SKB Environmental, Inc.

2018 Coal Combustion Residuals Annual Monitoring Report

SKB Rosemount Industrial Waste Facility
13425 Courthouse Boulevard
Rosemount, Minnesota
Permit SW-383

January 31, 2019

Coal Combustion Residuals Annual Groundwater Monitoring Report

SKB Rosemount Industrial Waste Facility
13425 Courthouse Boulevard
Rosemount, Minnesota
Permit SW-383

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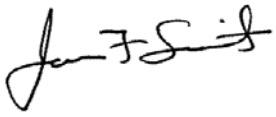
Date:
January 31, 2019



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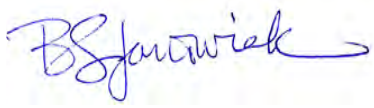

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Regional Engineer

Professional Engineer

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the state of Minnesota.
Signature: _____
Typed or Printed Name: Kevin Michael Lienau
Date: January 31, 2019 License Number: 25086

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Acronyms

BTV	Background Threshold Values
CCR	Coal Combustion Residuals (CCR)
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
QA/QC	Quality assurance/quality control
Report	Coal Combustion Residuals Annual Monitoring Report
SKB Rosemount Landfill	SKB Rosemount Industrial Waste Facility
SSI	Statistically Significant Increase
Test America	Test America, Inc.
USL	Upper Simultaneous Limit

1 Introduction

The *2018 Combustion Coal Residuals Annual Monitoring Report* (Report) was prepared to summarize the results of 2018 groundwater monitoring events and associated analysis for Appendix III to Part 257 at the SKB Rosemount Industrial Waste Facility (SKB Rosemount Landfill). The SKB Landfill operates under Minnesota Pollution Control Agency (MPCA) Site Permit Number SW-383. The SKB Rosemount Landfill is located at 13425 Courthouse Boulevard, Rosemount, Dakota County, Minnesota (**Figure 1**).

Per CFR 40.257.90 – 257.98, 2 groundwater sampling events were conducted at the SKB Rosemount Landfill in the spring and fall of 2018. Analytical results from the groundwater monitoring events are compared and evaluated to Background Threshold Values (BTVs) established for the SKB Rosemount Landfill.

1.1 Scope of Work

The following scope of work was conducted for the 2018 CCR groundwater monitoring events:

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

2 Site Background

2.1 Site Location and Description

SKB Rosemount Landfill was initially operated as an industrial waste containment facility. In the fall of 1999, the facility opened a Municipal Solid Waste Incinerator Ash cell (Cell 4), in the summer of 2004 the facility opened a Construction and Demolition cell (Cell 5), and in the fall 2009 the facility opened the 3M cell (Cell 3M). The site is located within a 236-acre parcel of land in Sections 19, 20, and 29, Township 115 North, Range 18 West, Dakota County, Minnesota (**Figure 1**). With reference to roadways, the facility is located between State Highway 55 and Ehlers Path East. The facility entrance is from State Highway 55.

Located in the Vermillion River watershed, the historical property prior to development, consist of rolling topography ranging in elevation from 820 feet above the National Geodetic Vertical Datum of 1929 (NGVD 29) in the southwest corner to 907 feet above NGVD 29 near the middle of the site. The site has since been altered, with the low point 800 feet above NGVD in the bottom of Cell 3A and Cell 3B to 930 feet above NGVD at the top of Cell 1, Cell 2, and Cell 3A. A seasonal pond is located on the southwest corner of the property. The pond is historically dry except following heavy rain events. Stormwater flows either to natural depressions scattered about the site or to stormwater retention areas in the southwest and north-central area of the property. Stormwater collected in these areas infiltrates into the soil. The nearest open water body is the Mississippi River located approximately 1 mile northeast of the site.

3 Monitoring Network Systems and Sampling Schedule

The groundwater monitoring network at the SKB Rosemount Landfill was designed based on the analysis of local and regional hydrologic conditions. Groundwater beneath the site generally moves from southwest (upgradient) to northeast (downgradient). Currently the system consists of 28 monitoring wells and 5 piezometers, 5 abandoned wells, and 1 abandoned piezometer (**Figure 2**).

The monitoring wells and piezometers used as data collection points have been divided into 5 groups for the purpose of this report:

- Shallow Upgradient Monitoring Points (designated U#S). The shallow upgradient monitoring points consist of the monitoring wells that are completed in the shallow water table aquifer south (upgradient) of the compliance boundary.
- Deep Upgradient Monitoring Points (designated U#D). The deep upgradient monitoring points consist of monitoring wells that are completed in the Outwash/Prairie du Chien aquifer south of the compliance boundary.
- Shallow Downgradient Monitoring Points (designated D#S). The shallow downgradient monitoring points consist of the monitoring wells that are completed in the shallow water table aquifer along the north (downgradient) compliance boundary.
- Deep Downgradient Monitoring Points (designated D#D). The deep downgradient monitoring points consist of monitoring wells that are completed in the Outwash/Prairie du Chien aquifer north (downgradient) of the compliance boundary.
- Cell Wells (designated CW#). The cell wells are monitoring wells completed in the shallow aquifer immediately downgradient of the cell sumps.

For the CCR background evaluation, a total of 2 groundwater monitoring events were conducted in 2017 on the following dates:

- April 23-26, 2018
- October 22-23, 2018

4 Groundwater Sample Methodology

For the SKB Rosemount 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 Amherst, New York.

Groundwater samples were collected from 7 monitoring wells during the 2 sampling events in 2018 and were analyzed for parameters specified in Appendix III to Part 257 and are noted below:

Appendix III

General Chemistry

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

Metals

- Boron (Method 6010C)
- Calcium (Method 6010C)

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 monitoring events are presented in **Table 1**. Groundwater contours maps were generated for the April 23 and October 22, 2018 monitoring events. Groundwater elevation contour maps for both the water table and the deeper monitoring zone are presented in **Figures 3** through **6**. The groundwater flow is to the northeast across the site. This flow direction is consistent with historical flow direction.

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 are provided in **Table 3** and copies of field sampling data sheets are in **Appendix A**. Laboratory analytical reports are included in **Appendix B**.

The calculated BTVs for the SKB Rosemount Landfill are provided in **Table 4**. Comparing the 2018 sampling results to the BTVs indicate that Boron exceeded the BTV of 0.150 milligrams per liter (mg/l).

Result Summary of BTV Exceedances

Boron

- Downgradient monitoring well
  - D-3S (0.22 mg/l) (10/23/2018) – Exceedance not confirmed. Confirmation sampling scheduled for spring 2019.

6 Statistical Evaluation Data

This groundwater statistical evaluation for landfill monitoring is conducted in accordance with CFR 40.257.93(f)(3)). Specifically, current concentrations were compared to the interwell upper simultaneous limits (USLs) in order to determine if a potential statistically significant increase (SSI) exists at downgradient wells.

The background dataset was determined for each well using analytical results ranging from Spring 2017 to the most recent sampling events in October of 2018.

Statistical evaluation of the 2017 - 2018 CCR groundwater monitoring data determined background concentrations and included:

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

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

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

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

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

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

- 95% upper simultaneous limit (USL)

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

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

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

If there were no detected results, the highest detection limit was proposed as the BTV. The calculated BTVs are included in **Table 4**. The statistical evaluation data is included in **Appendix C**.

6.1 SSI Determination

The detected concentrations for the first and second half 2018 sampling event with the respective USL are listed below. Compliance is determined by comparing the current concentration to the calculated USL. Confirmation sampling for detected concentration of Boron at D-3S reported above BTV for second half 2018 sampling event will occur in spring 2019.

Comparison of 2018 Confirmed COC Concentrations to USLs

Monitoring Well	Analyte	First Half 2018 Conc (mg/L)	USL Conc (mg/L)	Second Half 2018 Conc (mg/L)	Percent Non-Detect	USL Notes
D-3S	Boron	0.15	0.150	**0.22**	0%	Non-parametric distribution Not Confirmed

Notes:

Conc – Concentration
KM – Kaplan Meier method for non-detect substitution
Bolded concentration exceeds the respective USL.

7 Conclusions

The groundwater data collected in the 2017 – 2018 sampling events were statistically tested following the concepts outlined in this report to form a background data set. Interwell USLs were developed for Chloride Fluoride, Sulfate as SO_4, Total Dissolved Solids, Boron, Calcium and in fifteen monitoring wells (D-1D, D-1S, D-2D, D-2S, D-3D, D-3S, D-4D, D-4S, D-5D, D-5S2, D-7, D-8, D-9, U-4D, and U-4S). Upper and lower threshold values were developed for pH using USL and box plot statistics. The resulting USLs were compared to the current concentrations for each COC and well pair. Compliance is determined by comparing the currently detected concentrations to the calculated USL. A Boron concentration of 0.22 mg/l detected at D-3S exceeded the calculated USL of 0.150 mg/l. Resampling is required to determine if the exceedance is statistically significant.

8 Report Summary

Per the CFR 40.257.90 – 257.98, 2 monitoring events were conducted at the SKB Lansing Rosemount Landfill in 2018. Groundwater samples were analyzed for parameters indicated in Appendix III to Part 257. Groundwater samples were collected from the monitoring network's 15 monitoring wells located at the SKB Rosemount Landfill during the monitoring events. Groundwater elevation information from the monitoring data indicates a northeasterly groundwater flow beneath the landfill.

Groundwater sampling was performed in the spring and fall of 2018. The following analytes were reported above the calculated BTVs:

- A Boron groundwater concentration was detected above the BTV at downgradient monitoring well D-3S during the fall 2018 sampling event. A subsequent confirmation of the concentration must occur for the exceedance to be considered statistically significant.

9 Recommendations

CCR groundwater monitoring events will be conducted in the spring and fall of 2019. 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 well. 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.

A 2019 Annual Monitoring Report will be prepared and include sampling results from the 2019 CCR groundwater monitoring events and an evaluation of the analytical results as they pertained to BTVs.

References

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

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

United States Geological Survey, 1967 (revised 1993). *7.5-minute quadrangle map, Inver Grove Heights.*

Figures

SOURCE: USGS 7.5 MINUTE SERIES
TOPOGRAPHIC QUADRANGLE 1993
INVER GROVE HEIGHTS, MINNESOTA
CONTOUR INTERVAL = 10'

QUADRANGLE LOCATION

DRAFTED BY: W.G.S. (N.J.)	SITE LOCATION MAP
CHECKED BY:	SKB ENVIRONMENTAL INC. ROSEMOUNT FACILITY 13425 COURTHOUSE BOULEVARD ROSEMOUNT, MINNESOTA
REVIEWED BY:	Groundwater & Environmental Services, Inc. 1285 CORPORATE CENTER DRIVE, SUITE 120, EAGAN, MN 55121
NORTH	SCALE IN FEET: 0 – 2000 / DATE: 1-10-14 / FIGURE: 1

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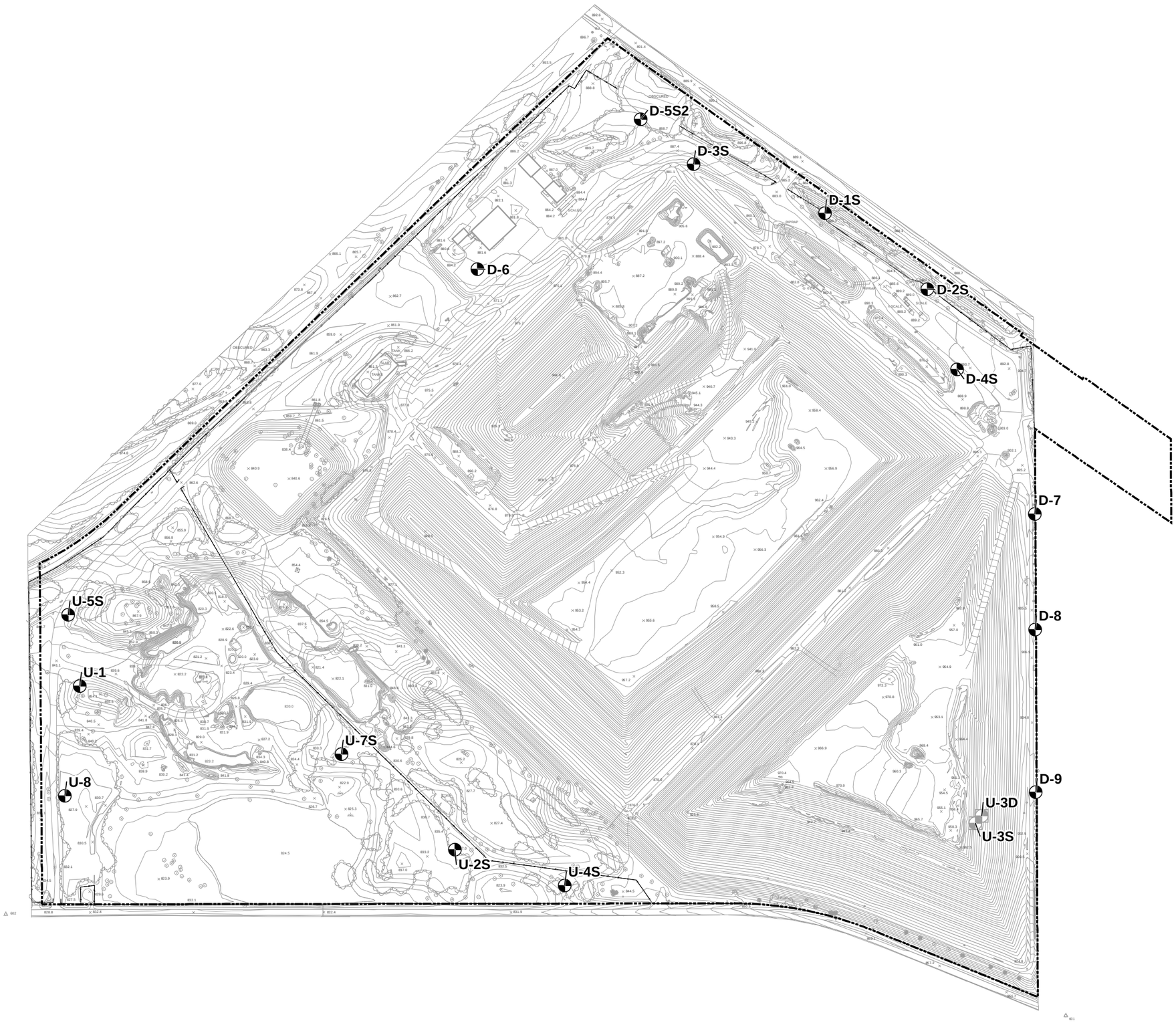

Legend

- PROPERTY BOUNDARY
- FENCE
- MONITORING WELL
- DESTROYED MONITORING WELL
- ABANDONED MONITORING WELL

SITE MAP

SKB ENVIRONMENTAL INC.
ROSEMOUNT FACILITY
13425 COURTHOUSE BOULEVARD
ROSEMOUNT, MINNESOTA

Drawn	Date
JTL	1-5-18
Designed	Figure
DMC	2
Approved	
-	

N W E S

Scale In Feet (Approximate)
0 400

GES
Groundwater & Environmental Services, Inc.

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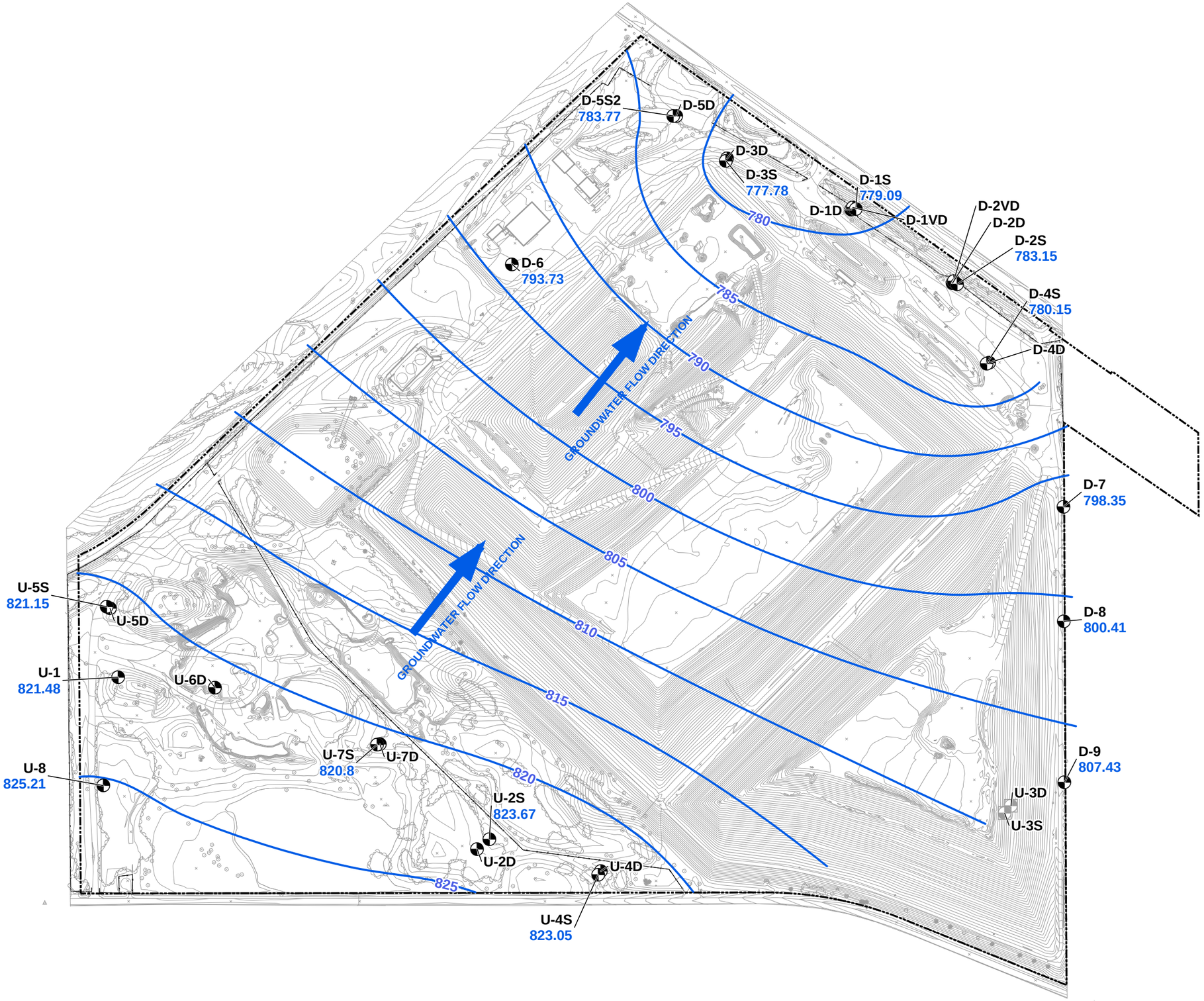

Legend

- GROUNDWATER ELEVATION ISOCONTOUR (ft MSL)
- PROPERTY BOUNDARY
- FENCE
- 771.75 MEASURED GROUNDWATER ELEVATION (ft MSL)
- MONITORING WELL
- DESTROYED MONITORING WELL
- ABANDONED MONITORING WELL

WATER TABLE CONTOUR MAP
APRIL 23, 2018

SKB ENVIRONMENTAL INC.
ROSEMOUNT FACILITY
13425 COURTHOUSE BOULEVARD
ROSEMOUNT, MINNESOTA

Drawn	JTL	Date	5-7-18
Designed	JTL	Figure	3
Approved	-		

N W E S

Scale In Feet (Approximate)
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Groundwater & Environmental Services, Inc.

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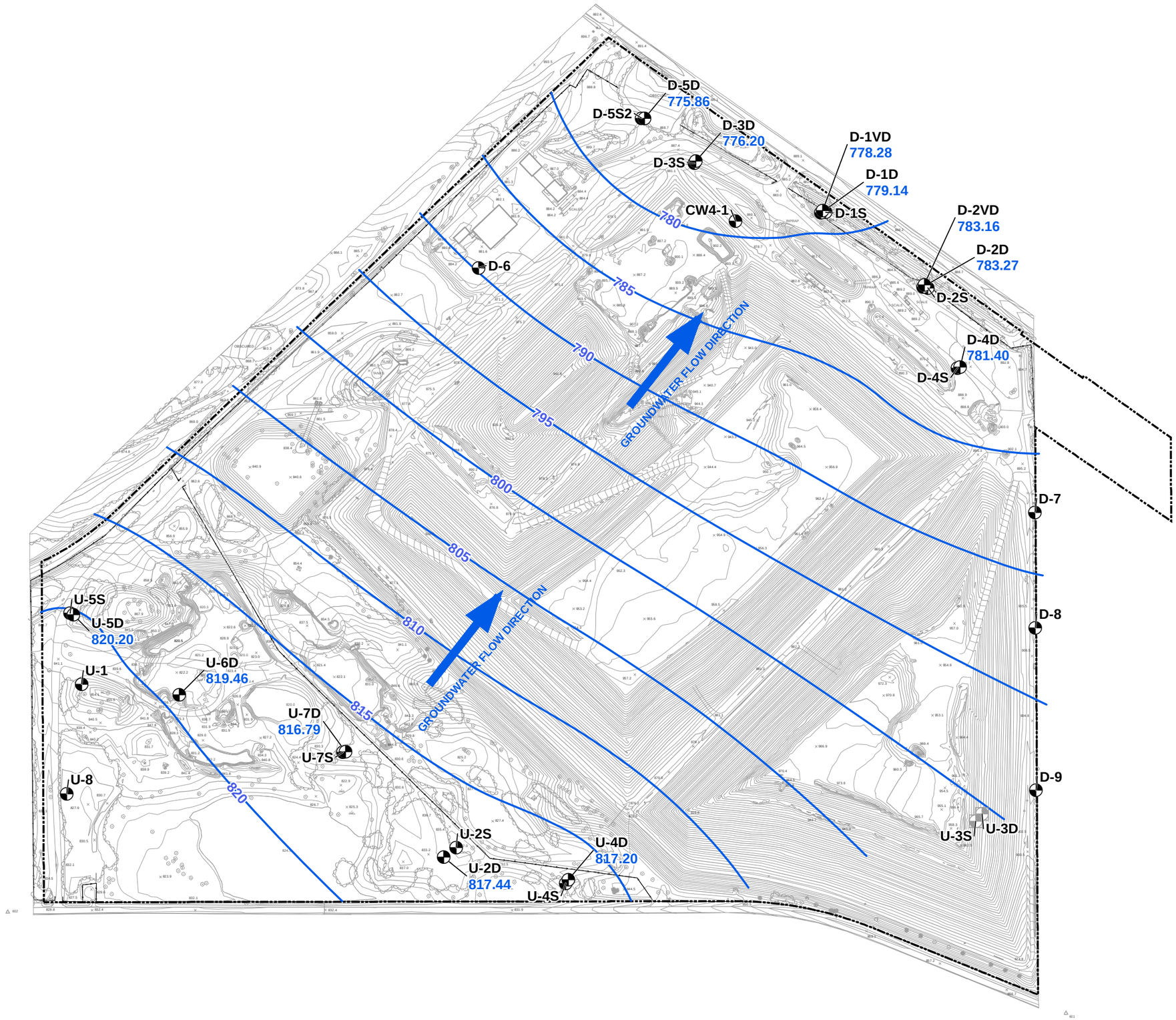

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- GROUNDWATER ELEVATION ISOCONTOUR (ft MSL)
- PROPERTY BOUNDARY
- FENCE
- 771.75 MEASURED GROUNDWATER ELEVATION (ft MSL)
- MONITORING WELL
- DESTROYED MONITORING WELL
- ABANDONED MONITORING WELL

POTENTIOMETRIC SURFACE CONTOUR MAP
APRIL 23, 2018

SKB ENVIRONMENTAL INC.
ROSEMOUNT FACILITY
13425 COURTHOUSE BOULEVARD
ROSEMOUNT, MINNESOTA

Drawn	JTL	Date	5-3-18
Designed	JTL	Figure	4
Approved	-		

N W E S

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Groundwater & Environmental Services, Inc.

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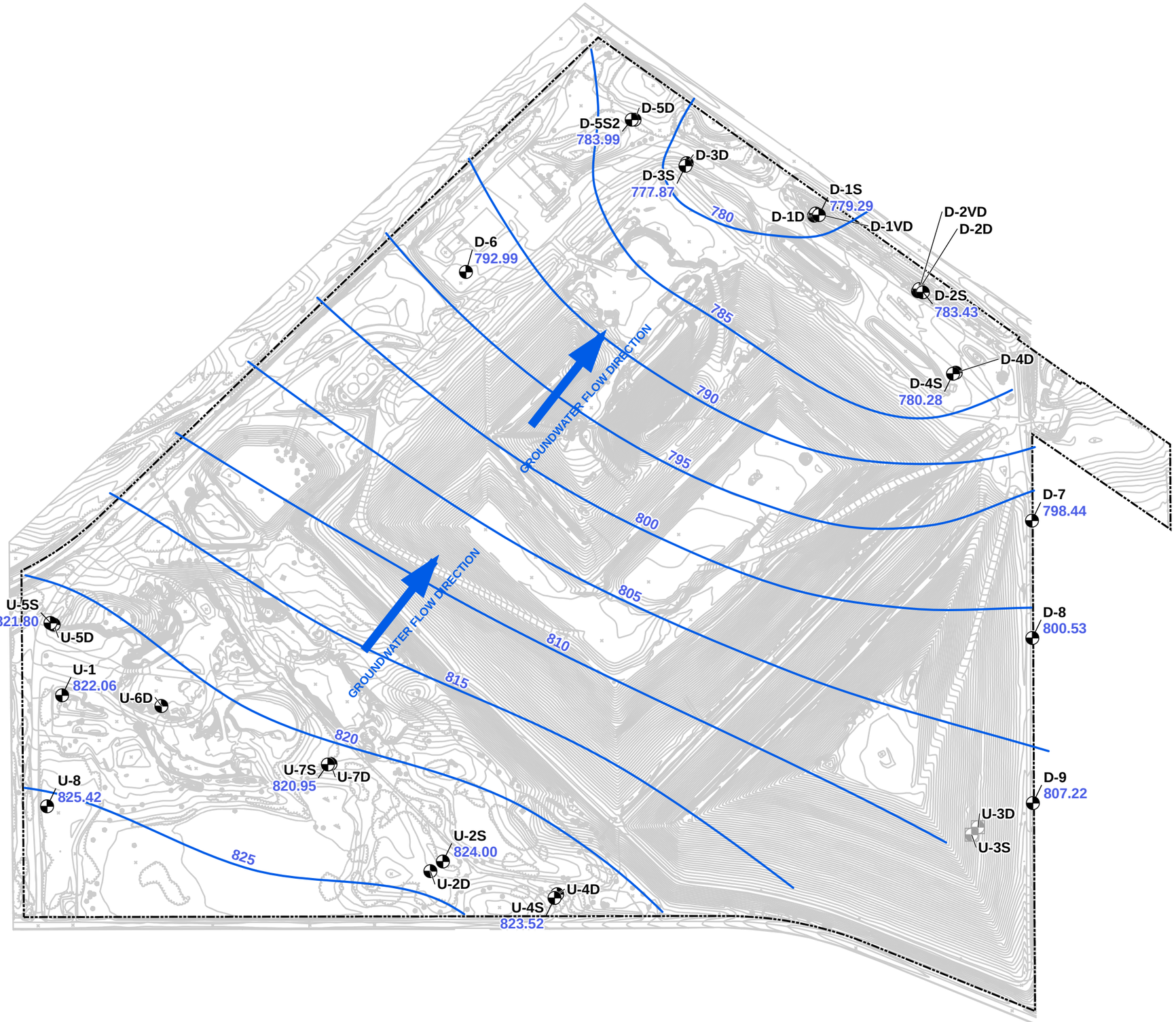

Legend

- GROUNDWATER ELEVATION ISOCONTOUR (ft MSL)
- PROPERTY BOUNDARY
- FENCE
- 771.75 MEASURED GROUNDWATER ELEVATION (ft MSL)
- MONITORING WELL
- DESTROYED MONITORING WELL
- ABANDONED MONITORING WELL

WATER TABLE CONTOUR MAP
OCTOBER 22, 2018

SKB Environmental
Rosemount Facility
13425 Courthouse Boulevard
Rosemount, Minnesota

Drawn: **AMW**
Designed: **AMW**
Approved: **DMC**
Date: **12/21/18**
Figure: **5**

Scale In Feet (Approximate)
0 400

Groundwater & Environmental Services, Inc.

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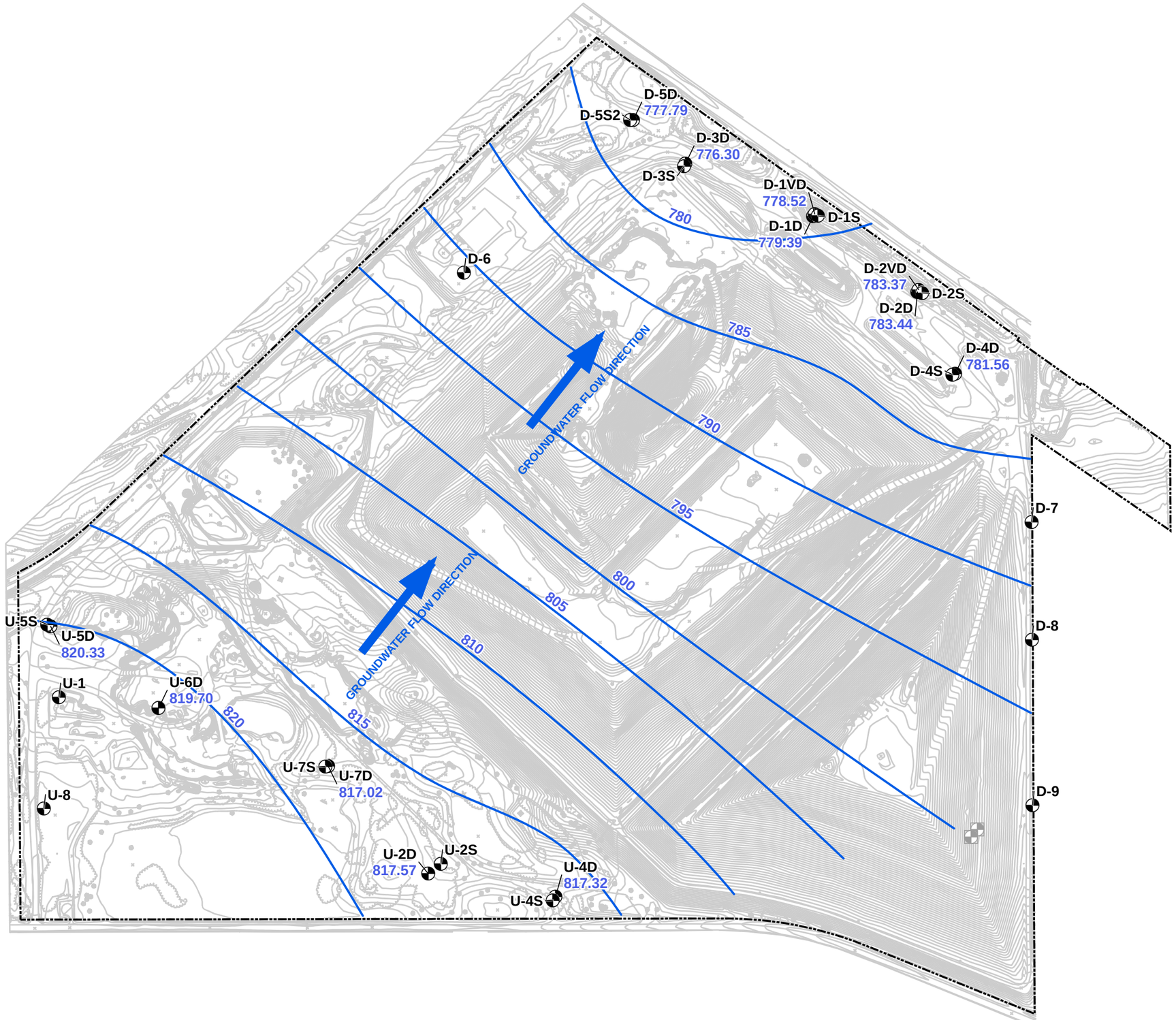

Legend

- GROUNDWATER ELEVATION ISOCONTOUR (ft MSL)
- PROPERTY BOUNDARY
- FENCE
- 771.75 MEASURED GROUNDWATER ELEVATION (ft MSL)
- MONITORING WELL
- DESTROYED MONITORING WELL
- ABANDONED MONITORING WELL

POTENTIOMETRIC SURFACE CONTOUR MAP
OCTOBER 22, 2018

SKB Environmental
Rosemount Facility
13425 Courthouse Boulevard
Rosemount, Minnesota

Drawn
AMW
Designed
AMW
Approved
DMC

Date
12/21/18
Figure
6

Scale In Feet (Approximate)
0 400

Groundwater & Environmental Services, Inc.

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Tables

CCR 2018 Annual Monitoring Report
SKB Rosemount Industrial Waste Facility
13425 Courthouse Boulevard
Rosemount, Minnesota

Table 1

Groundwater Elevations
Downgradient Deep Wells

DATE	D-1D	D-1VD	D-2D	D-2VD	D-3D	D-4D	D-5D
04/23/2018	779.14	778.28	783.27	783.16	776.20	781.40	775.86
10/22/2018	779.39	778.52	783.44	783.37	776.30	781.56	777.79

CCR 2018 Annual Monitoring Report
SKB Rosemount Industrial Waste Facility
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Rosemount, Minnesota

Table 1

Groundwater Elevations
Downgradient Deep Wells

DATE	D-1S	D-2S	D-3S	D-4S	D-5S2	D-7	D-8	D-9
04/23/2018	779.09	783.15	777.78	780.15	783.77	798.35	800.41	807.43
10/22/2018	779.29	783.43	777.87	780.28	783.99	798.44	800.53	807.22

CCR 2018 Annual Monitoring Report
SKB Rosemount Industrial Waste Facility
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Rosemount, Minnesota

Table 1

Groundwater Elevations
Downgradient Deep Wells

DATE	U-2D	U-4D	U-5D	U-7D
04/23/2018	817.44	817.2	820.2	816.79
10/22/2018	817.57	817.32	820.33	817.02

Table 1

Groundwater Elevations
Downgradient Deep Wells

DATE	U-1	U-2S	U-4S	U-5S	U-7S
04/23/2018	821.48	823.67	823.05	821.15	820.80
10/22/2018	822.06	824.00	823.52	821.80	820.95

CCR 2018 Annual Monitoring Report
SKB Rosemount Industrial Waste Facility
13425 Courthouse Boulevard
Rosemount, Minnesota

Table 2

Well Stabilization Data

Well ID	Measurement Date	Purge Rate l/min	Field pH	Field Specific Conductivity umhos/cm	Field Temp deg c
D-1D	4/24/18 10:55 AM	1	7.81	709	11.20
D-1D	4/24/18 11:00 AM	1	7.81	709	11.10
D-1D	4/24/18 11:05 AM	1	7.81	709	11.10
D-1D	4/24/18 11:10 AM	1	7.81	709	11.10
D-1D	10/23/18 12:20 PM	1	7.60	784	11.43
D-1D	10/23/18 12:50 PM	1	7.59	786	11.59
D-1D	10/23/18 1:20 PM	1	7.55	783	11.61
D-1D	10/23/18 1:50 PM	1	7.55	783	11.58
D-1S	4/24/18 10:55 AM	1	8.04	606	9.90
D-1S	4/24/18 11:00 AM	1	7.29	791	11.40
D-1S	4/24/18 11:05 AM	1	7.27	786	11.30
D-1S	4/24/18 11:10 AM	1	7.28	783	11.30
D-1S	10/23/18 12:10 PM	1	7.54	729	11.29
D-1S	10/23/18 12:15 PM	1	6.99	900	11.39
D-1S	10/23/18 12:20 PM	1	7.00	897	11.59
D-1S	10/23/18 12:25 PM	1	6.99	895	11.58
D-2D	4/24/18 12:10 PM	1	7.63	711	10.10
D-2D	4/24/18 12:15 PM	1	7.63	711	10.10
D-2D	4/24/18 12:20 PM	1	7.63	711	10.10
D-2D	4/24/18 12:25 PM	1	7.63	711	10.10
D-2D	10/23/18 2:00 PM	1	7.37	799	10.39
D-2D	10/23/18 2:30 PM	1	7.37	799	10.40
D-2D	10/23/18 3:00 PM	1	7.38	799	10.39
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D-2S	10/23/18 2:30 PM	1	7.15	875	10.75
D-3D	4/24/18 9:30 AM	1	7.50	775	10.10
D-3D	4/24/18 9:40 AM	1	7.50	776	10.10
D-3D	4/24/18 9:50 AM	1	7.50	775	10.10
D-3D	4/24/18 10:00 AM	1	7.50	775	10.10
D-3D	10/23/18 10:10 AM	1	7.25	874	10.31
D-3D	10/23/18 10:40 AM	1	7.24	875	10.29
D-3D	10/23/18 11:10 AM	1	7.25	875	10.30
D-3D	10/23/18 11:40 AM	1	7.23	870	10.32
D-3S	4/24/18 9:30 AM	1	7.98	844	10.70
D-3S	4/24/18 9:40 AM	1	7.41	896	10.20
D-3S	4/24/18 9:50 AM	1	7.40	898	10.20
D-3S	4/24/18 10:00 AM	1	7.41	899	10.20
D-3S	10/23/18 10:10 AM	1	7.60	914	11.62
D-3S	10/23/18 10:20 AM	1	7.16	951	10.53
D-3S	10/23/18 10:30 AM	1	7.18	953	10.54
D-3S	10/23/18 10:40 AM	1	7.18	954	10.56

CCR 2018 Annual Monitoring Report
SKB Rosemount Industrial Waste Facility
13425 Courthouse Boulevard
Rosemount, Minnesota

Table 2

Well Stabilization Data

Well ID	Measurement Date	Purge Rate l/min	Field pH	Field Specific Conductivity umhos/cm	Field Temp deg c
D-4D	4/26/18 7:40 AM	1	7.61	745	10.70
D-4D	4/26/18 7:45 AM	1	7.61	744	10.70
D-4D	4/26/18 7:50 AM	1	7.61	745	10.70
D-4D	4/26/18 7:55 AM	1	7.61	743	10.70
D-4D	10/24/18 8:40 AM	1	7.40	844	10.51
D-4D	10/24/18 8:55 AM	1	7.41	840	10.22
D-4D	10/24/18 9:10 AM	1	7.40	841	10.21
D-4D	10/24/18 9:25 AM	1	7.40	841	10.21
D-4S	4/26/18 7:40 AM	1	8.28	684	10.70
D-4S	4/26/18 7:45 AM	1	7.55	762	10.90
D-4S	4/26/18 7:50 AM	1	7.54	762	10.90
D-4S	4/26/18 7:55 AM	1	7.54	762	10.90
D-4S	10/24/18 8:40 AM	1	7.45	829	11.19
D-4S	10/24/18 8:45 AM	1	7.27	861	11.04
D-4S	10/24/18 8:50 AM	1	7.29	860	11.10
D-4S	10/24/18 8:55 AM	1	7.30	859	11.12
D-5D	4/24/18 7:40 AM	1	7.52	741	9.70
D-5D	4/24/18 7:50 AM	1	7.52	740	9.70
D-5D	4/24/18 8:00 AM	1	7.52	740	9.70
D-5D	4/24/18 8:10 AM	1	7.52	740	9.70
D-5D	10/23/18 9:00 AM	1	6.79	832	9.77
D-5D	10/23/18 9:15 AM	1	7.22	835	9.83
D-5D	10/23/18 9:30 AM	1	6.83	826	9.83
D-5D	10/23/18 9:45 AM	1	6.77	831	9.89
D-5S2	4/24/18 7:40 AM	1	8.43	710	9.40
D-5S2	4/24/18 7:50 AM	1	7.34	962	9.90
D-5S2	4/24/18 8:00 AM	1	7.33	961	9.90
D-5S2	4/24/18 8:10 AM	1	7.33	961	9.90
D-5S2	10/23/18 9:00 AM	1	7.34	1050	9.60
D-5S2	10/23/18 9:05 AM	1	7.07	1050	9.98
D-5S2	10/23/18 9:10 AM	1	7.06	1050	10.06
D-5S2	10/23/18 9:15 AM	1	7.07	1050	10.07
D-7	4/26/18 8:45 AM	1	7.62	813	10.00
D-7	4/26/18 8:50 AM	1	7.62	813	9.90
D-7	4/26/18 8:55 AM	1	7.62	813	9.90
D-7	4/26/18 9:00 AM	1	7.62	813	9.90
D-7	10/24/18 7:30 AM	1	7.49	842	9.58
D-7	10/24/18 7:35 AM	1	7.47	841	9.61
D-7	10/24/18 7:40 AM	1	7.45	840	9.66
D-7	10/24/18 7:45 AM	1	7.44	839	9.71
D-8	4/26/18 9:45 AM	1	8.26	637	10.00
D-8	4/26/18 10:00 AM	1	7.86	742	9.80
D-8	4/26/18 10:15 AM	1	7.78	709	9.80
D-8	4/26/18 10:30 AM	1	7.81	719	9.80
D-8	10/24/18 9:45 AM	1	7.73	788	10.66
D-8	10/24/18 9:55 AM	1	7.57	840	10.03
D-8	10/24/18 10:05 AM	1	7.57	814	10.05
D-8	10/24/18 10:15 AM	1	7.55	825	10.08

CCR 2018 Annual Monitoring Report
SKB Rosemount Industrial Waste Facility
13425 Courthouse Boulevard
Rosemount, Minnesota

Table 2

Well Stabilization Data

Well ID	Measurement Date	Purge Rate l/min	Field pH	Field Specific Conductivity umhos/cm	Field Temp deg c
D-9	4/26/18 11:05 AM	1	8.33	625	8.80
D-9	4/26/18 11:20 AM	1	7.43	667	10.20
D-9	4/26/18 11:35 AM	1	7.69	704	10.20
D-9	4/26/18 11:50 AM	1	7.71	694	10.20
D-9	10/24/18 11:05 AM	1	7.58	641	10.38
D-9	10/24/18 11:15 AM	1	7.35	802	10.84
D-9	10/24/18 11:25 AM	1	7.46	830	10.87
D-9	10/24/18 11:35 AM	1	7.47	833	10.93
U-4D	4/23/18 9:40 AM	1	7.61	728	9.30
U-4D	4/23/18 10:15 AM	1	7.61	728	9.30
U-4D	4/23/18 10:40 AM	1	7.62	728	9.30
U-4D	4/23/18 11:00 AM	1	7.63	728	9.30
U-4D	10/22/18 12:50 PM	1	7.32	819	9.72
U-4D	10/22/18 1:10 PM	1	7.29	819	9.68
U-4D	10/22/18 1:25 PM	1	7.33	820	9.65
U-4D	10/22/18 1:40 PM	1	7.33	819	9.65
U-4D	10/22/18 2:00 PM	1	7.33	819	9.65
U-4S	4/23/18 9:40 AM	1	8.40	831	10.00
U-4S	4/23/18 10:00 AM	1	7.39	838	10.10
U-4S	4/23/18 10:10 AM	1	7.36	838	10.10
U-4S	4/23/18 10:20 AM	1	7.35	838	10.10
U-4S	10/22/18 12:50 PM	1	7.52	861	12.72
U-4S	10/22/18 12:55 PM	1	7.06	851	10.92
U-4S	10/22/18 1:00 PM	1	7.07	852	10.62
U-4S	10/22/18 1:05 PM	1	7.07	853	10.63
U-5D	4/23/18 12:20 PM	1	7.75	700	10.70
U-5D	4/23/18 12:40 PM	1	7.75	700	10.70
U-5D	4/23/18 1:00 PM	1	7.75	700	10.70
U-5D	4/23/18 1:20 PM	1	7.75	700	10.60
U-5D	10/22/18 3:10 PM	1	7.46	772	10.37
U-5D	10/22/18 3:20 PM	1	7.45	773	10.22
U-5D	10/22/18 3:30 PM	1	7.46	774	10.18
U-5D	10/22/18 3:40 PM	1	7.45	773	10.19
U-5S	4/23/18 12:20 PM	1	7.69	804	10.60
U-5S	4/23/18 12:25 PM	1	7.47	806	10.50
U-5S	4/23/18 12:30 PM	1	7.44	807	10.50
U-5S	4/23/18 12:35 PM	1	7.44	806	10.50
U-5S	10/22/18 3:10 PM	1	7.46	866	11.80
U-5S	10/22/18 3:15 PM	1	7.15	880	10.79
U-5S	10/22/18 3:20 PM	1	7.14	880	10.73
U-5S	10/22/18 3:25 PM	1	7.15	880	10.73

Table 3

Groundwater Analytical Data

Location	Date	Parameter	Result	Units	CAS #
D-1D	04/24/2018	Boron	< 0.020	mg/l	7440-42-8
D-1D	10/23/2018	Boron	< 0.020	mg/l	7440-42-8
D-1D	04/24/2018	Calcium	91.5	mg/l	7440-70-2
D-1D	10/23/2018	Calcium	89.2	mg/l	7440-70-2
D-1D	04/24/2018	Chloride	36.9	mg/l	16887-00-6
D-1D	10/23/2018	Chloride	34.8	mg/l	16887-00-6
D-1D	04/24/2018	Fluoride	< 0.10	mg/l	16984-48-8
D-1D	10/23/2018	Fluoride	0.11	mg/l	16984-48-8
D-1D	04/24/2018	pH	7.8	pH UNITS	PH
D-1D	10/23/2018	pH	7.8	pH UNITS	PH
D-1D	04/24/2018	Sulfate as SO4	30.4	mg/l	14808-79-8
D-1D	10/23/2018	Sulfate as SO4	30.1	mg/l	14808-79-8
D-1D	04/24/2018	Total Dissolved Solids	387	mg/l	TDS
D-1D	10/23/2018	Total Dissolved Solids	312	mg/l	TDS
D-1S	04/24/2018	Boron	0.038	mg/l	7440-42-8
D-1S	10/23/2018	Boron	0.036	mg/l	7440-42-8
D-1S	04/24/2018	Calcium	115	mg/l	7440-70-2
D-1S	10/23/2018	Calcium	110	mg/l	7440-70-2
D-1S	04/24/2018	Chloride	34.3	mg/l	16887-00-6
D-1S	10/23/2018	Chloride	35.4	mg/l	16887-00-6
D-1S	04/24/2018	Fluoride	< 0.10	mg/l	16984-48-8
D-1S	10/23/2018	Fluoride	< 0.10	mg/l	16984-48-8
D-1S	04/24/2018	pH	7.4	pH UNITS	PH
D-1S	10/23/2018	pH	7.2	pH UNITS	PH
D-1S	04/24/2018	Sulfate as SO4	28.5	mg/l	14808-79-8
D-1S	10/23/2018	Sulfate as SO4	28.6	mg/l	14808-79-8
D-1S	04/24/2018	Total Dissolved Solids	438	mg/l	TDS
D-1S	10/23/2018	Total Dissolved Solids	444	mg/l	TDS
D-2D	04/24/2018	Boron	< 0.020	mg/l	7440-42-8
D-2D	10/23/2018	Boron	< 0.020	mg/l	7440-42-8
D-2D	04/24/2018	Calcium	94.7	mg/l	7440-70-2
D-2D	10/23/2018	Calcium	90.5	mg/l	7440-70-2
D-2D	04/24/2018	Chloride	33.0	mg/l	16887-00-6
D-2D	10/23/2018	Chloride	33.2	mg/l	16887-00-6
D-2D	04/24/2018	Fluoride	< 0.10	mg/l	16984-48-8
D-2D	10/23/2018	Fluoride	0.17	mg/l	16984-48-8
D-2D	04/24/2018	pH	7.7	pH UNITS	PH
D-2D	10/23/2018	pH	7.5	pH UNITS	PH
D-2D	04/24/2018	Sulfate as SO4	24.3	mg/l	14808-79-8
D-2D	10/23/2018	Sulfate as SO4	24.0	mg/l	14808-79-8
D-2D	04/24/2018	Total Dissolved Solids	385	mg/l	TDS
D-2D	10/23/2018	Total Dissolved Solids	383	mg/l	TDS
D-2S	04/24/2018	Boron	0.021	mg/l	7440-42-8
D-2S	10/23/2018	Boron	0.020	mg/l	7440-42-8
D-2S	04/24/2018	Calcium	106	mg/l	7440-70-2
D-2S	10/23/2018	Calcium	99.4	mg/l	7440-70-2
D-2S	04/24/2018	Chloride	50.1	mg/l	16887-00-6
D-2S	10/23/2018	Chloride	49.1	mg/l	16887-00-6
D-2S	04/24/2018	Fluoride	< 0.10	mg/l	16984-48-8

Table 3

Groundwater Analytical Data

Location	Date	Parameter	Result	Units	CAS #
D-2S	10/23/2018	Fluoride	< 0.10	mg/l	16984-48-8
D-2S	04/24/2018	pH	7.5	pH UNITS	PH
D-2S	10/23/2018	pH	7.4	pH UNITS	PH
D-2S	04/24/2018	Sulfate as SO4	28.8	mg/l	14808-79-8
D-2S	10/23/2018	Sulfate as SO4	29.2	mg/l	14808-79-8
D-2S	04/24/2018	Total Dissolved Solids	433	mg/l	TDS
D-2S	10/23/2018	Total Dissolved Solids	430	mg/l	TDS
D-3D	04/24/2018	Boron	0.027	mg/l	7440-42-8
D-3D	10/23/2018	Boron	0.029	mg/l	7440-42-8
D-3D	04/24/2018	Calcium	104	mg/l	7440-70-2
D-3D	10/23/2018	Calcium	103	mg/l	7440-70-2
D-3D	04/24/2018	Chloride	41.4	mg/l	16887-00-6
D-3D	10/23/2018	Chloride	43.9	mg/l	16887-00-6
D-3D	04/24/2018	Fluoride	< 0.10	mg/l	16984-48-8
D-3D	10/23/2018	Fluoride	< 0.10	mg/l	16984-48-8
D-3D	04/24/2018	pH	7.6	pH UNITS	PH
D-3D	10/23/2018	pH	7.5	pH UNITS	PH
D-3D	04/24/2018	Sulfate as SO4	33.5	mg/l	14808-79-8
D-3D	10/23/2018	Sulfate as SO4	33.4	mg/l	14808-79-8
D-3D	04/24/2018	Total Dissolved Solids	432	mg/l	TDS
D-3D	10/23/2018	Total Dissolved Solids	429	mg/l	TDS
D-3S	04/24/2018	Boron	0.15	mg/l	7440-42-8
D-3S	10/23/2018	Boron	0.22	mg/l	7440-42-8
D-3S	04/24/2018	Calcium	117	mg/l	7440-70-2
D-3S	10/23/2018	Calcium	107	mg/l	7440-70-2
D-3S	04/24/2018	Chloride	80.8	mg/l	16887-00-6
D-3S	10/23/2018	Chloride	66.1	mg/l	16887-00-6
D-3S	04/24/2018	Fluoride	< 0.10	mg/l	16984-48-8
D-3S	10/23/2018	Fluoride	< 0.10	mg/l	16984-48-8
D-3S	04/24/2018	pH	7.5	pH UNITS	PH
D-3S	10/23/2018	pH	7.4	pH UNITS	PH
D-3S	04/24/2018	Sulfate as SO4	45.0	mg/l	14808-79-8
D-3S	10/23/2018	Sulfate as SO4	41.9	mg/l	14808-79-8
D-3S	04/24/2018	Total Dissolved Solids	517	mg/l	TDS
D-3S	10/23/2018	Total Dissolved Solids	469	mg/l	TDS
D-4D	04/26/2018	Boron	< 0.020	mg/l	7440-42-8
D-4D	10/22/2018	Boron	< 0.020	mg/l	7440-42-8
D-4D	04/26/2018	Calcium	94.0	mg/l	7440-70-2
D-4D	10/22/2018	Calcium	96.0	mg/l	7440-70-2
D-4D	04/26/2018	Chloride	48.8	mg/l	16887-00-6
D-4D	10/22/2018	Chloride	48.1	mg/l	16887-00-6
D-4D	04/26/2018	Fluoride	< 0.10	mg/l	16984-48-8
D-4D	10/22/2018	Fluoride	0.10	mg/l	16984-48-8
D-4D	04/26/2018	pH	7.7	pH UNITS	PH
D-4D	10/22/2018	pH	7.5	pH UNITS	PH
D-4D	04/26/2018	Sulfate as SO4	26.5	mg/l	14808-79-8
D-4D	10/22/2018	Sulfate as SO4	25.9	mg/l	14808-79-8
D-4D	04/26/2018	Total Dissolved Solids	413	mg/l	TDS
D-4D	10/22/2018	Total Dissolved Solids	425	mg/l	TDS

Table 3

Groundwater Analytical Data

Location	Date	Parameter	Result	Units	CAS #
D-4S	04/23/2018	Boron	< 0.020	mg/l	7440-42-8
D-4S	10/22/2018	Boron	< 0.020	mg/l	7440-42-8
D-4S	04/23/2018	Calcium	99.6	mg/l	7440-70-2
D-4S	10/22/2018	Calcium	100	mg/l	7440-70-2
D-4S	04/23/2018	Chloride	49.1	mg/l	16887-00-6
D-4S	10/22/2018	Chloride	49.5	mg/l	16887-00-6
D-4S	04/23/2018	Fluoride	< 0.10	mg/l	16984-48-8
D-4S	10/22/2018	Fluoride	< 0.10	mg/l	16984-48-8
D-4S	04/23/2018	pH	7.6	pH UNITS	PH
D-4S	10/22/2018	pH	7.5	pH UNITS	PH
D-4S	04/23/2018	Sulfate as SO4	27.4	mg/l	14808-79-8
D-4S	10/22/2018	Sulfate as SO4	26.0	mg/l	14808-79-8
D-4S	04/23/2018	Total Dissolved Solids	436	mg/l	TDS
D-4S	10/22/2018	Total Dissolved Solids	426	mg/l	TDS
D-5D	04/24/2018	Boron	< 0.020	mg/l	7440-42-8
D-5D	10/24/2018	Boron	< 0.020	mg/l	7440-42-8
D-5D	04/24/2018	Calcium	101	mg/l	7440-70-2
D-5D	10/24/2018	Calcium	97.7	mg/l	7440-70-2
D-5D	04/24/2018	Chloride	24.4	mg/l	16887-00-6
D-5D	10/24/2018	Chloride	26.3	mg/l	16887-00-6
D-5D	04/24/2018	Fluoride	< 0.10	mg/l	16984-48-8
D-5D	10/24/2018	Fluoride	< 0.10	mg/l	16984-48-8
D-5D	04/24/2018	pH	7.6	pH UNITS	PH
D-5D	10/24/2018	pH	7.5	pH UNITS	PH
D-5D	04/24/2018	Sulfate as SO4	32.1	mg/l	14808-79-8
D-5D	10/24/2018	Sulfate as SO4	31.8	mg/l	14808-79-8
D-5D	04/24/2018	Total Dissolved Solids	413	mg/l	TDS
D-5D	10/24/2018	Total Dissolved Solids	426	mg/l	TDS
D-5S2	04/24/2018	Boron	0.065	mg/l	7440-42-8
D-5S2	10/24/2018	Boron	0.074	mg/l	7440-42-8
D-5S2	04/24/2018	Calcium	127	mg/l	7440-70-2
D-5S2	10/24/2018	Calcium	124	mg/l	7440-70-2
D-5S2	04/24/2018	Chloride	69.0	mg/l	16887-00-6
D-5S2	10/24/2018	Chloride	65.1	mg/l	16887-00-6
D-5S2	04/24/2018	Fluoride	< 0.10	mg/l	16984-48-8
D-5S2	10/24/2018	Fluoride	< 0.25	mg/l	16984-48-8
D-5S2	04/24/2018	pH	7.5	pH UNITS	PH
D-5S2	10/24/2018	pH	7.3	pH UNITS	PH
D-5S2	04/24/2018	Sulfate as SO4	56.6	mg/l	14808-79-8
D-5S2	10/24/2018	Sulfate as SO4	64.0	mg/l	14808-79-8
D-5S2	04/24/2018	Total Dissolved Solids	547	mg/l	TDS
D-5S2	10/24/2018	Total Dissolved Solids	555	mg/l	TDS
D-7	04/26/2018	Boron	0.055	mg/l	7440-42-8
D-7	10/24/2018	Boron	0.067	mg/l	7440-42-8
D-7	04/26/2018	Calcium	105	mg/l	7440-70-2
D-7	10/24/2018	Calcium	100	mg/l	7440-70-2
D-7	04/26/2018	Chloride	26.6	mg/l	16887-00-6
D-7	10/24/2018	Chloride	27.5	mg/l	16887-00-6
D-7	04/26/2018	Fluoride	< 0.25	mg/l	16984-48-8

Table 3

Groundwater Analytical Data

Location	Date	Parameter	Result	Units	CAS #
D-7	10/24/2018	Fluoride	< 0.10	mg/l	16984-48-8
D-7	04/26/2018	pH	7.6	pH UNITS	PH
D-7	10/24/2018	pH	7.5	pH UNITS	PH
D-7	04/26/2018	Sulfate as SO4	34.8	mg/l	14808-79-8
D-7	10/24/2018	Sulfate as SO4	32.5	mg/l	14808-79-8
D-7	04/26/2018	Total Dissolved Solids	464	mg/l	TDS
D-7	10/24/2018	Total Dissolved Solids	462	mg/l	TDS
D-8	04/26/2018	Boron	< 0.020	mg/l	7440-42-8
D-8	10/24/2018	Boron	< 0.020	mg/l	7440-42-8
D-8	04/26/2018	Calcium	95.9	mg/l	7440-70-2
D-8	10/24/2018	Calcium	93.7	mg/l	7440-70-2
D-8	04/26/2018	Chloride	30.0	mg/l	16887-00-6
D-8	10/24/2018	Chloride	30.9	mg/l	16887-00-6
D-8	04/26/2018	Fluoride	0.10	mg/l	16984-48-8
D-8	10/24/2018	Fluoride	0.16	mg/l	16984-48-8
D-8	04/26/2018	pH	7.8	pH UNITS	PH
D-8	10/24/2018	pH	7.6	pH UNITS	PH
D-8	04/26/2018	Sulfate as SO4	44.3	mg/l	14808-79-8
D-8	10/24/2018	Sulfate as SO4	39.5	mg/l	14808-79-8
D-8	04/26/2018	Total Dissolved Solids	423	mg/l	TDS
D-8	10/24/2018	Total Dissolved Solids	436	mg/l	TDS
D-9	04/26/2018	Boron	0.020	mg/l	7440-42-8
D-9	10/24/2018	Boron	0.024	mg/l	7440-42-8
D-9	04/26/2018	Calcium	92.7	mg/l	7440-70-2
D-9	10/24/2018	Calcium	107	mg/l	7440-70-2
D-9	04/26/2018	Chloride	39.1	mg/l	16887-00-6
D-9	10/24/2018	Chloride	39.1	mg/l	16887-00-6
D-9	04/26/2018	Fluoride	< 0.10	mg/l	16984-48-8
D-9	10/24/2018	Fluoride	0.12	mg/l	16984-48-8
D-9	04/26/2018	pH	7.7	pH UNITS	PH
D-9	10/24/2018	pH	7.6	pH UNITS	PH
D-9	04/26/2018	Sulfate as SO4	28.0	mg/l	14808-79-8
D-9	10/24/2018	Sulfate as SO4	24.7	mg/l	14808-79-8
D-9	04/26/2018	Total Dissolved Solids	389	mg/l	TDS
D-9	10/24/2018	Total Dissolved Solids	454	mg/l	TDS
U-4D	04/23/2018	Boron	< 0.020	mg/l	7440-42-8
U-4D	10/24/2018	Boron	< 0.020	mg/l	7440-42-8
U-4D	04/23/2018	Calcium	92.2	mg/l	7440-70-2
U-4D	10/24/2018	Calcium	96.4	mg/l	7440-70-2
U-4D	04/23/2018	Chloride	38.6	mg/l	16887-00-6
U-4D	10/24/2018	Chloride	37.5	mg/l	16887-00-6
U-4D	04/23/2018	Fluoride	0.12	mg/l	16984-48-8
U-4D	10/24/2018	Fluoride	0.14	mg/l	16984-48-8
U-4D	04/23/2018	pH	7.7	pH UNITS	PH
U-4D	10/24/2018	pH	7.5	pH UNITS	PH
U-4D	04/23/2018	Sulfate as SO4	29.0	mg/l	14808-79-8
U-4D	10/24/2018	Sulfate as SO4	25.8	mg/l	14808-79-8
U-4D	04/23/2018	Total Dissolved Solids	381	mg/l	TDS
U-4D	10/24/2018	Total Dissolved Solids	417	mg/l	TDS

Table 3

Groundwater Analytical Data

Location	Date	Parameter	Result	Units	CAS #
U-4S	04/23/2018	Boron	0.026	mg/l	7440-42-8
U-4S	10/24/2018	Boron	0.021	mg/l	7440-42-8
U-4S	04/23/2018	Calcium	109	mg/l	7440-70-2
U-4S	10/24/2018	Calcium	96.3	mg/l	7440-70-2
U-4S	04/23/2018	Chloride	49.5	mg/l	16887-00-6
U-4S	10/24/2018	Chloride	49.5	mg/l	16887-00-6
U-4S	04/23/2018	Fluoride	0.080	mg/l	16984-48-8
U-4S	10/24/2018	Fluoride	0.10	mg/l	16984-48-8
U-4S	04/23/2018	pH	7.5	pH UNITS	PH
U-4S	10/24/2018	pH	7.4	pH UNITS	PH
U-4S	04/23/2018	Sulfate as SO4	19.2	mg/l	14808-79-8
U-4S	10/24/2018	Sulfate as SO4	16.3	mg/l	14808-79-8
U-4S	04/23/2018	Total Dissolved Solids	490	mg/l	TDS
U-4S	10/24/2018	Total Dissolved Solids	448	mg/l	TDS

Table 4

Background Threshold Values

Appendix III to Part 257

Parameter	Background Threshold Value (BTV)	Units	CAS #
Boron	0.150	mg/l	7440-42-8
Calcium	127	mg/l	7440-70-2
Chloride	83.5	mg/l	16887-00-6
Fluoride	0.250	mg/l	15984-48-8
pH	Lower 7.1 Upper 8.2	pH UNITS	PH
Sulfate as SO4	67.3	mg/l	14808-79-8
Total Dissolved Solids	683	mg/l	TDS

Appendix A – Field Data Sheets

Groundwater & Environmental Services, INC.
FIELD WORK REQUEST FORM

Project No.: 3501976/42/870 (GW) Date Prepared: April 13, 2018

Site: SKB Environmental
13425 Courthouse Blvd.
Rosemount, MN 55068

Site Contact: Nate Beinemann (SKB) Available Time – 24 hrs
Field Representative: NS (Initial)
Field Work Coordinator: Brian Deering

Tasks:

Field

1. Wells will be gauged at the time of GW monitoring. Water probe should remain in the well at the time of sampling to ensure minimal drawdown.
2. Samples will be collected via low-flow monitoring techniques per GES SOP. Please use the GES low flow monitoring sample sheets.
3. Collect all monitoring well samples in the order on the attached sheet
    a. Collect "Duplicate A" at U5S
    b. Collect "Duplicate B" at D3D
    c. Collect "Field Blank A" at U5S (laboratory grade water – see attached for details)
    d. Collect "Field Blank B" at D3D (laboratory grade water – see attached for details)
    e. 1 Equipment blank will be collected by dipping the water level indicator into the laboratory grade water and filling the glassware (do this one after all samples are collected) Clean water probe before sampling as you would prior to gauging a new well.
4. All COC's must be QA'd by a project manager prior to submitting to a laboratory. Ensure all lab-ware is tightly sealed and properly labeled and that the COC matches the containers for each samples location.

Ensure all field specific data sheets are filled out in full. Use the previous monitoring event sheets as reference if you have questions on volumes, purge times, ect. These should be used as reference only and are not a steadfast rule for purging ect.

Office

1. scan all field notes into project folders
2. S&R form
3. upload pictures from camera

Date Completed: 4/26/18

Technician: NS (Initial)

WELL PURGING RECORD
LOW-FLOW SAMPLING METHOD

Site:	SKB Restaurant		Tubing Diameter (ID):	2	inches
Project Number:	3501576		Depth to Water:	13.69	ft, TOC
Sampling Device:	Dedicated Bladder Pump		Depth to Bottom of Well:	34.36	ft, TOC
Date:	4/23/18		Feet of Water in Well:	20.67	ft
Well ID:	MW-45		Volume of Water in Well:	3.37	gal

Elapsed Time (min)	Depth to Water (ft, TOC)	pH (s.u.)	Specific Conductance (umhos/cm)	Temperature (°F) C	Purge Rate (L/min)
1	13.69	8.40	831	16.0	1
10	13.80	7.39	838	10.1	1
20	13.71	7.36	838	10.1	1
30	13.72	7.35	838	10.1	1

Purge Start Time: 9:40 Purge End Time: 10:20 Total Volume Purged: 7.1 gal

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

Weather Conditions: 54°F, sunny, 0-5 mph S

Comments:

WELL PURGING RECORD
LOW-FLOW SAMPLING METHOD

Site: SKB Rosemount
Project Number: 3501976
Sampling Device: Dedicated Bladder Pump
Date: 4/23/18
Well ID: U-4D

Tubing Diameter (ID): 2 inches
Depth to Water: 20.10 ft, TOC
Depth to Bottom of Well: 89.20 ft, TOC
Feet of Water in Well: 69.1 ft
Volume of Water in Well: 11.26 gal

Elapsed Time (min)	Depth to Water (ft, TOC)	pH (s.u.)	Specific Conductance (µmhos / cm)	Temperature (°F) C	Purge Rate (L/min)
1	20.10	7.61	728	9.3	1
35	20.11	7.61	728	9.3	1
60	20.12	7.62	728	9.3	1
80	20.12	7.63	728	9.3	1

Purge Start Time: 9:40 Purge End Time: 11:25 Total Volume Purged: 11.5 gal

Approximate Purge Rate: 1 L/min Purged/Sampled by: A. Ehlgaer

Weather Conditions: 54°F, Sunny, 0-5 mph S

Comments:

WELL PURGING RECORD
LOW-FLOW SAMPLING METHOD

Site: SLB Reservoir
Project Number: 2501976
Sampling Device: Dedicated Bladder Pump
Date: 4/23/19
Well ID: U-55

Tubing Diameter (ID): 2 inches
Depth to Water: 27.14 ft, TOC
Depth to Bottom of Well: 42.5 ft, TOC
Feet of Water in Well: 15.36 ft
Volume of Water in Well: 2.5 gal

Elapsed Time (min)	Depth to Water (ft, TOC)	pH (s.u.)	Specific Conductance (mhos / cm)	Temperature (°F) °C	Purge Rate (L/min)
1	~~27.17~~	7.69	904	10.5	1
5	~~27.18~~	7.47	906	10.5	1
10	~~27.18~~	7.44	807	10.5	1
15	~~27.18~~	7.44	806	10.5	1

Purge Start Time: 12:20 Purge End Time: 12:40 Total Volume Purged: 2.5 gal

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

Weather Conditions: 56°F, sunny, 0-5 mph W

Comments: Duplicate #1

WELL PURGING RECORD
LOW-FLOW SAMPLING METHOD

Site: SLD Regiment
Project Number: 350/976
Sampling Device: Dedicated Bladder Pump
Date: 4/23/18
Well ID: V-5D

Tubing Diameter (ID): 2 inches
Depth to Water: 29.47 ft, TOC
Depth to Bottom of Well: 101.54 ft, TOC
Feet of Water in Well: 72.07 ft
Volume of Water in Well: 11.75 gal

Elapsed Time (min)	Depth to Water (ft, TOC)	pH (s.u.)	Specific Conductance (µmhos / cm.)	Temperature (°F) °C	Purge Rate (L/min)
1	29.47	7.75	700	10.7	1
20	29.48	7.75	700	10.7	1
40	29.48	7.75	700	10.7	1
60	29.48	7.75	700	10.6	1

Purge Start Time: 12:20 Purge End Time: 13:35 Total Volume Purged: 12.0 gal

Approximate Purge Rate: 1 L/min Purged/Sampled by: K. Scalzetti

Weather Conditions: 62°F, sunny, 0-5 mph W

Comments:

WELL PURGING RECORD
LOW-FLOW SAMPLING METHOD

Site: GVB Redevelopment
Project Number: 350197G
Sampling Device: Dedicated Bladder Pump
Date: 4/24/18
Well ID: D-55Z

Tubing Diameter (ID): 1 inches
Depth to Water: 107.92 ft, TOC
Depth to Bottom of Well: 121.91 ft, TOC
Feet of Water in Well: 13.99 ft
Volume of Water in Well: 2.28 gal

Elapsed Time (min)	Depth to Water (ft, TOC)	pH (s.u.)	Specific Conductance (Units / cm)	Temperature (°F) C	Purge Rate (L/min)
1	107.92	8.43	710	9.4	1
10	107.83	7.34	962	9.9	1
20	107.84	7.33	961	9.9	1
30	107.84	7.33	961	9.9	1

Purge Start Time: 7:40 Purge End Time: 8:20 Total Volume Purged: 2.5 gal

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

Weather Conditions: 45°F, sunny, 0 - 5 mph N

Comments:

WELL PURGING RECORD
LOW-FLOW SAMPLING METHOD

Site: SLB Rockwall
Project Number: 350/976
Sampling Device: Dedicated Bladder Pump
Date: 4/24/18
Well ID: D-5D

Tubing Diameter (ID): 2 inches
Depth to Water: 115.52 ft, TOC
Depth to Bottom of Well: 152.10 ft, TOC
Feet of Water in Well: 36.58 ft
Volume of Water in Well: 5.96 gal

Elapsed Time (min)	Depth to Water (ft, TOC)	pH (s.u.)	Specific Conductance (Units / cm)	Temperature (°F)	Purge Rate (L/min)
1	115.52	7.52	741	9.7	1
10	115.53	7.52	740	9.7	1
20	115.53	7.52	740	9.7	1
30	115.53	7.52	740	9.7	1

Purge Start Time: 7:40 Purge End Time: 8:25 Total Volume Purged: 6.0 gal

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

Weather Conditions: 45°F, sunny, 0 - 5 mph N

Comments:

WELL PURGING RECORD
LOW-FLOW SAMPLING METHOD

Site: SRB Rosemount
Project Number: 3501976
Sampling Device: Dedicated Bladder Pump
Date: 4/24/18
Well ID: D-36

Tubing Diameter (ID): 2 inches
Depth to Water: 108.64 ft, TOC
Depth to Bottom of Well: 135.13 ft, TOC
Feet of Water in Well: 26.49 ft
Volume of Water in Well: 4.32 gal

Elapsed Time (min)	Depth to Water (ft, TOC)	pH (s.u.)	Specific Conductance (Units /cm)	Temperature (°F)	Purge Rate (L/min)
1	108.64	7.98	844	10.7	1
10	108.65	7.41	896	10.2	1
20	108.66	7.40	898	10.8	1
30	108.66	7.41	899	10.2	1

Purge Start Time: 9:30 Purge End Time: 10:05 Total Volume Purged: 5.0 gal

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

Weather Conditions: 57°F, sunny, 0-5 mph NW

Comments:

WELL PURGING RECORD
LOW-FLOW SAMPLING METHOD

Site: SKB Rockwood
Project Number: 350197G
Sampling Device: Dedicated Bladder Pump
Date: 4/24/19
Well ID: D-3D

Tubing Diameter (ID): 2 inches
Depth to Water: 109.56 ft, TOC
Depth to Bottom of Well: 155.50 ft, TOC
Feet of Water in Well: 45.94 ft
Volume of Water in Well: 7.49 gal

Elapsed Time (min)	Depth to Water (ft, TOC)	pH (s.u.)	Specific Conductance (Umhos/cm)	Temperature (°F) °C	Purge Rate (L/min)
1	109.56	7.50	775	10.1	1
10	109.57	7.50	776	10.1	1
20	109.58	7.50	775	10.1	1
30	109.58	7.50	775	10.1	1

Purge Start Time: 9:30 Purge End Time: 10:10 Total Volume Purged: 8.0 gal

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

Weather Conditions: 57°F, sunny, 0 - 5 mph NW

Comments: DUPLICATE B

WELL PURGING RECORD
LOW-FLOW SAMPLING METHOD

Site:	SLB Rossmoor	Tubing Diameter (ID):	2	inches
Project Number:	350197G	Depth to Water:	121.35'	ft, TOC
Sampling Device:	Bladder Pump Advanced	Depth to Bottom of Well:	135.97'	ft, TOC
Date:	4/24/18	Feet of Water in Well:	14.62	ft
Well ID:	D-15	Volume of Water in Well:	2.38	gal

Elapsed Time (min)	Depth to Water (ft, TOC)	pH (s.u.)	Specific Conductance (umhos / cm)	Temperature (°F) °C	Purge Rate (L/min)
1	121.36	8.04	606	9.9	1
5	121.36	7.29	791	11.4	1
10	121.36	7.27	786	11.3	1
15	121.36	7.28	783	11.3	1

Purge Start Time: 10:55 Purge End Time: 11:20 Total Volume Purged: 2.5 gal

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

Weather Conditions: 50°F, mostly cloudy 0 - 5 mph W

Comments:

WELL PURGING RECORD
LOW-FLOW SAMPLING METHOD

Site: SLB Rosemont
Project Number: 3501976
Sampling Device: Dedicated Bladder Pump
Date: 4/24/19
Well ID: D-10

Tubing Diameter (ID): 2 inches
Depth to Water: 118.25 ft, TOC
Depth to Bottom of Well: 164.5 ft, TOC
Feet of Water in Well: 46.25 ft
Volume of Water in Well: 7.54 gal

Elapsed Time (min)	Depth to Water (ft, TOC)	pH (s.u.)	Specific Conductance (umhos/cm)	Temperature (°F)	Purge Rate (L/min)
1	118.25	7.81	709	11.2	1
5	118.26	7.81	709	11.1	1
10	118.27	7.81	709	11.1	1
15	118.27	7.81	709	11.1	1

Purge Start Time: 10:55 Purge End Time: 11:25 Total Volume Purged: 8 gal

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

Weather Conditions: 59°F, mostly cloudy, 0-5 mph N

Comments:

WELL PURGING RECORD
LOW-FLOW SAMPLING METHOD

Site: SLB Peerwood
Project Number: 3501876
Sampling Device: Dedicated Bladder Pump
Date: 4/24/18
Well ID: D-25

Tubing Diameter (ID): 2 inches
Depth to Water: 116.43 ft, TOC
Depth to Bottom of Well: 134.78 ft, TOC
Feet of Water in Well: 18.35 ft
Volume of Water in Well: 2.99 gal

Elapsed Time (min)	Depth to Water (ft, TOC)	pH (s.u.)	Specific Conductance (Units / Cm)	Temperature (°F) °C	Purge Rate (L/min)
1	116.43	8.08	742	10.9	1
10	116.44	7.42	790	10.3	1
20	116.48	7.43	787	10.3	1
30	116.45	7.44	783	10.7	1

Purge Start Time: 12:10 Purge End Time: 12:45 Total Volume Purged: 5.0 gal

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

Weather Conditions: 60°F, mostly cloudy, 5–10 mph N

Comments:

WELL PURGING RECORD
LOW-FLOW SAMPLING METHOD

Site: SKB Redevelopment
Project Number: 3501976
Sampling Device: Dedicated Bladder Pump
Date: 4/24/18
Well ID: D-20

Tubing Diameter (ID): 2 inches
Depth to Water: 115.25 ft, TOC
Depth to Bottom of Well: 163.98 ft, TOC
Feet of Water in Well: 48.73 ft
Volume of Water in Well: 7.94 gal

Elapsed Time (min)	Depth to Water (ft, TOC)	pH (s.u.)	Specific Conductance (µmhos/cm)	Temperature (°F) °C	Purge Rate (L/min)
1	163.98	7.63	711	10.1	1
10	163.99	7.63	711	10.1	1
20	164.00	7.63	711	10.1	1
30	164.00	7.63	711	10.1	1

Purge Start Time: 12:10 Purge End Time: 12:50 Total Volume Purged: 8.0 gal

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

Weather Conditions: 60°F, mostly cloudy, 5–10 mph N

Comments:

WELL PURGING RECORD
LOW-FLOW SAMPLING METHOD

Site: SKB Rosemount
Project Number: 3501976
Sampling Device: Decontaminated Bladder Pump
Date: 4/26/18
Well ID: D-45

Tubing Diameter (ID): 2 inches
Depth to Water: 103.64 ft, TOC
Depth to Bottom of Well: 120.40 ft, TOC
Feet of Water in Well: 16.76 ft
Volume of Water in Well: 2.73 gal

Elapsed Time (min)	Depth to Water (ft, TOC)	pH (s.u.)	Specific Conductance (umhos/cm)	Temperature (°F) °C	Purge Rate (L/min)
1	103.64	8.28	694	10.7	1
5	103.65	7.55	762	10.9	1
10	103.66	7.54	762	10.9	1
15	103.66	7.54	762	10.9	1
			7		

Purge Start Time: 7:40 Purge End Time: 8:00 Total Volume Purged: 3.0 gal

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

Weather Conditions: 40°F, mostly sunny, 0—5 mph SW

Comments:

WELL PURGING RECORD
LOW-FLOW SAMPLING METHOD

Site: SKB Redmond
Project Number: 3501976
Sampling Device: Peristaltic Bladder Pump
Date: 4/2/18
Well ID: D-4D

Tubing Diameter (ID): 2 inches
Depth to Water: 103.81 ft, TOC
Depth to Bottom of Well: 138.71 ft, TOC
Feet of Water in Well: 34.9 ft
Volume of Water in Well: 5.69 gal

Elapsed Time (min)	Depth to Water (ft, TOC)	pH (s.u.)	Specific Conductance (umhos / cm)	Temperature (°F) °C	Purge Rate (L/min)
1	103.81	7.61	745	10.7	1
5	103.82	7.61	744	10.7	1
10	103.82	7.61	745	10.7	1
15	103.82	7.61	743	10.7	1

Purge Start Time: 7:40 Purge End Time: 9:05 Total Volume Purged: 6.0 gal

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

Weather Conditions: 40°F, mostly sunny, 0 – 5 mph SW

Comments:

WELL PURGING RECORD
LOW-FLOW SAMPLING METHOD

Site: SLB Rockwood
Project Number: 350197.76
Sampling Device: Grundfos Pump
Date: 4/2/18
Well ID: D-7

Tubing Diameter (ID): 2 inches
Depth to Water: 102.67 ft, TOC
Depth to Bottom of Well: 107.5 ft, TOC
Feet of Water in Well: 4.83 ft
Volume of Water in Well: 0.79 gal

Elapsed Time (min)	Depth to Water (ft, TOC)	pH (s.u.)	Specific Conductance (µmhos/cm)	Temperature (°F) °C	Purge Rate (L/min)
1	102.67	7.62	913	10.0	1
5	103.12	7.62	913	9.9	1
10	104.56	7.62	913	9.9	1
15	105.78	7.62	913	9.9	1

Purge Start Time: 8:45 Purge End Time: 9:05 Total Volume Purged: 1.0 gal

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

Weather Conditions: 42 F, mostly sunny, 5-10 mph SW

Comments:

WELL PURGING RECORD
LOW-FLOW SAMPLING METHOD

Site: SKB Redmond
Project Number: 7501976
Sampling Device: Dedicated Bladder Pump
Date: 4/2/18
Well ID: D-8

Tubing Diameter (ID): 2 inches
Depth to Water: 107.51 ft, TOC
Depth to Bottom of Well: 130.1 ft, TOC
Feet of Water in Well: 22.59 ft
Volume of Water in Well: 3.68 gal

Elapsed Time (min)	Depth to Water (ft, TOC)	pH (s.u.)	Specific Conductance (Units / Um)	Temperature (°K) °C	Purge Rate (L/min)
1	107.51	8.26	637	10.0	1
15	107.52	7.86	742	9.8	1
30	107.54	7.78	709	9.8	1
45	107.54	7.81	714	9.8	1

Purge Start Time: 9:45 Purge End Time: 10:50 Total Volume Purged: 4.0 gal

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

Weather Conditions: 53°F, partly cloudy, 5-10 mph W

Comments:

WELL PURGING RECORD
LOW-FLOW SAMPLING METHOD

Site: SKB Redwood
Project Number: 350/976
Sampling Device: Dedicated Bladder Pump
Date: 4/2/19
Well ID: D-9

Tubing Diameter (ID): 2 inches
Depth to Water: 97.06' ft, TOC
Depth to Bottom of Well: 118.5' ft, TOC
Feet of Water in Well: 21.44 ft
Volume of Water in Well: 3.49 gal

Elapsed Time (min)	Depth to Water (ft, TOC)	pH (s.u.)	Specific Conductance (umhos / cm)	Temperature (°F) °C	Purge Rate (L/min)
1	97.06	8.33	625	8.8	1
15	97.07	7.43	667	10.2	1
30	97.09	7.69	704	10.2	1
45	97.07	7.71	694	10.2	1

Purge Start Time: 11:05 Purge End Time: 12:00 Total Volume Purged: 3.5 gal

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

Weather Conditions: 53°F, partly cloudy, 5 ~ 10 mph W

Comments:

Groundwater & Environmental Services, INC.
FIELD WORK REQUEST FORM

Project No.: 3501976/43/870 (GW) Date Prepared: October 16, 2018

Site: SKB Environmental
13425 Courthouse Blvd.
Rosemount, MN 55068

Site Contact: Nate Beinemann (SKB) Available Time – 24 hrs
Field Representative: MJ (Initial)
Field Work Coordinator: Brian Deering

Tasks:

Field

1. Wells will be gauged at the time of GW monitoring. Water probe should remain in the well at the time of sampling to ensure minimal drawdown.
2. Samples will be collected via low-flow monitoring techniques per GES SOP. Please use the GES low flow monitoring sample sheets.
3. Collect all monitoring well samples in the order on the attached sheet
    a. Collect "Duplicate A" at U5S
    b. Collect "Duplicate B" at D3D
    c. Collect "Field Blank A" at U5S (laboratory grade water – see attached for details)
    d. Collect "Field Blank B" at D35 (laboratory grade water – see attached for details)
    e. 1 Equipment blank will be collected by dipping the water level indicator into the laboratory grade water and filling the glassware (do this one after all samples are collected) Clean water probe before sampling as you would prior to gauging a new well.
4. All COC's must be QA'd by a project manager prior to submitting to a laboratory. Ensure all lab-ware is tightly sealed and properly labeled and that the COC matches the containers for each samples location.

Ensure all field specific data sheets are filled out in full. Use the previous monitoring event sheets as reference if you have questions on volumes, purge times, ect. These should be used as reference only and are not a steadfast rule for purging ect.

Office

1. scan all field notes into project folders
2. S&R form
3. upload pictures from camera

Date Completed: 10/24/18

Technician: MJ (Initial)

WELL PURGING RECORD
LOW-FLOW SAMPLING METHOD

Site: SKB Rosemont
Project Number: 30199 76
Sampling Device: Bladder Pump
Date: 10/22/19
Well ID: U-45

Tubing Diameter (ID): 2 inches
Depth to Water: 13.21 ft, TOC
Depth to Bottom of Well: 34.36 ft, TOC
Feet of Water in Well: 21.15 ft
Volume of Water in Well: 3.45 gal

Elapsed Time (min)	Depth to Water (ft, TOC)	pH (s.u.)	Specific Conductance (μ l/mos)	Temperature (°F) °C	Purge Rate (L/min)
1	13.21	7.52	861	12.72	1
5	13.23	7.06	851	10.92	1
10	13.23	7.01	852	10.52	1
18	13.23	7.07	853	10.63	1

Purge Start Time: 12:50 Purge End Time: 13:05 Total Volume Purged: 10.5 gal

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

Weather Conditions: 60°F, Sunny, 10 - 15 mph W

Comments:

WELL PURGING RECORD
LOW-FLOW SAMPLING METHOD

Site: SLB Kingsland
Project Number: 3501976
Sampling Device: Bladder Pump
Date: 10/22/18
Well ID: D-4D

Tubing Diameter (ID): 2 inches
Depth to Water: 19.98 ft, TOC
Depth to Bottom of Well: 89.2 ft, TOC
Feet of Water in Well: 69.22 ft
Volume of Water in Well: 11.28 gal

Elapsed Time (min)	Depth to Water (ft, TOC)	pH (s.u.)	Specific Conductance (µS/cm)	Temperature (°F)	Purge Rate (L/min)
1	19.98	7.32	819	9.72	1
20	19.95	7.29	819	9.68	1
35	19.96	7.33	820	9.65	1
50	19.95	7.33	819	9.65	1
80	19.95	7.33	819	9.65	1

Purge Start Time: 12:50 Purge End Time: 14:00 Total Volume Purged: 30.0 gal
Approximate Purge Rate: 1 L/min Purged/Sampled by: N.S
Weather Conditions: 60°F, sunny, 15 - 20 mph W
Comments:

WELL PURGING RECORD
LOW-FLOW SAMPLING METHOD

Site: SLB Regional
Project Number: 358476
Sampling Device: Dedicated Bladder Pump
Date: 10/22/19
Well ID: MW-55

Tubing Diameter (ID): 2 inches
Depth to Water: 26.49 ft, TOC
Depth to Bottom of Well: 42.5 ft, TOC
Feet of Water in Well: 16.01 ft
Volume of Water in Well: 2.61 gal

Elapsed Time (min)	Depth to Water (ft, TOC)	pH (s.u.)	Specific Conductance (µS/cm)	Temperature (°F) °C	Purge Rate (L/min)
1	26.49	7.46	816	11.90	1
5	26.50	7.15	860	10.79	1
10	26.52	7.14	890	10.73	1
15	26.52	7.15	880	10.73	1

Purge Start Time: 15:10 Purge End Time: 15:25 Total Volume Purged: 8.0 gal

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

Weather Conditions: 56 °F, sunny, 15-20 mph W

Comments:

WELL PURGING RECORD
LOW-FLOW SAMPLING METHOD

Site: SKB Rosemont
Project Number: 350197
Sampling Device: Bladder Pump
Date: 10/22/19
Well ID: U-5D

Tubing Diameter (ID): 2 inches
Depth to Water: 29.34 ft, TOC
Depth to Bottom of Well: 101.54 ft, TOC
Feet of Water in Well: 72.2 ft
Volume of Water in Well: 11.78 gal

Elapsed Time (min)	Depth to Water (ft, TOC)	pH (s.u.)	Specific Conductance (µ mhos)	Temperature (°F) °C	Purge Rate (L/min)
1	29.34	7.46	772	10.34	1
10	29.35	7.45	773	10.22	1
20	29.35	7.46	774	10.18	1
30	29.35	7.45	777	10.19	1

Purge Start Time: 15:10 Purge End Time: 15:35 Total Volume Purged: 36.0 gal

Approximate Purge Rate: 1 L/min Purged/Sampled by: MS

Weather Conditions: 55°F, cloudy, 15-20 mph W

Comments:

WELL PURGING RECORD
LOW-FLOW SAMPLING METHOD

Site: SKB Rockmart
Project Number: 3501976
Sampling Device: Dedicated Bladder Pump
Date: 10/23/18
Well ID: D-552

Tubing Diameter (ID): 2 inches
Depth to Water: 107.60 ft, TOC
Depth to Bottom of Well: 121.81 ft, TOC
Feet of Water in Well: 14.21 ft
Volume of Water in Well: 2.32 gal

Elapsed Time (min)	Depth to Water (ft, TOC)	pH (s.u.)	Specific Conductance (μ mhos)	Temperature (°F) °C	Purge Rate (L/min)
1	107.60	7.08	1,056	9.60	1
5	107.61	7.07	1,050	9.98	1
10	107.62	7.06	1,050	10.06	1
15	107.62	7.07	1,050	10.07	1

Purge Start Time: 9:00 Purge End Time: 9:15 Total Volume Purged: 7.0 gal

Approximate Purge Rate: 1 L/min Purged/Sampled by: N-S

Weather Conditions: 34°F, partly cloudy, NW 0-5 mph

Comments:

WELL PURGING RECORD
LOW-FLOW SAMPLING METHOD

Site: SKB Rosemount
Project Number: 3501576
Sampling Device: Bladder Pump
Date: 10/23/12
Well ID: P-5D

Tubing Diameter (ID): 2 inches
Depth to Water: 113.39 ft, TOC
Depth to Bottom of Well: 157.1 ft, TOC
Feet of Water in Well: 43.71 ft
Volume of Water in Well: 7.12 gal

Elapsed Time (min)	Depth to Water (ft, TOC)	pH (s.u.)	Specific Conductance (µ mhos)	Temperature (°F) °C	Purge Rate (L/min)
1	113.39	6.79	932	9.77	1
15	113.41	7.22	935	9.83	1
30	113.41	6.93	526	9.83	1
45	113.41	6.97	831	9.99	1

Purge Start Time: 9:00 Purge End Time: 9:45 Total Volume Purged: 21.5 gal

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

Weather Conditions: °F, Mst/c Cloudy, 0 – 5 mph NW

Comments:

WELL PURGING RECORD
LOW-FLOW SAMPLING METHOD

Site: SKB Rosemount
Project Number: 3501976
Sampling Device: Bladder Pump
Date: 10/23/19
Well ID: D-35

Tubing Diameter (ID): 2 inches
Depth to Water: 108.55' ft, TOC
Depth to Bottom of Well: 135.13' ft, TOC
Feet of Water in Well: 26.58 ft
Volume of Water in Well: 4.33 gal

Elapsed Time (min)	Depth to Water (ft, TOC)	pH (s.u.)	Specific Conductance (µ / mhos)	Temperature (°F) °C	Purge Rate (L/min)
1	108.55	7.60	914	11.62	1
10	108.56	7.16	951	10.53	1
20	108.57	7.18	953	10.54	1
30	108.57	7.18	954	10.56	1

Purge Start Time: 10:10 Purge End Time: 10:40 Total Volume Purged: 13.0 gal
Approximate Purge Rate: 1 L/min Purged/Sampled by: M.S
Weather Conditions: 41°F, mostly cloudy, 0-5 mph N
Comments:

WELL PURGING RECORD
LOW-FLOW SAMPLING METHOD

Site: SKB Rosemount
Project Number: 3501976
Sampling Device: Bladder Pump
Date: 10/23/18
Well ID: D-3V

Tubing Diameter (ID): 2 inches
Depth to Water: 109.46 ft, TOC
Depth to Bottom of Well: 155.50 ft, TOC
Feet of Water in Well: 46.04 ft
Volume of Water in Well: 7.5 gal

Elapsed Time (min)	Depth to Water (ft, TOC)	pH (s.u.)	Specific Conductance (µ mhos)	Temperature (°F) °C	Purge Rate (L/min)
1	109.46	7.25	874	10.31	1
30	109.48	7.24	875	10.29	1
60	109.48	7.25	875	10.30	1
90	109.48	7.23	870	10.32	1

Purge Start Time: 10:10 Purge End Time: 11:40 Total Volume Purged: 22.5 gal

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

Weather Conditions: 41°F, mostly cloudy, 0 – 5 mph N

Comments:

WELL PURGING RECORD
LOW-FLOW SAMPLING METHOD

Site: SLB Rosemont
Project Number: 3501976
Sampling Device: Bladder Pump
Date: 10/23/18
Well ID: D-15

Tubing Diameter (ID): 2 inches
Depth to Water: 121.15' ft, TOC
Depth to Bottom of Well: 135.97 ft, TOC
Feet of Water in Well: 14.82 ft
Volume of Water in Well: 2.42 gal

Elapsed Time (min)	Depth to Water (ft, TOC)	pH (s.u.)	Specific Conductance (µ / mhos)	Temperature (°K) °C	Purge Rate (L/min)
1	121.15	7.54	729	11.29	1
5	121.16	6.99	900	11.39	1
10	121.17	7.00	897	11.59	1
15	121.17	6.99	895	11.58	1

Purge Start Time: 12:10 Purge End Time: 12:30 Total Volume Purged: 7.5 gal

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

Weather Conditions: 46 °F, partly cloudy, 0-5 mph NW

Comments:

WELL PURGING RECORD
LOW-FLOW SAMPLING METHOD

Site: SKB Roseman
Project Number: 350/976
Sampling Device: Bladder Pump
Date: 10/23/18
Well ID: D-1D

Tubing Diameter (ID): 2 inches
Depth to Water: 118.00 ft, TOC
Depth to Bottom of Well: 164.5 ft, TOC
Feet of Water in Well: 46.5 ft
Volume of Water in Well: 7.6 gal

Elapsed Time (min)	Depth to Water (ft, TOC)	pH (s.u.)	Specific Conductance (uS/cm)	Temperature (°F) °C	Purge Rate (L/min)
1	118.00	7.60	784	11.43	1
30	117.98	7.54	796	11.54	1
60	117.98	7.55	783	11.61	1
90	117.98	7.55	783	11.58	1

Purge Start Time: 12:20 Purge End Time: 13:50 Total Volume Purged: 83.0 gal
Approximate Purge Rate: 1 L/min. Purged/Sampled by: N.S
Weather Conditions: 48°F, partly cloudy, NW 0 – 5 mph
Comments:

WELL PURGING RECORD
LOW-FLOW SAMPLING METHOD

Site:	SKB Rosemont	Tubing Diameter (ID):	2	inches
Project Number:	350/976	Depth to Water:	116.15	ft, TOC
Sampling Device:	Bladder Pump	Depth to Bottom of Well:	134.78	ft, TOC
Date:	10/23/19	Feet of Water in Well:	18.63	ft
Well ID:	D-25	Volume of Water in Well:	3.03	gal

Elapsed Time (min)	Depth to Water (ft, TOC)	pH (s.u.)	Specific Conductance (µ mhos)	Temperature (°F) °C	Purge Rate (L/min)
1	116.15	7.52	842	11.97	1
10	116.17	7.19	872	11.06	1
20	116.17	7.16	873	10.78	1
30	116.17	7.15	875	10.75	1

Purge Start Time: 14:00 Purge End Time: 14:30 Total Volume Purged: 9.5 gal

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

Weather Conditions: 46°F, mostly sunny, NW 0—5 mph

Comments:

WELL PURGING RECORD
LOW-FLOW SAMPLING METHOD

Site:	SKB Rosemead	Tubing Diameter (ID):	2	inches
Project Number:	350197.6	Depth to Water:	115.09	ft, TOC
Sampling Device:	Bladder Pump	Depth to Bottom of Well:	163.98	ft, TOC
Date:	10/23/18	Feet of Water in Well:	48.89	ft
Well ID:	D-2D	Volume of Water in Well:	7.97	gal

Elapsed Time (min)	Depth to Water (ft, TOC)	pH (s.u.)	Specific Conductance (µ mhos)	Temperature (°F) C	Purge Rate (L/min)
1	115.09	7.37	799	10.39	1
30	115.11	7.37	799	10.40	1
60	115.11	7.38	799	10.39	1
90	115.11	7.38	799	10.40	1

Purge Start Time: 14:00 Purge End Time: 15:30 Total Volume Purged: 240 gal

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

Weather Conditions: 46 °F, mostly sunny, NW - 5 mph

Comments:

WELL PURGING RECORD
LOW-FLOW SAMPLING METHOD

Site: SLB Rockwood
Project Number: 3501976
Sampling Device: Bladder Pump
Date: 10/28/19
Well ID: D-45

Tubing Diameter (ID): 2 inches
Depth to Water: 103.51 ft, TOC
Depth to Bottom of Well: 120.4 ft, TOC
Feet of Water in Well: 16.89 ft
Volume of Water in Well: 7.75 gal

Elapsed Time (min)	Depth to Water (ft, TOC)	pH (s.u.)	Specific Conductance (µ mhos)	Temperature (°F) °C	Purge Rate (L/min)
1	103.51	~~11.49~~ 7.45	929	11.19	1
5	103.53	~~11.04~~ 7.29	881	11.04	1
10	103.53	~~11.10~~ 7.29	860	11.10	1
15	103.53	~~11.12~~ 7.30	959	11.12	1

Purge Start Time: 8:40 Purge End Time: 9:55 Total Volume Purged: 8.5 gal
Approximate Purge Rate: 1 L/min Purged/Sampled by: M. S.
Weather Conditions: 33 °F, mostly sunny, calm — mph
Comments:

WELL PURGING RECORD
LOW-FLOW SAMPLING METHOD

Site: SKB Rosemont
Project Number: 3501476
Sampling Device: Bladder Pump
Date: 10/24/18
Well ID: D-40

Tubing Diameter (ID): 2 inches
Depth to Water: 103.65 ft, TOC
Depth to Bottom of Well: 139.7 ft, TOC
Feet of Water in Well: 36.05 ft
Volume of Water in Well: 5.88 gal

Elapsed Time (min)	Depth to Water (ft, TOC)	pH (s.u.)	Specific Conductance (V / mhos)	Temperature (°F) °C	Purge Rate (L/min)
1	103.65	7.40	944	10.81	1
15	103.66	7.41	940	10.22	1
30	103.67	7.40	941	10.21	1
45	103.67	7.40	941	10.21	1

Purge Start Time: 9:40 Purge End Time: 9:35 Total Volume Purged: 18.0 gal

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

Weather Conditions: 33°F, mostly sunny, calm — mph

Comments:

WELL PURGING RECORD
LOW-FLOW SAMPLING METHOD

Site: SLB Rosemont
Project Number: 3501976
Sampling Device: Bladder Pump
Date: 10/24/18
Well ID: D-7

Tubing Diameter (ID): 2 inches
Depth to Water: 102.55 ft, TOC
Depth to Bottom of Well: 107.40 ft, TOC
Feet of Water in Well: 4.85 ft
Volume of Water in Well: 0.79 gal

Elapsed Time (min)	Depth to Water (ft, TOC)	pH (s.u.)	Specific Conductance (µ mhos)	Temperature (°F) °C	Purge Rate (L/min)
1	102.55	7.49	942	9.58	1
5	103.71	7.47	941	9.61	1
10	104.87	7.45	940	9.66	1
15	105.65	7.44	939	9.71	1

Purge Start Time: 7:30 Purge End Time: 7:45 Total Volume Purged: 2.5 gal

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

Weather Conditions: 31°F, mostly sunny, calm mph

Comments:

WELL PURGING RECORD
LOW-FLOW SAMPLING METHOD

Site: GKB Rossmoor
Project Number: 3501976
Sampling Device: Bladder Pump
Date: 10/24/16
Well ID: D-8

Tubing Diameter (ID): 2 inches
Depth to Water: 107.39 ft, TOC
Depth to Bottom of Well: 130.1 ft, TOC
Feet of Water in Well: 22.71 ft
Volume of Water in Well: 3.7 gal

Elapsed Time (min)	Depth to Water (ft, TOC)	pH (s.u.)	Specific Conductance (µ mhos)	Temperature (°F) °C	Purge Rate (L/min)
1	107.39	7.73	788	10.66	1
10	107.41	7.57	840	10.03	1
20	107.41	7.57	814	10.05	1
30	107.41	7.55	825	10.08	1

Purge Start Time: 9:45 Purge End Time: 10:15 Total Volume Purged: 11.5 gal

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

Weather Conditions: 40°F, mostly sunny, SE 0 – 5 mph

Comments:

WELL PURGING RECORD
LOW-FLOW SAMPLING METHOD

Site: SKB Rosemont
Project Number: 36019 76
Sampling Device: Bladder Pump
Date: 10/24/18
Well ID: D-9

Tubing Diameter (ID): 2 inches
Depth to Water: 97.27 ft, TOC
Depth to Bottom of Well: 118.5 ft, TOC
Feet of Water in Well: 21.23 ft
Volume of Water in Well: 3.46 gal

Elapsed Time (min)	Depth to Water (ft, TOC)	pH (s.u.)	Specific Conductance (V /mhos)	Temperature (°F) °C	Purge Rate (L/min)
1	97.27	7.58	641	10.38	1
10	97.29	7.35	802	10.84	1
20	97.29	7.46	830	10.87	1
30	97.29	7.47	833	10.93	1

Purge Start Time: 11:05 Purge End Time: 11:35 Total Volume Purged: 10.5 gal

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

Weather Conditions: 47 °F, partly cloudy, 0-5 mph S

Comments:

Appendix B – Laboratory Analytical Reports

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: 480-135006-1
Client Project/Site: SKB Rosemount - CCR Groundwater
Sampling Event: CCR Groundwater
Revision: 1

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

Attn: Nathaniel Beinemann

Authorized for release by:
1/30/2019 1:06:28 PM

Ryan VanDette, Project Manager II
(716)504-9830
ryan.vandette@testamericainc.com

Table of Contents

Definitions/Glossary

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

TestAmerica Job ID: 480-135006-1

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.
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.
¤	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)

Job ID: 480-135006-1

Laboratory: TestAmerica Buffalo

Narrative

Job Narrative
480-135006-1

Comments
This report has been revised to report only the Appendix III metals.

No additional comments.

Receipt
The samples were received on 4/27/2018 9:40 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 4 coolers at receipt time were 2.4º C, 3.0º C, 3.6º C and 3.8º C.

HPLC/IC
Method(s) 300.0: The following samples were diluted due to the nature of the sample matrix based on historical results: D-1D (480-135006-1), D-1S (480-135006-2), D-2D (480-135006-3), D-2S (480-135006-4), D-3D (480-135006-5), D-3S (480-135006-6), D-4D (480-135006-7), D-4S (480-135006-8), D-5D (480-135006-9), D-5S2 (480-135006-10) and D-7 (480-135006-11). Elevated reporting limits (RLs) are provided.

Method(s) 300.0: The following sample was diluted due to the nature of the sample matrix based on historical results: D-9 (480-135006-13). Elevated reporting limits (RLs) are provided.

Method(s) 300.0: The following samples were reported with elevated reporting limits for all analytes: DUPLICATE A (480-135006-20) and DUPLICATE B (480-135006-21). The sample was analyzed at a dilution based on screening results.

Method(s) 300.0: The following sample was diluted due to the nature of the sample matrix based on historical results: D-3D (480-135006-5). Elevated reporting limits (RLs) are provided.

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

Metals
Method(s) 6010D: The following sample was diluted due to the presence of Total Silicon which interferes with Lead: D-7 (480-135006-11). 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: D-1D (480-135006-1), D-1S (480-135006-2), D-2D (480-135006-3), D-2S (480-135006-4), D-3D (480-135006-5), D-3S (480-135006-6), D-4D (480-135006-7), D-4S (480-135006-8), D-5D (480-135006-9), D-5S2 (480-135006-10), D-7 (480-135006-11), D-8 (480-135006-12), D-9 (480-135006-13), U-4D (480-135006-14), U-4S (480-135006-15), U-5D (480-135006-16), U-5S (480-135006-17), EQUIPMENT BLANK (480-135006-18), FIELD BLANK A (480-135006-19), DUPLICATE A (480-135006-20) and DUPLICATE B (480-135006-21).

Method(s) SM 2540C: The following sample was analyzed outside of analytical holding time due to laboratory error. D-5D (480-135006-9).

Method(s) SM 2540C: The following samples were analyzed outside of analytical holding time due to system outages. D-1D (480-135006-1), D-1S (480-135006-2), D-2D (480-135006-3), D-2S (480-135006-4), D-3D (480-135006-5), D-3S (480-135006-6) and D-5S2 (480-135006-10)

Method(s) SM 2540C: The following samples were analyzed outside of analytical holding time due to analyst oversight. DUPLICATE B (480-135006-21) and (480-135006-A-21 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 Rosemount - CCR Groundwater

TestAmerica Job ID: 480-135006-1

Client Sample ID: D-1D — Lab Sample ID: 480-135006-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	91.5		0.50		mg/L	1		6010D	Total/NA
Chloride	36.9		1.0		mg/L	2		300.0	Total/NA
Sulfate	30.4		4.0		mg/L	2		300.0	Total/NA
Total Dissolved Solids	387	H	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
Temperature	18.5	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

Client Sample ID: D-1S — Lab Sample ID: 480-135006-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.038		0.020		mg/L	1		6010D	Total/NA
Calcium	115		0.50		mg/L	1		6010D	Total/NA
Chloride	34.3		1.0		mg/L	2		300.0	Total/NA
Sulfate	28.5		4.0		mg/L	2		300.0	Total/NA
Total Dissolved Solids	438	H	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	18.3	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

Client Sample ID: D-2D — Lab Sample ID: 480-135006-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	94.7		0.50		mg/L	1		6010D	Total/NA
Chloride	33.0		1.0		mg/L	2		300.0	Total/NA
Sulfate	24.3		4.0		mg/L	2		300.0	Total/NA
Total Dissolved Solids	385	H	10.0		mg/L	1		SM 2540C	Total/NA
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	19.4	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

Client Sample ID: D-2S — Lab Sample ID: 480-135006-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.021		0.020		mg/L	1		6010D	Total/NA
Calcium	106		0.50		mg/L	1		6010D	Total/NA
Chloride	50.1		1.0		mg/L	2		300.0	Total/NA
Sulfate	28.8		4.0		mg/L	2		300.0	Total/NA
Total Dissolved Solids	433	H	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	19.2	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

Client Sample ID: D-3D — Lab Sample ID: 480-135006-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.027		0.020		mg/L	1		6010D	Total/NA
Calcium	104		0.50		mg/L	1		6010D	Total/NA
Chloride	41.4		1.0		mg/L	2		300.0	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: D-3D (Continued) — Lab Sample ID: 480-135006-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Sulfate	33.5		4.0		mg/L	2		300.0	Total/NA
Total Dissolved Solids	432	H	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	18.8	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

Client Sample ID: D-3S — Lab Sample ID: 480-135006-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.15		0.020		mg/L	1		6010D	Total/NA
Calcium	117		0.50		mg/L	1		6010D	Total/NA
Chloride	80.8		1.0		mg/L	2		300.0	Total/NA
Sulfate	45.0		4.0		mg/L	2		300.0	Total/NA
Total Dissolved Solids	517	H	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	18.6	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

Client Sample ID: D-4D — Lab Sample ID: 480-135006-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	94.0		0.50		mg/L	1		6010D	Total/NA
Chloride	48.8		1.0		mg/L	2		300.0	Total/NA
Sulfate	26.5		4.0		mg/L	2		300.0	Total/NA
Total Dissolved Solids	413		10.0		mg/L	1		SM 2540C	Total/NA

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	18.6	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

Client Sample ID: D-4S — Lab Sample ID: 480-135006-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	99.6		0.50		mg/L	1		6010D	Total/NA
Chloride	49.1		1.0		mg/L	2		300.0	Total/NA
Sulfate	27.4		4.0		mg/L	2		300.0	Total/NA
Total Dissolved Solids	436		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	18.8	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

Client Sample ID: D-5D — Lab Sample ID: 480-135006-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	101		0.50		mg/L	1		6010D	Total/NA
Chloride	24.4		1.0		mg/L	2		300.0	Total/NA
Sulfate	32.1		4.0		mg/L	2		300.0	Total/NA
Total Dissolved Solids	413	H	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

This Detection Summary does not include radiochemical test results.

Client Sample ID: D-5D (Continued) — Lab Sample ID: 480-135006-9

Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
Temperature	19.1	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

Client Sample ID: D-5S2 — Lab Sample ID: 480-135006-10

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.065		0.020		mg/L	1		6010D	Total/NA
Calcium	127		0.50		mg/L	1		6010D	Total/NA
Chloride	69.0		1.0		mg/L	2		300.0	Total/NA
Sulfate	56.6		4.0		mg/L	2		300.0	Total/NA
Total Dissolved Solids	547	H	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	19.6	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

Client Sample ID: D-7 — Lab Sample ID: 480-135006-11

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.055		0.020		mg/L	1		6010D	Total/NA
Calcium	105		0.50		mg/L	1		6010D	Total/NA
Chloride	26.6		2.5		mg/L	5		300.0	Total/NA
Sulfate	34.8		10.0		mg/L	5		300.0	Total/NA
Total Dissolved Solids	464		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	19.7	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

Client Sample ID: D-8 — Lab Sample ID: 480-135006-12

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	95.9		0.50		mg/L	1		6010D	Total/NA
Chloride	30.0		0.50		mg/L	1		300.0	Total/NA
Fluoride	0.10		0.050		mg/L	1		300.0	Total/NA
Sulfate	44.3		2.0		mg/L	1		300.0	Total/NA
Total Dissolved Solids	423		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
Temperature	19.4	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

Client Sample ID: D-9 — Lab Sample ID: 480-135006-13

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.020		0.020		mg/L	1		6010D	Total/NA
Calcium	92.7		0.50		mg/L	1		6010D	Total/NA
Chloride	39.1		1.0		mg/L	2		300.0	Total/NA
Sulfate	28.0		4.0		mg/L	2		300.0	Total/NA
Total Dissolved Solids	389		10.0		mg/L	1		SM 2540C	Total/NA

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	19.2	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

This Detection Summary does not include radiochemical test results.

Detection Summary

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

TestAmerica Job ID: 480-135006-1

Client Sample ID: U-4D — Lab Sample ID: 480-135006-14

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	92.2		0.50		mg/L	1		6010D	Total/NA
Chloride	38.6		0.50		mg/L	1		300.0	Total/NA
Fluoride	0.12		0.050		mg/L	1		300.0	Total/NA
Sulfate	29.0		2.0		mg/L	1		300.0	Total/NA
Total Dissolved Solids	381		10.0		mg/L	1		SM 2540C	Total/NA
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	19.2	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

Client Sample ID: U-4S — Lab Sample ID: 480-135006-15

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.026		0.020		mg/L	1		6010D	Total/NA
Calcium	109		0.50		mg/L	1		6010D	Total/NA
Chloride	49.5		0.50		mg/L	1		300.0	Total/NA
Fluoride	0.080		0.050		mg/L	1		300.0	Total/NA
Sulfate	19.2		2.0		mg/L	1		300.0	Total/NA
Total Dissolved Solids	490		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	19.5	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

Client Sample ID: U-5D — Lab Sample ID: 480-135006-16

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	90.5		0.50		mg/L	1		6010D	Total/NA
Chloride	28.8		0.50		mg/L	1		300.0	Total/NA
Fluoride	0.11		0.050		mg/L	1		300.0	Total/NA
Sulfate	31.2		2.0		mg/L	1		300.0	Total/NA
Total Dissolved Solids	397		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	19.9	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

Client Sample ID: U-5S — Lab Sample ID: 480-135006-17

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.032		0.020		mg/L	1		6010D	Total/NA
Calcium	99.6		0.50		mg/L	1		6010D	Total/NA
Chloride	49.9		0.50		mg/L	1		300.0	Total/NA
Fluoride	0.11		0.050		mg/L	1		300.0	Total/NA
Sulfate	31.2		2.0		mg/L	1		300.0	Total/NA
Total Dissolved Solids	470		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	20.1	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

Client Sample ID: EQUIPMENT BLANK — Lab Sample ID: 480-135006-18

This Detection Summary does not include radiochemical test results.

Detection Summary

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

TestAmerica Job ID: 480-135006-1

Client Sample ID: EQUIPMENT BLANK (Continued) — Lab Sample ID: 480-135006-18

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	19.7	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

Client Sample ID: FIELD BLANK A — Lab Sample ID: 480-135006-19

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	19.5	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

Client Sample ID: DUPLICATE A — Lab Sample ID: 480-135006-20

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.033		0.020		mg/L	1		6010D	Total/NA
Calcium	103		0.50		mg/L	1		6010D	Total/NA
Chloride	49.7		1.0		mg/L	2		300.0	Total/NA
Sulfate	30.5		4.0		mg/L	2		300.0	Total/NA
Total Dissolved Solids	450		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	19.5	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

Client Sample ID: DUPLICATE B — Lab Sample ID: 480-135006-21

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.035		0.020		mg/L	1		6010D	Total/NA
Calcium	110		0.50		mg/L	1		6010D	Total/NA
Chloride	41.0		1.0		mg/L	2		300.0	Total/NA
Sulfate	34.7		4.0		mg/L	2		300.0	Total/NA
Total Dissolved Solids	453	H	10.0		mg/L	1		SM 2540C	Total/NA

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	19.6	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: D-1D

Date Collected: 04/24/18 11:25
Date Received: 04/27/18 09:40

Lab Sample ID: 480-135006-1

Matrix: Water

Method: 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		0.020		mg/L		05/03/18 08:45	05/07/18 20:17	1
Calcium	**91.5**		0.50		mg/L		05/03/18 08:45	05/07/18 20:17	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**36.9**		1.0		mg/L			05/03/18 01:54	2
Fluoride	ND		0.10		mg/L			05/03/18 01:54	2
Sulfate	**30.4**		4.0		mg/L			05/03/18 01:54	2
Total Dissolved Solids	**387**	**H**	10.0		mg/L			05/11/18 19:39	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	**7.8**	**HF**	0.1		SU			05/03/18 14:30	1
Temperature	**18.5**	**HF**	0.001		Degrees C			05/03/18 14:30	1

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

TestAmerica Job ID: 480-135006-1

Client Sample ID: D-1S
Date Collected: 04/24/18 11:20
Date Received: 04/27/18 09:40

Lab Sample ID: 480-135006-2
Matrix: Water

Method: 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	0.038		0.020		mg/L		05/03/18 08:45	05/07/18 20:20	1
Calcium	115		0.50		mg/L		05/03/18 08:45	05/07/18 20:20	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	34.3		1.0		mg/L			05/03/18 02:02	2
Fluoride	ND		0.10		mg/L			05/03/18 02:02	2
Sulfate	28.5		4.0		mg/L			05/03/18 02:02	2
Total Dissolved Solids	438	H	10.0		mg/L			05/11/18 19:39	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	7.4	HF	0.1		SU			05/03/18 14:33	1
Temperature	18.3	HF	0.001		Degrees C			05/03/18 14:33	1

Client Sample ID: D-2D

Date Collected: 04/24/18 12:50
Date Received: 04/27/18 09:40

Lab Sample ID: 480-135006-3

Matrix: Water

Method: 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		0.020		mg/L		05/03/18 08:45	05/07/18 20:24	1
Calcium	**94.7**		0.50		mg/L		05/03/18 08:45	05/07/18 20:24	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**33.0**		1.0		mg/L			05/03/18 02:10	2
Fluoride	ND		0.10		mg/L			05/03/18 02:10	2
Sulfate	**24.3**		4.0		mg/L			05/03/18 02:10	2
Total Dissolved Solids	**385**	**H**	10.0		mg/L			05/11/18 19:39	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	**7.7**	**HF**	0.1		SU			05/03/18 14:43	1
Temperature	**19.4**	**HF**	0.001		Degrees C			05/03/18 14:43	1

Client Sample Results

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

TestAmerica Job ID: 480-135006-1

Client Sample ID: D-2S

Date Collected: 04/24/18 12:45
Date Received: 04/27/18 09:40

Lab Sample ID: 480-135006-4

Matrix: Water

Method: 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	**0.021**		0.020		mg/L		05/03/18 08:45	05/07/18 20:28	1
Calcium	**106**		0.50		mg/L		05/03/18 08:45	05/07/18 20:28	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**50.1**		1.0		mg/L			05/03/18 02:18	2
Fluoride	ND		0.10		mg/L			05/03/18 02:18	2
Sulfate	**28.8**		4.0		mg/L			05/03/18 02:18	2
Total Dissolved Solids	**433**	**H**	10.0		mg/L			05/11/18 19:39	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	**7.5**	**HF**	0.1		SU			05/03/18 14:47	1
Temperature	**19.2**	**HF**	0.001		Degrees C			05/03/18 14:47	1

Client Sample Results

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

TestAmerica Job ID: 480-135006-1

Client Sample ID: D-3D
Date Collected: 04/24/18 10:10
Date Received: 04/27/18 09:40

Lab Sample ID: 480-135006-5
Matrix: Water

Method: 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	0.027		0.020		mg/L		05/03/18 08:45	05/07/18 20:58	1
Calcium	104		0.50		mg/L		05/03/18 08:45	05/07/18 20:58	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	41.4		1.0		mg/L			05/04/18 23:32	2
Fluoride	ND		0.10		mg/L			05/03/18 02:26	2
Sulfate	33.5		4.0		mg/L			05/03/18 02:26	2
Total Dissolved Solids	432	H	10.0		mg/L			05/11/18 19:39	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	7.6	HF	0.1		SU			05/03/18 14:50	1
Temperature	18.8	HF	0.001		Degrees C			05/03/18 14:50	1

Client Sample ID: D-3S

Date Collected: 04/24/18 10:05
Date Received: 04/27/18 09:40

Lab Sample ID: 480-135006-6

Matrix: Water

Method: 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	0.15		0.020		mg/L		05/03/18 08:45	05/07/18 21:02	1
Calcium	117		0.50		mg/L		05/03/18 08:45	05/07/18 21:02	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	80.8		1.0		mg/L			05/03/18 03:15	2
Fluoride	ND		0.10		mg/L			05/03/18 03:15	2
Sulfate	45.0		4.0		mg/L			05/03/18 03:15	2
Total Dissolved Solids	517	H	10.0		mg/L			05/11/18 19:39	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	7.5	HF	0.1		SU			05/03/18 14:54	1
Temperature	18.6	HF	0.001		Degrees C			05/03/18 14:54	1

Client Sample ID: D-4D

Date Collected: 04/26/18 08:05
Date Received: 04/27/18 09:40

Lab Sample ID: 480-135006-7

Matrix: Water

Method: 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		0.020		mg/L		05/03/18 08:45	05/07/18 21:06	1
Calcium	**94.0**		0.50		mg/L		05/03/18 08:45	05/07/18 21:06	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**48.8**		1.0		mg/L			05/03/18 03:23	2
Fluoride	ND		0.10		mg/L			05/03/18 03:23	2
Sulfate	**26.5**		4.0		mg/L			05/03/18 03:23	2
Total Dissolved Solids	**413**		10.0		mg/L			05/03/18 16:47	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	**7.7**	**HF**	0.1		SU			05/03/18 14:57	1
Temperature	**18.6**	**HF**	0.001		Degrees C			05/03/18 14:57	1

Client Sample Results

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

TestAmerica Job ID: 480-135006-1

Client Sample ID: D-4S
Date Collected: 04/23/18 08:00
Date Received: 04/27/18 09:40

Lab Sample ID: 480-135006-8
Matrix: Water

Method: 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		0.020		mg/L		05/03/18 08:45	05/07/18 21:10	1
Calcium	**99.6**		0.50		mg/L		05/03/18 08:45	05/07/18 21:10	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**49.1**		1.0		mg/L			05/03/18 03:32	2
Fluoride	ND		0.10		mg/L			05/03/18 03:32	2
Sulfate	**27.4**		4.0		mg/L			05/03/18 03:32	2
Total Dissolved Solids	**436**		10.0		mg/L			04/30/18 21:26	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	**7.6**	**HF**	0.1		SU			05/03/18 15:00	1
Temperature	**18.8**	**HF**	0.001		Degrees C			05/03/18 15:00	1

Client Sample ID: D-5D

Date Collected: 04/24/18 08:25
Date Received: 04/27/18 09:40

Lab Sample ID: 480-135006-9

Matrix: Water

Method: 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		0.020		mg/L		05/03/18 08:45	05/07/18 21:13	1
Calcium	**101**		0.50		mg/L		05/03/18 08:45	05/07/18 21:13	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**24.4**		1.0		mg/L			05/03/18 03:40	2
Fluoride	ND		0.10		mg/L			05/03/18 03:40	2
Sulfate	**32.1**		4.0		mg/L			05/03/18 03:40	2
Total Dissolved Solids	**413**	**H**	10.0		mg/L			05/04/18 18:34	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	**7.6**	**HF**	0.1		SU			05/03/18 15:04	1
Temperature	**19.1**	**HF**	0.001		Degrees C			05/03/18 15:04	1

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

TestAmerica Job ID: 480-135006-1

Client Sample ID: D-5S2
Date Collected: 04/24/18 08:20
Date Received: 04/27/18 09:40

Lab Sample ID: 480-135006-10
Matrix: Water

Method: 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	0.065		0.020		mg/L		05/03/18 08:45	05/07/18 21:29	1
Calcium	127		0.50		mg/L		05/03/18 08:45	05/07/18 21:29	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	69.0		1.0		mg/L			05/03/18 03:48	2
Fluoride	ND		0.10		mg/L			05/03/18 03:48	2
Sulfate	56.6		4.0		mg/L			05/03/18 03:48	2
Total Dissolved Solids	547	H	10.0		mg/L			05/11/18 19:39	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	7.5	HF	0.1		SU			05/03/18 15:07	1
Temperature	19.6	HF	0.001		Degrees C			05/03/18 15:07	1

Client Sample Results

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

TestAmerica Job ID: 480-135006-1

Client Sample ID: D-7
Date Collected: 04/26/18 09:05
Date Received: 04/27/18 09:40

Lab Sample ID: 480-135006-11
Matrix: Water

Method: 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	0.055		0.020		mg/L		05/03/18 08:45	05/07/18 21:33	1
Calcium	105		0.50		mg/L		05/03/18 08:45	05/07/18 21:33	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	26.6		2.5		mg/L			05/03/18 03:56	5
Fluoride	ND		0.25		mg/L			05/03/18 03:56	5
Sulfate	34.8		10.0		mg/L			05/03/18 03:56	5
Total Dissolved Solids	464		10.0		mg/L			05/03/18 16:47	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	7.6	HF	0.1		SU			05/03/18 15:11	1
Temperature	19.7	HF	0.001		Degrees C			05/03/18 15:11	1

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

TestAmerica Job ID: 480-135006-1

Client Sample ID: D-8
Date Collected: 04/26/18 10:50
Date Received: 04/27/18 09:40

Lab Sample ID: 480-135006-12
Matrix: Water

Method: 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		0.020		mg/L		05/03/18 08:45	05/07/18 21:36	1
Calcium	**95.9**		0.50		mg/L		05/03/18 08:45	05/07/18 21:36	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**30.0**		0.50		mg/L			05/03/18 10:48	1
Fluoride	**0.10**		0.050		mg/L			05/03/18 10:48	1
Sulfate	**44.3**		2.0		mg/L			05/03/18 10:48	1
Total Dissolved Solids	**423**		10.0		mg/L			05/03/18 16:47	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	**7.8**	**HF**	0.1		SU			05/03/18 15:14	1
Temperature	**19.4**	**HF**	0.001		Degrees C			05/03/18 15:14	1

Client Sample ID: D-9

Date Collected: 04/26/18 12:00
Date Received: 04/27/18 09:40

Lab Sample ID: 480-135006-13

Matrix: Water

Method: 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	**0.020**		0.020		mg/L		05/03/18 08:45	05/07/18 21:40	1
Calcium	**92.7**		0.50		mg/L		05/03/18 08:45	05/07/18 21:40	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**39.1**		1.0		mg/L			05/03/18 10:56	2
Fluoride	ND		0.10		mg/L			05/03/18 10:56	2
Sulfate	**28.0**		4.0		mg/L			05/03/18 10:56	2
Total Dissolved Solids	**389**		10.0		mg/L			05/03/18 16:47	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	**7.7**	**HF**	0.1		SU			05/03/18 15:21	1
Temperature	**19.2**	**HF**	0.001		Degrees C			05/03/18 15:21	1

Client Sample ID: U-4D

Date Collected: 04/23/18 11:25
Date Received: 04/27/18 09:40

Lab Sample ID: 480-135006-14

Matrix: Water

Method: 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		0.020		mg/L		05/03/18 08:45	05/07/18 21:44	1
Calcium	**92.2**		0.50		mg/L		05/03/18 08:45	05/07/18 21:44	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**38.6**		0.50		mg/L			05/03/18 11:37	1
Fluoride	**0.12**		0.050		mg/L			05/03/18 11:37	1
Sulfate	**29.0**		2.0		mg/L			05/03/18 11:37	1
Total Dissolved Solids	**381**		10.0		mg/L			04/30/18 21:26	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	**7.7**	**HF**	0.1		SU			05/03/18 15:24	1
Temperature	**19.2**	**HF**	0.001		Degrees C			05/03/18 15:24	1

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

TestAmerica Job ID: 480-135006-1

Client Sample ID: U-4S
Date Collected: 04/23/18 10:20
Date Received: 04/27/18 09:40

Lab Sample ID: 480-135006-15
Matrix: Water

Method: 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	0.026		0.020		mg/L		05/03/18 08:45	05/07/18 21:48	1
Calcium	109		0.50		mg/L		05/03/18 08:45	05/07/18 21:48	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	49.5		0.50		mg/L			05/03/18 11:45	1
Fluoride	0.080		0.050		mg/L			05/03/18 11:45	1
Sulfate	19.2		2.0		mg/L			05/03/18 11:45	1
Total Dissolved Solids	490		10.0		mg/L			04/30/18 21:26	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	7.5	HF	0.1		SU			05/03/18 15:28	1
Temperature	19.5	HF	0.001		Degrees C			05/03/18 15:28	1

Client Sample ID: U-5D

Date Collected: 04/23/18 13:35
Date Received: 04/27/18 09:40

Lab Sample ID: 480-135006-16

Matrix: Water

Method: 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		0.020		mg/L		05/03/18 08:45	05/07/18 21:51	1
Calcium	**90.5**		0.50		mg/L		05/03/18 08:45	05/07/18 21:51	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**28.8**		0.50		mg/L			05/03/18 11:53	1
Fluoride	**0.11**		0.050		mg/L			05/03/18 11:53	1
Sulfate	**31.2**		2.0		mg/L			05/03/18 11:53	1
Total Dissolved Solids	**397**		10.0		mg/L			04/30/18 21:26	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	**7.6**	**HF**	0.1		SU			05/03/18 15:31	1
Temperature	**19.9**	**HF**	0.001		Degrees C			05/03/18 15:31	1

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

TestAmerica Job ID: 480-135006-1

Client Sample ID: U-5S
Date Collected: 04/23/18 12:40
Date Received: 04/27/18 09:40

Lab Sample ID: 480-135006-17
Matrix: Water

Method: 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	0.032		0.020		mg/L		05/03/18 08:45	05/07/18 21:55	1
Calcium	99.6		0.50		mg/L		05/03/18 08:45	05/07/18 21:55	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	49.9		0.50		mg/L			05/03/18 12:01	1
Fluoride	0.11		0.050		mg/L			05/03/18 12:01	1
Sulfate	31.2		2.0		mg/L			05/03/18 12:01	1
Total Dissolved Solids	470		10.0		mg/L			04/30/18 21:26	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	7.6	HF	0.1		SU			05/03/18 15:35	1
Temperature	20.1	HF	0.001		Degrees C			05/03/18 15:35	1

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

TestAmerica Job ID: 480-135006-1

Client Sample ID: EQUIPMENT BLANK
Date Collected: 04/26/18 12:20
Date Received: 04/27/18 09:40

Lab Sample ID: 480-135006-18
Matrix: Water

Method: 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		0.020		mg/L		05/03/18 08:45	05/07/18 21:59	1
Calcium	ND		0.50		mg/L		05/03/18 08:45	05/07/18 21:59	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		0.50		mg/L			05/03/18 12:09	1
Fluoride	ND		0.050		mg/L			05/03/18 12:09	1
Sulfate	ND		2.0		mg/L			05/03/18 12:09	1
Total Dissolved Solids	ND		10.0		mg/L			04/30/18 21:26	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	**6.1**	**HF**	0.1		SU			05/03/18 15:38	1
Temperature	**19.7**	**HF**	0.001		Degrees C			05/03/18 15:38	1

Client Sample ID: FIELD BLANK A

Date Collected: 04/23/18 14:00
Date Received: 04/27/18 09:40

Lab Sample ID: 480-135006-19

Matrix: Water

Method: 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		0.020		mg/L		05/03/18 08:45	05/07/18 22:14	1
Calcium	ND		0.50		mg/L		05/03/18 08:45	05/07/18 22:14	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		0.50		mg/L			05/03/18 12:17	1
Fluoride	ND		0.050		mg/L			05/03/18 12:17	1
Sulfate	ND		2.0		mg/L			05/03/18 12:17	1
Total Dissolved Solids	ND		10.0		mg/L			04/30/18 21:26	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	**6.0**	**HF**	0.1		SU			05/03/18 15:41	1
Temperature	**19.5**	**HF**	0.001		Degrees C			05/03/18 15:41	1

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

TestAmerica Job ID: 480-135006-1

Client Sample ID: DUPLICATE A
Date Collected: 04/23/18 00:00
Date Received: 04/27/18 09:40

Lab Sample ID: 480-135006-20
Matrix: Water

Method: 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	0.033		0.020		mg/L		05/03/18 08:45	05/07/18 22:18	1
Calcium	103		0.50		mg/L		05/03/18 08:45	05/07/18 22:18	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	49.7		1.0		mg/L			05/03/18 12:25	2
Fluoride	ND		0.10		mg/L			05/03/18 12:25	2
Sulfate	30.5		4.0		mg/L			05/03/18 12:25	2
Total Dissolved Solids	450		10.0		mg/L			04/30/18 21:26	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	7.6	HF	0.1		SU			05/03/18 15:45	1
Temperature	19.5	HF	0.001		Degrees C			05/03/18 15:45	1

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

TestAmerica Job ID: 480-135006-1

Client Sample ID: DUPLICATE B
Date Collected: 04/24/18 00:00
Date Received: 04/27/18 09:40

Lab Sample ID: 480-135006-21
Matrix: Water

Method: 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	0.035		0.020		mg/L		05/03/18 08:35	05/07/18 15:34	1
Calcium	110		0.50		mg/L		05/03/18 08:35	05/07/18 15:34	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	41.0		1.0		mg/L			05/03/18 12:34	2
Fluoride	ND		0.10		mg/L			05/03/18 12:34	2
Sulfate	34.7		4.0		mg/L			05/03/18 12:34	2
Total Dissolved Solids	453	H	10.0		mg/L			05/11/18 19:58	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	7.7	HF	0.1		SU			05/03/18 15:48	1
Temperature	19.6	HF	0.001		Degrees C			05/03/18 15:48	1

Method: 6010D - Metals (ICP)

Lab Sample ID: MB 480-412159/1-A
Matrix: Water
Analysis Batch: 413110

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 412159

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		0.020		mg/L		05/03/18 08:45	05/07/18 20:09	1
Calcium	ND		0.50		mg/L		05/03/18 08:45	05/07/18 20:09	1

Lab Sample ID: LCS 480-412159/2-A
Matrix: Water
Analysis Batch: 413110

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 412159

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Boron	0.200	0.205		mg/L		103	80 - 120
Calcium	10.0	10.39		mg/L		104	80 - 120

Lab Sample ID: 480-135006-4 MS
Matrix: Water
Analysis Batch: 413110

Client Sample ID: D-2S
Prep Type: Total/NA
Prep Batch: 412159

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Boron	0.021		0.200	0.227		mg/L		103	75 - 125
Calcium	106		10.0	113.7	4	mg/L		79	75 - 125

Lab Sample ID: 480-135006-4 MSD
Matrix: Water
Analysis Batch: 413110

Client Sample ID: D-2S
Prep Type: Total/NA
Prep Batch: 412159

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Boron	0.021		0.200	0.227		mg/L		103	75 - 125	0	20
Calcium	106		10.0	115.3	4	mg/L		96	75 - 125	1	20

Lab Sample ID: MB 480-412162/1-A
Matrix: Water
Analysis Batch: 413102

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 412162

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		0.020		mg/L		05/03/18 08:35	05/07/18 13:55	1
Calcium	ND		0.50		mg/L		05/03/18 08:35	05/07/18 13:55	1

Lab Sample ID: LCS 480-412162/2-A
Matrix: Water
Analysis Batch: 413102

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 412162

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Boron	0.200	0.204		mg/L		102	80 - 120
Calcium	10.0	10.33		mg/L		103	80 - 120

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 480-412151/28
Matrix: Water
Analysis Batch: 412151

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			05/02/18 23:52	1
Fluoride	ND		0.050		mg/L			05/02/18 23:52	1
Sulfate	ND		2.0		mg/L			05/02/18 23:52	1

Lab Sample ID: MB 480-412151/52
Matrix: Water
Analysis Batch: 412151

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			05/03/18 03:07	1
Fluoride	ND		0.050		mg/L			05/03/18 03:07	1
Sulfate	ND		2.0		mg/L			05/03/18 03:07	1

Lab Sample ID: LCS 480-412151/27
Matrix: Water
Analysis Batch: 412151

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	51.23		mg/L		102	90 - 110
Fluoride	5.00	5.15		mg/L		103	90 - 110
Sulfate	50.0	51.27		mg/L		103	90 - 110

Lab Sample ID: LCS 480-412151/51
Matrix: Water
Analysis Batch: 412151

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	51.30		mg/L		103	90 - 110
Fluoride	5.00	5.15		mg/L		103	90 - 110
Sulfate	50.0	51.28		mg/L		103	90 - 110

Lab Sample ID: 480-135006-5 MS
Matrix: Water
Analysis Batch: 412151

Client Sample ID: D-3D
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Fluoride	ND		10.0	10.82		mg/L		108	82 - 120
Sulfate	33.5		100	141.0		mg/L		108	80 - 120

Lab Sample ID: 480-135006-11 MS
Matrix: Water
Analysis Batch: 412151

Client Sample ID: D-7
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	26.6		250	293.9		mg/L		107	81 - 120
Fluoride	ND		25.0	26.87		mg/L		107	82 - 120
Sulfate	34.8		250	302.1		mg/L		107	80 - 120

Method: 300.0 - Anions, Ion Chromatography (Continued)

Lab Sample ID: 480-135006-11 MSD
Matrix: Water
Analysis Batch: 412151

Client Sample ID: D-7
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	26.6		250	292.1		mg/L		106	81 - 120	1	20
Fluoride	ND		25.0	26.73		mg/L		107	82 - 120	0	20
Sulfate	34.8		250	301.1		mg/L		107	80 - 120	0	20

Lab Sample ID: MB 480-412210/5
Matrix: Water
Analysis Batch: 412210

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			05/03/18 10:07	1
Fluoride	ND		0.050		mg/L			05/03/18 10:07	1
Sulfate	ND		2.0		mg/L			05/03/18 10:07	1

Lab Sample ID: LCS 480-412210/4
Matrix: Water
Analysis Batch: 412210

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	50.69		mg/L		101	90 - 110
Fluoride	5.00	5.07		mg/L		101	90 - 110
Sulfate	50.0	51.72		mg/L		103	90 - 110

Lab Sample ID: 480-135006-13 MS
Matrix: Water
Analysis Batch: 412210

Client Sample ID: D-9
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	39.1		100	145.7		mg/L		107	81 - 120
Fluoride	ND		10.0	10.69		mg/L		106	82 - 120
Sulfate	28.0		100	137.8		mg/L		110	80 - 120

Lab Sample ID: 480-135006-13 MSD
Matrix: Water
Analysis Batch: 412210

Client Sample ID: D-9
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	39.1		100	144.6		mg/L		105	81 - 120	1	20
Fluoride	ND		10.0	10.61		mg/L		105	82 - 120	1	20
Sulfate	28.0		100	136.0		mg/L		108	80 - 120	1	20

Lab Sample ID: MB 480-412671/4
Matrix: Water
Analysis Batch: 412671

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			05/04/18 22:43	1
Fluoride	ND		0.050		mg/L			05/04/18 22:43	1
Sulfate	ND		2.0		mg/L			05/04/18 22:43	1

Method: 300.0 - Anions, Ion Chromatography (Continued)

Lab Sample ID: LCS 480-412671/3
Matrix: Water
Analysis Batch: 412671

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	52.61		mg/L		105	90 - 110
Fluoride	5.00	5.22		mg/L		104	90 - 110
Sulfate	50.0	54.12		mg/L		108	90 - 110

Lab Sample ID: 480-135006-5 MS
Matrix: Water
Analysis Batch: 412671

Client Sample ID: D-3D
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	41.4		100	149.1		mg/L		108	81 - 120
Fluoride	ND		10.0	10.68		mg/L		106	82 - 120
Sulfate	35.5		100	147.2		mg/L		112	80 - 120

Lab Sample ID: 480-135006-5 MSD
Matrix: Water
Analysis Batch: 412671

Client Sample ID: D-3D
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	41.4		100	149.4		mg/L		108	81 - 120	0	20
Fluoride	ND		10.0	10.72		mg/L		106	82 - 120	0	20
Sulfate	35.5		100	147.1		mg/L		112	80 - 120	0	20

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

Lab Sample ID: MB 480-411739/1
Matrix: Water
Analysis Batch: 411739

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			04/30/18 21:26	1

Lab Sample ID: LCS 480-411739/2
Matrix: Water
Analysis Batch: 411739

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	502	530.0		mg/L		106	85 - 115

Lab Sample ID: MB 480-412449/1
Matrix: Water
Analysis Batch: 412449

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			05/03/18 16:47	1

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

Lab Sample ID: LCS 480-412449/2
Matrix: Water
Analysis Batch: 412449

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	546	527.0		mg/L		97	85 - 115

Lab Sample ID: MB 480-412707/1
Matrix: Water
Analysis Batch: 412707

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			05/04/18 18:34	1

Lab Sample ID: LCS 480-412707/2
Matrix: Water
Analysis Batch: 412707

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	546	544.0		mg/L		100	85 - 115

Lab Sample ID: 480-135006-9 DU
Matrix: Water
Analysis Batch: 412707

Client Sample ID: D-5D
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Dissolved Solids	413	H	413.0		mg/L		0	10

Lab Sample ID: MB 480-413992/1
Matrix: Water
Analysis Batch: 413992

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			05/11/18 19:39	1

Lab Sample ID: LCS 480-413992/2
Matrix: Water
Analysis Batch: 413992

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Dissolved Solids	512	481.0		mg/L		94	85 - 115

Lab Sample ID: 480-135006-10 DU
Matrix: Water
Analysis Batch: 413992

Client Sample ID: D-5S2
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Dissolved Solids	547	H	591.0		mg/L		8	10

Lab Sample ID: MB 480-413993/1
Matrix: Water
Analysis Batch: 413993

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			05/11/18 19:58	1

Lab Sample ID: LCS 480-413993/2
Matrix: Water
Analysis Batch: 413993

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

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Total Dissolved Solids			512	519.0		mg/L		101	85 - 115		

Lab Sample ID: 480-135006-21 DU
Matrix: Water
Analysis Batch: 413993

Client Sample ID: DUPLICATE B
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Total Dissolved Solids	453	H		441.0	H	mg/L				3	10

Method: SM 4500 H+ B - pH

Lab Sample ID: LCS 480-412456/1
Matrix: Water
Analysis Batch: 412456

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 480-412456/23
Matrix: Water
Analysis Batch: 412456

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: 480-135006-2 DU
Matrix: Water
Analysis Batch: 412456

Client Sample ID: D-1S
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
pH	7.4	HF		7.4		SU				0.3	5
Temperature	18.3	HF		18.6		Degrees C				1	10

Lab Sample ID: 480-135006-21 DU
Matrix: Water
Analysis Batch: 412456

Client Sample ID: DUPLICATE B
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	19.6	HF		19.9		Degrees C				2	10

Metals

Prep Batch: 412159

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-135006-1	D-1D	Total/NA	Water	3005A	
480-135006-2	D-1S	Total/NA	Water	3005A	
480-135006-3	D-2D	Total/NA	Water	3005A	
480-135006-4	D-2S	Total/NA	Water	3005A	
480-135006-5	D-3D	Total/NA	Water	3005A	
480-135006-6	D-3S	Total/NA	Water	3005A	
480-135006-7	D-4D	Total/NA	Water	3005A	
480-135006-8	D-4S	Total/NA	Water	3005A	
480-135006-9	D-5D	Total/NA	Water	3005A	
480-135006-10	D-5S2	Total/NA	Water	3005A	
480-135006-11	D-7	Total/NA	Water	3005A	
480-135006-12	D-8	Total/NA	Water	3005A	
480-135006-13	D-9	Total/NA	Water	3005A	
480-135006-14	U-4D	Total/NA	Water	3005A	
480-135006-15	U-4S	Total/NA	Water	3005A	
480-135006-16	U-5D	Total/NA	Water	3005A	
480-135006-17	U-5S	Total/NA	Water	3005A	
480-135006-18	EQUIPMENT BLANK	Total/NA	Water	3005A	
480-135006-19	FIELD BLANK A	Total/NA	Water	3005A	
480-135006-20	DUPLICATE A	Total/NA	Water	3005A	
MB 480-412159/1-A	Method Blank	Total/NA	Water	3005A	
LCS 480-412159/2-A	Lab Control Sample	Total/NA	Water	3005A	
480-135006-4 MS	D-2S	Total/NA	Water	3005A	
480-135006-4 MSD	D-2S	Total/NA	Water	3005A	

Prep Batch: 412162

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-135006-21	DUPLICATE B	Total/NA	Water	3005A	
MB 480-412162/1-A	Method Blank	Total/NA	Water	3005A	
LCS 480-412162/2-A	Lab Control Sample	Total/NA	Water	3005A	

Analysis Batch: 413102

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-135006-21	DUPLICATE B	Total/NA	Water	6010D	412162
MB 480-412162/1-A	Method Blank	Total/NA	Water	6010D	412162
LCS 480-412162/2-A	Lab Control Sample	Total/NA	Water	6010D	412162

Analysis Batch: 413110

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-135006-1	D-1D	Total/NA	Water	6010D	412159
480-135006-2	D-1S	Total/NA	Water	6010D	412159
480-135006-3	D-2D	Total/NA	Water	6010D	412159
480-135006-4	D-2S	Total/NA	Water	6010D	412159
480-135006-5	D-3D	Total/NA	Water	6010D	412159
480-135006-6	D-3S	Total/NA	Water	6010D	412159
480-135006-7	D-4D	Total/NA	Water	6010D	412159
480-135006-8	D-4S	Total/NA	Water	6010D	412159
480-135006-9	D-5D	Total/NA	Water	6010D	412159
480-135006-10	D-5S2	Total/NA	Water	6010D	412159
480-135006-11	D-7	Total/NA	Water	6010D	412159
480-135006-12	D-8	Total/NA	Water	6010D	412159

Metals (Continued)

Analysis Batch: 413110 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-135006-13	D-9	Total/NA	Water	6010D	412159
480-135006-14	U-4D	Total/NA	Water	6010D	412159
480-135006-15	U-4S	Total/NA	Water	6010D	412159
480-135006-16	U-5D	Total/NA	Water	6010D	412159
480-135006-17	U-5S	Total/NA	Water	6010D	412159
480-135006-18	EQUIPMENT BLANK	Total/NA	Water	6010D	412159
480-135006-19	FIELD BLANK A	Total/NA	Water	6010D	412159
480-135006-20	DUPLICATE A	Total/NA	Water	6010D	412159
MB 480-412159/1-A	Method Blank	Total/NA	Water	6010D	412159
LCS 480-412159/2-A	Lab Control Sample	Total/NA	Water	6010D	412159
480-135006-4 MS	D-2S	Total/NA	Water	6010D	412159
480-135006-4 MSD	D-2S	Total/NA	Water	6010D	412159

General Chemistry

Analysis Batch: 411739

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-135006-8	D-4S	Total/NA	Water	SM 2540C	
480-135006-14	U-4D	Total/NA	Water	SM 2540C	
480-135006-15	U-4S	Total/NA	Water	SM 2540C	
480-135006-16	U-5D	Total/NA	Water	SM 2540C	
480-135006-17	U-5S	Total/NA	Water	SM 2540C	
480-135006-18	EQUIPMENT BLANK	Total/NA	Water	SM 2540C	
480-135006-19	FIELD BLANK A	Total/NA	Water	SM 2540C	
480-135006-20	DUPLICATE A	Total/NA	Water	SM 2540C	
MB 480-411739/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 480-411739/2	Lab Control Sample	Total/NA	Water	SM 2540C	

Analysis Batch: 412151

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-135006-1	D-1D	Total/NA	Water	300.0	
480-135006-2	D-1S	Total/NA	Water	300.0	
480-135006-3	D-2D	Total/NA	Water	300.0	
480-135006-4	D-2S	Total/NA	Water	300.0	
480-135006-5	D-3D	Total/NA	Water	300.0	
480-135006-6	D-3S	Total/NA	Water	300.0	
480-135006-7	D-4D	Total/NA	Water	300.0	
480-135006-8	D-4S	Total/NA	Water	300.0	
480-135006-9	D-5D	Total/NA	Water	300.0	
480-135006-10	D-5S2	Total/NA	Water	300.0	
480-135006-11	D-7	Total/NA	Water	300.0	
MB 480-412151/28	Method Blank	Total/NA	Water	300.0	
MB 480-412151/52	Method Blank	Total/NA	Water	300.0	
LCS 480-412151/27	Lab Control Sample	Total/NA	Water	300.0	
LCS 480-412151/51	Lab Control Sample	Total/NA	Water	300.0	
480-135006-5 MS	D-3D	Total/NA	Water	300.0	
480-135006-11 MS	D-7	Total/NA	Water	300.0	
480-135006-11 MSD	D-7	Total/NA	Water	300.0	

General Chemistry (Continued)

Analysis Batch: 412210

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-135006-12	D-8	Total/NA	Water	300.0	
480-135006-13	D-9	Total/NA	Water	300.0	
480-135006-14	U-4D	Total/NA	Water	300.0	
480-135006-15	U-4S	Total/NA	Water	300.0	
480-135006-16	U-5D	Total/NA	Water	300.0	
480-135006-17	U-5S	Total/NA	Water	300.0	
480-135006-18	EQUIPMENT BLANK	Total/NA	Water	300.0	
480-135006-19	FIELD BLANK A	Total/NA	Water	300.0	
480-135006-20	DUPLICATE A	Total/NA	Water	300.0	
480-135006-21	DUPLICATE B	Total/NA	Water	300.0	
MB 480-412210/5	Method Blank	Total/NA	Water	300.0	
LCS 480-412210/4	Lab Control Sample	Total/NA	Water	300.0	
480-135006-13 MS	D-9	Total/NA	Water	300.0	
480-135006-13 MSD	D-9	Total/NA	Water	300.0	

Analysis Batch: 412449

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-135006-7	D-4D	Total/NA	Water	SM 2540C	
480-135006-11	D-7	Total/NA	Water	SM 2540C	
480-135006-12	D-8	Total/NA	Water	SM 2540C	
480-135006-13	D-9	Total/NA	Water	SM 2540C	
MB 480-412449/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 480-412449/2	Lab Control Sample	Total/NA	Water	SM 2540C	

Analysis Batch: 412456

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-135006-1	D-1D	Total/NA	Water	SM 4500 H+ B	
480-135006-2	D-1S	Total/NA	Water	SM 4500 H+ B	
480-135006-3	D-2D	Total/NA	Water	SM 4500 H+ B	
480-135006-4	D-2S	Total/NA	Water	SM 4500 H+ B	
480-135006-5	D-3D	Total/NA	Water	SM 4500 H+ B	
480-135006-6	D-3S	Total/NA	Water	SM 4500 H+ B	
480-135006-7	D-4D	Total/NA	Water	SM 4500 H+ B	
480-135006-8	D-4S	Total/NA	Water	SM 4500 H+ B	
480-135006-9	D-5D	Total/NA	Water	SM 4500 H+ B	
480-135006-10	D-5S2	Total/NA	Water	SM 4500 H+ B	
480-135006-11	D-7	Total/NA	Water	SM 4500 H+ B	
480-135006-12	D-8	Total/NA	Water	SM 4500 H+ B	
480-135006-13	D-9	Total/NA	Water	SM 4500 H+ B	
480-135006-14	U-4D	Total/NA	Water	SM 4500 H+ B	
480-135006-15	U-4S	Total/NA	Water	SM 4500 H+ B	
480-135006-16	U-5D	Total/NA	Water	SM 4500 H+ B	
480-135006-17	U-5S	Total/NA	Water	SM 4500 H+ B	
480-135006-18	EQUIPMENT BLANK	Total/NA	Water	SM 4500 H+ B	
480-135006-19	FIELD BLANK A	Total/NA	Water	SM 4500 H+ B	
480-135006-20	DUPLICATE A	Total/NA	Water	SM 4500 H+ B	
480-135006-21	DUPLICATE B	Total/NA	Water	SM 4500 H+ B	
LCS 480-412456/1	Lab Control Sample	Total/NA	Water	SM 4500 H+ B	
LCS 480-412456/23	Lab Control Sample	Total/NA	Water	SM 4500 H+ B	
480-135006-2 DU	D-1S	Total/NA	Water	SM 4500 H+ B	
480-135006-21 DU	DUPLICATE B	Total/NA	Water	SM 4500 H+ B	

QC Association Summary

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

TestAmerica Job ID: 480-135006-1

Analysis Batch: 412671

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-135006-5	D-3D	Total/NA	Water	300.0	
MB 480-412671/4	Method Blank	Total/NA	Water	300.0	
LCS 480-412671/3	Lab Control Sample	Total/NA	Water	300.0	
480-135006-5 MS	D-3D	Total/NA	Water	300.0	
480-135006-5 MSD	D-3D	Total/NA	Water	300.0	

Analysis Batch: 412707

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-135006-9	D-5D	Total/NA	Water	SM 2540C	
MB 480-412707/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 480-412707/2	Lab Control Sample	Total/NA	Water	SM 2540C	
480-135006-9 DU	D-5D	Total/NA	Water	SM 2540C	

Analysis Batch: 413992

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-135006-1	D-1D	Total/NA	Water	SM 2540C	
480-135006-2	D-1S	Total/NA	Water	SM 2540C	
480-135006-3	D-2D	Total/NA	Water	SM 2540C	
480-135006-4	D-2S	Total/NA	Water	SM 2540C	
480-135006-5	D-3D	Total/NA	Water	SM 2540C	
480-135006-6	D-3S	Total/NA	Water	SM 2540C	
480-135006-10	D-5S2	Total/NA	Water	SM 2540C	
MB 480-413992/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 480-413992/2	Lab Control Sample	Total/NA	Water	SM 2540C	
480-135006-10 DU	D-5S2	Total/NA	Water	SM 2540C	

Analysis Batch: 413993

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-135006-21	DUPLICATE B	Total/NA	Water	SM 2540C	
MB 480-413993/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 480-413993/2	Lab Control Sample	Total/NA	Water	SM 2540C	
480-135006-21 DU	DUPLICATE B	Total/NA	Water	SM 2540C	

Lab Chronicle

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

TestAmerica Job ID: 480-135006-1

Client Sample ID: D-1D

Lab Sample ID: 480-135006-1

Date Collected: 04/24/18 11:25
Matrix: Water
Date Received: 04/27/18 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3005A			412159	05/03/18 08:45	KMP	TAL BUF
Total/NA	Analysis	6010D		1	413110	05/07/18 20:17	LMH	TAL BUF
Total/NA	Analysis	300.0		2	412151	05/03/18 01:54	RJS	TAL BUF
Total/NA	Analysis	SM 2540C		1	413992	05/11/18 19:39	MAB	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	412456	05/03/18 14:30	DSC	TAL BUF

Client Sample ID: D-1S

Lab Sample ID: 480-135006-2

Date Collected: 04/24/18 11:20
Matrix: Water
Date Received: 04/27/18 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3005A			412159	05/03/18 08:45	KMP	TAL BUF
Total/NA	Analysis	6010D		1	413110	05/07/18 20:20	LMH	TAL BUF
Total/NA	Analysis	300.0		2	412151	05/03/18 02:02	RJS	TAL BUF
Total/NA	Analysis	SM 2540C		1	413992	05/11/18 19:39	MAB	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	412456	05/03/18 14:33	DSC	TAL BUF

Client Sample ID: D-2D

Lab Sample ID: 480-135006-3

Date Collected: 04/24/18 12:50
Matrix: Water
Date Received: 04/27/18 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3005A			412159	05/03/18 08:45	KMP	TAL BUF
Total/NA	Analysis	6010D		1	413110	05/07/18 20:24	LMH	TAL BUF
Total/NA	Analysis	300.0		2	412151	05/03/18 02:10	RJS	TAL BUF
Total/NA	Analysis	SM 2540C		1	413992	05/11/18 19:39	MAB	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	412456	05/03/18 14:43	DSC	TAL BUF

Client Sample ID: D-2S

Lab Sample ID: 480-135006-4

Date Collected: 04/24/18 12:45
Matrix: Water
Date Received: 04/27/18 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3005A			412159	05/03/18 08:45	KMP	TAL BUF
Total/NA	Analysis	6010D		1	413110	05/07/18 20:28	LMH	TAL BUF
Total/NA	Analysis	300.0		2	412151	05/03/18 02:18	RJS	TAL BUF
Total/NA	Analysis	SM 2540C		1	413992	05/11/18 19:39	MAB	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	412456	05/03/18 14:47	DSC	TAL BUF

Lab Chronicle

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

TestAmerica Job ID: 480-135006-1

Client Sample ID: D-3D

Date Collected: 04/24/18 10:10
Date Received: 04/27/18 09:40

Lab Sample ID: 480-135006-5

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3005A			412159	05/03/18 08:45	KMP	TAL BUF
Total/NA	Analysis	6010D		1	413110	05/07/18 20:58	LMH	TAL BUF
Total/NA	Analysis	300.0		2	412151	05/03/18 02:26	RJS	TAL BUF
Total/NA	Analysis	300.0		2	412671	05/04/18 23:32	RJS	TAL BUF
Total/NA	Analysis	SM 2540C		1	413992	05/11/18 19:39	MAB	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	412456	05/03/18 14:50	DSC	TAL BUF

Client Sample ID: D-3S

Date Collected: 04/24/18 10:05
Date Received: 04/27/18 09:40

Lab Sample ID: 480-135006-6

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3005A			412159	05/03/18 08:45	KMP	TAL BUF
Total/NA	Analysis	6010D		1	413110	05/07/18 21:02	LMH	TAL BUF
Total/NA	Analysis	300.0		2	412151	05/03/18 03:15	RJS	TAL BUF
Total/NA	Analysis	SM 2540C		1	413992	05/11/18 19:39	MAB	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	412456	05/03/18 14:54	DSC	TAL BUF

Client Sample ID: D-4D

Date Collected: 04/26/18 08:05
Date Received: 04/27/18 09:40

Lab Sample ID: 480-135006-7

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3005A			412159	05/03/18 08:45	KMP	TAL BUF
Total/NA	Analysis	6010D		1	413110	05/07/18 21:06	LMH	TAL BUF
Total/NA	Analysis	300.0		2	412151	05/03/18 03:23	RJS	TAL BUF
Total/NA	Analysis	SM 2540C		1	412449	05/03/18 16:47	SMH	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	412456	05/03/18 14:57	DSC	TAL BUF

Client Sample ID: D-4S

Date Collected: 04/23/18 08:00
Date Received: 04/27/18 09:40

Lab Sample ID: 480-135006-8

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3005A			412159	05/03/18 08:45	KMP	TAL BUF
Total/NA	Analysis	6010D		1	413110	05/07/18 21:10	LMH	TAL BUF
Total/NA	Analysis	300.0		2	412151	05/03/18 03:32	RJS	TAL BUF
Total/NA	Analysis	SM 2540C		1	411739	04/30/18 21:26	MAB	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	412456	05/03/18 15:00	DSC	TAL BUF

Lab Chronicle

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

TestAmerica Job ID: 480-135006-1

Client Sample ID: D-5D

Date Collected: 04/24/18 08:25
Date Received: 04/27/18 09:40

Lab Sample ID: 480-135006-9
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3005A			412159	05/03/18 08:45	KMP	TAL BUF
Total/NA	Analysis	6010D		1	413110	05/07/18 21:13	LMH	TAL BUF
Total/NA	Analysis	300.0		2	412151	05/03/18 03:40	RJS	TAL BUF
Total/NA	Analysis	SM 2540C		1	412707	05/04/18 18:34	MAB	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	412456	05/03/18 15:04	DSC	TAL BUF

Client Sample ID: D-5S2

Date Collected: 04/24/18 08:20
Date Received: 04/27/18 09:40

Lab Sample ID: 480-135006-10
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3005A			412159	05/03/18 08:45	KMP	TAL BUF
Total/NA	Analysis	6010D		1	413110	05/07/18 21:29	LMH	TAL BUF
Total/NA	Analysis	300.0		2	412151	05/03/18 03:48	RJS	TAL BUF
Total/NA	Analysis	SM 2540C		1	413992	05/11/18 19:39	MAB	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	412456	05/03/18 15:07	DSC	TAL BUF

Client Sample ID: D-7

Date Collected: 04/26/18 09:05
Date Received: 04/27/18 09:40

Lab Sample ID: 480-135006-11
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3005A			412159	05/03/18 08:45	KMP	TAL BUF
Total/NA	Analysis	6010D		1	413110	05/07/18 21:33	LMH	TAL BUF
Total/NA	Analysis	300.0		5	412151	05/03/18 03:56	RJS	TAL BUF
Total/NA	Analysis	SM 2540C		1	412449	05/03/18 16:47	SMH	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	412456	05/03/18 15:11	DSC	TAL BUF

Client Sample ID: D-8

Date Collected: 04/26/18 10:50
Date Received: 04/27/18 09:40

Lab Sample ID: 480-135006-12
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3005A			412159	05/03/18 08:45	KMP	TAL BUF
Total/NA	Analysis	6010D		1	413110	05/07/18 21:36	LMH	TAL BUF
Total/NA	Analysis	300.0		1	412210	05/03/18 10:48	RJS	TAL BUF
Total/NA	Analysis	SM 2540C		1	412449	05/03/18 16:47	SMH	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	412456	05/03/18 15:14	DSC	TAL BUF

Lab Chronicle

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

TestAmerica Job ID: 480-135006-1

Client Sample ID: D-9

Lab Sample ID: 480-135006-13

Date Collected: 04/26/18 12:00
Matrix: Water
Date Received: 04/27/18 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3005A			412159	05/03/18 08:45	KMP	TAL BUF
Total/NA	Analysis	6010D		1	413110	05/07/18 21:40	LMH	TAL BUF
Total/NA	Analysis	300.0		2	412210	05/03/18 10:56	RJS	TAL BUF
Total/NA	Analysis	SM 2540C		1	412449	05/03/18 16:47	SMH	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	412456	05/03/18 15:21	DSC	TAL BUF

Client Sample ID: U-4D

Lab Sample ID: 480-135006-14

Date Collected: 04/23/18 11:25
Matrix: Water
Date Received: 04/27/18 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3005A			412159	05/03/18 08:45	KMP	TAL BUF
Total/NA	Analysis	6010D		1	413110	05/07/18 21:44	LMH	TAL BUF
Total/NA	Analysis	300.0		1	412210	05/03/18 11:37	RJS	TAL BUF
Total/NA	Analysis	SM 2540C		1	411739	04/30/18 21:26	MAB	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	412456	05/03/18 15:24	DSC	TAL BUF

Client Sample ID: U-4S

Lab Sample ID: 480-135006-15

Date Collected: 04/23/18 10:20
Matrix: Water
Date Received: 04/27/18 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3005A			412159	05/03/18 08:45	KMP	TAL BUF
Total/NA	Analysis	6010D		1	413110	05/07/18 21:48	LMH	TAL BUF
Total/NA	Analysis	300.0		1	412210	05/03/18 11:45	RJS	TAL BUF
Total/NA	Analysis	SM 2540C		1	411739	04/30/18 21:26	MAB	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	412456	05/03/18 15:28	DSC	TAL BUF

Client Sample ID: U-5D

Lab Sample ID: 480-135006-16

Date Collected: 04/23/18 13:35
Matrix: Water
Date Received: 04/27/18 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3005A			412159	05/03/18 08:45	KMP	TAL BUF
Total/NA	Analysis	6010D		1	413110	05/07/18 21:51	LMH	TAL BUF
Total/NA	Analysis	300.0		1	412210	05/03/18 11:53	RJS	TAL BUF
Total/NA	Analysis	SM 2540C		1	411739	04/30/18 21:26	MAB	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	412456	05/03/18 15:31	DSC	TAL BUF

Lab Chronicle

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

TestAmerica Job ID: 480-135006-1

Client Sample ID: U-5S

Lab Sample ID: 480-135006-17

Date Collected: 04/23/18 12:40
Matrix: Water
Date Received: 04/27/18 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3005A			412159	05/03/18 08:45	KMP	TAL BUF
Total/NA	Analysis	6010D		1	413110	05/07/18 21:55	LMH	TAL BUF
Total/NA	Analysis	300.0		1	412210	05/03/18 12:01	RJS	TAL BUF
Total/NA	Analysis	SM 2540C		1	411739	04/30/18 21:26	MAB	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	412456	05/03/18 15:35	DSC	TAL BUF

Client Sample ID: EQUIPMENT BLANK

Lab Sample ID: 480-135006-18

Date Collected: 04/26/18 12:20
Matrix: Water
Date Received: 04/27/18 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3005A			412159	05/03/18 08:45	KMP	TAL BUF
Total/NA	Analysis	6010D		1	413110	05/07/18 21:59	LMH	TAL BUF
Total/NA	Analysis	300.0		1	412210	05/03/18 12:09	RJS	TAL BUF
Total/NA	Analysis	SM 2540C		1	411739	04/30/18 21:26	MAB	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	412456	05/03/18 15:38	DSC	TAL BUF

Client Sample ID: FIELD BLANK A

Lab Sample ID: 480-135006-19

Date Collected: 04/23/18 14:00
Matrix: Water
Date Received: 04/27/18 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3005A			412159	05/03/18 08:45	KMP	TAL BUF
Total/NA	Analysis	6010D		1	413110	05/07/18 22:14	LMH	TAL BUF
Total/NA	Analysis	300.0		1	412210	05/03/18 12:17	RJS	TAL BUF
Total/NA	Analysis	SM 2540C		1	411739	04/30/18 21:26	MAB	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	412456	05/03/18 15:41	DSC	TAL BUF

Client Sample ID: DUPLICATE A

Lab Sample ID: 480-135006-20

Date Collected: 04/23/18 00:00
Matrix: Water
Date Received: 04/27/18 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3005A			412159	05/03/18 08:45	KMP	TAL BUF
Total/NA	Analysis	6010D		1	413110	05/07/18 22:18	LMH	TAL BUF
Total/NA	Analysis	300.0		2	412210	05/03/18 12:25	RJS	TAL BUF
Total/NA	Analysis	SM 2540C		1	411739	04/30/18 21:26	MAB	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	412456	05/03/18 15:45	DSC	TAL BUF

Lab Chronicle

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

TestAmerica Job ID: 480-135006-1

Client Sample ID: DUPLICATE B

Date Collected: 04/24/18 00:00
Date Received: 04/27/18 09:40

Lab Sample ID: 480-135006-21

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3005A			412162	05/03/18 08:35	KMP	TAL BUF
Total/NA	Analysis	6010D		1	413102	05/07/18 15:34	LMH	TAL BUF
Total/NA	Analysis	300.0		2	412210	05/03/18 12:34	RJS	TAL BUF
Total/NA	Analysis	SM 2540C		1	413993	05/11/18 19:58	MAB	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	412456	05/03/18 15:48	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. TestAmerica Job ID: 480-135006-1
Project/Site: SKB Rosemount - CCR Groundwater

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	12-31-19

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

Analysis Method	Prep Method	Matrix	Analyte
SM 4500 H+ B		Water	pH
SM 4500 H+ B		Water	Temperature

Method Summary

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

TestAmerica Job ID: 480-135006-1

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

Protocol References:

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

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

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

Laboratory References:

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

Sample Summary

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

TestAmerica Job ID: 480-135006-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
480-135006-1	D-1D	Water	04/24/18 11:25	04/27/18 09:40
480-135006-2	D-1S	Water	04/24/18 11:20	04/27/18 09:40
480-135006-3	D-2D	Water	04/24/18 12:50	04/27/18 09:40
480-135006-4	D-2S	Water	04/24/18 12:45	04/27/18 09:40
480-135006-5	D-3D	Water	04/24/18 10:10	04/27/18 09:40
480-135006-6	D-3S	Water	04/24/18 10:05	04/27/18 09:40
480-135006-7	D-4D	Water	04/26/18 08:05	04/27/18 09:40
480-135006-8	D-4S	Water	04/23/18 08:00	04/27/18 09:40
480-135006-9	D-5D	Water	04/24/18 08:25	04/27/18 09:40
480-135006-10	D-5S2	Water	04/24/18 08:20	04/27/18 09:40
480-135006-11	D-7	Water	04/26/18 09:05	04/27/18 09:40
480-135006-12	D-8	Water	04/26/18 10:50	04/27/18 09:40
480-135006-13	D-9	Water	04/26/18 12:00	04/27/18 09:40
480-135006-14	U-4D	Water	04/23/18 11:25	04/27/18 09:40
480-135006-15	U-4S	Water	04/23/18 10:20	04/27/18 09:40
480-135006-16	U-5D	Water	04/23/18 13:35	04/27/18 09:40
480-135006-17	U-5S	Water	04/23/18 12:40	04/27/18 09:40
480-135006-18	EQUIPMENT BLANK	Water	04/26/18 12:20	04/27/18 09:40
480-135006-19	FIELD BLANK A	Water	04/23/18 14:00	04/27/18 09:40
480-135006-20	DUPLICATE A	Water	04/23/18 00:00	04/27/18 09:40
480-135006-21	DUPLICATE B	Water	04/24/18 00:00	04/27/18 09:40

TestAmerica Buffalo
10 Hazelwood Drive

Amherst, NY 14228-2223
phone 716.691.2600 fax 716.691.7991

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRON

TestAmerica Lab

480-135006 COC

Regulatory Program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other:

Client Contact	Project Manager: Ryan Van Dette	Site Contact: Nathaniel Beineman	Date: 4/23/18	COC No:
SKB Environmental	Tel/Fax:	Lab Contact:	Carrier:	1 of 2 COCs
13425 Courthouse Blvd	Analysis Turnaround Time			Sampler:
Rosemount, MN 55068	☐ CALENDAR DAYS ☐ WORKING DAYS			For Lab Use Only:
(651) 438-1500 Phone	TAT if different from Below _____			Walk-in Client:
(651) 438-1549 FAX	☑ 2 weeks			Lab Sampling:
Project Name: RSMNT 2018 Q2 CCR GW	☐ 1 week			
Site: Rosemount	☐ 2 days			Job / SDG No.:
P O # 3063-18-00467	☐ 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)*	TDS	pH	Sulfate	Chloride	Fluoride	Sample Specific Notes:
D-1D	4/24/18	11:25	Grab	Water	4			X	X	X	X	X	X	
D-2S	4/24/18	12:45	Grab	Water	4			X	X	X	X	X	X	
D-2D	4/24/18	12:50	Grab	Water	4			X	X	X	X	X	X	
D-4S	4/26/18	8:00	Grab	Water	4			X	X	X	X	X	X	
D-4D	4/26/18	8:05	Grab	Water	4			X	X	X	X	X	X	
D-7	4/26/18	9:05	Grab	Water	4			X	X	X	X	X	X	
D-8	4/26/18	10:50	Grab	Water	4			X	X	X	X	X	X	
D-9	4/26/18	12:00	Grab	Water	4			X	X	X	X	X	X	
Equipment Blank	4/26/18	12:20	Grab	Water	4			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

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

☐ Return to Client ☐ Disposal by Lab ☐ Archive for _____ Months

***Metals (not field filtered) - Boron, Calcium**

#1 3.6°, 3.0°, 2.4°, 3.8°C

Custody Seals Intact: ☐ Yes ☐ No	Custody Seal No.:	Cooler Temp. (°C): Obs'd: _____ Corr'd: _____	Therm ID No.: _____

Relinquished by: Michele Selgo	Company: GES	Date/Time: 4/26/18 15:30	Received by:	Company:	Date/Time: 4/27/18 0940
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:

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

TestAmerica Buffalo
10 Hazelwood Drive

Amherst, NY 14228-2223
phone 716.691.2600 fax 716.691.7991

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratories, Inc.

Regulatory Program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other:

Client Contact	Project Manager: Ryan Van Dette	Site Contact: Nathaniel Beineman	Date: 4/23/18	COC No:
SKB Environmental	Tel/Fax:	Lab Contact:	Carrier:	2 of 2 COCs
13425 Courthouse Blvd	Analysis Turnaround Time			Sampler:
Rosemount, MN 55068	☐ CALENDAR DAYS ☐ WORKING DAYS			For Lab Use Only:
(651) 438-1500 Phone	TAT if different from Below			Walk-in Client:
(651) 438-1549 FAX	☑ 2 weeks			Lab Sampling:
Project Name: RSMNT 2018 Q2 CCR GW	☐ 1 week			
Site: Rosemount	☐ 2 days			Job / SDG No.:
P O # 3063-18-00467	☐ 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)*	TDS	pH	Sulfate	Chloride	Fluoride	Sample Specific Notes:
U-4S	4/23/18	10:20	Grab	Water	4			X	X	X	X	X	X	
U-4D	4/23/18	11:25	Grab	Water	4			X	X	X	X	X	X	
U-5S	4/23/18	12:40	Grab	Water	4			X	X	X	X	X	X	
DUPLICATE A	4/23/18	—	Grab	Water	4			X	X	X	X	X	X	
U-5D	4/23/18	13:35	Grab	Water	4			X	X	X	X	X	X	
Field Blank A	4/23/18	14:00	Grab	Water	4			X	X	X	X	X	X	
D-5S2	4/24/18	8:20	Grab	Water	4			X	X	X	X	X	X	
D-5D	4/24/18	8:25	Grab	Water	4			X	X	X	X	X	X	
D-3S	4/24/18	10:05	Grab	Water	4			X	X	X	X	X	X	
D-3D	4/24/18	10:10	Grab	Water	4			X	X	X	X	X	X	
DUPLICATE B	4/24/18	—	Grab	Water	4			X	X	X	X	X	X	
D-1S	4/24/18	11:20	Grab	Water	4			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

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

☐ Return to Client ☐ Disposal by Lab ☐ Archive for _____ Months

***Metals (not field filtered) - Boron, Calcium**

#1 3.6°C, 3.0°C, 2.4°C, 3.8°C

Custody Seals Intact: ☐ Yes ☐ No	Custody Seal No.:		Cooler Temp. (°C): Obs'd:	Corr'd:	Therm ID No.:
Relinquished by: Nicholas Schell	Company: GEI	Date/Time: 4/26/18 15:30	Received by:	Company: TAB	Date/Time: 4/27/18 0940
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:

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

Login Sample Receipt Checklist

Client: Waste Connections, Inc.

Job Number: 480-135006-1
SDG Number:

Login Number: 135006
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: 480-144158-1
Client Project/Site: SKB Rosemount - CCR Groundwater
Sampling Event: CCR Groundwater

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

Attn: Nathaniel Beinemann

Authorized for release by:
11/13/2018 1:51:12 PM
Anthony Strollo, Project Management Assistant I
anthony.strollo@testamericainc.com

Designee for

Ryan VanDette, Project Manager II
(716)504-9830
ryan.vandette@testamericainc.com

Table of Contents

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.
¤	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 Rosemount - CCR Groundwater

TestAmerica Job ID: 480-144158-1

Job ID: 480-144158-1

Laboratory: TestAmerica Buffalo

Narrative

Job Narrative
480-144158-1

Comments
No additional comments.

Receipt
The samples were received on 10/25/2018 10:00 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 7 coolers at receipt time were 2.1º C, 2.2º C, 2.5º C, 2.7º C, 3.0º C, 3.1º C and 3.4º C.

HPLC/IC
Method(s) 300.0: The following samples were reported with elevated reporting limits for all analytes: D-1D (480-144158-1), D-1S (480-144158-2), D-2D (480-144158-3), D-2S (480-144158-4), D-3D (480-144158-5), D-3S (480-144158-6), D-4D (480-144158-7), D-4S (480-144158-8), D-5D (480-144158-9), D-5S2 (480-144158-10) and D-7 (480-144158-11). 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) 6010D: The Total Boron result reported for the following sample did not concur with results previously reported for this site: D-3S (480-144158-6). Reanalysis was performed, and the result 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: D-1D (480-144158-1), D-1S (480-144158-2), D-2D (480-144158-3), D-2S (480-144158-4), D-3D (480-144158-5), D-3S (480-144158-6), D-4D (480-144158-7), D-4S (480-144158-8), D-5D (480-144158-9), D-5S2 (480-144158-10), D-7 (480-144158-11), D-8 (480-144158-12), D-9 (480-144158-13), U-4D (480-144158-14), U-4S (480-144158-15), U-5D (480-144158-16), U-5S (480-144158-17), DUP-1 (480-144158-18), DUP-2 (480-144158-19), FIELD BLANK (480-144158-20) and EQUIPMENT BLANK (480-144158-21).

Method(s) SM 2540C: Due to the matrix, the initial volume(s) used for the following samples deviated from the standard procedure: (480-144013-B-1) and (480-144013-B-1 DU). The reporting limits (RLs) have been adjusted proportionately.

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 Rosemount - CCR Groundwater

TestAmerica Job ID: 480-144158-1

Client Sample ID: D-1D — Lab Sample ID: 480-144158-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	89.2		0.50		mg/L	1		6010D	Total/NA
Chloride	34.8		1.0		mg/L	2		300.0	Total/NA
Fluoride	0.11		0.10		mg/L	2		300.0	Total/NA
Sulfate	30.1		4.0		mg/L	2		300.0	Total/NA
Total Dissolved Solids	312		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
Temperature	17.2	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

Client Sample ID: D-1S — Lab Sample ID: 480-144158-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.036		0.020		mg/L	1		6010D	Total/NA
Calcium	110		0.50		mg/L	1		6010D	Total/NA
Chloride	35.4		1.0		mg/L	2		300.0	Total/NA
Sulfate	28.6		4.0		mg/L	2		300.0	Total/NA
Total Dissolved Solids	444		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	16.6	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

Client Sample ID: D-2D — Lab Sample ID: 480-144158-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	90.5		0.50		mg/L	1		6010D	Total/NA
Chloride	33.2		1.0		mg/L	2		300.0	Total/NA
Fluoride	0.17		0.10		mg/L	2		300.0	Total/NA
Sulfate	24.0		4.0		mg/L	2		300.0	Total/NA
Total Dissolved Solids	383		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	17.9	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

Client Sample ID: D-2S — Lab Sample ID: 480-144158-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.020		0.020		mg/L	1		6010D	Total/NA
Calcium	99.4		0.50		mg/L	1		6010D	Total/NA
Chloride	49.1		1.0		mg/L	2		300.0	Total/NA
Sulfate	29.2		4.0		mg/L	2		300.0	Total/NA
Total Dissolved Solids	430		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	16.6	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

Client Sample ID: D-3D — Lab Sample ID: 480-144158-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.029		0.020		mg/L	1		6010D	Total/NA

This Detection Summary does not include radiochemical test results.

Detection Summary

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

TestAmerica Job ID: 480-144158-1

Client Sample ID: D-3D (Continued) — Lab Sample ID: 480-144158-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	103		0.50		mg/L	1		6010D	Total/NA
Chloride	43.9		1.0		mg/L	2		300.0	Total/NA
Sulfate	33.4		4.0		mg/L	2		300.0	Total/NA
Total Dissolved Solids	429		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	17.1	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

Client Sample ID: D-3S — Lab Sample ID: 480-144158-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.22		0.020		mg/L	1		6010D	Total/NA
Calcium	107		0.50		mg/L	1		6010D	Total/NA
Chloride	66.1		1.0		mg/L	2		300.0	Total/NA
Sulfate	41.9		4.0		mg/L	2		300.0	Total/NA
Total Dissolved Solids	469		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	17.3	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

Client Sample ID: D-4D — Lab Sample ID: 480-144158-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	96.0		0.50		mg/L	1		6010D	Total/NA
Chloride	48.1		1.0		mg/L	2		300.0	Total/NA
Fluoride	0.10		0.10		mg/L	2		300.0	Total/NA
Sulfate	25.9		4.0		mg/L	2		300.0	Total/NA
Total Dissolved Solids	425		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	17.9	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

Client Sample ID: D-4S — Lab Sample ID: 480-144158-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	100		0.50		mg/L	1		6010D	Total/NA
Chloride	49.5		1.0		mg/L	2		300.0	Total/NA
Sulfate	26.0		4.0		mg/L	2		300.0	Total/NA
Total Dissolved Solids	426		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	16.4	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

Client Sample ID: D-5D — Lab Sample ID: 480-144158-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	97.7		0.50		mg/L	1		6010D	Total/NA
Chloride	26.3		1.0		mg/L	2		300.0	Total/NA
Sulfate	31.8		4.0		mg/L	2		300.0	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: D-5D (Continued) — Lab Sample ID: 480-144158-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Total Dissolved Solids	426		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	18.9	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

Client Sample ID: D-5S2 — Lab Sample ID: 480-144158-10

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.074		0.020		mg/L	1		6010D	Total/NA
Calcium	124		0.50		mg/L	1		6010D	Total/NA
Chloride	65.1		2.5		mg/L	5		300.0	Total/NA
Sulfate	64.0		10.0		mg/L	5		300.0	Total/NA
Total Dissolved Solids	555		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	17.1	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

Client Sample ID: D-7 — Lab Sample ID: 480-144158-11

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.067		0.020		mg/L	1		6010D	Total/NA
Calcium	100		0.50		mg/L	1		6010D	Total/NA
Chloride	27.5		1.0		mg/L	2		300.0	Total/NA
Sulfate	32.5		4.0		mg/L	2		300.0	Total/NA
Total Dissolved Solids	462		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	19.6	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

Client Sample ID: D-8 — Lab Sample ID: 480-144158-12

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	93.7		0.50		mg/L	1		6010D	Total/NA
Chloride	30.9		0.50		mg/L	1		300.0	Total/NA
Fluoride	0.16		0.050		mg/L	1		300.0	Total/NA
Sulfate	39.5		2.0		mg/L	1		300.0	Total/NA
Total Dissolved Solids	436		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	18.3	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

Client Sample ID: D-9 — Lab Sample ID: 480-144158-13

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.024		0.020		mg/L	1		6010D	Total/NA
Calcium	107		0.50		mg/L	1		6010D	Total/NA
Chloride	39.1		0.50		mg/L	1		300.0	Total/NA
Fluoride	0.12		0.050		mg/L	1		300.0	Total/NA
Sulfate	24.7		2.0		mg/L	1		300.0	Total/NA

This Detection Summary does not include radiochemical test results.

Detection Summary

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

TestAmerica Job ID: 480-144158-1

Client Sample ID: D-9 (Continued) — Lab Sample ID: 480-144158-13

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Total Dissolved Solids	454		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	19.5	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

Client Sample ID: U-4D — Lab Sample ID: 480-144158-14

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	96.4		0.50		mg/L	1		6010D	Total/NA
Chloride	37.5		0.50		mg/L	1		300.0	Total/NA
Fluoride	0.14		0.050		mg/L	1		300.0	Total/NA
Sulfate	25.8		2.0		mg/L	1		300.0	Total/NA
Total Dissolved Solids	417		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	17.9	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

Client Sample ID: U-4S — Lab Sample ID: 480-144158-15

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.021		0.020		mg/L	1		6010D	Total/NA
Calcium	96.3		0.50		mg/L	1		6010D	Total/NA
Chloride	49.5		0.50		mg/L	1		300.0	Total/NA
Fluoride	0.10		0.050		mg/L	1		300.0	Total/NA
Sulfate	16.3		2.0		mg/L	1		300.0	Total/NA
Total Dissolved Solids	448		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	19.5	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

Client Sample ID: U-5D — Lab Sample ID: 480-144158-16

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	88.5		0.50		mg/L	1		6010D	Total/NA
Chloride	27.4		0.50		mg/L	1		300.0	Total/NA
Fluoride	0.15		0.050		mg/L	1		300.0	Total/NA
Sulfate	28.5		2.0		mg/L	1		300.0	Total/NA
Total Dissolved Solids	402		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	19.8	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

Client Sample ID: U-5S — Lab Sample ID: 480-144158-17

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.034		0.020		mg/L	1		6010D	Total/NA
Calcium	99.1		0.50		mg/L	1		6010D	Total/NA
Chloride	44.2		0.50		mg/L	1		300.0	Total/NA
Fluoride	0.15		0.050		mg/L	1		300.0	Total/NA

This Detection Summary does not include radiochemical test results.

Detection Summary

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

TestAmerica Job ID: 480-144158-1

Client Sample ID: U-5S (Continued) — Lab Sample ID: 480-144158-17

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Sulfate	27.4		2.0		mg/L	1		300.0	Total/NA
Total Dissolved Solids	449		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	16.9	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

Client Sample ID: DUP-1 — Lab Sample ID: 480-144158-18

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.032		0.020		mg/L	1		6010D	Total/NA
Calcium	96.0		0.50		mg/L	1		6010D	Total/NA
Chloride	43.9		0.50		mg/L	1		300.0	Total/NA
Fluoride	0.14		0.050		mg/L	1		300.0	Total/NA
Sulfate	27.1		2.0		mg/L	1		300.0	Total/NA
Total Dissolved Solids	457		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	19.3	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

Client Sample ID: DUP-2 — Lab Sample ID: 480-144158-19

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.22		0.020		mg/L	1		6010D	Total/NA
Calcium	114		0.50		mg/L	1		6010D	Total/NA
Chloride	66.2		0.50		mg/L	1		300.0	Total/NA
Fluoride	0.081		0.050		mg/L	1		300.0	Total/NA
Sulfate	41.1		2.0		mg/L	1		300.0	Total/NA
Total Dissolved Solids	497		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	19.0	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

Client Sample ID: FIELD BLANK — Lab Sample ID: 480-144158-20

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	18.6	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

Client Sample ID: EQUIPMENT BLANK — Lab Sample ID: 480-144158-21

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Total Dissolved Solids	14.0		10.0		mg/L	1		SM 2540C	Total/NA

Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
pH	6.2	HF	0.1		SU	1		SM 4500 H+ B	Total/NA
Temperature	17.4	HF	0.001		Degrees C	1		SM 4500 H+ B	Total/NA

This Detection Summary does not include radiochemical test results.

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

TestAmerica Job ID: 480-144158-1

Client Sample ID: D-1D
Date Collected: 10/23/18 13:50
Date Received: 10/25/18 10:00

Lab Sample ID: 480-144158-1
Matrix: Water

Method: 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		0.020		mg/L		10/29/18 12:36	11/05/18 16:49	1
Calcium	**89.2**		0.50		mg/L		10/29/18 12:36	11/05/18 16:49	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**34.8**		1.0		mg/L			11/10/18 02:51	2
Fluoride	**0.11**		0.10		mg/L			11/10/18 02:51	2
Sulfate	**30.1**		4.0		mg/L			11/10/18 02:51	2
Total Dissolved Solids	**312**		10.0		mg/L			10/30/18 18:03	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	**7.8**	**HF**	0.1		SU			10/29/18 13:05	1
Temperature	**17.2**	**HF**	0.001		Degrees C			10/29/18 13:05	1

Client Sample Results

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

TestAmerica Job ID: 480-144158-1

Client Sample ID: D-1S

Date Collected: 10/23/18 12:35
Date Received: 10/25/18 10:00

Lab Sample ID: 480-144158-2

Matrix: Water

Method: 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	**0.036**		0.020		mg/L		10/29/18 12:36	11/05/18 17:04	1
Calcium	**110**		0.50		mg/L		10/29/18 12:36	11/05/18 17:04	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**35.4**		1.0		mg/L			11/10/18 03:06	2
Fluoride	ND		0.10		mg/L			11/10/18 03:06	2
Sulfate	**28.6**		4.0		mg/L			11/10/18 03:06	2
Total Dissolved Solids	**444**		10.0		mg/L			10/30/18 18:03	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	**7.2**	**HF**	0.1		SU			10/29/18 13:07	1
Temperature	**16.6**	**HF**	0.001		Degrees C			10/29/18 13:07	1

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

TestAmerica Job ID: 480-144158-1

Client Sample ID: D-2D
Date Collected: 10/23/18 15:30
Date Received: 10/25/18 10:00

Lab Sample ID: 480-144158-3
Matrix: Water

Method: 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		0.020		mg/L		10/29/18 12:36	11/05/18 17:08	1
Calcium	**90.5**		0.50		mg/L		10/29/18 12:36	11/05/18 17:08	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**33.2**		1.0		mg/L			11/10/18 03:20	2
Fluoride	**0.17**		0.10		mg/L			11/10/18 03:20	2
Sulfate	**24.0**		4.0		mg/L			11/10/18 03:20	2
Total Dissolved Solids	**383**		10.0		mg/L			10/30/18 18:03	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	**7.5**	**HF**	0.1		SU			10/29/18 13:18	1
Temperature	**17.9**	**HF**	0.001		Degrees C			10/29/18 13:18	1

Client Sample Results

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

TestAmerica Job ID: 480-144158-1

Client Sample ID: D-2S
Date Collected: 10/23/18 14:30
Date Received: 10/25/18 10:00

Lab Sample ID: 480-144158-4
Matrix: Water

Method: 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	0.020		0.020		mg/L		10/29/18 12:36	11/05/18 17:26	1
Calcium	99.4		0.50		mg/L		10/29/18 12:36	11/05/18 17:26	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	49.1		1.0		mg/L			11/10/18 03:35	2
Fluoride	ND		0.10		mg/L			11/10/18 03:35	2
Sulfate	29.2		4.0		mg/L			11/10/18 03:35	2
Total Dissolved Solids	430		10.0		mg/L			10/30/18 18:03	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	7.4	HF	0.1		SU			10/29/18 13:12	1
Temperature	16.6	HF	0.001		Degrees C			10/29/18 13:12	1

Client Sample ID: D-3D

Date Collected: 10/23/18 11:40
Date Received: 10/25/18 10:00

Lab Sample ID: 480-144158-5

Matrix: Water

Method: 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	**0.029**		0.020		mg/L		10/29/18 12:36	11/05/18 17:30	1
Calcium	**103**		0.50		mg/L		10/29/18 12:36	11/05/18 17:30	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**43.9**		1.0		mg/L			11/10/18 03:49	2
Fluoride	ND		0.10		mg/L			11/10/18 03:49	2
Sulfate	**33.4**		4.0		mg/L			11/10/18 03:49	2
Total Dissolved Solids	**429**		10.0		mg/L			10/30/18 18:03	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	**7.5**	**HF**	0.1		SU			10/29/18 13:26	1
Temperature	**17.1**	**HF**	0.001		Degrees C			10/29/18 13:26	1

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

TestAmerica Job ID: 480-144158-1

Client Sample ID: D-3S
Date Collected: 10/23/18 10:40
Date Received: 10/25/18 10:00

Lab Sample ID: 480-144158-6
Matrix: Water

Method: 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	0.22		0.020		mg/L		10/29/18 12:36	11/05/18 17:34	1
Calcium	107		0.50		mg/L		10/29/18 12:36	11/05/18 17:34	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	66.1		1.0		mg/L			11/10/18 04:04	2
Fluoride	ND		0.10		mg/L			11/10/18 04:04	2
Sulfate	41.9		4.0		mg/L			11/10/18 04:04	2
Total Dissolved Solids	469		10.0		mg/L			10/30/18 18:03	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	7.4	HF	0.1		SU			10/29/18 13:23	1
Temperature	17.3	HF	0.001		Degrees C			10/29/18 13:23	1

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

TestAmerica Job ID: 480-144158-1

Client Sample ID: D-4D
Date Collected: 10/22/18 09:35
Date Received: 10/25/18 10:00

Lab Sample ID: 480-144158-7
Matrix: Water

Method: 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		0.020		mg/L		10/29/18 12:36	11/05/18 17:49	1
Calcium	**96.0**		0.50		mg/L		10/29/18 12:36	11/05/18 17:49	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**48.1**		1.0		mg/L			11/10/18 04:19	2
Fluoride	**0.10**		0.10		mg/L			11/10/18 04:19	2
Sulfate	**25.9**		4.0		mg/L			11/10/18 04:19	2
Total Dissolved Solids	**425**		10.0		mg/L			10/29/18 09:12	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	**7.5**	**HF**	0.1		SU			10/29/18 13:20	1
Temperature	**17.9**	**HF**	0.001		Degrees C			10/29/18 13:20	1

Client Sample Results

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

TestAmerica Job ID: 480-144158-1

Client Sample ID: D-4S
Date Collected: 10/22/18 08:55
Date Received: 10/25/18 10:00

Lab Sample ID: 480-144158-8
Matrix: Water

Method: 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		0.020		mg/L		10/29/18 12:36	11/05/18 17:53	1
Calcium	**100**		0.50		mg/L		10/29/18 12:36	11/05/18 17:53	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**49.5**		1.0		mg/L			11/10/18 04:33	2
Fluoride	ND		0.10		mg/L			11/10/18 04:33	2
Sulfate	**26.0**		4.0		mg/L			11/10/18 04:33	2
Total Dissolved Solids	**426**		10.0		mg/L			10/29/18 09:12	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	**7.5**	**HF**	0.1		SU			10/29/18 13:10	1
Temperature	**16.4**	**HF**	0.001		Degrees C			10/29/18 13:10	1

Client Sample Results

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

TestAmerica Job ID: 480-144158-1

Client Sample ID: D-5D
Date Collected: 10/24/18 09:45
Date Received: 10/25/18 10:00

Lab Sample ID: 480-144158-9
Matrix: Water

Method: 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		0.020		mg/L		10/29/18 12:36	11/05/18 17:56	1
Calcium	**97.7**		0.50		mg/L		10/29/18 12:36	11/05/18 17:56	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**26.3**		1.0		mg/L			11/10/18 04:48	2
Fluoride	ND		0.10		mg/L			11/10/18 04:48	2
Sulfate	**31.8**		4.0		mg/L			11/10/18 04:48	2
Total Dissolved Solids	**426**		10.0		mg/L			10/31/18 21:40	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	**7.5**	**HF**	0.1		SU			10/29/18 13:52	1
Temperature	**18.9**	**HF**	0.001		Degrees C			10/29/18 13:52	1

Client Sample Results

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

TestAmerica Job ID: 480-144158-1

Client Sample ID: D-5S2
Date Collected: 10/24/18 09:15
Date Received: 10/25/18 10:00

Lab Sample ID: 480-144158-10
Matrix: Water

Method: 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	0.074		0.020		mg/L		10/29/18 12:36	11/05/18 18:00	1
Calcium	124		0.50		mg/L		10/29/18 12:36	11/05/18 18:00	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	65.1		2.5		mg/L			11/10/18 06:15	5
Fluoride	ND		0.25		mg/L			11/10/18 06:15	5
Sulfate	64.0		10.0		mg/L			11/10/18 06:15	5
Total Dissolved Solids	555		10.0		mg/L			10/31/18 20:49	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	7.3	HF	0.1		SU			10/29/18 13:28	1
Temperature	17.1	HF	0.001		Degrees C			10/29/18 13:28	1

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

TestAmerica Job ID: 480-144158-1

Client Sample ID: D-7
Date Collected: 10/24/18 07:45
Date Received: 10/25/18 10:00

Lab Sample ID: 480-144158-11
Matrix: Water

Method: 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	0.067		0.020		mg/L		10/29/18 12:36	11/05/18 18:04	1
Calcium	100		0.50		mg/L		10/29/18 12:36	11/05/18 18:04	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	27.5		1.0		mg/L			11/10/18 06:30	2
Fluoride	ND		0.10		mg/L			11/10/18 06:30	2
Sulfate	32.5		4.0		mg/L			11/10/18 06:30	2
Total Dissolved Solids	462		10.0		mg/L			10/31/18 20:49	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	7.5	HF	0.1		SU			10/29/18 13:55	1
Temperature	19.6	HF	0.001		Degrees C			10/29/18 13:55	1

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

TestAmerica Job ID: 480-144158-1

Client Sample ID: D-8
Date Collected: 10/24/18 10:15
Date Received: 10/25/18 10:00

Lab Sample ID: 480-144158-12
Matrix: Water

Method: 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		0.020		mg/L		10/29/18 12:36	11/05/18 18:07	1
Calcium	**93.7**		0.50		mg/L		10/29/18 12:36	11/05/18 18:07	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**30.9**		0.50		mg/L			11/10/18 06:44	1
Fluoride	**0.16**		0.050		mg/L			11/10/18 06:44	1
Sulfate	**39.5**		2.0		mg/L			11/10/18 06:44	1
Total Dissolved Solids	**436**		10.0		mg/L			10/31/18 20:49	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	**7.6**	**HF**	0.1		SU			10/29/18 13:47	1
Temperature	**18.3**	**HF**	0.001		Degrees C			10/29/18 13:47	1

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

TestAmerica Job ID: 480-144158-1

Client Sample ID: D-9

Date Collected: 10/24/18 11:35
Date Received: 10/25/18 10:00

Lab Sample ID: 480-144158-13

Matrix: Water

Method: 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	0.024		0.020		mg/L		10/30/18 13:58	11/05/18 19:24	1
Calcium	107		0.50		mg/L		10/30/18 13:58	11/05/18 19:24	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	39.1		0.50		mg/L			11/10/18 06:59	1
Fluoride	0.12		0.050		mg/L			11/10/18 06:59	1
Sulfate	24.7		2.0		mg/L			11/10/18 06:59	1
Total Dissolved Solids	454		10.0		mg/L			10/31/18 20:49	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	7.6	HF	0.1		SU			10/29/18 14:02	1
Temperature	19.5	HF	0.001		Degrees C			10/29/18 14:02	1

Client Sample ID: U-4D

Date Collected: 10/24/18 14:00
Date Received: 10/25/18 10:00

Lab Sample ID: 480-144158-14

Matrix: Water

Method: 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		0.020		mg/L		10/30/18 13:58	11/05/18 19:39	1
Calcium	**96.4**		0.50		mg/L		10/30/18 13:58	11/05/18 19:39	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**37.5**		0.50		mg/L			11/10/18 07:14	1
Fluoride	**0.14**		0.050		mg/L			11/10/18 07:14	1
Sulfate	**25.8**		2.0		mg/L			11/10/18 07:14	1
Total Dissolved Solids	**417**		10.0		mg/L			10/31/18 20:49	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	**7.5**	**HF**	0.1		SU			10/29/18 13:33	1
Temperature	**17.9**	**HF**	0.001		Degrees C			10/29/18 13:33	1

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

TestAmerica Job ID: 480-144158-1

Client Sample ID: U-4S

Date Collected: 10/24/18 13:05
Date Received: 10/25/18 10:00

Lab Sample ID: 480-144158-15

Matrix: Water

Method: 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	0.021		0.020		mg/L		10/30/18 13:58	11/05/18 19:43	1
Calcium	96.3		0.50		mg/L		10/30/18 13:58	11/05/18 19:43	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	49.5		0.50		mg/L			11/10/18 07:28	1
Fluoride	0.10		0.050		mg/L			11/10/18 07:28	1
Sulfate	16.3		2.0		mg/L			11/10/18 07:28	1
Total Dissolved Solids	448		10.0		mg/L			10/31/18 20:49	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	7.4	HF	0.1		SU			10/29/18 14:00	1
Temperature	19.5	HF	0.001		Degrees C			10/29/18 14:00	1

Client Sample ID: U-5D

Date Collected: 10/24/18 13:35
Date Received: 10/25/18 10:00

Lab Sample ID: 480-144158-16

Matrix: Water

Method: 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		0.020		mg/L		10/30/18 13:58	11/05/18 19:46	1
Calcium	**88.5**		0.50		mg/L		10/30/18 13:58	11/05/18 19:46	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**27.4**		0.50		mg/L			11/10/18 08:41	1
Fluoride	**0.15**		0.050		mg/L			11/10/18 08:41	1
Sulfate	**28.5**		2.0		mg/L			11/10/18 08:41	1
Total Dissolved Solids	**402**		10.0		mg/L			10/31/18 20:49	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	**7.6**	**HF**	0.1		SU			10/29/18 13:57	1
Temperature	**19.8**	**HF**	0.001		Degrees C			10/29/18 13:57	1

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

TestAmerica Job ID: 480-144158-1

Client Sample ID: U-5S

Date Collected: 10/24/18 15:25
Date Received: 10/25/18 10:00

Lab Sample ID: 480-144158-17

Matrix: Water

Method: 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	0.034		0.020		mg/L		10/30/18 13:58	11/05/18 19:50	1
Calcium	99.1		0.50		mg/L		10/30/18 13:58	11/05/18 19:50	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	44.2		0.50		mg/L			11/10/18 08:56	1
Fluoride	0.15		0.050		mg/L			11/10/18 08:56	1
Sulfate	27.4		2.0		mg/L			11/10/18 08:56	1
Total Dissolved Solids	449		10.0		mg/L			10/31/18 20:49	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	7.4	HF	0.1		SU			10/29/18 12:57	1
Temperature	16.9	HF	0.001		Degrees C			10/29/18 12:57	1

Client Sample Results

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

TestAmerica Job ID: 480-144158-1

Client Sample ID: DUP-1
Date Collected: 10/24/18 00:00
Date Received: 10/25/18 10:00

Lab Sample ID: 480-144158-18
Matrix: Water

Method: 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	0.032		0.020		mg/L		10/30/18 13:58	11/05/18 19:54	1
Calcium	96.0		0.50		mg/L		10/30/18 13:58	11/05/18 19:54	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	43.9		0.50		mg/L			11/10/18 09:10	1
Fluoride	0.14		0.050		mg/L			11/10/18 09:10	1
Sulfate	27.1		2.0		mg/L			11/10/18 09:10	1
Total Dissolved Solids	457		10.0		mg/L			10/31/18 20:49	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	7.5	HF	0.1		SU			10/29/18 13:39	1
Temperature	19.3	HF	0.001		Degrees C			10/29/18 13:39	1

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

TestAmerica Job ID: 480-144158-1

Client Sample ID: DUP-2
Date Collected: 10/24/18 00:00
Date Received: 10/25/18 10:00

Lab Sample ID: 480-144158-19
Matrix: Water

Method: 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	0.22		0.020		mg/L		10/30/18 13:58	11/05/18 19:57	1
Calcium	114		0.50		mg/L		10/30/18 13:58	11/05/18 19:57	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	66.2		0.50		mg/L			11/10/18 09:25	1
Fluoride	0.081		0.050		mg/L			11/10/18 09:25	1
Sulfate	41.1		2.0		mg/L			11/10/18 09:25	1
Total Dissolved Solids	497		10.0		mg/L			10/31/18 20:49	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	7.5	HF	0.1		SU			10/29/18 13:36	1
Temperature	19.0	HF	0.001		Degrees C			10/29/18 13:36	1

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

TestAmerica Job ID: 480-144158-1

Client Sample ID: FIELD BLANK
Date Collected: 10/24/18 17:10
Date Received: 10/25/18 10:00

Lab Sample ID: 480-144158-20
Matrix: Water

Method: 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		0.020		mg/L		10/30/18 13:58	11/05/18 20:01	1
Calcium	ND		0.50		mg/L		10/30/18 13:58	11/05/18 20:01	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		0.50		mg/L			11/10/18 09:40	1
Fluoride	ND		0.050		mg/L			11/10/18 09:40	1
Sulfate	ND		2.0		mg/L			11/10/18 09:40	1
Total Dissolved Solids	ND		10.0		mg/L			10/31/18 20:49	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	**6.4**	**HF**	0.1		SU			10/29/18 13:42	1
Temperature	**18.6**	**HF**	0.001		Degrees C			10/29/18 13:42	1

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

TestAmerica Job ID: 480-144158-1

Client Sample ID: EQUIPMENT BLANK
Date Collected: 10/24/18 12:25
Date Received: 10/25/18 10:00

Lab Sample ID: 480-144158-21
Matrix: Water

Method: 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		0.020		mg/L		10/30/18 13:58	11/05/18 20:05	1
Calcium	ND		0.50		mg/L		10/30/18 13:58	11/05/18 20:05	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		0.50		mg/L			11/10/18 09:54	1
Fluoride	ND		0.050		mg/L			11/10/18 09:54	1
Sulfate	ND		2.0		mg/L			11/10/18 09:54	1
Total Dissolved Solids	**14.0**		10.0		mg/L			10/31/18 20:49	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH	**6.2**	**HF**	0.1		SU			10/29/18 13:31	1
Temperature	**17.4**	**HF**	0.001		Degrees C			10/29/18 13:31	1

Method: 6010D - Metals (ICP)

Lab Sample ID: MB 480-442259/1-A
Matrix: Water
Analysis Batch: 443783

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 442259

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		0.020		mg/L		10/29/18 12:36	11/05/18 16:42	1
Calcium	ND		0.50		mg/L		10/29/18 12:36	11/05/18 16:42	1

Lab Sample ID: LCS 480-442259/2-A
Matrix: Water
Analysis Batch: 443783

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 442259

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Boron	0.200	0.202		mg/L		101	80 - 120
Calcium	10.0	9.71		mg/L		97	80 - 120

Lab Sample ID: 480-144158-3 MS
Matrix: Water
Analysis Batch: 443783

Client Sample ID: D-2D
Prep Type: Total/NA
Prep Batch: 442259

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Boron	ND		0.200	0.222		mg/L		104	75 - 125
Calcium	90.5		10.0	99.51	4	mg/L		90	75 - 125

Lab Sample ID: 480-144158-3 MSD
Matrix: Water
Analysis Batch: 443783

Client Sample ID: D-2D
Prep Type: Total/NA
Prep Batch: 442259

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Boron	ND		0.200	0.223		mg/L		104	75 - 125	0	20
Calcium	90.5		10.0	100.3	4	mg/L		98	75 - 125	1	20

Lab Sample ID: MB 480-442401/1-A
Matrix: Water
Analysis Batch: 443793

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 442401

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		0.020		mg/L		10/30/18 13:58	11/05/18 18:59	1
Calcium	ND		0.50		mg/L		10/30/18 13:58	11/05/18 18:59	1

Lab Sample ID: LCS 480-442401/2-A
Matrix: Water
Analysis Batch: 443793

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 442401

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Boron	0.200	0.200		mg/L		100	80 - 120
Calcium	10.0	9.88		mg/L		99	80 - 120

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 480-444663/28
Matrix: Water
Analysis Batch: 444663

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			11/10/18 06:01	1
Fluoride	ND		0.050		mg/L			11/10/18 06:01	1
Sulfate	ND		2.0		mg/L			11/10/18 06:01	1

Lab Sample ID: MB 480-444663/4
Matrix: Water
Analysis Batch: 444663

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			11/10/18 00:11	1
Fluoride	ND		0.050		mg/L			11/10/18 00:11	1
Sulfate	ND		2.0		mg/L			11/10/18 00:11	1

Lab Sample ID: LCS 480-444663/27
Matrix: Water
Analysis Batch: 444663

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	49.63		mg/L		99	90 - 110
Fluoride	5.00	4.83		mg/L		97	90 - 110
Sulfate	50.0	48.16		mg/L		96	90 - 110

Lab Sample ID: LCS 480-444663/3
Matrix: Water
Analysis Batch: 444663

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	49.69		mg/L		99	90 - 110
Fluoride	5.00	4.81		mg/L		96	90 - 110
Sulfate	50.0	47.60		mg/L		95	90 - 110

Lab Sample ID: 480-144158-9 MS
Matrix: Water
Analysis Batch: 444663

Client Sample ID: D-5D
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	26.3		100	131.8		mg/L		106	81 - 120
Fluoride	ND		10.0	9.85		mg/L		98	82 - 120
Sulfate	31.8		100	132.8		mg/L		101	80 - 120

Lab Sample ID: 480-144158-15 MS
Matrix: Water
Analysis Batch: 444663

Client Sample ID: U-4S
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	49.5		50.0	96.99		mg/L		95	81 - 120
Fluoride	0.10		5.00	4.77		mg/L		93	82 - 120
Sulfate	16.3		50.0	64.18		mg/L		96	80 - 120

Method: 300.0 - Anions, Ion Chromatography (Continued)

Lab Sample ID: 480-144158-15 MSD
Matrix: Water
Analysis Batch: 444663

Client Sample ID: U-4S
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	49.5		50.0	96.94		mg/L		95	81 - 120	0	20
Fluoride	0.10		5.00	4.81		mg/L		94	82 - 120	1	20
Sulfate	16.3		50.0	63.06		mg/L		93	80 - 120	2	20

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

Lab Sample ID: MB 480-442257/1
Matrix: Water
Analysis Batch: 442257

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			10/29/18 09:12	1

Lab Sample ID: LCS 480-442257/2
Matrix: Water
Analysis Batch: 442257

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	500	491.0		mg/L		98	85 - 115

Lab Sample ID: MB 480-442614/1
Matrix: Water
Analysis Batch: 442614

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			10/30/18 18:03	1

Lab Sample ID: LCS 480-442614/2
Matrix: Water
Analysis Batch: 442614

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	500	457.0		mg/L		91	85 - 115

Lab Sample ID: 480-144158-1 DU
Matrix: Water
Analysis Batch: 442614

Client Sample ID: D-1D
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Dissolved Solids	312		338.0		mg/L		8	10

Lab Sample ID: MB 480-442929/1
Matrix: Water
Analysis Batch: 442929

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			10/31/18 20:49	1

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

Lab Sample ID: LCS 480-442929/2
Matrix: Water
Analysis Batch: 442929

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			500	493.0		mg/L		99	85 - 115		

Lab Sample ID: 480-144158-10 DU
Matrix: Water
Analysis Batch: 442929

Client Sample ID: D-5S2
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Total Dissolved Solids	555			550.0		mg/L				0.9	10

Lab Sample ID: 480-144158-21 DU
Matrix: Water
Analysis Batch: 442929

Client Sample ID: EQUIPMENT BLANK
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Total Dissolved Solids	14.0			13.00		mg/L				7	10

Lab Sample ID: MB 480-442934/1
Matrix: Water
Analysis Batch: 442934

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			10/31/18 21:40	1

Lab Sample ID: LCS 480-442934/2
Matrix: Water
Analysis Batch: 442934

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			500	488.0		mg/L		98	85 - 115		

Method: SM 4500 H+ B - pH

Lab Sample ID: LCS 480-442354/23
Matrix: Water
Analysis Batch: 442354

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		

Lab Sample ID: LCS 480-442354/45
Matrix: Water
Analysis Batch: 442354

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		

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

Lab Sample ID: 480-144158-12 DU
Matrix: Water
Analysis Batch: 442354

Client Sample ID: D-8
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
pH	7.6	HF		7.7		SU				0.8	5
Temperature	18.3	HF		18.4		Degrees C				0.7	10

Metals

Prep Batch: 442259

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-144158-1	D-1D	Total/NA	Water	3005A	
480-144158-2	D-1S	Total/NA	Water	3005A	
480-144158-3	D-2D	Total/NA	Water	3005A	
480-144158-4	D-2S	Total/NA	Water	3005A	
480-144158-5	D-3D	Total/NA	Water	3005A	
480-144158-6	D-3S	Total/NA	Water	3005A	
480-144158-7	D-4D	Total/NA	Water	3005A	
480-144158-8	D-4S	Total/NA	Water	3005A	
480-144158-9	D-5D	Total/NA	Water	3005A	
480-144158-10	D-5S2	Total/NA	Water	3005A	
480-144158-11	D-7	Total/NA	Water	3005A	
480-144158-12	D-8	Total/NA	Water	3005A	
MB 480-442259/1-A	Method Blank	Total/NA	Water	3005A	
LCS 480-442259/2-A	Lab Control Sample	Total/NA	Water	3005A	
480-144158-3 MS	D-2D	Total/NA	Water	3005A	
480-144158-3 MSD	D-2D	Total/NA	Water	3005A	

Prep Batch: 442401

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-144158-13	D-9	Total/NA	Water	3005A	
480-144158-14	U-4D	Total/NA	Water	3005A	
480-144158-15	U-4S	Total/NA	Water	3005A	
480-144158-16	U-5D	Total/NA	Water	3005A	
480-144158-17	U-5S	Total/NA	Water	3005A	
480-144158-18	DUP-1	Total/NA	Water	3005A	
480-144158-19	DUP-2	Total/NA	Water	3005A	
480-144158-20	FIELD BLANK	Total/NA	Water	3005A	
480-144158-21	EQUIPMENT BLANK	Total/NA	Water	3005A	
MB 480-442401/1-A	Method Blank	Total/NA	Water	3005A	
LCS 480-442401/2-A	Lab Control Sample	Total/NA	Water	3005A	

Analysis Batch: 443783

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-144158-1	D-1D	Total/NA	Water	6010D	442259
480-144158-2	D-1S	Total/NA	Water	6010D	442259
480-144158-3	D-2D	Total/NA	Water	6010D	442259
480-144158-4	D-2S	Total/NA	Water	6010D	442259
480-144158-5	D-3D	Total/NA	Water	6010D	442259
480-144158-6	D-3S	Total/NA	Water	6010D	442259
480-144158-7	D-4D	Total/NA	Water	6010D	442259
480-144158-8	D-4S	Total/NA	Water	6010D	442259
480-144158-9	D-5D	Total/NA	Water	6010D	442259
480-144158-10	D-5S2	Total/NA	Water	6010D	442259
480-144158-11	D-7	Total/NA	Water	6010D	442259
480-144158-12	D-8	Total/NA	Water	6010D	442259
MB 480-442259/1-A	Method Blank	Total/NA	Water	6010D	442259
LCS 480-442259/2-A	Lab Control Sample	Total/NA	Water	6010D	442259
480-144158-3 MS	D-2D	Total/NA	Water	6010D	442259
480-144158-3 MSD	D-2D	Total/NA	Water	6010D	442259

Metals (Continued)

Analysis Batch: 443793

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-144158-13	D-9	Total/NA	Water	6010D	442401
480-144158-14	U-4D	Total/NA	Water	6010D	442401
480-144158-15	U-4S	Total/NA	Water	6010D	442401
480-144158-16	U-5D	Total/NA	Water	6010D	442401
480-144158-17	U-5S	Total/NA	Water	6010D	442401
480-144158-18	DUP-1	Total/NA	Water	6010D	442401
480-144158-19	DUP-2	Total/NA	Water	6010D	442401
480-144158-20	FIELD BLANK	Total/NA	Water	6010D	442401
480-144158-21	EQUIPMENT BLANK	Total/NA	Water	6010D	442401
MB 480-442401/1-A	Method Blank	Total/NA	Water	6010D	442401
LCS 480-442401/2-A	Lab Control Sample	Total/NA	Water	6010D	442401

General Chemistry

Analysis Batch: 442257

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-144158-7	D-4D	Total/NA	Water	SM 2540C	
480-144158-8	D-4S	Total/NA	Water	SM 2540C	
MB 480-442257/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 480-442257/2	Lab Control Sample	Total/NA	Water	SM 2540C	

Analysis Batch: 442354

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-144158-1	D-1D	Total/NA	Water	SM 4500 H+ B	
480-144158-2	D-1S	Total/NA	Water	SM 4500 H+ B	
480-144158-3	D-2D	Total/NA	Water	SM 4500 H+ B	
480-144158-4	D-2S	Total/NA	Water	SM 4500 H+ B	
480-144158-5	D-3D	Total/NA	Water	SM 4500 H+ B	
480-144158-6	D-3S	Total/NA	Water	SM 4500 H+ B	
480-144158-7	D-4D	Total/NA	Water	SM 4500 H+ B	
480-144158-8	D-4S	Total/NA	Water	SM 4500 H+ B	
480-144158-9	D-5D	Total/NA	Water	SM 4500 H+ B	
480-144158-10	D-5S2	Total/NA	Water	SM 4500 H+ B	
480-144158-11	D-7	Total/NA	Water	SM 4500 H+ B	
480-144158-12	D-8	Total/NA	Water	SM 4500 H+ B	
480-144158-13	D-9	Total/NA	Water	SM 4500 H+ B	
480-144158-14	U-4D	Total/NA	Water	SM 4500 H+ B	
480-144158-15	U-4S	Total/NA	Water	SM 4500 H+ B	
480-144158-16	U-5D	Total/NA	Water	SM 4500 H+ B	
480-144158-17	U-5S	Total/NA	Water	SM 4500 H+ B	
480-144158-18	DUP-1	Total/NA	Water	SM 4500 H+ B	
480-144158-19	DUP-2	Total/NA	Water	SM 4500 H+ B	
480-144158-20	FIELD BLANK	Total/NA	Water	SM 4500 H+ B	
480-144158-21	EQUIPMENT BLANK	Total/NA	Water	SM 4500 H+ B	
LCS 480-442354/23	Lab Control Sample	Total/NA	Water	SM 4500 H+ B	
LCS 480-442354/45	Lab Control Sample	Total/NA	Water	SM 4500 H+ B	
480-144158-12 DU	D-8	Total/NA	Water	SM 4500 H+ B	

General Chemistry (Continued)

Analysis Batch: 442614

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-144158-1	D-1D	Total/NA	Water	SM 2540C	
480-144158-2	D-1S	Total/NA	Water	SM 2540C	
480-144158-3	D-2D	Total/NA	Water	SM 2540C	
480-144158-4	D-2S	Total/NA	Water	SM 2540C	
480-144158-5	D-3D	Total/NA	Water	SM 2540C	
480-144158-6	D-3S	Total/NA	Water	SM 2540C	
MB 480-442614/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 480-442614/2	Lab Control Sample	Total/NA	Water	SM 2540C	
480-144158-1 DU	D-1D	Total/NA	Water	SM 2540C	

Analysis Batch: 442929

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-144158-10	D-5S2	Total/NA	Water	SM 2540C	
480-144158-11	D-7	Total/NA	Water	SM 2540C	
480-144158-12	D-8	Total/NA	Water	SM 2540C	
480-144158-13	D-9	Total/NA	Water	SM 2540C	
480-144158-14	U-4D	Total/NA	Water	SM 2540C	
480-144158-15	U-4S	Total/NA	Water	SM 2540C	
480-144158-16	U-5D	Total/NA	Water	SM 2540C	
480-144158-17	U-5S	Total/NA	Water	SM 2540C	
480-144158-18	DUP-1	Total/NA	Water	SM 2540C	
480-144158-19	DUP-2	Total/NA	Water	SM 2540C	
480-144158-20	FIELD BLANK	Total/NA	Water	SM 2540C	
480-144158-21	EQUIPMENT BLANK	Total/NA	Water	SM 2540C	
MB 480-442929/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 480-442929/2	Lab Control Sample	Total/NA	Water	SM 2540C	
480-144158-10 DU	D-5S2	Total/NA	Water	SM 2540C	
480-144158-21 DU	EQUIPMENT BLANK	Total/NA	Water	SM 2540C	

Analysis Batch: 442934

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-144158-9	D-5D	Total/NA	Water	SM 2540C	
MB 480-442934/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 480-442934/2	Lab Control Sample	Total/NA	Water	SM 2540C	

Analysis Batch: 444663

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-144158-1	D-1D	Total/NA	Water	300.0	
480-144158-2	D-1S	Total/NA	Water	300.0	
480-144158-3	D-2D	Total/NA	Water	300.0	
480-144158-4	D-2S	Total/NA	Water	300.0	
480-144158-5	D-3D	Total/NA	Water	300.0	
480-144158-6	D-3S	Total/NA	Water	300.0	
480-144158-7	D-4D	Total/NA	Water	300.0	
480-144158-8	D-4S	Total/NA	Water	300.0	
480-144158-9	D-5D	Total/NA	Water	300.0	
480-144158-10	D-5S2	Total/NA	Water	300.0	
480-144158-11	D-7	Total/NA	Water	300.0	
480-144158-12	D-8	Total/NA	Water	300.0	
480-144158-13	D-9	Total/NA	Water	300.0	
480-144158-14	U-4D	Total/NA	Water	300.0	

General Chemistry (Continued)

Analysis Batch: 444663 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-144158-15	U-4S	Total/NA	Water	300.0	
480-144158-16	U-5D	Total/NA	Water	300.0	
480-144158-17	U-5S	Total/NA	Water	300.0	
480-144158-18	DUP-1	Total/NA	Water	300.0	
480-144158-19	DUP-2	Total/NA	Water	300.0	
480-144158-20	FIELD BLANK	Total/NA	Water	300.0	
480-144158-21	EQUIPMENT BLANK	Total/NA	Water	300.0	
MB 480-444663/28	Method Blank	Total/NA	Water	300.0	
MB 480-444663/4	Method Blank	Total/NA	Water	300.0	
LCS 480-444663/27	Lab Control Sample	Total/NA	Water	300.0	
LCS 480-444663/3	Lab Control Sample	Total/NA	Water	300.0	
480-144158-9 MS	D-5D	Total/NA	Water	300.0	
480-144158-15 MS	U-4S	Total/NA	Water	300.0	
480-144158-15 MSD	U-4S	Total/NA	Water	300.0	

Lab Chronicle

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

TestAmerica Job ID: 480-144158-1

Client Sample ID: D-1D

Lab Sample ID: 480-144158-1

Date Collected: 10/23/18 13:50
Matrix: Water
Date Received: 10/25/18 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3005A			442259	10/29/18 12:36	VEG	TAL BUF
Total/NA	Analysis	6010D		1	443783	11/05/18 16:49	EMB	TAL BUF
Total/NA	Analysis	300.0		2	444663	11/10/18 02:51	CLA	TAL BUF
Total/NA	Analysis	SM 2540C		1	442614	10/30/18 18:03	KTP	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	442354	10/29/18 13:05	KEB	TAL BUF

Client Sample ID: D-1S

Lab Sample ID: 480-144158-2

Date Collected: 10/23/18 12:35
Matrix: Water
Date Received: 10/25/18 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3005A			442259	10/29/18 12:36	VEG	TAL BUF
Total/NA	Analysis	6010D		1	443783	11/05/18 17:04	EMB	TAL BUF
Total/NA	Analysis	300.0		2	444663	11/10/18 03:06	CLA	TAL BUF
Total/NA	Analysis	SM 2540C		1	442614	10/30/18 18:03	KTP	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	442354	10/29/18 13:07	KEB	TAL BUF

Client Sample ID: D-2D

Lab Sample ID: 480-144158-3

Date Collected: 10/23/18 15:30
Matrix: Water
Date Received: 10/25/18 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3005A			442259	10/29/18 12:36	VEG	TAL BUF
Total/NA	Analysis	6010D		1	443783	11/05/18 17:08	EMB	TAL BUF
Total/NA	Analysis	300.0		2	444663	11/10/18 03:20	CLA	TAL BUF
Total/NA	Analysis	SM 2540C		1	442614	10/30/18 18:03	KTP	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	442354	10/29/18 13:18	KEB	TAL BUF

Client Sample ID: D-2S

Lab Sample ID: 480-144158-4

Date Collected: 10/23/18 14:30
Matrix: Water
Date Received: 10/25/18 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3005A			442259	10/29/18 12:36	VEG	TAL BUF
Total/NA	Analysis	6010D		1	443783	11/05/18 17:26	EMB	TAL BUF
Total/NA	Analysis	300.0		2	444663	11/10/18 03:35	CLA	TAL BUF
Total/NA	Analysis	SM 2540C		1	442614	10/30/18 18:03	KTP	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	442354	10/29/18 13:12	KEB	TAL BUF

Lab Chronicle

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

TestAmerica Job ID: 480-144158-1

Client Sample ID: D-3D

Date Collected: 10/23/18 11:40
Date Received: 10/25/18 10:00

Lab Sample ID: 480-144158-5
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3005A			442259	10/29/18 12:36	VEG	TAL BUF
Total/NA	Analysis	6010D		1	443783	11/05/18 17:30	EMB	TAL BUF
Total/NA	Analysis	300.0		2	444663	11/10/18 03:49	CLA	TAL BUF
Total/NA	Analysis	SM 2540C		1	442614	10/30/18 18:03	KTP	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	442354	10/29/18 13:26	KEB	TAL BUF

Client Sample ID: D-3S

Date Collected: 10/23/18 10:40
Date Received: 10/25/18 10:00

Lab Sample ID: 480-144158-6
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3005A			442259	10/29/18 12:36	VEG	TAL BUF
Total/NA	Analysis	6010D		1	443783	11/05/18 17:34	EMB	TAL BUF
Total/NA	Analysis	300.0		2	444663	11/10/18 04:04	CLA	TAL BUF
Total/NA	Analysis	SM 2540C		1	442614	10/30/18 18:03	KTP	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	442354	10/29/18 13:23	KEB	TAL BUF

Client Sample ID: D-4D

Date Collected: 10/22/18 09:35
Date Received: 10/25/18 10:00

Lab Sample ID: 480-144158-7
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3005A			442259	10/29/18 12:36	VEG	TAL BUF
Total/NA	Analysis	6010D		1	443783	11/05/18 17:49	EMB	TAL BUF
Total/NA	Analysis	300.0		2	444663	11/10/18 04:19	CLA	TAL BUF
Total/NA	Analysis	SM 2540C		1	442257	10/29/18 09:12	RAF	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	442354	10/29/18 13:20	KEB	TAL BUF

Client Sample ID: D-4S

Date Collected: 10/22/18 08:55
Date Received: 10/25/18 10:00

Lab Sample ID: 480-144158-8
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3005A			442259	10/29/18 12:36	VEG	TAL BUF
Total/NA	Analysis	6010D		1	443783	11/05/18 17:53	EMB	TAL BUF
Total/NA	Analysis	300.0		2	444663	11/10/18 04:33	CLA	TAL BUF
Total/NA	Analysis	SM 2540C		1	442257	10/29/18 09:12	RAF	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	442354	10/29/18 13:10	KEB	TAL BUF

Lab Chronicle

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

TestAmerica Job ID: 480-144158-1

Client Sample ID: D-5D

Date Collected: 10/24/18 09:45
Date Received: 10/25/18 10:00

Lab Sample ID: 480-144158-9

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3005A			442259	10/29/18 12:36	VEG	TAL BUF
Total/NA	Analysis	6010D		1	443783	11/05/18 17:56	EMB	TAL BUF
Total/NA	Analysis	300.0		2	444663	11/10/18 04:48	CLA	TAL BUF
Total/NA	Analysis	SM 2540C		1	442934	10/31/18 21:40	SMH	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	442354	10/29/18 13:52	KEB	TAL BUF

Client Sample ID: D-5S2

Date Collected: 10/24/18 09:15
Date Received: 10/25/18 10:00

Lab Sample ID: 480-144158-10

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3005A			442259	10/29/18 12:36	VEG	TAL BUF
Total/NA	Analysis	6010D		1	443783	11/05/18 18:00	EMB	TAL BUF
Total/NA	Analysis	300.0		5	444663	11/10/18 06:15	CLA	TAL BUF
Total/NA	Analysis	SM 2540C		1	442929	10/31/18 20:49	SMH	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	442354	10/29/18 13:28	KEB	TAL BUF

Client Sample ID: D-7

Date Collected: 10/24/18 07:45
Date Received: 10/25/18 10:00

Lab Sample ID: 480-144158-11

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3005A			442259	10/29/18 12:36	VEG	TAL BUF
Total/NA	Analysis	6010D		1	443783	11/05/18 18:04	EMB	TAL BUF
Total/NA	Analysis	300.0		2	444663	11/10/18 06:30	CLA	TAL BUF
Total/NA	Analysis	SM 2540C		1	442929	10/31/18 20:49	SMH	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	442354	10/29/18 13:55	KEB	TAL BUF

Client Sample ID: D-8

Date Collected: 10/24/18 10:15
Date Received: 10/25/18 10:00

Lab Sample ID: 480-144158-12

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3005A			442259	10/29/18 12:36	VEG	TAL BUF
Total/NA	Analysis	6010D		1	443783	11/05/18 18:07	EMB	TAL BUF
Total/NA	Analysis	300.0		1	444663	11/10/18 06:44	CLA	TAL BUF
Total/NA	Analysis	SM 2540C		1	442929	10/31/18 20:49	SMH	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	442354	10/29/18 13:47	KEB	TAL BUF

Lab Chronicle

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

TestAmerica Job ID: 480-144158-1

Client Sample ID: D-9

Lab Sample ID: 480-144158-13

Date Collected: 10/24/18 11:35
Matrix: Water
Date Received: 10/25/18 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3005A			442401	10/30/18 13:58	VEG	TAL BUF
Total/NA	Analysis	6010D		1	443793	11/05/18 19:24	LMH	TAL BUF
Total/NA	Analysis	300.0		1	444663	11/10/18 06:59	CLA	TAL BUF
Total/NA	Analysis	SM 2540C		1	442929	10/31/18 20:49	SMH	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	442354	10/29/18 14:02	KEB	TAL BUF

Client Sample ID: U-4D

Lab Sample ID: 480-144158-14

Date Collected: 10/24/18 14:00
Matrix: Water
Date Received: 10/25/18 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3005A			442401	10/30/18 13:58	VEG	TAL BUF
Total/NA	Analysis	6010D		1	443793	11/05/18 19:39	LMH	TAL BUF
Total/NA	Analysis	300.0		1	444663	11/10/18 07:14	CLA	TAL BUF
Total/NA	Analysis	SM 2540C		1	442929	10/31/18 20:49	SMH	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	442354	10/29/18 13:33	KEB	TAL BUF

Client Sample ID: U-4S

Lab Sample ID: 480-144158-15

Date Collected: 10/24/18 13:05
Matrix: Water
Date Received: 10/25/18 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3005A			442401	10/30/18 13:58	VEG	TAL BUF
Total/NA	Analysis	6010D		1	443793	11/05/18 19:43	LMH	TAL BUF
Total/NA	Analysis	300.0		1	444663	11/10/18 07:28	CLA	TAL BUF
Total/NA	Analysis	SM 2540C		1	442929	10/31/18 20:49	SMH	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	442354	10/29/18 14:00	KEB	TAL BUF

Client Sample ID: U-5D

Lab Sample ID: 480-144158-16

Date Collected: 10/24/18 13:35
Matrix: Water
Date Received: 10/25/18 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3005A			442401	10/30/18 13:58	VEG	TAL BUF
Total/NA	Analysis	6010D		1	443793	11/05/18 19:46	LMH	TAL BUF
Total/NA	Analysis	300.0		1	444663	11/10/18 08:41	CLA	TAL BUF
Total/NA	Analysis	SM 2540C		1	442929	10/31/18 20:49	SMH	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	442354	10/29/18 13:57	KEB	TAL BUF

Lab Chronicle

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

TestAmerica Job ID: 480-144158-1

Client Sample ID: U-5S
Date Collected: 10/24/18 15:25
Date Received: 10/25/18 10:00

Lab Sample ID: 480-144158-17
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3005A			442401	10/30/18 13:58	VEG	TAL BUF
Total/NA	Analysis	6010D		1	443793	11/05/18 19:50	LMH	TAL BUF
Total/NA	Analysis	300.0		1	444663	11/10/18 08:56	CLA	TAL BUF
Total/NA	Analysis	SM 2540C		1	442929	10/31/18 20:49	SMH	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	442354	10/29/18 12:57	KEB	TAL BUF

Client Sample ID: DUP-1
Date Collected: 10/24/18 00:00
Date Received: 10/25/18 10:00

Lab Sample ID: 480-144158-18
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3005A			442401	10/30/18 13:58	VEG	TAL BUF
Total/NA	Analysis	6010D		1	443793	11/05/18 19:54	LMH	TAL BUF
Total/NA	Analysis	300.0		1	444663	11/10/18 09:10	CLA	TAL BUF
Total/NA	Analysis	SM 2540C		1	442929	10/31/18 20:49	SMH	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	442354	10/29/18 13:39	KEB	TAL BUF

Client Sample ID: DUP-2
Date Collected: 10/24/18 00:00
Date Received: 10/25/18 10:00

Lab Sample ID: 480-144158-19
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3005A			442401	10/30/18 13:58	VEG	TAL BUF
Total/NA	Analysis	6010D		1	443793	11/05/18 19:57	LMH	TAL BUF
Total/NA	Analysis	300.0		1	444663	11/10/18 09:25	CLA	TAL BUF
Total/NA	Analysis	SM 2540C		1	442929	10/31/18 20:49	SMH	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	442354	10/29/18 13:36	KEB	TAL BUF

Client Sample ID: FIELD BLANK
Date Collected: 10/24/18 17:10
Date Received: 10/25/18 10:00

Lab Sample ID: 480-144158-20
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3005A			442401	10/30/18 13:58	VEG	TAL BUF
Total/NA	Analysis	6010D		1	443793	11/05/18 20:01	LMH	TAL BUF
Total/NA	Analysis	300.0		1	444663	11/10/18 09:40	CLA	TAL BUF
Total/NA	Analysis	SM 2540C		1	442929	10/31/18 20:49	SMH	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	442354	10/29/18 13:42	KEB	TAL BUF

Lab Chronicle

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

TestAmerica Job ID: 480-144158-1

Client Sample ID: EQUIPMENT BLANK

Date Collected: 10/24/18 12:25
Date Received: 10/25/18 10:00

Lab Sample ID: 480-144158-21

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3005A			442401	10/30/18 13:58	VEG	TAL BUF
Total/NA	Analysis	6010D		1	443793	11/05/18 20:05	LMH	TAL BUF
Total/NA	Analysis	300.0		1	444663	11/10/18 09:54	CLA	TAL BUF
Total/NA	Analysis	SM 2540C		1	442929	10/31/18 20:49	SMH	TAL BUF
Total/NA	Analysis	SM 4500 H+ B		1	442354	10/29/18 13:31	KEB	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. TestAmerica Job ID: 480-144158-1
Project/Site: SKB Rosemount - CCR Groundwater

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	12-31-18

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

Analysis Method	Prep Method	Matrix	Analyte
SM 4500 H+ B		Water	pH
SM 4500 H+ B		Water	Temperature

Method Summary

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

TestAmerica Job ID: 480-144158-1

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

Protocol References:

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

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

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

Laboratory References:

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

Sample Summary

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

TestAmerica Job ID: 480-144158-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
480-144158-1	D-1D	Water	10/23/18 13:50	10/25/18 10:00
480-144158-2	D-1S	Water	10/23/18 12:35	10/25/18 10:00
480-144158-3	D-2D	Water	10/23/18 15:30	10/25/18 10:00
480-144158-4	D-2S	Water	10/23/18 14:30	10/25/18 10:00
480-144158-5	D-3D	Water	10/23/18 11:40	10/25/18 10:00
480-144158-6	D-3S	Water	10/23/18 10:40	10/25/18 10:00
480-144158-7	D-4D	Water	10/22/18 09:35	10/25/18 10:00
480-144158-8	D-4S	Water	10/22/18 08:55	10/25/18 10:00
480-144158-9	D-5D	Water	10/24/18 09:45	10/25/18 10:00
480-144158-10	D-5S2	Water	10/24/18 09:15	10/25/18 10:00
480-144158-11	D-7	Water	10/24/18 07:45	10/25/18 10:00
480-144158-12	D-8	Water	10/24/18 10:15	10/25/18 10:00
480-144158-13	D-9	Water	10/24/18 11:35	10/25/18 10:00
480-144158-14	U-4D	Water	10/24/18 14:00	10/25/18 10:00
480-144158-15	U-4S	Water	10/24/18 13:05	10/25/18 10:00
480-144158-16	U-5D	Water	10/24/18 13:35	10/25/18 10:00
480-144158-17	U-5S	Water	10/24/18 15:25	10/25/18 10:00
480-144158-18	DUP-1	Water	10/24/18 00:00	10/25/18 10:00
480-144158-19	DUP-2	Water	10/24/18 00:00	10/25/18 10:00
480-144158-20	FIELD BLANK	Water	10/24/18 17:10	10/25/18 10:00
480-144158-21	EQUIPMENT BLANK	Water	10/24/18 12:25	10/25/18 10:00

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

Chain of Custody Record

TestAmerica Minneapolis
213

Regulatory Program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other:

480-144158 COC

Client Contact	Project Manager: Ryan Van Dette	Site Contact: Nathaniel Beineman	Date: 10/22/18	COC No.
SKB Environmental	Tel/Fax:	Lab Contact:	Carrier:	1 of 2 COCs
13425 Courthouse Blvd	Analysis Turnaround Time			Sampler:
Rosemount, MN 55068	☐ CALENDAR DAYS ☐ WORKING DAYS			For Lab Use Only:
(651) 438-1500 Phone	TAT if different from Below ____			Walk-in Client:
(651) 438-1549 FAX	☑ 2 weeks			Lab Sampling:
Project Name: RSMNT 2018 Q4 CCR GW	☐ 1 week			Job / SDG No.:
Site: Rosemount	☐ 2 days			
PO # 3063-18-01458	☐ 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	TDS	pH	Sulfate	Chloride	Fluoride	Radium 226 & 228 combined	Sample Specific Notes:
U-4S	10/22/18	13:05	Grab	Water	7			X	X	X	X	X	X	X	
U-4D	10/22/18	14:00	Grab	Water	7			X	X	X	X	X	X	X	
U-5S	10/22/18	15:25	Grab	Water	7			X	X	X	X	X	X	X	
DUP-1	10/22/18	—	Grab	Water	7			X	X	X	X	X	X	X	
FIELD BLANK 1	10/22/18	17:10	Grab	Water	7			X	X	X	X	X	X	X	
U-5D	10/22/18	15:35	Grab	Water	7			X	X	X	X	X	X	X	
D-5S2	10/23/18	9:15	Grab	Water	7			X	X	X	X	X	X	X	
D-5D	10/23/18	9:45	Grab	Water	7			X	X	X	X	X	X	X	
D-3S	10/23/18	10:40	Grab	Water	7			X	X	X	X	X	X	X	
DUP-2 ~~FIELD BLANK 2~~	10/23/18	—	Grab	Water	7			X	X	X	X	X	X	X	
D-3D	10/23/18	11:40	Grab	Water	7			X	X	X	X	X	X	X	
~~FIELD BLANK 2~~	~~10/23/18~~	~~11:45~~	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

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

***Metals (not field filtered) - Boron, Calcium, Antimony, Arsenic, Barium, Beryllium, Cadmium, Chromium, Cobalt, Lead, Lithium, Molybdenum, Selenium, Thallium**

2.1 30 2.7 2.5 2.2 3.1 3.4 #1

Custody Seals Intact: ☐ Yes ☐ No	Custody Seal No.:		Cooler Temp. (°C): Obs'd: _____ Corr'd: _____		Therm ID No.: _____
Relinquished by:	Company: GES	Date/Time: 10/24/18 17:4	Received by:	Company: TestAmerica	Date/Time: 10-24-18 1415
Relinquished by:	Company: TestAmerica	Date/Time: 10-24-18 1700	Received by:	Company: FED EX	Date/Time: 10/25/18 1000
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:

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

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

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Minneapolis SC
213

Regulatory Program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other:

TestAmerica Laboratories, Inc.

Client Contact	Project Manager: Ryan Van Dette	Site Contact: Nathaniel Beineman	Date: 10/22/18	COC No:
SKB Environmental	Tel/Fax:	Lab Contact:	Carrier:	1 of 2 COCs
13425 Courthouse Blvd	Analysis Turnaround Time			Sampler:
Rosemount, MN 55068	☐ CALENDAR DAYS ☐ WORKING DAYS			For Lab Use Only:
(651) 438-1500 Phone	TAT if different from Below _____			Walk-in Client:
(651) 438-1549 FAX	☑ 2 weeks			Lab Sampling:
Project Name: RSMNT 2018 Q4 CCR GW	☐ 1 week			Job / SDG No.:
Site: Rosemount	☐ 2 days			
P O # 3063-18-01458	☐ 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	TDS	pH	Sulfate	Chloride	Fluoride	Radium 226 & 228 combined	Sample Specific Notes:
D-1S	10/23/18	12:35	Grab	Water	7			X	X	X	X	X	X	X	
D-1D	10/23/18	13:50	Grab	Water	7			X	X	X	X	X	X	X	
D-2S	10/23/18	14:30	Grab	Water	7			X	X	X	X	X	X	X	
D-2D	10/23/18	15:30	Grab	Water	7			X	X	X	X	X	X	X	
D-7	10/24/18	7:45	Grab	Water	7			X	X	X	X	X	X	X	
D-4S	10/24/18	8:55	Grab	Water	7			X	X	X	X	X	X	X	
D-4D	10/24/18	9:35	Grab	Water	7			X	X	X	X	X	X	X	
D-8	10/24/18	10:15	Grab	Water	7			X	X	X	X	X	X	X	
D-9	10/24/18	11:35	Grab	Water	7			X	X	X	X	X	X	X	
Equipment Blank	10/24/18	12:25	Grab	water	7			X	X	X	X	X	X	X	

Preservation Used: ~~1~~= Ice, 2= HCl; 3= H_2SO_4; 4=HNO_3; 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

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

***Metals (not field filtered) - Boron, Calcium, Antimony, Arsenic, Barium, Beryllium, Cadmium, Chromium, Cobalt, Lead, Lithium, Molybdenum, Selenium, Thallium**

Custody Seals Intact: ☐ Yes ☐ No	Custody Seal No.:		Cooler Temp. (°C): Obs'd: _____ Corr'd: _____		Therm ID No.: _____
Relinquished by:	Company: GES	Date/Time: 10/24/18 17:00	Received by:	Company: TestAmerica	Date/Time: 10-24-18 1415
Relinquished by:	Company: TestAmerica	Date/Time: 10/24/18 1700	Received by:	Company: FAB	Date/Time: 10/25/18 1000
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:

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

Login Sample Receipt Checklist

Client: Waste Connections, Inc.

Job Number: 480-144158-1
SDG Number:

Login Number: 144158
List Number: 1
Creator: Stopa, Erik S

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	

Appendix C – Statistical Evaluation Data

1				**Background Statistics for Uncensored Full Data Sets**								
2			**User Selected Options**									
3			Date/Time of Computation	1/21/2019 11:38:30 AM								
4			From File	\\Svrrmt70-vm3\blacksburg-01\Projects\SKB Environmental\Rosemount Facility\Statistics\ProUCL\Rosemount s								
5			Full Precision	OFF								
6			Confidence Coefficient	95%								
7			Coverage	95%								
8			New or Future K Observations	1								
9			Number of Bootstrap Operations	2000								
10												
11	**|Boron|T^report_result_value**											
12												
13	**General Statistics**											
14						Total Number of Observations	134			Number of Distinct Observations	31		
15										Number of Missing Observations	135		
16						Minimum	0			First Quartile	20		
17						Second Largest	79			Median	20		
18						Maximum	150			Third Quartile	24.75		
19						Mean	26.46			SD	20.29		
20						Coefficient of Variation	0.767			Skewness	2.361		
21													
22						**Critical Values for Background Threshold Values (BTVs)**							
23						Tolerance Factor K (For UTL)	1.882			d2max (for USL)	3.307		
24													
25						**Normal GOF Test**							
26						Shapiro Wilk Test Statistic	0.744			**Normal GOF Test**			
27						5% Shapiro Wilk P Value	0			Data Not Normal at 5% Significance Level			
28						Lilliefors Test Statistic	0.294			**Lilliefors GOF Test**			
29						5% Lilliefors Critical Value	0.0765			Data Not Normal at 5% Significance Level			
30						**Data Not Normal at 5% Significance Level**							
31													
32						**Background Statistics Assuming Normal Distribution**							
33						95% UTL with 95% Coverage	64.64			90% Percentile (z)	52.46		
34						95% UPL (t)	60.19			95% Percentile (z)	59.83		
35						95% USL	93.54			99% Percentile (z)	73.65		
36													
37						**Gamma Statistics**							
38						**Gamma Statistics Not Available**							
39													
40						**Cannot Compute Gamma Statistics!**							
41													
42						**Cannot Compute Log Statistics**							
43													
44						**Nonparametric Distribution Free Background Statistics**							
45						**Data do not follow a Discernible Distribution (0.05)**							
46													
47						**Nonparametric Upper Limits for Background Threshold Values**							
48						Order of Statistic, r	131			95% UTL with 95% Coverage	74		
49						Approximate f	1.724			Confidence Coefficient (CC) achieved by UTL	0.907		
50						95% Percentile Bootstrap UTL with 95% Coverage	74			95% BCA Bootstrap UTL with 95% Coverage	74		
51						95% UPL	66			90% Percentile	54		
52						90% Chebyshev UPL	87.55			95% Percentile	65		
53						95% Chebyshev UPL	115.2			99% Percentile	79		
54						95% USL	150						
55													
56						Note: The use of USL to estimate a BTV is recommended only when the data set represents a background							
57						data set free of outliers and consists of observations collected from clean unimpacted locations.							
58						The use of USL tends to provide a balance between false positives and false negatives provided the data							
59						represents a background data set and when many onsite observations need to be compared with the BTV.							

|Calcium|T^report_result_value

General Statistics

Total Number of Observations	143	Number of Distinct Observations	88
		Number of Missing Observations	126
Minimum	0	First Quartile	89600
Second Largest	124000	Median	96000
Maximum	127000	Third Quartile	103000
Mean	87385	SD	32643
Coefficient of Variation	0.374	Skewness	-2.012

Critical Values for Background Threshold Values (BTVs)

Tolerance Factor K (For UTL)	1.874	d2max (for USL)	3.328

Normal GOF Test

Shapiro Wilk Test Statistic	0.657	**Normal GOF Test**	
5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.296	**Lilliefors GOF Test**	
5% Lilliefors Critical Value	0.0741	Data Not Normal at 5% Significance Level	

Data Not Normal at 5% Significance Level

Background Statistics Assuming Normal Distribution

95% UTL with 95% Coverage	148548	90% Percentile (z)	129219
95% UPL (t)	141619	95% Percentile (z)	141078
95% USL	196009	99% Percentile (z)	163324

Gamma Statistics

Gamma Statistics Not Available

Cannot Compute Gamma Statistics!

Cannot Compute Log Statistics

Nonparametric Distribution Free Background Statistics

Data do not follow a Discernible Distribution (0.05)

Nonparametric Upper Limits for Background Threshold Values

Order of Statistic, r	139	95% UTL with 95% Coverage	121000
Approximate f	1.463	Confidence Coefficient (CC) achieved by UTL	0.847
95% Percentile Bootstrap UTL with 95% Coverage	121000	95% BCA Bootstrap UTL with 95% Coverage	120800
95% UPL	118800	90% Percentile	113200
90% Chebyshev UPL	185655	95% Percentile	118000
95% Chebyshev UPL	230168	99% Percentile	123160
95% USL	127000		

Note: The use of USL to estimate a BTV is recommended only when the data set represents a background data set free of outliers and consists of observations collected from clean unimpacted locations. The use of USL tends to provide a balance between false positives and false negatives provided the data represents a background data set and when many onsite observations need to be compared with the BTV.

111	**|Chloride|T^report_result_value**										
112											
113	**General Statistics**										
114					Total Number of Observations	145			Number of Distinct Observations	122	
115									Number of Missing Observations	124	
116					Minimum	13800			First Quartile	32400	
117					Second Largest	78400			Median	41500	
118					Maximum	83500			Third Quartile	47000	
119					Mean	40645			SD	13297	
120					Coefficient of Variation	0.327			Skewness	0.435	
121					Mean of logged Data	10.55			SD of logged Data	0.357	
122											
123					**Critical Values for Background Threshold Values (BTVs)**						
124					Tolerance Factor K (For UTL)	1.872			d2max (for USL)	3.332	
125											
126					**Normal GOF Test**						
127					Shapiro Wilk Test Statistic	0.959			**Normal GOF Test**		
128					5% Shapiro Wilk P Value	0.00218			Data Not Normal at 5% Significance Level		
129					Lilliefors Test Statistic	0.0962			**Lilliefors GOF Test**		
130					5% Lilliefors Critical Value	0.0736			Data Not Normal at 5% Significance Level		
131					**Data Not Normal at 5% Significance Level**						
132											
133					**Background Statistics Assuming Normal Distribution**						
134					95% UTL with 95% Coverage	65536			90% Percentile (z)	57685	
135					95% UPL (t)	62733			95% Percentile (z)	62516	
136					95% USL	84951			99% Percentile (z)	71578	
137											
138					**Gamma GOF Test**						
139					A-D Test Statistic	1.841			**Anderson-Darling Gamma GOF Test**		
140					5% A-D Critical Value	0.753			Data Not Gamma Distributed at 5% Significance Level		
141					K-S Test Statistic	0.104			**Kolmogrov-Smirnoff Gamma GOF Test**		
142					5% K-S Critical Value	0.0778			Data Not Gamma Distributed at 5% Significance Level		
143					**Data Not Gamma Distributed at 5% Significance Level**						
144											
145					**Gamma Statistics**						
146					k hat (MLE)	8.747			k star (bias corrected MLE)	8.57	
147					Theta hat (MLE)	4647			Theta star (bias corrected MLE)	4742	
148					nu hat (MLE)	2537			nu star (bias corrected)	2485	
149					MLE Mean (bias corrected)	40645			MLE Sd (bias corrected)	13884	
150											
151					**Background Statistics Assuming Gamma Distribution**						
152					95% Wilson Hilferty (WH) Approx. Gamma UPL	65967			90% Percentile	59141	
153					95% Hawkins Wixley (HW) Approx. Gamma UPL	66655			95% Percentile	65845	
154					95% WH Approx. Gamma UTL with 95% Coverage	70059			99% Percentile	79688	
155					95% HW Approx. Gamma UTL with 95% Coverage	71011					
156					95% WH USL	103141			95% HW USL	107325	
157											
158					**Lognormal GOF Test**						
159					Shapiro Wilk Test Statistic	0.937			**Shapiro Wilk Lognormal GOF Test**		
160					5% Shapiro Wilk P Value	5.5921E-7			Data Not Lognormal at 5% Significance Level		
161					Lilliefors Test Statistic	0.123			**Lilliefors Lognormal GOF Test**		
162					5% Lilliefors Critical Value	0.0736			Data Not Lognormal at 5% Significance Level		
163					**Data Not Lognormal at 5% Significance Level**						
164											
165					**Background Statistics assuming Lognormal Distribution**						
166					95% UTL with 95% Coverage	74766			90% Percentile (z)	60568	
167					95% UPL (t)	69351			95% Percentile (z)	68948	
168					95% USL	125864			99% Percentile (z)	87922	
169											

	A	B	C	D	E	F	G	H	I	J	K	L
170	**Nonparametric Distribution Free Background Statistics**											
171	**Data do not follow a Discernible Distribution (0.05)**											
172												
173	**Nonparametric Upper Limits for Background Threshold Values**											
174					Order of Statistic, r	141				95% UTL with	95% Coverage	67800
175					Approximate f	1.484				Confidence Coefficient (CC) achieved by UTL		0.855
176				95% Percentile Bootstrap UTL with	95% Coverage	67800				95% BCA Bootstrap UTL with	95% Coverage	71080
177					95% UPL	66480					90% Percentile	57800
178					90% Chebyshev UPL	80672					95% Percentile	65980
179					95% Chebyshev UPL	98803					99% Percentile	76156
180					95% USL	83500						
181												
182	Note: The use of USL to estimate a BTV is recommended only when the data set represents a background											
183	data set free of outliers and consists of observations collected from clean unimpacted locations.											
184	The use of USL tends to provide a balance between false positives and false negatives provided the data											
185	represents a background data set and when many onsite observations need to be compared with the BTV.											
186												

187	**|Fluoride|T^report_result_value**										
188											
189	**General Statistics**										
190					Total Number of Observations	134			Number of Distinct Observations	11	
191									Number of Missing Observations	135	
192					Minimum	0			First Quartile	100	
193					Second Largest	250			Median	100	
194					Maximum	250			Third Quartile	250	
195					Mean	141.5			SD	89.56	
196					Coefficient of Variation	0.633			Skewness	0.0492	
197											
198	**Critical Values for Background Threshold Values (BTVs)**										
199					Tolerance Factor K (For UTL)	1.882			d2max (for USL)	3.307	
200											
201	**Normal GOF Test**										
202					Shapiro Wilk Test Statistic	0.765	**Normal GOF Test**				
203					5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level				
204					Lilliefors Test Statistic	0.275	**Lilliefors GOF Test**				
205					5% Lilliefors Critical Value	0.0765	Data Not Normal at 5% Significance Level				
206	**Data Not Normal at 5% Significance Level**										
207											
208	**Background Statistics Assuming Normal Distribution**										
209					95% UTL with 95% Coverage	310			90% Percentile (z)	256.2	
210					95% UPL (t)	290.4			95% Percentile (z)	288.8	
211					95% USL	437.6			99% Percentile (z)	349.8	
212											
213	**Gamma Statistics**										
214	**Gamma Statistics Not Available**										
215											
216	**Cannot Compute Gamma Statistics!**										
217											
218	**Cannot Compute Log Statistics**										
219											
220	**Nonparametric Distribution Free Background Statistics**										
221	**Data do not follow a Discernible Distribution (0.05)**										
222											
223	**Nonparametric Upper Limits for Background Threshold Values**										
224					Order of Statistic, r	131			95% UTL with 95% Coverage	250	
225					Approximate f	1.724			Confidence Coefficient (CC) achieved by UTL	0.907	
226					95% Percentile Bootstrap UTL with 95% Coverage	250			95% BCA Bootstrap UTL with 95% Coverage	250	
227					95% UPL	250			90% Percentile	250	
228					90% Chebyshev UPL	411.1			95% Percentile	250	
229					95% Chebyshev UPL	533.3			99% Percentile	250	
230					95% USL	250					
231											
232	Note: The use of USL to estimate a BTV is recommended only when the data set represents a background										
233	data set free of outliers and consists of observations collected from clean unimpacted locations.										
234	The use of USL tends to provide a balance between false positives and false negatives provided the data										
235	represents a background data set and when many onsite observations need to be compared with the BTV.										
236											

237	**|pH|T^report_result_value**										
238											
239	**General Statistics**										
240					Total Number of Observations	144			Number of Distinct Observations	15	
241									Number of Missing Observations	125	
242					Minimum	7.3			First Quartile	7.5	
243					Second Largest	8.1			Median	7.64	
244					Maximum	8.2			Third Quartile	7.7	
245					Mean	7.659			SD	0.181	
246					Coefficient of Variation	0.0237			Skewness	0.493	
247					Mean of logged Data	2.036			SD of logged Data	0.0235	
248											
249					**Critical Values for Background Threshold Values (BTVs)**						
250					Tolerance Factor K (For UTL)	1.873			d2max (for USL)	3.33	
251											
252					**Normal GOF Test**						
253					Shapiro Wilk Test Statistic	0.944			**Normal GOF Test**		
254					5% Shapiro Wilk P Value	1.3921E-5			Data Not Normal at 5% Significance Level		
255					Lilliefors Test Statistic	0.167			**Lilliefors GOF Test**		
256					5% Lilliefors Critical Value	0.0738			Data Not Normal at 5% Significance Level		
257					**Data Not Normal at 5% Significance Level**						
258											
259					**Background Statistics Assuming Normal Distribution**						
260					95% UTL with 95% Coverage	7.998			90% Percentile (z)	7.891	
261					95% UPL (t)	7.96			95% Percentile (z)	7.957	
262					95% USL	8.262			99% Percentile (z)	8.08	
263											
264					**Gamma GOF Test**						
265					A-D Test Statistic	2.462			**Anderson-Darling Gamma GOF Test**		
266					5% A-D Critical Value	0.75			Data Not Gamma Distributed at 5% Significance Level		
267					K-S Test Statistic	0.163			**Kolmogrov-Smirnoff Gamma GOF Test**		
268					5% K-S Critical Value	0.0779			Data Not Gamma Distributed at 5% Significance Level		
269					**Data Not Gamma Distributed at 5% Significance Level**						
270											
271					**Gamma Statistics**						
272					k hat (MLE)	1812			k star (bias corrected MLE)	1774	
273					Theta hat (MLE)	0.00423			Theta star (bias corrected MLE)	0.00432	
274					nu hat (MLE)	521790			nu star (bias corrected)	510921	
275					MLE Mean (bias corrected)	7.659			MLE Sd (bias corrected)	0.182	
276											
277					**Background Statistics Assuming Gamma Distribution**						
278					95% Wilson Hilferty (WH) Approx. Gamma UPL	7.961			90% Percentile	7.893	
279					95% Hawkins Wixley (HW) Approx. Gamma UPL	7.961			95% Percentile	7.96	
280					95% WH Approx. Gamma UTL with 95% Coverage	8			99% Percentile	8.088	
281					95% HW Approx. Gamma UTL with 95% Coverage	8.001					
282					95% WH USL	8.274			95% HW USL	8.276	
283											
284					**Lognormal GOF Test**						
285					Shapiro Wilk Test Statistic	0.947			**Shapiro Wilk Lognormal GOF Test**		
286					5% Shapiro Wilk P Value	4.1280E-5			Data Not Lognormal at 5% Significance Level		
287					Lilliefors Test Statistic	0.162			**Lilliefors Lognormal GOF Test**		
288					5% Lilliefors Critical Value	0.0738			Data Not Lognormal at 5% Significance Level		
289					**Data Not Lognormal at 5% Significance Level**						
290											
291					**Background Statistics assuming Lognormal Distribution**						
292					95% UTL with 95% Coverage	8.002			90% Percentile (z)	7.891	
293					95% UPL (t)	7.962			95% Percentile (z)	7.959	
294					95% USL	8.281			99% Percentile (z)	8.087	
295											

	A	B	C	D	E	F	G	H	I	J	K	L
296	**Nonparametric Distribution Free Background Statistics**											
297	**Data do not follow a Discernible Distribution (0.05)**											
298												
299	**Nonparametric Upper Limits for Background Threshold Values**											
300					Order of Statistic, r	140			95% UTL with	95% Coverage		8.1
301					Approximate f	1.474			Confidence Coefficient (CC) achieved by UTL			0.851
302			95% Percentile Bootstrap UTL with	95% Coverage		8.1			95% BCA Bootstrap UTL with	95% Coverage		8
303					95% UPL	8				90% Percentile		7.9
304					90% Chebyshev UPL	8.204				95% Percentile		8
305					95% Chebyshev UPL	8.451				99% Percentile		8.1
306					95% USL	8.2						
307												
308	Note: The use of USL to estimate a BTV is recommended only when the data set represents a background											
309	data set free of outliers and consists of observations collected from clean unimpacted locations.											
310	The use of USL tends to provide a balance between false positives and false negatives provided the data											
311	represents a background data set and when many onsite observations need to be compared with the BTV.											
312												

313	**|Sulfate as SO4|T^report_result_value**										
314											
315	**General Statistics**										
316						Total Number of Observations	144			Number of Distinct Observations	109	
317										Number of Missing Observations	125	
318						Minimum	3500			First Quartile	27850	
319						Second Largest	64000			Median	30400	
320						Maximum	67300			Third Quartile	34425	
321						Mean	32957			SD	9301	
322						Coefficient of Variation	0.282			Skewness	0.943	
323						Mean of logged Data	10.36			SD of logged Data	0.341	
324												
325						**Critical Values for Background Threshold Values (BTVs)**						
326						Tolerance Factor K (For UTL)	1.873			d2max (for USL)	3.33	
327												
328						**Normal GOF Test**						
329						Shapiro Wilk Test Statistic	0.873			**Normal GOF Test**		
330						5% Shapiro Wilk P Value	0			Data Not Normal at 5% Significance Level		
331						Lilliefors Test Statistic	0.2			**Lilliefors GOF Test**		
332						5% Lilliefors Critical Value	0.0738			Data Not Normal at 5% Significance Level		
333						**Data Not Normal at 5% Significance Level**						
334												
335						**Background Statistics Assuming Normal Distribution**						
336						95% UTL with 95% Coverage	50376			90% Percentile (z)	44877	
337						95% UPL (t)	48409			95% Percentile (z)	48256	
338						95% USL	63929			99% Percentile (z)	54595	
339												
340						**Gamma GOF Test**						
341						A-D Test Statistic	6.377			**Anderson-Darling Gamma GOF Test**		
342						5% A-D Critical Value	0.752			Data Not Gamma Distributed at 5% Significance Level		
343						K-S Test Statistic	0.163			**Kolmogrov-Smirnoff Gamma GOF Test**		
344						5% K-S Critical Value	0.078			Data Not Gamma Distributed at 5% Significance Level		
345						**Data Not Gamma Distributed at 5% Significance Level**						
346												
347						**Gamma Statistics**						
348						k hat (MLE)	11.05			k star (bias corrected MLE)	10.82	
349						Theta hat (MLE)	2983			Theta star (bias corrected MLE)	3045	
350						nu hat (MLE)	3182			nu star (bias corrected)	3117	
351						MLE Mean (bias corrected)	32957			MLE Sd (bias corrected)	10018	
352												
353						**Background Statistics Assuming Gamma Distribution**						
354						95% Wilson Hilferty (WH) Approx. Gamma UPL	50872			90% Percentile	46271	
355						95% Hawkins Wixley (HW) Approx. Gamma UPL	51653			95% Percentile	50978	
356						95% WH Approx. Gamma UTL with 95% Coverage	53700			99% Percentile	60614	
357						95% HW Approx. Gamma UTL with 95% Coverage	54704					
358						95% WH USL	76070			95% HW USL	79547	
359												
360						**Lognormal GOF Test**						
361						Shapiro Wilk Test Statistic	0.731			**Shapiro Wilk Lognormal GOF Test**		
362						5% Shapiro Wilk P Value	0			Data Not Lognormal at 5% Significance Level		
363						Lilliefors Test Statistic	0.175			**Lilliefors Lognormal GOF Test**		
364						5% Lilliefors Critical Value	0.0738			Data Not Lognormal at 5% Significance Level		
365						**Data Not Lognormal at 5% Significance Level**						
366												
367						**Background Statistics assuming Lognormal Distribution**						
368						95% UTL with 95% Coverage	59646			90% Percentile (z)	48747	
369						95% UPL (t)	55492			95% Percentile (z)	55181	
370						95% USL	98070			99% Percentile (z)	69630	
371												

	A	B	C	D	E	F	G	H	I	J	K	L
372	**Nonparametric Distribution Free Background Statistics**											
373	**Data do not follow a Discernible Distribution (0.05)**											
374												
375	**Nonparametric Upper Limits for Background Threshold Values**											
376					Order of Statistic, r	140			95% UTL with	95% Coverage		53800
377					Approximate f	1.474			Confidence Coefficient (CC) achieved by UTL			0.851
378			95% Percentile Bootstrap UTL with	95% Coverage		53800			95% BCA Bootstrap UTL with	95% Coverage		53800
379					95% UPL	51925				90% Percentile		47050
380					90% Chebyshev UPL	60957				95% Percentile		49240
381					95% Chebyshev UPL	73640				99% Percentile		62022
382					95% USL	67300						
383												
384	Note: The use of USL to estimate a BTV is recommended only when the data set represents a background											
385	data set free of outliers and consists of observations collected from clean unimpacted locations.											
386	The use of USL tends to provide a balance between false positives and false negatives provided the data											
387	represents a background data set and when many onsite observations need to be compared with the BTV.											
388												

389	**|Total Dissolved Solids|T^report_result_value**										
390											
391	**General Statistics**										
392					Total Number of Observations	143			Number of Distinct Observations	96	
393									Number of Missing Observations	126	
394					Minimum	41000			First Quartile	412000	
395					Second Largest	632000			Median	430000	
396					Maximum	683000			Third Quartile	460000	
397					Mean	429633			SD	87879	
398					Coefficient of Variation	0.205			Skewness	-2.002	
399					Mean of logged Data	12.92			SD of logged Data	0.401	
400											
401					**Critical Values for Background Threshold Values (BTVs)**						
402					Tolerance Factor K (For UTL)	1.874			d2max (for USL)	3.328	
403											
404					**Normal GOF Test**						
405					Shapiro Wilk Test Statistic	0.788	**Normal GOF Test**				
406					5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level				
407					Lilliefors Test Statistic	0.2	**Lilliefors GOF Test**				
408					5% Lilliefors Critical Value	0.0741	Data Not Normal at 5% Significance Level				
409					**Data Not Normal at 5% Significance Level**						
410											
411					**Background Statistics Assuming Normal Distribution**						
412				95% UTL with	95% Coverage	594291			90% Percentile (z)	542255	
413					95% UPL (t)	575639			95% Percentile (z)	574181	
414					95% USL	722064			99% Percentile (z)	634071	
415											
416					**Gamma GOF Test**						
417					A-D Test Statistic	18.5	**Anderson-Darling Gamma GOF Test**				
418					5% A-D Critical Value	0.752	Data Not Gamma Distributed at 5% Significance Level				
419					K-S Test Statistic	0.297	**Kolmogrov-Smirnoff Gamma GOF Test**				
420					5% K-S Critical Value	0.0783	Data Not Gamma Distributed at 5% Significance Level				
421					**Data Not Gamma Distributed at 5% Significance Level**						
422											
423					**Gamma Statistics**						
424					k hat (MLE)	10.73			k star (bias corrected MLE)	10.51	
425					Theta hat (MLE)	40049			Theta star (bias corrected MLE)	40889	
426					nu hat (MLE)	3068			nu star (bias corrected)	3005	
427					MLE Mean (bias corrected)	429633			MLE Sd (bias corrected)	132542	
428											
429					**Background Statistics Assuming Gamma Distribution**						
430				95% Wilson Hilferty (WH) Approx. Gamma UPL		664450			90% Percentile	605825	
431				95% Hawkins Wixley (HW) Approx. Gamma UPL		687631			95% Percentile	668310	
432				95% WH Approx. Gamma UTL with	95% Coverage	701431			99% Percentile	796357	
433				95% HW Approx. Gamma UTL with	95% Coverage	729901					
434					95% WH USL	992244			95% HW USL	1074122	
435											
436					**Lognormal GOF Test**						
437					Shapiro Wilk Test Statistic	0.451	**Shapiro Wilk Lognormal GOF Test**				
438					5% Shapiro Wilk P Value	0	Data Not Lognormal at 5% Significance Level				
439					Lilliefors Test Statistic	0.335	**Lilliefors Lognormal GOF Test**				
440					5% Lilliefors Critical Value	0.0741	Data Not Lognormal at 5% Significance Level				
441					**Data Not Lognormal at 5% Significance Level**						
442											
443					**Background Statistics assuming Lognormal Distribution**						
444				95% UTL with	95% Coverage	868467			90% Percentile (z)	684954	
445					95% UPL (t)	797627			95% Percentile (z)	792343	
446					95% USL	1555573			99% Percentile (z)	1041268	
447											

	A	B	C	D	E	F	G	H	I	J	K	L
448	**Nonparametric Distribution Free Background Statistics**											
449	**Data do not follow a Discernible Distribution (0.05)**											
450												
451	**Nonparametric Upper Limits for Background Threshold Values**											
452					Order of Statistic, r	139			95% UTL with	95% Coverage		570000
453					Approximate f	1.463			Confidence Coefficient (CC) achieved by UTL			0.847
454				95% Percentile Bootstrap UTL with	95% Coverage	577600			95% BCA Bootstrap UTL with	95% Coverage		570000
455					95% UPL	552400				90% Percentile		509800
456					90% Chebyshev UPL	694191				95% Percentile		541600
457					95% Chebyshev UPL	814027				99% Percentile		624440
458					95% USL	683000						
459												
460	Note: The use of USL to estimate a BTV is recommended only when the data set represents a background											
461	data set free of outliers and consists of observations collected from clean unimpacted locations.											
462	The use of USL tends to provide a balance between false positives and false negatives provided the data											
463	represents a background data set and when many onsite observations need to be compared with the BTV.											
464												

Outlier Tests for Selected Uncensored Variables

User Selected Options

Date/Time of Computation	1/21/2019 11:33:09 AM
From File	Rosemount source files saved_GKS.xls
Full Precision	OFF

Rosner's Outlier Test for |Boron|T^report_result_value

Mean	**29.3**
Standard Deviation	**30.86**
Number of data	**136**
Number of suspected outliers	**1**

#	Mean	sd	Potential outlier	Obs. Number	Test value	Critical value (5%)	Critical value (1%)
1	29.3	30.75	220	129	6.202	3.481	3.851

For 5% Significance Level, there is 1 Potential Outlier

Potential outliers is: 220

For 1% Significance Level, there is 1 Potential Outlier

Potential outliers is: 220

Rosner's Outlier Test for |Calcium|T^report_result_value

Mean	**87385**
Standard Deviation	**32643**
Number of data	**143**
Number of suspected outliers	**1**

#	Mean	sd	Potential outlier	Obs. Number	Test value	Critical value (5%)	Critical value (1%)
1	87385	32528	0	114	2.686	3.5	3.87

For 5% Significance Level, there is no Potential Outlier

For 1% Significance Level, there is no Potential Outlier

Rosner's Outlier Test for |Chloride|T^report_result_value

Mean	**40645**
Standard Deviation	**13297**
Number of data	**145**
Number of suspected outliers	**1**

#	Mean	sd	Potential outlier	Obs. Number	Test value	Critical value (5%)	Critical value (1%)
1	40645	13251	83500	112	3.234	3.506	3.876

For 5% Significance Level, there is no Potential Outlier

For 1% Significance Level, there is no Potential Outlier

Rosner's Outlier Test for |Fluoride|T^report_result_value

Mean	**141.5**
Standard Deviation	**89.56**
Number of data	**134**
Number of suspected outliers	**1**

#	Mean	sd	Potential outlier	Obs. Number	Test value	Critical value (5%)	Critical value (1%)
1	141.5	89.22	0	105	1.586	3.475	3.845

For 5% Significance Level, there is no Potential Outlier

For 1% Significance Level, there is no Potential Outlier

Rosner's Outlier Test for |pH|T^report_result_value

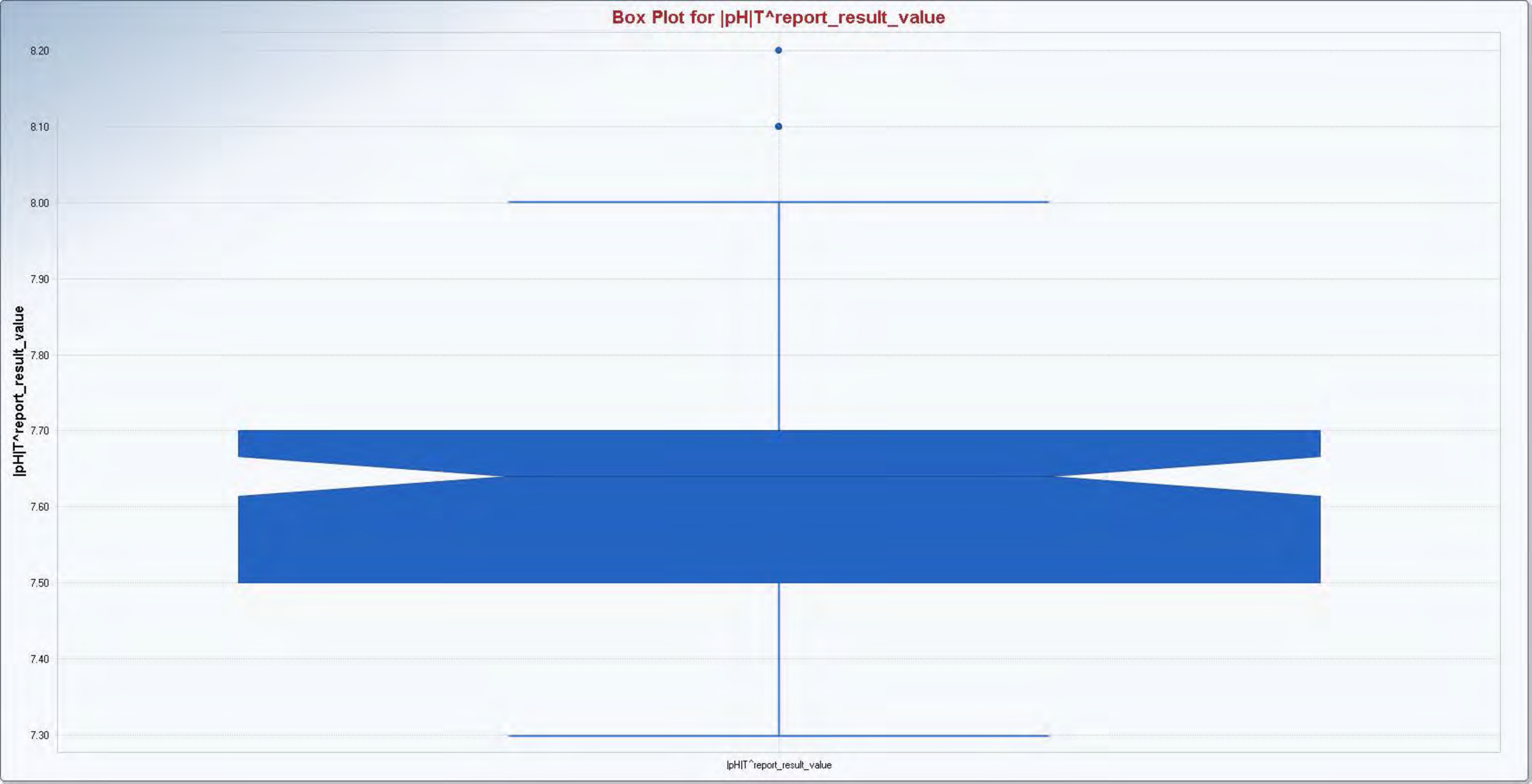
Mean	**7.659**
Standard Deviation	**0.181**
Number of data	**144**
Number of suspected outliers	**1**

#	Mean	sd	Potential outlier	Obs. Number	Test value	Critical value (5%)	Critical value (1%)
1	7.659	0.181	8.2	116	2.999	3.503	3.873

For 5% Significance Level, there is no Potential Outlier

For 1% Significance Level, there is no Potential Outlier

	A	B	C	D	E	F	G	H	I	J	K	L
95	**Rosner's Outlier Test for |Sulfate as SO4|T^report_result_value**											
96												
97												
98				**Mean**	**36320**							
99				**Standard Deviation**	**43079**							
100				**Number of data**	**144**							
101				**Number of suspected outliers**	**1**							
102												
103				Potential	Obs.	Test	Critical	Critical				
104	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
105	1	36320	42929	538000	143	11.69	3.503	3.873				
106												
107	For 5% Significance Level, there is 1 Potential Outlier											
108	Potential outliers is: 538000											
109												
110	For 1% Significance Level, there is 1 Potential Outlier											
111	Potential outliers is: 538000											
112												
113												
114	**Rosner's Outlier Test for |Total Dissolved Solids|T^report_result_value**											
115												
116												
117				**Mean**	**426940**							
118				**Standard Deviation**	**93345**							
119				**Number of data**	**144**							
120				**Number of suspected outliers**	**1**							
121												
122				Potential	Obs.	Test	Critical	Critical				
123	#	Mean	sd	outlier	Number	value	value (5%)	value (1%)				
124	1	426940	93020	41000	32	4.149	3.503	3.873				
125												
126	For 5% Significance Level, there is 1 Potential Outlier											
127	Potential outliers is: 41000											
128												
129	For 1% Significance Level, there is 1 Potential Outlier											
130	Potential outliers is: 41000											
131												


Box Plot for |pH|T^report_result_value
8.20
8.10
8.00
7.90
7.80
7.70
7.60
7.50
7.40
7.30
|pH|T^report_result_value
|pH|T^report_result_value