when the data set represents a background												
1090	data set free of outliers and consists of observations collected from clean unimpacted locations.												
1091	The use of USL tends to provide a balance between false positives and false negatives provided the data												
1092	represents a background data set and when many onsite observations need to be compared with the BTV.												
1093													
1094	<b>P-1 Thallium T^report_result_value</b>												
1095													
1096	<b>General Statistics</b>												
1097	Total Number of Observations					48						Number of Distinct Observations	1
1098												Number of Missing Observations	1
1099	Minimum					0.2						First Quartile	0.2
1100	Second Largest					0.2						Median	0.2
1101	Maximum					0.2						Third Quartile	0.2
1102	Mean					0.2						SD	5.610E-17
1103	Coefficient of Variation					2.805E-16						Skewness	1.033
1104													
1105	<b>Warning: There is only one distinct observation value in this data set - resulting in '0' variance!</b>												
1106	<b>ProUCL (or any other software) should not be used on such a data set!</b>												
1107	<b>The data set for variable P-1 Thallium T^report_result_value was not processed!</b>												
1108													
1109	<b>If possible, compute and collect Data Quality Objectives (DQOs) based sample size and analytical results.</b>												
1110	<b>The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).</b>												
1111													
1112													

	A	B	C	D	E	F	G	H	I	J	K	L
1113	P-1 Total Dissolved Solids T^report_result_value											
1114												
1115	<b>General Statistics</b>											
1116	Total Number of Observations				45		Number of Distinct Observations				44	
1117							Number of Missing Observations				4	
1118	Minimum				51500		First Quartile				553000	
1119	Second Largest				1590000		Median				760000	
1120	Maximum				1930000		Third Quartile				801000	
1121	Mean				705449		SD				334351	
1122	Coefficient of Variation				0.474		Skewness				1.066	
1123	Mean of logged Data				13.3		SD of logged Data				0.704	
1124												
1125	<b>Critical Values for Background Threshold Values (BTVs)</b>											
1126	Tolerance Factor K (For UTL)				2.085		d2max (for USL)				2.915	
1127												
1128	<b>Normal GOF Test</b>											
1129	Shapiro Wilk Test Statistic				0.888		<b>Shapiro Wilk GOF Test</b>					
1130	5% Shapiro Wilk Critical Value				0.945		Data Not Normal at 5% Significance Level					
1131	Lilliefors Test Statistic				0.169		<b>Lilliefors GOF Test</b>					
1132	5% Lilliefors Critical Value				0.132		Data Not Normal at 5% Significance Level					
1133	<b>Data Not Normal at 5% Significance Level</b>											
1134												
1135	<b>Background Statistics Assuming Normal Distribution</b>											
1136	95% UTL with 95% Coverage		1402593		90% Percentile (z)				1133937			
1137	95% UPL (t)		1273444		95% Percentile (z)				1255408			
1138	95% USL		1680186		99% Percentile (z)				1483267			
1139												
1140	<b>Gamma GOF Test</b>											
1141	A-D Test Statistic				2.709		<b>Anderson-Darling Gamma GOF Test</b>					
1142	5% A-D Critical Value				0.755		Data Not Gamma Distributed at 5% Significance Level					
1143	K-S Test Statistic				0.185		<b>Kolmogrov-Smirnoff Gamma GOF Test</b>					
1144	5% K-S Critical Value				0.133		Data Not Gamma Distributed at 5% Significance Level					
1145	<b>Data Not Gamma Distributed at 5% Significance Level</b>											
1146												
1147	<b>Gamma Statistics</b>											
1148	k hat (MLE)		3.22		k star (bias corrected MLE)				3.02			
1149	Theta hat (MLE)		219080		Theta star (bias corrected MLE)				233577			
1150	nu hat (MLE)		289.8		nu star (bias corrected)				271.8			
1151	MLE Mean (bias corrected)		705449		MLE Sd (bias corrected)				405927			
1152												
1153	<b>Background Statistics Assuming Gamma Distribution</b>											
1154	95% Wilson Hilferty (WH) Approx. Gamma UPL		1487670		90% Percentile				1249720			
1155	95% Hawkins Wixley (HW) Approx. Gamma UPL		1561675		95% Percentile				1477608			
1156	95% WH Approx. Gamma UTL with 95% Coverage		1749558		99% Percentile				1971412			
1157	95% HW Approx. Gamma UTL with 95% Coverage		1869451									
1158	95% WH USL		2412802		95% HW USL				2682930			
1159												
1160	<b>Lognormal GOF Test</b>											
1161	Shapiro Wilk Test Statistic				0.744		<b>Shapiro Wilk Lognormal GOF Test</b>					
1162	5% Shapiro Wilk Critical Value				0.945		Data Not Lognormal at 5% Significance Level					
1163	Lilliefors Test Statistic				0.23		<b>Lilliefors Lognormal GOF Test</b>					
1164	5% Lilliefors Critical Value				0.132		Data Not Lognormal at 5% Significance Level					
1165	<b>Data Not Lognormal at 5% Significance Level</b>											
1166												
1167	<b>Background Statistics assuming Lognormal Distribution</b>											
1168	95% UTL with 95% Coverage		2598732		90% Percentile (z)				1476420			
1169	95% UPL (t)		1980245		95% Percentile (z)				1906488			
1170	95% USL		4661025		99% Percentile (z)				3079618			

	A	B	C	D	E	F	G	H	I	J	K	L
1171												
1172	<b>Nonparametric Distribution Free Background Statistics</b>											
1173	<b>Data do not follow a Discernible Distribution (0.05)</b>											
1174												
1175	<b>Nonparametric Upper Limits for Background Threshold Values</b>											
1176	Order of Statistic, r				44		95% UTL with 95% Coverage				1590000	
1177	Approximate f				1.158		Confidence Coefficient (CC) achieved by UTL				0.665	
1178	95% Percentile Bootstrap UTL with 95% Coverage				1862000		95% BCA Bootstrap UTL with 95% Coverage				1737800	
1179	95% UPL				1473000		90% Percentile				930400	
1180	90% Chebyshev UPL				1719587		95% Percentile				1153800	
1181	95% Chebyshev UPL				2178957		99% Percentile				1780400	
1182	95% USL				1930000							
1183												
1184	Note: The use of USL to estimate a BTV is recommended only when the data set represents a background											
1185	data set free of outliers and consists of observations collected from clean unimpacted locations.											
1186	The use of USL tends to provide a balance between false positives and false negatives provided the data											
1187	represents a background data set and when many onsite observations need to be compared with the BTV.											
1188												

	A	B	C	D	E	F	G	H	I	J	K	L
1	<b>Background Statistics for Uncensored Full Data Sets</b>											
2	<b>User Selected Options</b>											
3	Date/Time of Computation			1/10/2018 3:21:16 PM								
4	From File			C:\Users\bjanowiak\Desktop\CCR sampling Brian Horan\Shamrock radium source file.xlsx								
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	<b>P-1 Radium (226) T^report_result_value</b>											
12												
13	<b>General Statistics</b>											
14	Total Number of Observations				47		Number of Distinct Observations				45	
15							Number of Missing Observations				8	
16	Minimum				0.0763		First Quartile				0.178	
17	Second Largest				58.2		Median				0.298	
18	Maximum				60.5		Third Quartile				21.85	
19	Mean				12.35		SD				20.41	
20	Coefficient of Variation				1.652		Skewness				1.369	
21	Mean of logged Data				0.0342		SD of logged Data				2.435	
22												
23	<b>Critical Values for Background Threshold Values (BTVs)</b>											
24	Tolerance Factor K (For UTL)				2.074		d2max (for USL)				2.933	
25												
26	<b>Normal GOF Test</b>											
27	Shapiro Wilk Test Statistic				0.631		<b>Shapiro Wilk GOF Test</b>					
28	5% Shapiro Wilk Critical Value				0.946		Data Not Normal at 5% Significance Level					
29	Lilliefors Test Statistic				0.417		<b>Lilliefors GOF Test</b>					
30	5% Lilliefors Critical Value				0.129		Data Not Normal at 5% Significance Level					
31	<b>Data Not Normal at 5% Significance Level</b>											
32												
33	<b>Background Statistics Assuming Normal Distribution</b>											
34	95% UTL with 95% Coverage				54.67		90% Percentile (z)				38.5	
35	95% UPL (t)				46.97		95% Percentile (z)				45.92	
36	95% USL				72.2		99% Percentile (z)				59.83	
37												
38	<b>Gamma GOF Test</b>											
39	A-D Test Statistic				5.984		<b>Anderson-Darling Gamma GOF Test</b>					
40	5% A-D Critical Value				0.871		Data Not Gamma Distributed at 5% Significance Level					
41	K-S Test Statistic				0.344		<b>Kolmogrov-Smirnoff Gamma GOF Test</b>					
42	5% K-S Critical Value				0.141		Data Not Gamma Distributed at 5% Significance Level					
43	<b>Data Not Gamma Distributed at 5% Significance Level</b>											
44												
45	<b>Gamma Statistics</b>											
46	k hat (MLE)				0.281		k star (bias corrected MLE)				0.277	
47	Theta hat (MLE)				43.94		Theta star (bias corrected MLE)				44.54	
48	nu hat (MLE)				26.42		nu star (bias corrected)				26.07	
49	MLE Mean (bias corrected)				12.35		MLE Sd (bias corrected)				23.45	
50												

	A	B	C	D	E	F	G	H	I	J	K	L	
51	<b>Background Statistics Assuming Gamma Distribution</b>												
52	95% Wilson Hilferty (WH) Approx. Gamma UPL					49.09						90% Percentile	36.74
53	95% Hawkins Wixley (HW) Approx. Gamma UPL					50.63						95% Percentile	57.92
54	95% WH Approx. Gamma UTL with 95% Coverage					71.71						99% Percentile	113.5
55	95% HW Approx. Gamma UTL with 95% Coverage					79.59							
56	95% WH USL					146.9						95% HW USL	190.2
57													
58	<b>Lognormal GOF Test</b>												
59	Shapiro Wilk Test Statistic					0.758						<b>Shapiro Wilk Lognormal GOF Test</b>	
60	5% Shapiro Wilk Critical Value					0.946						Data Not Lognormal at 5% Significance Level	
61	Lilliefors Test Statistic					0.257						<b>Lilliefors Lognormal GOF Test</b>	
62	5% Lilliefors Critical Value					0.129						Data Not Lognormal at 5% Significance Level	
63	<b>Data Not Lognormal at 5% Significance Level</b>												
64													
65	<b>Background Statistics assuming Lognormal Distribution</b>												
66	95% UTL with 95% Coverage					161.5						90% Percentile (z)	23.46
67	95% UPL (t)					64.42						95% Percentile (z)	56.82
68	95% USL					1308						99% Percentile (z)	298.7
69													
70	<b>Nonparametric Distribution Free Background Statistics</b>												
71	<b>Data do not follow a Discernible Distribution (0.05)</b>												
72													
73	<b>Nonparametric Upper Limits for Background Threshold Values</b>												
74	Order of Statistic, r					46						95% UTL with 95% Coverage	58.2
75	Approximate f					1.211						Confidence Coefficient (CC) achieved by UTL	0.688
76	95% Percentile Bootstrap UTL with 95% Coverage					59.81						95% BCA Bootstrap UTL with 95% Coverage	59.75
77	95% UPL					58.12						90% Percentile	46.94
78	90% Chebyshev UPL					74.22						95% Percentile	57.91
79	95% Chebyshev UPL					102.2						99% Percentile	59.44
80	95% USL					60.5							
81													
82	Note: The use of USL to estimate a BTV is recommended only when the data set represents a background												
83	data set free of outliers and consists of observations collected from clean unimpacted locations.												
84	The use of USL tends to provide a balance between false positives and false negatives provided the data												
85	represents a background data set and when many onsite observations need to be compared with the BTV.												
86													
87	<b>P-1 Radium 228 T^report_result_value</b>												
88													
89	<b>General Statistics</b>												
90	Total Number of Observations					46						Number of Distinct Observations	45
91												Number of Missing Observations	9
92	Minimum					0.278						First Quartile	0.363
93	Second Largest					43.1						Median	0.488
94	Maximum					49.7						Third Quartile	24.8
95	Mean					10.06						SD	15.93
96	Coefficient of Variation					1.583						Skewness	1.205
97	Mean of logged Data					0.399						SD of logged Data	2.001
98													
99	<b>Critical Values for Background Threshold Values (BTVs)</b>												
100	Tolerance Factor K (For UTL)					2.079						d2max (for USL)	2.924



	A	B	C	D	E	F	G	H	I	J	K	L
101												
102	<b>Normal GOF Test</b>											
103	Shapiro Wilk Test Statistic					0.63	<b>Shapiro Wilk GOF Test</b>					
104	5% Shapiro Wilk Critical Value					0.945	Data Not Normal at 5% Significance Level					
105	Lilliefors Test Statistic					0.433	<b>Lilliefors GOF Test</b>					
106	5% Lilliefors Critical Value					0.131	Data Not Normal at 5% Significance Level					
107	<b>Data Not Normal at 5% Significance Level</b>											
108												
109	<b>Background Statistics Assuming Normal Distribution</b>											
110	95% UTL with 95% Coverage				43.18	90% Percentile (z)						30.47
111	95% UPL (t)				37.09	95% Percentile (z)						36.26
112	95% USL				56.63	99% Percentile (z)						47.11
113												
114	<b>Gamma GOF Test</b>											
115	A-D Test Statistic					7.473	<b>Anderson-Darling Gamma GOF Test</b>					
116	5% A-D Critical Value					0.849	Data Not Gamma Distributed at 5% Significance Level					
117	K-S Test Statistic					0.379	<b>Kolmogrov-Smirnoff Gamma GOF Test</b>					
118	5% K-S Critical Value					0.141	Data Not Gamma Distributed at 5% Significance Level					
119	<b>Data Not Gamma Distributed at 5% Significance Level</b>											
120												
121	<b>Gamma Statistics</b>											
122	k hat (MLE)				0.352	k star (bias corrected MLE)						0.343
123	Theta hat (MLE)				28.58	Theta star (bias corrected MLE)						29.28
124	nu hat (MLE)				32.38	nu star (bias corrected)						31.6
125	MLE Mean (bias corrected)				10.06	MLE Sd (bias corrected)						17.16
126												
127	<b>Background Statistics Assuming Gamma Distribution</b>											
128	95% Wilson Hilferty (WH) Approx. Gamma UPL				38.94	90% Percentile						29.13
129	95% Hawkins Wixley (HW) Approx. Gamma UPL				39.71	95% Percentile						44.01
130	95% WH Approx. Gamma UTL with 95% Coverage				55.87	99% Percentile						82.08
131	95% HW Approx. Gamma UTL with 95% Coverage				60.58							
132	95% WH USL				109.3	95% HW USL						135
133												
134	<b>Lognormal GOF Test</b>											
135	Shapiro Wilk Test Statistic					0.678	<b>Shapiro Wilk Lognormal GOF Test</b>					
136	5% Shapiro Wilk Critical Value					0.945	Data Not Lognormal at 5% Significance Level					
137	Lilliefors Test Statistic					0.306	<b>Lilliefors Lognormal GOF Test</b>					
138	5% Lilliefors Critical Value					0.131	Data Not Lognormal at 5% Significance Level					
139	<b>Data Not Lognormal at 5% Significance Level</b>											
140												
141	<b>Background Statistics assuming Lognormal Distribution</b>											
142	95% UTL with 95% Coverage				95.63	90% Percentile (z)						19.38
143	95% UPL (t)				44.55	95% Percentile (z)						40.09
144	95% USL				518.5	99% Percentile (z)						156.8
145												
146	<b>Nonparametric Distribution Free Background Statistics</b>											
147	<b>Data do not follow a Discernible Distribution (0.05)</b>											
148												
149	<b>Nonparametric Upper Limits for Background Threshold Values</b>											
150	Order of Statistic, r				45	95% UTL with 95% Coverage						43.1

	A	B	C	D	E	F	G	H	I	J	K	L
151	Approximate f					1.184	Confidence Coefficient (CC) achieved by UTL					0.677
152	95% Percentile Bootstrap UTL with 95% Coverage					48.05	95% BCA Bootstrap UTL with 95% Coverage					47.73
153	95% UPL					42.65	90% Percentile					35.6
154	90% Chebyshev UPL					58.35	95% Percentile					40.95
155	95% Chebyshev UPL					80.23	99% Percentile					46.73
156	95% USL					49.7						
157												
158	Note: The use of USL to estimate a BTV is recommended only when the data set represents a background											
159	data set free of outliers and consists of observations collected from clean unimpacted locations.											
160	The use of USL tends to provide a balance between false positives and false negatives provided the data											
161	represents a background data set and when many onsite observations need to be compared with the BTV.											
162												
163	P-1 Radium-226/228 T^report_result_value											
164												
165	<b>General Statistics</b>											
166	Total Number of Observations					5	Number of Distinct Observations					5
167							Number of Missing Observations					46
168	Minimum					0.361	First Quartile					0.398
169	Second Largest					0.439	Median					0.426
170	Maximum					0.519	Third Quartile					0.439
171	Mean					0.429	SD					0.0587
172	Coefficient of Variation					0.137	Skewness					0.828
173	Mean of logged Data					-0.855	SD of logged Data					0.134
174												
175	<b>Critical Values for Background Threshold Values (BTVs)</b>											
176	Tolerance Factor K (For UTL)					4.203	d2max (for USL)					1.671
177												
178	<b>Normal GOF Test</b>											
179	Shapiro Wilk Test Statistic					0.957	<b>Shapiro Wilk GOF Test</b>					
180	5% Shapiro Wilk Critical Value					0.762	Data appear Normal at 5% Significance Level					
181	Lilliefors Test Statistic					0.23	<b>Lilliefors GOF Test</b>					
182	5% Lilliefors Critical Value					0.396	Data appear Normal at 5% Significance Level					
183	<b>Data appear Normal at 5% Significance Level</b>											
184												
185	<b>Background Statistics Assuming Normal Distribution</b>											
186	95% UTL with 95% Coverage					0.675	90% Percentile (z)					0.504
187	95% UPL (t)					0.566	95% Percentile (z)					0.525
188	95% USL					0.527	99% Percentile (z)					0.565
189												
190	<b>Gamma GOF Test</b>											
191	A-D Test Statistic					0.229	<b>Anderson-Darling Gamma GOF Test</b>					
192	5% A-D Critical Value					0.678	Detected data appear Gamma Distributed at 5% Significance Level					
193	K-S Test Statistic					0.205	<b>Kolmogrov-Smirnoff Gamma GOF Test</b>					
194	5% K-S Critical Value					0.357	Detected data appear Gamma Distributed at 5% Significance Level					
195	<b>Detected data appear Gamma Distributed at 5% Significance Level</b>											
196												
197	<b>Gamma Statistics</b>											
198	k hat (MLE)					68.76	k star (bias corrected MLE)					27.64
199	Theta hat (MLE)					0.00623	Theta star (bias corrected MLE)					0.0155
200	nu hat (MLE)					687.6	nu star (bias corrected)					276.4

	A	B	C	D	E	F	G	H	I	J	K	L
201	MLE Mean (bias corrected)					0.429	MLE Sd (bias corrected)					0.0815
202												
203	<b>Background Statistics Assuming Gamma Distribution</b>											
204	95% Wilson Hilferty (WH) Approx. Gamma UPL					0.576	90% Percentile					0.536
205	95% Hawkins Wixley (HW) Approx. Gamma UPL					0.577	95% Percentile					0.571
206	95% WH Approx. Gamma UTL with 95% Coverage					0.717	99% Percentile					0.641
207	95% HW Approx. Gamma UTL with 95% Coverage					0.724						
208	95% WH USL					0.53	95% HW USL					0.531
209												
210	<b>Lognormal GOF Test</b>											
211	Shapiro Wilk Test Statistic					0.976	<b>Shapiro Wilk Lognormal GOF Test</b>					
212	5% Shapiro Wilk Critical Value					0.762	Data appear Lognormal at 5% Significance Level					
213	Lilliefors Test Statistic					0.208	<b>Lilliefors Lognormal GOF Test</b>					
214	5% Lilliefors Critical Value					0.396	Data appear Lognormal at 5% Significance Level					
215	<b>Data appear Lognormal at 5% Significance Level</b>											
216												
217	<b>Background Statistics assuming Lognormal Distribution</b>											
218	95% UTL with 95% Coverage					0.748	90% Percentile (z)					0.505
219	95% UPL (t)					0.582	95% Percentile (z)					0.53
220	95% USL					0.532	99% Percentile (z)					0.581
221												
222	<b>Nonparametric Distribution Free Background Statistics</b>											
223	<b>Data appear Normal at 5% Significance Level</b>											
224												
225	<b>Nonparametric Upper Limits for Background Threshold Values</b>											
226	Order of Statistic, r					5	95% UTL with 95% Coverage					0.519
227	Approximate f					0.263	Confidence Coefficient (CC) achieved by UTL					0.226
228	95% Percentile Bootstrap UTL with 95% Coverage					0.519	95% BCA Bootstrap UTL with 95% Coverage					0.519
229	95% UPL					0.519	90% Percentile					0.487
230	90% Chebyshev UPL					0.622	95% Percentile					0.503
231	95% Chebyshev UPL					0.709	99% Percentile					0.516
232	95% USL					0.519						
233												
234	Note: The use of USL to estimate a BTV is recommended only when the data set represents a background											
235	data set free of outliers and consists of observations collected from clean unimpacted locations.											
236	The use of USL tends to provide a balance between false positives and false negatives provided the data											
237	represents a background data set and when many onsite observations need to be compared with the BTV.											
238												

	A	B	C	D	E	F	G	H	I	J	K	L
1					<b>Outlier Tests for Selected Uncensored Variables</b>							
2	<b>User Selected Options</b>											
3	Date/Time of Computation			12/4/2017 5:32:24 PM								
4				From File	ProUCL Analyte-Location Pairworking.xls							
5				Full Precision	OFF							
6												
7												
8	<b>Rosner's Outlier Test for P-1 Antimony T^report_result_value</b>											
9												
10												
11				<b>Mean</b>	<b>1</b>							
12				<b>Standard Deviation</b>	<b>0</b>							
13												
14												
15												
16												
17	<b>Rosner's Outlier Test for P-1 Arsenic T^report_result_value</b>											
18												
19												
20				<b>Mean</b>	<b>1.142</b>							
21				<b>Standard Deviation</b>	<b>0.871</b>							
22				<b>Number of data</b>	<b>48</b>							
23				<b>Number of suspected outliers</b>	<b>1</b>							
24												
25				Potential	Obs.	Test	Critical	Critical				
26	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
27	1	1.142	0.862	7	22	6.795	3.11	3.46				
28												
29	For 5% Significance Level, there is 1 Potential Outlier											
30	Potential outliers is: 7											
31												
32	For 1% Significance Level, there is 1 Potential Outlier											
33	Potential outliers is: 7											
34												
35												

	A	B	C	D	E	F	G	H	I	J	K	L
36	<b>Rosner's Outlier Test for P-1 Barium T^report_result_value</b>											
37												
38												
39	<b>Mean</b>		<b>179</b>									
40	<b>Standard Deviation</b>		<b>77.79</b>									
41	<b>Number of data</b>		<b>47</b>									
42	<b>Number of suspected outliers</b>		<b>1</b>									
43												
44				Potential	Obs.	Test	Critical	Critical				
45	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
46	1	179	76.95	340	22	2.092	3.1	3.46				
47												
48	For 5% Significance Level, there is no Potential Outlier											
49												
50	For 1% Significance Level, there is no Potential Outlier											
51												
52												
53	<b>Rosner's Outlier Test for P-1 Beryllium T^report_result_value</b>											
54												
55												
56	<b>Mean</b>		<b>0.7</b>									
57	<b>Standard Deviation</b>		<b>2.244E-16</b>									
58												
59												
60												
61												
62	<b>Rosner's Outlier Test for P-1 Boron T^report_result_value</b>											
63												
64												
65	<b>Mean</b>		<b>109.1</b>									
66	<b>Standard Deviation</b>		<b>96.41</b>									
67	<b>Number of data</b>		<b>47</b>									
68	<b>Number of suspected outliers</b>		<b>1</b>									
69												
70				Potential	Obs.	Test	Critical	Critical				
71	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
72	1	109.1	95.38	380	32	2.841	3.1	3.46				
73												
74	For 5% Significance Level, there is no Potential Outlier											
75												
76	For 1% Significance Level, there is no Potential Outlier											
77												
78												

	A	B	C	D	E	F	G	H	I	J	K	L
79	<b>Rosner's Outlier Test for P-1 Cadmium T^report_result_value</b>											
80												
81												
82			<b>Mean</b>	<b>0.603</b>								
83			<b>Standard Deviation</b>	<b>0.656</b>								
84			<b>Number of data</b>	<b>47</b>								
85			<b>Number of suspected outliers</b>	<b>1</b>								
86												
87				Potential	Obs.	Test	Critical	Critical				
88	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
89	1	0.603	0.649	5	3	6.778	3.1	3.46				
90												
91	For 5% Significance Level, there is 1 Potential Outlier											
92	Potential outliers is: 5											
93												
94	For 1% Significance Level, there is 1 Potential Outlier											
95	Potential outliers is: 5											
96												
97												
98	<b>Rosner's Outlier Test for P-1 Calcium T^report_result_value</b>											
99												
100												
101			<b>Mean</b>	<b>148732</b>								
102			<b>Standard Deviation</b>	<b>55548</b>								
103			<b>Number of data</b>	<b>47</b>								
104			<b>Number of suspected outliers</b>	<b>1</b>								
105												
106				Potential	Obs.	Test	Critical	Critical				
107	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
108	1	148732	54954	367000	22	3.972	3.1	3.46				
109												
110	For 5% Significance Level, there is 1 Potential Outlier											
111	Potential outliers is: 367000											
112												
113	For 1% Significance Level, there is 1 Potential Outlier											
114	Potential outliers is: 367000											
115												
116												
117	<b>Rosner's Outlier Test for P-1 Chloride T^report_result_value</b>											
118												
119												
120			<b>Mean</b>	<b>137851</b>								
121			<b>Standard Deviation</b>	<b>140611</b>								
122			<b>Number of data</b>	<b>47</b>								
123			<b>Number of suspected outliers</b>	<b>1</b>								
124												
125				Potential	Obs.	Test	Critical	Critical				
126	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
127	1	137851	139107	763000	22	4.494	3.1	3.46				
128												
129	For 5% Significance Level, there is 1 Potential Outlier											
130	Potential outliers is: 763000											
131												
132	For 1% Significance Level, there is 1 Potential Outlier											
133	Potential outliers is: 763000											







	A	B	C	D	E	F	G	H	I	J	K	L
244	Rosner's Outlier Test for P-1 pH T^report_result_value											
245	Rosner's Outlier Test for P-1 pH T^report_result_value											
246												
247												
248	Mean			7.032								
249	Standard Deviation			0.326								
250	Number of data			47								
251	Number of suspected outliers			1								
252												
253				Potential	Obs.	Test	Critical	Critical				
254	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
255	1	7.032	0.323	6	29	3.195	3.1	3.46				
256												
257	For 5% Significance Level, there is 1 Potential Outlier											
258	Potential outliers is: 6											
259												
260	For 1% Significance Level, there is no Potential Outlier											
261												
262												
263	Rosner's Outlier Test for P-1 Selenium T^report_result_value											
264												
265												
266	Mean			1								
267	Standard Deviation			0								
268												
269												
270												
271												
272	Rosner's Outlier Test for P-1 Sulfate as SO4 T^report_result_value											
273												
274												
275	Mean			55123								
276	Standard Deviation			32175								
277	Number of data			47								
278	Number of suspected outliers			1								
279												
280				Potential	Obs.	Test	Critical	Critical				
281	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
282	1	55123	31831	139000	26	2.635	3.1	3.46				
283												
284	For 5% Significance Level, there is no Potential Outlier											
285												
286	For 1% Significance Level, there is no Potential Outlier											
287												
288												
289	Rosner's Outlier Test for P-1 Thallium T^report_result_value											
290												
291												
292	Mean			0.2								
293	Standard Deviation			5.610E-17								
294												
295												

	A	B	C	D	E	F	G	H	I	J	K	L
296												
297												
298	<b>Rosner's Outlier Test for P-1 Total Dissolved Solids T^report_result_value</b>											
299												
300												
301	<b>Mean</b>			<b>735600</b>								
302	<b>Standard Deviation</b>			<b>405352</b>								
303	<b>Number of data</b>			<b>47</b>								
304	<b>Number of suspected outliers</b>			<b>1</b>								
305												
306				Potential	Obs.	Test	Critical	Critical				
307	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
308	1	735600	401017	2330000	22	3.976	3.1	3.46				
309												
310	For 5% Significance Level, there is 1 Potential Outlier											
311	Potential outliers is: 2330000											
312												
313	For 1% Significance Level, there is 1 Potential Outlier											
314	Potential outliers is: 2330000											
315												

	A	B	C	D	E	F	G	H	I	J	K	L
1					<b>Outlier Tests for Selected Uncensored Variables</b>							
2	<b>User Selected Options</b>											
3	Date/Time of Computation			1/10/2018 3:16:11 PM								
4				From File	Shamrock radium source file.xls							
5				Full Precision	OFF							
6												
7												
8	<b>Rosner's Outlier Test for P-1 Radium (226) T^report_result_value</b>											
9												
10												
11	<b>Mean</b>			<b>12.35</b>								
12	<b>Standard Deviation</b>			<b>20.41</b>								
13	<b>Number of data</b>			<b>47</b>								
14	<b>Number of suspected outliers</b>			<b>1</b>								
15												
16				Potential	Obs.	Test	Critical	Critical				
17	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
18	1	12.35	20.19	60.5	35	2.385	3.1	3.46				
19												
20	For 5% Significance Level, there is no Potential Outlier											
21												
22	For 1% Significance Level, there is no Potential Outlier											
23												
24												
25	<b>Rosner's Outlier Test for P-1 Radium 228 T^report_result_value</b>											
26												
27												
28	<b>Mean</b>			<b>11.27</b>								
29	<b>Standard Deviation</b>			<b>17.81</b>								
30	<b>Number of data</b>			<b>47</b>								
31	<b>Number of suspected outliers</b>			<b>1</b>								
32												
33				Potential	Obs.	Test	Critical	Critical				
34	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
35	1	11.27	17.62	67.1	35	3.168	3.1	3.46				
36												
37	For 5% Significance Level, there is 1 Potential Outlier											
38	Potential outliers is: 67.1											
39												
40	For 1% Significance Level, there is no Potential Outlier											
41												
42												
43	<b>on's Outlier Test for P-1 Radium-226/228 T^report_result_va</b>											
44												
45	Number of Observations = 6											
46	10% critical value: 0.482											
47	5% critical value: 0.56											
48	1% critical value: 0.698											
49												
50	<b>1. Observation Value 1.77 is a Potential Outlier (Upper Tail)</b>											

