COAL COMBUSTION RESIDUAL LANDFILL

ANNUAL GROUNDWATER MONITORING REPORT

Calendar Year 2024

LOWER COLORADO RIVER AUTHORITY (LCRA)

FAYETTE POWER PROJECT, LA GRANGE, TEXAS

JANUARY 31, 2025

Prepared by:

Kate McCarthy, P.G. # 10028

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Kate McCarthy
1/31/2025

EXECUTIVE SUMMARY

The LCRA Fayette Power Project (FPP) is a coal-fired power plant located east of La Grange in Fayette County, Texas. Coal Combustion Residuals (CCRs) generated at the facility are disposed of in the Combustion Byproducts Landfill (CBL) which is an existing landfill CCR Unit under the U.S. Environmental Protection Agency's Coal Combustion Residuals (CCR) Rules as codified in Title 40 of the Code of Federal Regulations (CFR), Chapter 257, Subpart D and the Texas Commission of Environmental Quality 30 Texas Administrative Code Chapter 352, Subchapter H.

During the calendar year 2024, the CBL was operating under detection monitoring. All groundwater sampling was conducted in accordance with 40 CFR §257.93/30 TAC Chapter 352, Subchapter H - Groundwater sampling and analysis requirements and 40 CFR §257.94. - Detection Monitoring. The CBL will remain in detection monitoring for 2025.

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2024 Groundwater Monitoring Report
Fayette Power Project
La Grange, TX

1.0 BACKGROUND

The LCRA Fayette Power Project (FPP) is a coal-fired power plant located east of La Grange in Fayette County, Texas. Coal Combustion Residuals (CCRs) generated at the facility are disposed of in the Combustion Byproducts Landfill (CBL) located south of the power plant and north of the railroad that borders the FPP site (Figure 1). The existing CBL consists of Cell 1 and Sub-cell 2D. Cell 1 was constructed in 1988 and sub-cell 2D in 2015; therefore, both active cells are considered existing landfill units under the U.S. Environmental Protection Agency's Coal Combustion Residuals (CCR) Rules as codified in Title 40 of the Code of Federal Regulations (CFR), Chapter 257, Subpart D.

2.0 PURPOSE

This report was prepared pursuant to 40 CFR §257.90(e), as amended on Aug. 28, 2020, and 30 Texas Administrative Code Chapter 352, Subchapter H which requires the owner or operator of an existing CCR landfill to prepare an annual groundwater monitoring report for the preceding calendar year.

3.0 GROUNDWATER MONITORING SYSTEM

The groundwater monitoring well network for 2024 consisted of six wells as described below and additionally in Table 1:

- Background – CBL-340I
- Down-gradient - CBL-301I, CBL-302I, CBL-306I, CBL-308I and CBL-341I

No groundwater monitoring wells were installed or decommissioned in 2024. Monitoring wells CBL301I, CBL-302I and CBL-341I were re-developed in March 2024. The locations of the monitoring wells are shown on Figure 1.

In accordance with 40 CFR §257.93(c) and 30 Tex. Admin. Code §352.931, groundwater elevations were measured in each monitoring well prior to purging and sampling for each semi-annual sampling event. Consistent with prior CBL potentiometric surface elevation maps, the inferred groundwater flow direction is towards the south-southwest. Groundwater flow rates were estimated along two transects for each groundwater sampling event. The western area transect has an approximate flow rate of 22-26 feet per year and the eastern area transect has an approximate flow rate of 50-61 feet per year. Detailed information is contained in the Technical Memorandum’s dated June 19, 2024, and December 30, 2024, prepared by Bullock, Bennett & Associates, LLC (BBA), which are included in Appendix A.

4.0 STATUS OF THE GROUNDWATER MONITORING PROGRAM

At the beginning of calendar year 2024, the CBL was operating under detection monitoring. All groundwater sampling was conducted in accordance with 40 CFR §257.93 – Groundwater sampling and analysis requirements and §257.94. – Detection Monitoring. Table 2 summarizes the sampling events. At the end of calendar year 2024, the CBL was operating under detection monitoring. As discussed in Section 5, the CBL will remain in detection monitoring for 2025. Table 3 contains a summary of the analytical data collected in 2024. In accordance with 30 TAC §352.901, Table 3 also contains a summary of all groundwater monitoring data collected since October 19, 2015.

5.0 STATISTICAL EVALUATIONS AND ALTERNATE SOURCE DETERMINATION

5.1 Statistical Analysis of First Quarter 2024 Data

In April 2024, Otter Creek Environmental Services, LLC (Otter Creek) completed the statistical analysis of the first quarter detection monitoring Appendix III constituent data utilizing the prediction limit intrawell method. Samples were collected on January 29-31, 2024.

Based on the January 2024 sampling data, there was an initial control limit (ICL) exceedance for boron in CBL-302I. Because this was an initial exceedance in a 1 of 2 resampling method, CBL-302I was resampled on April 5, 2024. The resample analytical results confirmed the control limit exceedance and a statistically significant increase (SSI) was indicated. As a result an Alternate Source Demonstration (ASD) was prepared.

As detailed in the ASD, further review of the data by a statistician determined that the CBL-302I data have too few detections to test whether the dataset is normally or lognormally distributed. As a result, the use of the Dixon Test to determine outliers was not in accordance with EPA's *Unified Guidance*[1]. Therefore, two previously identified outliers were reinstated in the background dataset resulting in an ICL for boron of 0.2970 mg/L. Both the January and April 2024 analytical results are below the re-established ICL of 0.2970 mg/L. Based on these findings, it was determined that the initially identified SSI was no longer applicable and that there was no evidence of a release from the CBL.

In accordance with 30 TAC § 352.941(d), LCRA submitted the ASD for TCEQ review within 90 days of the initial SSI determination and based on the findings it was determined that continuation of the Detection Monitoring Program was appropriate. In an email dated August 15, 2024, the TCEQ determined that the ASD justification was satisfactory.

Detailed information is contained in the *Alternate Source Demonstration – First Semi-Annual Monitoring Event 2024* dated July 17, 2024 prepared by BBA.

In September 2024, Otter Creek updated the statistical analysis of the first quarter detection monitoring Appendix III constituent data utilizing the updated prediction limit intrawell method. Analytical results were generally consistent with historic analytical results. The results indicated that there were no SSIs for any constituents in any well. Detailed information is contained in the *Results for the Groundwater Statistics, First Semi-annual Monitoring Event in 2024* prepared by Otter Creek which is included in Appendix B.

5.2 Statistical Analysis Third Quarter 2024 Data

Otter Creek completed the statistical analysis of the third quarter detection monitoring Appendix III constituent data utilizing the prediction limit intrawell method. Third quarter samples were collected between July 22-23, 2024.

[1] Statistical Analysis of Groundwater Monitoring Data At RCRA Facilities - Unified Guidance, March 2009. https://archive.epa.gov/epawaste/hazard/web/pdf/unified-guid.pdf

The July 2024 sampling data indicated that the calculated cumulative sum (CUSUM) datapoint for CBL-341I exceeded its Intrawell Control Limits (ICL). Because this was an initial exceedance in a 1 of 2 resampling method, CBL-341I was resampled on October 1, 2024. The resample analytical results confirmed the CUSUM exceedance, and an SSI was indicated. As a result an ASD was prepared.

It was concluded that the SSI for boron in CBL-341I groundwater does not indicate a release from the CBL based on the following:

- Boron concentrations in CBL-341I remain within the range of groundwater concentrations observed in the other CBL monitoring wells and are consistently lower than those in side-gradient well CBL-340I.

- CBL-340I groundwater conditions are not affected by CBL operations; however, a general upward trend in boron concentrations is observed in CBL-340I data, suggesting that background conditions with respect to boron are not stable, which could lead to the calculated CUSUM exceedance observed in CBL-341I.

- CBL area boron concentrations are within the range of concentrations observed in other Fayette County water wells.

- There are no observed upwards trends in calcium, chloride, fluoride, pH, sulfate, or TDS. Upward trends in these other Appendix III analytes would be expected if there were a release from the CBL. A hypothetical release from the CBL to groundwater is not expected to generate a “boron only” analyte plume in groundwater.

The observed boron data is attributed to natural shifts in dissolved analyte concentrations as aquifer materials undergo both dissolution and evaporation processes. The data observations reflect a non-static background condition in CBL groundwater, and the new data presents additional background information for future analyses.

Detailed information is contained in the *Alternate Source Demonstration – Second Semi-Annual Monitoring Event 2024* dated December 31, 2024 prepared by BBA and submitted to the TCEQ for review on January 2, 2025.

Analytical results were generally consistent with historic analytical results. Detailed information regarding the statical analysis is contained in the November 2024 *Results for the Groundwater Statistics, Second Semi-annual Monitoring Event in 2024* prepared by Otter Creek which is included in Appendix C.

6.0 PLANNED ACTIVITIES

Planned activities for 2025 include continued semi-annual detection monitoring with associated statistical analysis in accordance with the CCR rules.

TABLES

TABLE 1

MONITOR WELL DETAILS

Well ID	CBL-340I (Background Well)	CBL-301I	CBL-302I	CBL-306I	CBL-308I	CBL -341I
Installation Date	12/17/2015	5/23/2011	5/24/2011	6/3/2011	12/20/2011	11/14/2016
Hydrogeologic Unit Monitored	Intermediate Sand	Intermediate Sand	Intermediate Sand	Intermediate Sand	Intermediate Sand	Intermediate Sand
Casing Type	2" PVC	2" PVC	2" PVC	2" PVC	2" PVC	2" PVC
Total Well Depth (ft bgs)	37	51	24	14	32	43
Screened Interval (ft bgs)	22-37	41-51	14-24	9-14	22-32	33-43
Ground Surface Elevation (ft MSL)	374.69	369.75	355.99	337.93	364.93	364.03
TOC Elevation (ft MSL)	376.98	372.11	358.99	339.96	368.67	366.65
Northing	9949069.45	9946563.44	9947806.017	9946445.582	9947619.46	9947139.86
Easting	3428311.38	3429862.181	3429260.844	3428730.533	3428574.38	3429525.31
Survey Datum	Horizontal Datum: NAD83/2011-EPOCH 2012 Vertical Datum: NAVD88-GEOIDIZA	Horizontal Datum: NAD83/NSRS 2007 Vertical Datum: NAVD88	Horizontal Datum: NAD83/NSRS 2007 Vertical Datum: NAVD88	Horizontal Datum: NAD83/NSRS 2007 Vertical Datum: NAVD88	Horizontal Datum: NAD83/NSRS 2007 Vertical Datum: NAVD88	Horizontal Datum: NAD83/2011-EPOCH 2012 Vertical Datum: NAVD88-GEOIDIZA

TABLE 2

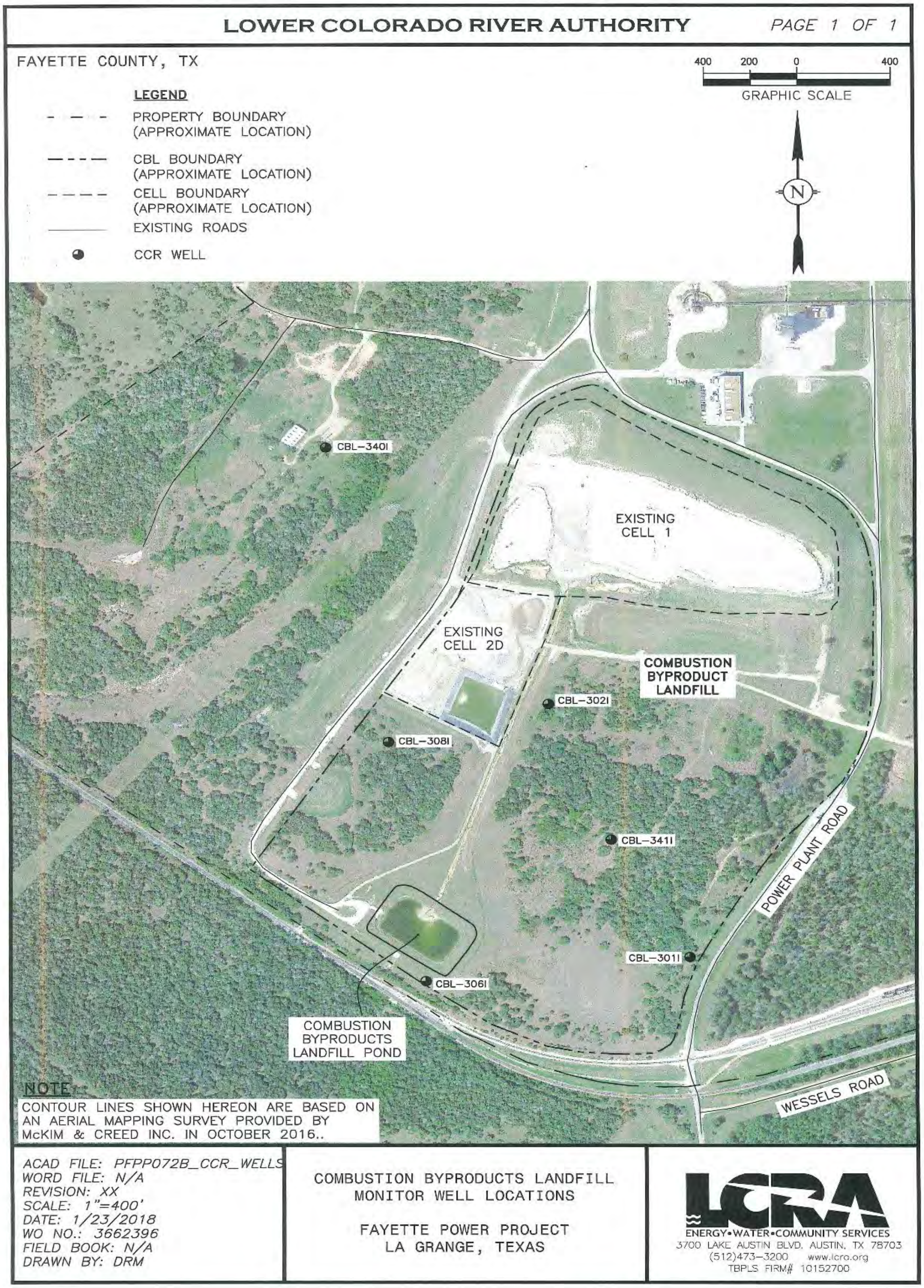
2024 CCR GROUNDWATER MONITORING EVENTS

Well #	Date of sample collection	# Samples collected for analysis	Monitoring program
CBL 340I	1/31/2024	1	Detection monitoring
	7/24/2024	1	Detection monitoring
CBL 301I	1/29/2024	1	Detection monitoring
	7/23/2024	1	Detection monitoring
CBL 302I	1/29/2024	1	Detection monitoring
	4/5/2024	1	Resample
	7/22/2024	1	Detection monitoring
CBL 306I	1/29/2024	1	Detection monitoring
	7/23/2024	1	Detection monitoring
CBL 308I	1/30/2024	1	Detection monitoring
	7/22/2024	1	Detection monitoring
CBL 341I	1/29/2024	1	Detection monitoring
	7/23/2024	1	Detection monitoring
	10/1/2024	1	Resample

FIGURES

FIGURE 1

MONITOR WELL LOCATION MAP



APPENDICES

Appendix A

CCR Groundwater Detection Monitoring Program
Evaluation of First Quarter 2024
Potentiometric Surface Data Collected from the CBL
Bullock, Bennett & Associates, LLC
June 19, 2024

CCR Groundwater Detection Monitoring Program
Evaluation of Third Quarter 2024
Potentiometric Surface Data Collected from the CBL
Bullock, Bennett & Associates, LLC
December 30, 2024

Bullock, Bennett & Associates, LLC

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Technical Memorandum

To: Kate McCarthy, P.G. Project No. 23699-1
Corporate Environmental
Lower Colorado River Authority (LCRA)

From: Charlie Macon, P.G.

Date: June 19, 2024

Subject: CCR GROUNDWATER DETECTION MONITORING PROGRAM EVALUATION OF FIRST QUARTER 2024 POTENTIOMETRIC SURFACE DATA COLLECTED FROM THE CBL

1.0 INTRODUCTION

This Technical Memorandum (Tech Memo) has been prepared by Bullock, Bennett & Associates, LLC (BBA) on behalf of the Lower Colorado River Authority (LCRA), and documents the evaluation of the Intermediate Sand groundwater bearing unit potentiometric surface data obtained during the First Quarter-2024 Combustion Byproducts Landfill (CBL) Groundwater Monitoring Event. The groundwater monitoring is being performed as part of the CBL Groundwater Monitoring Program (GMP) in accordance with the Coal Combustion Residuals (CCR) regulations as codified in 40 Code of Federal Regulations (CFR) 257.93 and Title 30 of the Texas Administrative Code §352.931 (30 TAC §352.931). The CBL is located at the Lower Colorado River Authority's (LCRA's) Fayette Power Project (FPP) facility near La Grange, Texas. This measurement of the potentiometric surface and determination of groundwater flow direction and flow rate is conducted for each groundwater monitoring event pursuant to the GMP requirements of 40 CFR §257.93(c) and 30 Texas Administrative Code §352.931.

2.0 POTENTIOMETRIC SURFACE DATA COLLECTION, MAPPING, AND GRADIENT DETERMINATION

All groundwater monitoring and sampling activities were performed by a BBA Environmental Scientist. Prior to conducting well purging and collection of groundwater samples for chemical analysis, the Scientist used an electronic well probe to determine depth to the Intermediate Sand groundwater surface below the surveyed top of monitoring well casing elevation. Table 1 presents the summary of groundwater measurements obtained from the CBL Groundwater Monitoring network in the First Quarter–2024 event.

Based on the measured groundwater elevations, a potentiometric surface map was prepared to document the First Quarter-2024 monitoring event (Figure 1). The map shows a groundwater potentiometric surface that is relatively consistent with those presented for all prior CBL GMP monitoring events. As illustrated by the map shown in Figure 1, the groundwater flow direction is to the south-southwest. The calculated gradient for the western portion of the CBL is 0.010 ft/ft. For the eastern portion of the CBL, the calculated gradient is 0.023 ft/ft.

3.0 GROUNDWATER FLOW RATE CALCULATION

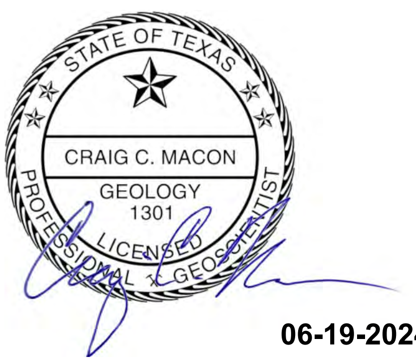
Groundwater flow rate was calculated along two transects, one along the western area having the lower gradient, and one along the eastern area having the higher gradient. As documented in the CBL Hydrogeology Report (Amec, 2013), a hydraulic conductivity value (K) of 6.3 x 10^{-4} centimeters per second (cm/sec) has been estimated for the Intermediate Sand. The hydraulic conductivity value is based on the rising-head slug test data obtained from monitoring well CBL-302I. Consistent with past evaluations of the Intermediate Sand, this hydraulic conductivity value was utilized for the First Quarter-2024 event to calculate the groundwater flow rate. Also consistent with past evaluations, an assumed porosity value of 0.30 was utilized based on the dominant aquifer lithology (clayey sands and silty sands).

Given the constants K = 6.3 x 10^{-4} cm/sec (= 648.9 feet/year) and Porosity = 0.30, the following groundwater flow velocities are calculated:

Eastern Transect (gradient of 0.023 ft/ft): 50 ft/yr (rounded)
Western Transect (gradient of 0.010 ft/ft): 22 ft/yr (rounded)

4.0 REFERENCES

Amec Environment & Infrastructure, Inc. (Amec), 2013: *Hydrogeologic Evaluation of Combustion Byproducts Landfill (CBL) Area Report, Fayette Power Project,* December 2013.

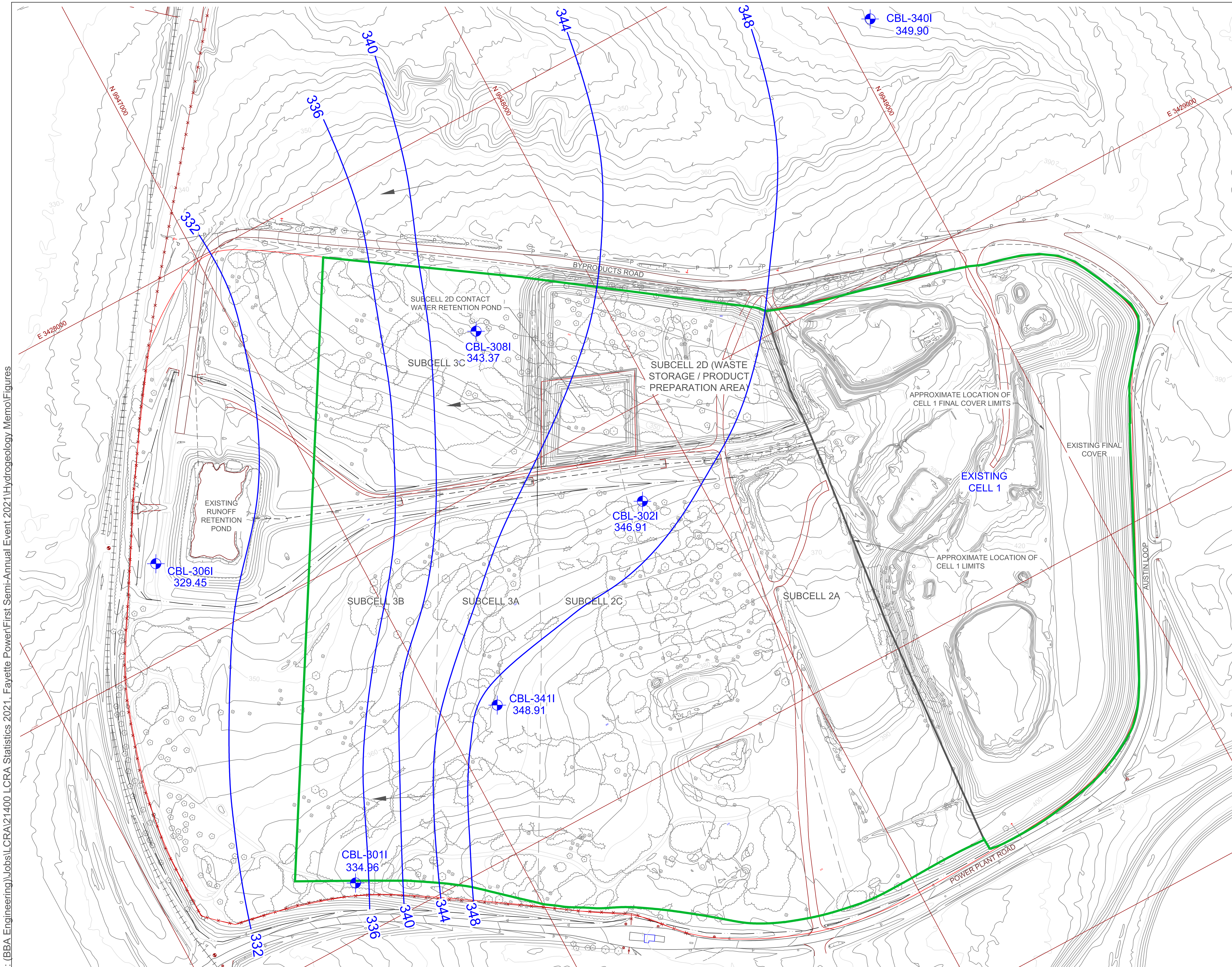


06-19-2024

TABLE 1
Combustion Byproducts Landfill
Groundwater Monitoring Well System
January 2024 Potentiometric Surface Data
Fayette Power Project
La Grange, Texas

Well ID	CBL-340I		CBL-301I		CBL-302I		CBL-306I		CBL-308I		CBL-341I	
Well Top of Casing Elevation	376.98		372.11		358.99		339.96		368.67		366.65	
Date	DTW (ft btoc)	Elevation (ft NAVD)	DTW (ft btoc)	Elevation (ft NAVD)	DTW (ft btoc)	Elevation (ft NAVD)	DTW (ft btoc)	Elevation (ft NAVD)	DTW (ft btoc)	Elevation (ft NAVD)	DTW (ft btoc)	Elevation (ft NAVD)
1/18/2024	27.08	349.90	37.15	334.96	12.08	346.91	10.51	329.45	25.30	343.37	17.74	348.91

Notes:
NM = Not Measured
ft btoc = feet below top of casing
ft NAVD = feet above North American Vertical Datum (1988)



LEGEND

- CBL UNIT BOUNDARY
- EXISTING GROUND ELEVATION (FT,MSL) (NOTES 1,2)
- EXISTING TOP OF CLAY LINER ELEVATION (FT,MSL) (NOTE 2)
- EXISTING ROAD
- EXISTING BUILDING
- EXISTING RAILROAD
- N 9949000 E 3428000 — COORDINATE GRID (NOTE 2)
- EXISTING FENCE
- PROPOSED PHASE BOUNDARY
- PROPOSED LIMIT OF WASTE
- POWER LINE
- WELLS
- CBL-302I 347.25 — CBL GROUNDWATER MONITORING WELL WITH POTENTIOMETRIC SURFACE ELEVATION INDICATED IN FEET ABOVE NAVD 1988.
- 348 — POTENTIOMETRIC SURFACE CONTOUR LINE
- INFERRED GROUNDWATER FLOW DIRECTION

NOTES:

1. THE EXISTING CONTOUR BASE MAP SHOWN ON THIS DRAWING WAS COMPILED USING AN AERIAL SURVEY BASED ON PHOTOGRAPHY PERFORMED ON 23 OCTOBER 2013 BY SURDEX CORPORATION AND LIDAR DATA PUBLISHED DECEMBER 2008 AND PROVIDED BY LCRA SURVEYING, MAPPING, AND GIS.
2. ELEVATIONS ARE IN FEET (FT) AS DEFINED BY THE NORTH AMERICAN VERTICAL DATUM (NAVD) OF 1988. STATE PLANE COORDINATE GRID CORRESPONDS TO TEXAS STATE PLANE COORDINATE SYSTEM, TEXAS CENTRAL ZONE (4203), NORTH AMERICAN DATUM 83 (NAD-83) 1983.

STATE OF TEXAS
CRAIG C. MACON
GEOLOGY
1301
LICENSED
PROFESSIONAL GEOSCIENTIST

06-19-2024

0 140 280
SCALE IN FEET

LOWER COLORADO RIVER AUTHORITY

Figure 1
Potentiometric Surface Map of the Intermediate Sand
January 2024

PROJECT: 22482-23	BY: SLB	REVISIONS
DATE: 6/19/2024	CHECKED: CCM	

Bullock, Bennet & Associates, LLC
Engineering and Geoscience
Texas Registrations: Engineering F-8542, Geoscience 50127

Bullock, Bennett & Associates, LLC

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Technical Memorandum

To: Kate McCarthy, P.G. Project No. 23699-2
Corporate Environmental
Lower Colorado River Authority (LCRA)

From: Charlie Macon, P.G.

Date: December 30, 2024

Subject: CCR GROUNDWATER DETECTION MONITORING PROGRAM EVALUATION OF THIRD QUARTER 2024 POTENTIOMETRIC SURFACE DATA COLLECTED FROM THE CBL

1.0 INTRODUCTION

This Technical Memorandum (Tech Memo) has been prepared by Bullock, Bennett & Associates, LLC (BBA) on behalf of the Lower Colorado River Authority (LCRA), and documents the evaluation of the Intermediate Sand groundwater bearing unit potentiometric surface data obtained during the Third Quarter-2024 Combustion Byproducts Landfill (CBL) Groundwater Monitoring Event. The groundwater monitoring is being performed as part of the CBL Groundwater Monitoring Program (GMP) in accordance with the Coal Combustion Residuals (CCR) regulations as codified in 40 Code of Federal Regulations (CFR) 257.93 and Title 30 of the Texas Administrative Code §352.931 (30 TAC §352.931). The CBL is located at the Lower Colorado River Authority's (LCRA's) Fayette Power Project (FPP) facility near La Grange, Texas. This measurement of the potentiometric surface and determination of groundwater flow direction and flow rate is conducted for each groundwater monitoring event pursuant to the GMP requirements of 40 CFR §257.93(c) and 30 Texas Administrative Code §352.931.

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Based on the measured groundwater elevations, a potentiometric surface map was prepared to document the Third Quarter-2024 monitoring event (Figure 1). The map shows a groundwater potentiometric surface that is relatively consistent with those presented for all prior CBL GMP monitoring events. As illustrated by the map shown in Figure 1, the groundwater flow direction is to the south-southwest. The calculated gradient for the western portion of the CBL is 0.012 ft/ft. For the eastern portion of the CBL, the calculated gradient is 0.028 ft/ft.

3.0 GROUNDWATER FLOW RATE CALCULATION

Groundwater flow rate was calculated along two transects, one along the western area having the lower gradient, and one along the eastern area having the higher gradient. As documented in the CBL Hydrogeology Report (Amec, 2013), a hydraulic conductivity value (K) of 6.3×10^{-4} centimeters per second (cm/sec) has been estimated for the Intermediate Sand. The hydraulic conductivity value is based on the rising-head slug test data obtained from monitoring well CBL-302I. Consistent with past evaluations of the Intermediate Sand, this hydraulic conductivity value was utilized for the Third Quarter-2024 event to calculate the groundwater flow rate. Also consistent with past evaluations, an assumed porosity value of 0.30 was utilized based on the dominant aquifer lithology (clayey sands and silty sands).

Given the constants $K = 6.3 \times 10^{-4}$ cm/sec (= 648.9 feet/year) and Porosity = 0.30, the following groundwater flow velocities are calculated:

Eastern Transect (gradient of 0.028 ft/ft): 61 ft/yr (rounded)
Western Transect (gradient of 0.012 ft/ft): 26 ft/yr (rounded)

4.0 REFERENCES

Amec Environment & Infrastructure, Inc. (Amec), 2013: *Hydrogeologic Evaluation of Combustion Byproducts Landfill (CBL) Area Report, Fayette Power Project,* December 2013.

12/30/2024

TABLE 1
Combustion Byproducts Landfill
Groundwater Monitoring Well System
July 2024 Potentiometric Surface Data
Fayette Power Project
La Grange, Texas

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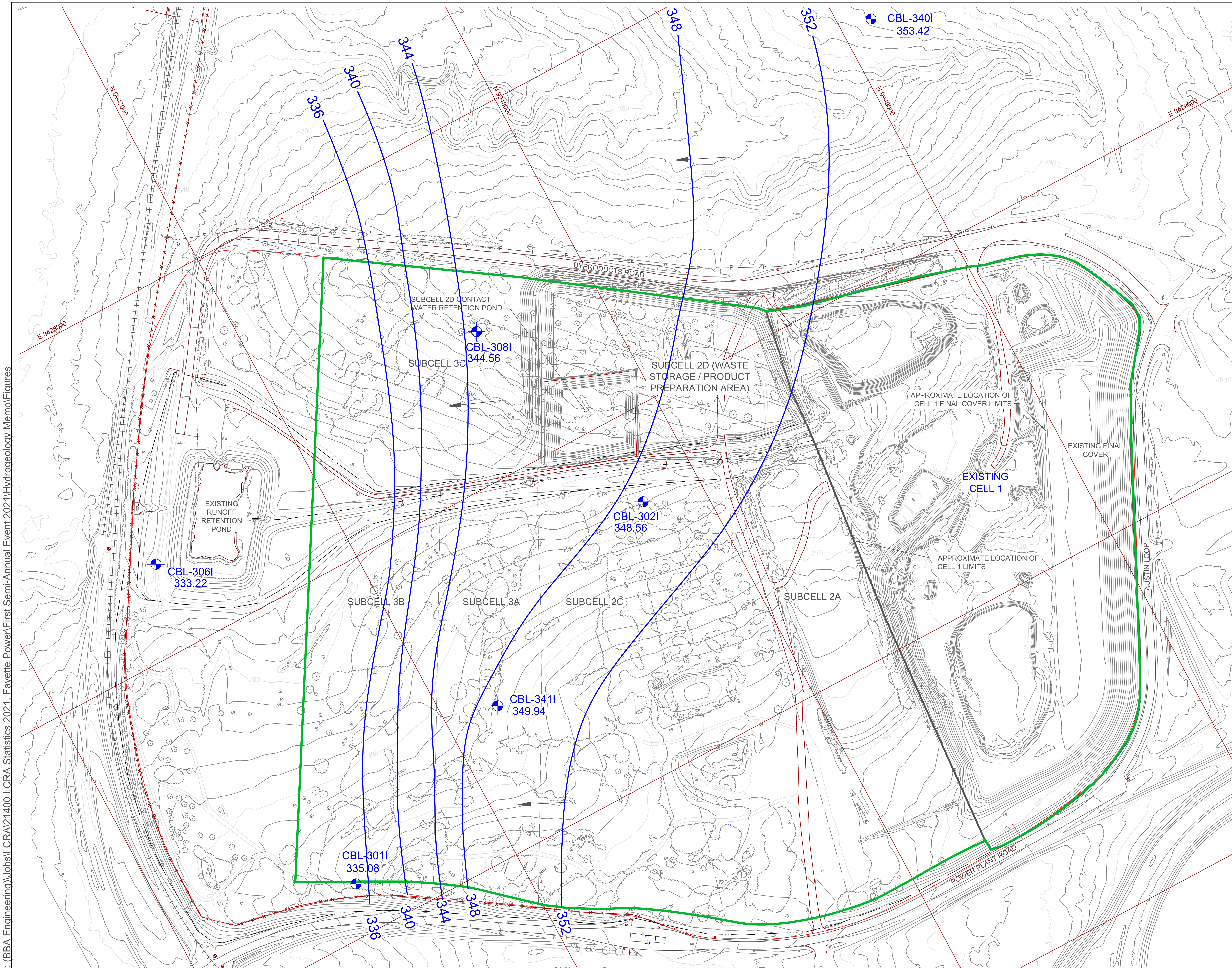
Date	DTW (ft btoc)	Elevation (ft NAVD)	DTW (ft btoc)	Elevation (ft NAVD)	DTW (ft btoc)	Elevation (ft NAVD)	DTW (ft btoc)	Elevation (ft NAVD)	DTW (ft btoc)	Elevation (ft NAVD)	DTW (ft btoc)	Elevation (ft NAVD)
7/22/2024	23.56	353.42	37.03	335.08	10.43	348.56	6.74	333.22	24.11	344.56	16.71	349.94

Notes:
NM = Not Measured
ft btoc = feet below top of casing
ft NAVD = feet above North American Vertical Datum (1988)



C: (BBA Engineering)\Jobs\LCRA\21400 LCRA Statistics 2021, Fayette Power\First Semi-Annual Event 2021\Hydrogeology Memo\Figures

LEGEND

- CBL UNIT BOUNDARY
- 350 — EXISTING GROUND ELEVATION (FT,MSL) (NOTES 1,2)
- (350) — EXISTING TOP OF CLAY LINER ELEVATION (FT,MSL) (NOTE 2)
- EXISTING ROAD
- EXISTING BUILDING
- EXISTING RAILROAD
- N 9949000 / E 3428000 — COORDINATE GRID (NOTE 2)
- EXISTING FENCE
- PROPOSED PHASE BOUNDARY
- PROPOSED LIMIT OF WASTE
- — P — P — P — POWER LINE
- WELLS
- CBL-302I 347.25 — CBL GROUNDWATER MONITORING WELL WITH POTENTIOMETRIC SURFACE ELEVATION INDICATED IN FEET ABOVE NAVD 1988.
- 348 — POTENTIOMETRIC SURFACE CONTOUR LINE
- INFERRED GROUNDWATER FLOW DIRECTION

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2. ELEVATIONS ARE IN FEET (FT) AS DEFINED BY THE NORTH AMERICAN VERTICAL DATUM (NAVD) OF 1988. STATE PLANE COORDINATE GRID CORRESPONDS TO TEXAS STATE PLANE COORDINATE SYSTEM, TEXAS CENTRAL ZONE (4203), NORTH AMERICAN DATUM 83 (NAD-83) 1983.

ALL MONITORING WELLS WERE GAUGED ON JULY 22, 2024

STATE OF TEXAS
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12/30/2024

0 140 280
SCALE IN FEET

LOWER COLORADO RIVER AUTHORITY

Figure 1
Potentiometric Surface Map
of the Intermediate Sand
July 2024

PROJECT: 22482-23	BY: SLB	REVISIONS
DATE: 12/16/2024	CHECKED: CCM	

Bullock, Bennet & Associates, LLC
Engineering and Geoscience
Texas Registrations: Engineering F-8542, Geoscience 50127

APPENDIX B

Results of the Groundwater Statistics for the Lower Colorado River Authority
First Semi-Annual Monitoring Event in 2024
Otter Creek Environmental Services, LLC
April 2024 (*Revised September 4)*

Results of the Ground Water Statistics

for Lower Colorado River Authority Fayette Power Project

First Semi-Annual Monitoring Event in 2024

Prepared for:
Lower Colorado River Authority (LCRA)
Fayette Power Project
LaGrange, TX

Prepared by:
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April 2024
Revised September 4, 2024

INTRODUCTION

This report contains the results of the statistical analyses used to evaluate the groundwater data obtained during the first semi-annual monitoring event in 2024 at the Lower Colorado River Authority (LCRA) Fayette Power Project (FPP) Combustion Byproducts Landfill (CBL), the Coal Combustion Residuals (CCR) unit addressed in this report. The statistical analyses were completed within 90 days of receipt of the analytical data. The groundwater at the FPP is monitored by wells CBL-301I, CBL-302I, CBL-306I, CBL-308I, CBL-340I, and CBL-341I.

Statistical comparisons and evaluation for statistically significant increases (SSIs) are conducted on all wells with the exception of former background (side-gradient) monitoring well CBL-340I. Based on the Alternative Source Determination (ASD) study conducted in 2018, the identification of natural aquifer heterogeneity resulted in determination that CBL-340I could not be used to reliably characterize the background geochemistry of the groundwater flowing beneath the CCR unit. As such, intrawell analysis of wells potentially affected by CCR operation was selected at that time, and the need for use of CBL-340I geochemical data was negated. A Groundwater Monitoring System Addendum Certification was prepared in 2018, documenting the transition from former interwell analysis to intrawell analysis.

The statistical plan is designed to detect a release from the facility at the earliest indication. An intrawell methodology is described and then applied to the FPP data. The statistical method conforms with the Coal Combustion Residual (CCR) rule (40 CFR Part 257), USEPA Guidance document (*Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities, Unified Guidance,* March 2009), and the American Society for Testing and Materials (ASTM) standard D6312-98, *Developing Appropriate Statistical Approaches for Ground-Water Detection Monitoring Programs*. The intrawell statistical evaluations were completed within 90 days of receipt of laboratory data.

Ground Water Monitoring Program

The groundwater monitoring network for FPP includes background well CBL-340I and downgradient wells CBL-301I, CBL-302I, CBL-306I, CBL-308I, and CBL-341I. Each of the groundwater monitoring wells is to be sampled at least semiannually and analyzed for the detection monitoring parameters listed in Appendix III of 40 CFR Part 257, as follows:

Boron
Calcium
Chloride
Fluoride
pH
Sulfate
Total Dissolved Solids

Statistical analysis is conducted on data from all Groundwater Monitoring Plan (GMP) wells with the exception of CBL-340I, as described above. The groundwater data obtained for statistical evaluation during the first semi-annual monitoring event in 2024 are summarized in Attachment A. Historical Appendix III data is summarized in Attachment B.

STATISTICAL METHODOLOGIES FOR DETECTION MONITORING

The CCR rule for statistical analysis provides several options for evaluating the ground water data [40 CFR 257.93(f)]. As referenced in Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities, Unified Guidance (EPA 530/R-09-007), the preferred methods for comparing ground water data are using either prediction limits or using control charts. The control chart procedure offers an advantage over the prediction limits procedure as more data is generated over time, because the control chart procedure generates a graph of compliance data over time and allows for better identification of long-term trends.

An intrawell control chart method was applied to the FPP 2024 first semiannual data using the DUMPStat® statistical program. DUMPStat® is a program for the statistical analysis of groundwater monitoring data using methods described in "Statistical Methods for Groundwater Monitoring" by Dr. Robert D. Gibbons. Groundwater statistical analysis was conducted on the Appendix III constituents listed above.

Intrawell statistics

Intrawell statistics compare new measurements to the historical data at each groundwater monitoring well independently. The Unified Guidance-recommended technique for intrawell comparisons is the combined Shewhart-CUSUM control chart. This control chart procedure detects changes in analyte concentrations both in terms of constituent concentration and cumulative concentration increases. This method is also extremely sensitive to sudden and gradual releases. A requirement for constructing these control charts is that the parameter is detected at a frequency greater than or equal to 25%, otherwise the data variance is not properly defined (ASTM D 6312-98 *Standard Guide for Developing Appropriate Statistical Approaches for Ground-Water Detection Monitoring Programs*).

The combined Shewhart-CUSUM control chart assumes that the data are independent and normally distributed with a fixed mean and a constant variance. Independent data is much more critical than the normality assumption. To achieve independence, it is recommended that data are collected no more frequently than quarterly to account for seasonal variation. The combined Shewhart-CUSUM control chart is robust to deviations from normality. Because the control charts do not use a specific multiplier based on a normal distribution, it is more conservative to assume normality.

Some groundwater monitoring parameters are not detected at a frequency great enough to generate the combined Shewhart-CUSUM control charts. For constituents that are detected less than 25% of the time at a particular well, the data are plotted as a time series until a sufficient number of data points are available to provide a 99% confidence nonparametric prediction limit. Thirteen independent measurements (with 1 resample) are necessary to achieve a 99% confidence (1% false positive rate) nonparametric prediction limit. Eight independent measurements (for pass 1 of 2 resamples) are necessary to achieve a 99% confidence nonparametric prediction limit. The nonparametric prediction limit is the largest determination out of the data set collected for that well and parameter. If the detection frequency is 0% after thirteen samples have been collected, the practical quantitation limit (PQL) becomes the nonparametric prediction limit.

In developing the statistical background, the historical data must be thoroughly screened for anomalous data due to sample collection error or laboratory analysis error. An erroneous data point, if not removed prior to the mean and variance computations, would yield a larger control limit thus increasing the false negative rate. The DUMPStat® program screens for outliers using the Dixon test. If the Dixon test indicates an outlier, the value is compared to three times the median value for intrawell analyses. If the value fails both criteria of the two-stage screening, the value is considered a statistical outlier and will not be used in the mean and variance determinations. Anomalous data will still be plotted on the graphs (with a unique symbol) but will not be included in the calculations.

The verification resample plan is an integral function of the statistical plan to reduce the probability that anomalous data obtained after the background has been established is indicative of a landfill release. Should an indication of an SSI be identified, the resampling plan is implemented by the operator to collect a verification sample.

The background data for each well and constituent is tested for existing trends using Sen's nonparametric estimate of trend.

Results of the Intrawell Statistics

The Appendix III parameter data from wells CBL-301I, CBL-302I, CBL-306I, CBL-308I, and CBL-341I were evaluated using the combined Shewhart-CUSUM control chart method.

The initial background was established with the ProUCL software using data obtained in 2016 and 2017. Initial exceedances for boron at CBL-301I and boron at CBL-341I were reported following the first semi-annual monitoring in 2020. Since the boron concentrations determined subsequently in January 2021 at CBL-301I (<0.050 mg/L) and CBL-341I (<0.050 mg/L) do not exceed the baseline threshold values (BTV), the previous exceedances are not statistically significant. BTV will be analogous to control limits in this report and future reports. Background was later established to include historical data obtained from 2016 through 2020 using DUMPStats.

Monitoring well background data sets must be periodically updated with valid detection monitoring results that are representative of background groundwater quality. Failure to update background data sets will exclude factors such as natural temporal variation, changes in field or laboratory methodologies, and changes in the water table due to meteorological conditions or other influences. Since there were no exceedances attributed to the unit, the background data in this evaluation includes historical data obtained from 2016 through 2022 for wells CBL-301I, CBL-302I, CBL-306I, CBL-308I, and CBL-341I.

A summary of the intrawell statistics is included in Attachment C, Table 1 “Summary Statistics and Intermediate Computations for Combined Shewhart-CUSUM Control Charts.” The control charts or time series graphs follow the summary table.

For the parameters evaluated, there were no control limit exceedances detected during the first semi-annual monitoring event for 2024.

A slight increasing trend was detected in the background data for sulfate at CBL-302I.

A control chart factor was selected to provide a balance of the site-wide false positive and false negative rates. A statistical power curve indicates the expected false assessments for the site as a whole. The site-wide false positive rate is 3% and the test becomes sensitive to 3 standard deviation units over background.

CONCLUSIONS

This document describes a comprehensive statistical plan designated for the FPP. The groundwater monitoring network for FPP consists of wells CBL-301I, CBL-302I, CBL-306I, CBL-308I, and CBL-341I. Each of the groundwater monitoring wells is sampled and analyzed for the detection monitoring parameters listed in Appendix III of 40 CFR Part 257. The current ground water data was compared to background using intrawell control charts. Using intrawell comparisons, there were no control limit exceedances detected.

Attachment A

Ground Water Data obtained during the First Semi-Annual Monitoring Event in 2024

Table 1

Analytical Data Summary for 1/29/2024 to 1/31/2024

Constituents	Units	CBL-301I	CBL-302I	CBL-306I	CBL-308I	CBL-340I	CBL-341I
Boron, Total	mg/L	.107	.160	.133	.150	.178	.133
Calcium, Total	mg/L	1050	937	186	714	607	875
Chloride	mg/L	2270	1440	153	1790	2210	1700
Fluoride	mg/L	<.100	<.100	1.490	1.260	.605	<.100
pH	S.U.	6.35	6.28	6.55	6.57	6.12	6.38
Sulfate	mg/L	475	1330	266	1360	705	346
Total Dissolved Solids	mg/L	4820	4950	1170	5410	5090	3990

* - The displayed value is the arithmetic mean of multiple database matches.

Table 2

Analytical Data Summary for 4/5/2024

Constituents	Units	CBL-302I
Boron, Total	mg/L	.163

* - The displayed value is the arithmetic mean of multiple database matches.

Attachment B

Historical Appendix III Ground Water Data

Table 1

Analytical Data Summary for CBL-301I

Constituents	Units	1/21/2016	5/4/2016	7/27/2016	10/24/2016	1/23/2017	3/22/2017	5/18/2017	7/26/2017	2/8/2018	7/25/2018	1/17/2019	5/2/2019	7/31/2019
Boron, Total	mg/L	<.0500	<.0500	<.0500	<.0500	<.0500	<.0500	.0707	<.0500	<.0500	<.0500	<.0500	<.0500	<.0500
Calcium, Total	mg/L	905	949	925	978	1000	1030	1060	961	873	993	156	762	783
Chloride	mg/L	2300	2160	2290	2250	3200	2390	2420	2500	2480	1330	619	1910	2240
Fluoride	mg/L	<.250	<.500	<.500	<.250	.312	<.500	<.500	<.500	<.500	<.500	.219	.112	.051
pH	S.U.	6.33	6.26	5.95	6.23	6.26	6.31	5.95	6.02	6.17	6.04	7.16	6.14	6.19
Sulfate	mg/L	336	311	336	326	488	337	342	381	344	196	104	398	332
Total Dissolved Solids	mg/L	4380	5050	6020	4570	6140	6570	6430	4290	5120	5390	1460	5650	6040

* - The displayed value is the arithmetic mean of multiple database matches.

Table 1

Analytical Data Summary for CBL-301I

Constituents	1/28/2020	9/17/2020	1/26/2021	7/20/2021	9/7/2021	1/26/2022	7/27/2022	8/30/2022	10/25/2022	1/25/2023	3/7/2023	8/2/2023	1/29/2024
Boron, Total	<.0500	.0801	<.0500	.0826	<.0500	<.0500	.0850	.1070	.0645	.1080	.1020	<.0500	.1070
Calcium, Total	851	1060	1130	1100		999	1010			977		1260	1050
Chloride	2360	2270	2420	2590		2440	1840			1960		2220	2270
Fluoride	.130	<.250	<.500	2.680	<.500	<.050	.156			1.720	<.050	.054	<.100
pH	6.26	6.13	6.06	6.13	6.14	6.27	6.08	6.14	6.21	6.34		6.21	6.35
Sulfate	349	350	374	419		406	285			1370	207	383	475
Total Dissolved Solids	4790	6340	6060	5870		4700	4590			5160		5360	4820

* - The displayed value is the arithmetic mean of multiple database matches.

Table 2

Analytical Data Summary for CBL-302I

Constituents	Units	1/22/2016	5/4/2016	7/27/2016	10/24/2016	1/23/2017	3/22/2017	5/16/2017	7/27/2017	2/8/2018	7/27/2018	1/22/2019	7/31/2019	1/30/2020
Boron, Total	mg/L	<.0500	<.0500	<.0500	.1560	<.0500	.2970	<.0500	<.0500	<.0500	<.0500	<.0500	<.0500	<.0500
Calcium, Total	mg/L	1030	1010	1030	1070	1100	1090	1100	1040	934	995	855	914	838
Chloride	mg/L	2190	2130	2210	2170	2080	2050	2230	2040	2080	1980	1960	1540	1540
Fluoride	mg/L	<.2500	<.5000	<.5000	<.2500	.3320	<.5000	<.5000	<.5000	.1120	<.5000	.0402	.0605	.1930
pH	S.U.	6.29	6.01	5.17	7.75	5.36	5.40	4.94	6.20	6.21	5.77	6.44	6.15	6.34
Sulfate	mg/L	1020	993	1090	1180	1150	1120	1230	1180	1240	1390	1250	1260	1350
Total Dissolved Solids	mg/L	5500	5390	6850	4210	6430	6460	5860	5120	6010	5510	5060	4190	4790

* - The displayed value is the arithmetic mean of multiple database matches.

Table 2

Analytical Data Summary for CBL-302I

Constituents	9/17/2020	1/28/2021	7/21/2021	9/7/2021	1/27/2022	7/28/2022	1/26/2023	7/18/2023	1/29/2024
Boron, Total	<.0500	<.0500	.0743		<.0500	<.0500	.1160	<.0500	.1600
Calcium, Total	853	1020	844		754	750	889	981	937
Chloride	1410	1370	1380		1310	1300	1460	1330	1440
Fluoride	<.2500	<.5000	2.2500	<.2500	<.0500	.1650	<.5000	1.7600	<.1000
pH	6.20	6.21	6.06	6.28	6.32	6.21	6.33	6.20	6.28
Sulfate	1280	1290	1350		1340	1300	1390	1230	1330
Total Dissolved Solids	4990	4800	4810		4510	5120	4930	5150	4950

* - The displayed value is the arithmetic mean of multiple database matches.

Table 3

Analytical Data Summary for CBL-306I

Constituents	Units	1/21/2016	5/4/2016	7/26/2016	10/24/2016	1/19/2017	3/22/2017	5/18/2017	7/27/2017	2/8/2018	7/27/2018	1/16/2019	7/31/2019	8/23/2019
Boron, Total	mg/L	<.0500	.0717	.0998	.0556	<.0500	.1240	.0832	.0531	<.0500	<.0500	<.0500	.0824	.0500
Calcium, Total	mg/L	137.0	47.2	105.0	198.0	174.0	204.0	205.0	234.0	230.0	275.0	180.0	106.0	226.0
Chloride	mg/L	155	20	114	330	197	231	289	350	385	283	215	538	318
Fluoride	mg/L	2.50	1.00	1.37	2.38	1.85	12.60	2.20	2.91	2.81	2.95	1.98	9.26	2.66
pH	S.U.	7.09	6.69	6.95	6.72	7.29	4.41	5.61	6.94	6.67	6.86	6.78	6.92	6.83
Sulfate	mg/L	266.0	29.5	139.0	432.0	270.0	340.0	412.0	513.0	493.0	406.0	292.0	816.0	387.0
Total Dissolved Solids	mg/L	1280	431	790	1150	1320	1460	1440	1280	1760	1450	1220	676	1710

* - The displayed value is the arithmetic mean of multiple database matches.

Table 3

Analytical Data Summary for CBL-306I

Constituents	1/29/2020	9/19/2020	1/28/2021	7/21/2021	1/27/2022	7/28/2022	1/26/2023	7/18/2023	1/29/2024
Boron, Total	<.0500	.0773	<.0500	.0927	.0548	.1100	.0973	.0659	.1330
Calcium, Total	247.0	260.0	257.0	216.0	212.0	182.0	149.0	260.0	186.0
Chloride	445	420	292	255	384	261	148	336	153
Fluoride	2.83	2.72	2.90	2.42	2.99	2.26	1.92	2.66	1.49
pH	6.70	7.16	6.84	6.55	6.87	6.70	7.30	6.49	6.55
Sulfate	561.0	506.0	388.0	336.0	510.0	348.0	205.0	454.0	266.0
Total Dissolved Solids	1830	1730	1420	1320	1730	1540	1000	1910	1170

* - The displayed value is the arithmetic mean of multiple database matches.

Table 4

Analytical Data Summary for CBL-308I

Constituents	Units	1/22/2016	5/4/2016	7/26/2016	10/24/2016	1/19/2017	3/22/2017	5/16/2017	7/26/2017	2/6/2018	7/25/2018	1/18/2019	7/31/2019	1/29/2020
Boron, Total	mg/L	<.0500	.1210	.1860	.2560	<.0500	.5450	.1090	.0799	<.0500	<.0500	<.0500	<.0500	<.0500
Calcium, Total	mg/L	903	870	911	939	919	947	954	878	859	863	760	840	745
Chloride	mg/L	2760	2580	2680	2870	2360	2530	2740	2760	2750	2680	2240	2290	2110
Fluoride	mg/L	1.49	2.30	1.64	1.59	1.33	9.05	1.70	1.90	1.76	2.10	1.68	1.62	1.60
pH	S.U.	6.36	6.13	5.95	6.27	6.83	6.27	5.54	6.27	6.26	6.07	6.39	6.25	6.37
Sulfate	mg/L	1490	1410	1490	1550	1320	1470	1580	1550	1570	1540	1520	1420	1340
Total Dissolved Solids	mg/L	6820	6120	7890	10200	9620	7260	6590	6480	6200	6320	4760	5820	5980

* - The displayed value is the arithmetic mean of multiple database matches.

Table 4

Analytical Data Summary for CBL-308I

Constituents	9/18/2020	1/28/2021	7/21/2021	1/27/2022	7/27/2022	1/26/2023	7/18/2023	1/30/2024
Boron, Total	.1030	<.0500	.1300	<.0500	.0790	.1430	<.0500	.1500
Calcium, Total	838	830	684	974	736	732	642	714
Chloride	2410	2200	1780	2020	2470	2570	1840	1790
Fluoride	1.33	1.44	1.74	1.75	1.43	<.50	1.86	1.26
pH	6.22	6.26	6.16	6.36	6.23	6.41	6.26	6.57
Sulfate	1310	1340	1240	1310	1190	445	1290	1360
Total Dissolved Solids	6860	6190	5270	5320	6840	5810	5680	5410

* - The displayed value is the arithmetic mean of multiple database matches.

Table 5

Analytical Data Summary for CBL-340I

Constituents	Units	1/21/2016	5/4/2016	7/27/2016	10/24/2016	1/23/2017	3/22/2017	5/16/2017	7/27/2017	2/8/2018	7/27/2018	1/22/2019	7/31/2019	1/30/2020
Boron, Total	mg/L	<.0500	.0832	.0810	.1580	<.0500	.1740	.1040	.0816	.0638	<.0500	<.0500	.1240	.0562
Calcium, Total	mg/L	564	560	575	607	627	581	584	571	555	544	518	518	539
Chloride	mg/L	2370	2260	2350	2380	2070	2280	2520	2380	2730	2450	2250	2280	2240
Fluoride	mg/L	1.090	1.920	1.060	1.260	.840	8.440	1.010	.850	1.000	1.300	.830	.880	.870
pH	S.U.	6.52	6.13	6.95	6.19	5.46	6.49	5.77	6.42	6.41	6.25	6.59	6.45	6.49
Sulfate	mg/L	652	616	668	675	571	635	715	685	752	711	639	684	637
Total Dissolved Solids	mg/L	4990	5230	6250	5670	6230	5480	5470	4880	5290	5100	4720	5560	5080

* - The displayed value is the arithmetic mean of multiple database matches.

Table 5

Analytical Data Summary for CBL-340I

Constituents	9/18/2020	1/28/2021	7/22/2021	1/28/2022	7/28/2022	1/30/2023	7/19/2023	1/31/2024
Boron, Total	.1460	<.0500	.3840	.1600	.2850	.1670	.2760	.1780
Calcium, Total	547	607	532	597	538	635	631	607
Chloride	2130	2260	2200	2200	2160	2230	2130	2210
Fluoride	.725	.835	.865	1.060	.865	.850	1.070	.605
pH	6.32	6.32	6.24	6.42	6.35	6.37	6.41	6.12
Sulfate	608	634	618	619	614	643	599	705
Total Dissolved Solids	5430	5520	4990	4870	5490	5010	5290	5090

* - The displayed value is the arithmetic mean of multiple database matches.

Table 6

Analytical Data Summary for CBL-341I

Constituents	Units	1/23/2017	2/23/2017	3/22/2017	4/20/2017	5/16/2017	6/20/2017	7/27/2017	9/11/2017	2/8/2018	8/24/2018	1/22/2019	7/31/2019	1/30/2020
Boron, Total	mg/L	<.0500	<.0500	<.0500	.0587	.0896	.0668	.0507	<.0500	<.0500	<.0500	<.0500	<.0500	<.0500
Calcium, Total	mg/L	854	870	906	898	860	950	829	848	810	824	782	714	767
Chloride	mg/L	1600	2000	1780	1770	1900	1820	1970	1710	2110	1910	1790	1650	1780
Fluoride	mg/L	.5300	<.5000	<.5000	<.5000	<.5000	.3350	.0550	.3670	.1060	.1140	.0546	.1000	.1530
pH	S.U.	5.74	5.23	5.72	5.73	5.54	6.19	6.21	6.10	6.18	5.82	6.38	6.23	6.27
Sulfate	mg/L	307	404	346	336	369	363	419	354	383	376	358	329	351
Total Dissolved Solids	mg/L	5000	4520	5110	4240	4840	5940	4150	4860	4320	4800	3870	5370	4900

* - The displayed value is the arithmetic mean of multiple database matches.

Table 6

Analytical Data Summary for CBL-341I

Constituents	9/17/2020	1/27/2021	7/22/2021	9/7/2021	1/27/2022	7/28/2022	1/26/2023	7/19/2023	1/29/2024
Boron, Total	.1020	<.0500	.1110		<.0500	.1150	.1340	.0760	.1330
Calcium, Total	814	874	852		1040	704	797	710	875
Chloride	1700	1800	1750		1810	1690	1660	1530	1700
Fluoride	<.2500	<.5000	1.1600	<.2500	<.0500	.1410	<.2500	1.1200	<.1000
pH	6.14	6.06	5.98	6.18	6.26	6.16	6.28	6.22	6.38
Sulfate	336	324	316		320	296	309	259	346
Total Dissolved Solids	4930	3940	4520		3800	4910	4390	4190	3990

* - The displayed value is the arithmetic mean of multiple database matches.

Attachment C

Summary Tables and Graphs for the Intrawell Comparisons

Table 1

Summary Statistics and Intermediate Computations for Combined Shewhart-CUSUM Control Charts

Constituent	Units	Well	N(back)	N(mon)	N(tot)	Mean	SD	R(i-1)	R(i)	S(i-1)	S(i)	Limit	Type	Conf	
Boron, Total	mg/L	CBL-301I	22	4	26	0.0586	0.0161	0.0500	0.1070	0.0586	0.0949	0.1391	normal		
Boron, Total	mg/L	CBL-302I	18	3	21			0.0500	0.1600			0.2970	nonpar	.99	**
Boron, Total	mg/L	CBL-306I	18	3	22	0.0679	0.0242	0.0659	0.1330	0.0679	0.1148	0.1891	normal		
Boron, Total	mg/L	CBL-308I	18	3	21	0.1144	0.1215	0.0500	0.1500	0.1144	0.1144	0.7217	normal		
Boron, Total	mg/L	CBL-341I	18	3	21	0.0635	0.0234	0.0760	0.1330	0.1114	0.1634	0.1803	normal		
Calcium, Total	mg/L	CBL-301I	18	3	22	964.9444	101.2710	1260.0000	1050.0000	1184.0467	1193.1490	1471.2996	normal		
Calcium, Total	mg/L	CBL-302I	18	3	21	957.0556	116.7478	981.0000	937.0000	957.0556	957.0556	1540.7947	normal		
Calcium, Total	mg/L	CBL-306I	16	3	22	214.8125	36.2569	260.0000	186.0000	232.8073	214.8125	396.0970	normal		
Calcium, Total	mg/L	CBL-308I	18	3	21	858.3333	82.3615	642.0000	714.0000	858.3333	858.3333	1270.1407	normal		
Calcium, Total	mg/L	CBL-341I	18	3	21	844.2222	79.4752	710.0000	875.0000	844.2222	844.2222	1241.5980	normal		
Chloride	mg/L	CBL-301I	18	3	22	2299.4444	372.4241	2220.0000	2270.0000	2299.4444	2299.4444	4161.5647	normal		
Chloride	mg/L	CBL-302I	18	3	21	1831.6667	360.2654	1330.0000	1440.0000	1831.6667	1831.6667	3632.9938	normal		
Chloride	mg/L	CBL-306I	16	3	22	300.6250	82.0828	336.0000	153.0000	300.6250	300.6250	711.0389	normal		
Chloride	mg/L	CBL-308I	18	3	21	2457.2222	303.1755	1840.0000	1790.0000	2457.2222	2457.2222	3973.0995	normal		
Chloride	mg/L	CBL-341I	18	3	21	1807.7778	129.1399	1530.0000	1700.0000	1807.7778	1807.7778	2453.4775	normal		
Fluoride	mg/L	CBL-301I	20	4	24	0.5080	0.5367	0.0540	0.1000	0.5080	0.5080	3.1915	normal		
Fluoride	mg/L	CBL-302I	19	3	22	0.4817	0.4622	1.7600	0.1000	1.4133	0.5849	2.7929	normal		
Fluoride	mg/L	CBL-306I	17	3	22	2.3959	0.5730	2.6600	1.4900	2.3959	2.3959	5.2610	normal		
Fluoride	mg/L	CBL-308I	17	3	21	1.6706	0.2554	1.8600	1.2600	1.6706	1.6706	2.9477	normal		
Fluoride	mg/L	CBL-341I	19	3	22	0.3745	0.2679	1.1200	0.1000	0.9191	0.3745	1.7141	normal		
pH	S.U.	CBL-301I	22	3	25	6.2014	0.2396	6.2100	6.3500	6.2014	6.2014	5.00 - 7.40	normal		
pH	S.U.	CBL-302I	19	3	22	6.0689	0.5972	6.2000	6.2800	6.0689	6.0689	3.08 - 9.05	normal		
pH	S.U.	CBL-306I	18	3	22	6.6478	0.6569	6.4900	6.5500	6.6478	6.6478	3.36 - 9.93	normal		
pH	S.U.	CBL-308I	18	3	21	6.2328	0.2475	6.2600	6.5700	6.2328	6.3844	5.00 - 7.47	normal		
pH	S.U.	CBL-341I	18	3	22	6.0494	0.2377	6.2200	6.3800	6.0939	6.2462	4.86 - 7.24	normal		
Sulfate	mg/L	CBL-301I	18	4	23	350.5556	60.2936	383.0000	475.0000	350.5556	429.7798	652.0236	normal		
Sulfate	mg/L	CBL-302I	18	3	21	1222.9444	114.1137	1230.0000	1330.0000	1225.8850	1247.3553	1793.5130	normal		
Sulfate	mg/L	CBL-306I	17	3	22	388.1765	110.3564	454.0000	266.0000	388.1765	388.1765	939.9583	normal		
Sulfate	mg/L	CBL-308I	18	3	21	1424.4444	121.4240	1290.0000	1360.0000	1424.4444	1424.4444	2031.5645	normal		
Sulfate	mg/L	CBL-341I	18	3	21	349.2778	32.8898	259.0000	346.0000	349.2778	349.2778	513.7270	normal		
Total Dissolved Solids	mg/L	CBL-301I	18	3	22	5444.4444	767.6950	5360.0000	4820.0000	5444.4444	5444.4444	9282.9193	normal		
Total Dissolved Solids	mg/L	CBL-302I	18	3	21	5311.6667	764.8702	5150.0000	4950.0000	5311.6667	5311.6667	9136.0178	normal		
Total Dissolved Solids	mg/L	CBL-306I	17	3	22	1437.0588	267.0853	1910.0000	1170.0000	1709.6860	1437.0588	2772.4853	normal		
Total Dissolved Solids	mg/L	CBL-308I	18	3	21	6696.6667	1385.2713	5680.0000	5410.0000	6696.6667	6696.6667	13623.0230	normal		
Total Dissolved Solids	mg/L	CBL-341I	18	3	21	4667.7778	554.0180	4190.0000	3990.0000	4667.7778	4667.7778	7437.8678	normal		

N(back) and N(mon) = Non-outlier measurements in the background and monitoring periods.
N(tot) = All independent measurements for that constituent and well.
For transformed data, mean and SD in transformed units and control limit in original units.
Conf = confidence level for passing initial test or one of two verification resamples (nonparametric test only).
* - Insufficient Data.
** - Detection Frequency < 25%.
*** - Zero Variance.

Table 2

Analytical Data and CUSUM Summary

Constituent	Units	Well	Date	Background	Result		Outlier	CUSUM	Adjusted	
Boron, Total	mg/L	CBL-301I	01/21/2016	yes	0.0500	ND				
Boron, Total	mg/L	CBL-301I	05/04/2016	yes	0.0500	ND				
Boron, Total	mg/L	CBL-301I	07/27/2016	yes	0.0500	ND				
Boron, Total	mg/L	CBL-301I	10/24/2016	yes	0.0500	ND				
Boron, Total	mg/L	CBL-301I	01/23/2017	yes	0.0500	ND				
Boron, Total	mg/L	CBL-301I	03/22/2017	yes	0.0500	ND				
Boron, Total	mg/L	CBL-301I	05/18/2017	yes	0.0707					
Boron, Total	mg/L	CBL-301I	07/26/2017	yes	0.0500	ND				
Boron, Total	mg/L	CBL-301I	02/08/2018	yes	0.0500	ND				
Boron, Total	mg/L	CBL-301I	07/25/2018	yes	0.0500	ND				
Boron, Total	mg/L	CBL-301I	01/17/2019	yes	0.0500	ND				
Boron, Total	mg/L	CBL-301I	05/02/2019	yes	0.0500	ND				
Boron, Total	mg/L	CBL-301I	07/31/2019	yes	0.0500	ND				
Boron, Total	mg/L	CBL-301I	01/28/2020	yes	0.0500	ND				
Boron, Total	mg/L	CBL-301I	09/17/2020	yes	0.0801					
Boron, Total	mg/L	CBL-301I	01/26/2021	yes	0.0500	ND				
Boron, Total	mg/L	CBL-301I	07/20/2021	yes	0.0826					
Boron, Total	mg/L	CBL-301I	09/07/2021	yes	0.0500	ND				
Boron, Total	mg/L	CBL-301I	01/26/2022	yes	0.0500	ND				
Boron, Total	mg/L	CBL-301I	07/27/2022	yes	0.0850					
Boron, Total	mg/L	CBL-301I	08/30/2022	yes	0.1070					
Boron, Total	mg/L	CBL-301I	10/25/2022	yes	0.0645					
Boron, Total	mg/L	CBL-301I	01/25/2023		0.1080			0.0959		
Boron, Total	mg/L	CBL-301I	03/07/2023		0.1020			0.1272		
Boron, Total	mg/L	CBL-301I	08/02/2023		0.0500	ND		0.0586		
Boron, Total	mg/L	CBL-301I	01/29/2024		0.1070			0.0949		
Boron, Total	mg/L	CBL-302I	01/22/2016	yes	0.0500	ND				
Boron, Total	mg/L	CBL-302I	05/04/2016	yes	0.0500	ND				
Boron, Total	mg/L	CBL-302I	07/27/2016	yes	0.0500	ND				
Boron, Total	mg/L	CBL-302I	10/24/2016	yes	0.1560					
Boron, Total	mg/L	CBL-302I	01/23/2017	yes	0.0500	ND				
Boron, Total	mg/L	CBL-302I	03/22/2017	yes	0.2970					
Boron, Total	mg/L	CBL-302I	05/16/2017	yes	0.0500	ND				
Boron, Total	mg/L	CBL-302I	07/27/2017	yes	0.0500	ND				
Boron, Total	mg/L	CBL-302I	02/08/2018	yes	0.0500	ND				
Boron, Total	mg/L	CBL-302I	07/27/2018	yes	0.0500	ND				
Boron, Total	mg/L	CBL-302I	01/22/2019	yes	0.0500	ND				
Boron, Total	mg/L	CBL-302I	07/31/2019	yes	0.0500	ND				
Boron, Total	mg/L	CBL-302I	01/30/2020	yes	0.0500	ND				
Boron, Total	mg/L	CBL-302I	09/17/2020	yes	0.0500	ND				
Boron, Total	mg/L	CBL-302I	01/28/2021	yes	0.0500	ND				
Boron, Total	mg/L	CBL-302I	07/21/2021	yes	0.0743					
Boron, Total	mg/L	CBL-302I	01/27/2022	yes	0.0500	ND				
Boron, Total	mg/L	CBL-302I	07/28/2022	yes	0.0500	ND				
Boron, Total	mg/L	CBL-302I	01/26/2023		0.1160					
Boron, Total	mg/L	CBL-302I	07/18/2023		0.0500	ND				
Boron, Total	mg/L	CBL-302I	01/29/2024		0.1600					
Boron, Total	mg/L	CBL-306I	01/21/2016	yes	0.0500	ND				
Boron, Total	mg/L	CBL-306I	05/04/2016	yes	0.0717					
Boron, Total	mg/L	CBL-306I	07/26/2016	yes	0.0998					

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ND = Not detected, Result = detection limit.

Table 2

Analytical Data and CUSUM Summary

Constituent	Units	Well	Date	Background	Result		Outlier	CUSUM	Adjusted	
Boron, Total	mg/L	CBL-306I	10/24/2016	yes	0.0556					
Boron, Total	mg/L	CBL-306I	01/19/2017	yes	0.0500	ND				
Boron, Total	mg/L	CBL-306I	03/22/2017	yes	0.1240					
Boron, Total	mg/L	CBL-306I	05/18/2017	yes	0.0832					
Boron, Total	mg/L	CBL-306I	07/27/2017	yes	0.0531					
Boron, Total	mg/L	CBL-306I	02/08/2018	yes	0.0500	ND				
Boron, Total	mg/L	CBL-306I	07/27/2018	yes	0.0500	ND				
Boron, Total	mg/L	CBL-306I	01/16/2019	yes	0.0500	ND				
Boron, Total	mg/L	CBL-306I	07/31/2019	yes	0.0824		yes			*
Boron, Total	mg/L	CBL-306I	08/23/2019	yes	0.0500					
Boron, Total	mg/L	CBL-306I	01/29/2020	yes	0.0500	ND				
Boron, Total	mg/L	CBL-306I	09/19/2020	yes	0.0773					
Boron, Total	mg/L	CBL-306I	01/28/2021	yes	0.0500	ND				
Boron, Total	mg/L	CBL-306I	07/21/2021	yes	0.0927					
Boron, Total	mg/L	CBL-306I	01/27/2022	yes	0.0548					
Boron, Total	mg/L	CBL-306I	07/28/2022	yes	0.1100					
Boron, Total	mg/L	CBL-306I	01/26/2023		0.0973			0.0791		
Boron, Total	mg/L	CBL-306I	07/18/2023		0.0659			0.0679		
Boron, Total	mg/L	CBL-306I	01/29/2024		0.1330			0.1148		
Boron, Total	mg/L	CBL-308I	01/22/2016	yes	0.0500	ND				
Boron, Total	mg/L	CBL-308I	05/04/2016	yes	0.1210					
Boron, Total	mg/L	CBL-308I	07/26/2016	yes	0.1860					
Boron, Total	mg/L	CBL-308I	10/24/2016	yes	0.2560					
Boron, Total	mg/L	CBL-308I	01/19/2017	yes	0.0500	ND				
Boron, Total	mg/L	CBL-308I	03/22/2017	yes	0.5450					
Boron, Total	mg/L	CBL-308I	05/16/2017	yes	0.1090					
Boron, Total	mg/L	CBL-308I	07/26/2017	yes	0.0799					
Boron, Total	mg/L	CBL-308I	02/06/2018	yes	0.0500	ND				
Boron, Total	mg/L	CBL-308I	07/25/2018	yes	0.0500	ND				
Boron, Total	mg/L	CBL-308I	01/18/2019	yes	0.0500	ND				
Boron, Total	mg/L	CBL-308I	07/31/2019	yes	0.0500	ND				
Boron, Total	mg/L	CBL-308I	01/29/2020	yes	0.0500	ND				
Boron, Total	mg/L	CBL-308I	09/18/2020	yes	0.1030					
Boron, Total	mg/L	CBL-308I	01/28/2021	yes	0.0500	ND				
Boron, Total	mg/L	CBL-308I	07/21/2021	yes	0.1300					
Boron, Total	mg/L	CBL-308I	01/27/2022	yes	0.0500	ND				
Boron, Total	mg/L	CBL-308I	07/27/2022	yes	0.0790					
Boron, Total	mg/L	CBL-308I	01/26/2023		0.1430			0.1144		
Boron, Total	mg/L	CBL-308I	07/18/2023		0.0500	ND		0.1144		
Boron, Total	mg/L	CBL-308I	01/30/2024		0.1500			0.1144		
Boron, Total	mg/L	CBL-341I	01/23/2017	yes	0.0500	ND				
Boron, Total	mg/L	CBL-341I	02/23/2017	yes	0.0500	ND				
Boron, Total	mg/L	CBL-341I	03/22/2017	yes	0.0500	ND				
Boron, Total	mg/L	CBL-341I	04/20/2017	yes	0.0587					
Boron, Total	mg/L	CBL-341I	05/16/2017	yes	0.0896					
Boron, Total	mg/L	CBL-341I	06/20/2017	yes	0.0668					
Boron, Total	mg/L	CBL-341I	07/27/2017	yes	0.0507					
Boron, Total	mg/L	CBL-341I	09/11/2017	yes	0.0500	ND				
Boron, Total	mg/L	CBL-341I	02/08/2018	yes	0.0500	ND				
Boron, Total	mg/L	CBL-341I	08/24/2018	yes	0.0500	ND				

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*** - ND value replaced with median RL.
**** - ND value replaced with manual RL.
ND = Not detected, Result = detection limit.

Table 2

Analytical Data and CUSUM Summary

Constituent	Units	Well	Date	Background	Result		Outlier	CUSUM	Adjusted	
Boron, Total	mg/L	CBL-341I	01/22/2019	yes	0.0500	ND				
Boron, Total	mg/L	CBL-341I	07/31/2019	yes	0.0500	ND				
Boron, Total	mg/L	CBL-341I	01/30/2020	yes	0.0500	ND				
Boron, Total	mg/L	CBL-341I	09/17/2020	yes	0.1020					
Boron, Total	mg/L	CBL-341I	01/27/2021	yes	0.0500	ND				
Boron, Total	mg/L	CBL-341I	07/22/2021	yes	0.1110					
Boron, Total	mg/L	CBL-341I	01/27/2022	yes	0.0500	ND				
Boron, Total	mg/L	CBL-341I	07/28/2022	yes	0.1150					
Boron, Total	mg/L	CBL-341I	01/26/2023		0.1340			0.1165		
Boron, Total	mg/L	CBL-341I	07/19/2023		0.0760			0.1114		
Boron, Total	mg/L	CBL-341I	01/29/2024		0.1330			0.1634		
Calcium, Total	mg/L	CBL-301I	01/21/2016	yes	905.0000					
Calcium, Total	mg/L	CBL-301I	05/04/2016	yes	949.0000					
Calcium, Total	mg/L	CBL-301I	07/27/2016	yes	925.0000					
Calcium, Total	mg/L	CBL-301I	10/24/2016	yes	978.0000					
Calcium, Total	mg/L	CBL-301I	01/23/2017	yes	1000.0000					
Calcium, Total	mg/L	CBL-301I	03/22/2017	yes	1030.0000					
Calcium, Total	mg/L	CBL-301I	05/18/2017	yes	1060.0000					
Calcium, Total	mg/L	CBL-301I	07/26/2017	yes	961.0000					
Calcium, Total	mg/L	CBL-301I	02/08/2018	yes	873.0000					
Calcium, Total	mg/L	CBL-301I	07/25/2018	yes	993.0000					
Calcium, Total	mg/L	CBL-301I	01/17/2019	yes	156.0000		yes			*
Calcium, Total	mg/L	CBL-301I	05/02/2019	yes	762.0000					
Calcium, Total	mg/L	CBL-301I	07/31/2019	yes	783.0000					
Calcium, Total	mg/L	CBL-301I	01/28/2020	yes	851.0000					
Calcium, Total	mg/L	CBL-301I	09/17/2020	yes	1060.0000					
Calcium, Total	mg/L	CBL-301I	01/26/2021	yes	1130.0000					
Calcium, Total	mg/L	CBL-301I	07/20/2021	yes	1100.0000					
Calcium, Total	mg/L	CBL-301I	01/26/2022	yes	999.0000					
Calcium, Total	mg/L	CBL-301I	07/27/2022	yes	1010.0000					
Calcium, Total	mg/L	CBL-301I	01/25/2023		977.0000			964.9444		
Calcium, Total	mg/L	CBL-301I	08/02/2023		1260.0000			1184.0467		
Calcium, Total	mg/L	CBL-301I	01/29/2024		1050.0000			1193.1490		
Calcium, Total	mg/L	CBL-302I	01/22/2016	yes	1030.0000					
Calcium, Total	mg/L	CBL-302I	05/04/2016	yes	1010.0000					
Calcium, Total	mg/L	CBL-302I	07/27/2016	yes	1030.0000					
Calcium, Total	mg/L	CBL-302I	10/24/2016	yes	1070.0000					
Calcium, Total	mg/L	CBL-302I	01/23/2017	yes	1100.0000					
Calcium, Total	mg/L	CBL-302I	03/22/2017	yes	1090.0000					
Calcium, Total	mg/L	CBL-302I	05/16/2017	yes	1100.0000					
Calcium, Total	mg/L	CBL-302I	07/27/2017	yes	1040.0000					
Calcium, Total	mg/L	CBL-302I	02/08/2018	yes	934.0000					
Calcium, Total	mg/L	CBL-302I	07/27/2018	yes	995.0000					
Calcium, Total	mg/L	CBL-302I	01/22/2019	yes	855.0000					
Calcium, Total	mg/L	CBL-302I	07/31/2019	yes	914.0000					
Calcium, Total	mg/L	CBL-302I	01/30/2020	yes	838.0000					
Calcium, Total	mg/L	CBL-302I	09/17/2020	yes	853.0000					
Calcium, Total	mg/L	CBL-302I	01/28/2021	yes	1020.0000					
Calcium, Total	mg/L	CBL-302I	07/21/2021	yes	844.0000					
Calcium, Total	mg/L	CBL-302I	01/27/2022	yes	754.0000					

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Table 2

Analytical Data and CUSUM Summary

Constituent	Units	Well	Date	Background	Result		Outlier	CUSUM	Adjusted	
Calcium, Total	mg/L	CBL-302I	07/28/2022	yes	750.0000					
Calcium, Total	mg/L	CBL-302I	01/26/2023		889.0000			957.0556		
Calcium, Total	mg/L	CBL-302I	07/18/2023		981.0000			957.0556		
Calcium, Total	mg/L	CBL-302I	01/29/2024		937.0000			957.0556		
Calcium, Total	mg/L	CBL-306I	01/21/2016	yes	137.0000					
Calcium, Total	mg/L	CBL-306I	05/04/2016	yes	47.2000		yes			*
Calcium, Total	mg/L	CBL-306I	07/26/2016	yes	105.0000		yes			*
Calcium, Total	mg/L	CBL-306I	10/24/2016	yes	198.0000					
Calcium, Total	mg/L	CBL-306I	01/19/2017	yes	174.0000					
Calcium, Total	mg/L	CBL-306I	03/22/2017	yes	204.0000					
Calcium, Total	mg/L	CBL-306I	05/18/2017	yes	205.0000					
Calcium, Total	mg/L	CBL-306I	07/27/2017	yes	234.0000					
Calcium, Total	mg/L	CBL-306I	02/08/2018	yes	230.0000					
Calcium, Total	mg/L	CBL-306I	07/27/2018	yes	275.0000					
Calcium, Total	mg/L	CBL-306I	01/16/2019	yes	180.0000					
Calcium, Total	mg/L	CBL-306I	07/31/2019	yes	106.0000		yes			*
Calcium, Total	mg/L	CBL-306I	08/23/2019	yes	226.0000					
Calcium, Total	mg/L	CBL-306I	01/29/2020	yes	247.0000					
Calcium, Total	mg/L	CBL-306I	09/19/2020	yes	260.0000					
Calcium, Total	mg/L	CBL-306I	01/28/2021	yes	257.0000					
Calcium, Total	mg/L	CBL-306I	07/21/2021	yes	216.0000					
Calcium, Total	mg/L	CBL-306I	01/27/2022	yes	212.0000					
Calcium, Total	mg/L	CBL-306I	07/28/2022	yes	182.0000					
Calcium, Total	mg/L	CBL-306I	01/26/2023		149.0000			214.8125		
Calcium, Total	mg/L	CBL-306I	07/18/2023		260.0000			232.8073		
Calcium, Total	mg/L	CBL-306I	01/29/2024		186.0000			214.8125		
Calcium, Total	mg/L	CBL-308I	01/22/2016	yes	903.0000					
Calcium, Total	mg/L	CBL-308I	05/04/2016	yes	870.0000					
Calcium, Total	mg/L	CBL-308I	07/26/2016	yes	911.0000					
Calcium, Total	mg/L	CBL-308I	10/24/2016	yes	939.0000					
Calcium, Total	mg/L	CBL-308I	01/19/2017	yes	919.0000					
Calcium, Total	mg/L	CBL-308I	03/22/2017	yes	947.0000					
Calcium, Total	mg/L	CBL-308I	05/16/2017	yes	954.0000					
Calcium, Total	mg/L	CBL-308I	07/26/2017	yes	878.0000					
Calcium, Total	mg/L	CBL-308I	02/06/2018	yes	859.0000					
Calcium, Total	mg/L	CBL-308I	07/25/2018	yes	863.0000					
Calcium, Total	mg/L	CBL-308I	01/18/2019	yes	760.0000					
Calcium, Total	mg/L	CBL-308I	07/31/2019	yes	840.0000					
Calcium, Total	mg/L	CBL-308I	01/29/2020	yes	745.0000					
Calcium, Total	mg/L	CBL-308I	09/18/2020	yes	838.0000					
Calcium, Total	mg/L	CBL-308I	01/28/2021	yes	830.0000					
Calcium, Total	mg/L	CBL-308I	07/21/2021	yes	684.0000					
Calcium, Total	mg/L	CBL-308I	01/27/2022	yes	974.0000					
Calcium, Total	mg/L	CBL-308I	07/27/2022	yes	736.0000					
Calcium, Total	mg/L	CBL-308I	01/26/2023		732.0000			858.3333		
Calcium, Total	mg/L	CBL-308I	07/18/2023		642.0000			858.3333		
Calcium, Total	mg/L	CBL-308I	01/30/2024		714.0000			858.3333		
Calcium, Total	mg/L	CBL-341I	01/23/2017	yes	854.0000					
Calcium, Total	mg/L	CBL-341I	02/23/2017	yes	870.0000					
Calcium, Total	mg/L	CBL-341I	03/22/2017	yes	906.0000					

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Table 2

Analytical Data and CUSUM Summary

Constituent	Units	Well	Date	Background	Result		Outlier	CUSUM	Adjusted	
Calcium, Total	mg/L	CBL-341I	04/20/2017	yes	898.0000					
Calcium, Total	mg/L	CBL-341I	05/16/2017	yes	860.0000					
Calcium, Total	mg/L	CBL-341I	06/20/2017	yes	950.0000					
Calcium, Total	mg/L	CBL-341I	07/27/2017	yes	829.0000					
Calcium, Total	mg/L	CBL-341I	09/11/2017	yes	848.0000					
Calcium, Total	mg/L	CBL-341I	02/08/2018	yes	810.0000					
Calcium, Total	mg/L	CBL-341I	08/24/2018	yes	824.0000					
Calcium, Total	mg/L	CBL-341I	01/22/2019	yes	782.0000					
Calcium, Total	mg/L	CBL-341I	07/31/2019	yes	714.0000					
Calcium, Total	mg/L	CBL-341I	01/30/2020	yes	767.0000					
Calcium, Total	mg/L	CBL-341I	09/17/2020	yes	814.0000					
Calcium, Total	mg/L	CBL-341I	01/27/2021	yes	874.0000					
Calcium, Total	mg/L	CBL-341I	07/22/2021	yes	852.0000					
Calcium, Total	mg/L	CBL-341I	01/27/2022	yes	1040.0000					
Calcium, Total	mg/L	CBL-341I	07/28/2022	yes	704.0000					
Calcium, Total	mg/L	CBL-341I	01/26/2023		797.0000			844.2222		
Calcium, Total	mg/L	CBL-341I	07/19/2023		710.0000			844.2222		
Calcium, Total	mg/L	CBL-341I	01/29/2024		875.0000			844.2222		
Chloride	mg/L	CBL-301I	01/21/2016	yes	2300.0000					
Chloride	mg/L	CBL-301I	05/04/2016	yes	2160.0000					
Chloride	mg/L	CBL-301I	07/27/2016	yes	2290.0000					
Chloride	mg/L	CBL-301I	10/24/2016	yes	2250.0000					
Chloride	mg/L	CBL-301I	01/23/2017	yes	3200.0000					
Chloride	mg/L	CBL-301I	03/22/2017	yes	2390.0000					
Chloride	mg/L	CBL-301I	05/18/2017	yes	2420.0000					
Chloride	mg/L	CBL-301I	07/26/2017	yes	2500.0000					
Chloride	mg/L	CBL-301I	02/08/2018	yes	2480.0000					
Chloride	mg/L	CBL-301I	07/25/2018	yes	1330.0000					
Chloride	mg/L	CBL-301I	01/17/2019	yes	619.0000		yes			*
Chloride	mg/L	CBL-301I	05/02/2019	yes	1910.0000					
Chloride	mg/L	CBL-301I	07/31/2019	yes	2240.0000					
Chloride	mg/L	CBL-301I	01/28/2020	yes	2360.0000					
Chloride	mg/L	CBL-301I	09/17/2020	yes	2270.0000					
Chloride	mg/L	CBL-301I	01/26/2021	yes	2420.0000					
Chloride	mg/L	CBL-301I	07/20/2021	yes	2590.0000					
Chloride	mg/L	CBL-301I	01/26/2022	yes	2440.0000					
Chloride	mg/L	CBL-301I	07/27/2022	yes	1840.0000					
Chloride	mg/L	CBL-301I	01/25/2023		1960.0000			2299.4444		
Chloride	mg/L	CBL-301I	08/02/2023		2220.0000			2299.4444		
Chloride	mg/L	CBL-301I	01/29/2024		2270.0000			2299.4444		
Chloride	mg/L	CBL-302I	01/22/2016	yes	2190.0000					
Chloride	mg/L	CBL-302I	05/04/2016	yes	2130.0000					
Chloride	mg/L	CBL-302I	07/27/2016	yes	2210.0000					
Chloride	mg/L	CBL-302I	10/24/2016	yes	2170.0000					
Chloride	mg/L	CBL-302I	01/23/2017	yes	2080.0000					
Chloride	mg/L	CBL-302I	03/22/2017	yes	2050.0000					
Chloride	mg/L	CBL-302I	05/16/2017	yes	2230.0000					
Chloride	mg/L	CBL-302I	07/27/2017	yes	2040.0000					
Chloride	mg/L	CBL-302I	02/08/2018	yes	2080.0000					
Chloride	mg/L	CBL-302I	07/27/2018	yes	1980.0000					

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Table 2

Analytical Data and CUSUM Summary

Constituent	Units	Well	Date	Background	Result		Outlier	CUSUM	Adjusted	
Chloride	mg/L	CBL-302I	01/22/2019	yes	1960.0000					
Chloride	mg/L	CBL-302I	07/31/2019	yes	1540.0000					
Chloride	mg/L	CBL-302I	01/30/2020	yes	1540.0000					
Chloride	mg/L	CBL-302I	09/17/2020	yes	1410.0000					
Chloride	mg/L	CBL-302I	01/28/2021	yes	1370.0000					
Chloride	mg/L	CBL-302I	07/21/2021	yes	1380.0000					
Chloride	mg/L	CBL-302I	01/27/2022	yes	1310.0000					
Chloride	mg/L	CBL-302I	07/28/2022	yes	1300.0000					
Chloride	mg/L	CBL-302I	01/26/2023		1460.0000			1831.6667		
Chloride	mg/L	CBL-302I	07/18/2023		1330.0000			1831.6667		
Chloride	mg/L	CBL-302I	01/29/2024		1440.0000			1831.6667		
Chloride	mg/L	CBL-306I	01/21/2016	yes	155.0000					
Chloride	mg/L	CBL-306I	05/04/2016	yes	20.0000		yes			*
Chloride	mg/L	CBL-306I	07/26/2016	yes	114.0000		yes			*
Chloride	mg/L	CBL-306I	10/24/2016	yes	330.0000					
Chloride	mg/L	CBL-306I	01/19/2017	yes	197.0000					
Chloride	mg/L	CBL-306I	03/22/2017	yes	231.0000					
Chloride	mg/L	CBL-306I	05/18/2017	yes	289.0000					
Chloride	mg/L	CBL-306I	07/27/2017	yes	350.0000					
Chloride	mg/L	CBL-306I	02/08/2018	yes	385.0000					
Chloride	mg/L	CBL-306I	07/27/2018	yes	283.0000					
Chloride	mg/L	CBL-306I	01/16/2019	yes	215.0000					
Chloride	mg/L	CBL-306I	07/31/2019	yes	538.0000		yes			*
Chloride	mg/L	CBL-306I	08/23/2019	yes	318.0000					
Chloride	mg/L	CBL-306I	01/29/2020	yes	445.0000					
Chloride	mg/L	CBL-306I	09/19/2020	yes	420.0000					
Chloride	mg/L	CBL-306I	01/28/2021	yes	292.0000					
Chloride	mg/L	CBL-306I	07/21/2021	yes	255.0000					
Chloride	mg/L	CBL-306I	01/27/2022	yes	384.0000					
Chloride	mg/L	CBL-306I	07/28/2022	yes	261.0000					
Chloride	mg/L	CBL-306I	01/26/2023		148.0000			300.6250		
Chloride	mg/L	CBL-306I	07/18/2023		336.0000			300.6250		
Chloride	mg/L	CBL-306I	01/29/2024		153.0000			300.6250		
Chloride	mg/L	CBL-308I	01/22/2016	yes	2760.0000					
Chloride	mg/L	CBL-308I	05/04/2016	yes	2580.0000					
Chloride	mg/L	CBL-308I	07/26/2016	yes	2680.0000					
Chloride	mg/L	CBL-308I	10/24/2016	yes	2870.0000					
Chloride	mg/L	CBL-308I	01/19/2017	yes	2360.0000					
Chloride	mg/L	CBL-308I	03/22/2017	yes	2530.0000					
Chloride	mg/L	CBL-308I	05/16/2017	yes	2740.0000					
Chloride	mg/L	CBL-308I	07/26/2017	yes	2760.0000					
Chloride	mg/L	CBL-308I	02/06/2018	yes	2750.0000					
Chloride	mg/L	CBL-308I	07/25/2018	yes	2680.0000					
Chloride	mg/L	CBL-308I	01/18/2019	yes	2240.0000					
Chloride	mg/L	CBL-308I	07/31/2019	yes	2290.0000					
Chloride	mg/L	CBL-308I	01/29/2020	yes	2110.0000					
Chloride	mg/L	CBL-308I	09/18/2020	yes	2410.0000					
Chloride	mg/L	CBL-308I	01/28/2021	yes	2200.0000					
Chloride	mg/L	CBL-308I	07/21/2021	yes	1780.0000					
Chloride	mg/L	CBL-308I	01/27/2022	yes	2020.0000					

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Table 2

Analytical Data and CUSUM Summary

Constituent	Units	Well	Date	Background	Result		Outlier	CUSUM	Adjusted	
Chloride	mg/L	CBL-308I	07/27/2022	yes	2470.0000					
Chloride	mg/L	CBL-308I	01/26/2023		2570.0000			2457.2222		
Chloride	mg/L	CBL-308I	07/18/2023		1840.0000			2457.2222		
Chloride	mg/L	CBL-308I	01/30/2024		1790.0000			2457.2222		
Chloride	mg/L	CBL-341I	01/23/2017	yes	1600.0000					
Chloride	mg/L	CBL-341I	02/23/2017	yes	2000.0000					
Chloride	mg/L	CBL-341I	03/22/2017	yes	1780.0000					
Chloride	mg/L	CBL-341I	04/20/2017	yes	1770.0000					
Chloride	mg/L	CBL-341I	05/16/2017	yes	1900.0000					
Chloride	mg/L	CBL-341I	06/20/2017	yes	1820.0000					
Chloride	mg/L	CBL-341I	07/27/2017	yes	1970.0000					
Chloride	mg/L	CBL-341I	09/11/2017	yes	1710.0000					
Chloride	mg/L	CBL-341I	02/08/2018	yes	2110.0000					
Chloride	mg/L	CBL-341I	08/24/2018	yes	1910.0000					
Chloride	mg/L	CBL-341I	01/22/2019	yes	1790.0000					
Chloride	mg/L	CBL-341I	07/31/2019	yes	1650.0000					
Chloride	mg/L	CBL-341I	01/30/2020	yes	1780.0000					
Chloride	mg/L	CBL-341I	09/17/2020	yes	1700.0000					
Chloride	mg/L	CBL-341I	01/27/2021	yes	1800.0000					
Chloride	mg/L	CBL-341I	07/22/2021	yes	1750.0000					
Chloride	mg/L	CBL-341I	01/27/2022	yes	1810.0000					
Chloride	mg/L	CBL-341I	07/28/2022	yes	1690.0000					
Chloride	mg/L	CBL-341I	01/26/2023		1660.0000			1807.7778		
Chloride	mg/L	CBL-341I	07/19/2023		1530.0000			1807.7778		
Chloride	mg/L	CBL-341I	01/29/2024		1700.0000			1807.7778		
Fluoride	mg/L	CBL-301I	01/21/2016	yes	0.2500	ND			0.5000	***
Fluoride	mg/L	CBL-301I	05/04/2016	yes	0.5000	ND				
Fluoride	mg/L	CBL-301I	07/27/2016	yes	0.5000	ND				
Fluoride	mg/L	CBL-301I	10/24/2016	yes	0.2500	ND			0.5000	***
Fluoride	mg/L	CBL-301I	01/23/2017	yes	0.3120					
Fluoride	mg/L	CBL-301I	03/22/2017	yes	0.5000	ND				
Fluoride	mg/L	CBL-301I	05/18/2017	yes	0.5000	ND				
Fluoride	mg/L	CBL-301I	07/26/2017	yes	0.5000	ND				
Fluoride	mg/L	CBL-301I	02/08/2018	yes	0.5000	ND				
Fluoride	mg/L	CBL-301I	07/25/2018	yes	0.5000	ND				
Fluoride	mg/L	CBL-301I	01/17/2019	yes	0.2190					
Fluoride	mg/L	CBL-301I	05/02/2019	yes	0.1120					
Fluoride	mg/L	CBL-301I	07/31/2019	yes	0.0510					
Fluoride	mg/L	CBL-301I	01/28/2020	yes	0.1300					
Fluoride	mg/L	CBL-301I	09/17/2020	yes	0.2500	ND			0.5000	***
Fluoride	mg/L	CBL-301I	01/26/2021	yes	0.5000	ND				
Fluoride	mg/L	CBL-301I	07/20/2021	yes	2.6800					
Fluoride	mg/L	CBL-301I	09/07/2021	yes	0.5000	ND				
Fluoride	mg/L	CBL-301I	01/26/2022	yes	0.0500	ND			0.5000	***
Fluoride	mg/L	CBL-301I	07/27/2022	yes	0.1560					
Fluoride	mg/L	CBL-301I	01/25/2023		1.7200			1.3175		
Fluoride	mg/L	CBL-301I	03/07/2023		0.0500	ND		0.5080		
Fluoride	mg/L	CBL-301I	08/02/2023		0.0540			0.5080		
Fluoride	mg/L	CBL-301I	01/29/2024		0.1000	ND		0.5080		
Fluoride	mg/L	CBL-302I	01/22/2016	yes	0.2500	ND			0.5000	***

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Table 2

Analytical Data and CUSUM Summary

Constituent	Units	Well	Date	Background	Result		Outlier	CUSUM	Adjusted	
Fluoride	mg/L	CBL-302I	05/04/2016	yes	0.5000	ND				
Fluoride	mg/L	CBL-302I	07/27/2016	yes	0.5000	ND				
Fluoride	mg/L	CBL-302I	10/24/2016	yes	0.2500	ND			0.5000	***
Fluoride	mg/L	CBL-302I	01/23/2017	yes	0.3320					
Fluoride	mg/L	CBL-302I	03/22/2017	yes	0.5000	ND				
Fluoride	mg/L	CBL-302I	05/16/2017	yes	0.5000	ND				
Fluoride	mg/L	CBL-302I	07/27/2017	yes	0.5000	ND				
Fluoride	mg/L	CBL-302I	02/08/2018	yes	0.1120					
Fluoride	mg/L	CBL-302I	07/27/2018	yes	0.5000	ND				
Fluoride	mg/L	CBL-302I	01/22/2019	yes	0.0402					
Fluoride	mg/L	CBL-302I	07/31/2019	yes	0.0605					
Fluoride	mg/L	CBL-302I	01/30/2020	yes	0.1930					
Fluoride	mg/L	CBL-302I	09/17/2020	yes	0.2500	ND			0.5000	***
Fluoride	mg/L	CBL-302I	01/28/2021	yes	0.5000	ND				
Fluoride	mg/L	CBL-302I	07/21/2021	yes	2.2500					
Fluoride	mg/L	CBL-302I	09/07/2021	yes	0.2500	ND			0.5000	***
Fluoride	mg/L	CBL-302I	01/27/2022	yes	0.0500	ND			0.5000	***
Fluoride	mg/L	CBL-302I	07/28/2022	yes	0.1650					
Fluoride	mg/L	CBL-302I	01/26/2023		0.5000	ND		0.4817		
Fluoride	mg/L	CBL-302I	07/18/2023		1.7600			1.4133		
Fluoride	mg/L	CBL-302I	01/29/2024		0.1000	ND		0.5849		
Fluoride	mg/L	CBL-306I	01/21/2016	yes	2.5000					
Fluoride	mg/L	CBL-306I	05/04/2016	yes	1.0000					
Fluoride	mg/L	CBL-306I	07/26/2016	yes	1.3700					
Fluoride	mg/L	CBL-306I	10/24/2016	yes	2.3800					
Fluoride	mg/L	CBL-306I	01/19/2017	yes	1.8500					
Fluoride	mg/L	CBL-306I	03/22/2017	yes	12.6000		yes			*
Fluoride	mg/L	CBL-306I	05/18/2017	yes	2.2000					
Fluoride	mg/L	CBL-306I	07/27/2017	yes	2.9100					
Fluoride	mg/L	CBL-306I	02/08/2018	yes	2.8100					
Fluoride	mg/L	CBL-306I	07/27/2018	yes	2.9500					
Fluoride	mg/L	CBL-306I	01/16/2019	yes	1.9800					
Fluoride	mg/L	CBL-306I	07/31/2019	yes	9.2600		yes			*
Fluoride	mg/L	CBL-306I	08/23/2019	yes	2.6600					
Fluoride	mg/L	CBL-306I	01/29/2020	yes	2.8300					
Fluoride	mg/L	CBL-306I	09/19/2020	yes	2.7200					
Fluoride	mg/L	CBL-306I	01/28/2021	yes	2.9000					
Fluoride	mg/L	CBL-306I	07/21/2021	yes	2.4200					
Fluoride	mg/L	CBL-306I	01/27/2022	yes	2.9900					
Fluoride	mg/L	CBL-306I	07/28/2022	yes	2.2600					
Fluoride	mg/L	CBL-306I	01/26/2023		1.9200			2.3959		
Fluoride	mg/L	CBL-306I	07/18/2023		2.6600			2.3959		
Fluoride	mg/L	CBL-306I	01/29/2024		1.4900			2.3959		
Fluoride	mg/L	CBL-308I	01/22/2016	yes	1.4900					
Fluoride	mg/L	CBL-308I	05/04/2016	yes	2.3000					
Fluoride	mg/L	CBL-308I	07/26/2016	yes	1.6400					
Fluoride	mg/L	CBL-308I	10/24/2016	yes	1.5900					
Fluoride	mg/L	CBL-308I	01/19/2017	yes	1.3300					
Fluoride	mg/L	CBL-308I	03/22/2017	yes	9.0500		yes			*
Fluoride	mg/L	CBL-308I	05/16/2017	yes	1.7000					

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Table 2

Analytical Data and CUSUM Summary

Constituent	Units	Well	Date	Background	Result		Outlier	CUSUM	Adjusted	
Fluoride	mg/L	CBL-308I	07/26/2017	yes	1.9000					
Fluoride	mg/L	CBL-308I	02/06/2018	yes	1.7600					
Fluoride	mg/L	CBL-308I	07/25/2018	yes	2.1000					
Fluoride	mg/L	CBL-308I	01/18/2019	yes	1.6800					
Fluoride	mg/L	CBL-308I	07/31/2019	yes	1.6200					
Fluoride	mg/L	CBL-308I	01/29/2020	yes	1.6000					
Fluoride	mg/L	CBL-308I	09/18/2020	yes	1.3300					
Fluoride	mg/L	CBL-308I	01/28/2021	yes	1.4400					
Fluoride	mg/L	CBL-308I	07/21/2021	yes	1.7400					
Fluoride	mg/L	CBL-308I	01/27/2022	yes	1.7500					
Fluoride	mg/L	CBL-308I	07/27/2022	yes	1.4300					
Fluoride	mg/L	CBL-308I	01/26/2023		0.5000	ND		1.6706		
Fluoride	mg/L	CBL-308I	07/18/2023		1.8600			1.6706		
Fluoride	mg/L	CBL-308I	01/30/2024		1.2600			1.6706		
Fluoride	mg/L	CBL-341I	01/23/2017	yes	0.5300					
Fluoride	mg/L	CBL-341I	02/23/2017	yes	0.5000	ND				
Fluoride	mg/L	CBL-341I	03/22/2017	yes	0.5000	ND				
Fluoride	mg/L	CBL-341I	04/20/2017	yes	0.5000	ND				
Fluoride	mg/L	CBL-341I	05/16/2017	yes	0.5000	ND				
Fluoride	mg/L	CBL-341I	06/20/2017	yes	0.3350					
Fluoride	mg/L	CBL-341I	07/27/2017	yes	0.0550					
Fluoride	mg/L	CBL-341I	09/11/2017	yes	0.3670					
Fluoride	mg/L	CBL-341I	02/08/2018	yes	0.1060					
Fluoride	mg/L	CBL-341I	08/24/2018	yes	0.1140					
Fluoride	mg/L	CBL-341I	01/22/2019	yes	0.0546					
Fluoride	mg/L	CBL-341I	07/31/2019	yes	0.1000					
Fluoride	mg/L	CBL-341I	01/30/2020	yes	0.1530					
Fluoride	mg/L	CBL-341I	09/17/2020	yes	0.2500	ND			0.5000	***
Fluoride	mg/L	CBL-341I	01/27/2021	yes	0.5000	ND				
Fluoride	mg/L	CBL-341I	07/22/2021	yes	1.1600					
Fluoride	mg/L	CBL-341I	09/07/2021	yes	0.2500	ND			0.5000	***
Fluoride	mg/L	CBL-341I	01/27/2022	yes	0.0500	ND			0.5000	***
Fluoride	mg/L	CBL-341I	07/28/2022	yes	0.1410					
Fluoride	mg/L	CBL-341I	01/26/2023		0.2500	ND		0.3745		
Fluoride	mg/L	CBL-341I	07/19/2023		1.1200			0.9191		
Fluoride	mg/L	CBL-341I	01/29/2024		0.1000	ND		0.3745		
pH	S.U.	CBL-301I	01/21/2016	yes	6.3300					
pH	S.U.	CBL-301I	05/04/2016	yes	6.2600					
pH	S.U.	CBL-301I	07/27/2016	yes	5.9500					
pH	S.U.	CBL-301I	10/24/2016	yes	6.2300					
pH	S.U.	CBL-301I	01/23/2017	yes	6.2600					
pH	S.U.	CBL-301I	03/22/2017	yes	6.3100					
pH	S.U.	CBL-301I	05/18/2017	yes	5.9500					
pH	S.U.	CBL-301I	07/26/2017	yes	6.0200					
pH	S.U.	CBL-301I	02/08/2018	yes	6.1700					
pH	S.U.	CBL-301I	07/25/2018	yes	6.0400					
pH	S.U.	CBL-301I	01/17/2019	yes	7.1600					
pH	S.U.	CBL-301I	05/02/2019	yes	6.1400					
pH	S.U.	CBL-301I	07/31/2019	yes	6.1900					
pH	S.U.	CBL-301I	01/28/2020	yes	6.2600					

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Table 2

Analytical Data and CUSUM Summary

Constituent	Units	Well	Date	Background	Result		Outlier	CUSUM	Adjusted	
pH	S.U.	CBL-301I	09/17/2020	yes	6.1300					
pH	S.U.	CBL-301I	01/26/2021	yes	6.0600					
pH	S.U.	CBL-301I	07/20/2021	yes	6.1300					
pH	S.U.	CBL-301I	09/07/2021	yes	6.1400					
pH	S.U.	CBL-301I	01/26/2022	yes	6.2700					
pH	S.U.	CBL-301I	07/27/2022	yes	6.0800					
pH	S.U.	CBL-301I	08/30/2022	yes	6.1400					
pH	S.U.	CBL-301I	10/25/2022	yes	6.2100					
pH	S.U.	CBL-301I	01/25/2023		6.3400			6.2014		
pH	S.U.	CBL-301I	08/02/2023		6.2100			6.2014		
pH	S.U.	CBL-301I	01/29/2024		6.3500			6.2014		
pH	S.U.	CBL-302I	01/22/2016	yes	6.2900					
pH	S.U.	CBL-302I	05/04/2016	yes	6.0100					
pH	S.U.	CBL-302I	07/27/2016	yes	5.1700					
pH	S.U.	CBL-302I	10/24/2016	yes	7.7500					
pH	S.U.	CBL-302I	01/23/2017	yes	5.3600					
pH	S.U.	CBL-302I	03/22/2017	yes	5.4000					
pH	S.U.	CBL-302I	05/16/2017	yes	4.9400					
pH	S.U.	CBL-302I	07/27/2017	yes	6.2000					
pH	S.U.	CBL-302I	02/08/2018	yes	6.2100					
pH	S.U.	CBL-302I	07/27/2018	yes	5.7700					
pH	S.U.	CBL-302I	01/22/2019	yes	6.4400					
pH	S.U.	CBL-302I	07/31/2019	yes	6.1500					
pH	S.U.	CBL-302I	01/30/2020	yes	6.3400					
pH	S.U.	CBL-302I	09/17/2020	yes	6.2000					
pH	S.U.	CBL-302I	01/28/2021	yes	6.2100					
pH	S.U.	CBL-302I	07/21/2021	yes	6.0600					
pH	S.U.	CBL-302I	09/07/2021	yes	6.2800					
pH	S.U.	CBL-302I	01/27/2022	yes	6.3200					
pH	S.U.	CBL-302I	07/28/2022	yes	6.2100					
pH	S.U.	CBL-302I	01/26/2023		6.3300			6.0689		
pH	S.U.	CBL-302I	07/18/2023		6.2000			6.0689		
pH	S.U.	CBL-302I	01/29/2024		6.2800			6.0689		
pH	S.U.	CBL-306I	01/21/2016	yes	7.0900					
pH	S.U.	CBL-306I	05/04/2016	yes	6.6900					
pH	S.U.	CBL-306I	07/26/2016	yes	6.9500					
pH	S.U.	CBL-306I	10/24/2016	yes	6.7200					
pH	S.U.	CBL-306I	01/19/2017	yes	7.2900					
pH	S.U.	CBL-306I	03/22/2017	yes	4.4100					
pH	S.U.	CBL-306I	05/18/2017	yes	5.6100					
pH	S.U.	CBL-306I	07/27/2017	yes	6.9400					
pH	S.U.	CBL-306I	02/08/2018	yes	6.6700					
pH	S.U.	CBL-306I	07/27/2018	yes	6.8600					
pH	S.U.	CBL-306I	01/16/2019	yes	6.7800					
pH	S.U.	CBL-306I	07/31/2019	yes	6.9200		yes			*
pH	S.U.	CBL-306I	08/23/2019	yes	6.8300					
pH	S.U.	CBL-306I	01/29/2020	yes	6.7000					
pH	S.U.	CBL-306I	09/19/2020	yes	7.1600					
pH	S.U.	CBL-306I	01/28/2021	yes	6.8400					
pH	S.U.	CBL-306I	07/21/2021	yes	6.5500					

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Table 2

Analytical Data and CUSUM Summary

Constituent	Units	Well	Date	Background	Result		Outlier	CUSUM	Adjusted	
pH	S.U.	CBL-306I	01/27/2022	yes	6.8700					
pH	S.U.	CBL-306I	07/28/2022	yes	6.7000					
pH	S.U.	CBL-306I	01/26/2023		7.3000			6.8073		
pH	S.U.	CBL-306I	07/18/2023		6.4900			6.6478		
pH	S.U.	CBL-306I	01/29/2024		6.5500			6.6478		
pH	S.U.	CBL-308I	01/22/2016	yes	6.3600					
pH	S.U.	CBL-308I	05/04/2016	yes	6.1300					
pH	S.U.	CBL-308I	07/26/2016	yes	5.9500					
pH	S.U.	CBL-308I	10/24/2016	yes	6.2700					
pH	S.U.	CBL-308I	01/19/2017	yes	6.8300					
pH	S.U.	CBL-308I	03/22/2017	yes	6.2700					
pH	S.U.	CBL-308I	05/16/2017	yes	5.5400					
pH	S.U.	CBL-308I	07/26/2017	yes	6.2700					
pH	S.U.	CBL-308I	02/06/2018	yes	6.2600					
pH	S.U.	CBL-308I	07/25/2018	yes	6.0700					
pH	S.U.	CBL-308I	01/18/2019	yes	6.3900					
pH	S.U.	CBL-308I	07/31/2019	yes	6.2500					
pH	S.U.	CBL-308I	01/29/2020	yes	6.3700					
pH	S.U.	CBL-308I	09/18/2020	yes	6.2200					
pH	S.U.	CBL-308I	01/28/2021	yes	6.2600					
pH	S.U.	CBL-308I	07/21/2021	yes	6.1600					
pH	S.U.	CBL-308I	01/27/2022	yes	6.3600					
pH	S.U.	CBL-308I	07/27/2022	yes	6.2300					
pH	S.U.	CBL-308I	01/26/2023		6.4100			6.2328		
pH	S.U.	CBL-308I	07/18/2023		6.2600			6.2328		
pH	S.U.	CBL-308I	01/30/2024		6.5700			6.3844		
pH	S.U.	CBL-341I	01/23/2017	yes	5.7400					
pH	S.U.	CBL-341I	02/23/2017	yes	5.2300		yes			*
pH	S.U.	CBL-341I	03/22/2017	yes	5.7200					
pH	S.U.	CBL-341I	04/20/2017	yes	5.7300					
pH	S.U.	CBL-341I	05/16/2017	yes	5.5400					
pH	S.U.	CBL-341I	06/20/2017	yes	6.1900					
pH	S.U.	CBL-341I	07/27/2017	yes	6.2100					
pH	S.U.	CBL-341I	09/11/2017	yes	6.1000					
pH	S.U.	CBL-341I	02/08/2018	yes	6.1800					
pH	S.U.	CBL-341I	08/24/2018	yes	5.8200					
pH	S.U.	CBL-341I	01/22/2019	yes	6.3800					
pH	S.U.	CBL-341I	07/31/2019	yes	6.2300					
pH	S.U.	CBL-341I	01/30/2020	yes	6.2700					
pH	S.U.	CBL-341I	09/17/2020	yes	6.1400					
pH	S.U.	CBL-341I	01/27/2021	yes	6.0600					
pH	S.U.	CBL-341I	07/22/2021	yes	5.9800					
pH	S.U.	CBL-341I	09/07/2021	yes	6.1800					
pH	S.U.	CBL-341I	01/27/2022	yes	6.2600					
pH	S.U.	CBL-341I	07/28/2022	yes	6.1600					
pH	S.U.	CBL-341I	01/26/2023		6.2800			6.1017		
pH	S.U.	CBL-341I	07/19/2023		6.2200			6.0939		
pH	S.U.	CBL-341I	01/29/2024		6.3800			6.2462		
Sulfate	mg/L	CBL-301I	01/21/2016	yes	336.0000					
Sulfate	mg/L	CBL-301I	05/04/2016	yes	311.0000					

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Table 2

Analytical Data and CUSUM Summary

Constituent	Units	Well	Date	Background	Result		Outlier	CUSUM	Adjusted	
Sulfate	mg/L	CBL-301I	07/27/2016	yes	336.0000					
Sulfate	mg/L	CBL-301I	10/24/2016	yes	326.0000					
Sulfate	mg/L	CBL-301I	01/23/2017	yes	488.0000					
Sulfate	mg/L	CBL-301I	03/22/2017	yes	337.0000					
Sulfate	mg/L	CBL-301I	05/18/2017	yes	342.0000					
Sulfate	mg/L	CBL-301I	07/26/2017	yes	381.0000					
Sulfate	mg/L	CBL-301I	02/08/2018	yes	344.0000					
Sulfate	mg/L	CBL-301I	07/25/2018	yes	196.0000					
Sulfate	mg/L	CBL-301I	01/17/2019	yes	104.0000		yes			*
Sulfate	mg/L	CBL-301I	05/02/2019	yes	398.0000					
Sulfate	mg/L	CBL-301I	07/31/2019	yes	332.0000					
Sulfate	mg/L	CBL-301I	01/28/2020	yes	349.0000					
Sulfate	mg/L	CBL-301I	09/17/2020	yes	350.0000					
Sulfate	mg/L	CBL-301I	01/26/2021	yes	374.0000					
Sulfate	mg/L	CBL-301I	07/20/2021	yes	419.0000					
Sulfate	mg/L	CBL-301I	01/26/2022	yes	406.0000					
Sulfate	mg/L	CBL-301I	07/27/2022	yes	285.0000					
Sulfate	mg/L	CBL-301I	01/25/2023		1370.0000			1324.7798		**
Sulfate	mg/L	CBL-301I	03/07/2023		207.0000			350.5556		
Sulfate	mg/L	CBL-301I	08/02/2023		383.0000			350.5556		
Sulfate	mg/L	CBL-301I	01/29/2024		475.0000			429.7798		
Sulfate	mg/L	CBL-302I	01/22/2016	yes	1020.0000					
Sulfate	mg/L	CBL-302I	05/04/2016	yes	993.0000					
Sulfate	mg/L	CBL-302I	07/27/2016	yes	1090.0000					
Sulfate	mg/L	CBL-302I	10/24/2016	yes	1180.0000					
Sulfate	mg/L	CBL-302I	01/23/2017	yes	1150.0000					
Sulfate	mg/L	CBL-302I	03/22/2017	yes	1120.0000					
Sulfate	mg/L	CBL-302I	05/16/2017	yes	1230.0000					
Sulfate	mg/L	CBL-302I	07/27/2017	yes	1180.0000					
Sulfate	mg/L	CBL-302I	02/08/2018	yes	1240.0000					
Sulfate	mg/L	CBL-302I	07/27/2018	yes	1390.0000					
Sulfate	mg/L	CBL-302I	01/22/2019	yes	1250.0000					
Sulfate	mg/L	CBL-302I	07/31/2019	yes	1260.0000					
Sulfate	mg/L	CBL-302I	01/30/2020	yes	1350.0000					
Sulfate	mg/L	CBL-302I	09/17/2020	yes	1280.0000					
Sulfate	mg/L	CBL-302I	01/28/2021	yes	1290.0000					
Sulfate	mg/L	CBL-302I	07/21/2021	yes	1350.0000					
Sulfate	mg/L	CBL-302I	01/27/2022	yes	1340.0000					
Sulfate	mg/L	CBL-302I	07/28/2022	yes	1300.0000					
Sulfate	mg/L	CBL-302I	01/26/2023		1390.0000			1304.4147		
Sulfate	mg/L	CBL-302I	07/18/2023		1230.0000			1225.8850		
Sulfate	mg/L	CBL-302I	01/29/2024		1330.0000			1247.3553		
Sulfate	mg/L	CBL-306I	01/21/2016	yes	266.0000					
Sulfate	mg/L	CBL-306I	05/04/2016	yes	29.5000		yes			*
Sulfate	mg/L	CBL-306I	07/26/2016	yes	139.0000					
Sulfate	mg/L	CBL-306I	10/24/2016	yes	432.0000					
Sulfate	mg/L	CBL-306I	01/19/2017	yes	270.0000					
Sulfate	mg/L	CBL-306I	03/22/2017	yes	340.0000					
Sulfate	mg/L	CBL-306I	05/18/2017	yes	412.0000					
Sulfate	mg/L	CBL-306I	07/27/2017	yes	513.0000					

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Table 2

Analytical Data and CUSUM Summary

Constituent	Units	Well	Date	Background	Result		Outlier	CUSUM	Adjusted	
Sulfate	mg/L	CBL-306I	02/08/2018	yes	493.0000					
Sulfate	mg/L	CBL-306I	07/27/2018	yes	406.0000					
Sulfate	mg/L	CBL-306I	01/16/2019	yes	292.0000					
Sulfate	mg/L	CBL-306I	07/31/2019	yes	816.0000		yes			*
Sulfate	mg/L	CBL-306I	08/23/2019	yes	387.0000					
Sulfate	mg/L	CBL-306I	01/29/2020	yes	561.0000					
Sulfate	mg/L	CBL-306I	09/19/2020	yes	506.0000					
Sulfate	mg/L	CBL-306I	01/28/2021	yes	388.0000					
Sulfate	mg/L	CBL-306I	07/21/2021	yes	336.0000					
Sulfate	mg/L	CBL-306I	01/27/2022	yes	510.0000					
Sulfate	mg/L	CBL-306I	07/28/2022	yes	348.0000					
Sulfate	mg/L	CBL-306I	01/26/2023		205.0000			388.1765		
Sulfate	mg/L	CBL-306I	07/18/2023		454.0000			388.1765		
Sulfate	mg/L	CBL-306I	01/29/2024		266.0000			388.1765		
Sulfate	mg/L	CBL-308I	01/22/2016	yes	1490.0000					
Sulfate	mg/L	CBL-308I	05/04/2016	yes	1410.0000					
Sulfate	mg/L	CBL-308I	07/26/2016	yes	1490.0000					
Sulfate	mg/L	CBL-308I	10/24/2016	yes	1550.0000					
Sulfate	mg/L	CBL-308I	01/19/2017	yes	1320.0000					
Sulfate	mg/L	CBL-308I	03/22/2017	yes	1470.0000					
Sulfate	mg/L	CBL-308I	05/16/2017	yes	1580.0000					
Sulfate	mg/L	CBL-308I	07/26/2017	yes	1550.0000					
Sulfate	mg/L	CBL-308I	02/06/2018	yes	1570.0000					
Sulfate	mg/L	CBL-308I	07/25/2018	yes	1540.0000					
Sulfate	mg/L	CBL-308I	01/18/2019	yes	1520.0000					
Sulfate	mg/L	CBL-308I	07/31/2019	yes	1420.0000					
Sulfate	mg/L	CBL-308I	01/29/2020	yes	1340.0000					
Sulfate	mg/L	CBL-308I	09/18/2020	yes	1310.0000					
Sulfate	mg/L	CBL-308I	01/28/2021	yes	1340.0000					
Sulfate	mg/L	CBL-308I	07/21/2021	yes	1240.0000					
Sulfate	mg/L	CBL-308I	01/27/2022	yes	1310.0000					
Sulfate	mg/L	CBL-308I	07/27/2022	yes	1190.0000					
Sulfate	mg/L	CBL-308I	01/26/2023		445.0000			1424.4444		
Sulfate	mg/L	CBL-308I	07/18/2023		1290.0000			1424.4444		
Sulfate	mg/L	CBL-308I	01/30/2024		1360.0000			1424.4444		
Sulfate	mg/L	CBL-341I	01/23/2017	yes	307.0000					
Sulfate	mg/L	CBL-341I	02/23/2017	yes	404.0000					
Sulfate	mg/L	CBL-341I	03/22/2017	yes	346.0000					
Sulfate	mg/L	CBL-341I	04/20/2017	yes	336.0000					
Sulfate	mg/L	CBL-341I	05/16/2017	yes	369.0000					
Sulfate	mg/L	CBL-341I	06/20/2017	yes	363.0000					
Sulfate	mg/L	CBL-341I	07/27/2017	yes	419.0000					
Sulfate	mg/L	CBL-341I	09/11/2017	yes	354.0000					
Sulfate	mg/L	CBL-341I	02/08/2018	yes	383.0000					
Sulfate	mg/L	CBL-341I	08/24/2018	yes	376.0000					
Sulfate	mg/L	CBL-341I	01/22/2019	yes	358.0000					
Sulfate	mg/L	CBL-341I	07/31/2019	yes	329.0000					
Sulfate	mg/L	CBL-341I	01/30/2020	yes	351.0000					
Sulfate	mg/L	CBL-341I	09/17/2020	yes	336.0000					
Sulfate	mg/L	CBL-341I	01/27/2021	yes	324.0000					

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Analytical Data and CUSUM Summary

Constituent	Units	Well	Date	Background	Result		Outlier	CUSUM	Adjusted	
Sulfate	mg/L	CBL-341I	07/22/2021	yes	316.0000					
Sulfate	mg/L	CBL-341I	01/27/2022	yes	320.0000					
Sulfate	mg/L	CBL-341I	07/28/2022	yes	296.0000					
Sulfate	mg/L	CBL-341I	01/26/2023		309.0000			349.2778		
Sulfate	mg/L	CBL-341I	07/19/2023		259.0000			349.2778		
Sulfate	mg/L	CBL-341I	01/29/2024		346.0000			349.2778		
Total Dissolved Solids	mg/L	CBL-301I	01/21/2016	yes	4380.0000					
Total Dissolved Solids	mg/L	CBL-301I	05/04/2016	yes	5050.0000					
Total Dissolved Solids	mg/L	CBL-301I	07/27/2016	yes	6020.0000					
Total Dissolved Solids	mg/L	CBL-301I	10/24/2016	yes	4570.0000					
Total Dissolved Solids	mg/L	CBL-301I	01/23/2017	yes	6140.0000					
Total Dissolved Solids	mg/L	CBL-301I	03/22/2017	yes	6570.0000					
Total Dissolved Solids	mg/L	CBL-301I	05/18/2017	yes	6430.0000					
Total Dissolved Solids	mg/L	CBL-301I	07/26/2017	yes	4290.0000					
Total Dissolved Solids	mg/L	CBL-301I	02/08/2018	yes	5120.0000					
Total Dissolved Solids	mg/L	CBL-301I	07/25/2018	yes	5390.0000					
Total Dissolved Solids	mg/L	CBL-301I	01/17/2019	yes	1460.0000		yes			*
Total Dissolved Solids	mg/L	CBL-301I	05/02/2019	yes	5650.0000					
Total Dissolved Solids	mg/L	CBL-301I	07/31/2019	yes	6040.0000					
Total Dissolved Solids	mg/L	CBL-301I	01/28/2020	yes	4790.0000					
Total Dissolved Solids	mg/L	CBL-301I	09/17/2020	yes	6340.0000					
Total Dissolved Solids	mg/L	CBL-301I	01/26/2021	yes	6060.0000					
Total Dissolved Solids	mg/L	CBL-301I	07/20/2021	yes	5870.0000					
Total Dissolved Solids	mg/L	CBL-301I	01/26/2022	yes	4700.0000					
Total Dissolved Solids	mg/L	CBL-301I	07/27/2022	yes	4590.0000					
Total Dissolved Solids	mg/L	CBL-301I	01/25/2023		5160.0000			5444.4444		
Total Dissolved Solids	mg/L	CBL-301I	08/02/2023		5360.0000			5444.4444		
Total Dissolved Solids	mg/L	CBL-301I	01/29/2024		4820.0000			5444.4444		
Total Dissolved Solids	mg/L	CBL-302I	01/22/2016	yes	5500.0000					
Total Dissolved Solids	mg/L	CBL-302I	05/04/2016	yes	5390.0000					
Total Dissolved Solids	mg/L	CBL-302I	07/27/2016	yes	6850.0000					
Total Dissolved Solids	mg/L	CBL-302I	10/24/2016	yes	4210.0000					
Total Dissolved Solids	mg/L	CBL-302I	01/23/2017	yes	6430.0000					
Total Dissolved Solids	mg/L	CBL-302I	03/22/2017	yes	6460.0000					
Total Dissolved Solids	mg/L	CBL-302I	05/16/2017	yes	5860.0000					
Total Dissolved Solids	mg/L	CBL-302I	07/27/2017	yes	5120.0000					
Total Dissolved Solids	mg/L	CBL-302I	02/08/2018	yes	6010.0000					
Total Dissolved Solids	mg/L	CBL-302I	07/27/2018	yes	5510.0000					
Total Dissolved Solids	mg/L	CBL-302I	01/22/2019	yes	5060.0000					
Total Dissolved Solids	mg/L	CBL-302I	07/31/2019	yes	4190.0000					
Total Dissolved Solids	mg/L	CBL-302I	01/30/2020	yes	4790.0000					
Total Dissolved Solids	mg/L	CBL-302I	09/17/2020	yes	4990.0000					
Total Dissolved Solids	mg/L	CBL-302I	01/28/2021	yes	4800.0000					
Total Dissolved Solids	mg/L	CBL-302I	07/21/2021	yes	4810.0000					
Total Dissolved Solids	mg/L	CBL-302I	01/27/2022	yes	4510.0000					
Total Dissolved Solids	mg/L	CBL-302I	07/28/2022	yes	5120.0000					
Total Dissolved Solids	mg/L	CBL-302I	01/26/2023		4930.0000			5311.6667		
Total Dissolved Solids	mg/L	CBL-302I	07/18/2023		5150.0000			5311.6667		
Total Dissolved Solids	mg/L	CBL-302I	01/29/2024		4950.0000			5311.6667		
Total Dissolved Solids	mg/L	CBL-306I	01/21/2016	yes	1280.0000					

* - Outlier for that well and constituent.
** - Non-outlier detected sample Result and / or CUSUM value exceeds limit.
*** - ND value replaced with median RL.
**** - ND value replaced with manual RL.
ND = Not detected, Result = detection limit.

Table 2

Analytical Data and CUSUM Summary

Constituent	Units	Well	Date	Background	Result		Outlier	CUSUM	Adjusted	
Total Dissolved Solids	mg/L	CBL-306I	05/04/2016	yes	431.0000		yes			*
Total Dissolved Solids	mg/L	CBL-306I	07/26/2016	yes	790.0000					
Total Dissolved Solids	mg/L	CBL-306I	10/24/2016	yes	1150.0000					
Total Dissolved Solids	mg/L	CBL-306I	01/19/2017	yes	1320.0000					
Total Dissolved Solids	mg/L	CBL-306I	03/22/2017	yes	1460.0000					
Total Dissolved Solids	mg/L	CBL-306I	05/18/2017	yes	1440.0000					
Total Dissolved Solids	mg/L	CBL-306I	07/27/2017	yes	1280.0000					
Total Dissolved Solids	mg/L	CBL-306I	02/08/2018	yes	1760.0000					
Total Dissolved Solids	mg/L	CBL-306I	07/27/2018	yes	1450.0000					
Total Dissolved Solids	mg/L	CBL-306I	01/16/2019	yes	1220.0000					
Total Dissolved Solids	mg/L	CBL-306I	07/31/2019	yes	676.0000		yes			*
Total Dissolved Solids	mg/L	CBL-306I	08/23/2019	yes	1710.0000					
Total Dissolved Solids	mg/L	CBL-306I	01/29/2020	yes	1830.0000					
Total Dissolved Solids	mg/L	CBL-306I	09/19/2020	yes	1730.0000					
Total Dissolved Solids	mg/L	CBL-306I	01/28/2021	yes	1420.0000					
Total Dissolved Solids	mg/L	CBL-306I	07/21/2021	yes	1320.0000					
Total Dissolved Solids	mg/L	CBL-306I	01/27/2022	yes	1730.0000					
Total Dissolved Solids	mg/L	CBL-306I	07/28/2022	yes	1540.0000					
Total Dissolved Solids	mg/L	CBL-306I	01/26/2023		1000.0000			1437.0588		
Total Dissolved Solids	mg/L	CBL-306I	07/18/2023		1910.0000			1709.6860		
Total Dissolved Solids	mg/L	CBL-306I	01/29/2024		1170.0000			1437.0588		
Total Dissolved Solids	mg/L	CBL-308I	01/22/2016	yes	6820.0000					
Total Dissolved Solids	mg/L	CBL-308I	05/04/2016	yes	6120.0000					
Total Dissolved Solids	mg/L	CBL-308I	07/26/2016	yes	7890.0000					
Total Dissolved Solids	mg/L	CBL-308I	10/24/2016	yes	10200.0000					
Total Dissolved Solids	mg/L	CBL-308I	01/19/2017	yes	9620.0000					
Total Dissolved Solids	mg/L	CBL-308I	03/22/2017	yes	7260.0000					
Total Dissolved Solids	mg/L	CBL-308I	05/16/2017	yes	6590.0000					
Total Dissolved Solids	mg/L	CBL-308I	07/26/2017	yes	6480.0000					
Total Dissolved Solids	mg/L	CBL-308I	02/06/2018	yes	6200.0000					
Total Dissolved Solids	mg/L	CBL-308I	07/25/2018	yes	6320.0000					
Total Dissolved Solids	mg/L	CBL-308I	01/18/2019	yes	4760.0000					
Total Dissolved Solids	mg/L	CBL-308I	07/31/2019	yes	5820.0000					
Total Dissolved Solids	mg/L	CBL-308I	01/29/2020	yes	5980.0000					
Total Dissolved Solids	mg/L	CBL-308I	09/18/2020	yes	6860.0000					
Total Dissolved Solids	mg/L	CBL-308I	01/28/2021	yes	6190.0000					
Total Dissolved Solids	mg/L	CBL-308I	07/21/2021	yes	5270.0000					
Total Dissolved Solids	mg/L	CBL-308I	01/27/2022	yes	5320.0000					
Total Dissolved Solids	mg/L	CBL-308I	07/27/2022	yes	6840.0000					
Total Dissolved Solids	mg/L	CBL-308I	01/26/2023		5810.0000			6696.6667		
Total Dissolved Solids	mg/L	CBL-308I	07/18/2023		5680.0000			6696.6667		
Total Dissolved Solids	mg/L	CBL-308I	01/30/2024		5410.0000			6696.6667		
Total Dissolved Solids	mg/L	CBL-341I	01/23/2017	yes	5000.0000					
Total Dissolved Solids	mg/L	CBL-341I	02/23/2017	yes	4520.0000					
Total Dissolved Solids	mg/L	CBL-341I	03/22/2017	yes	5110.0000					
Total Dissolved Solids	mg/L	CBL-341I	04/20/2017	yes	4240.0000					
Total Dissolved Solids	mg/L	CBL-341I	05/16/2017	yes	4840.0000					
Total Dissolved Solids	mg/L	CBL-341I	06/20/2017	yes	5940.0000					
Total Dissolved Solids	mg/L	CBL-341I	07/27/2017	yes	4150.0000					
Total Dissolved Solids	mg/L	CBL-341I	09/11/2017	yes	4860.0000					

* - Outlier for that well and constituent.
** - Non-outlier detected sample Result and / or CUSUM value exceeds limit.
*** - ND value replaced with median RL.
**** - ND value replaced with manual RL.
ND = Not detected, Result = detection limit.

Table 2

Analytical Data and CUSUM Summary

Constituent	Units	Well	Date	Background	Result		Outlier	CUSUM	Adjusted	
Total Dissolved Solids	mg/L	CBL-341I	02/08/2018	yes	4320.0000					
Total Dissolved Solids	mg/L	CBL-341I	08/24/2018	yes	4800.0000					
Total Dissolved Solids	mg/L	CBL-341I	01/22/2019	yes	3870.0000					
Total Dissolved Solids	mg/L	CBL-341I	07/31/2019	yes	5370.0000					
Total Dissolved Solids	mg/L	CBL-341I	01/30/2020	yes	4900.0000					
Total Dissolved Solids	mg/L	CBL-341I	09/17/2020	yes	4930.0000					
Total Dissolved Solids	mg/L	CBL-341I	01/27/2021	yes	3940.0000					
Total Dissolved Solids	mg/L	CBL-341I	07/22/2021	yes	4520.0000					
Total Dissolved Solids	mg/L	CBL-341I	01/27/2022	yes	3800.0000					
Total Dissolved Solids	mg/L	CBL-341I	07/28/2022	yes	4910.0000					
Total Dissolved Solids	mg/L	CBL-341I	01/26/2023		4390.0000			4667.7778		
Total Dissolved Solids	mg/L	CBL-341I	07/19/2023		4190.0000			4667.7778		
Total Dissolved Solids	mg/L	CBL-341I	01/29/2024		3990.0000			4667.7778		

* - Outlier for that well and constituent.
** - Non-outlier detected sample Result and / or CUSUM value exceeds limit.
*** - ND value replaced with median RL.
**** - ND value replaced with manual RL.
ND = Not detected, Result = detection limit.

Table 4

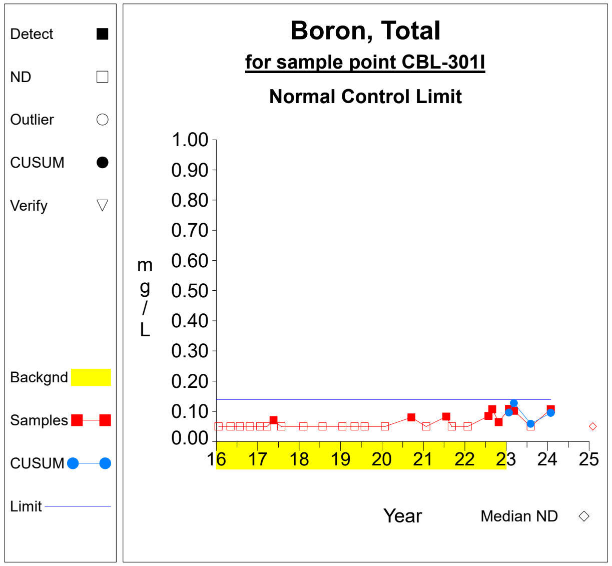
Dixon's Test Outliers
1% Significance Level

Constituent	Units	Well	Date	Result	ND Qualifier	Date Range	N	Critical Value
Calcium, Total	mg/L	CBL-301I	01/17/2019	156.0000		01/21/2016-07/27/2022	19	0.5503
Chloride	mg/L	CBL-301I	01/17/2019	619.0000		01/21/2016-07/27/2022	19	0.5503
Chloride	mg/L	CBL-306I	05/04/2016	20.0000		01/21/2016-07/28/2022	17	0.5798
Fluoride	mg/L	CBL-306I	03/22/2017	12.6000		01/21/2016-07/28/2022	18	0.5643
Fluoride	mg/L	CBL-308I	03/22/2017	9.0500		01/22/2016-07/27/2022	18	0.5643
Sulfate	mg/L	CBL-301I	01/17/2019	104.0000		01/21/2016-07/27/2022	19	0.5503
Sulfate	mg/L	CBL-306I	05/04/2016	29.5000		01/21/2016-07/28/2022	18	0.5643
Total Dissolved Solids	mg/L	CBL-301I	01/17/2019	1460.0000		01/21/2016-07/27/2022	19	0.5503
Total Dissolved Solids	mg/L	CBL-306I	05/04/2016	431.0000		01/21/2016-07/28/2022	18	0.5643

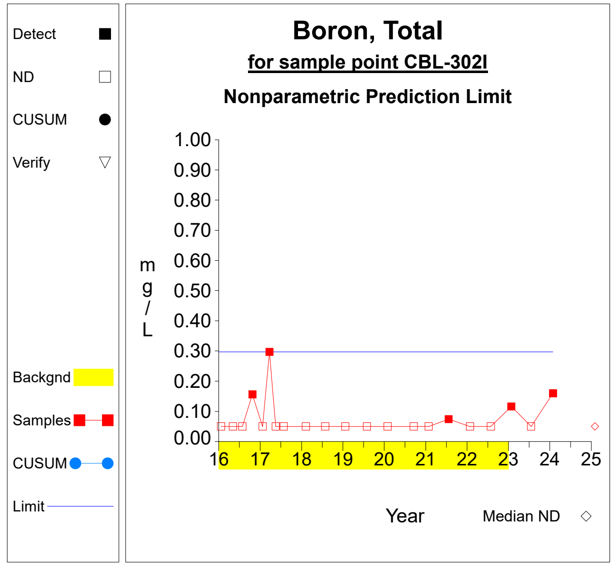
N = Total number of independent measurements in background at each well.
Date Range = Dates of the first and last measurements included in background at each well.
Critical Value depends on the significance level and on N-1 when the two most extreme values are tested or N for the most extreme value.

LCRA Fayette Power [GW] September 2024

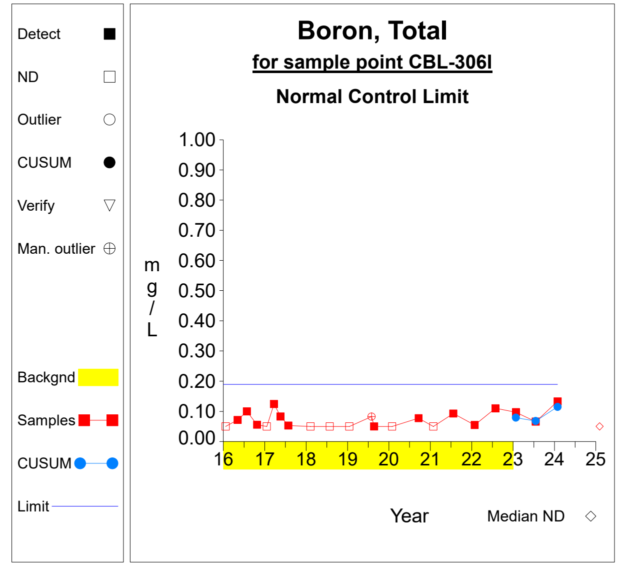
Intra-Well Control Charts / Prediction Limits



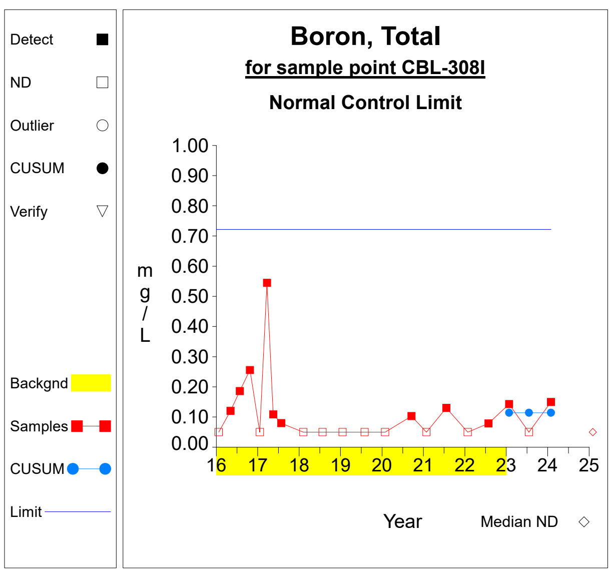
Graph 1



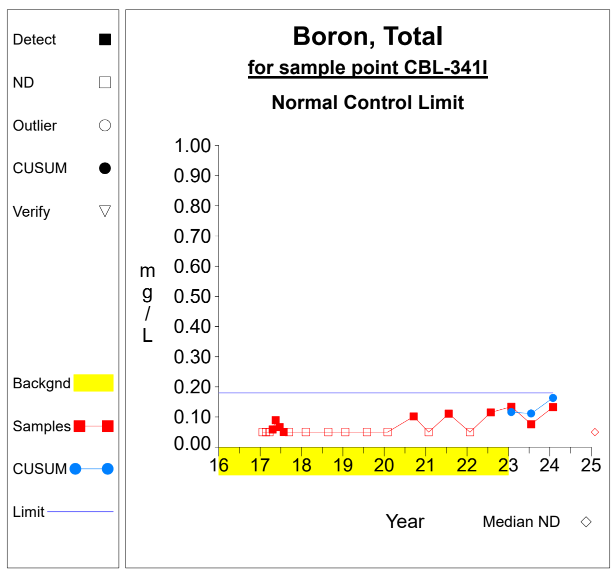
Graph 2



Graph 3



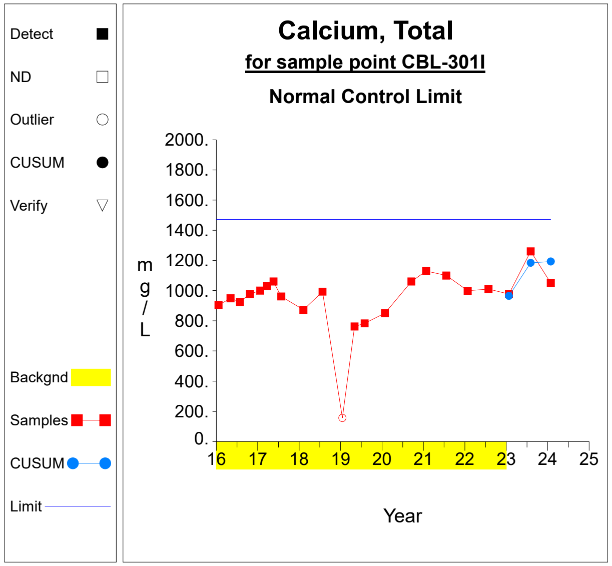
Graph 4



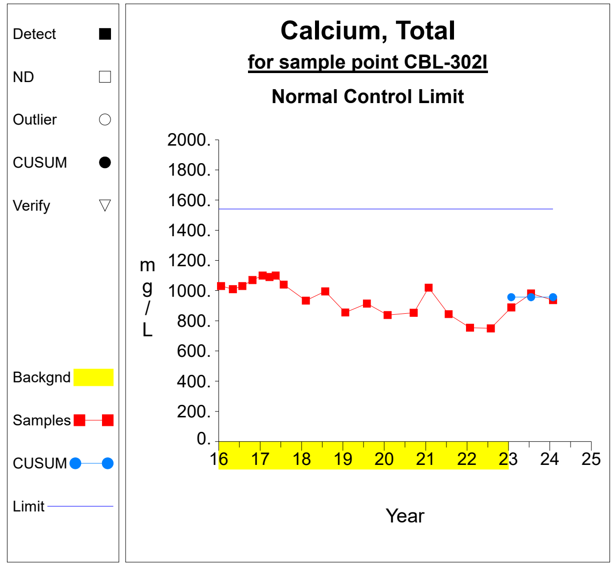
Graph 5

Prepared by: Otter Creek Environmental

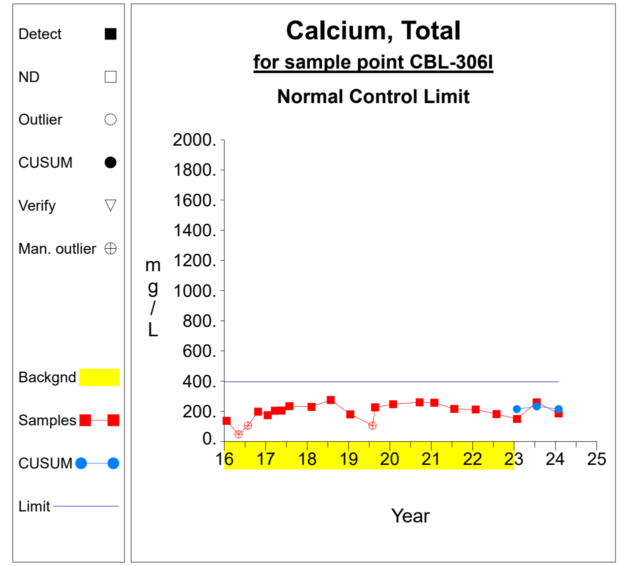
Intra-Well Control Charts / Prediction Limits



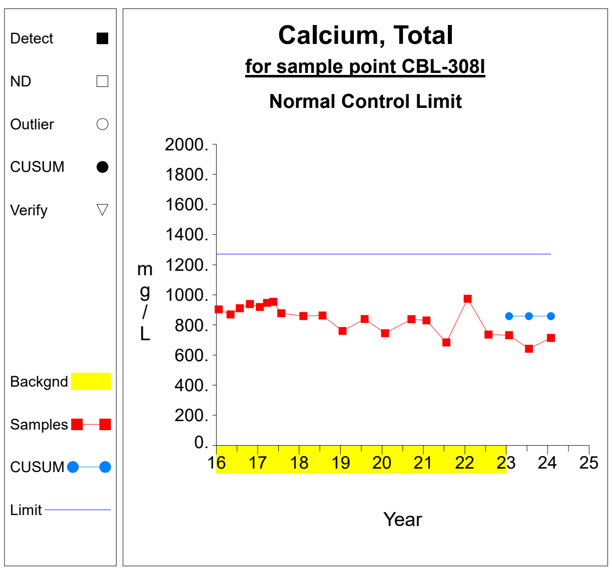
Graph 6



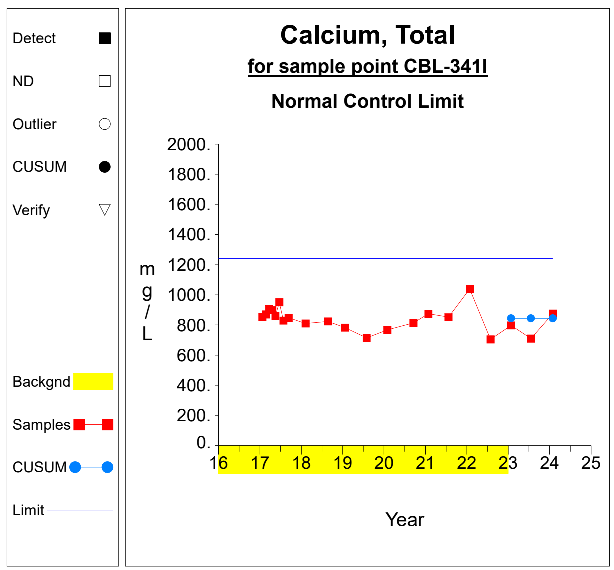
Graph 7



Graph 8

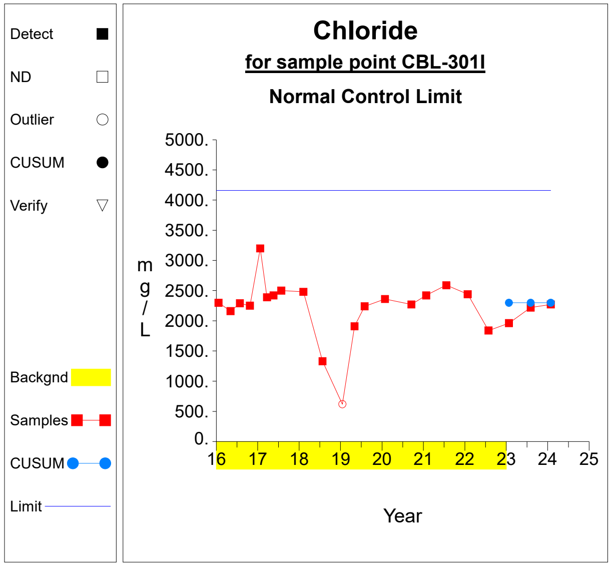


Graph 9

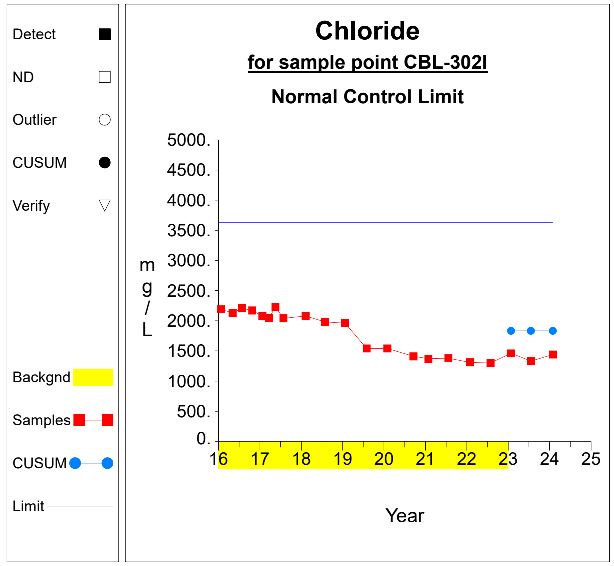


Graph 10

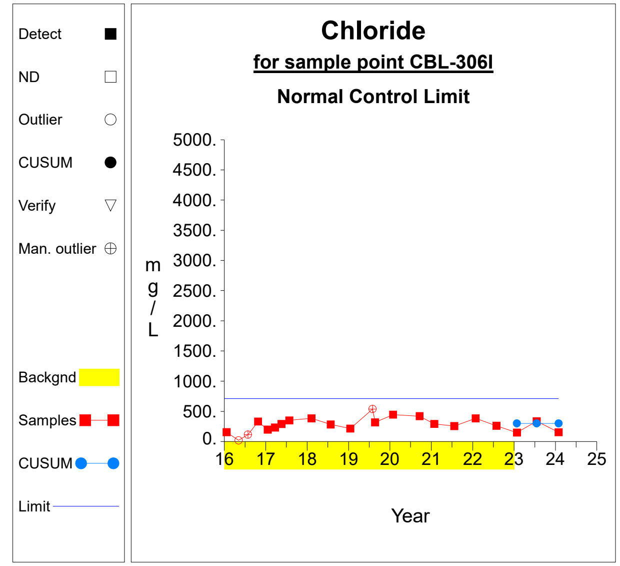
Intra-Well Control Charts / Prediction Limits



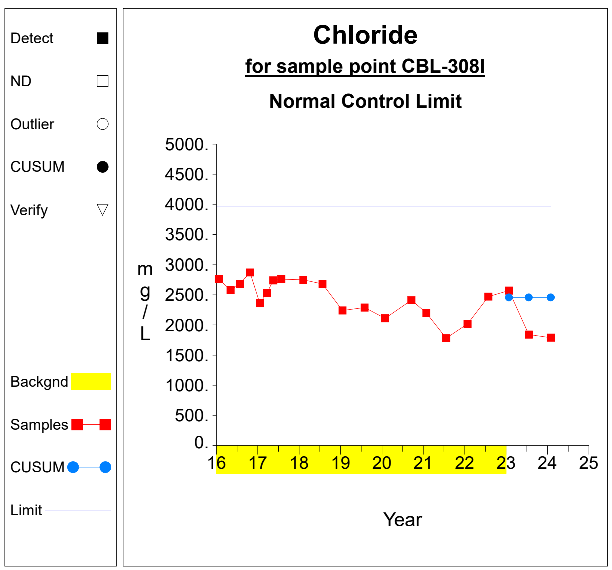
Graph 11



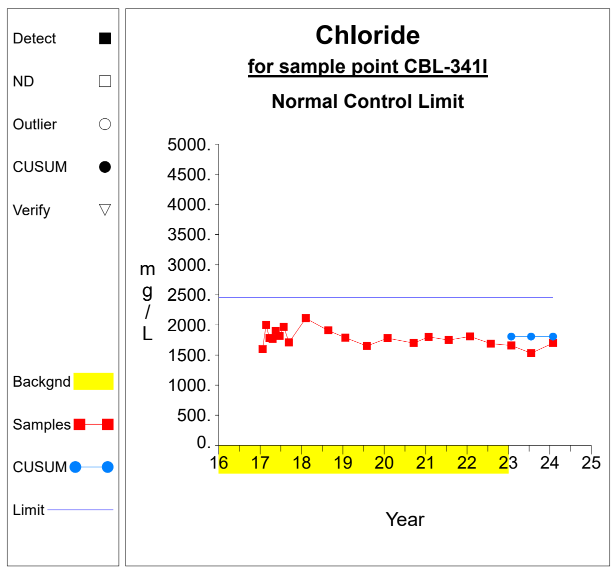
Graph 12



Graph 13

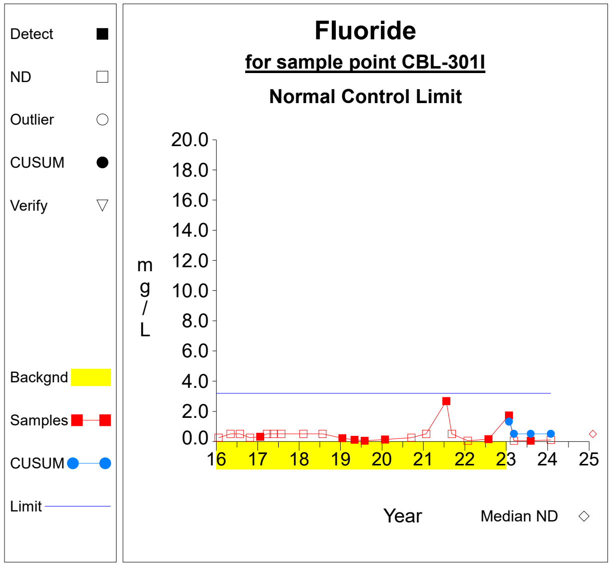


Graph 14

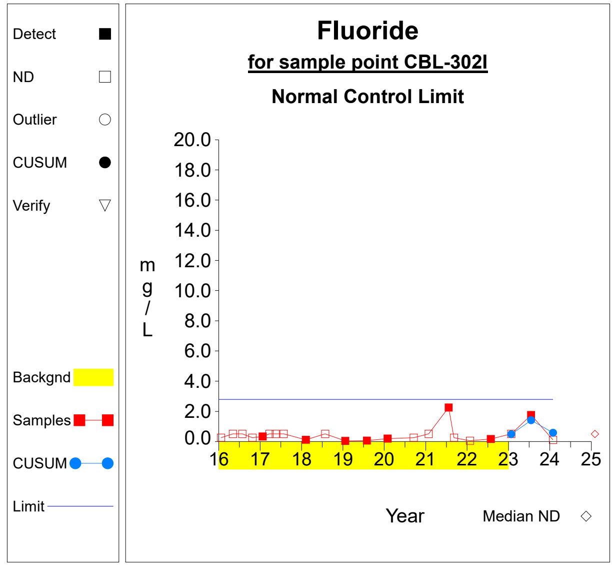


Graph 15

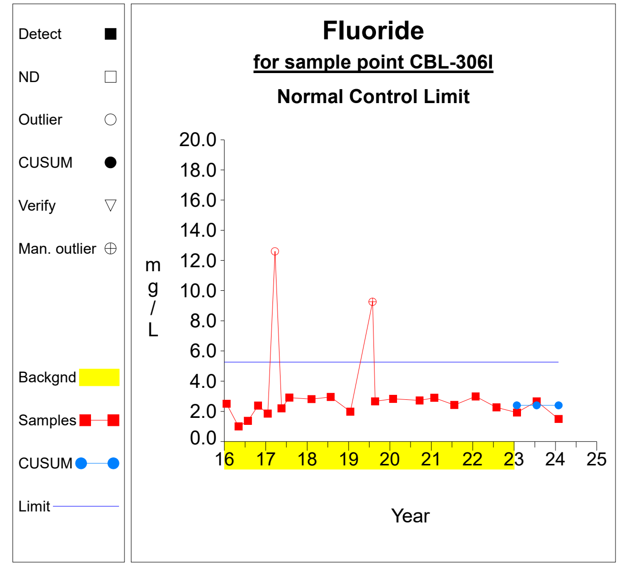
Intra-Well Control Charts / Prediction Limits



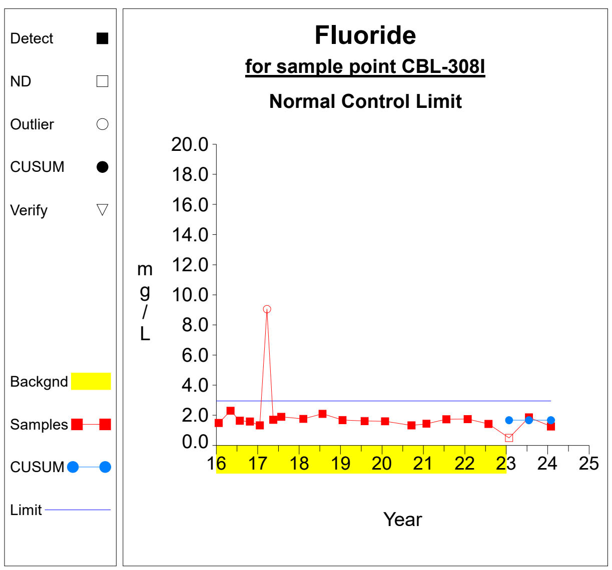
Graph 16



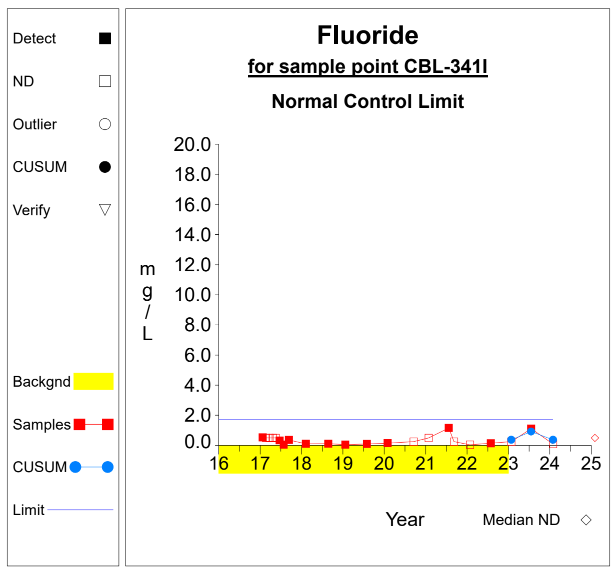
Graph 17



Graph 18



Graph 19



Graph 20

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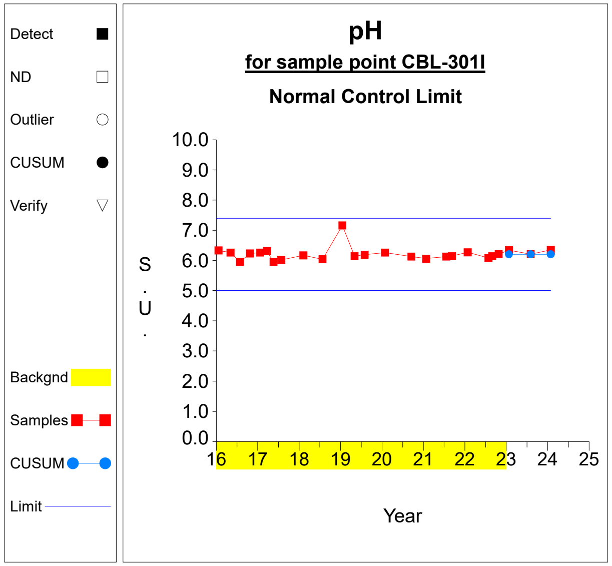
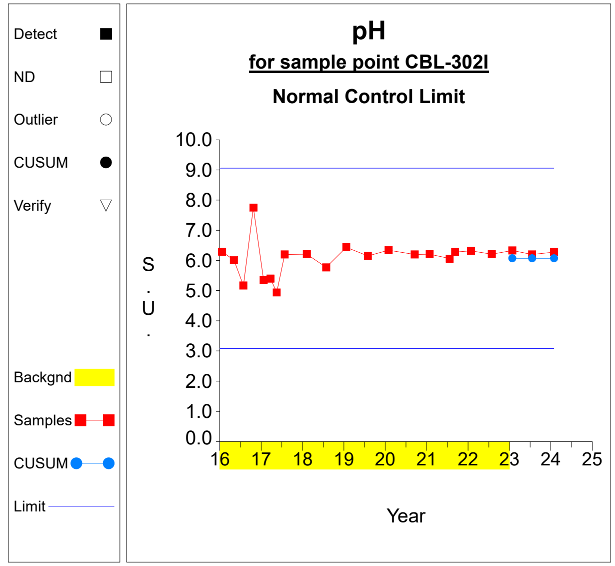
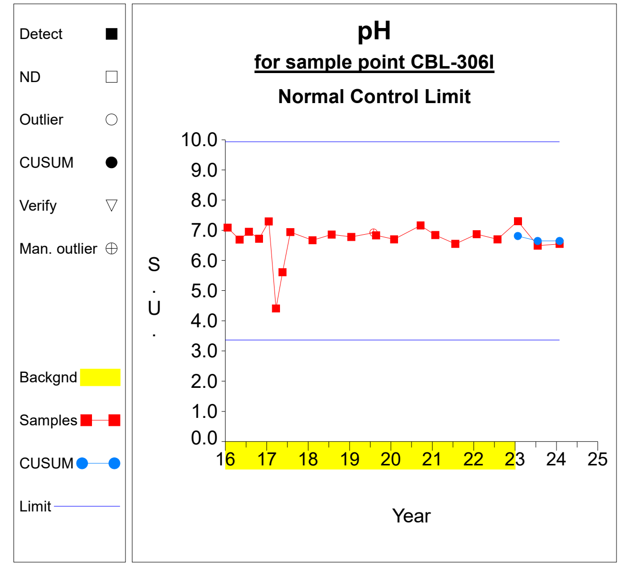
Intra-Well Control Charts / Prediction Limits



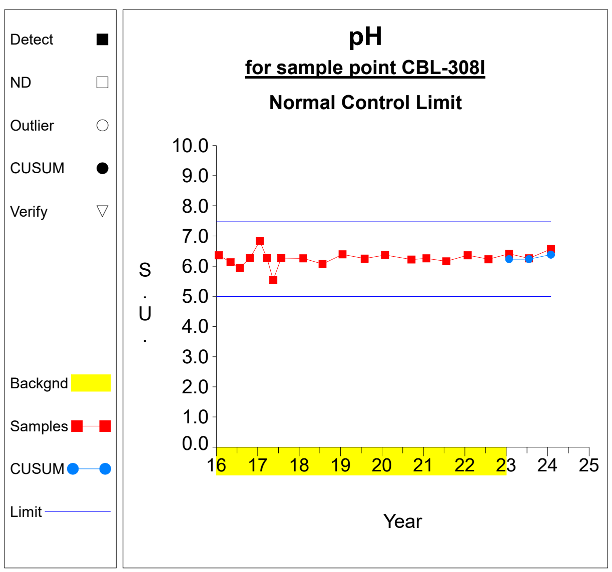
Graph 21



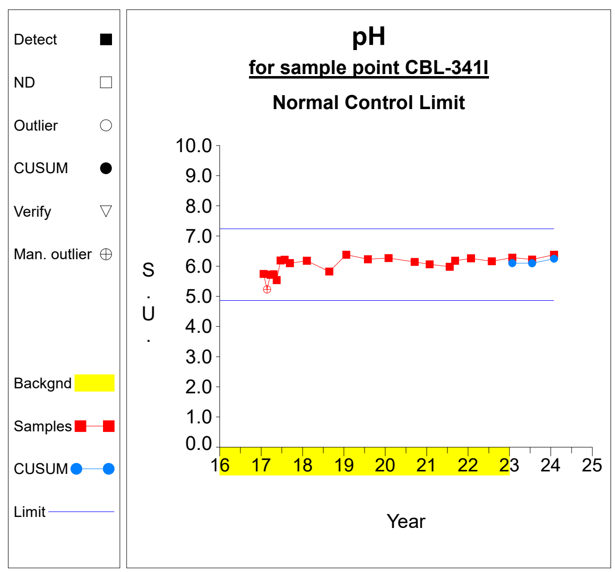
Graph 22



Graph 23

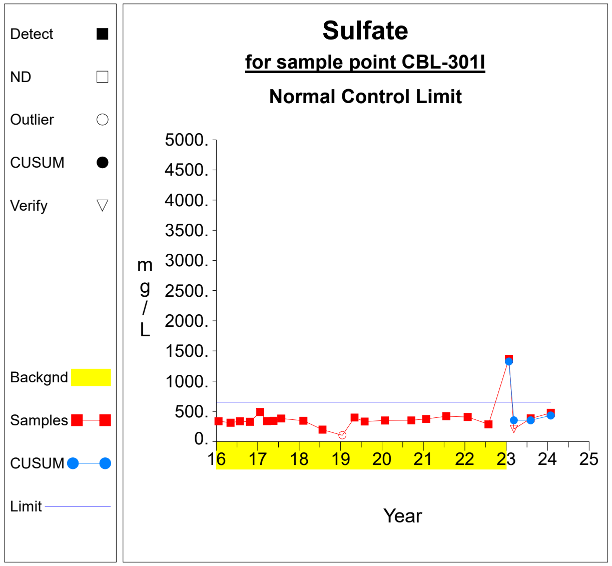


Graph 24

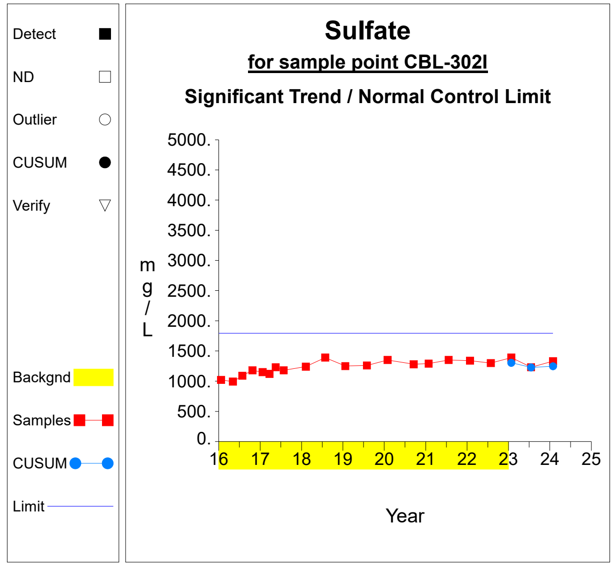


Graph 25

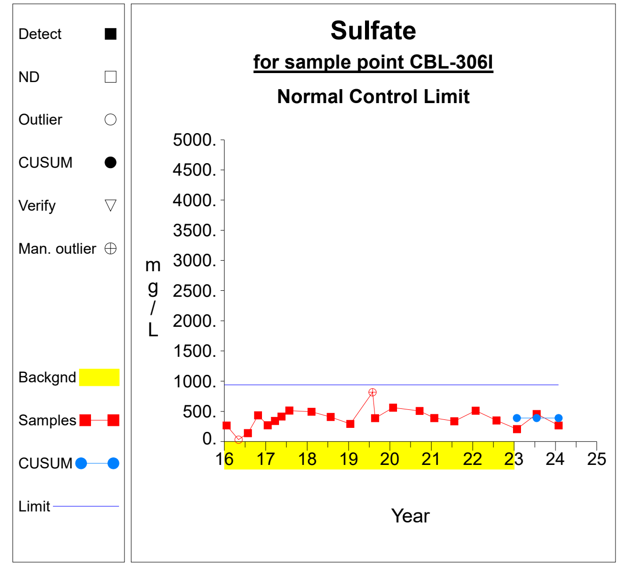
Intra-Well Control Charts / Prediction Limits



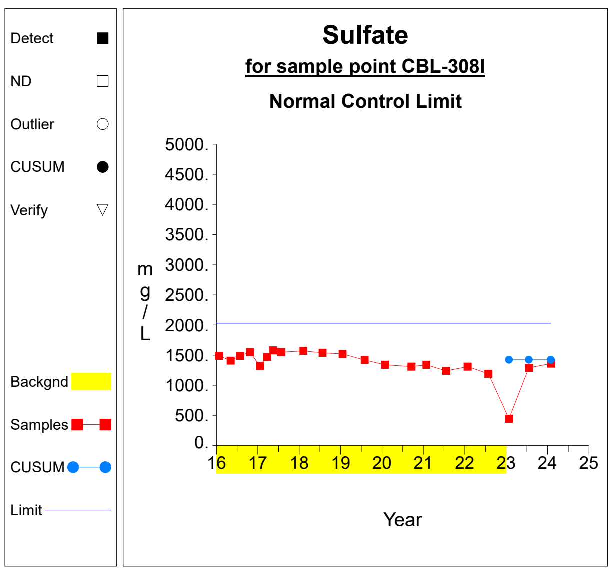
Graph 26



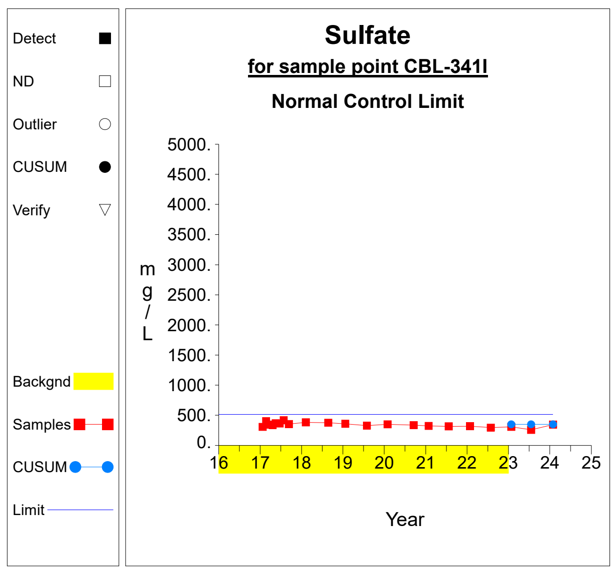
Graph 27



Graph 28

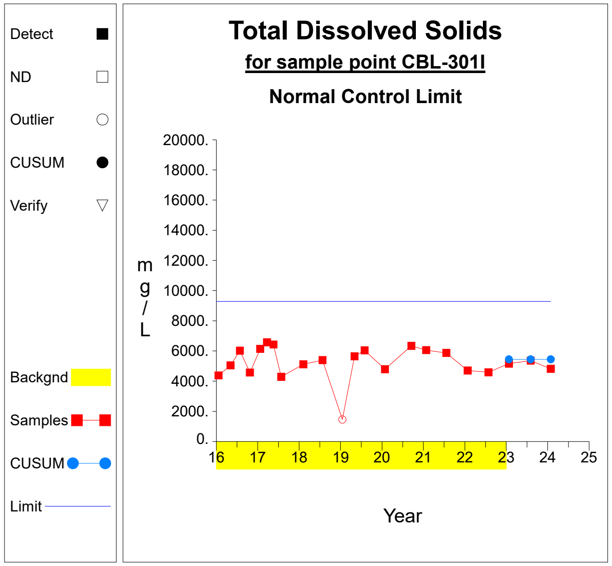


Graph 29

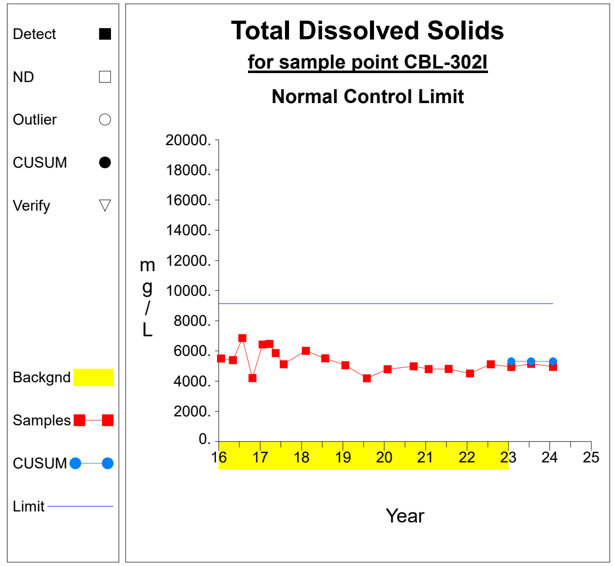


Graph 30

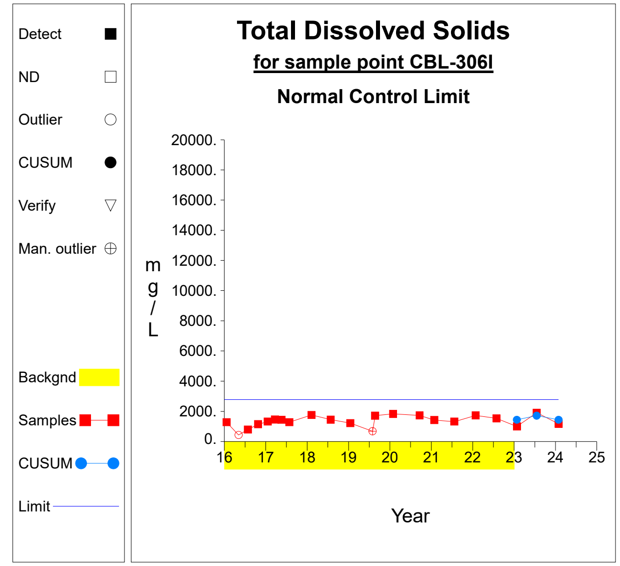
Intra-Well Control Charts / Prediction Limits



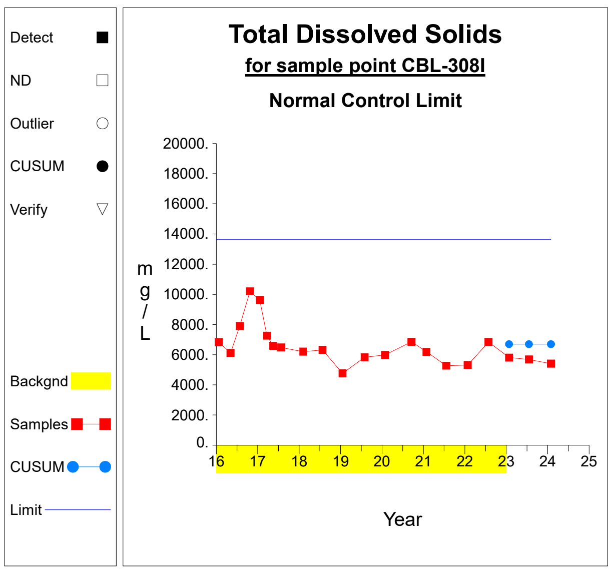
Graph 31



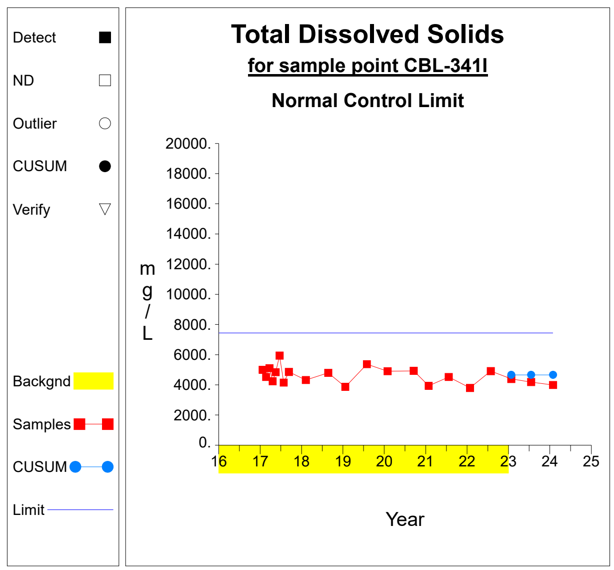
Graph 32



Graph 33

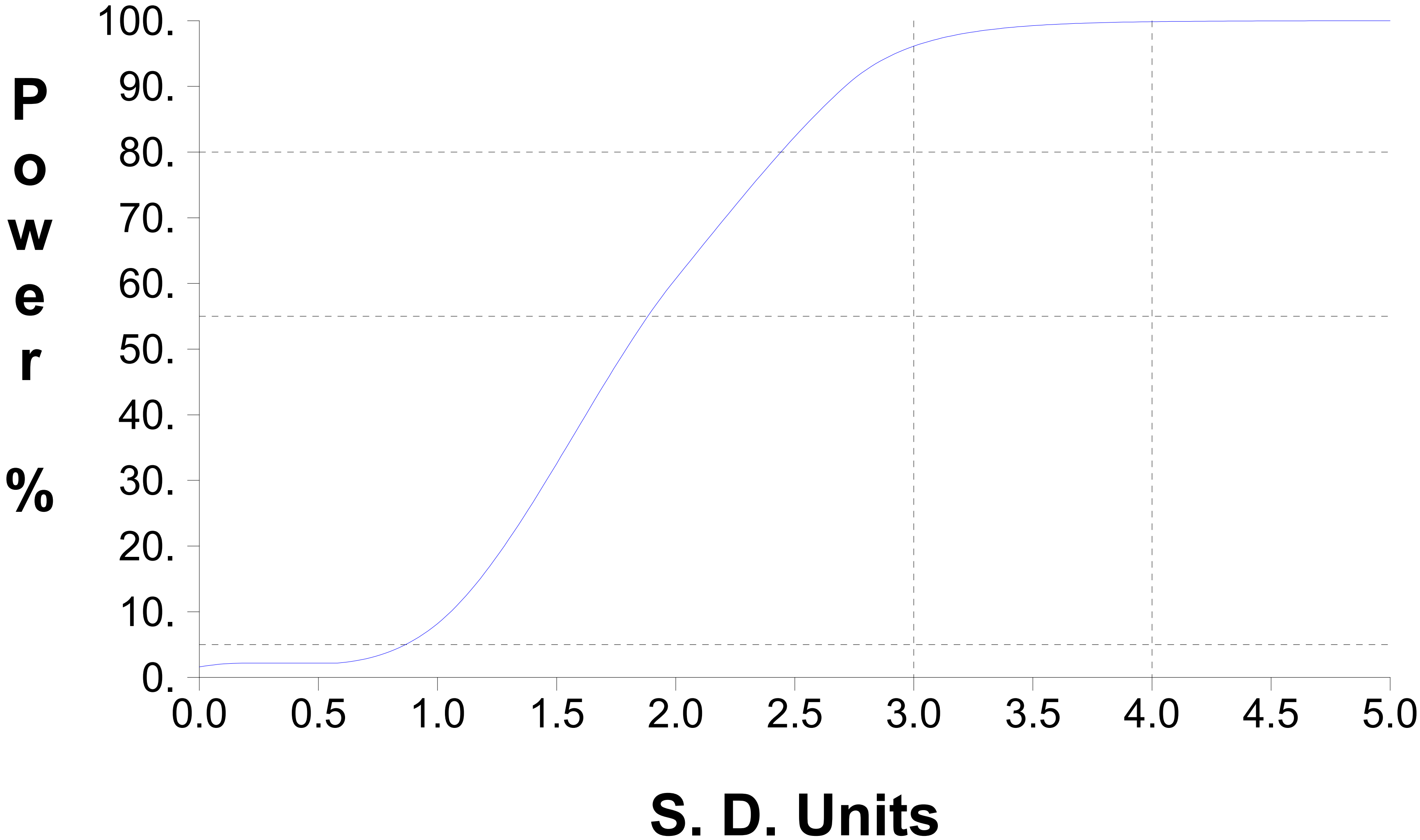


Graph 34



Graph 35

False Positive and False Negative Rates for Current Intra-Well Control Charts Monitoring Program



Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Boron, Total (mg/L) at CBL-301I
Normal Control Limit

Step	Equation	Description
1	$\bar{X}$ = **sum[X]** / **N** = **1.29** / **22** = **0.059**	Compute background mean.
2	S = ((**sum[X^2]** - **sum[X]**^{2}/**N**) / (**N**-1))^{½} = ((**0.081** - **1.664**/**22**) / (**22**-1))^{½} = **0.016**	Compute background sd.
3	SCL = $\bar{\mathbf{X}}$ + **F** * **S** = **0.059** + **5.0** * **0.016** = **0.139**	Compute combined Shewhart-CUSUM normal control limit.
4	N' = **N** * (**N**-1) / 2 = **22** * (**22**-1) / 2 = **231**	Number of sample pairs during trend detection period.
5	S = **0.0**	Sen's estimator of trend.
6	var(S) = **764.333**	Variance estimate for slope.
7	M_1(S) = (**N'** - $\mathbf{Z}_{.99}$ * **var(S)**^{½}) / 2 = (**231** - **2.326** * **764.333**^{½}) / 2 = **83.347**	Ordinal position for one-sided lower confidence limit for slope. The LCL is the M_1^{th} largest slope estimate. When M_1 is not an integer, interpolation is used.
8	LCL(S) = **0.0**	One-sided lower confidence limit for slope.

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Boron, Total (mg/L) at CBL-302I
Nonparametric Prediction Limit

Step	Equation	Description
1	PL = max(X) = **0.297**	Compute nonparametric prediction limit as largest background measurement.
2	Conf = **0.99**	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Boron, Total (mg/L) at CBL-306I
Normal Control Limit

Step	Equation	Description
1	$\bar{X}$ = **sum[X]** / **N** = **1.222** / **18** = **0.068**	Compute background mean.
2	S = ((**sum[X^2] - sum[X]^2/N**) / (**N**-1))$^{1/2}$ = ((**0.093 - 1.494/18**) / (**18**-1))$^{1/2}$ = **0.024**	Compute background sd.
3	SCL = $\bar{\mathbf{X}}$ + **F** * **S** = **0.068** + **5.0** * **0.024** = **0.189**	Compute combined Shewhart-CUSUM normal control limit.
4	N' = **N** * (**N**-1) / 2 = **18** * (**18**-1) / 2 = **153**	Number of sample pairs during trend detection period.
5	S = **0.0**	Sen's estimator of trend.
6	var(S) = **631.667**	Variance estimate for slope.
7	M_1(S) = (**N' - $Z_{.99}$** * **var(S)**$^{1/2}$) / 2 = (**153 - 2.326** * **631.667**$^{1/2}$) / 2 = **47.27**	Ordinal position for one-sided lower confidence limit for slope. The LCL is the M_1th largest slope estimate. When M_1 is not an integer, interpolation is used.
8	LCL(S) = **-0.003**	One-sided lower confidence limit for slope.

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Boron, Total (mg/L) at CBL-308I
Normal Control Limit

Step	Equation	Description
1	$\bar{X} = \textbf{sum[X]} / \textbf{N}$ $= \textbf{2.059} / \textbf{18}$ $= \textbf{0.114}$	Compute background mean.
2	$S = ((\textbf{sum[X}^{\mathbf{2}}\textbf{]} - \textbf{sum[X]}^2/\textbf{N}) / (\textbf{N}-1))^{½}$ $= ((\textbf{0.486} - \textbf{4.239}/\textbf{18}) / (\textbf{18}-1))^{½}$ $= \textbf{0.121}$	Compute background sd.
3	$SCL = \bar{\mathbf{X}} + \mathbf{F} * \mathbf{S}$ $= \textbf{0.114} + \textbf{5.0} * \textbf{0.121}$ $= \textbf{0.722}$	Compute combined Shewhart-CUSUM normal control limit.
4	$N' = \mathbf{N} * (\mathbf{N}-1) / 2$ $= \textbf{18} * (\textbf{18}-1) / 2$ $= \textbf{153}$	Number of sample pairs during trend detection period.
5	$S = \textbf{0.0}$	Sen's estimator of trend.
6	$var(S) = \textbf{605.0}$	Variance estimate for slope.
7	$M_1(S) = (\mathbf{N'} - \mathbf{Z}_{.99} * \mathbf{var(S)}^{½}) / 2$ $= (\textbf{153} - \textbf{2.326} * \textbf{605.0}^{½}) / 2$ $= \textbf{47.894}$	Ordinal position for one-sided lower confidence limit for slope. The LCL is the M_1^{th} largest slope estimate. When M_1 is not an integer, interpolation is used.
8	$LCL(S) = \textbf{-0.027}$	One-sided lower confidence limit for slope.

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Boron, Total (mg/L) at CBL-341I
Normal Control Limit

Step	Equation	Description
1	$\bar{X}$ = **sum[X]** / **N** = **1.144** / **18** = **0.064**	Compute background mean.
2	$S = ((\mathbf{sum[X^2] - sum[X]^2}/\mathbf{N}) / (\mathbf{N}-1))^{1/2}$ $= ((\mathbf{0.082 - 1.308/18}) / (\mathbf{18}-1))^{1/2}$ = **0.023**	Compute background sd.
3	SCL = $\bar{\mathbf{X}}$ + **F** * **S** = **0.064** + **5.0** * **0.023** = **0.18**	Compute combined Shewhart-CUSUM normal control limit.
4	N' = **N** * (**N**-1) / 2 = **18** * (**18**-1) / 2 = **153**	Number of sample pairs during trend detection period.
5	S = **0.0**	Sen's estimator of trend.
6	var(S) = **532.0**	Variance estimate for slope.
7	$M_1(S) = (\mathbf{N' - Z_{.99}} * \mathbf{var(S)}^{1/2}) / 2$ $= (\mathbf{153 - 2.326} * \mathbf{532.0}^{1/2}) / 2$ = **49.675**	Ordinal position for one-sided lower confidence limit for slope. The LCL is the M_1^{th} largest slope estimate. When M_1 is not an integer, interpolation is used.
8	LCL(S) = **0.0**	One-sided lower confidence limit for slope.

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Calcium, Total (mg/L) at CBL-301I
Normal Control Limit

Step	Equation	Description
1	$\overline{X} = \mathbf{sum[X]} / \mathbf{N}$ $= \mathbf{17369.0} / \mathbf{18}$ $= \mathbf{964.944}$	Compute background mean.
2	$S = ((\mathbf{sum[X^2] - sum[X]}^2/\mathbf{N}) / (\mathbf{N}-1))^{1/2}$ $= ((\mathbf{1.69{\times}10^7} - \mathbf{3.02{\times}10^8/18}) / (\mathbf{18}-1))^{1/2}$ $= \mathbf{101.271}$	Compute background sd.
3	$SCL = \overline{\mathbf{X}} + \mathbf{F} * \mathbf{S}$ $= \mathbf{964.944} + \mathbf{5.0} * \mathbf{101.271}$ $= \mathbf{1471.3}$	Compute combined Shewhart-CUSUM normal control limit.
4	$N' = \mathbf{N} * (\mathbf{N}-1) / 2$ $= \mathbf{18} * (\mathbf{18}-1) / 2$ $= \mathbf{153}$	Number of sample pairs during trend detection period.
5	$S = \mathbf{16.171}$	Sen's estimator of trend.
6	$var(S) = \mathbf{696.0}$	Variance estimate for slope.
7	$M_1(S) = (\mathbf{N' - Z_{.99} * var(S)^{1/2}}) / 2$ $= (\mathbf{153} - \mathbf{2.326} * \mathbf{696.0}^{1/2}) / 2$ $= \mathbf{45.818}$	Ordinal position for one-sided lower confidence limit for slope. The LCL is the M_1th largest slope estimate. When M_1 is not an integer, interpolation is used.
8	$LCL(S) = \mathbf{-27.044}$	One-sided lower confidence limit for slope.

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Calcium, Total (mg/L) at CBL-302I
Normal Control Limit

Step	Equation	Description
1	$\overline{X} = \textbf{sum[X]} / \textbf{N}$ $= \textbf{17227.0} / \textbf{18}$ $= \textbf{957.056}$	Compute background mean.
2	$S = ((\textbf{sum[X}^{\textbf{2}}\textbf{]} - \textbf{sum[X]}^2/\textbf{N}) / (\textbf{N}-1))^{1/2}$ $= ((\textbf{1.67}\times\textbf{10}^{\textbf{7}} - \textbf{2.97}\times\textbf{10}^{\textbf{8}}/\textbf{18}) / (\textbf{18}-1))^{1/2}$ $= \textbf{116.748}$	Compute background sd.
3	$SCL = \overline{\textbf{X}} + \textbf{F} * \textbf{S}$ $= \textbf{957.056} + \textbf{5.0} * \textbf{116.748}$ $= \textbf{1540.795}$	Compute combined Shewhart-CUSUM normal control limit.
4	$N' = \textbf{N} * (\textbf{N}-1) / 2$ $= \textbf{18} * (\textbf{18}-1) / 2$ $= \textbf{153}$	Number of sample pairs during trend detection period.
5	$S = \textbf{-46.655}$	Sen's estimator of trend.
6	$var(S) = \textbf{695.0}$	Variance estimate for slope.
7	$M_1(S) = (\textbf{N'} - \textbf{Z}_{.99} * \textbf{var(S)}^{1/2}) / 2$ $= (\textbf{153} - \textbf{2.326} * \textbf{695.0}^{1/2}) / 2$ $= \textbf{45.84}$	Ordinal position for one-sided lower confidence limit for slope. The LCL is the M_1^{th} largest slope estimate. When M_1 is not an integer, interpolation is used.
8	$LCL(S) = \textbf{-66.423}$	One-sided lower confidence limit for slope.

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Calcium, Total (mg/L) at CBL-306I
Normal Control Limit

Step	Equation	Description
1	$\bar{X}$ = **sum[X]** / **N** = **3437.0** / **16** = **214.813**	Compute background mean.
2	S = ((**sum[X^2] - sum[X]^2/N**) / (**N**-1))^{½} = ((**758029.0 - 1.18×10^7/16**) / (**16**-1))^{½} = **36.257**	Compute background sd.
3	SCL = $\bar{X}$ + **F** * **S** = **214.813** + **5.0** * **36.257** = **396.097**	Compute combined Shewhart-CUSUM normal control limit.
4	N' = **N** * (**N**-1) / 2 = **16** * (**16**-1) / 2 = **120**	Number of sample pairs during trend detection period.
5	S = **9.18**	Sen's estimator of trend.
6	var(S) = **493.333**	Variance estimate for slope.
7	M_1(S) = (**N' - $Z_{.99}$** * **var(S)**^{½}) / 2 = (**120** - **2.326** * **493.333**^{½}) / 2 = **34.168**	Ordinal position for one-sided lower confidence limit for slope. The LCL is the M_1th largest slope estimate. When M_1 is not an integer, interpolation is used.
8	LCL(S) = **-4.826**	One-sided lower confidence limit for slope.

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Calcium, Total (mg/L) at CBL-308I
Normal Control Limit

Step	Equation	Description
1	$\bar{X}$ = **sum[X]** / **N**	Compute background mean.
	= **15450.0** / **18**	
	= **858.333**	
2	$S = ((\mathbf{sum[X^2]} - \mathbf{sum[X]}^2/\mathbf{N}) / (\mathbf{N}-1))^{1/2}$	Compute background sd.
	$= ((\mathbf{1.34{\times}10^7} - \mathbf{2.39{\times}10^8}/\mathbf{18}) / (\mathbf{18}-1))^{1/2}$	
	= **82.361**	
3	SCL = $\bar{\mathbf{X}}$ + **F** * **S**	Compute combined Shewhart-CUSUM normal control limit.
	= **858.333** + **5.0** * **82.361**	
	= **1270.141**	
4	N' = **N** * (**N**-1) / 2	Number of sample pairs during trend detection period.
	= **18** * (**18**-1) / 2	
	= **153**	
5	S = **-24.047**	Sen's estimator of trend.
6	var(S) = **697.0**	Variance estimate for slope.
7	$M_1(S) = (\mathbf{N'} - \mathbf{Z}_{.99} * \mathbf{var(S)}^{1/2}) / 2$	Ordinal position for one-sided lower confidence limit for slope. The LCL is the M_1^{th} largest slope estimate. When M_1 is not an integer, interpolation is used.
	$= (\mathbf{153} - \mathbf{2.326} * \mathbf{697.0}^{1/2}) / 2$	
	= **45.796**	
8	LCL(S) = **-45.396**	One-sided lower confidence limit for slope.

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Calcium, Total (mg/L) at CBL-341I
Normal Control Limit

Step	Equation	Description
1	$\overline{X} = \mathbf{sum[X]} / \mathbf{N}$ $= \mathbf{15196.0} / \mathbf{18}$ $= \mathbf{844.222}$	Compute background mean.
2	$S = ((\mathbf{sum[X^2] - sum[X]^2/N}) / (\mathbf{N}-1))^{½}$ $= ((\mathbf{1.29 \times 10^7 - 2.31 \times 10^8/18}) / (\mathbf{18}-1))^{½}$ $= \mathbf{79.475}$	Compute background sd.
3	$SCL = \overline{\mathbf{X}} + \mathbf{F} * \mathbf{S}$ $= \mathbf{844.222} + \mathbf{5.0} * \mathbf{79.475}$ $= \mathbf{1241.598}$	Compute combined Shewhart-CUSUM normal control limit.
4	$N' = \mathbf{N} * (\mathbf{N}-1) / 2$ $= \mathbf{18} * (\mathbf{18}-1) / 2$ $= \mathbf{153}$	Number of sample pairs during trend detection period.
5	$S = \mathbf{-24.621}$	Sen's estimator of trend.
6	$var(S) = \mathbf{697.0}$	Variance estimate for slope.
7	$M_1(S) = (\mathbf{N'} - \mathbf{Z_{.99}} * \mathbf{var(S)}^{½}) / 2$ $= (\mathbf{153} - \mathbf{2.326} * \mathbf{697.0}^{½}) / 2$ $= \mathbf{45.796}$	Ordinal position for one-sided lower confidence limit for slope. The LCL is the M_1th largest slope estimate. When M_1 is not an integer, interpolation is used.
8	$LCL(S) = \mathbf{-46.4}$	One-sided lower confidence limit for slope.

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Chloride (mg/L) at CBL-301I
Normal Control Limit

Step	Equation	Description
1	$\bar{X}$ = **sum[X]** / **N**	Compute background mean.
	= **41390.0** / **18**	
	= **2299.444**	
2	S = ((**sum[X^2] - sum[X]^2/N**) / (**N**-1))^{½}	Compute background sd.
	= ((**9.75**x**10^7** - **1.71**x**10^9**/**18**) / (**18**-1))^{½}	
	= **372.424**	
3	SCL = $\bar{\mathbf{X}}$ + **F** * **S**	Compute combined Shewhart-CUSUM normal control limit.
	= **2299.444** + **5.0** * **372.424**	
	= **4161.565**	
4	N' = **N** * (**N**-1) / 2	Number of sample pairs during trend detection period.
	= **18** * (**18**-1) / 2	
	= **153**	
5	S = **10.311**	Sen's estimator of trend.
6	var(S) = **696.0**	Variance estimate for slope.
7	M_1(S) = (**N' - $Z_{.99}$** * **var(S)**^{½}) / 2	Ordinal position for one-sided lower confidence limit for slope. The LCL is the M_1^{th} largest slope estimate. When M_1 is not an integer, interpolation is used.
	= (**153** - **2.326** * **696.0**^{½}) / 2	
	= **45.818**	
8	LCL(S) = **-82.048**	One-sided lower confidence limit for slope.

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Chloride (mg/L) at CBL-302I
Normal Control Limit

Step	Equation	Description
1	$\bar{X}$ = **sum[X]** / **N** = **32970.0** / **18** = **1831.667**	Compute background mean.
2	$S = ((\mathbf{sum[X^2]} - \mathbf{sum[X]}^2/\mathbf{N}) / (\mathbf{N}-1))^{1/2}$ $= ((\mathbf{6.26{\times}10^7} - \mathbf{1.09{\times}10^9/18}) / (\mathbf{18}-1))^{1/2}$ = **360.265**	Compute background sd.
3	SCL = $\bar{\mathbf{X}}$ + **F** * **S** = **1831.667** + **5.0** * **360.265** = **3632.994**	Compute combined Shewhart-CUSUM normal control limit.
4	N' = **N** * (**N**-1) / 2 = **18** * (**18**-1) / 2 = **153**	Number of sample pairs during trend detection period.
5	S = **-159.984**	Sen's estimator of trend.
6	var(S) = **695.0**	Variance estimate for slope.
7	$M_1(S) = (\mathbf{N'} - \mathbf{Z}_{.99} * \mathbf{var(S)}^{1/2}) / 2$ $= (\mathbf{153} - \mathbf{2.326} * \mathbf{695.0}^{1/2}) / 2$ = **45.84**	Ordinal position for one-sided lower confidence limit for slope. The LCL is the M_1^{th} largest slope estimate. When M_1 is not an integer, interpolation is used.
8	LCL(S) = **-190.868**	One-sided lower confidence limit for slope.

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Chloride (mg/L) at CBL-306I
Normal Control Limit

Step	Equation	Description
1	$\bar{X} = \mathbf{sum[X]} / \mathbf{N}$ $= \mathbf{4810.0} / \mathbf{16}$ $= \mathbf{300.625}$	Compute background mean.
2	$S = ((\mathbf{sum[X^2] - sum[X]}^2/\mathbf{N}) / (\mathbf{N}-1))^{1/2}$ $= ((\mathbf{1.55{\times}10^6 - 2.31{\times}10^7/16}) / (\mathbf{16}-1))^{1/2}$ $= \mathbf{82.083}$	Compute background sd.
3	$SCL = \bar{\mathbf{X}} + \mathbf{F} * \mathbf{S}$ $= \mathbf{300.625} + \mathbf{5.0} * \mathbf{82.083}$ $= \mathbf{711.039}$	Compute combined Shewhart-CUSUM normal control limit.
4	$N' = \mathbf{N} * (\mathbf{N}-1) / 2$ $= \mathbf{16} * (\mathbf{16}-1) / 2$ $= \mathbf{120}$	Number of sample pairs during trend detection period.
5	$S = \mathbf{16.104}$	Sen's estimator of trend.
6	$var(S) = \mathbf{493.333}$	Variance estimate for slope.
7	$M_1(S) = (\mathbf{N' - Z_{.99} * var(S)}^{1/2}) / 2$ $= (\mathbf{120 - 2.326 * 493.333}^{1/2}) / 2$ $= \mathbf{34.168}$	Ordinal position for one-sided lower confidence limit for slope. The LCL is the M_1 th largest slope estimate. When M_1 is not an integer, interpolation is used.
8	$LCL(S) = \mathbf{-15.759}$	One-sided lower confidence limit for slope.

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Chloride (mg/L) at CBL-308I
Normal Control Limit

Step	Equation	Description
1	$\bar{X}$ = **sum[X]** / **N** = **44230.0** / **18** = **2457.222**	Compute background mean.
2	S = ((**sum[X^2] - sum[X]^2/N**) / (**N**-1))^{½} = ((**1.10x10^8** - **1.96x10^9/18**) / (**18**-1))^{½} = **303.175**	Compute background sd.
3	SCL = $\bar{X}$ + **F** * **S** = **2457.222** + **5.0** * **303.175** = **3973.1**	Compute combined Shewhart-CUSUM normal control limit.
4	N' = **N** * (**N**-1) / 2 = **18** * (**18**-1) / 2 = **153**	Number of sample pairs during trend detection period.
5	S = **-106.468**	Sen's estimator of trend.
6	var(S) = **695.0**	Variance estimate for slope.
7	M_1(S) = (**N' - $Z_{.99}$** * **var(S)**^{½}) / 2 = (**153 - 2.326** * **695.0**^{½}) / 2 = **45.84**	Ordinal position for one-sided lower confidence limit for slope. The LCL is the M_1^{th} largest slope estimate. When M_1 is not an integer, interpolation is used.
8	LCL(S) = **-174.502**	One-sided lower confidence limit for slope.

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Chloride (mg/L) at CBL-341I
Normal Control Limit

Step	Equation	Description
1	$\overline{X}$ = **sum[X]** / **N**	Compute background mean.
	= **32540.0** / **18**	
	= **1807.778**	
2	S = ((**sum[X^2] - sum[X]^2**/**N**) / (**N**-1))$^{1/2}$	Compute background sd.
	= ((**5.91**x**10^7** - **1.06**x**10^9**/**18**) / (**18**-1))$^{1/2}$	
	= **129.14**	
3	SCL = $\overline{\mathbf{X}}$ + **F** * **S**	Compute combined Shewhart-CUSUM normal control limit.
	= **1807.778** + **5.0** * **129.14**	
	= **2453.477**	
4	N' = **N** * (**N**-1) / 2	Number of sample pairs during trend detection period.
	= **18** * (**18**-1) / 2	
	= **153**	
5	S = **-16.82**	Sen's estimator of trend.
6	var(S) = **696.0**	Variance estimate for slope.
7	M_1(S) = (**N' - $Z_{.99}$** * **var(S)**$^{1/2}$) / 2	Ordinal position for one-sided lower confidence limit for slope. The LCL is the M_1^{th} largest slope estimate. When M_1 is not an integer, interpolation is used.
	= (**153** - **2.326** * **696.0**$^{1/2}$) / 2	
	= **45.818**	
8	LCL(S) = **-57.489**	One-sided lower confidence limit for slope.

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Fluoride (mg/L) at CBL-301I
Normal Control Limit

Step	Equation	Description
1	$\overline{X}$ = **sum[X]** / **N**	Compute background mean.
	= **10.16** / **20**	
	= **0.508**	
2	S = ((**sum[X^2]** - **sum[X]**^{2}/**N**) / (**N**-1))^{½}	Compute background sd.
	= ((**10.634** - **103.226/20**) / (**20**-1))^{½}	
	= **0.537**	
3	SCL = $\overline{\mathbf{X}}$ + **F** * **S**	Compute combined Shewhart-CUSUM normal control limit.
	= **0.508** + **5.0** * **0.537**	
	= **3.191**	
4	N' = **N** * (**N**-1) / 2	Number of sample pairs during trend detection period.
	= **20** * (**20**-1) / 2	
	= **190**	
5	S = **0.0**	Sen's estimator of trend.
6	var(S) = **681.333**	Variance estimate for slope.
7	M_1(S) = (**N' - Z$_{.99}$** * **var(S)**^{½}) / 2	Ordinal position for one-sided lower confidence limit for slope. The LCL is the M_1th largest slope estimate. When M_1 is not an integer, interpolation is used.
	= (**190** - **2.326** * **681.333**^{½}) / 2	
	= **64.643**	
8	LCL(S) = **-0.035**	One-sided lower confidence limit for slope.

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Fluoride (mg/L) at CBL-302I
Normal Control Limit

Step	Equation	Description
1	$\bar{X} = \mathbf{sum[X]} / \mathbf{N}$ $= \mathbf{9.153} / \mathbf{19}$ $= \mathbf{0.482}$	Compute background mean.
2	$S = ((\mathbf{sum[X^2] - sum[X]}^2/\mathbf{N}) / (\mathbf{N}-1))^{1/2}$ $= ((\mathbf{8.255 - 83.772/19}) / (\mathbf{19}-1))^{1/2}$ $= \mathbf{0.462}$	Compute background sd.
3	$SCL = \bar{\mathbf{X}} + \mathbf{F} * \mathbf{S}$ $= \mathbf{0.482} + \mathbf{5.0} * \mathbf{0.462}$ $= \mathbf{2.793}$	Compute combined Shewhart-CUSUM normal control limit.
4	$N' = \mathbf{N} * (\mathbf{N}-1) / 2$ $= \mathbf{19} * (\mathbf{19}-1) / 2$ $= \mathbf{171}$	Number of sample pairs during trend detection period.
5	$S = \mathbf{0.0}$	Sen's estimator of trend.
6	$var(S) = \mathbf{604.333}$	Variance estimate for slope.
7	$M_1(S) = (\mathbf{N' - Z_{.99} * var(S)}^{1/2}) / 2$ $= (\mathbf{171 - 2.326 * 604.333}^{1/2}) / 2$ $= \mathbf{56.91}$	Ordinal position for one-sided lower confidence limit for slope. The LCL is the M_1^{th} largest slope estimate. When M_1 is not an integer, interpolation is used.
8	$LCL(S) = \mathbf{-0.031}$	One-sided lower confidence limit for slope.

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Fluoride (mg/L) at CBL-306I
Normal Control Limit

Step	Equation	Description
1	$\overline{X}$ = **sum[X]** / **N**	Compute background mean.
	= **40.73** / **17**	
	= **2.396**	
2	S = ((**sum[X²] - sum[X]**^{2}/**N**) / (**N**-1))$^{1/2}$	Compute background sd.
	= ((**102.838** - **1658.933/17**) / (**17**-1))$^{1/2}$	
	= **0.573**	
3	SCL = $\overline{\mathbf{X}}$ + **F** * **S**	Compute combined Shewhart-CUSUM normal control limit.
	= **2.396** + **5.0** * **0.573**	
	= **5.261**	
4	N' = **N** * (**N**-1) / 2	Number of sample pairs during trend detection period.
	= **17** * (**17**-1) / 2	
	= **136**	
5	S = **0.119**	Sen's estimator of trend.
6	var(S) = **589.333**	Variance estimate for slope.
7	M_1(S) = (**N'** - **Z**$_{.99}$ * **var(S)**$^{1/2}$) / 2	Ordinal position for one-sided lower confidence limit for slope. The LCL is the M_1^{th} largest slope estimate. When M_1 is not an integer, interpolation is used.
	= (**136** - **2.326** * **589.333**$^{1/2}$) / 2	
	= **39.767**	
8	LCL(S) = **-0.032**	One-sided lower confidence limit for slope.

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Fluoride (mg/L) at CBL-308I
Normal Control Limit

Step	Equation	Description
1	$\bar{X} = \textbf{sum[X]} / \textbf{N}$ $= \textbf{28.4} / \textbf{17}$ $= \textbf{1.671}$	Compute background mean.
2	$S = ((\textbf{sum[X}^{\textbf{2}}\textbf{]} - \textbf{sum[X]}^2/\textbf{N}) / (\textbf{N}-1))^{1/2}$ $= ((\textbf{48.489} - \textbf{806.56}/\textbf{17}) / (\textbf{17}-1))^{1/2}$ $= \textbf{0.255}$	Compute background sd.
3	$SCL = \bar{\textbf{X}} + \textbf{F} * \textbf{S}$ $= \textbf{1.671} + \textbf{5.0} * \textbf{0.255}$ $= \textbf{2.948}$	Compute combined Shewhart-CUSUM normal control limit.
4	$N' = \textbf{N} * (\textbf{N}-1) / 2$ $= \textbf{17} * (\textbf{17}-1) / 2$ $= \textbf{136}$	Number of sample pairs during trend detection period.
5	$S = \textbf{-0.02}$	Sen's estimator of trend.
6	$var(S) = \textbf{588.333}$	Variance estimate for slope.
7	$M_1(S) = (\textbf{N'} - \textbf{Z}_{.99} * \textbf{var(S)}^{1/2}) / 2$ $= (\textbf{136} - \textbf{2.326} * \textbf{588.333}^{1/2}) / 2$ $= \textbf{39.791}$	Ordinal position for one-sided lower confidence limit for slope. The LCL is the M_1th largest slope estimate. When M_1 is not an integer, interpolation is used.
8	$LCL(S) = \textbf{-0.111}$	One-sided lower confidence limit for slope.

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Fluoride (mg/L) at CBL-341I
Normal Control Limit

Step	Equation	Description
1	$\bar{X} = \textbf{sum[X]} / \textbf{N}$ $= \textbf{7.116} / \textbf{19}$ $= \textbf{0.375}$	Compute background mean.
2	$S = ((\textbf{sum[X}^{\textbf{2}}\textbf{]} - \textbf{sum[X]}^2/\textbf{N}) / (\textbf{N}-1))^{1/2}$ $= ((\textbf{3.957} - \textbf{50.632}/\textbf{19}) / (\textbf{19}-1))^{1/2}$ $= \textbf{0.268}$	Compute background sd.
3	$SCL = \bar{\textbf{X}} + \textbf{F} * \textbf{S}$ $= \textbf{0.375} + \textbf{5.0} * \textbf{0.268}$ $= \textbf{1.714}$	Compute combined Shewhart-CUSUM normal control limit.
4	$N' = \textbf{N} * (\textbf{N}-1) / 2$ $= \textbf{19} * (\textbf{19}-1) / 2$ $= \textbf{171}$	Number of sample pairs during trend detection period.
5	$S = \textbf{0.0}$	Sen's estimator of trend.
6	$var(S) = \textbf{751.667}$	Variance estimate for slope.
7	$M_1(S) = (\textbf{N'} - \textbf{Z}_{.99} * \textbf{var(S)}^{1/2}) / 2$ $= (\textbf{171} - \textbf{2.326} * \textbf{751.667}^{1/2}) / 2$ $= \textbf{53.615}$	Ordinal position for one-sided lower confidence limit for slope. The LCL is the M_1^{th} largest slope estimate. When M_1 is not an integer, interpolation is used.
8	$LCL(S) = \textbf{-0.133}$	One-sided lower confidence limit for slope.

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
pH (S.U.) at CBL-301I
Normal Control Limit

Step	Equation	Description
1	$\bar{X}$ = **sum[X]** / **N**	Compute background mean.
	= **136.43** / **22**	
	= **6.201**	
2	S = ((**sum[X^2]** - **sum[X]**^{2}/**N**) / (**N**-1))^{½}	Compute background sd.
	= ((**847.258** - **18613.145/22**) / (**22**-1))^{½}	
	= **0.24**	
3	SCL = **$\bar{X}$** ± **F** * **S**	Compute combined Shewhart-CUSUM normal control interval.
	= **6.201** ± **5.0** * **0.24**	
	= **5.003**, **7.4**	
4	N' = **N** * (**N**-1) / 2	Number of sample pairs during trend detection period.
	= **22** * (**22**-1) / 2	
	= **231**	
5	S = **-0.007**	Sen's estimator of trend.
6	var(S) = **1248.333**	Variance estimate for slope.
7	M_1(S) = (**N' - Z$_{.99}$** * **var(S)**^{½}) / 2	Ordinal position for one-sided lower confidence limit for slope. The LCL is the M_1th largest slope estimate. When M_1 is not an integer, interpolation is used.
	= (**231** - **2.326** * **1248.333**^{½}) / 2	
	= **74.409**	
8	LCL(S) = **-0.036**	One-sided lower confidence limit for slope.

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
pH (S.U.) at CBL-302I
Normal Control Limit

Step	Equation	Description
1	$\bar{X} = \mathbf{sum[X]} / \mathbf{N}$ $= \mathbf{115.31} / \mathbf{19}$ $= \mathbf{6.069}$	Compute background mean.
2	$S = ((\mathbf{sum[X^2]} - \mathbf{sum[X]}^2/\mathbf{N}) / (\mathbf{N}-1))^{1/2}$ $= ((\mathbf{706.23} - \mathbf{13296.396}/\mathbf{19}) / (\mathbf{19}-1))^{1/2}$ $= \mathbf{0.597}$	Compute background sd.
3	$SCL = \bar{\mathbf{X}} \pm \mathbf{F} * \mathbf{S}$ $= \mathbf{6.069} \pm \mathbf{5.0} * \mathbf{0.597}$ $= \mathbf{3.083}, \mathbf{9.055}$	Compute combined Shewhart-CUSUM normal control interval.
4	$N' = \mathbf{N} * (\mathbf{N}-1) / 2$ $= \mathbf{19} * (\mathbf{19}-1) / 2$ $= \mathbf{171}$	Number of sample pairs during trend detection period.
5	$S = \mathbf{0.044}$	Sen's estimator of trend.
6	$var(S) = \mathbf{812.333}$	Variance estimate for slope.
7	$M_1(S) = (\mathbf{N'} - \mathbf{Z}_{.99} * \mathbf{var(S)}^{1/2}) / 2$ $= (\mathbf{171} - \mathbf{2.326} * \mathbf{812.333}^{1/2}) / 2$ $= \mathbf{52.353}$	Ordinal position for one-sided lower confidence limit for slope. The LCL is the M_1 th largest slope estimate. When M_1 is not an integer, interpolation is used.
8	$LCL(S) = \mathbf{-0.04}$	One-sided lower confidence limit for slope.

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
pH (S.U.) at CBL-306I
Normal Control Limit

Step	Equation	Description
1	$\bar{X} = \textbf{sum[X]} / \textbf{N}$ $= \textbf{119.66} / \textbf{18}$ $= \textbf{6.648}$	Compute background mean.
2	$S = ((\textbf{sum[X}^2\textbf{]} - \textbf{sum[X]}^2/\textbf{N}) / (\textbf{N}-1))^{1/2}$ $= ((\textbf{802.809} - \textbf{14318.516}/\textbf{18}) / (\textbf{18}-1))^{1/2}$ $= \textbf{0.657}$	Compute background sd.
3	$SCL = \bar{\textbf{X}} \pm \textbf{F} * \textbf{S}$ $= \textbf{6.648} \pm \textbf{5.0} * \textbf{0.657}$ $= \textbf{3.363}, \textbf{9.932}$	Compute combined Shewhart-CUSUM normal control interval.
4	$N' = \textbf{N} * (\textbf{N}-1) / 2$ $= \textbf{18} * (\textbf{18}-1) / 2$ $= \textbf{153}$	Number of sample pairs during trend detection period.
5	$S = \textbf{-0.011}$	Sen's estimator of trend.
6	$var(S) = \textbf{696.0}$	Variance estimate for slope.
7	$M_1(S) = (\textbf{N'} - \textbf{Z}_{.99} * \textbf{var(S)}^{1/2}) / 2$ $= (\textbf{153} - \textbf{2.326} * \textbf{696.0}^{1/2}) / 2$ $= \textbf{45.818}$	Ordinal position for one-sided lower confidence limit for slope. The LCL is the M_1th largest slope estimate. When M_1 is not an integer, interpolation is used.
8	$LCL(S) = \textbf{-0.094}$	One-sided lower confidence limit for slope.

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
pH (S.U.) at CBL-308I
Normal Control Limit

Step	Equation	Description
1	$\bar{X} = \textbf{sum[X]} / \textbf{N}$ $= \textbf{112.19} / \textbf{18}$ $= \textbf{6.233}$	Compute background mean.
2	$S = (\,(\textbf{sum[X}^{\textbf{2}}\textbf{]} - \textbf{sum[X]}^2/\textbf{N}) / (\textbf{N}-1)\,)^{½}$ $= (\,(\textbf{700.296} - \textbf{12586.596/18}) / (\textbf{18}-1)\,)^{½}$ $= \textbf{0.247}$	Compute background sd.
3	$SCL = \bar{\textbf{X}} \pm \textbf{F} * \textbf{S}$ $= \textbf{6.233} \pm \textbf{5.0} * \textbf{0.247}$ $= \textbf{4.996}, \textbf{7.47}$	Compute combined Shewhart-CUSUM normal control interval.
4	$N' = \textbf{N} * (\textbf{N}-1) / 2$ $= \textbf{18} * (\textbf{18}-1) / 2$ $= \textbf{153}$	Number of sample pairs during trend detection period.
5	$S = \textbf{-0.002}$	Sen's estimator of trend.
6	$var(S) = \textbf{691.333}$	Variance estimate for slope.
7	$M_1(S) = (\textbf{N'} - \textbf{Z}_{.99} * \textbf{var(S)}^{½}) / 2$ $= (\textbf{153} - \textbf{2.326} * \textbf{691.333}^{½}) / 2$ $= \textbf{45.921}$	Ordinal position for one-sided lower confidence limit for slope. The LCL is the M_1 th largest slope estimate. When M_1 is not an integer, interpolation is used.
8	$LCL(S) = \textbf{-0.03}$	One-sided lower confidence limit for slope.

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
pH (S.U.) at CBL-341I
Normal Control Limit

Step	Equation	Description
1	$\bar{X}$ = **sum[X]** / **N**	Compute background mean.
	= **108.89** / **18**	
	= **6.049**	
2	S = ((**sum[X^2] - sum[X]^2/N**) / (**N**-1))^{½}	Compute background sd.
	= ((**659.685** - **11857.032/18**) / (**18**-1))^{½}	
	= **0.238**	
3	SCL = $\bar{X}$ ± **F** * **S**	Compute combined Shewhart-CUSUM normal control interval.
	= **6.049** ± **5.0** * **0.238**	
	= **4.861**, **7.238**	
4	N' = **N** * (**N**-1) / 2	Number of sample pairs during trend detection period.
	= **18** * (**18**-1) / 2	
	= **153**	
5	S = **0.067**	Sen's estimator of trend.
6	var(S) = **696.0**	Variance estimate for slope.
7	M_1(S) = (**N' - $Z_{.99}$** * **var(S)**^{½}) / 2	Ordinal position for one-sided lower confidence limit for slope. The LCL is the M_1th largest slope estimate. When M_1 is not an integer, interpolation is used.
	= (**153** - **2.326** * **696.0**^{½}) / 2	
	= **45.818**	
8	LCL(S) = **-0.015**	One-sided lower confidence limit for slope.

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Sulfate (mg/L) at CBL-301I
Normal Control Limit

Step	Equation	Description
1	$\bar{X}$ = **sum[X]** / **N** = **6310.0** / **18** = **350.556**	Compute background mean.
2	S = ((**sum[X^2] - sum[X]^2**/**N**) / (**N**-1))$^{1/2}$ = ((**2.27**x**10^6** - **3.98**x**10^7**/**18**) / (**18**-1))$^{1/2}$ = **60.294**	Compute background sd.
3	SCL = $\bar{\mathbf{X}}$ + **F** * **S** = **350.556** + **5.0** * **60.294** = **652.024**	Compute combined Shewhart-CUSUM normal control limit.
4	N' = **N** * (**N**-1) / 2 = **18** * (**18**-1) / 2 = **153**	Number of sample pairs during trend detection period.
5	S = **6.483**	Sen's estimator of trend.
6	var(S) = **696.0**	Variance estimate for slope.
7	M_1(S) = (**N' - $Z_{.99}$** * **var(S)**$^{1/2}$) / 2 = (**153** - **2.326** * **696.0**$^{1/2}$) / 2 = **45.818**	Ordinal position for one-sided lower confidence limit for slope. The LCL is the M_1^{th} largest slope estimate. When M_1 is not an integer, interpolation is used.
8	LCL(S) = **-8.207**	One-sided lower confidence limit for slope.

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Sulfate (mg/L) at CBL-302I
Normal Control Limit

Step	Equation	Description
1	$\bar{X} = \mathbf{sum[X]} / \mathbf{N}$ $= \mathbf{22013.0} / \mathbf{18}$ $= \mathbf{1222.944}$	Compute background mean.
2	$S = ((\mathbf{sum[X^2]} - \mathbf{sum[X]}^2/\mathbf{N}) / (\mathbf{N}-1))^{1/2}$ $= ((\mathbf{2.71 \times 10^7} - \mathbf{4.85 \times 10^8/18}) / (\mathbf{18}-1))^{1/2}$ $= \mathbf{114.114}$	Compute background sd.
3	$SCL = \bar{\mathbf{X}} + \mathbf{F} * \mathbf{S}$ $= \mathbf{1222.944} + \mathbf{5.0} * \mathbf{114.114}$ $= \mathbf{1793.513}$	Compute combined Shewhart-CUSUM normal control limit.
4	$N' = \mathbf{N} * (\mathbf{N}-1) / 2$ $= \mathbf{18} * (\mathbf{18}-1) / 2$ $= \mathbf{153}$	Number of sample pairs during trend detection period.
5	$S = \mathbf{45.342}$	Sen's estimator of trend.
6	$var(S) = \mathbf{695.0}$	Variance estimate for slope.
7	$M_1(S) = (\mathbf{N'} - \mathbf{Z_{.99}} * \mathbf{var(S)}^{1/2}) / 2$ $= (\mathbf{153} - \mathbf{2.326} * \mathbf{695.0}^{1/2}) / 2$ $= \mathbf{45.84}$	Ordinal position for one-sided lower confidence limit for slope. The LCL is the M_1^{th} largest slope estimate. When M_1 is not an integer, interpolation is used.
8	$LCL(S) = \mathbf{25.012}$	One-sided lower confidence limit for slope.
9	$LCL(S) > 0$	**Significant increasing trend.**

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Sulfate (mg/L) at CBL-306I
Normal Control Limit

Step	Equation	Description
1	$\bar{X}$ = **sum[X]** / **N** = **6599.0** / **17** = **388.176**	Compute background mean.
2	S = ((**sum[X^2] - sum[X]^2/N**) / (**N**-1))$^{1/2}$ = ((**2.76**x**10^6** - **4.35**x**10^7/17**) / (**17**-1))$^{1/2}$ = **110.356**	Compute background sd.
3	SCL = **$\bar{X}$** + **F** * **S** = **388.176** + **5.0** * **110.356** = **939.958**	Compute combined Shewhart-CUSUM normal control limit.
4	N' = **N** * (**N**-1) / 2 = **17** * (**17**-1) / 2 = **136**	Number of sample pairs during trend detection period.
5	S = **18.243**	Sen's estimator of trend.
6	var(S) = **589.333**	Variance estimate for slope.
7	M_1(S) = (**N' - $Z_{.99}$** * **var(S)**$^{1/2}$) / 2 = (**136** - **2.326** * **589.333**$^{1/2}$) / 2 = **39.767**	Ordinal position for one-sided lower confidence limit for slope. The LCL is the M_1^{th} largest slope estimate. When M_1 is not an integer, interpolation is used.
8	LCL(S) = **-14.639**	One-sided lower confidence limit for slope.

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Sulfate (mg/L) at CBL-308I
Normal Control Limit

Step	Equation	Description
1	$\bar{X} = \mathbf{sum[X]} / \mathbf{N}$ $= \mathbf{25640.0} / \mathbf{18}$ $= \mathbf{1424.444}$	Compute background mean.
2	$S = ((\mathbf{sum[X^2]} - \mathbf{sum[X]}^2/\mathbf{N}) / (\mathbf{N}-1))^{1/2}$ $= ((\mathbf{3.68 \times 10^7} - \mathbf{6.57 \times 10^8}/\mathbf{18}) / (\mathbf{18}-1))^{1/2}$ $= \mathbf{121.424}$	Compute background sd.
3	$SCL = \bar{\mathbf{X}} + \mathbf{F} * \mathbf{S}$ $= \mathbf{1424.444} + \mathbf{5.0} * \mathbf{121.424}$ $= \mathbf{2031.565}$	Compute combined Shewhart-CUSUM normal control limit.
4	$N' = \mathbf{N} * (\mathbf{N}-1) / 2$ $= \mathbf{18} * (\mathbf{18}-1) / 2$ $= \mathbf{153}$	Number of sample pairs during trend detection period.
5	$S = \mathbf{-41.243}$	Sen's estimator of trend.
6	$var(S) = \mathbf{693.0}$	Variance estimate for slope.
7	$M_1(S) = (\mathbf{N'} - \mathbf{Z_{.99}} * \mathbf{var(S)}^{1/2}) / 2$ $= (\mathbf{153} - \mathbf{2.326} * \mathbf{693.0}^{1/2}) / 2$ $= \mathbf{45.884}$	Ordinal position for one-sided lower confidence limit for slope. The LCL is the M_1th largest slope estimate. When M_1 is not an integer, interpolation is used.
8	$LCL(S) = \mathbf{-65.458}$	One-sided lower confidence limit for slope.

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Sulfate (mg/L) at CBL-341I
Normal Control Limit

Step	Equation	Description
1	$\bar{X}$ = **sum[X]** / **N** = **6287.0** / **18** = **349.278**	Compute background mean.
2	S = ((**sum[X^2] - sum[X]^2/N**) / (**N**-1))^{½} = ((**2.21x10^6 - 3.95x10^7/18**) / (**18**-1))^{½} = **32.89**	Compute background sd.
3	SCL = $\bar{\mathbf{X}}$ + **F** * **S** = **349.278** + **5.0** * **32.89** = **513.727**	Compute combined Shewhart-CUSUM normal control limit.
4	N' = **N** * (**N**-1) / 2 = **18** * (**18**-1) / 2 = **153**	Number of sample pairs during trend detection period.
5	S = **-10.817**	Sen's estimator of trend.
6	var(S) = **696.0**	Variance estimate for slope.
7	M_1(S) = (**N' - $Z_{.99}$** * **var(S)**^{½}) / 2 = (**153 - 2.326** * **696.0**^{½}) / 2 = **45.818**	Ordinal position for one-sided lower confidence limit for slope. The LCL is the M_1^{th} largest slope estimate. When M_1 is not an integer, interpolation is used.
8	LCL(S) = **-19.435**	One-sided lower confidence limit for slope.

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Total Dissolved Solids (mg/L) at CBL-301I
Normal Control Limit

Step	Equation	Description
1	$\bar{X} = \textbf{sum[X]} / \textbf{N}$ $= \textbf{98000.0} / \textbf{18}$ $= \textbf{5444.444}$	Compute background mean.
2	$S = ((\textbf{sum[X}^{\textbf{2}}\textbf{]} - \textbf{sum[X]}^2/\textbf{N}) / (\textbf{N}-1))^{½}$ $= ((\textbf{5.44}\times\textbf{10}^{\textbf{8}} - \textbf{9.60}\times\textbf{10}^{\textbf{9}}/\textbf{18}) / (\textbf{18}-1))^{½}$ $= \textbf{767.695}$	Compute background sd.
3	$SCL = \bar{\textbf{X}} + \textbf{F} * \textbf{S}$ $= \textbf{5444.444} + \textbf{5.0} * \textbf{767.695}$ $= \textbf{9282.919}$	Compute combined Shewhart-CUSUM normal control limit.
4	$N' = \textbf{N} * (\textbf{N}-1) / 2$ $= \textbf{18} * (\textbf{18}-1) / 2$ $= \textbf{153}$	Number of sample pairs during trend detection period.
5	$S = \textbf{8.889}$	Sen's estimator of trend.
6	$var(S) = \textbf{697.0}$	Variance estimate for slope.
7	$M_1(S) = (\textbf{N'} - \textbf{Z}_{.99} * \textbf{var(S)}^{½}) / 2$ $= (\textbf{153} - \textbf{2.326} * \textbf{697.0}^{½}) / 2$ $= \textbf{45.796}$	Ordinal position for one-sided lower confidence limit for slope. The LCL is the M_1^{th} largest slope estimate. When M_1 is not an integer, interpolation is used.
8	$LCL(S) = \textbf{-248.456}$	One-sided lower confidence limit for slope.

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Total Dissolved Solids (mg/L) at CBL-302I
Normal Control Limit

Step	Equation	Description
1	$\bar{X} = \mathbf{sum[X]} / \mathbf{N}$ $= \mathbf{95610.0} / \mathbf{18}$ $= \mathbf{5311.667}$	Compute background mean.
2	$S = ((\mathbf{sum[X^2] - sum[X]^2/N}) / (\mathbf{N}-1))^{½}$ $= ((\mathbf{5.18{\times}10^8 - 9.14{\times}10^9/18}) / (\mathbf{18}-1))^{½}$ $= \mathbf{764.87}$	Compute background sd.
3	$SCL = \bar{\mathbf{X}} + \mathbf{F} * \mathbf{S}$ $= \mathbf{5311.667} + \mathbf{5.0} * \mathbf{764.87}$ $= \mathbf{9136.018}$	Compute combined Shewhart-CUSUM normal control limit.
4	$N' = \mathbf{N} * (\mathbf{N}-1) / 2$ $= \mathbf{18} * (\mathbf{18}-1) / 2$ $= \mathbf{153}$	Number of sample pairs during trend detection period.
5	$S = \mathbf{-219.811}$	Sen's estimator of trend.
6	$var(S) = \mathbf{696.0}$	Variance estimate for slope.
7	$M_1(S) = (\mathbf{N' - Z_{.99} * var(S)^{½}}) / 2$ $= (\mathbf{153 - 2.326 * 696.0^{½}}) / 2$ $= \mathbf{45.818}$	Ordinal position for one-sided lower confidence limit for slope. The LCL is the M_1^{th} largest slope estimate. When M_1 is not an integer, interpolation is used.
8	$LCL(S) = \mathbf{-407.793}$	One-sided lower confidence limit for slope.

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Total Dissolved Solids (mg/L) at CBL-306I
Normal Control Limit

Step	Equation	Description
1	$\bar{X} = \mathbf{sum[X]} / \mathbf{N}$ $= \mathbf{24430.0} / \mathbf{17}$ $= \mathbf{1437.059}$	Compute background mean.
2	$S = ((\mathbf{sum[X^2]} - \mathbf{sum[X]}^2/\mathbf{N}) / (\mathbf{N}-1))^{½}$ $= ((\mathbf{3.62{\times}10^7} - \mathbf{5.97{\times}10^8}/\mathbf{17}) / (\mathbf{17}-1))^{½}$ $= \mathbf{267.085}$	Compute background sd.
3	$SCL = \bar{\mathbf{X}} + \mathbf{F} * \mathbf{S}$ $= \mathbf{1437.059} + \mathbf{5.0} * \mathbf{267.085}$ $= \mathbf{2772.485}$	Compute combined Shewhart-CUSUM normal control limit.
4	$N' = \mathbf{N} * (\mathbf{N}-1) / 2$ $= \mathbf{17} * (\mathbf{17}-1) / 2$ $= \mathbf{136}$	Number of sample pairs during trend detection period.
5	$S = \mathbf{76.005}$	Sen's estimator of trend.
6	$var(S) = \mathbf{586.333}$	Variance estimate for slope.
7	$M_1(S) = (\mathbf{N'} - \mathbf{Z}_{.99} * \mathbf{var(S)}^{½}) / 2$ $= (\mathbf{136} - \mathbf{2.326} * \mathbf{586.333}^{½}) / 2$ $= \mathbf{39.839}$	Ordinal position for one-sided lower confidence limit for slope. The LCL is the M_1th largest slope estimate. When M_1 is not an integer, interpolation is used.
8	$LCL(S) = \mathbf{-5.732}$	One-sided lower confidence limit for slope.

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Total Dissolved Solids (mg/L) at CBL-308I
Normal Control Limit

Step	Equation	Description
1	$\bar{X} = \textbf{sum[X]} / \textbf{N}$ $= \textbf{120540.0} / \textbf{18}$ $= \textbf{6696.667}$	Compute background mean.
2	$S = ((\textbf{sum[X}^2\textbf{]} - \textbf{sum[X]}^2/\textbf{N}) / (\textbf{N}-1))^{½}$ $= ((\textbf{8.40}\times\textbf{10}^8 - \textbf{1.45}\times\textbf{10}^{10}/\textbf{18}) / (\textbf{18}-1))^{½}$ $= \textbf{1385.271}$	Compute background sd.
3	$SCL = \bar{\textbf{X}} + \textbf{F} * \textbf{S}$ $= \textbf{6696.667} + \textbf{5.0} * \textbf{1385.271}$ $= \textbf{13623.023}$	Compute combined Shewhart-CUSUM normal control limit.
4	$N' = \textbf{N} * (\textbf{N}-1) / 2$ $= \textbf{18} * (\textbf{18}-1) / 2$ $= \textbf{153}$	Number of sample pairs during trend detection period.
5	$S = \textbf{-270.134}$	Sen's estimator of trend.
6	$var(S) = \textbf{697.0}$	Variance estimate for slope.
7	$M_1(S) = (\textbf{N'} - \textbf{Z}_{.99} * \textbf{var(S)}^{½}) / 2$ $= (\textbf{153} - \textbf{2.326} * \textbf{697.0}^{½}) / 2$ $= \textbf{45.796}$	Ordinal position for one-sided lower confidence limit for slope. The LCL is the M_1^{th} largest slope estimate. When M_1 is not an integer, interpolation is used.
8	$LCL(S) = \textbf{-711.043}$	One-sided lower confidence limit for slope.

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Total Dissolved Solids (mg/L) at CBL-341I
Normal Control Limit

Step	Equation	Description
1	$\bar{X}$ = **sum[X]** / **N** = **84020.0** / **18** = **4667.778**	Compute background mean.
2	S = ((**sum[X^2] - sum[X]^2**/**N**) / (**N**-1))^{½} = ((**3.97**x**10^8** - **7.06**x**10^9**/**18**) / (**18**-1))^{½} = **554.018**	Compute background sd.
3	SCL = $\bar{\mathbf{X}}$ + **F** * **S** = **4667.778** + **5.0** * **554.018** = **7437.868**	Compute combined Shewhart-CUSUM normal control limit.
4	N' = **N** * (**N**-1) / 2 = **18** * (**18**-1) / 2 = **153**	Number of sample pairs during trend detection period.
5	S = **-76.49**	Sen's estimator of trend.
6	var(S) = **696.0**	Variance estimate for slope.
7	M_1(S) = (**N' - $Z_{.99}$** * **var(S)**^{½}) / 2 = (**153** - **2.326** * **696.0**^{½}) / 2 = **45.818**	Ordinal position for one-sided lower confidence limit for slope. The LCL is the M_1^{th} largest slope estimate. When M_1 is not an integer, interpolation is used.
8	LCL(S) = **-305.108**	One-sided lower confidence limit for slope.

APPENDIX C

Results of the Groundwater Statistics for the Lower Colorado River Authority
Second Semi-Annual Monitoring Event in 2024
Otter Creek Environmental Services, LLC
November 2024

Results of the Ground Water Statistics

for Lower Colorado River Authority Fayette Power Project

Second Semi-Annual Monitoring Event in 2024

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INTRODUCTION

This report contains the results of the statistical analyses used to evaluate the groundwater data obtained during the second semi-annual monitoring event in 2024 at the Lower Colorado River Authority (LCRA) Fayette Power Project (FPP) Combustion Byproducts Landfill (CBL), the Coal Combustion Residuals (CCR) unit addressed in this report. The statistical analyses were completed within 90 days of receipt of the analytical data. The groundwater at the FPP is monitored by wells CBL-301I, CBL-302I, CBL-306I, CBL-308I, CBL-340I, and CBL-341I.

Statistical comparisons and evaluation for statistically significant increases (SSIs) are conducted on all wells with the exception of former background (side-gradient) monitoring well CBL-340I. Based on the Alternative Source Determination (ASD) study conducted in 2018, the identification of natural aquifer heterogeneity resulted in determination that CBL-340I could not be used to reliably characterize the background geochemistry of the groundwater flowing beneath the CCR unit. As such, intrawell analysis of wells potentially affected by CCR operation was selected at that time, and the need for use of CBL-340I geochemical data was negated. A Groundwater Monitoring System Addendum Certification was prepared in 2018, documenting the transition from former interwell analysis to intrawell analysis.

The statistical plan is designed to detect a release from the facility at the earliest indication. An intrawell methodology is described and then applied to the FPP data. The statistical method conforms with the Coal Combustion Residual (CCR) rule (40 CFR Part 257), USEPA Guidance document (*Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities, Unified Guidance,* March 2009), and the American Society for Testing and Materials (ASTM) standard D6312-98, *Developing Appropriate Statistical Approaches for Ground-Water Detection Monitoring Programs*. The intrawell statistical evaluations were completed within 90 days of receipt of laboratory data.

Ground Water Monitoring Program

The groundwater monitoring network for FPP includes background well CBL-340I and downgradient wells CBL-301I, CBL-302I, CBL-306I, CBL-308I, and CBL-341I. Each of the groundwater monitoring wells is to be sampled at least semiannually and analyzed for the detection monitoring parameters listed in Appendix III of 40 CFR Part 257, as follows:

Boron
Calcium
Chloride
Fluoride
pH
Sulfate
Total Dissolved Solids

Statistical analysis is conducted on data from all Groundwater Monitoring Plan (GMP) wells with the exception of CBL-340I, as described above. The groundwater data obtained for statistical evaluation during the second semi-annual monitoring event in 2024 are summarized in Attachment A. Historical Appendix III data is summarized in Attachment B.

STATISTICAL METHODOLOGIES FOR DETECTION MONITORING

The CCR rule for statistical analysis provides several options for evaluating the ground water data [40 CFR 257.93(f)]. As referenced in Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities, Unified Guidance (EPA 530/R-09-007), the preferred methods for comparing ground water data are using either prediction limits or using control charts. The control chart procedure offers an advantage over the prediction limits procedure as more data is generated over time, because the control chart procedure generates a graph of compliance data over time and allows for better identification of long-term trends.

An intrawell control chart method was applied to the FPP 2024 second semiannual data using the DUMPStat® statistical program. DUMPStat® is a program for the statistical analysis of groundwater monitoring data using methods described in “Statistical Methods for Groundwater Monitoring” by Dr. Robert D. Gibbons. Groundwater statistical analysis was conducted on the Appendix III constituents listed above.

Intrawell statistics

Intrawell statistics compare new measurements to the historical data at each groundwater monitoring well independently. The Unified Guidance-recommended technique for intrawell comparisons is the combined Shewhart-CUSUM control chart. This control chart procedure detects changes in analyte concentrations both in terms of constituent concentration and cumulative concentration increases. This method is also extremely sensitive to sudden and gradual releases. A requirement for constructing these control charts is that the parameter is detected at a frequency greater than or equal to 25%, otherwise the data variance is not properly defined (ASTM D 6312-98 *Standard Guide for Developing Appropriate Statistical Approaches for Ground-Water Detection Monitoring Programs*).

The combined Shewhart-CUSUM control chart assumes that the data are independent and normally distributed with a fixed mean and a constant variance. Independent data is much more critical than the normality assumption. To achieve independence, it is recommended that data are collected no more frequently than quarterly to account for seasonal variation. The combined Shewhart-CUSUM control chart is robust to deviations from normality. Because the control charts do not use a specific multiplier based on a normal distribution, it is more conservative to assume normality.

Some groundwater monitoring parameters are not detected at a frequency great enough to generate the combined Shewhart-CUSUM control charts. For constituents that are detected less than 25% of the time at a particular well, the data are plotted as a time series until a sufficient number of data points are available to provide a 99% confidence nonparametric prediction limit. Thirteen independent measurements (with 1 resample) are necessary to achieve a 99% confidence (1% false positive rate) nonparametric prediction limit. Eight independent measurements (for pass 1 of 2 resamples) are necessary to achieve a 99% confidence nonparametric prediction limit. The nonparametric prediction limit is the largest determination out of the data set collected for that well and parameter. If the detection frequency is 0% after thirteen samples have been collected, the practical quantitation limit (PQL) becomes the nonparametric prediction limit.

In developing the statistical background, the historical data must be thoroughly screened for anomalous data due to sample collection error or laboratory analysis error. An erroneous data point, if not removed prior to the mean and variance computations, would yield a larger control limit thus increasing the false negative rate. The DUMPStat® program screens the background for outliers using the Dixon test on values at least three times the median background concentration for intrawell analyses. If the Dixon test indicates a statistical outlier, the value will not be used in the mean and variance determinations. Anomalous data will still be plotted on the graphs (with a unique symbol) but will not be included in the calculations.

The verification resample plan is an integral function of the statistical plan to reduce the probability that anomalous data obtained after the background has been established is indicative of a landfill release. Should an indication of an SSI be identified, the resampling plan is implemented by the operator to collect a verification sample.

The background data for each well and constituent is tested for existing trends using Sen's nonparametric estimate of trend.

Results of the Intrawell Statistics

The Appendix III parameter data from wells CBL-301I, CBL-302I, CBL-306I, CBL-308I, and CBL-341I were evaluated using the combined Shewhart-CUSUM control chart method.

The initial background was established with the ProUCL software using data obtained in 2016 and 2017. Initial exceedances for boron at CBL-301I and boron at CBL-341I were reported following the second semi-annual monitoring in 2020. Since the boron concentrations determined subsequently in January 2021 at CBL-301I (<0.050 mg/L) and CBL-341I (<0.050 mg/L) do not exceed the baseline threshold values (BTV), the previous exceedances are not statistically significant. BTV will be analogous to control limits in this report and future reports. Background was later established to include historical data obtained from 2016 through 2020 using DUMPStats.

Monitoring well background data sets must be periodically updated with valid detection monitoring results that are representative of background groundwater quality. Failure to update background data sets will exclude factors such as natural temporal variation, changes in field or laboratory methodologies, and changes in the water table due to meteorological conditions or other influences. Since there were no exceedances attributed to the unit, the background data in this evaluation includes historical data obtained from 2016 through 2022 for wells CBL-301I, CBL-302I, CBL-306I, CBL-308I, and CBL-341I.

A summary of the intrawell statistics is included in Attachment C, Table 1 “Summary Statistics and Intermediate Computations for Combined Shewhart-CUSUM Control Charts.” The control charts or time series graphs follow the summary table.

For the parameters evaluated, there is a control limit exceedance detected for boron at CBL-341I. The CUSUM value for boron at CBL-341I (0.2013 mg/L) exceeded the normal control limit of 0.1803 mg/L, however, the boron concentration determined at CBL-341I (0.119 mg/L) did not exceed the limit.

A slight increasing trend was detected in the background data for sulfate at CBL-302I.

A control chart factor was selected to provide a balance of the site-wide false positive and false negative rates. A statistical power curve indicates the expected false assessments for the site as a whole. The site-wide false positive rate is 2% and the test becomes sensitive to 4 standard deviation units over background.

Monitoring well CBL-341I was resampled on October 1, 2024 and analyzed for boron. For the resample conducted, CUSUM value for boron at CBL-341I (0.2183 mg/L) exceeded the normal control limit of 0.1803 mg/L, however, the boron concentration determined at CBL-341I (0.136 mg/L) did not exceed the limit.

CONCLUSIONS

This document describes a comprehensive statistical plan designated for the FPP. The groundwater monitoring network for FPP consists of wells CBL-301I, CBL-302I, CBL-306I, CBL-308I, and CBL-341I. Each of the groundwater monitoring wells is sampled and analyzed for the detection monitoring parameters listed in Appendix III of 40 CFR Part 257. The current ground water data was compared to background using intrawell control charts. Using intrawell comparisons, there is a control limit exceedance detected for boron at CBL-341I. The boron concentration determined at CBL-341I is consistent with boron levels at each of the other monitoring wells.

Attachment A

Ground Water Data obtained during the Second Semi-Annual Monitoring Event in 2024

Table 1

Analytical Data Summary for 7/22/2024 to 7/23/2024

Constituents	Units	CBL-301I	CBL-302I	CBL-306I	CBL-308I	CBL-340I	CBL-341I
Boron, Total	mg/L	.082	.137	.134	.139	.181	.119
Calcium, Total	mg/L	912	845	115	683	560	801
Chloride	mg/L	2350.0	1650.0	10.2	2250.0	2480.0	1960.0
Fluoride	mg/L	<.100	.101	.823	.864	.521	<.100
pH	S.U.	6.45	6.41	6.54	6.53	6.12	6.39
Sulfate	mg/L	454.0	1370.0	70.7	1430.0	780.0	367.0
Total Dissolved Solids	mg/L	4580	4840	691	5810	5320	3700

* - The displayed value is the arithmetic mean of multiple database matches.

Table 2

Analytical Data Summary for 10/1/2024

Constituents	Units	CBL-341I
Boron, Total	mg/L	.136

* - The displayed value is the arithmetic mean of multiple database matches.

Attachment B

Historical Appendix III Ground Water Data

Table 1

Analytical Data Summary for CBL-301I

Constituents	Units	1/21/2016	5/4/2016	7/27/2016	10/24/2016	1/23/2017	3/22/2017	5/18/2017	7/26/2017	2/8/2018	7/25/2018	1/17/2019	5/2/2019	7/31/2019
Boron, Total	mg/L	<.0500	<.0500	<.0500	<.0500	<.0500	<.0500	.0707	<.0500	<.0500	<.0500	<.0500	<.0500	<.0500
Calcium, Total	mg/L	905	949	925	978	1000	1030	1060	961	873	993	156	762	783
Chloride	mg/L	2300	2160	2290	2250	3200	2390	2420	2500	2480	1330	619	1910	2240
Fluoride	mg/L	<.250	<.500	<.500	<.250	.312	<.500	<.500	<.500	<.500	<.500	.219	.112	.051
pH	S.U.	6.33	6.26	5.95	6.23	6.26	6.31	5.95	6.02	6.17	6.04	7.16	6.14	6.19
Sulfate	mg/L	336	311	336	326	488	337	342	381	344	196	104	398	332
Total Dissolved Solids	mg/L	4380	5050	6020	4570	6140	6570	6430	4290	5120	5390	1460	5650	6040

* - The displayed value is the arithmetic mean of multiple database matches.

Table 1

Analytical Data Summary for CBL-301I

Constituents	1/28/2020	9/17/2020	1/26/2021	7/20/2021	9/7/2021	1/26/2022	7/27/2022	8/30/2022	10/25/2022	1/25/2023	3/7/2023	8/2/2023	1/29/2024	7/23/2024
Boron, Total	<.0500	.0801	<.0500	.0826	<.0500	<.0500	.0850	.1070	.0645	.1080	.1020	<.0500	.1070	.0820
Calcium, Total	851	1060	1130	1100		999	1010			977		1260	1050	912
Chloride	2360	2270	2420	2590		2440	1840			1960		2220	2270	2350
Fluoride	.130	<.250	<.500	2.680	<.500	<.050	.156			1.720	<.050	.054	<.100	<.100
pH	6.26	6.13	6.06	6.13	6.14	6.27	6.08	6.14	6.21	6.34		6.21	6.35	6.45
Sulfate	349	350	374	419		406	285			1370	207	383	475	454
Total Dissolved Solids	4790	6340	6060	5870		4700	4590			5160		5360	4820	4580

* - The displayed value is the arithmetic mean of multiple database matches.

Table 2

Analytical Data Summary for CBL-302I

Constituents	Units	1/22/2016	5/4/2016	7/27/2016	10/24/2016	1/23/2017	3/22/2017	5/16/2017	7/27/2017	2/8/2018	7/27/2018	1/22/2019	7/31/2019	1/30/2020
Boron, Total	mg/L	<.0500	<.0500	<.0500	.1560	<.0500	.2970	<.0500	<.0500	<.0500	<.0500	<.0500	<.0500	<.0500
Calcium, Total	mg/L	1030	1010	1030	1070	1100	1090	1100	1040	934	995	855	914	838
Chloride	mg/L	2190	2130	2210	2170	2080	2050	2230	2040	2080	1980	1960	1540	1540
Fluoride	mg/L	<.2500	<.5000	<.5000	<.2500	.3320	<.5000	<.5000	<.5000	.1120	<.5000	.0402	.0605	.1930
pH	S.U.	6.29	6.01	5.17	7.75	5.36	5.40	4.94	6.20	6.21	5.77	6.44	6.15	6.34
Sulfate	mg/L	1020	993	1090	1180	1150	1120	1230	1180	1240	1390	1250	1260	1350
Total Dissolved Solids	mg/L	5500	5390	6850	4210	6430	6460	5860	5120	6010	5510	5060	4190	4790

* - The displayed value is the arithmetic mean of multiple database matches.

Table 2

Analytical Data Summary for CBL-302I

Constituents	9/17/2020	1/28/2021	7/21/2021	9/7/2021	1/27/2022	7/28/2022	1/26/2023	7/18/2023	1/29/2024	4/5/2024	7/22/2024
Boron, Total	<.0500	<.0500	.0743		<.0500	<.0500	.1160	<.0500	.1600	.1630	.1370
Calcium, Total	853	1020	844		754	750	889	981	937		845
Chloride	1410	1370	1380		1310	1300	1460	1330	1440		1650
Fluoride	<.2500	<.5000	2.2500	<.2500	<.0500	.1650	<.5000	1.7600	<.1000		.1010
pH	6.20	6.21	6.06	6.28	6.32	6.21	6.33	6.20	6.28		6.41
Sulfate	1280	1290	1350		1340	1300	1390	1230	1330		1370
Total Dissolved Solids	4990	4800	4810		4510	5120	4930	5150	4950		4840

* - The displayed value is the arithmetic mean of multiple database matches.

Table 3

Analytical Data Summary for CBL-306I

Constituents	Units	1/21/2016	5/4/2016	7/26/2016	10/24/2016	1/19/2017	3/22/2017	5/18/2017	7/27/2017	2/8/2018	7/27/2018	1/16/2019	7/31/2019	8/23/2019
Boron, Total	mg/L	<.0500	.0717	.0998	.0556	<.0500	.1240	.0832	.0531	<.0500	<.0500	<.0500	.0824	.0500
Calcium, Total	mg/L	137.0	47.2	105.0	198.0	174.0	204.0	205.0	234.0	230.0	275.0	180.0	106.0	226.0
Chloride	mg/L	155.0	20.0	114.0	330.0	197.0	231.0	289.0	350.0	385.0	283.0	215.0	538.0	318.0
Fluoride	mg/L	2.500	1.000	1.370	2.380	1.850	12.600	2.200	2.910	2.810	2.950	1.980	9.260	2.660
pH	S.U.	7.09	6.69	6.95	6.72	7.29	4.41	5.61	6.94	6.67	6.86	6.78	6.92	6.83
Sulfate	mg/L	266.0	29.5	139.0	432.0	270.0	340.0	412.0	513.0	493.0	406.0	292.0	816.0	387.0
Total Dissolved Solids	mg/L	1280	431	790	1150	1320	1460	1440	1280	1760	1450	1220	676	1710

* - The displayed value is the arithmetic mean of multiple database matches.

Table 3

Analytical Data Summary for CBL-306I

Constituents	1/29/2020	9/19/2020	1/28/2021	7/21/2021	1/27/2022	7/28/2022	1/26/2023	7/18/2023	1/29/2024	7/23/2024
Boron, Total	<.0500	.0773	<.0500	.0927	.0548	.1100	.0973	.0659	.1330	.1340
Calcium, Total	247.0	260.0	257.0	216.0	212.0	182.0	149.0	260.0	186.0	115.0
Chloride	445.0	420.0	292.0	255.0	384.0	261.0	148.0	336.0	153.0	10.2
Fluoride	2.830	2.720	2.900	2.420	2.990	2.260	1.920	2.660	1.490	.823
pH	6.70	7.16	6.84	6.55	6.87	6.70	7.30	6.49	6.55	6.54
Sulfate	561.0	506.0	388.0	336.0	510.0	348.0	205.0	454.0	266.0	70.7
Total Dissolved Solids	1830	1730	1420	1320	1730	1540	1000	1910	1170	691

* - The displayed value is the arithmetic mean of multiple database matches.

Table 4

Analytical Data Summary for CBL-308I

Constituents	Units	1/22/2016	5/4/2016	7/26/2016	10/24/2016	1/19/2017	3/22/2017	5/16/2017	7/26/2017	2/6/2018	7/25/2018	1/18/2019	7/31/2019	1/29/2020
Boron, Total	mg/L	<.0500	.1210	.1860	.2560	<.0500	.5450	.1090	.0799	<.0500	<.0500	<.0500	<.0500	<.0500
Calcium, Total	mg/L	903	870	911	939	919	947	954	878	859	863	760	840	745
Chloride	mg/L	2760	2580	2680	2870	2360	2530	2740	2760	2750	2680	2240	2290	2110
Fluoride	mg/L	1.490	2.300	1.640	1.590	1.330	9.050	1.700	1.900	1.760	2.100	1.680	1.620	1.600
pH	S.U.	6.36	6.13	5.95	6.27	6.83	6.27	5.54	6.27	6.26	6.07	6.39	6.25	6.37
Sulfate	mg/L	1490	1410	1490	1550	1320	1470	1580	1550	1570	1540	1520	1420	1340
Total Dissolved Solids	mg/L	6820	6120	7890	10200	9620	7260	6590	6480	6200	6320	4760	5820	5980

* - The displayed value is the arithmetic mean of multiple database matches.

Table 4

Analytical Data Summary for CBL-308I

Constituents	9/18/2020	1/28/2021	7/21/2021	1/27/2022	7/27/2022	1/26/2023	7/18/2023	1/30/2024	7/22/2024
Boron, Total	.1030	<.0500	.1300	<.0500	.0790	.1430	<.0500	.1500	.1390
Calcium, Total	838	830	684	974	736	732	642	714	683
Chloride	2410	2200	1780	2020	2470	2570	1840	1790	2250
Fluoride	1.330	1.440	1.740	1.750	1.430	<.500	1.860	1.260	.864
pH	6.22	6.26	6.16	6.36	6.23	6.41	6.26	6.57	6.53
Sulfate	1310	1340	1240	1310	1190	445	1290	1360	1430
Total Dissolved Solids	6860	6190	5270	5320	6840	5810	5680	5410	5810

* - The displayed value is the arithmetic mean of multiple database matches.

Table 5

Analytical Data Summary for CBL-340I

Constituents	Units	1/21/2016	5/4/2016	7/27/2016	10/24/2016	1/23/2017	3/22/2017	5/16/2017	7/27/2017	2/8/2018	7/27/2018	1/22/2019	7/31/2019	1/30/2020
Boron, Total	mg/L	<.0500	.0832	.0810	.1580	<.0500	.1740	.1040	.0816	.0638	<.0500	<.0500	.1240	.0562
Calcium, Total	mg/L	564	560	575	607	627	581	584	571	555	544	518	518	539
Chloride	mg/L	2370	2260	2350	2380	2070	2280	2520	2380	2730	2450	2250	2280	2240
Fluoride	mg/L	1.090	1.920	1.060	1.260	.840	8.440	1.010	.850	1.000	1.300	.830	.880	.870
pH	S.U.	6.52	6.13	6.95	6.19	5.46	6.49	5.77	6.42	6.41	6.25	6.59	6.45	6.49
Sulfate	mg/L	652	616	668	675	571	635	715	685	752	711	639	684	637
Total Dissolved Solids	mg/L	4990	5230	6250	5670	6230	5480	5470	4880	5290	5100	4720	5560	5080

* - The displayed value is the arithmetic mean of multiple database matches.

Table 5

Analytical Data Summary for CBL-340I

Constituents	9/18/2020	1/28/2021	7/22/2021	1/28/2022	7/28/2022	1/30/2023	7/19/2023	1/31/2024	7/23/2024
Boron, Total	.1460	<.0500	.3840	.1600	.2850	.1670	.2760	.1780	.1810
Calcium, Total	547	607	532	597	538	635	631	607	560
Chloride	2130	2260	2200	2200	2160	2230	2130	2210	2480
Fluoride	.725	.835	.865	1.060	.865	.850	1.070	.605	.521
pH	6.32	6.32	6.24	6.42	6.35	6.37	6.41	6.12	6.12
Sulfate	608	634	618	619	614	643	599	705	780
Total Dissolved Solids	5430	5520	4990	4870	5490	5010	5290	5090	5320

* - The displayed value is the arithmetic mean of multiple database matches.

Table 6

Analytical Data Summary for CBL-341I

Constituents	Units	1/23/2017	2/23/2017	3/22/2017	4/20/2017	5/16/2017	6/20/2017	7/27/2017	9/11/2017	2/8/2018	8/24/2018	1/22/2019	7/31/2019	1/30/2020
Boron, Total	mg/L	<.0500	<.0500	<.0500	.0587	.0896	.0668	.0507	<.0500	<.0500	<.0500	<.0500	<.0500	<.0500
Calcium, Total	mg/L	854	870	906	898	860	950	829	848	810	824	782	714	767
Chloride	mg/L	1600	2000	1780	1770	1900	1820	1970	1710	2110	1910	1790	1650	1780
Fluoride	mg/L	.5300	<.5000	<.5000	<.5000	<.5000	.3350	.0550	.3670	.1060	.1140	.0546	.1000	.1530
pH	S.U.	5.74	5.23	5.72	5.73	5.54	6.19	6.21	6.10	6.18	5.82	6.38	6.23	6.27
Sulfate	mg/L	307	404	346	336	369	363	419	354	383	376	358	329	351
Total Dissolved Solids	mg/L	5000	4520	5110	4240	4840	5940	4150	4860	4320	4800	3870	5370	4900

* - The displayed value is the arithmetic mean of multiple database matches.

Table 6

Analytical Data Summary for CBL-341I

Constituents	9/17/2020	1/27/2021	7/22/2021	9/7/2021	1/27/2022	7/28/2022	1/26/2023	7/19/2023	1/29/2024	7/22/2024	10/1/2024
Boron, Total	.1020	<.0500	.1110		<.0500	.1150	.1340	.0760	.1330	.1190	.1360
Calcium, Total	814	874	852		1040	704	797	710	875	801	
Chloride	1700	1800	1750		1810	1690	1660	1530	1700	1960	
Fluoride	<.2500	<.5000	1.1600	<.2500	<.0500	.1410	<.2500	1.1200	<.1000	<.1000	
pH	6.14	6.06	5.98	6.18	6.26	6.16	6.28	6.22	6.38	6.39	
Sulfate	336	324	316		320	296	309	259	346	367	
Total Dissolved Solids	4930	3940	4520		3800	4910	4390	4190	3990	3700	

* - The displayed value is the arithmetic mean of multiple database matches.

Attachment C

Summary Tables and Graphs for the Intrawell Comparisons

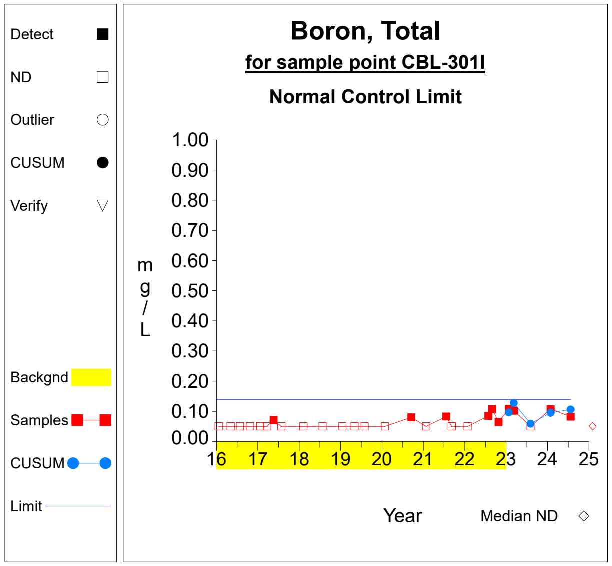
Table 1

Summary Statistics and Intermediate Computations for Combined Shewhart-CUSUM Control Charts

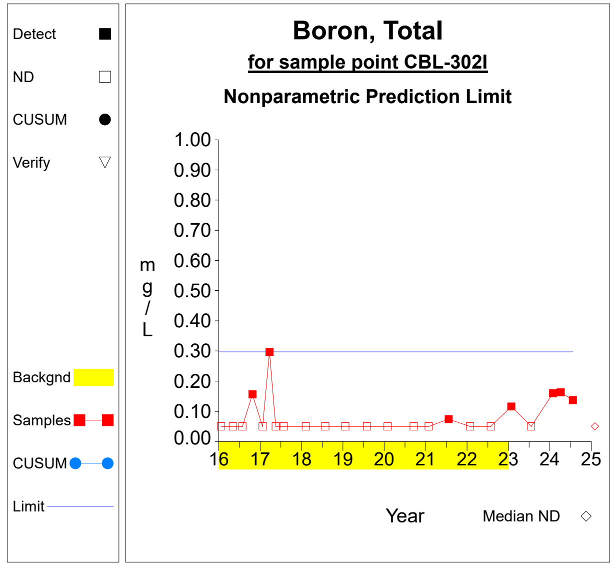
Constituent	Units	Well	N(back)	N(mon)	N(tot)	Mean	SD	R(i-1)	R(i)	S(i-1)	S(i)	Limit	Type	Conf	
Boron, Total	mg/L	CBL-301I	22	5	27	0.0586	0.0161	0.1070	0.0820	0.0949	0.1062	0.1391	normal		
Boron, Total	mg/L	CBL-302I	18	5	23			0.1630	0.1370			0.2970	nonpar	.99	**
Boron, Total	mg/L	CBL-306I	18	4	23	0.0679	0.0242	0.1330	0.1340	0.1148	0.1627	0.1891	normal		
Boron, Total	mg/L	CBL-308I	18	4	22	0.1144	0.1215	0.1500	0.1390	0.1144	0.1144	0.7217	normal		
Boron, Total	mg/L	CBL-341I	18	4	22	0.0635	0.0234	0.1330	0.1190	0.1634	0.2013	0.1803	normal		
Calcium, Total	mg/L	CBL-301I	18	4	23	964.9444	101.2710	1050.0000	912.0000	1193.1490	1064.2513	1471.2996	normal		
Calcium, Total	mg/L	CBL-302I	18	4	22	957.0556	116.7478	937.0000	845.0000	957.0556	957.0556	1540.7947	normal		
Calcium, Total	mg/L	CBL-306I	16	4	23	214.8125	36.2569	186.0000	115.0000	214.8125	214.8125	396.0970	normal		
Calcium, Total	mg/L	CBL-308I	18	4	22	858.3333	82.3615	714.0000	683.0000	858.3333	858.3333	1270.1407	normal		
Calcium, Total	mg/L	CBL-341I	18	4	22	844.2222	79.4752	875.0000	801.0000	844.2222	844.2222	1241.5980	normal		
Chloride	mg/L	CBL-301I	18	4	23	2299.4444	372.4241	2270.0000	2350.0000	2299.4444	2299.4444	4161.5647	normal		
Chloride	mg/L	CBL-302I	18	4	22	1831.6667	360.2654	1440.0000	1650.0000	1831.6667	1831.6667	3632.9938	normal		
Chloride	mg/L	CBL-306I	16	4	23	300.6250	82.0828	153.0000	10.2000	300.6250	300.6250	711.0389	normal		
Chloride	mg/L	CBL-308I	18	4	22	2457.2222	303.1755	1790.0000	2250.0000	2457.2222	2457.2222	3973.0995	normal		
Chloride	mg/L	CBL-341I	18	4	22	1807.7778	129.1399	1700.0000	1960.0000	1807.7778	1863.1450	2453.4775	normal		
Fluoride	mg/L	CBL-301I	20	5	25	0.5080	0.5367	0.1000	0.1000	0.5080	0.5080	3.1915	normal		
Fluoride	mg/L	CBL-302I	19	4	23	0.4817	0.4622	0.1000	0.1010	0.5849	0.4817	2.7929	normal		
Fluoride	mg/L	CBL-306I	17	4	23	2.3959	0.5730	1.4900	0.8230	2.3959	2.3959	5.2610	normal		
Fluoride	mg/L	CBL-308I	17	4	22	1.6706	0.2554	1.2600	0.8640	1.6706	1.6706	2.9477	normal		
Fluoride	mg/L	CBL-341I	19	4	23	0.3745	0.2679	0.1000	0.1000	0.3745	0.3745	1.7141	normal		
pH	S.U.	CBL-301I	22	4	26	6.2014	0.2396	6.3500	6.4500	6.2014	6.2703	5.00 - 7.40	normal		
pH	S.U.	CBL-302I	19	4	23	6.0689	0.5972	6.2800	6.4100	6.0689	6.0689	3.08 - 9.05	normal		
pH	S.U.	CBL-306I	18	4	23	6.6478	0.6569	6.5500	6.5400	6.6478	6.6478	3.36 - 9.93	normal		
pH	S.U.	CBL-308I	18	4	22	6.2328	0.2475	6.5700	6.5300	6.3844	6.4960	5.00 - 7.47	normal		
pH	S.U.	CBL-341I	18	4	23	6.0494	0.2377	6.3800	6.3900	6.2462	6.4084	4.86 - 7.24	normal		
Sulfate	mg/L	CBL-301I	18	5	24	350.5556	60.2936	475.0000	454.0000	429.7798	488.0040	652.0236	normal		
Sulfate	mg/L	CBL-302I	18	4	22	1222.9444	114.1137	1330.0000	1370.0000	1247.3553	1308.8255	1793.5130	normal		
Sulfate	mg/L	CBL-306I	17	4	23	388.1765	110.3564	266.0000	70.7000	388.1765	388.1765	939.9583	normal		
Sulfate	mg/L	CBL-308I	18	4	22	1424.4444	121.4240	1360.0000	1430.0000	1424.4444	1424.4444	2031.5645	normal		
Sulfate	mg/L	CBL-341I	18	4	22	349.2778	32.8898	346.0000	367.0000	349.2778	349.2778	513.7270	normal		
Total Dissolved Solids	mg/L	CBL-301I	18	4	23	5444.4444	767.6950	4820.0000	4580.0000	5444.4444	5444.4444	9282.9193	normal		
Total Dissolved Solids	mg/L	CBL-302I	18	4	22	5311.6667	764.8702	4950.0000	4840.0000	5311.6667	5311.6667	9136.0178	normal		
Total Dissolved Solids	mg/L	CBL-306I	17	4	23	1437.0588	267.0853	1170.0000	691.0000	1437.0588	1437.0588	2772.4853	normal		
Total Dissolved Solids	mg/L	CBL-308I	18	4	22	6696.6667	1385.2713	5410.0000	5810.0000	6696.6667	6696.6667	13623.0230	normal		
Total Dissolved Solids	mg/L	CBL-341I	18	4	22	4667.7778	554.0180	3990.0000	3700.0000	4667.7778	4667.7778	7437.8678	normal		

N(back) and N(mon) = Non-outlier measurements in the background and monitoring periods.
N(tot) = All independent measurements for that constituent and well.
For transformed data, mean and SD in transformed units and control limit in original units.
Conf = confidence level for passing initial test or one of two verification resamples (nonparametric test only).
* - Insufficient Data.
** - Detection Frequency < 25%.
*** - Zero Variance.

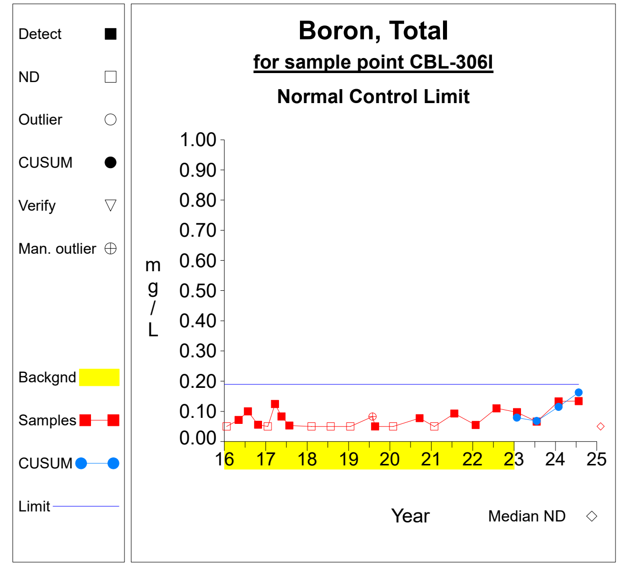
Intra-Well Control Charts / Prediction Limits



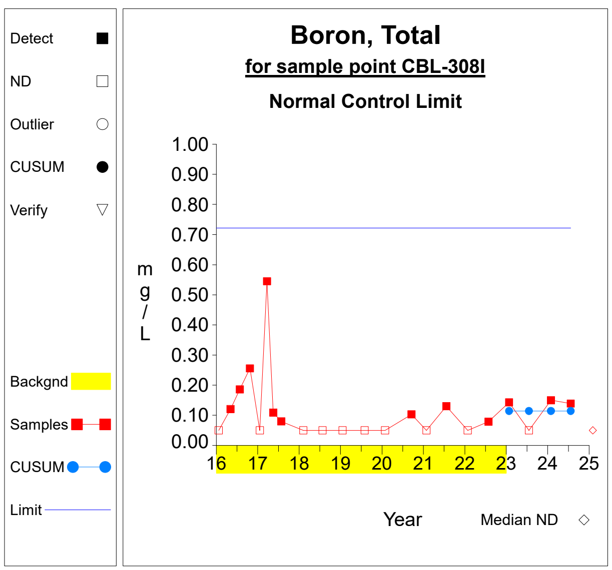
Graph 1



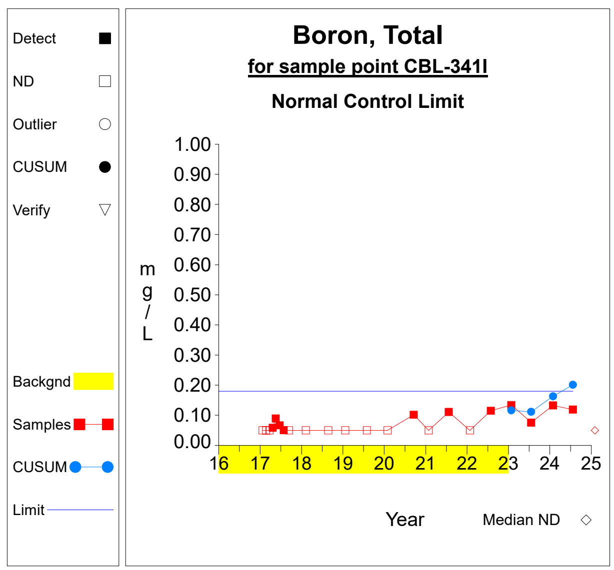
Graph 2



Graph 3

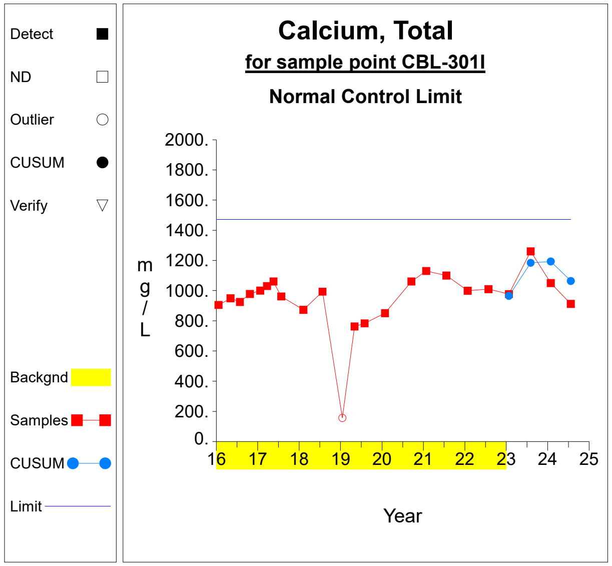


Graph 4

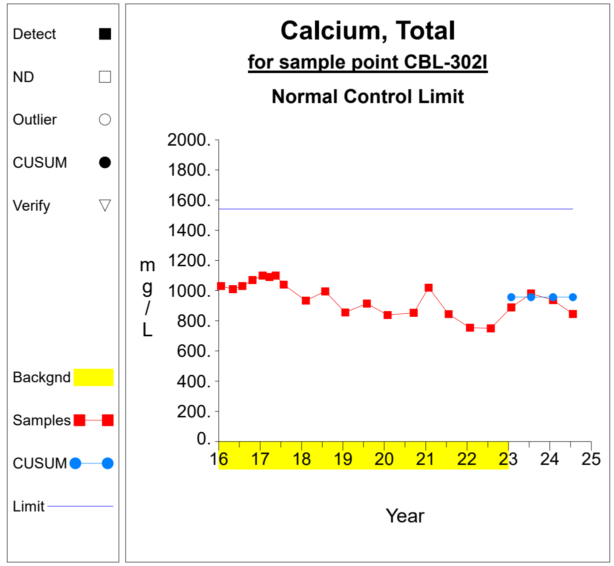


Graph 5

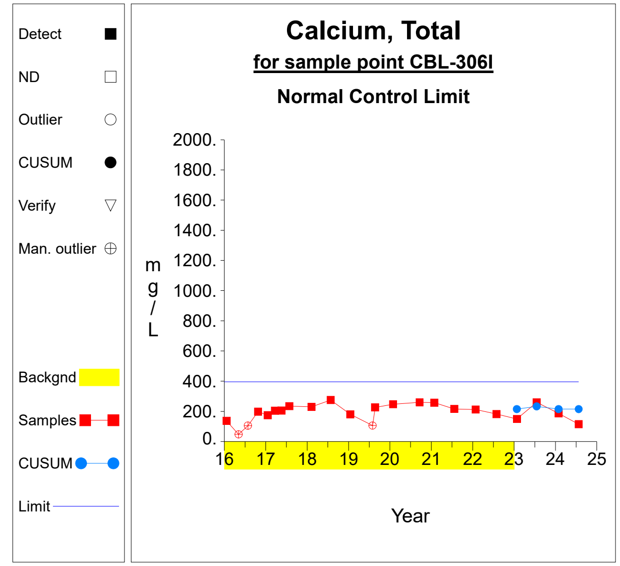
Intra-Well Control Charts / Prediction Limits



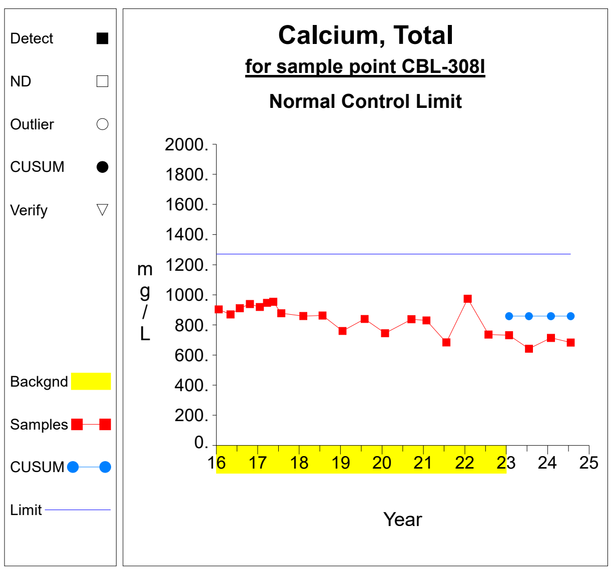
Graph 6



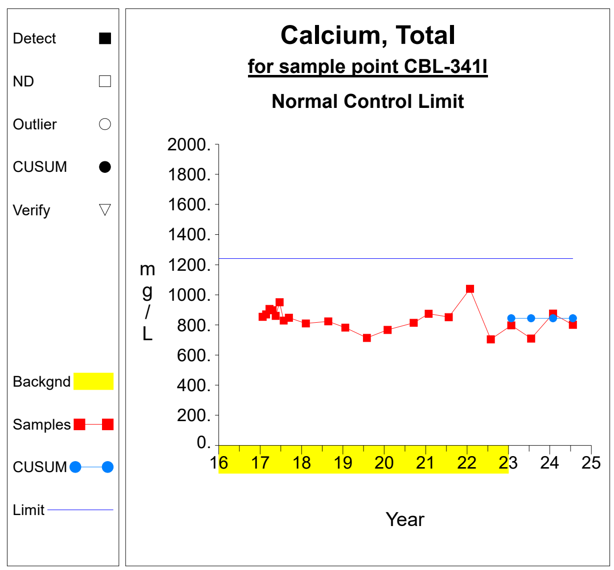
Graph 7



Graph 8



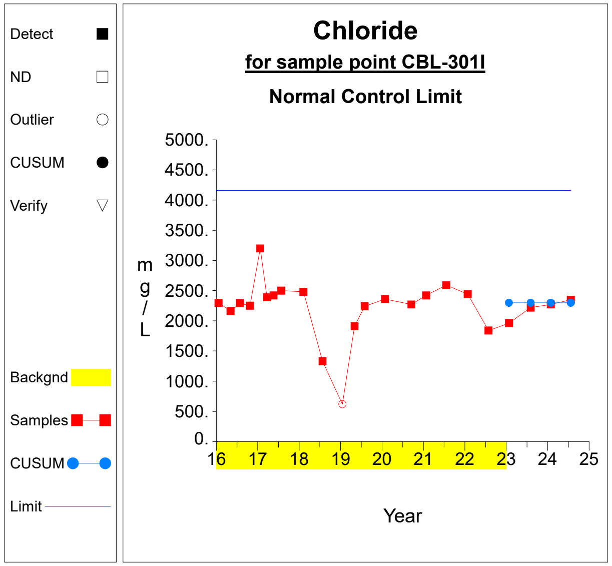
Graph 9



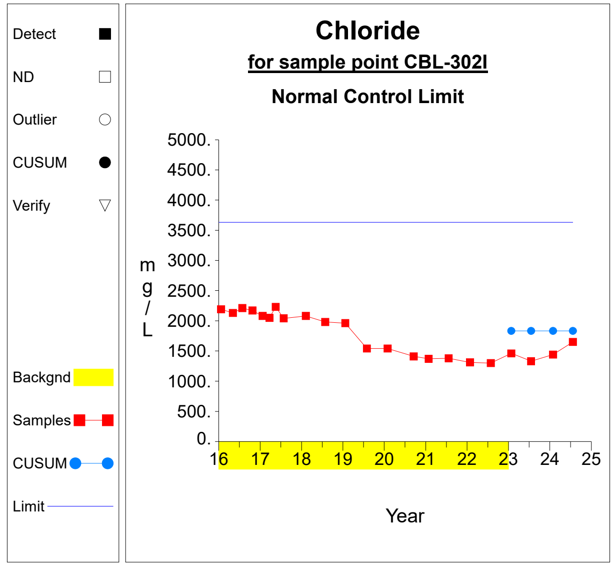
Graph 10

LCRA Fayette Power [GW] November 2024

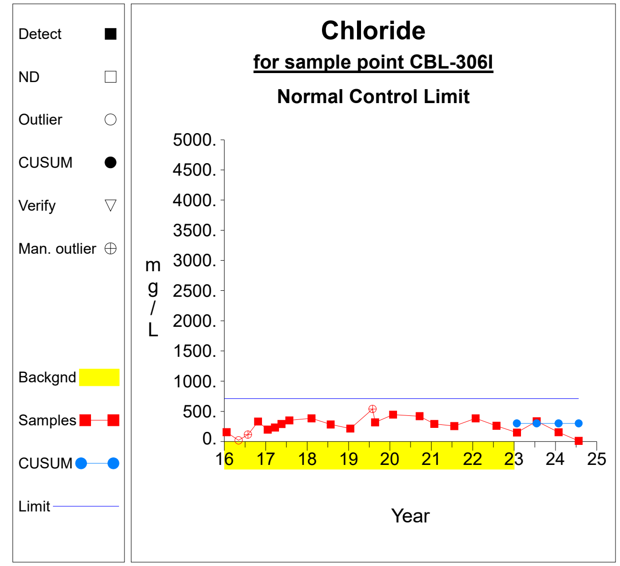
Intra-Well Control Charts / Prediction Limits



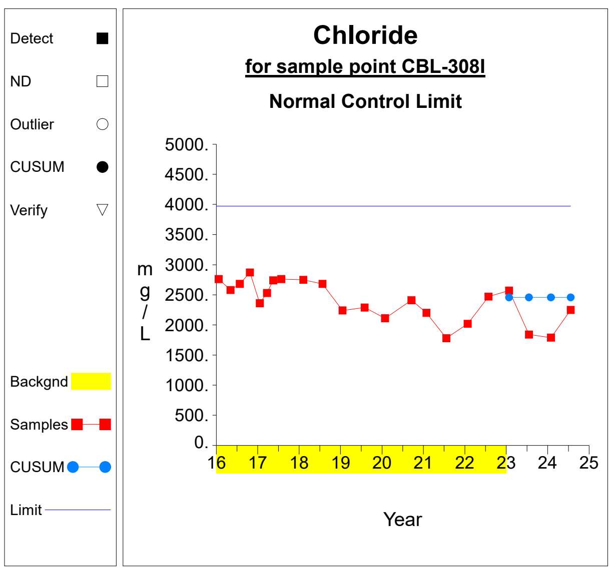
Graph 11



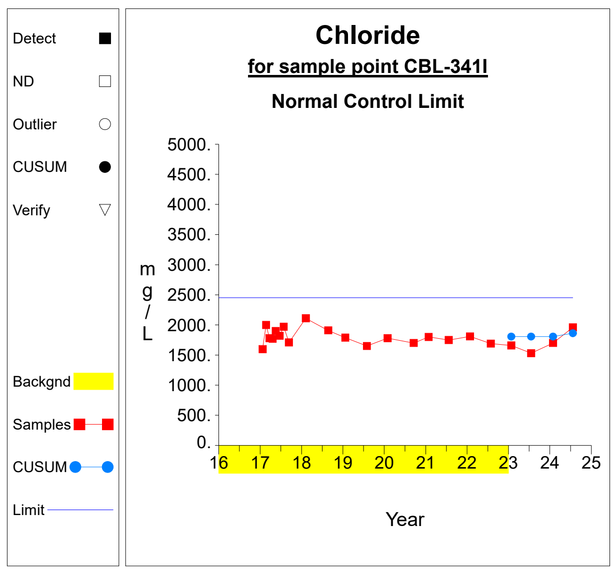
Graph 12



Graph 13



Graph 14



Graph 15

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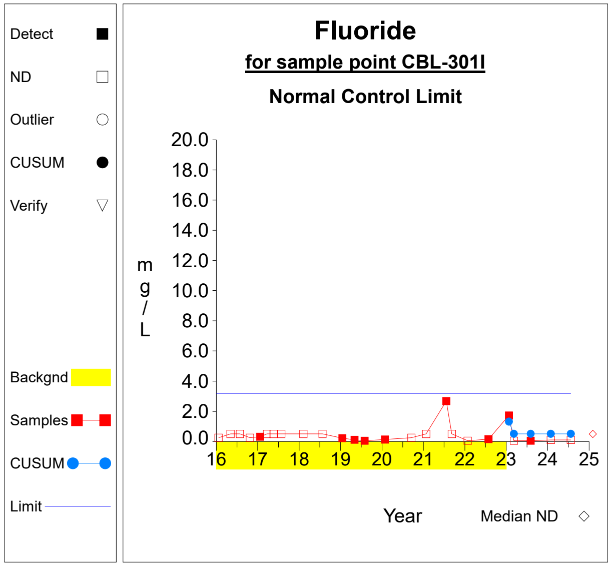
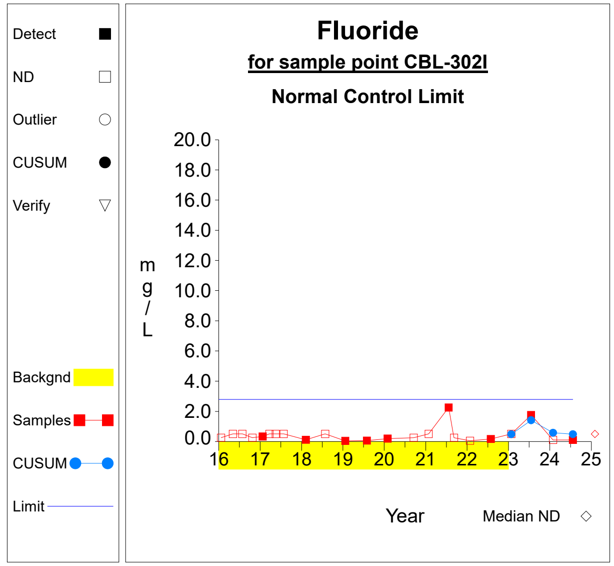
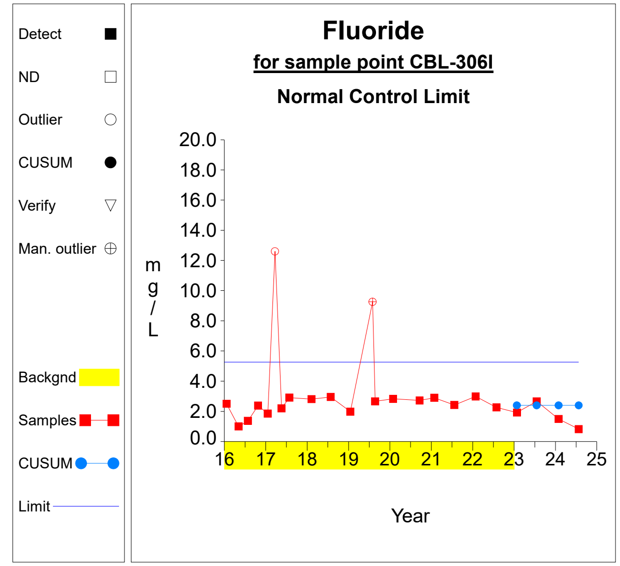
Intra-Well Control Charts / Prediction Limits



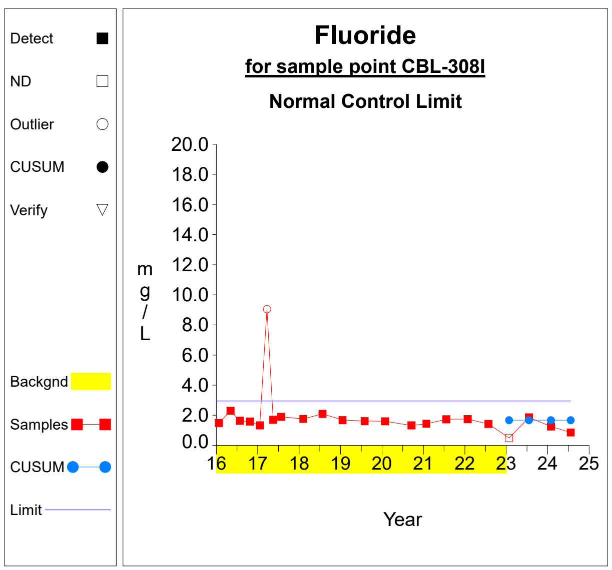
Graph 16



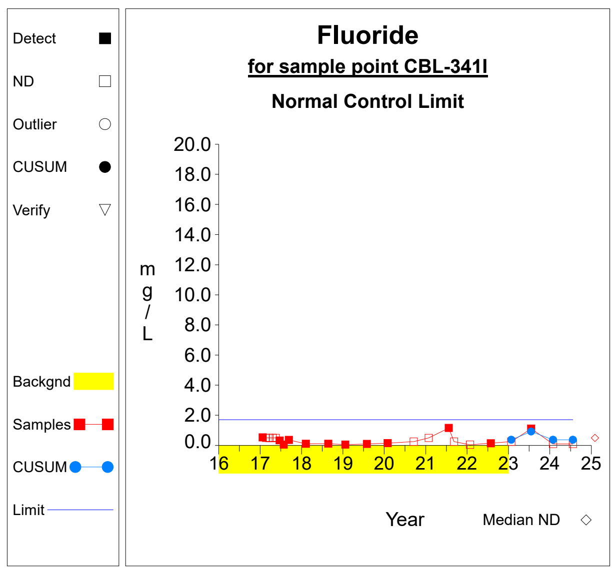
Graph 17



Graph 18

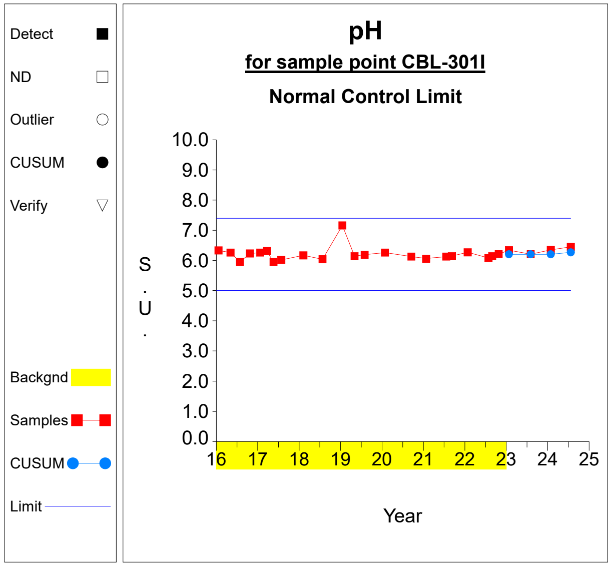


Graph 19

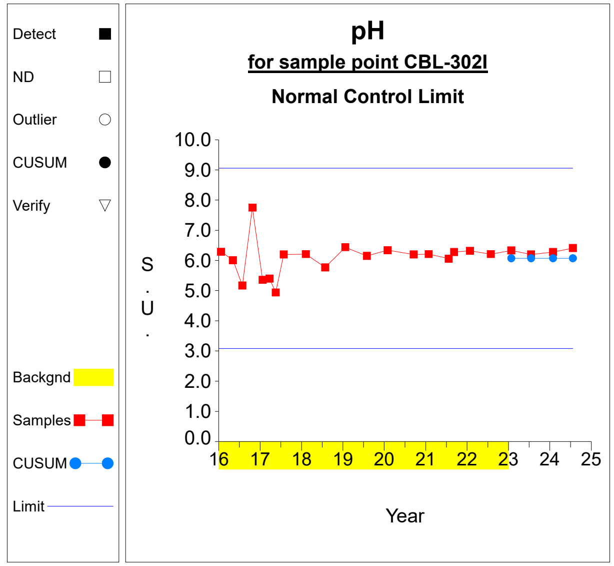


Graph 20

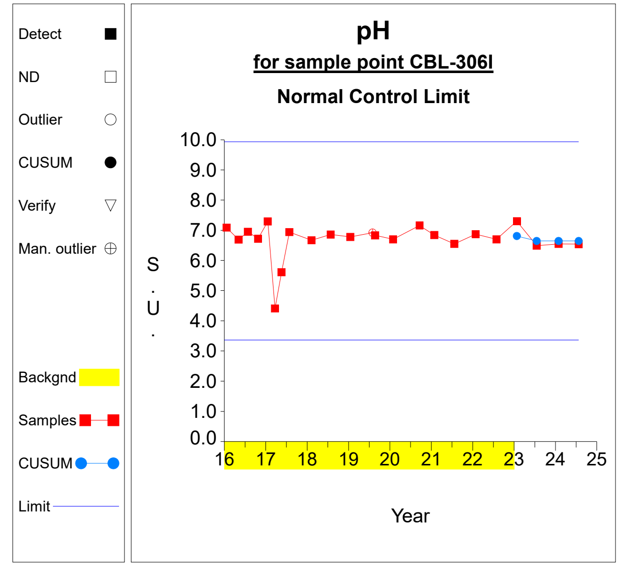
Intra-Well Control Charts / Prediction Limits



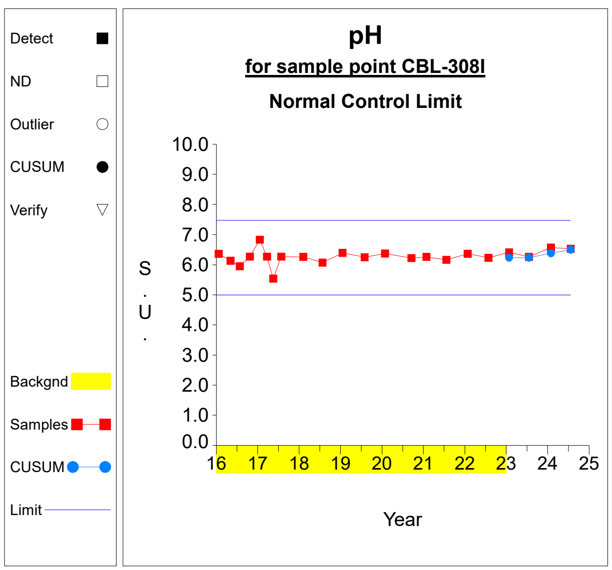
Graph 21



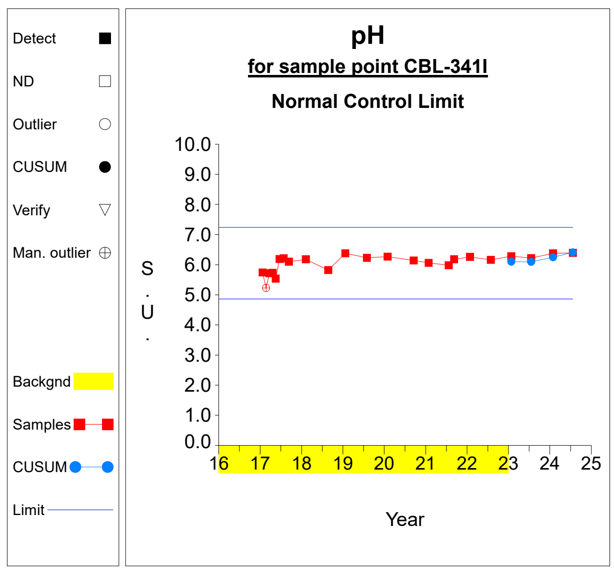
Graph 22



Graph 23

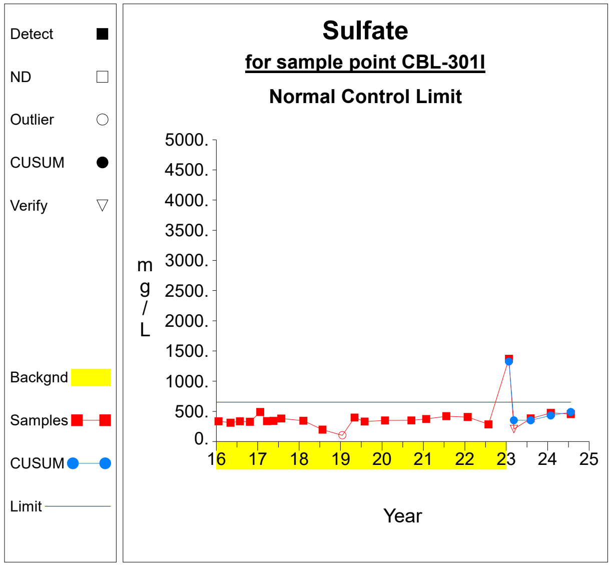


Graph 24

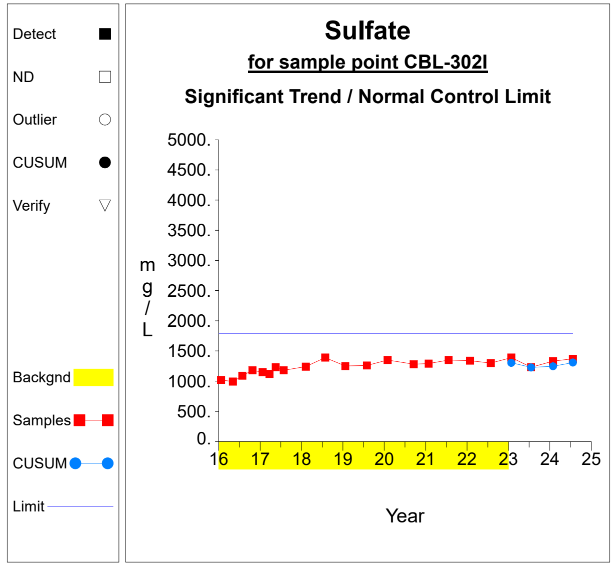


Graph 25

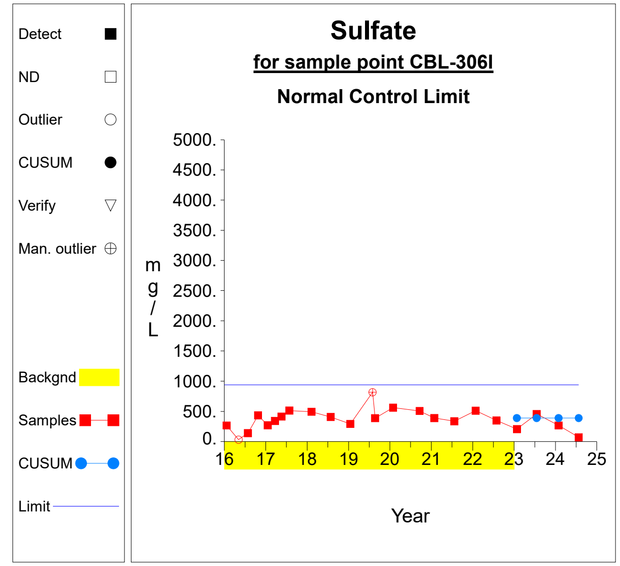
Intra-Well Control Charts / Prediction Limits



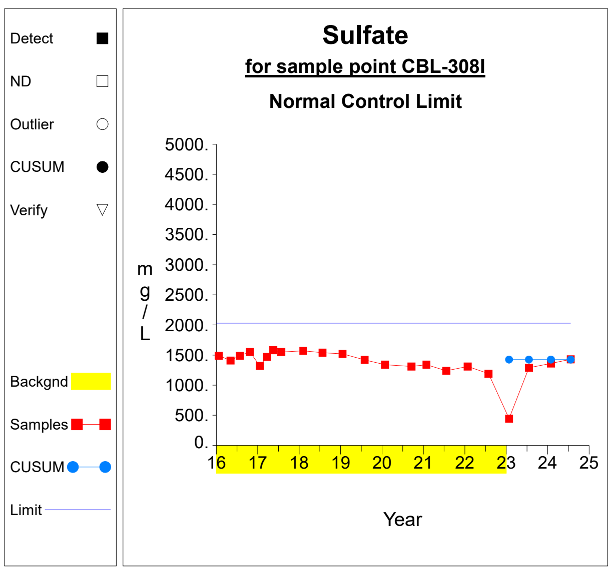
Graph 26



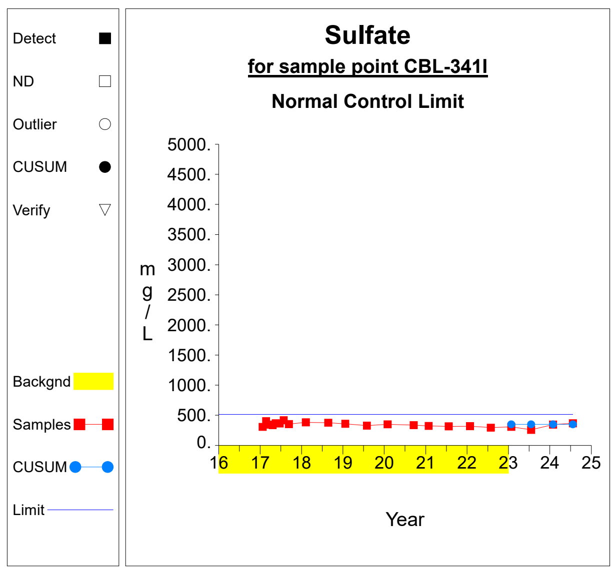
Graph 27



Graph 28



Graph 29



Graph 30

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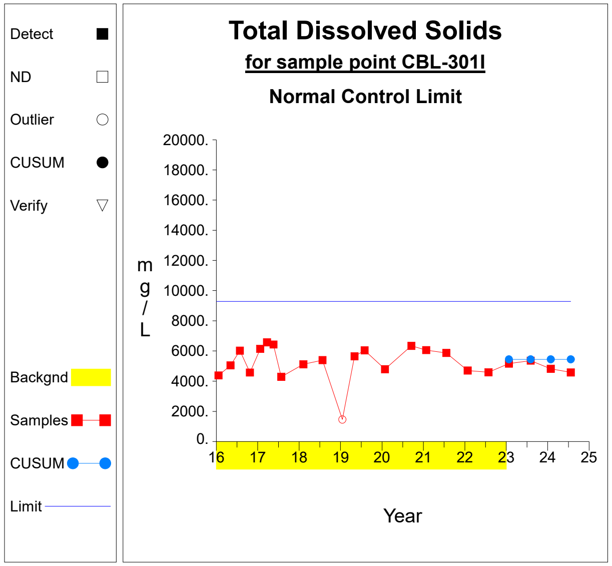
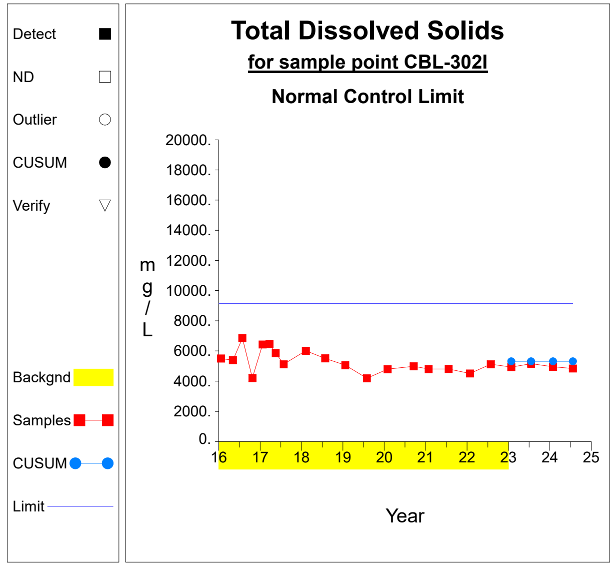
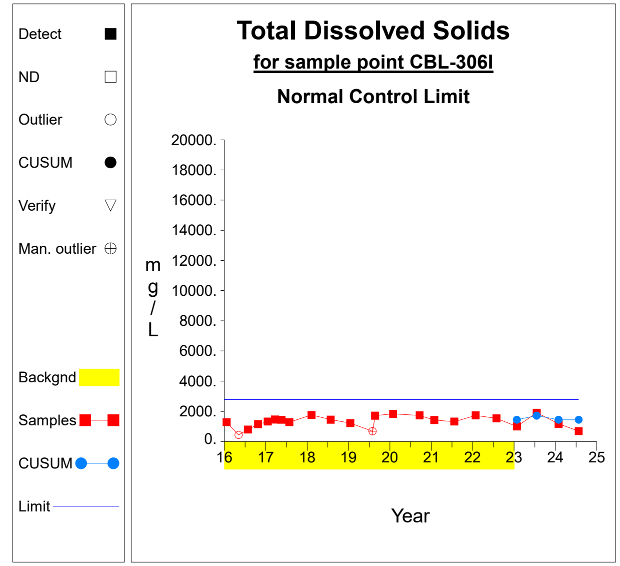
Intra-Well Control Charts / Prediction Limits



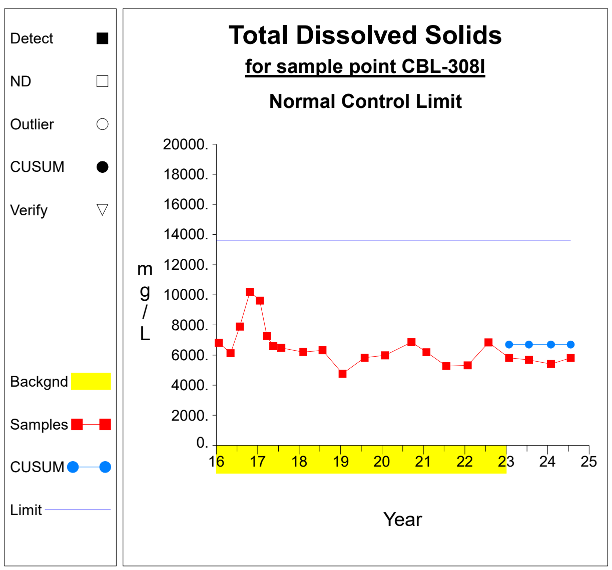
Graph 31



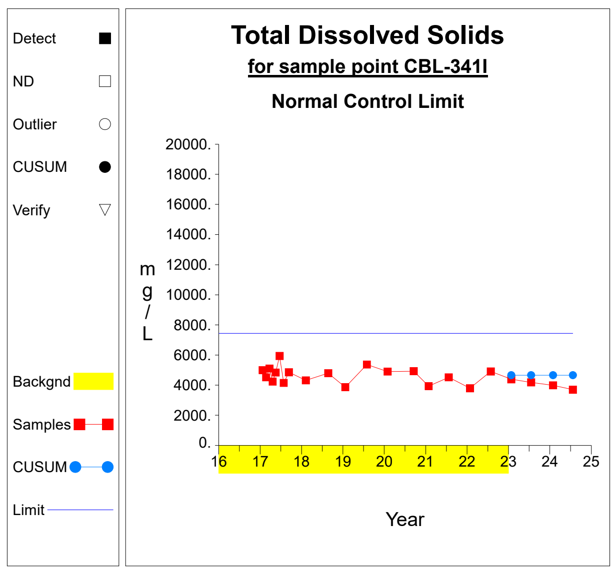
Graph 32



Graph 33



Graph 34



Graph 35

Prepared by: Otter Creek Environmental

False Positive and False Negative Rates for Current Intra-Well Control Charts Monitoring Program

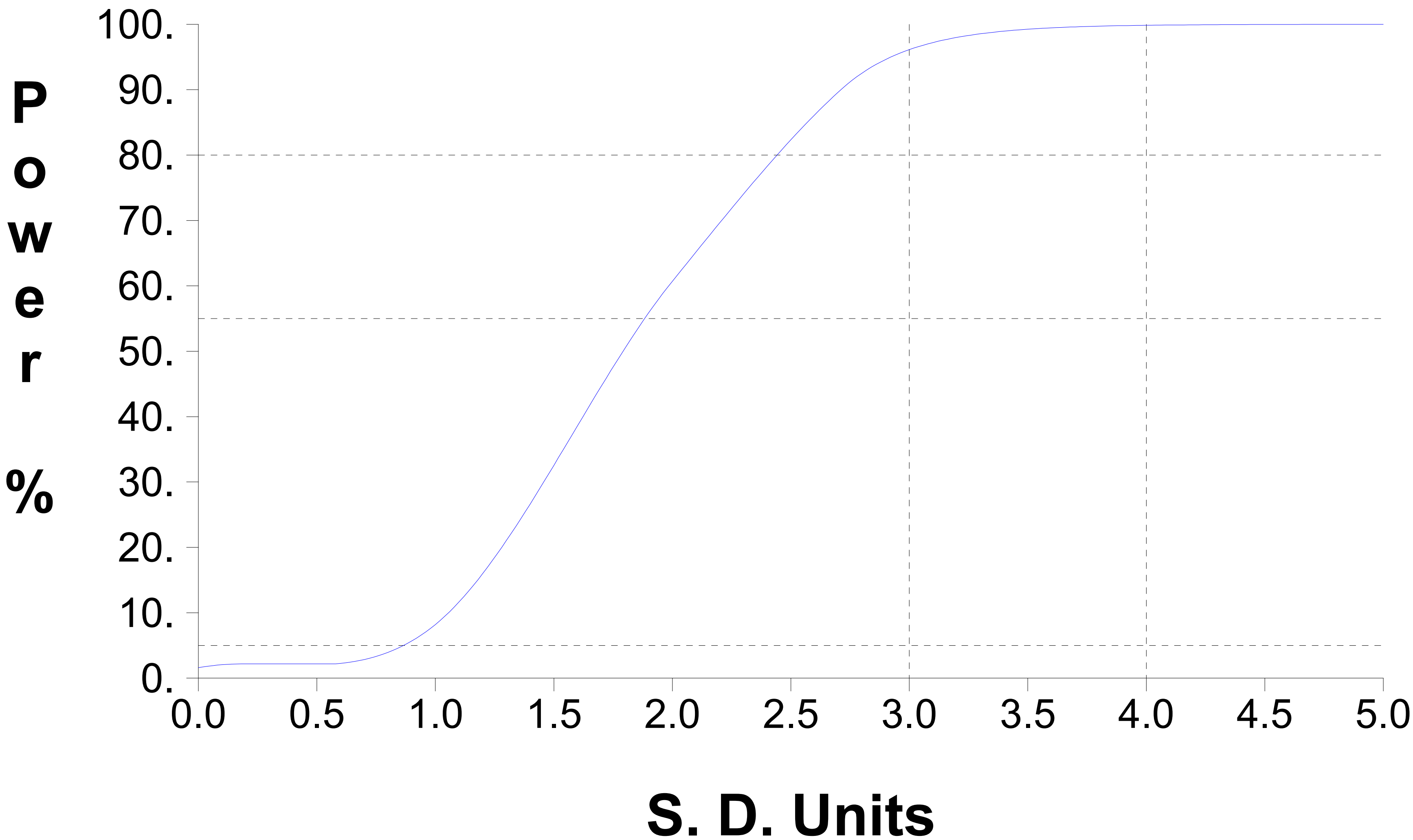


Table 2

Analytical Data and CUSUM Summary

Constituent	Units	Well	Date	Background	Result		Outlier	CUSUM	Adjusted	
Boron, Total	mg/L	CBL-301I	01/21/2016	yes	0.0500	ND				
Boron, Total	mg/L	CBL-301I	05/04/2016	yes	0.0500	ND				
Boron, Total	mg/L	CBL-301I	07/27/2016	yes	0.0500	ND				
Boron, Total	mg/L	CBL-301I	10/24/2016	yes	0.0500	ND				
Boron, Total	mg/L	CBL-301I	01/23/2017	yes	0.0500	ND				
Boron, Total	mg/L	CBL-301I	03/22/2017	yes	0.0500	ND				
Boron, Total	mg/L	CBL-301I	05/18/2017	yes	0.0707					
Boron, Total	mg/L	CBL-301I	07/26/2017	yes	0.0500	ND				
Boron, Total	mg/L	CBL-301I	02/08/2018	yes	0.0500	ND				
Boron, Total	mg/L	CBL-301I	07/25/2018	yes	0.0500	ND				
Boron, Total	mg/L	CBL-301I	01/17/2019	yes	0.0500	ND				
Boron, Total	mg/L	CBL-301I	05/02/2019	yes	0.0500	ND				
Boron, Total	mg/L	CBL-301I	07/31/2019	yes	0.0500	ND				
Boron, Total	mg/L	CBL-301I	01/28/2020	yes	0.0500	ND				
Boron, Total	mg/L	CBL-301I	09/17/2020	yes	0.0801					
Boron, Total	mg/L	CBL-301I	01/26/2021	yes	0.0500	ND				
Boron, Total	mg/L	CBL-301I	07/20/2021	yes	0.0826					
Boron, Total	mg/L	CBL-301I	09/07/2021	yes	0.0500	ND				
Boron, Total	mg/L	CBL-301I	01/26/2022	yes	0.0500	ND				
Boron, Total	mg/L	CBL-301I	07/27/2022	yes	0.0850					
Boron, Total	mg/L	CBL-301I	08/30/2022	yes	0.1070					
Boron, Total	mg/L	CBL-301I	10/25/2022	yes	0.0645					
Boron, Total	mg/L	CBL-301I	01/25/2023		0.1080			0.0959		
Boron, Total	mg/L	CBL-301I	03/07/2023		0.1020			0.1272		
Boron, Total	mg/L	CBL-301I	08/02/2023		0.0500	ND		0.0586		
Boron, Total	mg/L	CBL-301I	01/29/2024		0.1070			0.0949		
Boron, Total	mg/L	CBL-301I	07/23/2024		0.0820			0.1062		
Boron, Total	mg/L	CBL-302I	01/22/2016	yes	0.0500	ND				
Boron, Total	mg/L	CBL-302I	05/04/2016	yes	0.0500	ND				
Boron, Total	mg/L	CBL-302I	07/27/2016	yes	0.0500	ND				
Boron, Total	mg/L	CBL-302I	10/24/2016	yes	0.1560					
Boron, Total	mg/L	CBL-302I	01/23/2017	yes	0.0500	ND				
Boron, Total	mg/L	CBL-302I	03/22/2017	yes	0.2970					
Boron, Total	mg/L	CBL-302I	05/16/2017	yes	0.0500	ND				
Boron, Total	mg/L	CBL-302I	07/27/2017	yes	0.0500	ND				
Boron, Total	mg/L	CBL-302I	02/08/2018	yes	0.0500	ND				
Boron, Total	mg/L	CBL-302I	07/27/2018	yes	0.0500	ND				
Boron, Total	mg/L	CBL-302I	01/22/2019	yes	0.0500	ND				
Boron, Total	mg/L	CBL-302I	07/31/2019	yes	0.0500	ND				
Boron, Total	mg/L	CBL-302I	01/30/2020	yes	0.0500	ND				
Boron, Total	mg/L	CBL-302I	09/17/2020	yes	0.0500	ND				
Boron, Total	mg/L	CBL-302I	01/28/2021	yes	0.0500	ND				
Boron, Total	mg/L	CBL-302I	07/21/2021	yes	0.0743					
Boron, Total	mg/L	CBL-302I	01/27/2022	yes	0.0500	ND				
Boron, Total	mg/L	CBL-302I	07/28/2022	yes	0.0500	ND				
Boron, Total	mg/L	CBL-302I	01/26/2023		0.1160					
Boron, Total	mg/L	CBL-302I	07/18/2023		0.0500	ND				
Boron, Total	mg/L	CBL-302I	01/29/2024		0.1600					
Boron, Total	mg/L	CBL-302I	04/05/2024		0.1630					
Boron, Total	mg/L	CBL-302I	07/22/2024		0.1370					

* - Outlier for that well and constituent.
** - Non-outlier detected sample Result and / or CUSUM value exceeds limit.
*** - ND value replaced with median RL.
**** - ND value replaced with manual RL.
ND = Not detected, Result = detection limit.

Table 2

Analytical Data and CUSUM Summary

Constituent	Units	Well	Date	Background	Result		Outlier	CUSUM	Adjusted	
Boron, Total	mg/L	CBL-306I	01/21/2016	yes	0.0500	ND				
Boron, Total	mg/L	CBL-306I	05/04/2016	yes	0.0717					
Boron, Total	mg/L	CBL-306I	07/26/2016	yes	0.0998					
Boron, Total	mg/L	CBL-306I	10/24/2016	yes	0.0556					
Boron, Total	mg/L	CBL-306I	01/19/2017	yes	0.0500	ND				
Boron, Total	mg/L	CBL-306I	03/22/2017	yes	0.1240					
Boron, Total	mg/L	CBL-306I	05/18/2017	yes	0.0832					
Boron, Total	mg/L	CBL-306I	07/27/2017	yes	0.0531					
Boron, Total	mg/L	CBL-306I	02/08/2018	yes	0.0500	ND				
Boron, Total	mg/L	CBL-306I	07/27/2018	yes	0.0500	ND				
Boron, Total	mg/L	CBL-306I	01/16/2019	yes	0.0500	ND				
Boron, Total	mg/L	CBL-306I	07/31/2019	yes	0.0824		yes			*
Boron, Total	mg/L	CBL-306I	08/23/2019	yes	0.0500					
Boron, Total	mg/L	CBL-306I	01/29/2020	yes	0.0500	ND				
Boron, Total	mg/L	CBL-306I	09/19/2020	yes	0.0773					
Boron, Total	mg/L	CBL-306I	01/28/2021	yes	0.0500	ND				
Boron, Total	mg/L	CBL-306I	07/21/2021	yes	0.0927					
Boron, Total	mg/L	CBL-306I	01/27/2022	yes	0.0548					
Boron, Total	mg/L	CBL-306I	07/28/2022	yes	0.1100					
Boron, Total	mg/L	CBL-306I	01/26/2023		0.0973			0.0791		
Boron, Total	mg/L	CBL-306I	07/18/2023		0.0659			0.0679		
Boron, Total	mg/L	CBL-306I	01/29/2024		0.1330			0.1148		
Boron, Total	mg/L	CBL-306I	07/23/2024		0.1340			0.1627		
Boron, Total	mg/L	CBL-308I	01/22/2016	yes	0.0500	ND				
Boron, Total	mg/L	CBL-308I	05/04/2016	yes	0.1210					
Boron, Total	mg/L	CBL-308I	07/26/2016	yes	0.1860					
Boron, Total	mg/L	CBL-308I	10/24/2016	yes	0.2560					
Boron, Total	mg/L	CBL-308I	01/19/2017	yes	0.0500	ND				
Boron, Total	mg/L	CBL-308I	03/22/2017	yes	0.5450					
Boron, Total	mg/L	CBL-308I	05/16/2017	yes	0.1090					
Boron, Total	mg/L	CBL-308I	07/26/2017	yes	0.0799					
Boron, Total	mg/L	CBL-308I	02/06/2018	yes	0.0500	ND				
Boron, Total	mg/L	CBL-308I	07/25/2018	yes	0.0500	ND				
Boron, Total	mg/L	CBL-308I	01/18/2019	yes	0.0500	ND				
Boron, Total	mg/L	CBL-308I	07/31/2019	yes	0.0500	ND				
Boron, Total	mg/L	CBL-308I	01/29/2020	yes	0.0500	ND				
Boron, Total	mg/L	CBL-308I	09/18/2020	yes	0.1030					
Boron, Total	mg/L	CBL-308I	01/28/2021	yes	0.0500	ND				
Boron, Total	mg/L	CBL-308I	07/21/2021	yes	0.1300					
Boron, Total	mg/L	CBL-308I	01/27/2022	yes	0.0500	ND				
Boron, Total	mg/L	CBL-308I	07/27/2022	yes	0.0790					
Boron, Total	mg/L	CBL-308I	01/26/2023		0.1430			0.1144		
Boron, Total	mg/L	CBL-308I	07/18/2023		0.0500	ND		0.1144		
Boron, Total	mg/L	CBL-308I	01/30/2024		0.1500			0.1144		
Boron, Total	mg/L	CBL-308I	07/22/2024		0.1390			0.1144		
Boron, Total	mg/L	CBL-341I	01/23/2017	yes	0.0500	ND				
Boron, Total	mg/L	CBL-341I	02/23/2017	yes	0.0500	ND				
Boron, Total	mg/L	CBL-341I	03/22/2017	yes	0.0500	ND				
Boron, Total	mg/L	CBL-341I	04/20/2017	yes	0.0587					
Boron, Total	mg/L	CBL-341I	05/16/2017	yes	0.0896					

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Table 2

Analytical Data and CUSUM Summary

Constituent	Units	Well	Date	Background	Result		Outlier	CUSUM	Adjusted	
Boron, Total	mg/L	CBL-341I	06/20/2017	yes	0.0668					
Boron, Total	mg/L	CBL-341I	07/27/2017	yes	0.0507					
Boron, Total	mg/L	CBL-341I	09/11/2017	yes	0.0500	ND				
Boron, Total	mg/L	CBL-341I	02/08/2018	yes	0.0500	ND				
Boron, Total	mg/L	CBL-341I	08/24/2018	yes	0.0500	ND				
Boron, Total	mg/L	CBL-341I	01/22/2019	yes	0.0500	ND				
Boron, Total	mg/L	CBL-341I	07/31/2019	yes	0.0500	ND				
Boron, Total	mg/L	CBL-341I	01/30/2020	yes	0.0500	ND				
Boron, Total	mg/L	CBL-341I	09/17/2020	yes	0.1020					
Boron, Total	mg/L	CBL-341I	01/27/2021	yes	0.0500	ND				
Boron, Total	mg/L	CBL-341I	07/22/2021	yes	0.1110					
Boron, Total	mg/L	CBL-341I	01/27/2022	yes	0.0500	ND				
Boron, Total	mg/L	CBL-341I	07/28/2022	yes	0.1150					
Boron, Total	mg/L	CBL-341I	01/26/2023		0.1340			0.1165		
Boron, Total	mg/L	CBL-341I	07/19/2023		0.0760			0.1114		
Boron, Total	mg/L	CBL-341I	01/29/2024		0.1330			0.1634		
Boron, Total	mg/L	CBL-341I	07/22/2024		0.1190			0.2013		**
Calcium, Total	mg/L	CBL-301I	01/21/2016	yes	905.0000					
Calcium, Total	mg/L	CBL-301I	05/04/2016	yes	949.0000					
Calcium, Total	mg/L	CBL-301I	07/27/2016	yes	925.0000					
Calcium, Total	mg/L	CBL-301I	10/24/2016	yes	978.0000					
Calcium, Total	mg/L	CBL-301I	01/23/2017	yes	1000.0000					
Calcium, Total	mg/L	CBL-301I	03/22/2017	yes	1030.0000					
Calcium, Total	mg/L	CBL-301I	05/18/2017	yes	1060.0000					
Calcium, Total	mg/L	CBL-301I	07/26/2017	yes	961.0000					
Calcium, Total	mg/L	CBL-301I	02/08/2018	yes	873.0000					
Calcium, Total	mg/L	CBL-301I	07/25/2018	yes	993.0000					
Calcium, Total	mg/L	CBL-301I	01/17/2019	yes	156.0000		yes			*
Calcium, Total	mg/L	CBL-301I	05/02/2019	yes	762.0000					
Calcium, Total	mg/L	CBL-301I	07/31/2019	yes	783.0000					
Calcium, Total	mg/L	CBL-301I	01/28/2020	yes	851.0000					
Calcium, Total	mg/L	CBL-301I	09/17/2020	yes	1060.0000					
Calcium, Total	mg/L	CBL-301I	01/26/2021	yes	1130.0000					
Calcium, Total	mg/L	CBL-301I	07/20/2021	yes	1100.0000					
Calcium, Total	mg/L	CBL-301I	01/26/2022	yes	999.0000					
Calcium, Total	mg/L	CBL-301I	07/27/2022	yes	1010.0000					
Calcium, Total	mg/L	CBL-301I	01/25/2023		977.0000			964.9444		
Calcium, Total	mg/L	CBL-301I	08/02/2023		1260.0000			1184.0467		
Calcium, Total	mg/L	CBL-301I	01/29/2024		1050.0000			1193.1490		
Calcium, Total	mg/L	CBL-301I	07/23/2024		912.0000			1064.2513		
Calcium, Total	mg/L	CBL-302I	01/22/2016	yes	1030.0000					
Calcium, Total	mg/L	CBL-302I	05/04/2016	yes	1010.0000					
Calcium, Total	mg/L	CBL-302I	07/27/2016	yes	1030.0000					
Calcium, Total	mg/L	CBL-302I	10/24/2016	yes	1070.0000					
Calcium, Total	mg/L	CBL-302I	01/23/2017	yes	1100.0000					
Calcium, Total	mg/L	CBL-302I	03/22/2017	yes	1090.0000					
Calcium, Total	mg/L	CBL-302I	05/16/2017	yes	1100.0000					
Calcium, Total	mg/L	CBL-302I	07/27/2017	yes	1040.0000					
Calcium, Total	mg/L	CBL-302I	02/08/2018	yes	934.0000					
Calcium, Total	mg/L	CBL-302I	07/27/2018	yes	995.0000					

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Table 2

Analytical Data and CUSUM Summary

Constituent	Units	Well	Date	Background	Result		Outlier	CUSUM	Adjusted	
Calcium, Total	mg/L	CBL-302I	01/22/2019	yes	855.0000					
Calcium, Total	mg/L	CBL-302I	07/31/2019	yes	914.0000					
Calcium, Total	mg/L	CBL-302I	01/30/2020	yes	838.0000					
Calcium, Total	mg/L	CBL-302I	09/17/2020	yes	853.0000					
Calcium, Total	mg/L	CBL-302I	01/28/2021	yes	1020.0000					
Calcium, Total	mg/L	CBL-302I	07/21/2021	yes	844.0000					
Calcium, Total	mg/L	CBL-302I	01/27/2022	yes	754.0000					
Calcium, Total	mg/L	CBL-302I	07/28/2022	yes	750.0000					
Calcium, Total	mg/L	CBL-302I	01/26/2023		889.0000			957.0556		
Calcium, Total	mg/L	CBL-302I	07/18/2023		981.0000			957.0556		
Calcium, Total	mg/L	CBL-302I	01/29/2024		937.0000			957.0556		
Calcium, Total	mg/L	CBL-302I	07/22/2024		845.0000			957.0556		
Calcium, Total	mg/L	CBL-306I	01/21/2016	yes	137.0000					
Calcium, Total	mg/L	CBL-306I	05/04/2016	yes	47.2000		yes			*
Calcium, Total	mg/L	CBL-306I	07/26/2016	yes	105.0000		yes			*
Calcium, Total	mg/L	CBL-306I	10/24/2016	yes	198.0000					
Calcium, Total	mg/L	CBL-306I	01/19/2017	yes	174.0000					
Calcium, Total	mg/L	CBL-306I	03/22/2017	yes	204.0000					
Calcium, Total	mg/L	CBL-306I	05/18/2017	yes	205.0000					
Calcium, Total	mg/L	CBL-306I	07/27/2017	yes	234.0000					
Calcium, Total	mg/L	CBL-306I	02/08/2018	yes	230.0000					
Calcium, Total	mg/L	CBL-306I	07/27/2018	yes	275.0000					
Calcium, Total	mg/L	CBL-306I	01/16/2019	yes	180.0000					
Calcium, Total	mg/L	CBL-306I	07/31/2019	yes	106.0000		yes			*
Calcium, Total	mg/L	CBL-306I	08/23/2019	yes	226.0000					
Calcium, Total	mg/L	CBL-306I	01/29/2020	yes	247.0000					
Calcium, Total	mg/L	CBL-306I	09/19/2020	yes	260.0000					
Calcium, Total	mg/L	CBL-306I	01/28/2021	yes	257.0000					
Calcium, Total	mg/L	CBL-306I	07/21/2021	yes	216.0000					
Calcium, Total	mg/L	CBL-306I	01/27/2022	yes	212.0000					
Calcium, Total	mg/L	CBL-306I	07/28/2022	yes	182.0000					
Calcium, Total	mg/L	CBL-306I	01/26/2023		149.0000			214.8125		
Calcium, Total	mg/L	CBL-306I	07/18/2023		260.0000			232.8073		
Calcium, Total	mg/L	CBL-306I	01/29/2024		186.0000			214.8125		
Calcium, Total	mg/L	CBL-306I	07/23/2024		115.0000			214.8125		
Calcium, Total	mg/L	CBL-308I	01/22/2016	yes	903.0000					
Calcium, Total	mg/L	CBL-308I	05/04/2016	yes	870.0000					
Calcium, Total	mg/L	CBL-308I	07/26/2016	yes	911.0000					
Calcium, Total	mg/L	CBL-308I	10/24/2016	yes	939.0000					
Calcium, Total	mg/L	CBL-308I	01/19/2017	yes	919.0000					
Calcium, Total	mg/L	CBL-308I	03/22/2017	yes	947.0000					
Calcium, Total	mg/L	CBL-308I	05/16/2017	yes	954.0000					
Calcium, Total	mg/L	CBL-308I	07/26/2017	yes	878.0000					
Calcium, Total	mg/L	CBL-308I	02/06/2018	yes	859.0000					
Calcium, Total	mg/L	CBL-308I	07/25/2018	yes	863.0000					
Calcium, Total	mg/L	CBL-308I	01/18/2019	yes	760.0000					
Calcium, Total	mg/L	CBL-308I	07/31/2019	yes	840.0000					
Calcium, Total	mg/L	CBL-308I	01/29/2020	yes	745.0000					
Calcium, Total	mg/L	CBL-308I	09/18/2020	yes	838.0000					
Calcium, Total	mg/L	CBL-308I	01/28/2021	yes	830.0000					

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Table 2

Analytical Data and CUSUM Summary

Constituent	Units	Well	Date	Background	Result		Outlier	CUSUM	Adjusted	
Calcium, Total	mg/L	CBL-308I	07/21/2021	yes	684.0000					
Calcium, Total	mg/L	CBL-308I	01/27/2022	yes	974.0000					
Calcium, Total	mg/L	CBL-308I	07/27/2022	yes	736.0000					
Calcium, Total	mg/L	CBL-308I	01/26/2023		732.0000			858.3333		
Calcium, Total	mg/L	CBL-308I	07/18/2023		642.0000			858.3333		
Calcium, Total	mg/L	CBL-308I	01/30/2024		714.0000			858.3333		
Calcium, Total	mg/L	CBL-308I	07/22/2024		683.0000			858.3333		
Calcium, Total	mg/L	CBL-341I	01/23/2017	yes	854.0000					
Calcium, Total	mg/L	CBL-341I	02/23/2017	yes	870.0000					
Calcium, Total	mg/L	CBL-341I	03/22/2017	yes	906.0000					
Calcium, Total	mg/L	CBL-341I	04/20/2017	yes	898.0000					
Calcium, Total	mg/L	CBL-341I	05/16/2017	yes	860.0000					
Calcium, Total	mg/L	CBL-341I	06/20/2017	yes	950.0000					
Calcium, Total	mg/L	CBL-341I	07/27/2017	yes	829.0000					
Calcium, Total	mg/L	CBL-341I	09/11/2017	yes	848.0000					
Calcium, Total	mg/L	CBL-341I	02/08/2018	yes	810.0000					
Calcium, Total	mg/L	CBL-341I	08/24/2018	yes	824.0000					
Calcium, Total	mg/L	CBL-341I	01/22/2019	yes	782.0000					
Calcium, Total	mg/L	CBL-341I	07/31/2019	yes	714.0000					
Calcium, Total	mg/L	CBL-341I	01/30/2020	yes	767.0000					
Calcium, Total	mg/L	CBL-341I	09/17/2020	yes	814.0000					
Calcium, Total	mg/L	CBL-341I	01/27/2021	yes	874.0000					
Calcium, Total	mg/L	CBL-341I	07/22/2021	yes	852.0000					
Calcium, Total	mg/L	CBL-341I	01/27/2022	yes	1040.0000					
Calcium, Total	mg/L	CBL-341I	07/28/2022	yes	704.0000					
Calcium, Total	mg/L	CBL-341I	01/26/2023		797.0000			844.2222		
Calcium, Total	mg/L	CBL-341I	07/19/2023		710.0000			844.2222		
Calcium, Total	mg/L	CBL-341I	01/29/2024		875.0000			844.2222		
Calcium, Total	mg/L	CBL-341I	07/22/2024		801.0000			844.2222		
Chloride	mg/L	CBL-301I	01/21/2016	yes	2300.0000					
Chloride	mg/L	CBL-301I	05/04/2016	yes	2160.0000					
Chloride	mg/L	CBL-301I	07/27/2016	yes	2290.0000					
Chloride	mg/L	CBL-301I	10/24/2016	yes	2250.0000					
Chloride	mg/L	CBL-301I	01/23/2017	yes	3200.0000					
Chloride	mg/L	CBL-301I	03/22/2017	yes	2390.0000					
Chloride	mg/L	CBL-301I	05/18/2017	yes	2420.0000					
Chloride	mg/L	CBL-301I	07/26/2017	yes	2500.0000					
Chloride	mg/L	CBL-301I	02/08/2018	yes	2480.0000					
Chloride	mg/L	CBL-301I	07/25/2018	yes	1330.0000					
Chloride	mg/L	CBL-301I	01/17/2019	yes	619.0000		yes			*
Chloride	mg/L	CBL-301I	05/02/2019	yes	1910.0000					
Chloride	mg/L	CBL-301I	07/31/2019	yes	2240.0000					
Chloride	mg/L	CBL-301I	01/28/2020	yes	2360.0000					
Chloride	mg/L	CBL-301I	09/17/2020	yes	2270.0000					
Chloride	mg/L	CBL-301I	01/26/2021	yes	2420.0000					
Chloride	mg/L	CBL-301I	07/20/2021	yes	2590.0000					
Chloride	mg/L	CBL-301I	01/26/2022	yes	2440.0000					
Chloride	mg/L	CBL-301I	07/27/2022	yes	1840.0000					
Chloride	mg/L	CBL-301I	01/25/2023		1960.0000			2299.4444		
Chloride	mg/L	CBL-301I	08/02/2023		2220.0000			2299.4444		

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Analytical Data and CUSUM Summary

Constituent	Units	Well	Date	Background	Result		Outlier	CUSUM	Adjusted	
Chloride	mg/L	CBL-301I	01/29/2024		2270.0000			2299.4444		
Chloride	mg/L	CBL-301I	07/23/2024		2350.0000			2299.4444		
Chloride	mg/L	CBL-302I	01/22/2016	yes	2190.0000					
Chloride	mg/L	CBL-302I	05/04/2016	yes	2130.0000					
Chloride	mg/L	CBL-302I	07/27/2016	yes	2210.0000					
Chloride	mg/L	CBL-302I	10/24/2016	yes	2170.0000					
Chloride	mg/L	CBL-302I	01/23/2017	yes	2080.0000					
Chloride	mg/L	CBL-302I	03/22/2017	yes	2050.0000					
Chloride	mg/L	CBL-302I	05/16/2017	yes	2230.0000					
Chloride	mg/L	CBL-302I	07/27/2017	yes	2040.0000					
Chloride	mg/L	CBL-302I	02/08/2018	yes	2080.0000					
Chloride	mg/L	CBL-302I	07/27/2018	yes	1980.0000					
Chloride	mg/L	CBL-302I	01/22/2019	yes	1960.0000					
Chloride	mg/L	CBL-302I	07/31/2019	yes	1540.0000					
Chloride	mg/L	CBL-302I	01/30/2020	yes	1540.0000					
Chloride	mg/L	CBL-302I	09/17/2020	yes	1410.0000					
Chloride	mg/L	CBL-302I	01/28/2021	yes	1370.0000					
Chloride	mg/L	CBL-302I	07/21/2021	yes	1380.0000					
Chloride	mg/L	CBL-302I	01/27/2022	yes	1310.0000					
Chloride	mg/L	CBL-302I	07/28/2022	yes	1300.0000					
Chloride	mg/L	CBL-302I	01/26/2023		1460.0000			1831.6667		
Chloride	mg/L	CBL-302I	07/18/2023		1330.0000			1831.6667		
Chloride	mg/L	CBL-302I	01/29/2024		1440.0000			1831.6667		
Chloride	mg/L	CBL-302I	07/22/2024		1650.0000			1831.6667		
Chloride	mg/L	CBL-306I	01/21/2016	yes	155.0000					
Chloride	mg/L	CBL-306I	05/04/2016	yes	20.0000		yes			*
Chloride	mg/L	CBL-306I	07/26/2016	yes	114.0000		yes			*
Chloride	mg/L	CBL-306I	10/24/2016	yes	330.0000					
Chloride	mg/L	CBL-306I	01/19/2017	yes	197.0000					
Chloride	mg/L	CBL-306I	03/22/2017	yes	231.0000					
Chloride	mg/L	CBL-306I	05/18/2017	yes	289.0000					
Chloride	mg/L	CBL-306I	07/27/2017	yes	350.0000					
Chloride	mg/L	CBL-306I	02/08/2018	yes	385.0000					
Chloride	mg/L	CBL-306I	07/27/2018	yes	283.0000					
Chloride	mg/L	CBL-306I	01/16/2019	yes	215.0000					
Chloride	mg/L	CBL-306I	07/31/2019	yes	538.0000		yes			*
Chloride	mg/L	CBL-306I	08/23/2019	yes	318.0000					
Chloride	mg/L	CBL-306I	01/29/2020	yes	445.0000					
Chloride	mg/L	CBL-306I	09/19/2020	yes	420.0000					
Chloride	mg/L	CBL-306I	01/28/2021	yes	292.0000					
Chloride	mg/L	CBL-306I	07/21/2021	yes	255.0000					
Chloride	mg/L	CBL-306I	01/27/2022	yes	384.0000					
Chloride	mg/L	CBL-306I	07/28/2022	yes	261.0000					
Chloride	mg/L	CBL-306I	01/26/2023		148.0000			300.6250		
Chloride	mg/L	CBL-306I	07/18/2023		336.0000			300.6250		
Chloride	mg/L	CBL-306I	01/29/2024		153.0000			300.6250		
Chloride	mg/L	CBL-306I	07/23/2024		10.2000			300.6250		
Chloride	mg/L	CBL-308I	01/22/2016	yes	2760.0000					
Chloride	mg/L	CBL-308I	05/04/2016	yes	2580.0000					
Chloride	mg/L	CBL-308I	07/26/2016	yes	2680.0000					

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Constituent	Units	Well	Date	Background	Result		Outlier	CUSUM	Adjusted	
Chloride	mg/L	CBL-308I	10/24/2016	yes	2870.0000					
Chloride	mg/L	CBL-308I	01/19/2017	yes	2360.0000					
Chloride	mg/L	CBL-308I	03/22/2017	yes	2530.0000					
Chloride	mg/L	CBL-308I	05/16/2017	yes	2740.0000					
Chloride	mg/L	CBL-308I	07/26/2017	yes	2760.0000					
Chloride	mg/L	CBL-308I	02/06/2018	yes	2750.0000					
Chloride	mg/L	CBL-308I	07/25/2018	yes	2680.0000					
Chloride	mg/L	CBL-308I	01/18/2019	yes	2240.0000					
Chloride	mg/L	CBL-308I	07/31/2019	yes	2290.0000					
Chloride	mg/L	CBL-308I	01/29/2020	yes	2110.0000					
Chloride	mg/L	CBL-308I	09/18/2020	yes	2410.0000					
Chloride	mg/L	CBL-308I	01/28/2021	yes	2200.0000					
Chloride	mg/L	CBL-308I	07/21/2021	yes	1780.0000					
Chloride	mg/L	CBL-308I	01/27/2022	yes	2020.0000					
Chloride	mg/L	CBL-308I	07/27/2022	yes	2470.0000					
Chloride	mg/L	CBL-308I	01/26/2023		2570.0000			2457.2222		
Chloride	mg/L	CBL-308I	07/18/2023		1840.0000			2457.2222		
Chloride	mg/L	CBL-308I	01/30/2024		1790.0000			2457.2222		
Chloride	mg/L	CBL-308I	07/22/2024		2250.0000			2457.2222		
Chloride	mg/L	CBL-341I	01/23/2017	yes	1600.0000					
Chloride	mg/L	CBL-341I	02/23/2017	yes	2000.0000					
Chloride	mg/L	CBL-341I	03/22/2017	yes	1780.0000					
Chloride	mg/L	CBL-341I	04/20/2017	yes	1770.0000					
Chloride	mg/L	CBL-341I	05/16/2017	yes	1900.0000					
Chloride	mg/L	CBL-341I	06/20/2017	yes	1820.0000					
Chloride	mg/L	CBL-341I	07/27/2017	yes	1970.0000					
Chloride	mg/L	CBL-341I	09/11/2017	yes	1710.0000					
Chloride	mg/L	CBL-341I	02/08/2018	yes	2110.0000					
Chloride	mg/L	CBL-341I	08/24/2018	yes	1910.0000					
Chloride	mg/L	CBL-341I	01/22/2019	yes	1790.0000					
Chloride	mg/L	CBL-341I	07/31/2019	yes	1650.0000					
Chloride	mg/L	CBL-341I	01/30/2020	yes	1780.0000					
Chloride	mg/L	CBL-341I	09/17/2020	yes	1700.0000					
Chloride	mg/L	CBL-341I	01/27/2021	yes	1800.0000					
Chloride	mg/L	CBL-341I	07/22/2021	yes	1750.0000					
Chloride	mg/L	CBL-341I	01/27/2022	yes	1810.0000					
Chloride	mg/L	CBL-341I	07/28/2022	yes	1690.0000					
Chloride	mg/L	CBL-341I	01/26/2023		1660.0000			1807.7778		
Chloride	mg/L	CBL-341I	07/19/2023		1530.0000			1807.7778		
Chloride	mg/L	CBL-341I	01/29/2024		1700.0000			1807.7778		
Chloride	mg/L	CBL-341I	07/22/2024		1960.0000			1863.1450		
Fluoride	mg/L	CBL-301I	01/21/2016	yes	0.2500	ND			0.5000	***
Fluoride	mg/L	CBL-301I	05/04/2016	yes	0.5000	ND				
Fluoride	mg/L	CBL-301I	07/27/2016	yes	0.5000	ND				
Fluoride	mg/L	CBL-301I	10/24/2016	yes	0.2500	ND			0.5000	***
Fluoride	mg/L	CBL-301I	01/23/2017	yes	0.3120					
Fluoride	mg/L	CBL-301I	03/22/2017	yes	0.5000	ND				
Fluoride	mg/L	CBL-301I	05/18/2017	yes	0.5000	ND				
Fluoride	mg/L	CBL-301I	07/26/2017	yes	0.5000	ND				
Fluoride	mg/L	CBL-301I	02/08/2018	yes	0.5000	ND				

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Table 2

Analytical Data and CUSUM Summary

Constituent	Units	Well	Date	Background	Result		Outlier	CUSUM	Adjusted	
Fluoride	mg/L	CBL-301I	07/25/2018	yes	0.5000	ND				
Fluoride	mg/L	CBL-301I	01/17/2019	yes	0.2190					
Fluoride	mg/L	CBL-301I	05/02/2019	yes	0.1120					
Fluoride	mg/L	CBL-301I	07/31/2019	yes	0.0510					
Fluoride	mg/L	CBL-301I	01/28/2020	yes	0.1300					
Fluoride	mg/L	CBL-301I	09/17/2020	yes	0.2500	ND			0.5000	***
Fluoride	mg/L	CBL-301I	01/26/2021	yes	0.5000	ND				
Fluoride	mg/L	CBL-301I	07/20/2021	yes	2.6800					
Fluoride	mg/L	CBL-301I	09/07/2021	yes	0.5000	ND				
Fluoride	mg/L	CBL-301I	01/26/2022	yes	0.0500	ND			0.5000	***
Fluoride	mg/L	CBL-301I	07/27/2022	yes	0.1560					
Fluoride	mg/L	CBL-301I	01/25/2023		1.7200			1.3175		
Fluoride	mg/L	CBL-301I	03/07/2023		0.0500	ND		0.5080		
Fluoride	mg/L	CBL-301I	08/02/2023		0.0540			0.5080		
Fluoride	mg/L	CBL-301I	01/29/2024		0.1000	ND		0.5080		
Fluoride	mg/L	CBL-301I	07/23/2024		0.1000	ND		0.5080		
Fluoride	mg/L	CBL-302I	01/22/2016	yes	0.2500	ND			0.5000	***
Fluoride	mg/L	CBL-302I	05/04/2016	yes	0.5000	ND				
Fluoride	mg/L	CBL-302I	07/27/2016	yes	0.5000	ND				
Fluoride	mg/L	CBL-302I	10/24/2016	yes	0.2500	ND			0.5000	***
Fluoride	mg/L	CBL-302I	01/23/2017	yes	0.3320					
Fluoride	mg/L	CBL-302I	03/22/2017	yes	0.5000	ND				
Fluoride	mg/L	CBL-302I	05/16/2017	yes	0.5000	ND				
Fluoride	mg/L	CBL-302I	07/27/2017	yes	0.5000	ND				
Fluoride	mg/L	CBL-302I	02/08/2018	yes	0.1120					
Fluoride	mg/L	CBL-302I	07/27/2018	yes	0.5000	ND				
Fluoride	mg/L	CBL-302I	01/22/2019	yes	0.0402					
Fluoride	mg/L	CBL-302I	07/31/2019	yes	0.0605					
Fluoride	mg/L	CBL-302I	01/30/2020	yes	0.1930					
Fluoride	mg/L	CBL-302I	09/17/2020	yes	0.2500	ND			0.5000	***
Fluoride	mg/L	CBL-302I	01/28/2021	yes	0.5000	ND				
Fluoride	mg/L	CBL-302I	07/21/2021	yes	2.2500					
Fluoride	mg/L	CBL-302I	09/07/2021	yes	0.2500	ND			0.5000	***
Fluoride	mg/L	CBL-302I	01/27/2022	yes	0.0500	ND			0.5000	***
Fluoride	mg/L	CBL-302I	07/28/2022	yes	0.1650					
Fluoride	mg/L	CBL-302I	01/26/2023		0.5000	ND		0.4817		
Fluoride	mg/L	CBL-302I	07/18/2023		1.7600			1.4133		
Fluoride	mg/L	CBL-302I	01/29/2024		0.1000	ND		0.5849		
Fluoride	mg/L	CBL-302I	07/22/2024		0.1010			0.4817		
Fluoride	mg/L	CBL-306I	01/21/2016	yes	2.5000					
Fluoride	mg/L	CBL-306I	05/04/2016	yes	1.0000					
Fluoride	mg/L	CBL-306I	07/26/2016	yes	1.3700					
Fluoride	mg/L	CBL-306I	10/24/2016	yes	2.3800					
Fluoride	mg/L	CBL-306I	01/19/2017	yes	1.8500					
Fluoride	mg/L	CBL-306I	03/22/2017	yes	12.6000		yes			*
Fluoride	mg/L	CBL-306I	05/18/2017	yes	2.2000					
Fluoride	mg/L	CBL-306I	07/27/2017	yes	2.9100					
Fluoride	mg/L	CBL-306I	02/08/2018	yes	2.8100					
Fluoride	mg/L	CBL-306I	07/27/2018	yes	2.9500					
Fluoride	mg/L	CBL-306I	01/16/2019	yes	1.9800					

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Table 2

Analytical Data and CUSUM Summary

Constituent	Units	Well	Date	Background	Result		Outlier	CUSUM	Adjusted	
Fluoride	mg/L	CBL-306I	07/31/2019	yes	9.2600		yes			*
Fluoride	mg/L	CBL-306I	08/23/2019	yes	2.6600					
Fluoride	mg/L	CBL-306I	01/29/2020	yes	2.8300					
Fluoride	mg/L	CBL-306I	09/19/2020	yes	2.7200					
Fluoride	mg/L	CBL-306I	01/28/2021	yes	2.9000					
Fluoride	mg/L	CBL-306I	07/21/2021	yes	2.4200					
Fluoride	mg/L	CBL-306I	01/27/2022	yes	2.9900					
Fluoride	mg/L	CBL-306I	07/28/2022	yes	2.2600					
Fluoride	mg/L	CBL-306I	01/26/2023		1.9200			2.3959		
Fluoride	mg/L	CBL-306I	07/18/2023		2.6600			2.3959		
Fluoride	mg/L	CBL-306I	01/29/2024		1.4900			2.3959		
Fluoride	mg/L	CBL-306I	07/23/2024		0.8230			2.3959		
Fluoride	mg/L	CBL-308I	01/22/2016	yes	1.4900					
Fluoride	mg/L	CBL-308I	05/04/2016	yes	2.3000					
Fluoride	mg/L	CBL-308I	07/26/2016	yes	1.6400					
Fluoride	mg/L	CBL-308I	10/24/2016	yes	1.5900					
Fluoride	mg/L	CBL-308I	01/19/2017	yes	1.3300					
Fluoride	mg/L	CBL-308I	03/22/2017	yes	9.0500		yes			*
Fluoride	mg/L	CBL-308I	05/16/2017	yes	1.7000					
Fluoride	mg/L	CBL-308I	07/26/2017	yes	1.9000					
Fluoride	mg/L	CBL-308I	02/06/2018	yes	1.7600					
Fluoride	mg/L	CBL-308I	07/25/2018	yes	2.1000					
Fluoride	mg/L	CBL-308I	01/18/2019	yes	1.6800					
Fluoride	mg/L	CBL-308I	07/31/2019	yes	1.6200					
Fluoride	mg/L	CBL-308I	01/29/2020	yes	1.6000					
Fluoride	mg/L	CBL-308I	09/18/2020	yes	1.3300					
Fluoride	mg/L	CBL-308I	01/28/2021	yes	1.4400					
Fluoride	mg/L	CBL-308I	07/21/2021	yes	1.7400					
Fluoride	mg/L	CBL-308I	01/27/2022	yes	1.7500					
Fluoride	mg/L	CBL-308I	07/27/2022	yes	1.4300					
Fluoride	mg/L	CBL-308I	01/26/2023		0.5000	ND		1.6706		
Fluoride	mg/L	CBL-308I	07/18/2023		1.8600			1.6706		
Fluoride	mg/L	CBL-308I	01/30/2024		1.2600			1.6706		
Fluoride	mg/L	CBL-308I	07/22/2024		0.8640			1.6706		
Fluoride	mg/L	CBL-341I	01/23/2017	yes	0.5300					
Fluoride	mg/L	CBL-341I	02/23/2017	yes	0.5000	ND				
Fluoride	mg/L	CBL-341I	03/22/2017	yes	0.5000	ND				
Fluoride	mg/L	CBL-341I	04/20/2017	yes	0.5000	ND				
Fluoride	mg/L	CBL-341I	05/16/2017	yes	0.5000	ND				
Fluoride	mg/L	CBL-341I	06/20/2017	yes	0.3350					
Fluoride	mg/L	CBL-341I	07/27/2017	yes	0.0550					
Fluoride	mg/L	CBL-341I	09/11/2017	yes	0.3670					
Fluoride	mg/L	CBL-341I	02/08/2018	yes	0.1060					
Fluoride	mg/L	CBL-341I	08/24/2018	yes	0.1140					
Fluoride	mg/L	CBL-341I	01/22/2019	yes	0.0546					
Fluoride	mg/L	CBL-341I	07/31/2019	yes	0.1000					
Fluoride	mg/L	CBL-341I	01/30/2020	yes	0.1530					
Fluoride	mg/L	CBL-341I	09/17/2020	yes	0.2500	ND			0.5000	***
Fluoride	mg/L	CBL-341I	01/27/2021	yes	0.5000	ND				
Fluoride	mg/L	CBL-341I	07/22/2021	yes	1.1600					

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Table 2

Analytical Data and CUSUM Summary

Constituent	Units	Well	Date	Background	Result		Outlier	CUSUM	Adjusted	
Fluoride	mg/L	CBL-341I	09/07/2021	yes	0.2500	ND			0.5000	***
Fluoride	mg/L	CBL-341I	01/27/2022	yes	0.0500	ND			0.5000	***
Fluoride	mg/L	CBL-341I	07/28/2022	yes	0.1410					
Fluoride	mg/L	CBL-341I	01/26/2023		0.2500	ND		0.3745		
Fluoride	mg/L	CBL-341I	07/19/2023		1.1200			0.9191		
Fluoride	mg/L	CBL-341I	01/29/2024		0.1000	ND		0.3745		
Fluoride	mg/L	CBL-341I	07/22/2024		0.1000	ND		0.3745		
pH	S.U.	CBL-301I	01/21/2016	yes	6.3300					
pH	S.U.	CBL-301I	05/04/2016	yes	6.2600					
pH	S.U.	CBL-301I	07/27/2016	yes	5.9500					
pH	S.U.	CBL-301I	10/24/2016	yes	6.2300					
pH	S.U.	CBL-301I	01/23/2017	yes	6.2600					
pH	S.U.	CBL-301I	03/22/2017	yes	6.3100					
pH	S.U.	CBL-301I	05/18/2017	yes	5.9500					
pH	S.U.	CBL-301I	07/26/2017	yes	6.0200					
pH	S.U.	CBL-301I	02/08/2018	yes	6.1700					
pH	S.U.	CBL-301I	07/25/2018	yes	6.0400					
pH	S.U.	CBL-301I	01/17/2019	yes	7.1600					
pH	S.U.	CBL-301I	05/02/2019	yes	6.1400					
pH	S.U.	CBL-301I	07/31/2019	yes	6.1900					
pH	S.U.	CBL-301I	01/28/2020	yes	6.2600					
pH	S.U.	CBL-301I	09/17/2020	yes	6.1300					
pH	S.U.	CBL-301I	01/26/2021	yes	6.0600					
pH	S.U.	CBL-301I	07/20/2021	yes	6.1300					
pH	S.U.	CBL-301I	09/07/2021	yes	6.1400					
pH	S.U.	CBL-301I	01/26/2022	yes	6.2700					
pH	S.U.	CBL-301I	07/27/2022	yes	6.0800					
pH	S.U.	CBL-301I	08/30/2022	yes	6.1400					
pH	S.U.	CBL-301I	10/25/2022	yes	6.2100					
pH	S.U.	CBL-301I	01/25/2023		6.3400			6.2014		
pH	S.U.	CBL-301I	08/02/2023		6.2100			6.2014		
pH	S.U.	CBL-301I	01/29/2024		6.3500			6.2014		
pH	S.U.	CBL-301I	07/23/2024		6.4500			6.2703		
pH	S.U.	CBL-302I	01/22/2016	yes	6.2900					
pH	S.U.	CBL-302I	05/04/2016	yes	6.0100					
pH	S.U.	CBL-302I	07/27/2016	yes	5.1700					
pH	S.U.	CBL-302I	10/24/2016	yes	7.7500					
pH	S.U.	CBL-302I	01/23/2017	yes	5.3600					
pH	S.U.	CBL-302I	03/22/2017	yes	5.4000					
pH	S.U.	CBL-302I	05/16/2017	yes	4.9400					
pH	S.U.	CBL-302I	07/27/2017	yes	6.2000					
pH	S.U.	CBL-302I	02/08/2018	yes	6.2100					
pH	S.U.	CBL-302I	07/27/2018	yes	5.7700					
pH	S.U.	CBL-302I	01/22/2019	yes	6.4400					
pH	S.U.	CBL-302I	07/31/2019	yes	6.1500					
pH	S.U.	CBL-302I	01/30/2020	yes	6.3400					
pH	S.U.	CBL-302I	09/17/2020	yes	6.2000					
pH	S.U.	CBL-302I	01/28/2021	yes	6.2100					
pH	S.U.	CBL-302I	07/21/2021	yes	6.0600					
pH	S.U.	CBL-302I	09/07/2021	yes	6.2800					

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Table 2

Analytical Data and CUSUM Summary

Constituent	Units	Well	Date	Background	Result		Outlier	CUSUM	Adjusted	
pH	S.U.	CBL-302I	01/27/2022	yes	6.3200					
pH	S.U.	CBL-302I	07/28/2022	yes	6.2100					
pH	S.U.	CBL-302I	01/26/2023		6.3300			6.0689		
pH	S.U.	CBL-302I	07/18/2023		6.2000			6.0689		
pH	S.U.	CBL-302I	01/29/2024		6.2800			6.0689		
pH	S.U.	CBL-302I	07/22/2024		6.4100			6.0689		
pH	S.U.	CBL-306I	01/21/2016	yes	7.0900					
pH	S.U.	CBL-306I	05/04/2016	yes	6.6900					
pH	S.U.	CBL-306I	07/26/2016	yes	6.9500					
pH	S.U.	CBL-306I	10/24/2016	yes	6.7200					
pH	S.U.	CBL-306I	01/19/2017	yes	7.2900					
pH	S.U.	CBL-306I	03/22/2017	yes	4.4100					
pH	S.U.	CBL-306I	05/18/2017	yes	5.6100					
pH	S.U.	CBL-306I	07/27/2017	yes	6.9400					
pH	S.U.	CBL-306I	02/08/2018	yes	6.6700					
pH	S.U.	CBL-306I	07/27/2018	yes	6.8600					
pH	S.U.	CBL-306I	01/16/2019	yes	6.7800					
pH	S.U.	CBL-306I	07/31/2019	yes	6.9200		yes			*
pH	S.U.	CBL-306I	08/23/2019	yes	6.8300					
pH	S.U.	CBL-306I	01/29/2020	yes	6.7000					
pH	S.U.	CBL-306I	09/19/2020	yes	7.1600					
pH	S.U.	CBL-306I	01/28/2021	yes	6.8400					
pH	S.U.	CBL-306I	07/21/2021	yes	6.5500					
pH	S.U.	CBL-306I	01/27/2022	yes	6.8700					
pH	S.U.	CBL-306I	07/28/2022	yes	6.7000					
pH	S.U.	CBL-306I	01/26/2023		7.3000			6.8073		
pH	S.U.	CBL-306I	07/18/2023		6.4900			6.6478		
pH	S.U.	CBL-306I	01/29/2024		6.5500			6.6478		
pH	S.U.	CBL-306I	07/23/2024		6.5400			6.6478		
pH	S.U.	CBL-308I	01/22/2016	yes	6.3600					
pH	S.U.	CBL-308I	05/04/2016	yes	6.1300					
pH	S.U.	CBL-308I	07/26/2016	yes	5.9500					
pH	S.U.	CBL-308I	10/24/2016	yes	6.2700					
pH	S.U.	CBL-308I	01/19/2017	yes	6.8300					
pH	S.U.	CBL-308I	03/22/2017	yes	6.2700					
pH	S.U.	CBL-308I	05/16/2017	yes	5.5400					
pH	S.U.	CBL-308I	07/26/2017	yes	6.2700					
pH	S.U.	CBL-308I	02/06/2018	yes	6.2600					
pH	S.U.	CBL-308I	07/25/2018	yes	6.0700					
pH	S.U.	CBL-308I	01/18/2019	yes	6.3900					
pH	S.U.	CBL-308I	07/31/2019	yes	6.2500					
pH	S.U.	CBL-308I	01/29/2020	yes	6.3700					
pH	S.U.	CBL-308I	09/18/2020	yes	6.2200					
pH	S.U.	CBL-308I	01/28/2021	yes	6.2600					
pH	S.U.	CBL-308I	07/21/2021	yes	6.1600					
pH	S.U.	CBL-308I	01/27/2022	yes	6.3600					
pH	S.U.	CBL-308I	07/27/2022	yes	6.2300					
pH	S.U.	CBL-308I	01/26/2023		6.4100			6.2328		
pH	S.U.	CBL-308I	07/18/2023		6.2600			6.2328		
pH	S.U.	CBL-308I	01/30/2024		6.5700			6.3844		

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Table 2

Analytical Data and CUSUM Summary

Constituent	Units	Well	Date	Background	Result		Outlier	CUSUM	Adjusted	
pH	S.U.	CBL-308I	07/22/2024		6.5300			6.4960		
pH	S.U.	CBL-341I	01/23/2017	yes	5.7400					
pH	S.U.	CBL-341I	02/23/2017	yes	5.2300		yes			*
pH	S.U.	CBL-341I	03/22/2017	yes	5.7200					
pH	S.U.	CBL-341I	04/20/2017	yes	5.7300					
pH	S.U.	CBL-341I	05/16/2017	yes	5.5400					
pH	S.U.	CBL-341I	06/20/2017	yes	6.1900					
pH	S.U.	CBL-341I	07/27/2017	yes	6.2100					
pH	S.U.	CBL-341I	09/11/2017	yes	6.1000					
pH	S.U.	CBL-341I	02/08/2018	yes	6.1800					
pH	S.U.	CBL-341I	08/24/2018	yes	5.8200					
pH	S.U.	CBL-341I	01/22/2019	yes	6.3800					
pH	S.U.	CBL-341I	07/31/2019	yes	6.2300					
pH	S.U.	CBL-341I	01/30/2020	yes	6.2700					
pH	S.U.	CBL-341I	09/17/2020	yes	6.1400					
pH	S.U.	CBL-341I	01/27/2021	yes	6.0600					
pH	S.U.	CBL-341I	07/22/2021	yes	5.9800					
pH	S.U.	CBL-341I	09/07/2021	yes	6.1800					
pH	S.U.	CBL-341I	01/27/2022	yes	6.2600					
pH	S.U.	CBL-341I	07/28/2022	yes	6.1600					
pH	S.U.	CBL-341I	01/26/2023		6.2800			6.1017		
pH	S.U.	CBL-341I	07/19/2023		6.2200			6.0939		
pH	S.U.	CBL-341I	01/29/2024		6.3800			6.2462		
pH	S.U.	CBL-341I	07/22/2024		6.3900			6.4084		
Sulfate	mg/L	CBL-301I	01/21/2016	yes	336.0000					
Sulfate	mg/L	CBL-301I	05/04/2016	yes	311.0000					
Sulfate	mg/L	CBL-301I	07/27/2016	yes	336.0000					
Sulfate	mg/L	CBL-301I	10/24/2016	yes	326.0000					
Sulfate	mg/L	CBL-301I	01/23/2017	yes	488.0000					
Sulfate	mg/L	CBL-301I	03/22/2017	yes	337.0000					
Sulfate	mg/L	CBL-301I	05/18/2017	yes	342.0000					
Sulfate	mg/L	CBL-301I	07/26/2017	yes	381.0000					
Sulfate	mg/L	CBL-301I	02/08/2018	yes	344.0000					
Sulfate	mg/L	CBL-301I	07/25/2018	yes	196.0000					
Sulfate	mg/L	CBL-301I	01/17/2019	yes	104.0000		yes			*
Sulfate	mg/L	CBL-301I	05/02/2019	yes	398.0000					
Sulfate	mg/L	CBL-301I	07/31/2019	yes	332.0000					
Sulfate	mg/L	CBL-301I	01/28/2020	yes	349.0000					
Sulfate	mg/L	CBL-301I	09/17/2020	yes	350.0000					
Sulfate	mg/L	CBL-301I	01/26/2021	yes	374.0000					
Sulfate	mg/L	CBL-301I	07/20/2021	yes	419.0000					
Sulfate	mg/L	CBL-301I	01/26/2022	yes	406.0000					
Sulfate	mg/L	CBL-301I	07/27/2022	yes	285.0000					
Sulfate	mg/L	CBL-301I	01/25/2023		1370.0000			1324.7798		**
Sulfate	mg/L	CBL-301I	03/07/2023		207.0000			350.5556		
Sulfate	mg/L	CBL-301I	08/02/2023		383.0000			350.5556		
Sulfate	mg/L	CBL-301I	01/29/2024		475.0000			429.7798		
Sulfate	mg/L	CBL-301I	07/23/2024		454.0000			488.0040		
Sulfate	mg/L	CBL-302I	01/22/2016	yes	1020.0000					
Sulfate	mg/L	CBL-302I	05/04/2016	yes	993.0000					

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Table 2

Analytical Data and CUSUM Summary

Constituent	Units	Well	Date	Background	Result		Outlier	CUSUM	Adjusted	
Sulfate	mg/L	CBL-302I	07/27/2016	yes	1090.0000					
Sulfate	mg/L	CBL-302I	10/24/2016	yes	1180.0000					
Sulfate	mg/L	CBL-302I	01/23/2017	yes	1150.0000					
Sulfate	mg/L	CBL-302I	03/22/2017	yes	1120.0000					
Sulfate	mg/L	CBL-302I	05/16/2017	yes	1230.0000					
Sulfate	mg/L	CBL-302I	07/27/2017	yes	1180.0000					
Sulfate	mg/L	CBL-302I	02/08/2018	yes	1240.0000					
Sulfate	mg/L	CBL-302I	07/27/2018	yes	1390.0000					
Sulfate	mg/L	CBL-302I	01/22/2019	yes	1250.0000					
Sulfate	mg/L	CBL-302I	07/31/2019	yes	1260.0000					
Sulfate	mg/L	CBL-302I	01/30/2020	yes	1350.0000					
Sulfate	mg/L	CBL-302I	09/17/2020	yes	1280.0000					
Sulfate	mg/L	CBL-302I	01/28/2021	yes	1290.0000					
Sulfate	mg/L	CBL-302I	07/21/2021	yes	1350.0000					
Sulfate	mg/L	CBL-302I	01/27/2022	yes	1340.0000					
Sulfate	mg/L	CBL-302I	07/28/2022	yes	1300.0000					
Sulfate	mg/L	CBL-302I	01/26/2023		1390.0000			1304.4147		
Sulfate	mg/L	CBL-302I	07/18/2023		1230.0000			1225.8850		
Sulfate	mg/L	CBL-302I	01/29/2024		1330.0000			1247.3553		
Sulfate	mg/L	CBL-302I	07/22/2024		1370.0000			1308.8255		
Sulfate	mg/L	CBL-306I	01/21/2016	yes	266.0000					
Sulfate	mg/L	CBL-306I	05/04/2016	yes	29.5000		yes			*
Sulfate	mg/L	CBL-306I	07/26/2016	yes	139.0000					
Sulfate	mg/L	CBL-306I	10/24/2016	yes	432.0000					
Sulfate	mg/L	CBL-306I	01/19/2017	yes	270.0000					
Sulfate	mg/L	CBL-306I	03/22/2017	yes	340.0000					
Sulfate	mg/L	CBL-306I	05/18/2017	yes	412.0000					
Sulfate	mg/L	CBL-306I	07/27/2017	yes	513.0000					
Sulfate	mg/L	CBL-306I	02/08/2018	yes	493.0000					
Sulfate	mg/L	CBL-306I	07/27/2018	yes	406.0000					
Sulfate	mg/L	CBL-306I	01/16/2019	yes	292.0000					
Sulfate	mg/L	CBL-306I	07/31/2019	yes	816.0000		yes			*
Sulfate	mg/L	CBL-306I	08/23/2019	yes	387.0000					
Sulfate	mg/L	CBL-306I	01/29/2020	yes	561.0000					
Sulfate	mg/L	CBL-306I	09/19/2020	yes	506.0000					
Sulfate	mg/L	CBL-306I	01/28/2021	yes	388.0000					
Sulfate	mg/L	CBL-306I	07/21/2021	yes	336.0000					
Sulfate	mg/L	CBL-306I	01/27/2022	yes	510.0000					
Sulfate	mg/L	CBL-306I	07/28/2022	yes	348.0000					
Sulfate	mg/L	CBL-306I	01/26/2023		205.0000			388.1765		
Sulfate	mg/L	CBL-306I	07/18/2023		454.0000			388.1765		
Sulfate	mg/L	CBL-306I	01/29/2024		266.0000			388.1765		
Sulfate	mg/L	CBL-306I	07/23/2024		70.7000			388.1765		
Sulfate	mg/L	CBL-308I	01/22/2016	yes	1490.0000					
Sulfate	mg/L	CBL-308I	05/04/2016	yes	1410.0000					
Sulfate	mg/L	CBL-308I	07/26/2016	yes	1490.0000					
Sulfate	mg/L	CBL-308I	10/24/2016	yes	1550.0000					
Sulfate	mg/L	CBL-308I	01/19/2017	yes	1320.0000					
Sulfate	mg/L	CBL-308I	03/22/2017	yes	1470.0000					
Sulfate	mg/L	CBL-308I	05/16/2017	yes	1580.0000					

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Table 2

Analytical Data and CUSUM Summary

Constituent	Units	Well	Date	Background	Result		Outlier	CUSUM	Adjusted	
Sulfate	mg/L	CBL-308I	07/26/2017	yes	1550.0000					
Sulfate	mg/L	CBL-308I	02/06/2018	yes	1570.0000					
Sulfate	mg/L	CBL-308I	07/25/2018	yes	1540.0000					
Sulfate	mg/L	CBL-308I	01/18/2019	yes	1520.0000					
Sulfate	mg/L	CBL-308I	07/31/2019	yes	1420.0000					
Sulfate	mg/L	CBL-308I	01/29/2020	yes	1340.0000					
Sulfate	mg/L	CBL-308I	09/18/2020	yes	1310.0000					
Sulfate	mg/L	CBL-308I	01/28/2021	yes	1340.0000					
Sulfate	mg/L	CBL-308I	07/21/2021	yes	1240.0000					
Sulfate	mg/L	CBL-308I	01/27/2022	yes	1310.0000					
Sulfate	mg/L	CBL-308I	07/27/2022	yes	1190.0000					
Sulfate	mg/L	CBL-308I	01/26/2023		445.0000			1424.4444		
Sulfate	mg/L	CBL-308I	07/18/2023		1290.0000			1424.4444		
Sulfate	mg/L	CBL-308I	01/30/2024		1360.0000			1424.4444		
Sulfate	mg/L	CBL-308I	07/22/2024		1430.0000			1424.4444		
Sulfate	mg/L	CBL-341I	01/23/2017	yes	307.0000					
Sulfate	mg/L	CBL-341I	02/23/2017	yes	404.0000					
Sulfate	mg/L	CBL-341I	03/22/2017	yes	346.0000					
Sulfate	mg/L	CBL-341I	04/20/2017	yes	336.0000					
Sulfate	mg/L	CBL-341I	05/16/2017	yes	369.0000					
Sulfate	mg/L	CBL-341I	06/20/2017	yes	363.0000					
Sulfate	mg/L	CBL-341I	07/27/2017	yes	419.0000					
Sulfate	mg/L	CBL-341I	09/11/2017	yes	354.0000					
Sulfate	mg/L	CBL-341I	02/08/2018	yes	383.0000					
Sulfate	mg/L	CBL-341I	08/24/2018	yes	376.0000					
Sulfate	mg/L	CBL-341I	01/22/2019	yes	358.0000					
Sulfate	mg/L	CBL-341I	07/31/2019	yes	329.0000					
Sulfate	mg/L	CBL-341I	01/30/2020	yes	351.0000					
Sulfate	mg/L	CBL-341I	09/17/2020	yes	336.0000					
Sulfate	mg/L	CBL-341I	01/27/2021	yes	324.0000					
Sulfate	mg/L	CBL-341I	07/22/2021	yes	316.0000					
Sulfate	mg/L	CBL-341I	01/27/2022	yes	320.0000					
Sulfate	mg/L	CBL-341I	07/28/2022	yes	296.0000					
Sulfate	mg/L	CBL-341I	01/26/2023		309.0000			349.2778		
Sulfate	mg/L	CBL-341I	07/19/2023		259.0000			349.2778		
Sulfate	mg/L	CBL-341I	01/29/2024		346.0000			349.2778		
Sulfate	mg/L	CBL-341I	07/22/2024		367.0000			349.2778		
Total Dissolved Solids	mg/L	CBL-301I	01/21/2016	yes	4380.0000					
Total Dissolved Solids	mg/L	CBL-301I	05/04/2016	yes	5050.0000					
Total Dissolved Solids	mg/L	CBL-301I	07/27/2016	yes	6020.0000					
Total Dissolved Solids	mg/L	CBL-301I	10/24/2016	yes	4570.0000					
Total Dissolved Solids	mg/L	CBL-301I	01/23/2017	yes	6140.0000					
Total Dissolved Solids	mg/L	CBL-301I	03/22/2017	yes	6570.0000					
Total Dissolved Solids	mg/L	CBL-301I	05/18/2017	yes	6430.0000					
Total Dissolved Solids	mg/L	CBL-301I	07/26/2017	yes	4290.0000					
Total Dissolved Solids	mg/L	CBL-301I	02/08/2018	yes	5120.0000					
Total Dissolved Solids	mg/L	CBL-301I	07/25/2018	yes	5390.0000					
Total Dissolved Solids	mg/L	CBL-301I	01/17/2019	yes	1460.0000		yes			*
Total Dissolved Solids	mg/L	CBL-301I	05/02/2019	yes	5650.0000					
Total Dissolved Solids	mg/L	CBL-301I	07/31/2019	yes	6040.0000					

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Table 2

Analytical Data and CUSUM Summary

Constituent	Units	Well	Date	Background	Result		Outlier	CUSUM	Adjusted	
Total Dissolved Solids	mg/L	CBL-301I	01/28/2020	yes	4790.0000					
Total Dissolved Solids	mg/L	CBL-301I	09/17/2020	yes	6340.0000					
Total Dissolved Solids	mg/L	CBL-301I	01/26/2021	yes	6060.0000					
Total Dissolved Solids	mg/L	CBL-301I	07/20/2021	yes	5870.0000					
Total Dissolved Solids	mg/L	CBL-301I	01/26/2022	yes	4700.0000					
Total Dissolved Solids	mg/L	CBL-301I	07/27/2022	yes	4590.0000					
Total Dissolved Solids	mg/L	CBL-301I	01/25/2023		5160.0000			5444.4444		
Total Dissolved Solids	mg/L	CBL-301I	08/02/2023		5360.0000			5444.4444		
Total Dissolved Solids	mg/L	CBL-301I	01/29/2024		4820.0000			5444.4444		
Total Dissolved Solids	mg/L	CBL-301I	07/23/2024		4580.0000			5444.4444		
Total Dissolved Solids	mg/L	CBL-302I	01/22/2016	yes	5500.0000					
Total Dissolved Solids	mg/L	CBL-302I	05/04/2016	yes	5390.0000					
Total Dissolved Solids	mg/L	CBL-302I	07/27/2016	yes	6850.0000					
Total Dissolved Solids	mg/L	CBL-302I	10/24/2016	yes	4210.0000					
Total Dissolved Solids	mg/L	CBL-302I	01/23/2017	yes	6430.0000					
Total Dissolved Solids	mg/L	CBL-302I	03/22/2017	yes	6460.0000					
Total Dissolved Solids	mg/L	CBL-302I	05/16/2017	yes	5860.0000					
Total Dissolved Solids	mg/L	CBL-302I	07/27/2017	yes	5120.0000					
Total Dissolved Solids	mg/L	CBL-302I	02/08/2018	yes	6010.0000					
Total Dissolved Solids	mg/L	CBL-302I	07/27/2018	yes	5510.0000					
Total Dissolved Solids	mg/L	CBL-302I	01/22/2019	yes	5060.0000					
Total Dissolved Solids	mg/L	CBL-302I	07/31/2019	yes	4190.0000					
Total Dissolved Solids	mg/L	CBL-302I	01/30/2020	yes	4790.0000					
Total Dissolved Solids	mg/L	CBL-302I	09/17/2020	yes	4990.0000					
Total Dissolved Solids	mg/L	CBL-302I	01/28/2021	yes	4800.0000					
Total Dissolved Solids	mg/L	CBL-302I	07/21/2021	yes	4810.0000					
Total Dissolved Solids	mg/L	CBL-302I	01/27/2022	yes	4510.0000					
Total Dissolved Solids	mg/L	CBL-302I	07/28/2022	yes	5120.0000					
Total Dissolved Solids	mg/L	CBL-302I	01/26/2023		4930.0000			5311.6667		
Total Dissolved Solids	mg/L	CBL-302I	07/18/2023		5150.0000			5311.6667		
Total Dissolved Solids	mg/L	CBL-302I	01/29/2024		4950.0000			5311.6667		
Total Dissolved Solids	mg/L	CBL-302I	07/22/2024		4840.0000			5311.6667		
Total Dissolved Solids	mg/L	CBL-306I	01/21/2016	yes	1280.0000					
Total Dissolved Solids	mg/L	CBL-306I	05/04/2016	yes	431.0000		yes			*
Total Dissolved Solids	mg/L	CBL-306I	07/26/2016	yes	790.0000					
Total Dissolved Solids	mg/L	CBL-306I	10/24/2016	yes	1150.0000					
Total Dissolved Solids	mg/L	CBL-306I	01/19/2017	yes	1320.0000					
Total Dissolved Solids	mg/L	CBL-306I	03/22/2017	yes	1460.0000					
Total Dissolved Solids	mg/L	CBL-306I	05/18/2017	yes	1440.0000					
Total Dissolved Solids	mg/L	CBL-306I	07/27/2017	yes	1280.0000					
Total Dissolved Solids	mg/L	CBL-306I	02/08/2018	yes	1760.0000					
Total Dissolved Solids	mg/L	CBL-306I	07/27/2018	yes	1450.0000					
Total Dissolved Solids	mg/L	CBL-306I	01/16/2019	yes	1220.0000					
Total Dissolved Solids	mg/L	CBL-306I	07/31/2019	yes	676.0000		yes			*
Total Dissolved Solids	mg/L	CBL-306I	08/23/2019	yes	1710.0000					
Total Dissolved Solids	mg/L	CBL-306I	01/29/2020	yes	1830.0000					
Total Dissolved Solids	mg/L	CBL-306I	09/19/2020	yes	1730.0000					
Total Dissolved Solids	mg/L	CBL-306I	01/28/2021	yes	1420.0000					
Total Dissolved Solids	mg/L	CBL-306I	07/21/2021	yes	1320.0000					
Total Dissolved Solids	mg/L	CBL-306I	01/27/2022	yes	1730.0000					

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Table 2

Analytical Data and CUSUM Summary

Constituent	Units	Well	Date	Background	Result		Outlier	CUSUM	Adjusted	
Total Dissolved Solids	mg/L	CBL-306I	07/28/2022	yes	1540.0000					
Total Dissolved Solids	mg/L	CBL-306I	01/26/2023		1000.0000			1437.0588		
Total Dissolved Solids	mg/L	CBL-306I	07/18/2023		1910.0000			1709.6860		
Total Dissolved Solids	mg/L	CBL-306I	01/29/2024		1170.0000			1437.0588		
Total Dissolved Solids	mg/L	CBL-306I	07/23/2024		691.0000			1437.0588		
Total Dissolved Solids	mg/L	CBL-308I	01/22/2016	yes	6820.0000					
Total Dissolved Solids	mg/L	CBL-308I	05/04/2016	yes	6120.0000					
Total Dissolved Solids	mg/L	CBL-308I	07/26/2016	yes	7890.0000					
Total Dissolved Solids	mg/L	CBL-308I	10/24/2016	yes	10200.0000					
Total Dissolved Solids	mg/L	CBL-308I	01/19/2017	yes	9620.0000					
Total Dissolved Solids	mg/L	CBL-308I	03/22/2017	yes	7260.0000					
Total Dissolved Solids	mg/L	CBL-308I	05/16/2017	yes	6590.0000					
Total Dissolved Solids	mg/L	CBL-308I	07/26/2017	yes	6480.0000					
Total Dissolved Solids	mg/L	CBL-308I	02/06/2018	yes	6200.0000					
Total Dissolved Solids	mg/L	CBL-308I	07/25/2018	yes	6320.0000					
Total Dissolved Solids	mg/L	CBL-308I	01/18/2019	yes	4760.0000					
Total Dissolved Solids	mg/L	CBL-308I	07/31/2019	yes	5820.0000					
Total Dissolved Solids	mg/L	CBL-308I	01/29/2020	yes	5980.0000					
Total Dissolved Solids	mg/L	CBL-308I	09/18/2020	yes	6860.0000					
Total Dissolved Solids	mg/L	CBL-308I	01/28/2021	yes	6190.0000					
Total Dissolved Solids	mg/L	CBL-308I	07/21/2021	yes	5270.0000					
Total Dissolved Solids	mg/L	CBL-308I	01/27/2022	yes	5320.0000					
Total Dissolved Solids	mg/L	CBL-308I	07/27/2022	yes	6840.0000					
Total Dissolved Solids	mg/L	CBL-308I	01/26/2023		5810.0000			6696.6667		
Total Dissolved Solids	mg/L	CBL-308I	07/18/2023		5680.0000			6696.6667		
Total Dissolved Solids	mg/L	CBL-308I	01/30/2024		5410.0000			6696.6667		
Total Dissolved Solids	mg/L	CBL-308I	07/22/2024		5810.0000			6696.6667		
Total Dissolved Solids	mg/L	CBL-341I	01/23/2017	yes	5000.0000					
Total Dissolved Solids	mg/L	CBL-341I	02/23/2017	yes	4520.0000					
Total Dissolved Solids	mg/L	CBL-341I	03/22/2017	yes	5110.0000					
Total Dissolved Solids	mg/L	CBL-341I	04/20/2017	yes	4240.0000					
Total Dissolved Solids	mg/L	CBL-341I	05/16/2017	yes	4840.0000					
Total Dissolved Solids	mg/L	CBL-341I	06/20/2017	yes	5940.0000					
Total Dissolved Solids	mg/L	CBL-341I	07/27/2017	yes	4150.0000					
Total Dissolved Solids	mg/L	CBL-341I	09/11/2017	yes	4860.0000					
Total Dissolved Solids	mg/L	CBL-341I	02/08/2018	yes	4320.0000					
Total Dissolved Solids	mg/L	CBL-341I	08/24/2018	yes	4800.0000					
Total Dissolved Solids	mg/L	CBL-341I	01/22/2019	yes	3870.0000					
Total Dissolved Solids	mg/L	CBL-341I	07/31/2019	yes	5370.0000					
Total Dissolved Solids	mg/L	CBL-341I	01/30/2020	yes	4900.0000					
Total Dissolved Solids	mg/L	CBL-341I	09/17/2020	yes	4930.0000					
Total Dissolved Solids	mg/L	CBL-341I	01/27/2021	yes	3940.0000					
Total Dissolved Solids	mg/L	CBL-341I	07/22/2021	yes	4520.0000					
Total Dissolved Solids	mg/L	CBL-341I	01/27/2022	yes	3800.0000					
Total Dissolved Solids	mg/L	CBL-341I	07/28/2022	yes	4910.0000					
Total Dissolved Solids	mg/L	CBL-341I	01/26/2023		4390.0000			4667.7778		
Total Dissolved Solids	mg/L	CBL-341I	07/19/2023		4190.0000			4667.7778		
Total Dissolved Solids	mg/L	CBL-341I	01/29/2024		3990.0000			4667.7778		
Total Dissolved Solids	mg/L	CBL-341I	07/22/2024		3700.0000			4667.7778		

* - Outlier for that well and constituent.
** - Non-outlier detected sample Result and / or CUSUM value exceeds limit.
*** - ND value replaced with median RL.
**** - ND value replaced with manual RL.
ND = Not detected, Result = detection limit.

Table 4

Dixon's Test Outliers
1% Significance Level

Constituent	Units	Well	Date	Result	ND Qualifier	Date Range	N	Critical Value
Calcium, Total	mg/L	CBL-301I	01/17/2019	156.0000		01/21/2016-07/27/2022	19	0.5503
Chloride	mg/L	CBL-301I	01/17/2019	619.0000		01/21/2016-07/27/2022	19	0.5503
Chloride	mg/L	CBL-306I	05/04/2016	20.0000		01/21/2016-07/28/2022	17	0.5798
Fluoride	mg/L	CBL-306I	03/22/2017	12.6000		01/21/2016-07/28/2022	18	0.5643
Fluoride	mg/L	CBL-308I	03/22/2017	9.0500		01/22/2016-07/27/2022	18	0.5643
Sulfate	mg/L	CBL-301I	01/17/2019	104.0000		01/21/2016-07/27/2022	19	0.5503
Sulfate	mg/L	CBL-306I	05/04/2016	29.5000		01/21/2016-07/28/2022	18	0.5643
Total Dissolved Solids	mg/L	CBL-301I	01/17/2019	1460.0000		01/21/2016-07/27/2022	19	0.5503
Total Dissolved Solids	mg/L	CBL-306I	05/04/2016	431.0000		01/21/2016-07/28/2022	18	0.5643

N = Total number of independent measurements in background at each well.
Date Range = Dates of the first and last measurements included in background at each well.
Critical Value depends on the significance level and on N-1 when the two most extreme values are tested or N for the most extreme value.

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Boron, Total (mg/L) at CBL-301I
Normal Control Limit

Step	Equation	Description
1	$\overline{X} = \mathbf{sum[X]} / \mathbf{N}$ $= \mathbf{1.29} / \mathbf{22}$ $= \mathbf{0.059}$	Compute background mean.
2	$S = ((\mathbf{sum[X^2]} - \mathbf{sum[X]}^2/\mathbf{N}) / (\mathbf{N}-1))^{1/2}$ $= ((\mathbf{0.081} - \mathbf{1.664}/\mathbf{22}) / (\mathbf{22}-1))^{1/2}$ $= \mathbf{0.016}$	Compute background sd.
3	$SCL = \overline{\mathbf{X}} + \mathbf{F} * \mathbf{S}$ $= \mathbf{0.059} + \mathbf{5.0} * \mathbf{0.016}$ $= \mathbf{0.139}$	Compute combined Shewhart-CUSUM normal control limit.
4	$N' = \mathbf{N} * (\mathbf{N}-1) / 2$ $= \mathbf{22} * (\mathbf{22}-1) / 2$ $= \mathbf{231}$	Number of sample pairs during trend detection period.
5	$S = \mathbf{0.0}$	Sen's estimator of trend.
6	$var(S) = \mathbf{764.333}$	Variance estimate for slope.
7	$M_1(S) = (\mathbf{N'} - \mathbf{Z}_{.99} * \mathbf{var(S)}^{1/2}) / 2$ $= (\mathbf{231} - \mathbf{2.326} * \mathbf{764.333}^{1/2}) / 2$ $= \mathbf{83.347}$	Ordinal position for one-sided lower confidence limit for slope. The LCL is the M_1th largest slope estimate. When M_1 is not an integer, interpolation is used.
8	$LCL(S) = \mathbf{0.0}$	One-sided lower confidence limit for slope.

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Boron, Total (mg/L) at CBL-302I
Nonparametric Prediction Limit

Step	Equation	Description
1	PL = max(X) = **0.297**	Compute nonparametric prediction limit as largest background measurement.
2	Conf = **0.99**	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Boron, Total (mg/L) at CBL-306I
Normal Control Limit

Step	Equation	Description
1	$\bar{X}$ = **sum[X]** / **N** = **1.222** / **18** = **0.068**	Compute background mean.
2	S = ((**sum[X^2] - sum[X]^2/N**) / (**N**-1))^{½} = ((**0.093** - **1.494/18**) / (**18**-1))^{½} = **0.024**	Compute background sd.
3	SCL = $\bar{X}$ + **F** * **S** = **0.068** + **5.0** * **0.024** = **0.189**	Compute combined Shewhart-CUSUM normal control limit.
4	N' = **N** * (**N**-1) / 2 = **18** * (**18**-1) / 2 = **153**	Number of sample pairs during trend detection period.
5	S = **0.0**	Sen's estimator of trend.
6	var(S) = **631.667**	Variance estimate for slope.
7	M_1(S) = (**N' - $Z_{.99}$** * **var(S)**^{½}) / 2 = (**153** - **2.326** * **631.667**^{½}) / 2 = **47.27**	Ordinal position for one-sided lower confidence limit for slope. The LCL is the M_1th largest slope estimate. When M_1 is not an integer, interpolation is used.
8	LCL(S) = **-0.003**	One-sided lower confidence limit for slope.

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Boron, Total (mg/L) at CBL-308I
Normal Control Limit

Step	Equation	Description
1	$\overline{X}$ = **sum[X]** / **N** = **2.059** / **18** = **0.114**	Compute background mean.
2	S = ((**sum[X^2] - sum[X]^2**/**N**) / (**N**-1))^{½} = ((**0.486** - **4.239**/**18**) / (**18**-1))^{½} = **0.121**	Compute background sd.
3	SCL = $\overline{\mathbf{X}}$ + **F** * **S** = **0.114** + **5.0** * **0.121** = **0.722**	Compute combined Shewhart-CUSUM normal control limit.
4	N' = **N** * (**N**-1) / 2 = **18** * (**18**-1) / 2 = **153**	Number of sample pairs during trend detection period.
5	S = **0.0**	Sen's estimator of trend.
6	var(S) = **605.0**	Variance estimate for slope.
7	M_1(S) = (**N' - $Z_{.99}$** * **var(S)**^{½}) / 2 = (**153** - **2.326** * **605.0**^{½}) / 2 = **47.894**	Ordinal position for one-sided lower confidence limit for slope. The LCL is the M_1^{th} largest slope estimate. When M_1 is not an integer, interpolation is used.
8	LCL(S) = **-0.027**	One-sided lower confidence limit for slope.

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Boron, Total (mg/L) at CBL-341I
Normal Control Limit

Step	Equation	Description
1	$\bar{X}$ = **sum[X]** / **N** = **1.144** / **18** = **0.064**	Compute background mean.
2	S = ((**sum[X^2] - sum[X]^2**/**N**) / (**N**-1))$^{1/2}$ = ((**0.082** - **1.308**/**18**) / (**18**-1))$^{1/2}$ = **0.023**	Compute background sd.
3	SCL = $\bar{X}$ + **F** * **S** = **0.064** + **5.0** * **0.023** = **0.18**	Compute combined Shewhart-CUSUM normal control limit.
4	N' = **N** * (**N**-1) / 2 = **18** * (**18**-1) / 2 = **153**	Number of sample pairs during trend detection period.
5	S = **0.0**	Sen's estimator of trend.
6	var(S) = **532.0**	Variance estimate for slope.
7	M_1(S) = (**N' - $Z_{.99}$** * **var(S)**$^{1/2}$) / 2 = (**153** - **2.326** * **532.0**$^{1/2}$) / 2 = **49.675**	Ordinal position for one-sided lower confidence limit for slope. The LCL is the M_1th largest slope estimate. When M_1 is not an integer, interpolation is used.
8	LCL(S) = **0.0**	One-sided lower confidence limit for slope.

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Calcium, Total (mg/L) at CBL-301I
Normal Control Limit

Step	Equation	Description
1	$\bar{X}$ = **sum[X]** / **N**	Compute background mean.
	= **17369.0** / **18**	
	= **964.944**	
2	S = ((**sum[X^2] - sum[X]^2**/**N**) / (**N**-1))^{½}	Compute background sd.
	= ((**1.69x10^7** - **3.02x10^8/18**) / (**18**-1))^{½}	
	= **101.271**	
3	SCL = $\bar{X}$ + **F** * **S**	Compute combined Shewhart-CUSUM normal control limit.
	= **964.944** + **5.0** * **101.271**	
	= **1471.3**	
4	N' = **N** * (**N**-1) / 2	Number of sample pairs during trend detection period.
	= **18** * (**18**-1) / 2	
	= **153**	
5	S = **16.171**	Sen's estimator of trend.
6	var(S) = **696.0**	Variance estimate for slope.
7	M_1(S) = (**N' - $Z_{.99}$** * **var(S)**^{½}) / 2	Ordinal position for one-sided lower confidence limit for slope. The LCL is the M_1th largest slope estimate. When M_1 is not an integer, interpolation is used.
	= (**153** - **2.326** * **696.0**^{½}) / 2	
	= **45.818**	
8	LCL(S) = **-27.044**	One-sided lower confidence limit for slope.

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Calcium, Total (mg/L) at CBL-302I
Normal Control Limit

Step	Equation	Description
1	$\bar{X} = \mathbf{sum[X]} / \mathbf{N}$ $= \mathbf{17227.0} / \mathbf{18}$ $= \mathbf{957.056}$	Compute background mean.
2	$S = ((\mathbf{sum[X^2]} - \mathbf{sum[X]}^2/\mathbf{N}) / (\mathbf{N}-1))^{1/2}$ $= ((\mathbf{1.67 \times 10^7} - \mathbf{2.97 \times 10^8}/\mathbf{18}) / (\mathbf{18}-1))^{1/2}$ $= \mathbf{116.748}$	Compute background sd.
3	$SCL = \bar{\mathbf{X}} + \mathbf{F} * \mathbf{S}$ $= \mathbf{957.056} + \mathbf{5.0} * \mathbf{116.748}$ $= \mathbf{1540.795}$	Compute combined Shewhart-CUSUM normal control limit.
4	$N' = \mathbf{N} * (\mathbf{N}-1) / 2$ $= \mathbf{18} * (\mathbf{18}-1) / 2$ $= \mathbf{153}$	Number of sample pairs during trend detection period.
5	$S = \mathbf{-46.655}$	Sen's estimator of trend.
6	$var(S) = \mathbf{695.0}$	Variance estimate for slope.
7	$M_1(S) = (\mathbf{N'} - \mathbf{Z}_{.99} * \mathbf{var(S)}^{1/2}) / 2$ $= (\mathbf{153} - \mathbf{2.326} * \mathbf{695.0}^{1/2}) / 2$ $= \mathbf{45.84}$	Ordinal position for one-sided lower confidence limit for slope. The LCL is the M_1^{th} largest slope estimate. When M_1 is not an integer, interpolation is used.
8	$LCL(S) = \mathbf{-66.423}$	One-sided lower confidence limit for slope.

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Calcium, Total (mg/L) at CBL-306I
Normal Control Limit

Step	Equation	Description
1	$\bar{X}$ = **sum[X]** / **N** = **3437.0** / **16** = **214.813**	Compute background mean.
2	S = ((**sum[X^2] - sum[X]^2/N**) / (**N**-1))^{½} = ((**758029.0 - 1.18×10^7/16**) / (**16**-1))^{½} = **36.257**	Compute background sd.
3	SCL = $\bar{X}$ + **F** * **S** = **214.813** + **5.0** * **36.257** = **396.097**	Compute combined Shewhart-CUSUM normal control limit.
4	N' = **N** * (**N**-1) / 2 = **16** * (**16**-1) / 2 = **120**	Number of sample pairs during trend detection period.
5	S = **9.18**	Sen's estimator of trend.
6	var(S) = **493.333**	Variance estimate for slope.
7	M_1(S) = (**N' - $Z_{.99}$** * **var(S)^{½}**) / 2 = (**120 - 2.326** * **493.333**^{½}) / 2 = **34.168**	Ordinal position for one-sided lower confidence limit for slope. The LCL is the M_1th largest slope estimate. When M_1 is not an integer, interpolation is used.
8	LCL(S) = **-4.826**	One-sided lower confidence limit for slope.

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Calcium, Total (mg/L) at CBL-308I
Normal Control Limit

Step	Equation	Description
1	$\bar{X}$ = **sum[X]** / **N** = **15450.0** / **18** = **858.333**	Compute background mean.
2	S = ((**sum[X^2] - sum[X]**^{2}/**N**) / (**N**-1))^{½} = ((**1.34**x**10^7** - **2.39**x**10^8**/**18**) / (**18**-1))^{½} = **82.361**	Compute background sd.
3	SCL = $\bar{\mathbf{X}}$ + **F** * **S** = **858.333** + **5.0** * **82.361** = **1270.141**	Compute combined Shewhart-CUSUM normal control limit.
4	N' = **N** * (**N**-1) / 2 = **18** * (**18**-1) / 2 = **153**	Number of sample pairs during trend detection period.
5	S = **-24.047**	Sen's estimator of trend.
6	var(S) = **697.0**	Variance estimate for slope.
7	M_1(S) = (**N' - $Z_{.99}$** * **var(S)**^{½}) / 2 = (**153** - **2.326** * **697.0**^{½}) / 2 = **45.796**	Ordinal position for one-sided lower confidence limit for slope. The LCL is the M_1th largest slope estimate. When M_1 is not an integer, interpolation is used.
8	LCL(S) = **-45.396**	One-sided lower confidence limit for slope.

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Calcium, Total (mg/L) at CBL-341I
Normal Control Limit

Step	Equation	Description
1	$\bar{X} = \mathbf{sum[X]} / \mathbf{N}$ $= \mathbf{15196.0} / \mathbf{18}$ $= \mathbf{844.222}$	Compute background mean.
2	$S = ((\mathbf{sum[X^2]} - \mathbf{sum[X]}^2/\mathbf{N}) / (\mathbf{N}-1))^{1/2}$ $= ((\mathbf{1.29 \times 10^7} - \mathbf{2.31 \times 10^8}/\mathbf{18}) / (\mathbf{18}-1))^{1/2}$ $= \mathbf{79.475}$	Compute background sd.
3	$SCL = \bar{\mathbf{X}} + \mathbf{F} * \mathbf{S}$ $= \mathbf{844.222} + \mathbf{5.0} * \mathbf{79.475}$ $= \mathbf{1241.598}$	Compute combined Shewhart-CUSUM normal control limit.
4	$N' = \mathbf{N} * (\mathbf{N}-1) / 2$ $= \mathbf{18} * (\mathbf{18}-1) / 2$ $= \mathbf{153}$	Number of sample pairs during trend detection period.
5	$S = \mathbf{-24.621}$	Sen's estimator of trend.
6	$var(S) = \mathbf{697.0}$	Variance estimate for slope.
7	$M_1(S) = (\mathbf{N'} - \mathbf{Z}_{.99} * \mathbf{var(S)}^{1/2}) / 2$ $= (\mathbf{153} - \mathbf{2.326} * \mathbf{697.0}^{1/2}) / 2$ $= \mathbf{45.796}$	Ordinal position for one-sided lower confidence limit for slope. The LCL is the M_1^{th} largest slope estimate. When M_1 is not an integer, interpolation is used.
8	$LCL(S) = \mathbf{-46.4}$	One-sided lower confidence limit for slope.

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Chloride (mg/L) at CBL-301I
Normal Control Limit

Step	Equation	Description
1	$\bar{X} = \mathbf{sum[X]} / \mathbf{N}$ $= \mathbf{41390.0} / \mathbf{18}$ $= \mathbf{2299.444}$	Compute background mean.
2	$S = ((\mathbf{sum[X^2]} - \mathbf{sum[X]}^2/\mathbf{N}) / (\mathbf{N}-1))^{1/2}$ $= ((\mathbf{9.75 \times 10^7} - \mathbf{1.71 \times 10^9}/\mathbf{18}) / (\mathbf{18}-1))^{1/2}$ $= \mathbf{372.424}$	Compute background sd.
3	$SCL = \bar{\mathbf{X}} + \mathbf{F} * \mathbf{S}$ $= \mathbf{2299.444} + \mathbf{5.0} * \mathbf{372.424}$ $= \mathbf{4161.565}$	Compute combined Shewhart-CUSUM normal control limit.
4	$N' = \mathbf{N} * (\mathbf{N}-1) / 2$ $= \mathbf{18} * (\mathbf{18}-1) / 2$ $= \mathbf{153}$	Number of sample pairs during trend detection period.
5	$S = \mathbf{10.311}$	Sen's estimator of trend.
6	$var(S) = \mathbf{696.0}$	Variance estimate for slope.
7	$M_1(S) = (\mathbf{N'} - \mathbf{Z}_{.99} * \mathbf{var(S)}^{1/2}) / 2$ $= (\mathbf{153} - \mathbf{2.326} * \mathbf{696.0}^{1/2}) / 2$ $= \mathbf{45.818}$	Ordinal position for one-sided lower confidence limit for slope. The LCL is the M_1th largest slope estimate. When M_1 is not an integer, interpolation is used.
8	$LCL(S) = \mathbf{-82.048}$	One-sided lower confidence limit for slope.

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Chloride (mg/L) at CBL-302I
Normal Control Limit

Step	Equation	Description
1	$\bar{X} = \textbf{sum[X]} / \textbf{N}$ $= \textbf{32970.0} / \textbf{18}$ $= \textbf{1831.667}$	Compute background mean.
2	$S = ((\textbf{sum[X}^{\textbf{2}}\textbf{]} - \textbf{sum[X]}^2/\textbf{N}) / (\textbf{N}-1))^{1/2}$ $= ((\textbf{6.26}\times\textbf{10}^{\textbf{7}} - \textbf{1.09}\times\textbf{10}^{\textbf{9}}/\textbf{18}) / (\textbf{18}-1))^{1/2}$ $= \textbf{360.265}$	Compute background sd.
3	$SCL = \bar{\textbf{X}} + \textbf{F} * \textbf{S}$ $= \textbf{1831.667} + \textbf{5.0} * \textbf{360.265}$ $= \textbf{3632.994}$	Compute combined Shewhart-CUSUM normal control limit.
4	$N' = \textbf{N} * (\textbf{N}-1) / 2$ $= \textbf{18} * (\textbf{18}-1) / 2$ $= \textbf{153}$	Number of sample pairs during trend detection period.
5	$S = \textbf{-159.984}$	Sen's estimator of trend.
6	$var(S) = \textbf{695.0}$	Variance estimate for slope.
7	$M_1(S) = (\textbf{N'} - \textbf{Z}_{.99} * \textbf{var(S)}^{1/2}) / 2$ $= (\textbf{153} - \textbf{2.326} * \textbf{695.0}^{1/2}) / 2$ $= \textbf{45.84}$	Ordinal position for one-sided lower confidence limit for slope. The LCL is the M_1^{th} largest slope estimate. When M_1 is not an integer, interpolation is used.
8	$LCL(S) = \textbf{-190.868}$	One-sided lower confidence limit for slope.

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Chloride (mg/L) at CBL-306I
Normal Control Limit

Step	Equation	Description
1	$\overline{X}$ = **sum[X]** / **N**	Compute background mean.
	= **4810.0** / **16**	
	= **300.625**	
2	S = ((**sum[X^2] - sum[X]^2**/**N**) / (**N**-1))^{½}	Compute background sd.
	= ((**1.55**x**10^6** - **2.31**x**10^7**/**16**) / (**16**-1))^{½}	
	= **82.083**	
3	SCL = $\overline{\mathbf{X}}$ + **F** * **S**	Compute combined Shewhart-CUSUM normal control limit.
	= **300.625** + **5.0** * **82.083**	
	= **711.039**	
4	N' = **N** * (**N**-1) / 2	Number of sample pairs during trend detection period.
	= **16** * (**16**-1) / 2	
	= **120**	
5	S = **16.104**	Sen's estimator of trend.
6	var(S) = **493.333**	Variance estimate for slope.
7	M_1(S) = (**N' - Z$_{.99}$** * **var(S)**^{½}) / 2	Ordinal position for one-sided lower confidence limit for slope. The LCL is the M_1th largest slope estimate. When M_1 is not an integer, interpolation is used.
	= (**120** - **2.326** * **493.333**^{½}) / 2	
	= **34.168**	
8	LCL(S) = **-15.759**	One-sided lower confidence limit for slope.

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Chloride (mg/L) at CBL-308I
Normal Control Limit

Step	Equation	Description
1	$\bar{X}$ = **sum[X]** / **N** = **44230.0** / **18** = **2457.222**	Compute background mean.
2	S = ((**sum[X^2] - sum[X]^2**/**N**) / (**N**-1))$^{1/2}$ = ((**1.10x10^8** - **1.96x10^9**/**18**) / (**18**-1))$^{1/2}$ = **303.175**	Compute background sd.
3	SCL = $\bar{X}$ + **F** * **S** = **2457.222** + **5.0** * **303.175** = **3973.1**	Compute combined Shewhart-CUSUM normal control limit.
4	N' = **N** * (**N**-1) / 2 = **18** * (**18**-1) / 2 = **153**	Number of sample pairs during trend detection period.
5	S = **-106.468**	Sen's estimator of trend.
6	var(S) = **695.0**	Variance estimate for slope.
7	M_1(S) = (**N' - $Z_{.99}$** * **var(S)**$^{1/2}$) / 2 = (**153** - **2.326** * **695.0**$^{1/2}$) / 2 = **45.84**	Ordinal position for one-sided lower confidence limit for slope. The LCL is the M_1th largest slope estimate. When M_1 is not an integer, interpolation is used.
8	LCL(S) = **-174.502**	One-sided lower confidence limit for slope.

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Chloride (mg/L) at CBL-341I
Normal Control Limit

Step	Equation	Description
1	$\overline{X}$ = **sum[X] / N** = **32540.0 / 18** = **1807.778**	Compute background mean.
2	S = ((**sum[X^2] - sum[X]^2/N**) / (**N**-1))^{½} = ((**5.91x10^7 - 1.06x10^9/18**) / (**18**-1))^{½} = **129.14**	Compute background sd.
3	SCL = **$\overline{X}$ + F * S** = **1807.778 + 5.0 * 129.14** = **2453.477**	Compute combined Shewhart-CUSUM normal control limit.
4	N' = **N** * (**N**-1) / 2 = **18** * (**18**-1) / 2 = **153**	Number of sample pairs during trend detection period.
5	S = **-16.82**	Sen's estimator of trend.
6	var(S) = **696.0**	Variance estimate for slope.
7	M_1(S) = (**N' - $Z_{.99}$ * var(S)^{½}**) / 2 = (**153 - 2.326 * 696.0^{½}**) / 2 = **45.818**	Ordinal position for one-sided lower confidence limit for slope. The LCL is the M_1th largest slope estimate. When M_1 is not an integer, interpolation is used.
8	LCL(S) = **-57.489**	One-sided lower confidence limit for slope.

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Fluoride (mg/L) at CBL-301I
Normal Control Limit

Step	Equation	Description
1	$\bar{X}$ = **sum[X]** / **N** = **10.16** / **20** = **0.508**	Compute background mean.
2	S = ((**sum[X^2] - sum[X]**^{2}/**N**) / (**N**-1))^{½} = ((**10.634** - **103.226/20**) / (**20**-1))^{½} = **0.537**	Compute background sd.
3	SCL = $\bar{X}$ + **F** * **S** = **0.508** + **5.0** * **0.537** = **3.191**	Compute combined Shewhart-CUSUM normal control limit.
4	N' = **N** * (**N**-1) / 2 = **20** * (**20**-1) / 2 = **190**	Number of sample pairs during trend detection period.
5	S = **0.0**	Sen's estimator of trend.
6	var(S) = **681.333**	Variance estimate for slope.
7	M_1(S) = (**N' - $Z_{.99}$** * **var(S)**^{½}) / 2 = (**190** - **2.326** * **681.333**^{½}) / 2 = **64.643**	Ordinal position for one-sided lower confidence limit for slope. The LCL is the M_1th largest slope estimate. When M_1 is not an integer, interpolation is used.
8	LCL(S) = **-0.035**	One-sided lower confidence limit for slope.

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Fluoride (mg/L) at CBL-302I
Normal Control Limit

Step	Equation	Description
1	$\overline{X} = \mathbf{sum[X]} / \mathbf{N}$	Compute background mean.
	$= \mathbf{9.153} / \mathbf{19}$	
	$= \mathbf{0.482}$	
2	$S = ((\mathbf{sum[X^2] - sum[X]^2/N}) / (\mathbf{N}-1))^{1/2}$	Compute background sd.
	$= ((\mathbf{8.255 - 83.772/19}) / (\mathbf{19}-1))^{1/2}$	
	$= \mathbf{0.462}$	
3	$SCL = \mathbf{\overline{X}} + \mathbf{F} * \mathbf{S}$	Compute combined Shewhart-CUSUM normal control limit.
	$= \mathbf{0.482} + \mathbf{5.0} * \mathbf{0.462}$	
	$= \mathbf{2.793}$	
4	$N' = \mathbf{N} * (\mathbf{N}-1) / 2$	Number of sample pairs during trend detection period.
	$= \mathbf{19} * (\mathbf{19}-1) / 2$	
	$= \mathbf{171}$	
5	$S = \mathbf{0.0}$	Sen's estimator of trend.
6	$var(S) = \mathbf{604.333}$	Variance estimate for slope.
7	$M_1(S) = (\mathbf{N' - Z_{.99}} * \mathbf{var(S)}^{1/2}) / 2$	Ordinal position for one-sided lower confidence limit for slope. The LCL is the M_1 th largest slope estimate. When M_1 is not an integer, interpolation is used.
	$= (\mathbf{171} - \mathbf{2.326} * \mathbf{604.333}^{1/2}) / 2$	
	$= \mathbf{56.91}$	
8	$LCL(S) = \mathbf{-0.031}$	One-sided lower confidence limit for slope.

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Fluoride (mg/L) at CBL-306I
Normal Control Limit

Step	Equation	Description
1	$\bar{X} = \mathbf{sum[X]} / \mathbf{N}$ $= \mathbf{40.73} / \mathbf{17}$ $= \mathbf{2.396}$	Compute background mean.
2	$S = ((\mathbf{sum[X^2]} - \mathbf{sum[X]}^2/\mathbf{N}) / (\mathbf{N}-1))^{½}$ $= ((\mathbf{102.838} - \mathbf{1658.933/17}) / (\mathbf{17}-1))^{½}$ $= \mathbf{0.573}$	Compute background sd.
3	$SCL = \bar{\mathbf{X}} + \mathbf{F} * \mathbf{S}$ $= \mathbf{2.396} + \mathbf{5.0} * \mathbf{0.573}$ $= \mathbf{5.261}$	Compute combined Shewhart-CUSUM normal control limit.
4	$N' = \mathbf{N} * (\mathbf{N}-1) / 2$ $= \mathbf{17} * (\mathbf{17}-1) / 2$ $= \mathbf{136}$	Number of sample pairs during trend detection period.
5	$S = \mathbf{0.119}$	Sen's estimator of trend.
6	$var(S) = \mathbf{589.333}$	Variance estimate for slope.
7	$M_1(S) = (\mathbf{N'} - \mathbf{Z}_{.99} * \mathbf{var(S)}^{½}) / 2$ $= (\mathbf{136} - \mathbf{2.326} * \mathbf{589.333}^{½}) / 2$ $= \mathbf{39.767}$	Ordinal position for one-sided lower confidence limit for slope. The LCL is the M_1^{th} largest slope estimate. When M_1 is not an integer, interpolation is used.
8	$LCL(S) = \mathbf{-0.032}$	One-sided lower confidence limit for slope.

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Fluoride (mg/L) at CBL-308I
Normal Control Limit

Step	Equation	Description
1	$\bar{X}$ = **sum[X]** / **N** = **28.4** / **17** = **1.671**	Compute background mean.
2	S = ((**sum[X^2] - sum[X]^2**/**N**) / (**N**-1))^{½} = ((**48.489** - **806.56**/**17**) / (**17**-1))^{½} = **0.255**	Compute background sd.
3	SCL = **$\bar{X}$** + **F** * **S** = **1.671** + **5.0** * **0.255** = **2.948**	Compute combined Shewhart-CUSUM normal control limit.
4	N' = **N** * (**N**-1) / 2 = **17** * (**17**-1) / 2 = **136**	Number of sample pairs during trend detection period.
5	S = **-0.02**	Sen's estimator of trend.
6	var(S) = **588.333**	Variance estimate for slope.
7	M_1(S) = (**N'** - **$Z_{.99}$** * **var(S)**^{½}) / 2 = (**136** - **2.326** * **588.333**^{½}) / 2 = **39.791**	Ordinal position for one-sided lower confidence limit for slope. The LCL is the M_1th largest slope estimate. When M_1 is not an integer, interpolation is used.
8	LCL(S) = **-0.111**	One-sided lower confidence limit for slope.

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Fluoride (mg/L) at CBL-341I
Normal Control Limit

Step	Equation	Description
1	$\bar{X}$ = **sum[X]** / **N**	Compute background mean.
	= **7.116** / **19**	
	= **0.375**	
2	S = ((**sum[X^2] - sum[X]^2**/**N**) / (**N**-1))$^{1/2}$	Compute background sd.
	= ((**3.957** - **50.632**/**19**) / (**19**-1))$^{1/2}$	
	= **0.268**	
3	SCL = $\bar{X}$ + **F** * **S**	Compute combined Shewhart-CUSUM normal control limit.
	= **0.375** + **5.0** * **0.268**	
	= **1.714**	
4	N' = **N** * (**N**-1) / 2	Number of sample pairs during trend detection period.
	= **19** * (**19**-1) / 2	
	= **171**	
5	S = **0.0**	Sen's estimator of trend.
6	var(S) = **751.667**	Variance estimate for slope.
7	M_1(S) = (**N'** - **Z**$_{.99}$ * **var(S)**$^{1/2}$) / 2	Ordinal position for one-sided lower confidence limit for slope. The LCL is the M_1th largest slope estimate. When M_1 is not an integer, interpolation is used.
	= (**171** - **2.326** * **751.667**$^{1/2}$) / 2	
	= **53.615**	
8	LCL(S) = **-0.133**	One-sided lower confidence limit for slope.

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
pH (S.U.) at CBL-301I
Normal Control Limit

Step	Equation	Description
1	$\bar{X}$ = **sum[X]** / **N** = **136.43** / **22** = **6.201**	Compute background mean.
2	S = ((**sum[X^2] - sum[X]^2**/**N**) / (**N**-1))$^{1/2}$ = ((**847.258** - **18613.145/22**) / (**22**-1))$^{1/2}$ = **0.24**	Compute background sd.
3	SCL = $\bar{X}$ ± **F** * **S** = **6.201** ± **5.0** * **0.24** = **5.003**, **7.4**	Compute combined Shewhart-CUSUM normal control interval.
4	N' = **N** * (**N**-1) / 2 = **22** * (**22**-1) / 2 = **231**	Number of sample pairs during trend detection period.
5	S = **-0.007**	Sen's estimator of trend.
6	var(S) = **1248.333**	Variance estimate for slope.
7	M_1(S) = (**N' - $Z_{.99}$** * **var(S)**$^{1/2}$) / 2 = (**231** - **2.326** * **1248.333**$^{1/2}$) / 2 = **74.409**	Ordinal position for one-sided lower confidence limit for slope. The LCL is the M_1th largest slope estimate. When M_1 is not an integer, interpolation is used.
8	LCL(S) = **-0.036**	One-sided lower confidence limit for slope.

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
pH (S.U.) at CBL-302I
Normal Control Limit

Step	Equation	Description
1	$\bar{X}$ = **sum[X]** / **N**	Compute background mean.
	= **115.31** / **19**	
	= **6.069**	
2	S = ((**sum[X^2] - sum[X]^2/N**) / (**N**-1))$^{1/2}$	Compute background sd.
	= ((**706.23 - 13296.396/19**) / (**19**-1))$^{1/2}$	
	= **0.597**	
3	SCL = $\bar{X}$ ± **F** * **S**	Compute combined Shewhart-CUSUM normal control interval.
	= **6.069** ± **5.0** * **0.597**	
	= **3.083**, **9.055**	
4	N' = **N** * (**N**-1) / 2	Number of sample pairs during trend detection period.
	= **19** * (**19**-1) / 2	
	= **171**	
5	S = **0.044**	Sen's estimator of trend.
6	var(S) = **812.333**	Variance estimate for slope.
7	M_1(S) = (**N' - $Z_{.99}$** * **var(S)**$^{1/2}$) / 2	Ordinal position for one-sided lower confidence limit for slope. The LCL is the M_1th largest slope estimate. When M_1 is not an integer, interpolation is used.
	= (**171** - **2.326** * **812.333**$^{1/2}$) / 2	
	= **52.353**	
8	LCL(S) = **-0.04**	One-sided lower confidence limit for slope.

Prepared by: Otter Creek Environmental

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
pH (S.U.) at CBL-306I
Normal Control Limit

Step	Equation	Description
1	$\overline{X}$ = **sum[X]** / **N**	Compute background mean.
	= **119.66** / **18**	
	= **6.648**	
2	S = ((**sum[X^2] - sum[X]^2**/**N**) / (**N**-1))^{½}	Compute background sd.
	= ((**802.809** - **14318.516**/**18**) / (**18**-1))^{½}	
	= **0.657**	
3	SCL = $\overline{\mathbf{X}}$ ± **F** * **S**	Compute combined Shewhart-CUSUM normal control interval.
	= **6.648** ± **5.0** * **0.657**	
	= **3.363**, **9.932**	
4	N' = **N** * (**N**-1) / 2	Number of sample pairs during trend detection period.
	= **18** * (**18**-1) / 2	
	= **153**	
5	S = **-0.011**	Sen's estimator of trend.
6	var(S) = **696.0**	Variance estimate for slope.
7	M_1(S) = (**N' - Z$_{.99}$** * **var(S)**^{½}) / 2	Ordinal position for one-sided lower confidence limit for slope. The LCL is the M_1^{th} largest slope estimate. When M_1 is not an integer, interpolation is used.
	= (**153** - **2.326** * **696.0**^{½}) / 2	
	= **45.818**	
8	LCL(S) = **-0.094**	One-sided lower confidence limit for slope.

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
pH (S.U.) at CBL-308I
Normal Control Limit

Step	Equation	Description
1	$\bar{X} = \mathbf{sum[X]} / \mathbf{N}$ $= \mathbf{112.19} / \mathbf{18}$ $= \mathbf{6.233}$	Compute background mean.
2	$S = ((\mathbf{sum[X^2] - sum[X]^2/N}) / (\mathbf{N}-1))^{½}$ $= ((\mathbf{700.296 - 12586.596/18}) / (\mathbf{18}-1))^{½}$ $= \mathbf{0.247}$	Compute background sd.
3	$SCL = \mathbf{\bar{X}} \pm \mathbf{F} * \mathbf{S}$ $= \mathbf{6.233} \pm \mathbf{5.0} * \mathbf{0.247}$ $= \mathbf{4.996}, \mathbf{7.47}$	Compute combined Shewhart-CUSUM normal control interval.
4	$N' = \mathbf{N} * (\mathbf{N}-1) / 2$ $= \mathbf{18} * (\mathbf{18}-1) / 2$ $= \mathbf{153}$	Number of sample pairs during trend detection period.
5	$S = \mathbf{-0.002}$	Sen's estimator of trend.
6	$var(S) = \mathbf{691.333}$	Variance estimate for slope.
7	$M_1(S) = (\mathbf{N' - Z_{.99} * var(S)^{½}}) / 2$ $= (\mathbf{153 - 2.326 * 691.333^{½}}) / 2$ $= \mathbf{45.921}$	Ordinal position for one-sided lower confidence limit for slope. The LCL is the M_1th largest slope estimate. When M_1 is not an integer, interpolation is used.
8	$LCL(S) = \mathbf{-0.03}$	One-sided lower confidence limit for slope.

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
pH (S.U.) at CBL-341I
Normal Control Limit

Step	Equation	Description
1	$\bar{X} = \mathbf{sum[X]} / \mathbf{N}$ $= \mathbf{108.89} / \mathbf{18}$ $= \mathbf{6.049}$	Compute background mean.
2	$S = ((\mathbf{sum[X^2] - sum[X]^2/N}) / (\mathbf{N}-1))^{1/2}$ $= ((\mathbf{659.685 - 11857.032/18}) / (\mathbf{18}-1))^{1/2}$ $= \mathbf{0.238}$	Compute background sd.
3	$SCL = \bar{\mathbf{X}} \pm \mathbf{F} * \mathbf{S}$ $= \mathbf{6.049} \pm \mathbf{5.0} * \mathbf{0.238}$ $= \mathbf{4.861}, \mathbf{7.238}$	Compute combined Shewhart-CUSUM normal control interval.
4	$N' = \mathbf{N} * (\mathbf{N}-1) / 2$ $= \mathbf{18} * (\mathbf{18}-1) / 2$ $= \mathbf{153}$	Number of sample pairs during trend detection period.
5	$S = \mathbf{0.067}$	Sen's estimator of trend.
6	$var(S) = \mathbf{696.0}$	Variance estimate for slope.
7	$M_1(S) = (\mathbf{N' - Z_{.99} * var(S)^{1/2}}) / 2$ $= (\mathbf{153 - 2.326 * 696.0^{1/2}}) / 2$ $= \mathbf{45.818}$	Ordinal position for one-sided lower confidence limit for slope. The LCL is the M_1th largest slope estimate. When M_1 is not an integer, interpolation is used.
8	$LCL(S) = \mathbf{-0.015}$	One-sided lower confidence limit for slope.

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Sulfate (mg/L) at CBL-301I
Normal Control Limit

Step	Equation	Description
1	$\overline{X} = \mathbf{sum[X]} / \mathbf{N}$	Compute background mean.
	$= \mathbf{6310.0} / \mathbf{18}$	
	$= \mathbf{350.556}$	
2	$S = ((\mathbf{sum[X^2]} - \mathbf{sum[X]}^2/\mathbf{N}) / (\mathbf{N}-1))^{½}$	Compute background sd.
	$= ((\mathbf{2.27}\times\mathbf{10^6} - \mathbf{3.98}\times\mathbf{10^7}/\mathbf{18}) / (\mathbf{18}-1))^{½}$	
	$= \mathbf{60.294}$	
3	$SCL = \overline{\mathbf{X}} + \mathbf{F} * \mathbf{S}$	Compute combined Shewhart-CUSUM normal control limit.
	$= \mathbf{350.556} + \mathbf{5.0} * \mathbf{60.294}$	
	$= \mathbf{652.024}$	
4	$N' = \mathbf{N} * (\mathbf{N}-1) / 2$	Number of sample pairs during trend detection period.
	$= \mathbf{18} * (\mathbf{18}-1) / 2$	
	$= \mathbf{153}$	
5	$S = \mathbf{6.483}$	Sen's estimator of trend.
6	$var(S) = \mathbf{696.0}$	Variance estimate for slope.
7	$M_1(S) = (\mathbf{N'} - \mathbf{Z}_{.99} * \mathbf{var(S)}^{½}) / 2$	Ordinal position for one-sided lower confidence limit for slope. The LCL is the M_1^{th} largest slope estimate. When M_1 is not an integer, interpolation is used.
	$= (\mathbf{153} - \mathbf{2.326} * \mathbf{696.0}^{½}) / 2$	
	$= \mathbf{45.818}$	
8	$LCL(S) = \mathbf{-8.207}$	One-sided lower confidence limit for slope.

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Sulfate (mg/L) at CBL-302I
Normal Control Limit

Step	Equation	Description
1	$\bar{X}$ = **sum[X]** / **N** = **22013.0** / **18** = **1222.944**	Compute background mean.
2	S = ((**sum[X^2]** - **sum[X]**^{2}/**N**) / (**N**-1))^{½} = ((**2.71x10^7** - **4.85x10^8/18**) / (**18**-1))^{½} = **114.114**	Compute background sd.
3	SCL = $\bar{\mathbf{X}}$ + **F** * **S** = **1222.944** + **5.0** * **114.114** = **1793.513**	Compute combined Shewhart-CUSUM normal control limit.
4	N' = **N** * (**N**-1) / 2 = **18** * (**18**-1) / 2 = **153**	Number of sample pairs during trend detection period.
5	S = **45.342**	Sen's estimator of trend.
6	var(S) = **695.0**	Variance estimate for slope.
7	M_1(S) = (**N' - Z**$_{.99}$ * **var(S)**^{½}) / 2 = (**153** - **2.326** * **695.0**^{½}) / 2 = **45.84**	Ordinal position for one-sided lower confidence limit for slope. The LCL is the M_1th largest slope estimate. When M_1 is not an integer, interpolation is used.
8	LCL(S) = **25.012**	One-sided lower confidence limit for slope.
9	LCL(S) > 0	**Significant increasing trend.**

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Sulfate (mg/L) at CBL-306I
Normal Control Limit

Step	Equation	Description
1	$\bar{X}$ = **sum[X]** / **N** = **6599.0** / **17** = **388.176**	Compute background mean.
2	S = ((**sum[X^2]** - **sum[X]**^{2}/**N**) / (**N**-1))^{½} = ((**2.76**x**10^6** - **4.35**x**10^7**/**17**) / (**17**-1))^{½} = **110.356**	Compute background sd.
3	SCL = **$\bar{X}$** + **F** * **S** = **388.176** + **5.0** * **110.356** = **939.958**	Compute combined Shewhart-CUSUM normal control limit.
4	N' = **N** * (**N**-1) / 2 = **17** * (**17**-1) / 2 = **136**	Number of sample pairs during trend detection period.
5	S = **18.243**	Sen's estimator of trend.
6	var(S) = **589.333**	Variance estimate for slope.
7	M_1(S) = (**N'** - **Z$_{.99}$** * **var(S)**^{½}) / 2 = (**136** - **2.326** * **589.333**^{½}) / 2 = **39.767**	Ordinal position for one-sided lower confidence limit for slope. The LCL is the M_1^{th} largest slope estimate. When M_1 is not an integer, interpolation is used.
8	LCL(S) = **-14.639**	One-sided lower confidence limit for slope.

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Sulfate (mg/L) at CBL-308I
Normal Control Limit

Step	Equation	Description
1	$\bar{X}$ = **sum[X]** / **N** = **25640.0** / **18** = **1424.444**	Compute background mean.
2	S = ((**sum[X^2] - sum[X]^2**/**N**) / (**N**-1))^{½} = ((**3.68x10^7 - 6.57x10^8/18**) / (**18**-1))^{½} = **121.424**	Compute background sd.
3	SCL = $\bar{X}$ + **F** * **S** = **1424.444** + **5.0** * **121.424** = **2031.565**	Compute combined Shewhart-CUSUM normal control limit.
4	N' = **N** * (**N**-1) / 2 = **18** * (**18**-1) / 2 = **153**	Number of sample pairs during trend detection period.
5	S = **-41.243**	Sen's estimator of trend.
6	var(S) = **693.0**	Variance estimate for slope.
7	M_1(S) = (**N' - $Z_{.99}$** * **var(S)**^{½}) / 2 = (**153 - 2.326** * **693.0**^{½}) / 2 = **45.884**	Ordinal position for one-sided lower confidence limit for slope. The LCL is the M_1th largest slope estimate. When M_1 is not an integer, interpolation is used.
8	LCL(S) = **-65.458**	One-sided lower confidence limit for slope.

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Sulfate (mg/L) at CBL-341I
Normal Control Limit

Step	Equation	Description
1	$\overline{X}$ = **sum[X]** / **N**	Compute background mean.
	= **6287.0** / **18**	
	= **349.278**	
2	$S = ((\mathbf{sum[X^2]} - \mathbf{sum[X]}^2/\mathbf{N}) / (\mathbf{N}-1))^{1/2}$	Compute background sd.
	$= ((\mathbf{2.21{\times}10^6} - \mathbf{3.95{\times}10^7}/\mathbf{18}) / (\mathbf{18}-1))^{1/2}$	
	= **32.89**	
3	SCL = $\mathbf{\overline{X}}$ + **F** * **S**	Compute combined Shewhart-CUSUM normal control limit.
	= **349.278** + **5.0** * **32.89**	
	= **513.727**	
4	N' = **N** * (**N**-1) / 2	Number of sample pairs during trend detection period.
	= **18** * (**18**-1) / 2	
	= **153**	
5	S = **-10.817**	Sen's estimator of trend.
6	var(S) = **696.0**	Variance estimate for slope.
7	$M_1(S) = (\mathbf{N'} - \mathbf{Z_{.99}} * \mathbf{var(S)}^{1/2}) / 2$	Ordinal position for one-sided lower confidence limit for slope. The LCL is the M_1^{th} largest slope estimate. When M_1 is not an integer, interpolation is used.
	$= (\mathbf{153} - \mathbf{2.326} * \mathbf{696.0}^{1/2}) / 2$	
	= **45.818**	
8	LCL(S) = **-19.435**	One-sided lower confidence limit for slope.

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Total Dissolved Solids (mg/L) at CBL-301I
Normal Control Limit

Step	Equation	Description
1	$\bar{X}$ = **sum[X]** / **N** = **98000.0** / **18** = **5444.444**	Compute background mean.
2	S = ((**sum[X^2] - sum[X]^2**/**N**) / (**N**-1))$^{1/2}$ = ((**5.44x10^8** - **9.60x10^9**/**18**) / (**18**-1))$^{1/2}$ = **767.695**	Compute background sd.
3	SCL = $\bar{X}$ + **F** * **S** = **5444.444** + **5.0** * **767.695** = **9282.919**	Compute combined Shewhart-CUSUM normal control limit.
4	N' = **N** * (**N**-1) / 2 = **18** * (**18**-1) / 2 = **153**	Number of sample pairs during trend detection period.
5	S = **8.889**	Sen's estimator of trend.
6	var(S) = **697.0**	Variance estimate for slope.
7	M_1(S) = (**N' - $Z_{.99}$** * **var(S)**$^{1/2}$) / 2 = (**153** - **2.326** * **697.0**$^{1/2}$) / 2 = **45.796**	Ordinal position for one-sided lower confidence limit for slope. The LCL is the M_1^{th} largest slope estimate. When M_1 is not an integer, interpolation is used.
8	LCL(S) = **-248.456**	One-sided lower confidence limit for slope.

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Total Dissolved Solids (mg/L) at CBL-302I
Normal Control Limit

Step	Equation	Description
1	$\bar{X} = \mathbf{sum[X]} / \mathbf{N}$ $= \mathbf{95610.0} / \mathbf{18}$ $= \mathbf{5311.667}$	Compute background mean.
2	$S = ((\mathbf{sum[X^2]} - \mathbf{sum[X]}^2/\mathbf{N}) / (\mathbf{N}-1))^{½}$ $= ((\mathbf{5.18 \times 10^8} - \mathbf{9.14 \times 10^9}/\mathbf{18}) / (\mathbf{18}-1))^{½}$ $= \mathbf{764.87}$	Compute background sd.
3	$SCL = \bar{\mathbf{X}} + \mathbf{F} * \mathbf{S}$ $= \mathbf{5311.667} + \mathbf{5.0} * \mathbf{764.87}$ $= \mathbf{9136.018}$	Compute combined Shewhart-CUSUM normal control limit.
4	$N' = \mathbf{N} * (\mathbf{N}-1) / 2$ $= \mathbf{18} * (\mathbf{18}-1) / 2$ $= \mathbf{153}$	Number of sample pairs during trend detection period.
5	$S = \mathbf{-219.811}$	Sen's estimator of trend.
6	$var(S) = \mathbf{696.0}$	Variance estimate for slope.
7	$M_1(S) = (\mathbf{N'} - \mathbf{Z}_{.99} * \mathbf{var(S)}^{½}) / 2$ $= (\mathbf{153} - \mathbf{2.326} * \mathbf{696.0}^{½}) / 2$ $= \mathbf{45.818}$	Ordinal position for one-sided lower confidence limit for slope. The LCL is the M_1 th largest slope estimate. When M_1 is not an integer, interpolation is used.
8	$LCL(S) = \mathbf{-407.793}$	One-sided lower confidence limit for slope.

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Total Dissolved Solids (mg/L) at CBL-306I
Normal Control Limit

Step	Equation	Description
1	$\bar{X} = \textbf{sum[X]} / \textbf{N}$ $= \textbf{24430.0} / \textbf{17}$ $= \textbf{1437.059}$	Compute background mean.
2	$S = ((\textbf{sum[X}^2\textbf{]} - \textbf{sum[X]}^2/\textbf{N}) / (\textbf{N}-1))^{½}$ $= ((\textbf{3.62}\times\textbf{10}^7 - \textbf{5.97}\times\textbf{10}^8/\textbf{17}) / (\textbf{17}-1))^{½}$ $= \textbf{267.085}$	Compute background sd.
3	$SCL = \bar{\textbf{X}} + \textbf{F} * \textbf{S}$ $= \textbf{1437.059} + \textbf{5.0} * \textbf{267.085}$ $= \textbf{2772.485}$	Compute combined Shewhart-CUSUM normal control limit.
4	$N' = \textbf{N} * (\textbf{N}-1) / 2$ $= \textbf{17} * (\textbf{17}-1) / 2$ $= \textbf{136}$	Number of sample pairs during trend detection period.
5	$S = \textbf{76.005}$	Sen's estimator of trend.
6	$var(S) = \textbf{586.333}$	Variance estimate for slope.
7	$M_1(S) = (\textbf{N'} - \textbf{Z}_{.99} * \textbf{var(S)}^{½}) / 2$ $= (\textbf{136} - \textbf{2.326} * \textbf{586.333}^{½}) / 2$ $= \textbf{39.839}$	Ordinal position for one-sided lower confidence limit for slope. The LCL is the M_1^{th} largest slope estimate. When M_1 is not an integer, interpolation is used.
8	$LCL(S) = \textbf{-5.732}$	One-sided lower confidence limit for slope.

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Total Dissolved Solids (mg/L) at CBL-308I
Normal Control Limit

Step	Equation	Description
1	$\bar{X}$ = **sum[X]** / **N** = **120540.0** / **18** = **6696.667**	Compute background mean.
2	S = ((**sum[X^2] - sum[X]^2**/**N**) / (**N**-1))^{½} = ((**8.40x10^8** - **1.45x10^{10}**/**18**) / (**18**-1))^{½} = **1385.271**	Compute background sd.
3	SCL = $\bar{\mathbf{X}}$ + **F** * **S** = **6696.667** + **5.0** * **1385.271** = **13623.023**	Compute combined Shewhart-CUSUM normal control limit.
4	N' = **N** * (**N**-1) / 2 = **18** * (**18**-1) / 2 = **153**	Number of sample pairs during trend detection period.
5	S = **-270.134**	Sen's estimator of trend.
6	var(S) = **697.0**	Variance estimate for slope.
7	M_1(S) = (**N'** - **Z**$_{.99}$ * **var(S)**^{½}) / 2 = (**153** - **2.326** * **697.0**^{½}) / 2 = **45.796**	Ordinal position for one-sided lower confidence limit for slope. The LCL is the M_1th largest slope estimate. When M_1 is not an integer, interpolation is used.
8	LCL(S) = **-711.043**	One-sided lower confidence limit for slope.

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Total Dissolved Solids (mg/L) at CBL-341I
Normal Control Limit

Step	Equation	Description
1	$\bar{X}$ = **sum[X]** / **N** = **84020.0** / **18** = **4667.778**	Compute background mean.
2	S = ((**sum[X^2] - sum[X]^2/N**) / (**N**-1))^{½} = ((**3.97x10^8 - 7.06x10^9/18**) / (**18**-1))^{½} = **554.018**	Compute background sd.
3	SCL = $\bar{\mathbf{X}}$ + **F** * **S** = **4667.778** + **5.0** * **554.018** = **7437.868**	Compute combined Shewhart-CUSUM normal control limit.
4	N' = **N** * (**N**-1) / 2 = **18** * (**18**-1) / 2 = **153**	Number of sample pairs during trend detection period.
5	S = **-76.49**	Sen's estimator of trend.
6	var(S) = **696.0**	Variance estimate for slope.
7	M_1(S) = (**N' - $Z_{.99}$** * **var(S)**^{½}) / 2 = (**153 - 2.326** * **696.0**^{½}) / 2 = **45.818**	Ordinal position for one-sided lower confidence limit for slope. The LCL is the M_1^{th} largest slope estimate. When M_1 is not an integer, interpolation is used.
8	LCL(S) = **-305.108**	One-sided lower confidence limit for slope.

Table 1

Summary Statistics and Intermediate Computations for Combined Shewhart-CUSUM Control Charts

Constituent	Units	Well	N(back)	N(mon)	N(tot)	Mean	SD	R(i-1)	R(i)	S(i-1)	S(i)	Limit	Type	Conf
Boron, Total	mg/L	CBL-341I	18	5	23	0.0635	0.0234	0.1190	0.1360	0.2013	0.2183	0.1803	normal	

N(back) and N(mon) = Non-outlier measurements in the background and monitoring periods.
N(tot) = All independent measurements for that constituent and well.
For transformed data, mean and SD in transformed units and control limit in original units.
Conf = confidence level for passing initial test or one of two verification resamples (nonparametric test only).
* - Insufficient Data.
** - Detection Frequency < 25%.
*** - Zero Variance.

Table 2

Analytical Data and CUSUM Summary

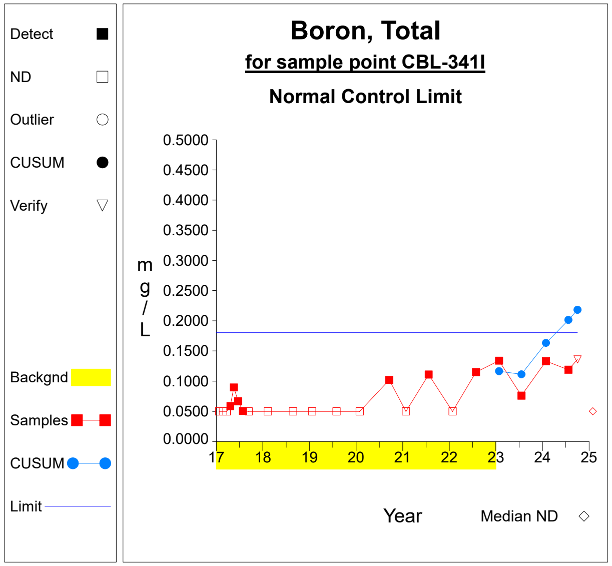
Constituent	Units	Well	Date	Background	Result		Outlier	CUSUM	Adjusted	
Boron, Total	mg/L	CBL-341I	01/23/2017	yes	0.0500	ND				
Boron, Total	mg/L	CBL-341I	02/23/2017	yes	0.0500	ND				
Boron, Total	mg/L	CBL-341I	03/22/2017	yes	0.0500	ND				
Boron, Total	mg/L	CBL-341I	04/20/2017	yes	0.0587					
Boron, Total	mg/L	CBL-341I	05/16/2017	yes	0.0896					
Boron, Total	mg/L	CBL-341I	06/20/2017	yes	0.0668					
Boron, Total	mg/L	CBL-341I	07/27/2017	yes	0.0507					
Boron, Total	mg/L	CBL-341I	09/11/2017	yes	0.0500	ND				
Boron, Total	mg/L	CBL-341I	02/08/2018	yes	0.0500	ND				
Boron, Total	mg/L	CBL-341I	08/24/2018	yes	0.0500	ND				
Boron, Total	mg/L	CBL-341I	01/22/2019	yes	0.0500	ND				
Boron, Total	mg/L	CBL-341I	07/31/2019	yes	0.0500	ND				
Boron, Total	mg/L	CBL-341I	01/30/2020	yes	0.0500	ND				
Boron, Total	mg/L	CBL-341I	09/17/2020	yes	0.1020					
Boron, Total	mg/L	CBL-341I	01/27/2021	yes	0.0500	ND				
Boron, Total	mg/L	CBL-341I	07/22/2021	yes	0.1110					
Boron, Total	mg/L	CBL-341I	01/27/2022	yes	0.0500	ND				
Boron, Total	mg/L	CBL-341I	07/28/2022	yes	0.1150					
Boron, Total	mg/L	CBL-341I	01/26/2023		0.1340			0.1165		
Boron, Total	mg/L	CBL-341I	07/19/2023		0.0760			0.1114		
Boron, Total	mg/L	CBL-341I	01/29/2024		0.1330			0.1634		
Boron, Total	mg/L	CBL-341I	07/22/2024		0.1190			0.2013		**
Boron, Total	mg/L	CBL-341I	10/01/2024		0.1360			0.2183		**

* - Outlier for that well and constituent.
** - Non-outlier detected sample Result and / or CUSUM value exceeds limit.
*** - ND value replaced with median RL.
**** - ND value replaced with manual RL.
ND = Not detected, Result = detection limit.

LCRA Fayette Power [GW]

November 2024

Intra-Well Sublist Control Charts / Prediction Limits



Graph 1

Prepared by: Otter Creek Environmental

Worksheet 3 - Intra-Well Sublist Control Charts / Prediction Limits
Boron, Total (mg/L) at CBL-341I
Normal Control Limit

Step	Equation	Description
1	$\overline{X} = \textbf{sum[X]} / \textbf{N}$ $= \textbf{1.144} / \textbf{18}$ $= \textbf{0.064}$	Compute background mean.
2	$S = ((\textbf{sum[X}^{\textbf{2}}\textbf{]} - \textbf{sum[X]}^2/\textbf{N}) / (\textbf{N}-1))^{1/2}$ $= ((\textbf{0.082} - \textbf{1.308}/\textbf{18}) / (\textbf{18}-1))^{1/2}$ $= \textbf{0.023}$	Compute background sd.
3	$SCL = \overline{\textbf{X}} + \textbf{F} * \textbf{S}$ $= \textbf{0.064} + \textbf{5.0} * \textbf{0.023}$ $= \textbf{0.18}$	Compute combined Shewhart-CUSUM normal control limit.
4	$N' = \textbf{N} * (\textbf{N}-1) / 2$ $= \textbf{18} * (\textbf{18}-1) / 2$ $= \textbf{153}$	Number of sample pairs during trend detection period.
5	$S = \textbf{0.0}$	Sen's estimator of trend.
6	$var(S) = \textbf{532.0}$	Variance estimate for slope.
7	$M_1(S) = (\textbf{N'} - \textbf{Z}_{.99} * \textbf{var(S)}^{1/2}) / 2$ $= (\textbf{153} - \textbf{2.326} * \textbf{532.0}^{1/2}) / 2$ $= \textbf{49.675}$	Ordinal position for one-sided lower confidence limit for slope. The LCL is the M_1^{th} largest slope estimate. When M_1 is not an integer, interpolation is used.
8	$LCL(S) = \textbf{0.0}$	One-sided lower confidence limit for slope.

APPENDIX D

Analytical Data for Calendar Year 2024

February 08, 2024

Charlie Macon
BBA Engineering
165 N. Lampasas St.
Bertram, TX 78605
TEL: (512) 585-7180
FAX:

Order No.: 2402007

RE: Fayette Q1 - CCR

Dear Charlie Macon:

DHL Analytical, Inc. received 9 sample(s) on 2/1/2024 for the analyses presented in the following report.

There were no problems with the analyses and all data met requirements of NELAP except where noted in the Case Narrative. All non-NELAP methods will be identified accordingly in the case narrative and all estimated uncertainties of test results are within method or EPA specifications.

If you have any questions regarding these tests results, please feel free to call. Thank you for using DHL Analytical.

Sincerely,

John DuPont
General Manager

This report was performed under the accreditation of the State of Texas Laboratory Certification Number: T104704211-23-29

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DHL ANALYTICAL

2300 Double Creek Dr. Round Rock, TX 78664
Phone 512.388.8222
Web: **www.dhlanalytical.com**
Email: **login@dhlanalytical.com**

CHAIN-OF-CUSTODY

CLIENT: BBA Engineering	DATE: 1-31-24	LAB USE ONLY	
ADDRESS: 155 N. Lampasas ST Bertram TX	**PO#:**	DHL WORKORDER #: 2402007	
PHONE: 512-820-4159 EMAIL: smacon@BBAen.	PROJECT LOCATION OR NAME: Fayette Q1 - CCR		
DATA REPORTED TO: SMacon@BBAengineering.com			
ADDITIONAL REPORT COPIES TO:	CLIENT PROJECT #	COLLECTOR: Samuel Macon	

Authorize 5% surcharge for TRRP report? ☐ Yes ☐ No

W=WATER SE=SEDIMENT L=LIQUID P=PAINT S=SOIL SL=SLUDGE SO=SOLID

Field Sample I.D.	Lab Use Only DHL Lab #	Collection Date	Collection Time	Matrix	Container Type	# of Containers	HCL ☐ H_3PO_4 ☐	HNO_3	H_2SO_4	NaOH ☐ Zn Acetate ☐	ICE ☒ UNPRESERVED ☐	BTEX ☐ MTBE ☐ [METHOD 8260]	TPH 1005 ☐ TPH 1006 ☐ HOLD 1006 ☐	GRO 8015 ☐ DRO 8015 ☐	VOC 8260 ☐ VOC 624.1 ☐	SVOC 8270 ☐ SVOC 625.1 ☐	PAH 8270 ☐ HOLD PAH ☐	PEST 8270 ☐ 625.1 ☐ O-P PEST 8270 ☐	PCB 8082 ☐ 608.3 ☐ PCB 8270 ☐ 625.1 ☐	HERB 8321 ☐ T PHOS ☐ AMMONIA ☐	METALS 6020 ☐ 200.8 ☐ DISS. METALS ☐	RCRA 8 ☐ TX11 ☐ ___	pH ☐ HEX CHROM ☐ ALKALINITY ☐ COD ☐	ANIONS 300 ☐ 9056 ☐ ___	TCLP-SVOC ☐ VOC ☐ PEST ☐ HERB ☐	TCLP-METALS ☐ RCRA 8 ☐ TX-11 ☐ Pb ☐	RCI ☐ IGN ☐ DGAS ☐ OIL&GREASE ☐	TDS ☐ TSS ☐ % MOIST ☐ CYANIDE ☐	B, Ca	Cl, F, SO4	TDS	FIELD NOTES
CBL-301 I	01	1-29-24	1250	W	PL	2		X			X																		X	X	X	
CBL-302 I	02	1-29-24	1453	|	|	|		X			X																		X	X	X	
CBL-306 I	03	1-29-24	1558	|	|	|		X			X																		X	X	X	
CBL-308 I	04	1-30-24	1445	|	|	|		X			X																		X	X	X	
CBL-310 I	05	1-31-24	1414	|	|	|		X			X																		X	X	X	
CBL-311 I	06	1-29-24	1435	|	|	|		X			X																		X	X	X	
EB-CCR	07	1-30-24	1500	|	|	|		X			X																		X	X	X	
FB-CCR	08	1-30-24	1510	|	|	|		X			X																		X	X	X	
Dup-1-CCR	09	1-29-24	—	|	|	|		X			X																		X	X	X	

Relinquished By: (Sign)	DATE/TIME	Received by:
[signature]	2/1/24 0917	[signature]
Relinquished By: (Sign)	DATE/TIME	Received by:
Relinquished By: (Sign)	DATE/TIME	Received by:

TURN AROUND TIME (CALL FIRST FOR RUSH)
RUSH-1 DAY☐ RUSH-2 DAY☐ RUSH-3 DAY☐
NORMAL ☒ OTHER ☐
DUE DATE ____________ ☐

LAB USE ONLY **THERMO #:** 78
RECEIVING TEMP (°C): 0.7°C
IF >6°C, ARE SAMPLES ON ICE AND JUST COLLECTED? YES / NO
CUSTODY SEALS ON ICE CHEST: ☐ BROKEN ☐ INTACT ☒ NOT USED
CARRIER: ☐ LSO ☐ FEDEX ☐ UPS ☐ COURIER ☒ HAND DELIVERED

☒ **DHL DISPOSAL @ $10.00 each**

	Arsenic	Boron	Calcium	Chloride	Chromium	Cobalt	Fluoride	Manganese	Mercury	Molybdenum	Nickel	Selenium	Sulfate	TDS	Field pH	
CCR Program																
CBL-340I																2 metals, 3 major ions, TDS
CBL-301I																2 metals, 3 major ions, TDS
CBL-302I																2 metals, 3 major ions, TDS
CBL-306I																2 metals, 3 major ions, TDS
CBL-308I																2 metals, 3 major ions, TDS
CBL-341I																2 metals, 3 major ions, TDS
Equipment Blank																2 metals, 3 major ions, TDS
Field Blank																2 metals, 3 major ions, TDS
Duplicate																2 metals, 3 major ions, TDS

DHL Analytical, Inc.

Sample Receipt Checklist

Client Name: **BBA Engineering**

Date Received: **2/1/2024**

Work Order Number: **2402007**

Received by: **KAO**

Checklist completed by: ______ (Signature) 2/1/2024 (Date)

Reviewed by: DL (Initials) 2/1/2024 (Date)

Carrier name: Hand Delivered

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑ NA ☐
Water - pH<2 acceptable upon receipt?	Yes ☑	No ☐	NA ☐ LOT # 13171
	Adjusted?		Checked by
Water - ph>9 (S) or ph>10 (CN) acceptable upon receipt?	Yes ☐	No ☐	NA ☑ LOT #
	Adjusted?		Checked by
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	

Cooler #	1
Temp °C	0.7
Seal Intact	NP

Any No response must be detailed in the comments section below.

Client contacted: ______ Date contacted: ______ Person contacted: ______

Contacted by: ______ Regarding: ______

Comments: ______

Corrective Action: ______

Page 1 of 1

Laboratory Name: DHL Analytical, Inc.

Laboratory Review Checklist: Reportable Data

Project Name: Fayette Q1 - CCR	**LRC Date:** 2/8/2024
Reviewer Name: Angie O'Donnell	**Laboratory Work Order: 2402007**
Prep Batch Number(s): See Prep Dates Report	**Run Batch:** See Analytical Dates Report

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
R1	OI	**Chain-of-Custody (C-O-C)**					
		1) Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X				**R1-01**
		2) Were all departures from standard conditions described in an exception report?			X		
R2	OI	**Sample and Quality Control (QC) Identification**					
		1) Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X				
		2) Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X				
R3	OI	**Test Reports**					
		1) Were all samples prepared and analyzed within holding times?	X				
		2) Other than those results < MQL, were all other raw values bracketed by calibration standards?	X				
		3) Were calculations checked by a peer or supervisor?	X				
		4) Were all analyte identifications checked by a peer or supervisor?	X				
		5) Were sample detection limits reported for all analytes not detected?	X				
		6) Were all results for soil and sediment samples reported on a dry weight basis?			X		
		7) Were % moisture (or solids) reported for all soil and sediment samples?			X		
		8) Were bulk soils/solids samples for volatile analysis extracted with methanol per EPA Method 5035?			X		
		9) If required for the project, TICs reported?			X		
R4	O	**Surrogate Recovery Data**					
		1) Were surrogates added prior to extraction?			X		
		2) Were surrogate percent recoveries in all samples within the laboratory QC limits?			X		
R5	OI	**Test Reports/Summary Forms for Blank Samples**					
		1) Were appropriate type(s) of blanks analyzed?	X				
		2) Were blanks analyzed at the appropriate frequency?	X				
		3) Where method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	X				
		4) Were blank concentrations < MDL?	X				
		5) For analyte(s) detected in a blank sample, was the concentration, unadjusted for sample specific factors, in all associated field samples, **greater** than 10 times the concentration in the blank sample?			X		
R6	OI	**Laboratory Control Samples (LCS):**					
		1) Were all COCs included in the LCS?	X				
		2) Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	X				
		3) Were LCSs analyzed at the required frequency?	X				
		4) Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	X				
		5) Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	X				
		6) Was the LCSD RPD within QC limits (if applicable)?	X				
R7	OI	**Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Data**					
		1) Were the project/method specified analytes included in the MS and MSD?	X				
		2) Were MS/MSD analyzed at the appropriate frequency?	X				
		3) Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?		X			**R7-03**
		4) Were MS/MSD RPDs within laboratory QC limits?	X				
R8	OI	**Analytical Duplicate Data**					
		1) Were appropriate analytical duplicates analyzed for each matrix?	X				
		2) Were analytical duplicates analyzed at the appropriate frequency?	X				
		3) Were RPDs or relative standard deviations within the laboratory QC limits?	X				
R9	OI	**Method Quantitation Limits (MQLs):**					
		1) Are the MQLs for each method analyte included in the laboratory data package?	X				
		2) Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	X				
		3) Are unadjusted MQLs and DCSs included in the laboratory data package?	X				
R10	OI	**Other Problems/Anomalies**					
		1) Are all known problems/anomalies/special conditions noted in this LRC and ER?	X				**R10-01**
		2) Was applicable and available technology used to lower the SDL to minimize the matrix interference affects on the sample results?	X				
		3) Is the laboratory NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices and methods associated with this laboratory data package?	X				

Laboratory Name: DHL Analytical, Inc.

Laboratory Review Checklist (continued): Supporting Data

Project Name: Fayette Q1 - CCR	**LRC Date:** 2/8/2024
Reviewer Name: Angie O'Donnell	**Laboratory Work Order: 2402007**
Prep Batch Number(s): See Prep Dates Report	**Run Batch:** See Analytical Dates Report

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
S1	OI	**Initial Calibration (ICAL)**					
		1) Were response factors and/or relative response factors for each analyte within QC limits?	X				
		2) Were percent RSDs or correlation coefficient criteria met?	X				
		3) Was the number of standards recommended in the method used for all analytes?	X				
		4) Were all points generated between the lowest and highest standard used to calculate the curve?	X				
		5) Are ICAL data available for all instruments used?	X				
		6) Has the initial calibration curve been verified using an appropriate second source standard?	X				
S2	OI	**Initial and Continuing calibration Verification (ICCV and CCV) and Continuing Calibration blank (CCB):**					
		1) Was the CCV analyzed at the method-required frequency?	X				
		2) Were percent differences for each analyte within the method-required QC limits?	X				
		3) Was the ICAL curve verified for each analyte?	X				
		4) Was the absolute value of the analyte concentration in the inorganic CCB < MDL?	X				
S3	O	**Mass Spectral Tuning:**					
		1) Was the appropriate compound for the method used for tuning?	X				
		2) Were ion abundance data within the method-required QC limits?	X				
S4	O	**Internal Standards (IS):**					
		1) Were IS area counts and retention times within the method-required QC limits?	X				
S5	OI	**Raw Data (NELAC Section 5.5.10)**					
		1) Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X				
		2) Were data associated with manual integrations flagged on the raw data?	X				
S6	O	**Dual Column Confirmation**					
		1) Did dual column confirmation results meet the method-required QC?			X		
S7	O	**Tentatively Identified Compounds (TICs):**					
		1) If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X		
S8	I	**Interference Check Sample (ICS) Results:**					
		1) Were percent recoveries within method QC limits?	X				
S9	I	**Serial Dilutions, Post Digestion Spikes, and Method of Standard Additions**					
		1) Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			X		
S10	OI	**Method Detection Limit (MDL) Studies**					
		1) Was a MDL study performed for each reported analyte?	X				
		2) Is the MDL either adjusted or supported by the analysis of DCSs?	X				
S11	OI	**Proficiency Test Reports:**					
		1) Was the lab's performance acceptable on the applicable proficiency tests or evaluation studies?	X				
S12	OI	**Standards Documentation**					
		1) Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	X				
S13	OI	**Compound/Analyte Identification Procedures**					
		1) Are the procedures for compound/analyte identification documented?	X				
S14	OI	**Demonstration of Analyst Competency (DOC)**					
		1) Was DOC conducted consistent with NELAC Chapter 5 – Appendix C?	X				
		2) Is documentation of the analyst's competency up-to-date and on file?	X				
S15	OI	**Verification/Validation Documentation for Methods** (NELAC Chapter 5)					
		1) Are all the methods used to generate the data documented, verified, and validated, where applicable?	X				
S16	OI	**Laboratory Standard Operating Procedures (SOPs):**					
		1) Are laboratory SOPs current and on file for each method performed?	X				

1 Items identified by the letter "R" should be included in the laboratory data package submitted to the TCEQ in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
2 O = organic analyses; I = inorganic analyses (and general chemistry, when applicable).
3 NA = Not applicable.
4 NR = Not Reviewed.
5 ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Laboratory Data Package Signature Page – RG-366/TRRP-13

This data package consists of:

This signature page, the laboratory review checklist, and the following reportable data:

R1 Field chain-of-custody documentation;
R2 Sample identification cross-reference;
R3 Test reports (analytical data sheets) for each environmental sample that includes:
- a) Items consistent with NELAC Chapter 5,
- b) dilution factors,
- c) preparation methods,
- d) cleanup methods, and
- e) if required for the project, tentatively identified compounds (TICs).

R4 Surrogate recovery data including:
- a) Calculated recovery (%R), and
- b) The laboratory's surrogate QC limits.

R5 Test reports/summary forms for blank samples;
R6 Test reports/summary forms for laboratory control samples (LCSs) including:
- a) LCS spiking amounts,
- b) Calculated %R for each analyte, and
- c) The laboratory's LCS QC limits.

R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:
- a) Samples associated with the MS/MSD clearly identified,
- b) MS/MSD spiking amounts,
- c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
- d) Calculated %Rs and relative percent differences (RPDs), and
- e) The laboratory's MS/MSD QC limits

R8 Laboratory analytical duplicate (if applicable) recovery and precision:
- a) The amount of analyte measured in the duplicate,
- b) The calculated RPD, and
- c) The laboratory's QC limits for analytical duplicates.

R9 List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix;
R10 Other problems or anomalies.

The Exception Report for each "No" or "Not Reviewed (NR)" item in the Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory is not accredited under the Texas Laboratory Accreditation Program.

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory in the Exception Reports. By my signature below, I affirm to the best of my knowledge that all problems/anomalies observed by the laboratory have been identified in the Laboratory Review Checklist, and no information or data affecting the quality of the data has been knowingly withheld.

This laboratory was last inspected by TCEQ on May 30 – June 2, 2023. Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

Name: John DuPont
Official Title: General Manager

John DuPont
Signature

02/09/24
Date

Name: Dr. Derhsing Luu
Official Title: Technical Director

CLIENT:	BBA Engineering
Project:	Fayette Q1 - CCR
Lab Order:	2402007

CASE NARRATIVE

Samples were analyzed using the methods outlined in the following references:

Method SW6020B - Metals Analysis
Method M2540C - Total Dissolved Solids Analysis
Method E300 - Anions Analysis

Exception Report R1-01

The samples were received and log-in performed on 2/1/2024. A total of 9 samples were received and analyzed. The samples arrived in good condition and were properly packaged.

Exception Report R7-03

For Anions Analysis, for Batch 113810, the recovery of Chloride for the Matrix Spike and Matrix Spike Duplicate (2402007-05 MS/MSD) was below the method control limits. These are flagged accordingly in the QC Summary report. This anion was within method control limits in the associated LCS. No further corrective action was taken.

Exception Report R10-01

Per project specification, MS/MSD/Duplicates are from this workorder or project samples only.

DHL Analytical, Inc.

Date: *08-Feb-24*

CLIENT: BBA Engineering
Project: Fayette Q1 - CCR
Lab Order: 2402007

Work Order Sample Summary

Lab Smp ID	Client Sample ID	Tag Number	Date Collected	Date Recved
2402007-01	CBL-301I		01/29/24 12:50 PM	02/01/2024
2402007-02	CBL-302I		01/29/24 02:53 PM	02/01/2024
2402007-03	CBL-306I		01/29/24 03:58 PM	02/01/2024
2402007-04	CBL-308I		01/30/24 02:45 PM	02/01/2024
2402007-05	CBL-340I		01/31/24 02:14 PM	02/01/2024
2402007-06	CBL-341I		01/29/24 02:35 PM	02/01/2024
2402007-07	EB-CCR		01/30/24 03:00 PM	02/01/2024
2402007-08	FB-CCR		01/30/24 03:10 PM	02/01/2024
2402007-09	DUP1-CCR		01/29/24	02/01/2024

DHL Analytical, Inc.

08-Feb-24

Lab Order: 2402007
Client: BBA Engineering
Project: Fayette Q1 - CCR

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
2402007-01A	CBL-301I	01/29/24 12:50 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/07/24 07:28 AM	113876
	CBL-301I	01/29/24 12:50 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/07/24 07:28 AM	113876
2402007-01B	CBL-301I	01/29/24 12:50 PM	Aqueous	E300	Anion Preparation	02/01/24 01:53 PM	113810
	CBL-301I	01/29/24 12:50 PM	Aqueous	E300	Anion Preparation	02/01/24 01:53 PM	113810
	CBL-301I	01/29/24 12:50 PM	Aqueous	E300	Anion Preparation	02/02/24 10:03 AM	113823
	CBL-301I	01/29/24 12:50 PM	Aqueous	M2540C	TDS Preparation	02/02/24 09:40 AM	113821
2402007-02A	CBL-302I	01/29/24 02:53 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/07/24 07:28 AM	113876
	CBL-302I	01/29/24 02:53 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/07/24 07:28 AM	113876
2402007-02B	CBL-302I	01/29/24 02:53 PM	Aqueous	E300	Anion Preparation	02/01/24 01:53 PM	113810
	CBL-302I	01/29/24 02:53 PM	Aqueous	E300	Anion Preparation	02/01/24 01:53 PM	113810
	CBL-302I	01/29/24 02:53 PM	Aqueous	E300	Anion Preparation	02/02/24 10:03 AM	113823
	CBL-302I	01/29/24 02:53 PM	Aqueous	M2540C	TDS Preparation	02/02/24 09:40 AM	113821
2402007-03A	CBL-306I	01/29/24 03:58 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/07/24 07:28 AM	113876
	CBL-306I	01/29/24 03:58 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/07/24 07:28 AM	113876
2402007-03B	CBL-306I	01/29/24 03:58 PM	Aqueous	E300	Anion Preparation	02/01/24 01:53 PM	113810
	CBL-306I	01/29/24 03:58 PM	Aqueous	E300	Anion Preparation	02/01/24 01:53 PM	113810
	CBL-306I	01/29/24 03:58 PM	Aqueous	M2540C	TDS Preparation	02/02/24 09:40 AM	113821
2402007-04A	CBL-308I	01/30/24 02:45 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/07/24 07:28 AM	113876
	CBL-308I	01/30/24 02:45 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/07/24 07:28 AM	113876
2402007-04B	CBL-308I	01/30/24 02:45 PM	Aqueous	E300	Anion Preparation	02/01/24 01:53 PM	113810
	CBL-308I	01/30/24 02:45 PM	Aqueous	E300	Anion Preparation	02/01/24 01:53 PM	113810
	CBL-308I	01/30/24 02:45 PM	Aqueous	E300	Anion Preparation	02/02/24 10:03 AM	113823
	CBL-308I	01/30/24 02:45 PM	Aqueous	M2540C	TDS Preparation	02/02/24 09:40 AM	113821
2402007-05A	CBL-340I	01/31/24 02:14 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/07/24 07:28 AM	113876
	CBL-340I	01/31/24 02:14 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/07/24 07:28 AM	113876
2402007-05B	CBL-340I	01/31/24 02:14 PM	Aqueous	E300	Anion Preparation	02/01/24 01:53 PM	113810
	CBL-340I	01/31/24 02:14 PM	Aqueous	E300	Anion Preparation	02/01/24 01:53 PM	113810
	CBL-340I	01/31/24 02:14 PM	Aqueous	E300	Anion Preparation	02/01/24 01:53 PM	113810

Lab Order: 2402007
Client: BBA Engineering
Project: Fayette Q1 - CCR

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
2402007-05B	CBL-340I	01/31/24 02:14 PM	Aqueous	M2540C	TDS Preparation	02/02/24 09:40 AM	113821
2402007-06A	CBL-341I	01/29/24 02:35 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/07/24 07:28 AM	113876
	CBL-341I	01/29/24 02:35 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/07/24 07:28 AM	113876
2402007-06B	CBL-341I	01/29/24 02:35 PM	Aqueous	E300	Anion Preparation	02/01/24 01:53 PM	113810
	CBL-341I	01/29/24 02:35 PM	Aqueous	E300	Anion Preparation	02/01/24 01:53 PM	113810
	CBL-341I	01/29/24 02:35 PM	Aqueous	E300	Anion Preparation	02/02/24 10:03 AM	113823
	CBL-341I	01/29/24 02:35 PM	Aqueous	M2540C	TDS Preparation	02/02/24 09:40 AM	113821
2402007-07A	EB-CCR	01/30/24 03:00 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/07/24 07:28 AM	113876
2402007-07B	EB-CCR	01/30/24 03:00 PM	Aqueous	E300	Anion Preparation	02/01/24 01:53 PM	113810
	EB-CCR	01/30/24 03:00 PM	Aqueous	E300	Anion Preparation	02/01/24 01:53 PM	113810
	EB-CCR	01/30/24 03:00 PM	Aqueous	M2540C	TDS Preparation	02/02/24 09:40 AM	113821
2402007-08A	FB-CCR	01/30/24 03:10 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/07/24 07:28 AM	113876
2402007-08B	FB-CCR	01/30/24 03:10 PM	Aqueous	E300	Anion Preparation	02/01/24 01:53 PM	113810
	FB-CCR	01/30/24 03:10 PM	Aqueous	E300	Anion Preparation	02/01/24 01:53 PM	113810
	FB-CCR	01/30/24 03:10 PM	Aqueous	M2540C	TDS Preparation	02/02/24 09:40 AM	113821
2402007-09A	DUP1-CCR	01/29/24	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/07/24 07:28 AM	113876
	DUP1-CCR	01/29/24	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/07/24 07:28 AM	113876
2402007-09B	DUP1-CCR	01/29/24	Aqueous	E300	Anion Preparation	02/01/24 01:53 PM	113810
	DUP1-CCR	01/29/24	Aqueous	E300	Anion Preparation	02/01/24 01:53 PM	113810
	DUP1-CCR	01/29/24	Aqueous	M2540C	TDS Preparation	02/02/24 09:40 AM	113821

Lab Order: 2402007
Client: BBA Engineering
Project: Fayette Q1 - CCR

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
2402007-01A	CBL-301I	Aqueous	SW6020B	Total Metals: ICP-MS - Water	113876	50	02/07/24 04:06 PM	ICP-MS4_240207B
	CBL-301I	Aqueous	SW6020B	Total Metals: ICP-MS - Water	113876	1	02/07/24 03:11 PM	ICP-MS4_240207B
2402007-01B	CBL-301I	Aqueous	E300	Anions by IC method - Water	113810	10	02/01/24 08:12 PM	IC4_240201B
	CBL-301I	Aqueous	E300	Anions by IC method - Water	113810	1	02/02/24 01:54 AM	IC4_240201B
	CBL-301I	Aqueous	E300	Anions by IC method - Water	113823	100	02/02/24 03:11 PM	IC4_240202B
	CBL-301I	Aqueous	M2540C	Total Dissolved Solids	113821	1	02/02/24 02:00 PM	WC_240202B
2402007-02A	CBL-302I	Aqueous	SW6020B	Total Metals: ICP-MS - Water	113876	1	02/07/24 03:13 PM	ICP-MS4_240207B
	CBL-302I	Aqueous	SW6020B	Total Metals: ICP-MS - Water	113876	50	02/07/24 04:08 PM	ICP-MS4_240207B
2402007-02B	CBL-302I	Aqueous	E300	Anions by IC method - Water	113810	10	02/01/24 08:31 PM	IC4_240201B
	CBL-302I	Aqueous	E300	Anions by IC method - Water	113810	1	02/02/24 03:29 AM	IC4_240201B
	CBL-302I	Aqueous	E300	Anions by IC method - Water	113823	100	02/02/24 03:30 PM	IC4_240202B
	CBL-302I	Aqueous	M2540C	Total Dissolved Solids	113821	1	02/02/24 02:00 PM	WC_240202B
2402007-03A	CBL-306I	Aqueous	SW6020B	Total Metals: ICP-MS - Water	113876	1	02/07/24 03:15 PM	ICP-MS4_240207B
	CBL-306I	Aqueous	SW6020B	Total Metals: ICP-MS - Water	113876	10	02/07/24 04:10 PM	ICP-MS4_240207B
2402007-03B	CBL-306I	Aqueous	E300	Anions by IC method - Water	113810	10	02/01/24 08:50 PM	IC4_240201B
	CBL-306I	Aqueous	E300	Anions by IC method - Water	113810	1	02/02/24 03:48 AM	IC4_240201B
	CBL-306I	Aqueous	M2540C	Total Dissolved Solids	113821	1	02/02/24 02:00 PM	WC_240202B
2402007-04A	CBL-308I	Aqueous	SW6020B	Total Metals: ICP-MS - Water	113876	1	02/07/24 03:17 PM	ICP-MS4_240207B
	CBL-308I	Aqueous	SW6020B	Total Metals: ICP-MS - Water	113876	50	02/07/24 04:12 PM	ICP-MS4_240207B
2402007-04B	CBL-308I	Aqueous	E300	Anions by IC method - Water	113810	10	02/01/24 09:09 PM	IC4_240201B
	CBL-308I	Aqueous	E300	Anions by IC method - Water	113810	1	02/02/24 04:07 AM	IC4_240201B
	CBL-308I	Aqueous	E300	Anions by IC method - Water	113823	100	02/02/24 04:27 PM	IC4_240202B
	CBL-308I	Aqueous	M2540C	Total Dissolved Solids	113821	1	02/02/24 02:00 PM	WC_240202B
2402007-05A	CBL-340I	Aqueous	SW6020B	Total Metals: ICP-MS - Water	113876	50	02/07/24 04:14 PM	ICP-MS4_240207B
	CBL-340I	Aqueous	SW6020B	Total Metals: ICP-MS - Water	113876	1	02/07/24 03:19 PM	ICP-MS4_240207B
2402007-05B	CBL-340I	Aqueous	E300	Anions by IC method - Water	113810	100	02/01/24 06:37 PM	IC4_240201B
	CBL-340I	Aqueous	E300	Anions by IC method - Water	113810	10	02/01/24 09:28 PM	IC4_240201B
	CBL-340I	Aqueous	E300	Anions by IC method - Water	113810	1	02/02/24 04:26 AM	IC4_240201B

Lab Order: 2402007
Client: BBA Engineering
Project: Fayette Q1 - CCR

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
2402007-05B	CBL-340I	Aqueous	M2540C	Total Dissolved Solids	113821	1	02/02/24 02:00 PM	WC_240202B
2402007-06A	CBL-341I	Aqueous	SW6020B	Total Metals: ICP-MS - Water	113876	1	02/07/24 03:21 PM	ICP-MS4_240207B
	CBL-341I	Aqueous	SW6020B	Total Metals: ICP-MS - Water	113876	50	02/07/24 04:25 PM	ICP-MS4_240207B
2402007-06B	CBL-341I	Aqueous	E300	Anions by IC method - Water	113810	10	02/01/24 11:03 PM	IC4_240201B
	CBL-341I	Aqueous	E300	Anions by IC method - Water	113810	1	02/02/24 04:45 AM	IC4_240201B
	CBL-341I	Aqueous	E300	Anions by IC method - Water	113823	100	02/02/24 04:46 PM	IC4_240202B
	CBL-341I	Aqueous	M2540C	Total Dissolved Solids	113821	1	02/02/24 02:00 PM	WC_240202B
2402007-07A	EB-CCR	Aqueous	SW6020B	Total Metals: ICP-MS - Water	113876	1	02/07/24 04:27 PM	ICP-MS4_240207B
2402007-07B	EB-CCR	Aqueous	E300	Anions by IC method - Water	113810	10	02/01/24 11:22 PM	IC4_240201B
	EB-CCR	Aqueous	E300	Anions by IC method - Water	113810	1	02/02/24 05:04 AM	IC4_240201B
	EB-CCR	Aqueous	M2540C	Total Dissolved Solids	113821	1	02/02/24 02:00 PM	WC_240202B
2402007-08A	FB-CCR	Aqueous	SW6020B	Total Metals: ICP-MS - Water	113876	1	02/07/24 03:25 PM	ICP-MS4_240207B
2402007-08B	FB-CCR	Aqueous	E300	Anions by IC method - Water	113810	10	02/01/24 11:41 PM	IC4_240201B
	FB-CCR	Aqueous	E300	Anions by IC method - Water	113810	1	02/02/24 05:23 AM	IC4_240201B
	FB-CCR	Aqueous	M2540C	Total Dissolved Solids	113821	1	02/02/24 02:00 PM	WC_240202B
2402007-09A	DUP1-CCR	Aqueous	SW6020B	Total Metals: ICP-MS - Water	113876	1	02/07/24 03:27 PM	ICP-MS4_240207B
	DUP1-CCR	Aqueous	SW6020B	Total Metals: ICP-MS - Water	113876	10	02/07/24 04:29 PM	ICP-MS4_240207B
2402007-09B	DUP1-CCR	Aqueous	E300	Anions by IC method - Water	113810	10	02/02/24	IC4_240201B
	DUP1-CCR	Aqueous	E300	Anions by IC method - Water	113810	1	02/02/24 05:42 AM	IC4_240201B
	DUP1-CCR	Aqueous	M2540C	Total Dissolved Solids	113821	1	02/02/24 02:00 PM	WC_240202B

DHL Analytical, Inc.

Date: *08-Feb-24*

CLIENT:	BBA Engineering	**Client Sample ID:**	CBL-301I
Project:	Fayette Q1 - CCR	**Lab ID:**	2402007-01
Project No:		**Collection Date:**	01/29/24 12:50 PM
Lab Order:	2402007	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TOTAL METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Boron	0.107	0.0100	0.0300		mg/L	1	02/07/24 03:11 PM
Calcium	1050	5.00	15.0		mg/L	50	02/07/24 04:06 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **RA**
Chloride	2270	30.0	100		mg/L	100	02/02/24 03:11 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	02/02/24 01:54 AM
Sulfate	475	10.0	30.0		mg/L	10	02/01/24 08:12 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	4820	50.0	50.0		mg/L	1	02/02/24 02:00 PM

Qualifiers:

ND - Not Detected at the SDL
J - Analyte detected between SDL and RL
B - Analyte detected in the associated Method Blank
DF- Dilution Factor
N - Parameter not NELAP certified
See Final Page of Report for MQLs and MDLs

S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *08-Feb-24*

CLIENT:	BBA Engineering	**Client Sample ID:**	CBL-302I
Project:	Fayette Q1 - CCR	**Lab ID:**	2402007-02
Project No:		**Collection Date:**	01/29/24 02:53 PM
Lab Order:	2402007	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TOTAL METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Boron	0.160	0.0100	0.0300		mg/L	1	02/07/24 03:13 PM
Calcium	937	5.00	15.0		mg/L	50	02/07/24 04:08 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **RA**
Chloride	1440	30.0	100		mg/L	100	02/02/24 03:30 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	02/02/24 03:29 AM
Sulfate	1330	10.0	30.0		mg/L	10	02/01/24 08:31 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	4950	50.0	50.0		mg/L	1	02/02/24 02:00 PM

Qualifiers:

ND - Not Detected at the SDL
J - Analyte detected between SDL and RL
B - Analyte detected in the associated Method Blank
DF- Dilution Factor
N - Parameter not NELAP certified
See Final Page of Report for MQLs and MDLs

S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

CLIENT:	BBA Engineering	**Client Sample ID:**	CBL-306I
Project:	Fayette Q1 - CCR	**Lab ID:**	2402007-03
Project No:		**Collection Date:**	01/29/24 03:58 PM
Lab Order:	2402007	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TOTAL METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Boron	0.133	0.0100	0.0300		mg/L	1	02/07/24 03:15 PM
Calcium	186	1.00	3.00		mg/L	10	02/07/24 04:10 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **RA**
Chloride	153	3.00	10.0		mg/L	10	02/01/24 08:50 PM
Fluoride	1.49	0.100	0.400		mg/L	1	02/02/24 03:48 AM
Sulfate	266	10.0	30.0		mg/L	10	02/01/24 08:50 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	1170	50.0	50.0		mg/L	1	02/02/24 02:00 PM

Qualifiers:

- ND - Not Detected at the SDL
- J - Analyte detected between SDL and RL
- B - Analyte detected in the associated Method Blank
- DF- Dilution Factor
- N - Parameter not NELAP certified
- See Final Page of Report for MQLs and MDLs
- S - Spike Recovery outside control limits
- C - Sample Result or QC discussed in Case Narrative
- RL - Reporting Limit (MQL adjusted for moisture and sample size)
- SDL - Sample Detection Limit
- E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *08-Feb-24*

CLIENT:	BBA Engineering	**Client Sample ID:**	CBL-308I
Project:	Fayette Q1 - CCR	**Lab ID:**	2402007-04
Project No:		**Collection Date:**	01/30/24 02:45 PM
Lab Order:	2402007	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TOTAL METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Boron	0.150	0.0100	0.0300		mg/L	1	02/07/24 03:17 PM
Calcium	714	5.00	15.0		mg/L	50	02/07/24 04:12 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **RA**
Chloride	1790	30.0	100		mg/L	100	02/02/24 04:27 PM
Fluoride	1.26	0.100	0.400		mg/L	1	02/02/24 04:07 AM
Sulfate	1360	10.0	30.0		mg/L	10	02/01/24 09:09 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	5410	50.0	50.0		mg/L	1	02/02/24 02:00 PM

Qualifiers:

ND - Not Detected at the SDL
J - Analyte detected between SDL and RL
B - Analyte detected in the associated Method Blank
DF- Dilution Factor
N - Parameter not NELAP certified
See Final Page of Report for MQLs and MDLs

S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *08-Feb-24*

CLIENT:	BBA Engineering	**Client Sample ID:**	CBL-340I
Project:	Fayette Q1 - CCR	**Lab ID:**	2402007-05
Project No:		**Collection Date:**	01/31/24 02:14 PM
Lab Order:	2402007	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TOTAL METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Boron	0.178	0.0100	0.0300		mg/L	1	02/07/24 03:19 PM
Calcium	607	5.00	15.0		mg/L	50	02/07/24 04:14 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **RA**
Chloride	2210	30.0	100		mg/L	100	02/01/24 06:37 PM
Fluoride	0.605	0.100	0.400		mg/L	1	02/02/24 04:26 AM
Sulfate	705	10.0	30.0		mg/L	10	02/01/24 09:28 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	5090	50.0	50.0		mg/L	1	02/02/24 02:00 PM

Qualifiers:

ND - Not Detected at the SDL
J - Analyte detected between SDL and RL
B - Analyte detected in the associated Method Blank
DF- Dilution Factor
N - Parameter not NELAP certified
See Final Page of Report for MQLs and MDLs

S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *08-Feb-24*

CLIENT:	BBA Engineering	**Client Sample ID:**	CBL-341I
Project:	Fayette Q1 - CCR	**Lab ID:**	2402007-06
Project No:		**Collection Date:**	01/29/24 02:35 PM
Lab Order:	2402007	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TOTAL METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Boron	0.133	0.0100	0.0300		mg/L	1	02/07/24 03:21 PM
Calcium	875	5.00	15.0		mg/L	50	02/07/24 04:25 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **RA**
Chloride	1700	30.0	100		mg/L	100	02/02/24 04:46 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	02/02/24 04:45 AM
Sulfate	346	10.0	30.0		mg/L	10	02/01/24 11:03 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	3990	50.0	50.0		mg/L	1	02/02/24 02:00 PM

Qualifiers:

- ND - Not Detected at the SDL
- J - Analyte detected between SDL and RL
- B - Analyte detected in the associated Method Blank
- DF- Dilution Factor
- N - Parameter not NELAP certified
- See Final Page of Report for MQLs and MDLs
- S - Spike Recovery outside control limits
- C - Sample Result or QC discussed in Case Narrative
- RL - Reporting Limit (MQL adjusted for moisture and sample size)
- SDL - Sample Detection Limit
- E - TPH pattern not Gas or Diesel Range Pattern

CLIENT:	BBA Engineering	**Client Sample ID:**	EB-CCR
Project:	Fayette Q1 - CCR	**Lab ID:**	2402007-07
Project No:		**Collection Date:**	01/30/24 03:00 PM
Lab Order:	2402007	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TOTAL METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Boron	0.0162	0.0100	0.0300	J	mg/L	1	02/07/24 04:27 PM
Calcium	0.310	0.100	0.300		mg/L	1	02/07/24 04:27 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **RA**
Chloride	<0.300	0.300	1.00		mg/L	1	02/02/24 05:04 AM
Fluoride	<0.100	0.100	0.400		mg/L	1	02/02/24 05:04 AM
Sulfate	<1.00	1.00	3.00		mg/L	1	02/02/24 05:04 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	18.0	10.0	10.0		mg/L	1	02/02/24 02:00 PM

Qualifiers:

ND - Not Detected at the SDL
J - Analyte detected between SDL and RL
B - Analyte detected in the associated Method Blank
DF- Dilution Factor
N - Parameter not NELAP certified
See Final Page of Report for MQLs and MDLs

S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *08-Feb-24*

CLIENT:	BBA Engineering	**Client Sample ID:**	FB-CCR
Project:	Fayette Q1 - CCR	**Lab ID:**	2402007-08
Project No:		**Collection Date:**	01/30/24 03:10 PM
Lab Order:	2402007	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TOTAL METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Boron	0.0377	0.0100	0.0300		mg/L	1	02/07/24 03:25 PM
Calcium	<0.100	0.100	0.300		mg/L	1	02/07/24 03:25 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **RA**
Chloride	<0.300	0.300	1.00		mg/L	1	02/02/24 05:23 AM
Fluoride	<0.100	0.100	0.400		mg/L	1	02/02/24 05:23 AM
Sulfate	<1.00	1.00	3.00		mg/L	1	02/02/24 05:23 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	<10.0	10.0	10.0		mg/L	1	02/02/24 02:00 PM

Qualifiers:

ND - Not Detected at the SDL
J - Analyte detected between SDL and RL
B - Analyte detected in the associated Method Blank
DF- Dilution Factor
N - Parameter not NELAP certified
See Final Page of Report for MQLs and MDLs

S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *08-Feb-24*

CLIENT:	BBA Engineering	**Client Sample ID:**	DUP1-CCR
Project:	Fayette Q1 - CCR	**Lab ID:**	2402007-09
Project No:		**Collection Date:**	01/29/24
Lab Order:	2402007	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TOTAL METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Boron	0.125	0.0100	0.0300		mg/L	1	02/07/24 03:27 PM
Calcium	182	1.00	3.00		mg/L	10	02/07/24 04:29 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **RA**
Chloride	145	3.00	10.0		mg/L	10	02/02/24
Fluoride	1.45	0.100	0.400		mg/L	1	02/02/24 05:42 AM
Sulfate	257	10.0	30.0		mg/L	10	02/02/24
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	1170	50.0	50.0		mg/L	1	02/02/24 02:00 PM

Qualifiers:

ND - Not Detected at the SDL
J - Analyte detected between SDL and RL
B - Analyte detected in the associated Method Blank
DF- Dilution Factor
N - Parameter not NELAP certified
See Final Page of Report for MQLs and MDLs

S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

CLIENT: BBA Engineering
Work Order: 2402007
Project: Fayette Q1 - CCR

ANALYTICAL QC SUMMARY REPORT

RunID: **ICP-MS4_231207B**

Sample ID: **DCS2-113134** Batch ID: **113134** TestNo: **SW6020B** Units: **mg/L**
SampType: **DCS2** Run ID: **ICP-MS4_231207B** Analysis Date: **12/7/2023 10:16:00 AM** Prep Date: **12/6/2023**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.289	0.300	0.300	0	96.3	70	130	0	0	

Sample ID: **DCS4-113134** Batch ID: **113134** TestNo: **SW6020B** Units: **mg/L**
SampType: **DCS4** Run ID: **ICP-MS4_231207B** Analysis Date: **12/7/2023 10:21:00 AM** Prep Date: **12/6/2023**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0303	0.0300	0.0300	0	101	70	130	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: BBA Engineering
Work Order: 2402007
Project: Fayette Q1 - CCR

ANALYTICAL QC SUMMARY REPORT

RunID: **ICP-MS4_240207B**

The QC data in batch 113876 applies to the following samples: 2402007-01A, 2402007-02A, 2402007-03A, 2402007-04A, 2402007-05A, 2402007-06A, 2402007-07A, 2402007-08A, 2402007-09A

Sample ID: **MB-113876** Batch ID: **113876** TestNo: **SW6020B** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS4_240207B** Analysis Date: **2/7/2024 2:59:00 PM** Prep Date: **2/7/2024**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	<0.0100	0.0300								
Calcium	<0.100	0.300								

Sample ID: **LCS-113876** Batch ID: **113876** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS4_240207B** Analysis Date: **2/7/2024 3:01:00 PM** Prep Date: **2/7/2024**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.194	0.0300	0.200	0	96.8	80	120			
Calcium	5.22	0.300	5.00	0	104	80	120			

Sample ID: **LCSD-113876** Batch ID: **113876** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS4_240207B** Analysis Date: **2/7/2024 3:03:00 PM** Prep Date: **2/7/2024**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.202	0.0300	0.200	0	101	80	120	4.45	15	
Calcium	5.20	0.300	5.00	0	104	80	120	0.482	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: BBA Engineering
Work Order: 2402007
Project: Fayette Q1 - CCR

ANALYTICAL QC SUMMARY REPORT

RunID: **ICP-MS4_240207B**

Sample ID: **ICV-240207** Batch ID: **R131281** TestNo: **SW6020B** Units: **mg/L**
SampType: **ICV** Run ID: **ICP-MS4_240207B** Analysis Date: **2/7/2024 11:55:00 AM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0958	0.0300	0.100	0	95.8	90	110			
Calcium	2.50	0.300	2.50	0	100	90	110			

Sample ID: **LCVL-240207** Batch ID: **R131281** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS4_240207B** Analysis Date: **2/7/2024 12:05:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0192	0.0300	0.0200	0	95.9	80	120			
Calcium	0.0870	0.300	0.100	0	87.0	80	120			

Sample ID: **CCV1-240207** Batch ID: **R131281** TestNo: **SW6020B** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS4_240207B** Analysis Date: **2/7/2024 2:34:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.199	0.0300	0.200	0	99.3	90	110			
Calcium	5.02	0.300	5.00	0	100	90	110			

Sample ID: **CCV2-240207** Batch ID: **R131281** TestNo: **SW6020B** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS4_240207B** Analysis Date: **2/7/2024 3:44:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.194	0.0300	0.200	0	96.8	90	110			
Calcium	5.03	0.300	5.00	0	101	90	110			

Sample ID: **CCV3-240207** Batch ID: **R131281** TestNo: **SW6020B** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS4_240207B** Analysis Date: **2/7/2024 4:17:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.202	0.0300	0.200	0	101	90	110			
Calcium	5.05	0.300	5.00	0	101	90	110			

Sample ID: **CCV4-240207** Batch ID: **R131281** TestNo: **SW6020B** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS4_240207B** Analysis Date: **2/7/2024 4:33:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.192	0.0300	0.200	0	96.1	90	110			
Calcium	5.01	0.300	5.00	0	100	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: BBA Engineering
Work Order: 2402007
Project: Fayette Q1 - CCR

ANALYTICAL QC SUMMARY REPORT

RunID: **IC4_240125A**

Sample ID: **DCS2-113705** Batch ID: **113705** TestNo: **E300** Units: **mg/L**
SampType: **DCS2** Run ID: **IC4_240125A** Analysis Date: **1/25/2024 6:22:47 PM** Prep Date: **1/25/2024**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	0.496	1.00	0.5000	0	99.3	70	130	0	0	
Fluoride	0.176	0.400	0.2000	0	87.9	70	130	0	0	
Sulfate	1.26	3.00	1.500	0	84.1	70	130	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: BBA Engineering
Work Order: 2402007
Project: Fayette Q1 - CCR

ANALYTICAL QC SUMMARY REPORT

RunID: **IC4_240201B**

The QC data in batch 113810 applies to the following samples: 2402007-01B, 2402007-02B, 2402007-03B, 2402007-04B, 2402007-05B, 2402007-06B, 2402007-07B, 2402007-08B, 2402007-09B

Sample ID: **MB-113810** Batch ID: **113810** TestNo: **E300** Units: **mg/L**
SampType: **MBLK** Run ID: **IC4_240201B** Analysis Date: **2/1/2024 10:34:23 AM** Prep Date: **2/1/2024**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	<0.300	1.00								
Fluoride	<0.100	0.400								
Sulfate	<1.00	3.00								

Sample ID: **LCS-113810** Batch ID: **113810** TestNo: **E300** Units: **mg/L**
SampType: **LCS** Run ID: **IC4_240201B** Analysis Date: **2/1/2024 10:53:23 AM** Prep Date: **2/1/2024**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.40	1.00	10.00	0	94.0	90	110			
Fluoride	3.68	0.400	4.000	0	92.0	90	110			
Sulfate	29.3	3.00	30.00	0	97.6	90	110			

Sample ID: **LCSD-113810** Batch ID: **113810** TestNo: **E300** Units: **mg/L**
SampType: **LCSD** Run ID: **IC4_240201B** Analysis Date: **2/1/2024 11:12:23 AM** Prep Date: **2/1/2024**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.41	1.00	10.00	0	94.1	90	110	0.073	20	
Fluoride	3.69	0.400	4.000	0	92.2	90	110	0.176	20	
Sulfate	29.3	3.00	30.00	0	97.5	90	110	0.111	20	

Sample ID: **2402007-05BMS** Batch ID: **113810** TestNo: **E300** Units: **mg/L**
SampType: **MS** Run ID: **IC4_240201B** Analysis Date: **2/1/2024 6:56:20 PM** Prep Date: **2/1/2024**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	3880	100	2000	2211	83.5	90	110			S
Fluoride	1950	40.0	2000	0	97.4	90	110			
Sulfate	2550	300	2000	669.7	94.0	90	110			

Sample ID: **2402007-05BMSD** Batch ID: **113810** TestNo: **E300** Units: **mg/L**
SampType: **MSD** Run ID: **IC4_240201B** Analysis Date: **2/1/2024 7:15:20 PM** Prep Date: **2/1/2024**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	3880	100	2000	2211	83.4	90	110	0.039	20	S
Fluoride	1950	40.0	2000	0	97.5	90	110	0.033	20	
Sulfate	2550	300	2000	669.7	94.0	90	110	0.001	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: BBA Engineering
Work Order: 2402007
Project: Fayette Q1 - CCR

ANALYTICAL QC SUMMARY REPORT

RunID: IC4_240201B

Sample ID: **ICV-240201** Batch ID: **R131200** TestNo: **E300** Units: **mg/L**
SampType: **ICV** Run ID: **IC4_240201B** Analysis Date: **2/1/2024 9:56:23 AM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	24.2	1.00	25.00	0	96.7	90	110			
Fluoride	9.45	0.400	10.00	0	94.5	90	110			
Sulfate	75.1	3.00	75.00	0	100	90	110			

Sample ID: **CCV1-240201** Batch ID: **R131200** TestNo: **E300** Units: **mg/L**
SampType: **CCV** Run ID: **IC4_240201B** Analysis Date: **2/1/2024 10:25:20 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.49	1.00	10.00	0	94.9	90	110			
Fluoride	3.76	0.400	4.000	0	94.0	90	110			
Sulfate	29.5	3.00	30.00	0	98.3	90	110			

Sample ID: **CCV2-240201** Batch ID: **R131200** TestNo: **E300** Units: **mg/L**
SampType: **CCV** Run ID: **IC4_240201B** Analysis Date: **2/2/2024 2:51:20 AM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.49	1.00	10.00	0	94.9	90	110			
Fluoride	3.78	0.400	4.000	0	94.5	90	110			
Sulfate	29.5	3.00	30.00	0	98.3	90	110			

Sample ID: **CCV3-240201** Batch ID: **R131200** TestNo: **E300** Units: **mg/L**
SampType: **CCV** Run ID: **IC4_240201B** Analysis Date: **2/2/2024 7:17:19 AM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.45	1.00	10.00	0	94.5	90	110			
Fluoride	3.78	0.400	4.000	0	94.6	90	110			
Sulfate	29.5	3.00	30.00	0	98.4	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: BBA Engineering
Work Order: 2402007
Project: Fayette Q1 - CCR

ANALYTICAL QC SUMMARY REPORT

RunID: **IC4_240202B**

The QC data in batch 113823 applies to the following samples: 2402007-01B, 2402007-02B, 2402007-04B, 2402007-06B

Sample ID: **MB-113823** Batch ID: **113823** TestNo: **E300** Units: **mg/L**
SampType: **MBLK** Run ID: **IC4_240202B** Analysis Date: **2/2/2024 11:47:12 AM** Prep Date: **2/2/2024**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	<0.300	1.00								

Sample ID: **LCS-113823** Batch ID: **113823** TestNo: **E300** Units: **mg/L**
SampType: **LCS** Run ID: **IC4_240202B** Analysis Date: **2/2/2024 12:06:12 PM** Prep Date: **2/2/2024**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.59	1.00	10.00	0	95.9	90	110			

Sample ID: **LCSD-113823** Batch ID: **113823** TestNo: **E300** Units: **mg/L**
SampType: **LCSD** Run ID: **IC4_240202B** Analysis Date: **2/2/2024 12:25:12 PM** Prep Date: **2/2/2024**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.60	1.00	10.00	0	96.0	90	110	0.113	20	

Sample ID: **2402007-02BMS** Batch ID: **113823** TestNo: **E300** Units: **mg/L**
SampType: **MS** Run ID: **IC4_240202B** Analysis Date: **2/2/2024 3:49:05 PM** Prep Date: **2/2/2024**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	3300	100	2000	1443	93.0	90	110			

Sample ID: **2402007-02BMSD** Batch ID: **113823** TestNo: **E300** Units: **mg/L**
SampType: **MSD** Run ID: **IC4_240202B** Analysis Date: **2/2/2024 4:08:05 PM** Prep Date: **2/2/2024**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	3310	100	2000	1443	93.1	90	110	0.064	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: BBA Engineering
Work Order: 2402007
Project: Fayette Q1 - CCR

ANALYTICAL QC SUMMARY REPORT

RunID: **IC4_240202B**

Sample ID: **ICV-240202**	Batch ID: **R131213**	TestNo: **E300**	Units: **mg/L**
SampType: **ICV**	Run ID: **IC4_240202B**	Analysis Date: **2/2/2024 11:09:12 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	24.3	1.00	25.00	0	97.3	90	110			

Sample ID: **CCV1-240202**	Batch ID: **R131213**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC4_240202B**	Analysis Date: **2/2/2024 6:59:05 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.64	1.00	10.00	0	96.4	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: BBA Engineering
Work Order: 2402007
Project: Fayette Q1 - CCR

ANALYTICAL QC SUMMARY REPORT

RunID: **WC_240202B**

The QC data in batch 113821 applies to the following samples: 2402007-01B, 2402007-02B, 2402007-03B, 2402007-04B, 2402007-05B, 2402007-06B, 2402007-07B, 2402007-08B, 2402007-09B

Sample ID: **MB-113821** Batch ID: **113821** TestNo: **M2540C** Units: **mg/L**
SampType: **MBLK** Run ID: **WC_240202B** Analysis Date: **2/2/2024 2:00:00 PM** Prep Date: **2/2/2024**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	<10.0	10.0								

Sample ID: **LCS-113821** Batch ID: **113821** TestNo: **M2540C** Units: **mg/L**
SampType: **LCS** Run ID: **WC_240202B** Analysis Date: **2/2/2024 2:00:00 PM** Prep Date: **2/2/2024**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	743	10.0	745.6	0	99.7	90	113			

Sample ID: **2402007-01B-DUP** Batch ID: **113821** TestNo: **M2540C** Units: **mg/L**
SampType: **DUP** Run ID: **WC_240202B** Analysis Date: **2/2/2024 2:00:00 PM** Prep Date: **2/2/2024**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	4860	50.0	0	4815				0.930	5	

Sample ID: **2402007-02B-DUP** Batch ID: **113821** TestNo: **M2540C** Units: **mg/L**
SampType: **DUP** Run ID: **WC_240202B** Analysis Date: **2/2/2024 2:00:00 PM** Prep Date: **2/2/2024**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	4730	50.0	0	4945				4.55	5	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT:	BBA Engineering
Work Order:	2402007
Project:	Fayette Q1 - CCR

MQL SUMMARY REPORT

TestNo: E300	**MDL**	**MQL**
Analyte	**mg/L**	**mg/L**
Chloride	0.300	1.00
Fluoride	0.100	0.400
Sulfate	1.00	3.00

TestNo: SW6020B	**MDL**	**MQL**
Analyte	**mg/L**	**mg/L**
Boron	0.0100	0.0300
Calcium	0.100	0.300

TestNo: M2540C	**MDL**	**MQL**
Analyte	**mg/L**	**mg/L**
Total Dissolved Solids (Residue, Filt	10.0	10.0

Qualifiers: MQL -Method Quantitation Limit as defined by TRRP
MDL -Method Detection Limit as defined by TRRP

April 18, 2024

Charlie Macon
BBA Engineering
165 N. Lampasas St.
Bertram, TX 78605
TEL: (512) 585-7180
FAX:

Order No.: 2404054

RE: Fayette Power Project Q1

Dear Charlie Macon:

DHL Analytical, Inc. received 3 sample(s) on 4/5/2024 for the analyses presented in the following report.

There were no problems with the analyses and all data met requirements of NELAP except where noted in the Case Narrative. All non-NELAP methods will be identified accordingly in the case narrative and all estimated uncertainties of test results are within method or EPA specifications.

If you have any questions regarding these tests results, please feel free to call. Thank you for using DHL Analytical.

Sincerely,

John DuPont
General Manager

This report was performed under the accreditation of the State of Texas Laboratory Certification Number: T104704211-23-29

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DHL ANALYTICAL

2300 Double Creek Dr. Round Rock, TX 78664
Phone 512.388.8222
Web: **www.dhlanalytical.com**
Email: **login@dhlanalytical.com**

CHAIN-OF-CUSTODY

PAGE 1 OF 1

CLIENT: BBA Engineering	DATE: 4-5-24
ADDRESS: 165 N. Lampasas St. Bertram, Tx	PO#:
PHONE: 512-820-4059 EMAIL: smacon@BBAEngineering.com	PROJECT LOCATION OR NAME: Fayette Power Project Q1
DATA REPORTED TO: cmacon@BBAEngineering.com	
ADDITIONAL REPORT COPIES TO: —	CLIENT PROJECT # COLLECTOR: Samuel Macon

LAB USE ONLY
DHL WORKORDER #: 2404054

Authorize 5% surcharge for TRRP report? ☐ Yes ☐ No

W=WATER SE=SEDIMENT
L=LIQUID P=PAINT
S=SOIL SL=SLUDGE
SO=SOLID

Field Sample I.D.	Lab Use Only DHL Lab #	Collection Date	Collection Time	Matrix	Container Type	# of Containers	HCL ☐ H_3PO_4 ☐	HNO_3	H_2SO_4	NaOH ☐ Zn Acetate ☐	ICE ☒ UNPRESERVED ☒	ANALYSES	BTEX ☐ MTBE ☐ [METHOD 8260]	TPH 1005 ☐ TPH 1006 ☐ HOLD 1006 ☐	GRO 8015 ☐ DRO 8015 ☐	VOC 8260 ☐ VOC 624.1 ☐	SVOC 8270 ☐ SVOC 625.1 ☐	PAH 8270 ☐ HOLD PAH ☐	PEST 8270 ☐ 625.1 ☐ O-P PEST 8270 ☐	PCB 8082 ☐ 608.3 ☐ PCB 8270 ☐ 625.1 ☐	HERB 8321 ☐ T PHOS ☐ AMMONIA ☐	METALS 6020 ☐ 200.8 ☐ DISS. METALS ☐	RCRA 8 ☐ TX11 ☐ ___	pH☐ HEX CHROM☐ ALKALINITY☐ COD☐	ANIONS 300 ☐ 9056 ☐ ___	TCLP-SVOC ☐ VOC ☐ PEST ☐ HERB ☐	TCLP-METALS ☐ RCRA 8 ☐ TX-11 ☐ Pb ☐	RCI ☐ IGN ☐ DGAS ☐ OIL&GREASE ☐	TDS ☐ TSS ☐ % MOIST ☐ CYANIDE ☐	Boron			FIELD NOTES
CBL-302I	01	4-5-24	1105	W	pL	1		X			X																			X			~~Hold~~ scm
CBL-302I(N)	02	↓	1105	↓	↓	1					X																			X			Hold- Need 10um Lab filter
CBL-302I(F)	03	↓	1105	↓	↓	1		X			X																			X			Hold

Relinquished By: (Sign)	DATE/TIME	Received by:
Samuel C. Macon	4-5-24 @1445	[signature]
Relinquished By: (Sign)	DATE/TIME	Received by:
Relinquished By: (Sign)	DATE/TIME	Received by:

TURN AROUND TIME (CALL FIRST FOR RUSH)
RUSH-1 DAY☐ RUSH-2 DAY☐
RUSH-3 DAY☐
NORMAL ☒ OTHER ☐
DUE DATE ____________ ☐

LAB USE ONLY **THERMO #:** 78
RECEIVING TEMP (°C): 5.1°C
IF >6°C, ARE SAMPLES ON ICE AND JUST COLLECTED? YES / NO
CUSTODY SEALS ON ICE CHEST: ☐ BROKEN ☐ INTACT ☒ NOT USED
CARRIER: ☐ LSO ☐ FEDEX ☐ UPS ☐ COURIER ☒ HAND DELIVERED

☒ **DHL DISPOSAL @ $10.00 each**

DHL Analytical, Inc.

Sample Receipt Checklist

Client Name: **BBA Engineering**

Date Received: **4/5/2024**

Work Order Number: **2404054**

Received by: **KAO**

Checklist completed by: (Signature) 4/5/2024 (Date)

Reviewed by: SW (Initials) 4/5/2024 (Date)

Carrier name: Hand Delivered

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐	
Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	Not Present ☑	
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑	
Chain of custody present?	Yes ☑	No ☐		
Chain of custody signed when relinquished and received?	Yes ☑	No ☐		
Chain of custody agrees with sample labels?	Yes ☑	No ☐		
Samples in proper container/bottle?	Yes ☑	No ☐		
Sample containers intact?	Yes ☑	No ☐		
Sufficient sample volume for indicated test?	Yes ☑	No ☐		
All samples received within holding time?	Yes ☑	No ☐		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑	NA ☐
Water - pH<2 acceptable upon receipt?	Yes ☑	No ☐	NA ☐	LOT # 11837
	Adjusted? No		Checked by R.A.	
Water - ph>9 (S) or ph>10 (CN) acceptable upon receipt?	Yes ☐	No ☐	NA ☑	LOT #
	Adjusted?		Checked by	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐		

Cooler #	1
Temp °C	5.1
Seal Intact	NP

Any No response must be detailed in the comments section below.

Client contacted: Date contacted: Person contacted:

Contacted by: Regarding:

Comments:

Corrective Action:

Page 1 of 1

Laboratory Name: DHL Analytical, Inc.

Laboratory Review Checklist: Reportable Data

Project Name: Fayette Power Project Q1	**LRC Date:** 4/18/2024
Reviewer Name: Angie O'Donnell	**Laboratory Work Order: 2404054**
Prep Batch Number(s): See Prep Dates Report	**Run Batch:** See Analytical Dates Report

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
		Chain-of-Custody (C-O-C)					
R1	OI	**1)** Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X				**R1-01**
		2) Were all departures from standard conditions described in an exception report?			X		
R2	OI	**Sample and Quality Control (QC) Identification**					
		1) Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X				
		2) Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X				
R3	OI	**Test Reports**					
		1) Were all samples prepared and analyzed within holding times?	X				
		2) Other than those results < MQL, were all other raw values bracketed by calibration standards?	X				
		3) Were calculations checked by a peer or supervisor?	X				
		4) Were all analyte identifications checked by a peer or supervisor?	X				
		5) Were sample detection limits reported for all analytes not detected?	X				
		6) Were all results for soil and sediment samples reported on a dry weight basis?			X		
		7) Were % moisture (or solids) reported for all soil and sediment samples?			X		
		8) Were bulk soils/solids samples for volatile analysis extracted with methanol per EPA Method 5035?			X		
		9) If required for the project, TICs reported?			X		
R4	O	**Surrogate Recovery Data**					
		1) Were surrogates added prior to extraction?			X		
		2) Were surrogate percent recoveries in all samples within the laboratory QC limits?			X		
R5	OI	**Test Reports/Summary Forms for Blank Samples**					
		1) Were appropriate type(s) of blanks analyzed?	X				
		2) Were blanks analyzed at the appropriate frequency?	X				
		3) Where method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	X				
		4) Were blank concentrations < MDL?	X				
		5) For analyte(s) detected in a blank sample, was the concentration, unadjusted for sample specific factors, in all associated field samples, **greater** than 10 times the concentration in the blank sample?			X		
R6	OI	**Laboratory Control Samples (LCS):**					
		1) Were all COCs included in the LCS?	X				
		2) Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	X				
		3) Were LCSs analyzed at the required frequency?	X				
		4) Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	X				
		5) Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	X				
		6) Was the LCSD RPD within QC limits (if applicable)?	X				
R7	OI	**Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Data**					
		1) Were the project/method specified analytes included in the MS and MSD?	X				
		2) Were MS/MSD analyzed at the appropriate frequency?	X				
		3) Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?	X				
		4) Were MS/MSD RPDs within laboratory QC limits?	X				
R8	OI	**Analytical Duplicate Data**					
		1) Were appropriate analytical duplicates analyzed for each matrix?			X		
		2) Were analytical duplicates analyzed at the appropriate frequency?			X		
		3) Were RPDs or relative standard deviations within the laboratory QC limits?			X		
R9	OI	**Method Quantitation Limits (MQLs):**					
		1) Are the MQLs for each method analyte included in the laboratory data package?	X				
		2) Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	X				
		3) Are unadjusted MQLs and DCSs included in the laboratory data package?	X				
R10	OI	**Other Problems/Anomalies**					
		1) Are all known problems/anomalies/special conditions noted in this LRC and ER?	X				
		2) Was applicable and available technology used to lower the SDL to minimize the matrix interference affects on the sample results?	X				
		3) Is the laboratory NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices and methods associated with this laboratory data package?	X				

Laboratory Name: DHL Analytical, Inc.							
Laboratory Review Checklist (continued): Supporting Data							
Project Name: Fayette Power Project Q1			**LRC Date:** 4/18/2024				
Reviewer Name: Angie O'Donnell			**Laboratory Work Order: 2404054**				
Prep Batch Number(s): See Prep Dates Report			**Run Batch:** See Analytical Dates Report				
#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
S1	OI	**Initial Calibration (ICAL)**					
		1) Were response factors and/or relative response factors for each analyte within QC limits?	X				
		2) Were percent RSDs or correlation coefficient criteria met?	X				
		3) Was the number of standards recommended in the method used for all analytes?	X				
		4) Were all points generated between the lowest and highest standard used to calculate the curve?	X				
		5) Are ICAL data available for all instruments used?	X				
		6) Has the initial calibration curve been verified using an appropriate second source standard?	X				
S2	OI	**Initial and Continuing calibration Verification (ICCV and CCV) and Continuing Calibration blank (CCB):**					
		1) Was the CCV analyzed at the method-required frequency?	X				
		2) Were percent differences for each analyte within the method-required QC limits?	X				
		3) Was the ICAL curve verified for each analyte?	X				
		4) Was the absolute value of the analyte concentration in the inorganic CCB < MDL?	X				
S3	O	**Mass Spectral Tuning:**					
		1) Was the appropriate compound for the method used for tuning?	X				
		2) Were ion abundance data within the method-required QC limits?	X				
S4	O	**Internal Standards (IS):**					
		1) Were IS area counts and retention times within the method-required QC limits?	X				
S5	OI	**Raw Data (NELAC Section 5.5.10)**					
		1) Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X				
		2) Were data associated with manual integrations flagged on the raw data?	X				
S6	O	**Dual Column Confirmation**					
		1) Did dual column confirmation results meet the method-required QC?			X		
S7	O	**Tentatively Identified Compounds (TICs):**					
		1) If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X		
S8	I	**Interference Check Sample (ICS) Results:**					
		1) Were percent recoveries within method QC limits?	X				
S9	I	**Serial Dilutions, Post Digestion Spikes, and Method of Standard Additions**					
		1) Were percent differences, recoveries, and the linearity within the QC limits specified in the method?	X				
S10	OI	**Method Detection Limit (MDL) Studies**					
		1) Was a MDL study performed for each reported analyte?	X				
		2) Is the MDL either adjusted or supported by the analysis of DCSs?	X				
S11	OI	**Proficiency Test Reports:**					
		1) Was the lab's performance acceptable on the applicable proficiency tests or evaluation studies?	X				
S12	OI	**Standards Documentation**					
		1) Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	X				
S13	OI	**Compound/Analyte Identification Procedures**					
		1) Are the procedures for compound/analyte identification documented?	X				
S14	OI	**Demonstration of Analyst Competency (DOC)**					
		1) Was DOC conducted consistent with NELAC Chapter 5 – Appendix C?	X				
		2) Is documentation of the analyst's competency up-to-date and on file?	X				
S15	OI	**Verification/Validation Documentation for Methods** (NELAC Chapter 5)					
		1) Are all the methods used to generate the data documented, verified, and validated, where applicable?	X				
S16	OI	**Laboratory Standard Operating Procedures (SOPs):**					
		1) Are laboratory SOPs current and on file for each method performed?	X				

1 Items identified by the letter "R" should be included in the laboratory data package submitted to the TCEQ in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
2 O = organic analyses; I = inorganic analyses (and general chemistry, when applicable).
3 NA = Not applicable.
4 NR = Not Reviewed.
5 ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Laboratory Data Package Signature Page – RG-366/TRRP-13

This data package consists of:

This signature page, the laboratory review checklist, and the following reportable data:

R1 Field chain-of-custody documentation;
R2 Sample identification cross-reference;
R3 Test reports (analytical data sheets) for each environmental sample that includes:
  a) Items consistent with NELAC Chapter 5,
  b) dilution factors,
  c) preparation methods,
  d) cleanup methods, and
  e) if required for the project, tentatively identified compounds (TICs).
R4 Surrogate recovery data including:
  a) Calculated recovery (%R), and
  b) The laboratory's surrogate QC limits.
R5 Test reports/summary forms for blank samples;
R6 Test reports/summary forms for laboratory control samples (LCSs) including:
  a) LCS spiking amounts,
  b) Calculated %R for each analyte, and
  c) The laboratory's LCS QC limits.
R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:
  a) Samples associated with the MS/MSD clearly identified,
  b) MS/MSD spiking amounts,
  c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
  d) Calculated %Rs and relative percent differences (RPDs), and
  e) The laboratory's MS/MSD QC limits
R8 Laboratory analytical duplicate (if applicable) recovery and precision:
  a) The amount of analyte measured in the duplicate,
  b) The calculated RPD, and
  c) The laboratory's QC limits for analytical duplicates.
R9 List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix;
R10 Other problems or anomalies.

The Exception Report for each "No" or "Not Reviewed (NR)" item in the Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory is not accredited under the Texas Laboratory Accreditation Program.

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory in the Exception Reports. By my signature below, I affirm to the best of my knowledge that all problems/anomalies observed by the laboratory have been identified in the Laboratory Review Checklist, and no information or data affecting the quality of the data has been knowingly withheld.

This laboratory was last inspected by TCEQ on May 30 – June 2, 2023. Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

Name: John DuPont
Official Title: General Manager

Signature: John DuPont — Date: 04/18/24

Name: Dr. Derhsing Luu
Official Title: Technical Director

CLIENT: BBA Engineering
Project: Fayette Power Project Q1
Lab Order: 2404054

CASE NARRATIVE

Samples were analyzed using the methods outlined in the following references:

Method SW6020B - Metals Analysis

Exception Report R1-01

The samples were received and log-in performed on 4/5/2024. A total of 3 samples were received and 1 was analyzed; two samples remained on-hold per the client. The samples arrived in good condition and were properly packaged.

DHL Analytical, Inc.

Date: *18-Apr-24*

CLIENT: BBA Engineering
Project: Fayette Power Project Q1
Lab Order: 2404054

Work Order Sample Summary

Lab Smp ID	Client Sample ID	Tag Number	Date Collected	Date Recved
2404054-01	CBL-302I		04/05/24 11:05 AM	04/05/2024
2404054-02	CBL-302I(N)		04/05/24 11:05 AM	04/05/2024
2404054-03	CBL-302I(F)		04/05/24 11:05 AM	04/05/2024

Lab Order: 2404054
Client: BBA Engineering
Project: Fayette Power Project Q1

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
2404054-01A	CBL-302I	04/05/24 11:05 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	04/08/24 07:12 AM	114841
	CBL-302I	04/05/24 11:05 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	04/08/24 07:12 AM	114841

Lab Order: 2404054
Client: BBA Engineering
Project: Fayette Power Project Q1

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
2404054-01A	CBL-302I	Aqueous	SW6020B	Total Metals: ICP-MS - Water	114841	1	04/09/24 01:51 PM	ICP-MS5_240409B
	CBL-302I	Aqueous	SW6020B	Total Metals: ICP-MS - Water	114841	1	04/09/24 03:22 PM	ICP-MS4_240409B

DHL Analytical, Inc.

Date: *18-Apr-24*

CLIENT:	BBA Engineering	**Client Sample ID:**	CBL-302I
Project:	Fayette Power Project Q1	**Lab ID:**	2404054-01
Project No:	23630	**Collection Date:**	04/05/24 11:05 AM
Lab Order:	2404054	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TOTAL METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Boron	0.163	0.0100	0.0300		mg/L	1	04/09/24 03:22 PM

Qualifiers:

ND - Not Detected at the SDL
J - Analyte detected between SDL and RL
B - Analyte detected in the associated Method Blank
DF- Dilution Factor
N - Parameter not NELAP certified
See Final Page of Report for MQLs and MDLs

S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc. **Date:** *18-Apr-24*

CLIENT: BBA Engineering
Work Order: 2404054
Project: Fayette Power Project Q1

ANALYTICAL QC SUMMARY REPORT

RunID: **ICP-MS4_240304A**

Sample ID: **DCS4-114267** Batch ID: **114267** TestNo: **SW6020B** Units: **mg/L**
SampType: **DCS4** Run ID: **ICP-MS4_240304A** Analysis Date: **3/4/2024 11:57:00 AM** Prep Date: **3/1/2024**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0299	0.0300	0.0300	0	99.8	70	130	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: BBA Engineering
Work Order: 2404054
Project: Fayette Power Project Q1

ANALYTICAL QC SUMMARY REPORT

RunID: **ICP-MS4_240409B**

The QC data in batch 114841 applies to the following samples: 2404054-01A

Sample ID: **MB-114841** Batch ID: **114841** TestNo: **SW6020B** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS4_240409B** Analysis Date: **4/9/2024 2:21:00 PM** Prep Date: **4/8/2024**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	<0.0100	0.0300								

Sample ID: **LCS-114841** Batch ID: **114841** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS4_240409B** Analysis Date: **4/9/2024 2:23:00 PM** Prep Date: **4/8/2024**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.196	0.0300	0.200	0	98.2	80	120			

Sample ID: **LCSD-114841** Batch ID: **114841** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS4_240409B** Analysis Date: **4/9/2024 2:25:00 PM** Prep Date: **4/8/2024**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.196	0.0300	0.200	0	97.8	80	120	0.441	15	

Sample ID: **2404040-08A SD** Batch ID: **114841** TestNo: **SW6020B** Units: **mg/L**
SampType: **SD** Run ID: **ICP-MS4_240409B** Analysis Date: **4/9/2024 2:31:00 PM** Prep Date: **4/8/2024**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.249	0.150	0	0.239				4.12	20	

Sample ID: **2404040-08A PDS** Batch ID: **114841** TestNo: **SW6020B** Units: **mg/L**
SampType: **PDS** Run ID: **ICP-MS4_240409B** Analysis Date: **4/9/2024 2:50:00 PM** Prep Date: **4/8/2024**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.439	0.0300	0.200	0.239	99.7	75	125			

Sample ID: **2404040-08A MS** Batch ID: **114841** TestNo: **SW6020B** Units: **mg/L**
SampType: **MS** Run ID: **ICP-MS4_240409B** Analysis Date: **4/9/2024 2:52:00 PM** Prep Date: **4/8/2024**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.452	0.0300	0.200	0.239	106	75	125			

Sample ID: **2404040-08A MSD** Batch ID: **114841** TestNo: **SW6020B** Units: **mg/L**
SampType: **MSD** Run ID: **ICP-MS4_240409B** Analysis Date: **4/9/2024 2:54:00 PM** Prep Date: **4/8/2024**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.450	0.0300	0.200	0.239	105	75	125	0.514	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: BBA Engineering
Work Order: 2404054
Project: Fayette Power Project Q1

ANALYTICAL QC SUMMARY REPORT

RunID: **ICP-MS4_240409B**

Sample ID: **ICV-240409** Batch ID: **R132417** TestNo: **SW6020B** Units: **mg/L**
SampType: **ICV** Run ID: **ICP-MS4_240409B** Analysis Date: **4/9/2024 10:33:00 AM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0950	0.0300	0.100	0	95.0	90	110			

Sample ID: **LCVL-240409** Batch ID: **R132417** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS4_240409B** Analysis Date: **4/9/2024 10:40:00 AM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0237	0.0300	0.0200	0	119	80	120			

Sample ID: **CCV2-240409** Batch ID: **R132417** TestNo: **SW6020B** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS4_240409B** Analysis Date: **4/9/2024 12:49:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.196	0.0300	0.200	0	97.9	90	110			

Sample ID: **CCV3-240409** Batch ID: **R132417** TestNo: **SW6020B** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS4_240409B** Analysis Date: **4/9/2024 2:58:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.203	0.0300	0.200	0	101	90	110			

Sample ID: **CCV4-240409** Batch ID: **R132417** TestNo: **SW6020B** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS4_240409B** Analysis Date: **4/9/2024 3:27:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.209	0.0300	0.200	0	104	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT:	BBA Engineering
Work Order:	2404054
Project:	Fayette Power Project Q1

MQL SUMMARY REPORT

TestNo: SW6020B	MDL	MQL
Analyte	**mg/L**	**mg/L**
Boron	0.0100	0.0300

Qualifiers: MQL -Method Quantitation Limit as defined by TRRP

MDL -Method Detection Limit as defined by TRRP

DATA USABILITY SUMMARY – LCRA Analytical Reports 2402007 and 2404054

Bullock, Bennett & Associates, LLC has reviewed the analytical data packages to be included in Appendix D of the Coal Combustion Residual Landfill 2024 Annual Groundwater Monitoring Report (Annual Groundwater Report) that was produced by DHL Analytical, Inc. for the analysis of groundwater samples collected in January 2024 and April 2024 at the Fayette Power Project (FPP) site. The Data were reviewed for conformance to the groundwater sampling and analysis requirements of 40 CFR § 257.93/30 TAC 352.931 and adherence to project objectives.

Objectives of the Data: To provide current data on concentrations of COCs in groundwater at the site for purposes of comparing Combustion Byproducts Landfill (CBL) compliance sample data to Appendix III Control Limits. To accomplish the stated data objectives, all field and laboratory procedures were performed in accordance with industry-established protocol, and the FPP Sampling and Analysis Plan. Appropriate quality assurance/quality control (QA/QC) measures were utilized. As described within the body of the Annual Groundwater Report, field QA/QC protocols integrated into this project followed industry standards and involved, among other factors:

- Use of sampling equipment decontamination protocol;
- Proper sample handling, preservation, and shipping procedures; and
- Maintenance of the sample chain of custody.

Also, as presented in the individual laboratory data packages, laboratory QA/QC procedures integrated into this project followed industry standards and involved, among others:

- Maintenance of sample custody;
- Application of laboratory cross references to field sample identifications and to specific QC samples;
- Use of laboratory control samples (LCSs);
- Use of matrix spike/matrix duplicate spikes (MS/MSDs);
- Use of appropriate method and method reporting limit (MRL);
- Reporting of non-detect results as less than the value of the MRL;
- Use of surrogate recoveries;
- Calculation of relative percent differences (RPDs);
- Use of method and preparation blanks; and
- The application of data qualifiers.

Data Reviewed: The data reviewed consisted of laboratory submittals and field data as follows:

- Project Objectives (i.e., recoveries and relative percent differences);
- Analytical Results, including, as applicable, data qualifiers;
- Documentation of preservation and holding times;
- Field and laboratory equipment calibrations;
- Laboratory blanks;
- Internal Laboratory Control Standards and Surrogate Recoveries;
- Laboratory Control Samples;
- Matrix Spike/Matrix Spike Duplicates;
- Field Precision as determined by duplicate samples collected in the field; and
- Field Procedures.

The results of the supporting quality control analyses for each of these QC factors were summarized in Quality Control narratives provided by the laboratory, and field/laboratory-completed chain of custody forms, the field forms, and the standard operational field procedures, and groundwater sampling procedures. A review of each of these was included in this Data Usability Summary.

Based on the Data Usability Review, the groundwater data are usable for their intended purpose. All samples were collected in the field using industry-standard operating procedures (SOPs), including decontamination protocol, sample preservation, and chain of custody.

Also, as presented in detail in the attached laboratory data packages, all appropriate QA/QC protocol were accomplished by the analytical laboratory. Where applicable, data have been appropriately qualified in the laboratory reports and the data, therefore, have been used accordingly.

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Issues were identified as follows:

- January 2024 sampling event (Report 2402007)
    - Exception Report R7-03:
      For Anions Analysis, for Batch 113810, the recovery of Chloride for the Matrix Spike and Matrix Spike Duplicate (2402007-05 MS/MSD) was below the method control limits. These are flagged accordingly in the QC Summary report. This anion was within method control limits in the associated LCS. No further corrective action was taken.
    - Exception Report R10-01:
      Per project specification, MS/MSD/Duplicates are from this workorder or project samples only.

- April 2024 sampling event (Report 2404054)
    - (No Exception Reports)

All exceptions were documented and described in the Quality Control narratives and no conditions with regard to laboratory control samples, matrix spike/matrix spike duplicates, sample preservation and holding times, or equipment calibrations were identified that would cause any of the data not to be useable.

August 02, 2024

Charlie Macon
BBA Engineering
165 N. Lampasas St.
Bertram, TX 78605

TEL: (512) 585-7180

FAX:

Order No.: 2407275

RE: Fayette CCR Program

Dear Charlie Macon:

DHL Analytical, Inc. received 9 sample(s) on 7/25/2024 for the analyses presented in the following report.

There were no problems with the analyses and all data met requirements of NELAP except where noted in the Case Narrative. All non-NELAP methods will be identified accordingly in the case narrative and all estimated uncertainties of test results are within method or EPA specifications.

If you have any questions regarding these tests results, please feel free to call. Thank you for using DHL Analytical.

Sincerely,

for

John DuPont
General Manager

This report was performed under the accreditation of the State of Texas Laboratory Certification Number: T104704211 - TX-C24-00120

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DHL ANALYTICAL

2300 Double Creek Dr. Round Rock, TX 78664
Phone 512.388.8222
Web: www.dhlanalytical.com
Email: login@dhlanalytical.com

CHAIN-OF-CUSTODY

CLIENT: BBA Engineering
ADDRESS: 165 N. Lampasas St. Bertram, TX 78605
PHONE: (512) 925-2549 EMAIL: cbennett@bbaengineering.com
DATA REPORTED TO: Craig Bennett
ADD'L REPORT COPIES TO: CHARLIE MACON

DATE: 7-25-24
PO#: 24713-2-1
LAB USE ONLY
DHL WORKORDER # 2407275
PROJECT LOCATION OR NAME: Fayette CCR Program
CLIENT PROJECT #: 24713-2-1
COLLECTOR: JOHN BRAYTON

Authorize 5% surcharge for TRRP report? ☐ Yes ☐ No

BOLD & ITALIC HEADERS INDICATE BOTTLE TYPE AND PRESERVATIVE

Field Sample I.D.	Lab Use Only DHL Lab #	Collection Date	Collection Time	Matrix	# of Containers	***500HDPE***	ANIONS,TDS	***500HDPEHNO3***	METALS	FIELD NOTES
CBL-340I	01	7-23-24	0950	AQUEOUS	2	-->	1	-->	1	
CBL-301I	02	7-23-24	0900	AQUEOUS	2	-->	1	-->	1	
CBL-302I	03	7-22-24	1540	AQUEOUS	2	-->	1	-->	1	
CBL-306I	04	7-23-24	0800	AQUEOUS	2	-->	1	-->	1	
CBL-308I	05	7-22-24	1635	AQUEOUS	2	-->	1	-->	1	
CBL-341I	06	7-22-24	1440	AQUEOUS	2	-->	1	-->	1	
~~Equipment Blank~~ EB-CCR	07	7-23-24	1005	AQUEOUS	2	-->	1	-->	1	
~~Field Blank~~ FB-CCR	08	7-23-24	1020	AQUEOUS	2	-->	1	-->	1	
~~Duplicate~~ DUP-1-CCR	09	7-22-24		AQUEOUS	2	-->	1	-->	1	

Relinquished By: (Sign)	DATE/TIME	Received By:
[signature]	7-25-24 2:27pm	[signature]
Relinquished By: (Sign)	DATE/TIME	Received By:
Relinquished By: (Sign)	DATE/TIME	Received By:

TURN AROUND TIME (CALL FIRST FOR RUSH)
RUSH-1 DAY ☐ RUSH-2 DAY ☐ RUSH-3 DAY ☐
NORMAL ☒ OTHER ☐
DUE DATE ______ ☐

LAB USE ONLY **THERMO #:** 78
RECEIVING TEMP (°C) 1.0°C
IF >6°C, ARE SAMPLES ON ICE AND JUST COLLECTED? YES/NO
CUSTODY SEALS ON ICE CHEST: ☐ BROKEN ☐ INTACT ☑ NOT USED
CARRIER:
☐ LSO ☐ FEDEX ☐ UPS ☐ COURIER ☑ HAND DELIVERED

☐ **DHL DISPOSAL @ $10.00 each**

2024 Second Semiannual Event																	Analyte Summary List
	Arsenic	Boron	Calcium	Chloride	Chromium	Cobalt	Fluoride	Manganese	Mercury	Molybdenum	Nickel	Selenium	Sulfate	TDS	Field pH		
CCR Program																	
CBL-340I																	2 metals, 3 major ions, TDS
CBL-301I																	2 metals, 3 major ions, TDS
CBL-302I																	2 metals, 3 major ions, TDS
CBL-306I																	2 metals, 3 major ions, TDS
CBL-308I																	2 metals, 3 major ions, TDS
CBL-341I																	2 metals, 3 major ions, TDS
Equipment Blank																	2 metals, 3 major ions, TDS
Field Blank																	2 metals, 3 major ions, TDS
Duplicate																	2 metals, 3 major ions, TDS
TPDES Program																	
MW-500																	7 metals, Mercury, 1 major ion
CBL-401																	5 metals, Mercury, 1 major ion
CBL-120																	5 metals, Mercury, 1 major ion
CBL-300M																	5 metals, Mercury, 1 major ion
CBL-301I																	5 metals, Mercury, 1 major ion
CBL-306I																	5 metals, Mercury, 1 major ion
CBL-308I																	5 metals, Mercury, 1 major ion
RP-1																	6 metals, Mercury, 1 major ion
RP-2																	6 metals, Mercury, 1 major ion
RP-67R																	6 metals, Mercury, 1 major ion
RP-70																	6 metals, Mercury, 1 major ion
Equipment Blank																	7 metals, Mercury, 1 major ion
Field Blank																	7 metals, Mercury, 1 major ion
Duplicate																	7 metals, Mercury, 1 major ion
TRRP Program																	
AP-508																	2 metals
AP-510																	2 metals
AP-512																	2 metals
AP-513																	2 metals
AP-405																	2 metals
AP-406																	2 metals
AP-407																	1 metal
AP-509																	2 metals
AP-511																	2 metals
AP-514																	2 metals
Equipment Blank																	3 metals
Field Blank																	3 metals
Duplicate																	3 metals

DHL Analytical, Inc.

Sample Receipt Checklist

Client Name: **BBA Engineering**

Date Received: **7/25/2024**

Work Order Number: **2407275**

Received by: **SRM**

Checklist completed by: _______ (Signature) 7/25/2024 (Date)

Reviewed by: _______ (Initials) 7/25/2024 (Date)

Carrier name: Hand Delivered

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐	
Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	Not Present ☑	
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑	
Chain of custody present?	Yes ☑	No ☐		
Chain of custody signed when relinquished and received?	Yes ☑	No ☐		
Chain of custody agrees with sample labels?	Yes ☑	No ☐		
Samples in proper container/bottle?	Yes ☑	No ☐		
Sample containers intact?	Yes ☑	No ☐		
Sufficient sample volume for indicated test?	Yes ☑	No ☐		
All samples received within holding time?	Yes ☑	No ☐		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑	NA ☐
Water - pH<2 acceptable upon receipt?	Yes ☑	No ☐	NA ☐	LOT # 13171
	Adjusted? no		Checked by	
Water - ph>9 (S) or ph>10 (CN) acceptable upon receipt?	Yes ☐	No ☐	NA ☑	LOT #
	Adjusted?		Checked by	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐		

Cooler #	1
Temp °C	1.0
Seal Intact	NP

Any No response must be detailed in the comments section below.

Client contacted: _______ Date contacted: _______ Person contacted: _______

Contacted by: _______ Regarding: _______

Comments: _______

Corrective Action: _______

Page 1 of 1

Laboratory Name: DHL Analytical, Inc.

Laboratory Review Checklist: Reportable Data

Project Name: Fayette CCR Program	**LRC Date:** 8/2/2024
Reviewer Name: Angie O'Donnell	**Laboratory Work Order: 2407275**
Prep Batch Number(s): See Prep Dates Report	**Run Batch:** See Analytical Dates Report

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
		Chain-of-Custody (C-O-C)					
R1	OI	**1)** Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X				**R1-01**
		2) Were all departures from standard conditions described in an exception report?			X		
R2	OI	**Sample and Quality Control (QC) Identification**					
		1) Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X				
		2) Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X				
R3	OI	**Test Reports**					
		1) Were all samples prepared and analyzed within holding times?	X				
		2) Other than those results < MQL, were all other raw values bracketed by calibration standards?	X				
		3) Were calculations checked by a peer or supervisor?	X				
		4) Were all analyte identifications checked by a peer or supervisor?	X				
		5) Were sample detection limits reported for all analytes not detected?	X				
		6) Were all results for soil and sediment samples reported on a dry weight basis?			X		
		7) Were % moisture (or solids) reported for all soil and sediment samples?			X		
		8) Were bulk soils/solids samples for volatile analysis extracted with methanol per EPA Method 5035?			X		
		9) If required for the project, TICs reported?			X		
R4	O	**Surrogate Recovery Data**					
		1) Were surrogates added prior to extraction?			X		
		2) Were surrogate percent recoveries in all samples within the laboratory QC limits?			X		
R5	OI	**Test Reports/Summary Forms for Blank Samples**					
		1) Were appropriate type(s) of blanks analyzed?	X				
		2) Were blanks analyzed at the appropriate frequency?	X				
		3) Where method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	X				
		4) Were blank concentrations < MDL?	X				
		5) For analyte(s) detected in a blank sample, was the concentration, unadjusted for sample specific factors, in all associated field samples, **greater** than 10 times the concentration in the blank sample?			X		
R6	OI	**Laboratory Control Samples (LCS):**					
		1) Were all COCs included in the LCS?	X				
		2) Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	X				
		3) Were LCSs analyzed at the required frequency?	X				
		4) Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	X				
		5) Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	X				
		6) Was the LCSD RPD within QC limits (if applicable)?	X				
R7	OI	**Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Data**					
		1) Were the project/method specified analytes included in the MS and MSD?	X				
		2) Were MS/MSD analyzed at the appropriate frequency?	X				
		3) Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?	X				
		4) Were MS/MSD RPDs within laboratory QC limits?	X				
R8	OI	**Analytical Duplicate Data**					
		1) Were appropriate analytical duplicates analyzed for each matrix?	X				
		2) Were analytical duplicates analyzed at the appropriate frequency?	X				
		3) Were RPDs or relative standard deviations within the laboratory QC limits?	X				
R9	OI	**Method Quantitation Limits (MQLs):**					
		1) Are the MQLs for each method analyte included in the laboratory data package?	X				
		2) Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	X				
		3) Are unadjusted MQLs and DCSs included in the laboratory data package?	X				
R10	OI	**Other Problems/Anomalies**					
		1) Are all known problems/anomalies/special conditions noted in this LRC and ER?	X				**R10-01**
		2) Was applicable and available technology used to lower the SDL to minimize the matrix interference affects on the sample results?	X				
		3) Is the laboratory NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices and methods associated with this laboratory data package?	X				

Laboratory Name: DHL Analytical, Inc. Laboratory Review Checklist (continued): Supporting Data								
Project Name: Fayette CCR Program			**LRC Date:** 8/2/2024					
Reviewer Name: Angie O'Donnell			**Laboratory Work Order: 2407275**					
Prep Batch Number(s): See Prep Dates Report			**Run Batch:** See Analytical Dates Report					
#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
S1	OI	**Initial Calibration (ICAL)**					
		1) Were response factors and/or relative response factors for each analyte within QC limits?	X				
		2) Were percent RSDs or correlation coefficient criteria met?	X				
		3) Was the number of standards recommended in the method used for all analytes?	X				
		4) Were all points generated between the lowest and highest standard used to calculate the curve?	X				
		5) Are ICAL data available for all instruments used?	X				
		6) Has the initial calibration curve been verified using an appropriate second source standard?	X				
S2	OI	**Initial and Continuing calibration Verification (ICCV and CCV) and Continuing Calibration blank (CCB):**					
		1) Was the CCV analyzed at the method-required frequency?	X				
		2) Were percent differences for each analyte within the method-required QC limits?	X				
		3) Was the ICAL curve verified for each analyte?	X				
		4) Was the absolute value of the analyte concentration in the inorganic CCB < MDL?	X				
S3	O	**Mass Spectral Tuning:**					
		1) Was the appropriate compound for the method used for tuning?	X				
		2) Were ion abundance data within the method-required QC limits?	X				
S4	O	**Internal Standards (IS):**					
		1) Were IS area counts and retention times within the method-required QC limits?	X				
S5	OI	**Raw Data (NELAC Section 5.5.10)**					
		1) Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X				
		2) Were data associated with manual integrations flagged on the raw data?	X				
S6	O	**Dual Column Confirmation**					
		1) Did dual column confirmation results meet the method-required QC?			X		
S7	O	**Tentatively Identified Compounds (TICs):**					
		1) If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X		
S8	I	**Interference Check Sample (ICS) Results:**					
		1) Were percent recoveries within method QC limits?	X				
S9	I	**Serial Dilutions, Post Digestion Spikes, and Method of Standard Additions**					
		1) Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			X		
S10	OI	**Method Detection Limit (MDL) Studies**					
		1) Was a MDL study performed for each reported analyte?	X				
		2) Is the MDL either adjusted or supported by the analysis of DCSs?	X				
S11	OI	**Proficiency Test Reports:**					
		1) Was the lab's performance acceptable on the applicable proficiency tests or evaluation studies?	X				
S12	OI	**Standards Documentation**					
		1) Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	X				
S13	OI	**Compound/Analyte Identification Procedures**					
		1) Are the procedures for compound/analyte identification documented?	X				
S14	OI	**Demonstration of Analyst Competency (DOC)**					
		1) Was DOC conducted consistent with NELAC Chapter 5 – Appendix C?	X				
		2) Is documentation of the analyst's competency up-to-date and on file?	X				
S15	OI	**Verification/Validation Documentation for Methods** (NELAC Chapter 5)					
		1) Are all the methods used to generate the data documented, verified, and validated, where applicable?	X				
S16	OI	**Laboratory Standard Operating Procedures (SOPs):**					
		1) Are laboratory SOPs current and on file for each method performed?	X				

1 Items identified by the letter "R" should be included in the laboratory data package submitted to the TCEQ in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
2 O = organic analyses; I = inorganic analyses (and general chemistry, when applicable).
3 NA = Not applicable.
4 NR = Not Reviewed.
5 ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Laboratory Data Package Signature Page – RG-366/TRRP-13

This data package consists of:

This signature page, the laboratory review checklist, and the following reportable data:

R1 Field chain-of-custody documentation;
R2 Sample identification cross-reference;
R3 Test reports (analytical data sheets) for each environmental sample that includes:
  a) Items consistent with NELAC Chapter 5,
  b) dilution factors,
  c) preparation methods,
  d) cleanup methods, and
  e) if required for the project, tentatively identified compounds (TICs).
R4 Surrogate recovery data including:
  a) Calculated recovery (%R), and
  b) The laboratory's surrogate QC limits.
R5 Test reports/summary forms for blank samples;
R6 Test reports/summary forms for laboratory control samples (LCSs) including:
  a) LCS spiking amounts,
  b) Calculated %R for each analyte, and
  c) The laboratory's LCS QC limits.
R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:
  a) Samples associated with the MS/MSD clearly identified,
  b) MS/MSD spiking amounts,
  c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
  d) Calculated %Rs and relative percent differences (RPDs), and
  e) The laboratory's MS/MSD QC limits
R8 Laboratory analytical duplicate (if applicable) recovery and precision:
  a) The amount of analyte measured in the duplicate,
  b) The calculated RPD, and
  c) The laboratory's QC limits for analytical duplicates.
R9 List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix;
R10 Other problems or anomalies.

The Exception Report for each "No" or "Not Reviewed (NR)" item in the Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory is not accredited under the Texas Laboratory Accreditation Program.

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory in the Exception Reports. By my signature below, I affirm to the best of my knowledge that all problems/anomalies observed by the laboratory have been identified in the Laboratory Review Checklist, and no information or data affecting the quality of the data has been knowingly withheld.

This laboratory was last inspected by TCEQ on May 30 – June 2, 2023. Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

Name: John DuPont
Official Title: General Manager

Name: Dr. Derhsing Luu
Official Title: Technical Director

Signature: Derhsing Luu   Date: 8/2/2024

 Date: *02-Aug-24*

CLIENT:	BBA Engineering
Project:	Fayette CCR Program
Lab Order:	2407275

CASE NARRATIVE

Samples were analyzed using the methods outlined in the following references:

Method SW6020B - Metals Analysis
Method M2540C - Total Dissolved Solids Analysis
Method E300 - Anions Analysis

Exception Report R1-01

The samples were received and log-in performed on 7/25/2024. A total of 9 samples were received and analyzed. The samples arrived in good condition and were properly packaged.

Exception Report R10-01

Per project specification, MS/MSD/Duplicates are from this workorder or project samples only.

DHL Analytical, Inc.

Date: *02-Aug-24*

CLIENT: BBA Engineering
Project: Fayette CCR Program
Lab Order: 2407275

Work Order Sample Summary

Lab Smp ID	Client Sample ID	Tag Number	Date Collected	Date Recved
2407275-01	CBL-340I		07/23/24 09:50 AM	07/25/2024
2407275-02	CBL-301I		07/23/24 09:00 AM	07/25/2024
2407275-03	CBL-302I		07/22/24 03:40 PM	07/25/2024
2407275-04	CBL-306I		07/23/24 08:00 AM	07/25/2024
2407275-05	CBL-308I		07/22/24 04:35 PM	07/25/2024
2407275-06	CBL-341I		07/22/24 02:40 PM	07/25/2024
2407275-07	EB-CCR		07/23/24 10:05 AM	07/25/2024
2407275-08	FB-CCR		07/23/24 10:20 AM	07/25/2024
2407275-09	DUP-1-CCR		07/22/24	07/25/2024

DHL Analytical, Inc.

02-Aug-24

Lab Order: 2407275
Client: BBA Engineering
Project: Fayette CCR Program

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
2407275-01A	CBL-340I	07/23/24 09:50 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	07/26/24 07:05 AM	116428
	CBL-340I	07/23/24 09:50 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	07/26/24 07:05 AM	116428
	CBL-340I	07/23/24 09:50 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	07/26/24 07:05 AM	116428
2407275-01B	CBL-340I	07/23/24 09:50 AM	Aqueous	E300	Anion Preparation	07/30/24 11:11 AM	116480
	CBL-340I	07/23/24 09:50 AM	Aqueous	E300	Anion Preparation	07/30/24 11:11 AM	116480
	CBL-340I	07/23/24 09:50 AM	Aqueous	E300	Anion Preparation	07/30/24 11:11 AM	116480
	CBL-340I	07/23/24 09:50 AM	Aqueous	M2540C	TDS Preparation	07/26/24 10:35 AM	116437
2407275-02A	CBL-301I	07/23/24 09:00 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	07/26/24 07:05 AM	116428
	CBL-301I	07/23/24 09:00 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	07/26/24 07:05 AM	116428
	CBL-301I	07/23/24 09:00 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	07/26/24 07:05 AM	116428
2407275-02B	CBL-301I	07/23/24 09:00 AM	Aqueous	E300	Anion Preparation	07/30/24 11:11 AM	116480
	CBL-301I	07/23/24 09:00 AM	Aqueous	E300	Anion Preparation	07/30/24 11:11 AM	116480
	CBL-301I	07/23/24 09:00 AM	Aqueous	E300	Anion Preparation	08/01/24 09:00 AM	116527
	CBL-301I	07/23/24 09:00 AM	Aqueous	M2540C	TDS Preparation	07/26/24 10:35 AM	116437
2407275-03A	CBL-302I	07/22/24 03:40 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	07/26/24 07:05 AM	116428
	CBL-302I	07/22/24 03:40 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	07/26/24 07:05 AM	116428
	CBL-302I	07/22/24 03:40 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	07/26/24 07:05 AM	116428
2407275-03B	CBL-302I	07/22/24 03:40 PM	Aqueous	E300	Anion Preparation	07/30/24 11:11 AM	116480
	CBL-302I	07/22/24 03:40 PM	Aqueous	E300	Anion Preparation	07/30/24 11:11 AM	116480
	CBL-302I	07/22/24 03:40 PM	Aqueous	E300	Anion Preparation	07/30/24 11:11 AM	116480
	CBL-302I	07/22/24 03:40 PM	Aqueous	M2540C	TDS Preparation	07/26/24 10:35 AM	116437
2407275-04A	CBL-306I	07/23/24 08:00 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	07/26/24 07:05 AM	116428
	CBL-306I	07/23/24 08:00 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	07/26/24 07:05 AM	116428
	CBL-306I	07/23/24 08:00 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	07/26/24 07:05 AM	116428
2407275-04B	CBL-306I	07/23/24 08:00 AM	Aqueous	E300	Anion Preparation	07/30/24 11:11 AM	116480
	CBL-306I	07/23/24 08:00 AM	Aqueous	E300	Anion Preparation	07/30/24 11:11 AM	116480
	CBL-306I	07/23/24 08:00 AM	Aqueous	M2540C	TDS Preparation	07/26/24 10:35 AM	116437
2407275-05A	CBL-308I	07/22/24 04:35 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	07/26/24 07:05 AM	116428

Lab Order: 2407275
Client: BBA Engineering
Project: Fayette CCR Program

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
2407275-05A	CBL-308I	07/22/24 04:35 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	07/26/24 07:05 AM	116428
	CBL-308I	07/22/24 04:35 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	07/26/24 07:05 AM	116428
2407275-05B	CBL-308I	07/22/24 04:35 PM	Aqueous	E300	Anion Preparation	07/30/24 11:11 AM	116480
	CBL-308I	07/22/24 04:35 PM	Aqueous	E300	Anion Preparation	07/30/24 11:11 AM	116480
	CBL-308I	07/22/24 04:35 PM	Aqueous	E300	Anion Preparation	08/01/24 09:00 AM	116527
	CBL-308I	07/22/24 04:35 PM	Aqueous	M2540C	TDS Preparation	07/26/24 10:35 AM	116437
2407275-06A	CBL-341I	07/22/24 02:40 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	07/26/24 07:05 AM	116428
	CBL-341I	07/22/24 02:40 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	07/26/24 07:05 AM	116428
	CBL-341I	07/22/24 02:40 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	07/26/24 07:05 AM	116428
2407275-06B	CBL-341I	07/22/24 02:40 PM	Aqueous	E300	Anion Preparation	07/30/24 11:11 AM	116480
	CBL-341I	07/22/24 02:40 PM	Aqueous	E300	Anion Preparation	07/30/24 11:11 AM	116480
	CBL-341I	07/22/24 02:40 PM	Aqueous	E300	Anion Preparation	07/30/24 11:11 AM	116480
	CBL-341I	07/22/24 02:40 PM	Aqueous	M2540C	TDS Preparation	07/26/24 10:35 AM	116437
2407275-07A	EB-CCR	07/23/24 10:05 AM	Equip Blank	SW3005A	Aq Prep Metals : ICP-MS	07/26/24 07:05 AM	116428
	EB-CCR	07/23/24 10:05 AM	Equip Blank	SW3005A	Aq Prep Metals : ICP-MS	07/26/24 07:05 AM	116428
2407275-07B	EB-CCR	07/23/24 10:05 AM	Equip Blank	E300	Anion Preparation	07/30/24 11:11 AM	116480
	EB-CCR	07/23/24 10:05 AM	Equip Blank	E300	Anion Preparation	07/30/24 11:11 AM	116480
	EB-CCR	07/23/24 10:05 AM	Equip Blank	M2540C	TDS Preparation	07/26/24 10:35 AM	116437
2407275-08A	FB-CCR	07/23/24 10:20 AM	Field Blank	SW3005A	Aq Prep Metals : ICP-MS	07/26/24 07:05 AM	116428
	FB-CCR	07/23/24 10:20 AM	Field Blank	SW3005A	Aq Prep Metals : ICP-MS	07/26/24 07:05 AM	116428
2407275-08B	FB-CCR	07/23/24 10:20 AM	Field Blank	E300	Anion Preparation	07/30/24 11:11 AM	116480
	FB-CCR	07/23/24 10:20 AM	Field Blank	E300	Anion Preparation	07/30/24 11:11 AM	116480
	FB-CCR	07/23/24 10:20 AM	Field Blank	M2540C	TDS Preparation	07/26/24 10:35 AM	116437
2407275-09A	DUP-1-CCR	07/22/24	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	07/26/24 07:05 AM	116428
	DUP-1-CCR	07/22/24	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	07/26/24 07:05 AM	116428
	DUP-1-CCR	07/22/24	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	07/26/24 07:05 AM	116428
2407275-09B	DUP-1-CCR	07/22/24	Aqueous	E300	Anion Preparation	07/30/24 11:11 AM	116480
	DUP-1-CCR	07/22/24	Aqueous	E300	Anion Preparation	07/30/24 11:11 AM	116480

Lab Order: 2407275
Client: BBA Engineering
Project: Fayette CCR Program

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
2407275-09B	DUP-1-CCR	07/22/24	Aqueous	E300	Anion Preparation	07/30/24 11:11 AM	116480
	DUP-1-CCR	07/22/24	Aqueous	M2540C	TDS Preparation	07/26/24 10:35 AM	116437

Lab Order: 2407275
Client: BBA Engineering
Project: Fayette CCR Program

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
2407275-01A	CBL-340I	Aqueous	SW6020B	Total Metals: ICP-MS - Water	116428	1	07/29/24 12:10 PM	ICP-MS5_240729B
	CBL-340I	Aqueous	SW6020B	Total Metals: ICP-MS - Water	116428	50	07/29/24 01:28 PM	ICP-MS5_240729B
	CBL-340I	Aqueous	SW6020B	Total Metals: ICP-MS - Water	116428	1	07/29/24 01:57 PM	ICP-MS4_240729D
2407275-01B	CBL-340I	Aqueous	E300	Anions by IC method - Water	116480	100	07/30/24 11:50 PM	IC2_240730A
	CBL-340I	Aqueous	E300	Anions by IC method - Water	116480	10	07/31/24 03:08 AM	IC2_240730A
	CBL-340I	Aqueous	E300	Anions by IC method - Water	116480	1	07/31/24 09:26 AM	IC2_240730A
	CBL-340I	Aqueous	M2540C	Total Dissolved Solids	116437	1	07/26/24 04:45 PM	WC_240726A
2407275-02A	CBL-301I	Aqueous	SW6020B	Total Metals: ICP-MS - Water	116428	1	07/29/24 01:59 PM	ICP-MS4_240729D
	CBL-301I	Aqueous	SW6020B	Total Metals: ICP-MS - Water	116428	1	07/29/24 12:12 PM	ICP-MS5_240729B
	CBL-301I	Aqueous	SW6020B	Total Metals: ICP-MS - Water	116428	50	07/29/24 01:30 PM	ICP-MS5_240729B
2407275-02B	CBL-301I	Aqueous	E300	Anions by IC method - Water	116480	10	07/31/24 03:26 AM	IC2_240730A
	CBL-301I	Aqueous	E300	Anions by IC method - Water	116480	1	07/31/24 09:44 AM	IC2_240730A
	CBL-301I	Aqueous	E300	Anions by IC method - Water	116527	100	08/01/24 05:07 PM	IC2_240801B
	CBL-301I	Aqueous	M2540C	Total Dissolved Solids	116437	1	07/26/24 04:45 PM	WC_240726A
2407275-03A	CBL-302I	Aqueous	SW6020B	Total Metals: ICP-MS - Water	116428	50	07/29/24 01:33 PM	ICP-MS5_240729B
	CBL-302I	Aqueous	SW6020B	Total Metals: ICP-MS - Water	116428	1	07/29/24 02:01 PM	ICP-MS4_240729D
	CBL-302I	Aqueous	SW6020B	Total Metals: ICP-MS - Water	116428	1	07/29/24 12:15 PM	ICP-MS5_240729B
2407275-03B	CBL-302I	Aqueous	E300	Anions by IC method - Water	116480	100	07/31/24 12:08 AM	IC2_240730A
	CBL-302I	Aqueous	E300	Anions by IC method - Water	116480	10	07/31/24 04:56 AM	IC2_240730A
	CBL-302I	Aqueous	E300	Anions by IC method - Water	116480	1	07/31/24 10:02 AM	IC2_240730A
	CBL-302I	Aqueous	M2540C	Total Dissolved Solids	116437	1	07/26/24 04:45 PM	WC_240726A
2407275-04A	CBL-306I	Aqueous	SW6020B	Total Metals: ICP-MS - Water	116428	1	07/29/24 02:03 PM	ICP-MS4_240729D
	CBL-306I	Aqueous	SW6020B	Total Metals: ICP-MS - Water	116428	1	07/29/24 12:17 PM	ICP-MS5_240729B
	CBL-306I	Aqueous	SW6020B	Total Metals: ICP-MS - Water	116428	10	07/29/24 01:35 PM	ICP-MS5_240729B
2407275-04B	CBL-306I	Aqueous	E300	Anions by IC method - Water	116480	10	07/31/24 05:14 AM	IC2_240730A
	CBL-306I	Aqueous	E300	Anions by IC method - Water	116480	1	07/31/24 10:20 AM	IC2_240730A
	CBL-306I	Aqueous	M2540C	Total Dissolved Solids	116437	1	07/26/24 04:45 PM	WC_240726A
2407275-05A	CBL-308I	Aqueous	SW6020B	Total Metals: ICP-MS - Water	116428	1	07/29/24 12:20 PM	ICP-MS5_240729B

Lab Order: 2407275
Client: BBA Engineering
Project: Fayette CCR Program

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
2407275-05A	CBL-308I	Aqueous	SW6020B	Total Metals: ICP-MS - Water	116428	50	07/29/24 01:38 PM	ICP-MS5_240729B
	CBL-308I	Aqueous	SW6020B	Total Metals: ICP-MS - Water	116428	1	07/29/24 02:05 PM	ICP-MS4_240729D
2407275-05B	CBL-308I	Aqueous	E300	Anions by IC method - Water	116480	10	07/31/24 05:32 AM	IC2_240730A
	CBL-308I	Aqueous	E300	Anions by IC method - Water	116480	1	07/31/24 10:38 AM	IC2_240730A
	CBL-308I	Aqueous	E300	Anions by IC method - Water	116527	100	08/01/24 05:25 PM	IC2_240801B
	CBL-308I	Aqueous	M2540C	Total Dissolved Solids	116437	1	07/26/24 04:45 PM	WC_240726A
2407275-06A	CBL-341I	Aqueous	SW6020B	Total Metals: ICP-MS - Water	116428	1	07/29/24 02:07 PM	ICP-MS4_240729D
	CBL-341I	Aqueous	SW6020B	Total Metals: ICP-MS - Water	116428	1	07/29/24 12:23 PM	ICP-MS5_240729B
	CBL-341I	Aqueous	SW6020B	Total Metals: ICP-MS - Water	116428	50	07/29/24 01:41 PM	ICP-MS5_240729B
2407275-06B	CBL-341I	Aqueous	E300	Anions by IC method - Water	116480	100	07/31/24 12:26 AM	IC2_240730A
	CBL-341I	Aqueous	E300	Anions by IC method - Water	116480	10	07/31/24 05:50 AM	IC2_240730A
	CBL-341I	Aqueous	E300	Anions by IC method - Water	116480	1	07/31/24 10:56 AM	IC2_240730A
	CBL-341I	Aqueous	M2540C	Total Dissolved Solids	116437	1	07/26/24 04:45 PM	WC_240726A
2407275-07A	EB-CCR	Equip Blank	SW6020B	Total Metals: ICP-MS - Water	116428	1	07/29/24 12:25 PM	ICP-MS5_240729B
	EB-CCR	Equip Blank	SW6020B	Total Metals: ICP-MS - Water	116428	1	07/29/24 02:09 PM	ICP-MS4_240729D
2407275-07B	EB-CCR	Equip Blank	E300	Anions by IC method - Water	116480	10	07/31/24 06:08 AM	IC2_240730A
	EB-CCR	Equip Blank	E300	Anions by IC method - Water	116480	1	07/31/24 11:14 AM	IC2_240730A
	EB-CCR	Equip Blank	M2540C	Total Dissolved Solids	116437	1	07/26/24 04:45 PM	WC_240726A
2407275-08A	FB-CCR	Field Blank	SW6020B	Total Metals: ICP-MS - Water	116428	1	07/29/24 02:11 PM	ICP-MS4_240729D
	FB-CCR	Field Blank	SW6020B	Total Metals: ICP-MS - Water	116428	1	07/29/24 12:28 PM	ICP-MS5_240729B
2407275-08B	FB-CCR	Field Blank	E300	Anions by IC method - Water	116480	10	07/31/24 06:26 AM	IC2_240730A
	FB-CCR	Field Blank	E300	Anions by IC method - Water	116480	1	07/31/24 11:32 AM	IC2_240730A
	FB-CCR	Field Blank	M2540C	Total Dissolved Solids	116437	1	07/26/24 04:45 PM	WC_240726A
2407275-09A	DUP-1-CCR	Aqueous	SW6020B	Total Metals: ICP-MS - Water	116428	1	07/29/24 02:13 PM	ICP-MS4_240729D
	DUP-1-CCR	Aqueous	SW6020B	Total Metals: ICP-MS - Water	116428	1	07/29/24 12:30 PM	ICP-MS5_240729B
	DUP-1-CCR	Aqueous	SW6020B	Total Metals: ICP-MS - Water	116428	50	07/29/24 01:43 PM	ICP-MS5_240729B
2407275-09B	DUP-1-CCR	Aqueous	E300	Anions by IC method - Water	116480	100	07/31/24 12:44 AM	IC2_240730A
	DUP-1-CCR	Aqueous	E300	Anions by IC method - Water	116480	10	07/31/24 06:44 AM	IC2_240730A

Lab Order: 2407275
Client: BBA Engineering
Project: Fayette CCR Program

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
2407275-09B	DUP-1-CCR	Aqueous	E300	Anions by IC method - Water	116480	1	07/31/24 11:50 AM	IC2_240730A
	DUP-1-CCR	Aqueous	M2540C	Total Dissolved Solids	116437	1	07/26/24 04:45 PM	WC_240726A

DHL Analytical, Inc.

Date: *02-Aug-24*

CLIENT:	BBA Engineering	**Client Sample ID:**	CBL-340I
Project:	Fayette CCR Program	**Lab ID:**	2407275-01
Project No:	24713-2-1	**Collection Date:**	07/23/24 09:50 AM
Lab Order:	2407275	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TOTAL METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Boron	0.181	0.0100	0.0300		mg/L	1	07/29/24 01:57 PM
Calcium	560	5.00	15.0		mg/L	50	07/29/24 01:28 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **KES**
Chloride	2480	30.0	100		mg/L	100	07/30/24 11:50 PM
Fluoride	0.521	0.100	0.400		mg/L	1	07/31/24 09:26 AM
Sulfate	780	10.0	30.0		mg/L	10	07/31/24 03:08 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	5320	50.0	50.0		mg/L	1	07/26/24 04:45 PM

Qualifiers:

ND - Not Detected at the SDL
J - Analyte detected between SDL and RL
B - Analyte detected in the associated Method Blank
DF- Dilution Factor
N - Parameter not NELAP certified
See Final Page of Report for MQLs and MDLs

S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *02-Aug-24*

CLIENT:	BBA Engineering	**Client Sample ID:**	CBL-301I
Project:	Fayette CCR Program	**Lab ID:**	2407275-02
Project No:	24713-2-1	**Collection Date:**	07/23/24 09:00 AM
Lab Order:	2407275	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TOTAL METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Boron	0.0820	0.0100	0.0300		mg/L	1	07/29/24 01:59 PM
Calcium	912	5.00	15.0		mg/L	50	07/29/24 01:30 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **KES**
Chloride	2350	30.0	100		mg/L	100	08/01/24 05:07 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	07/31/24 09:44 AM
Sulfate	454	10.0	30.0		mg/L	10	07/31/24 03:26 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	4580	50.0	50.0		mg/L	1	07/26/24 04:45 PM

Qualifiers:

- ND - Not Detected at the SDL
- J - Analyte detected between SDL and RL
- B - Analyte detected in the associated Method Blank
- DF- Dilution Factor
- N - Parameter not NELAP certified
- See Final Page of Report for MQLs and MDLs
- S - Spike Recovery outside control limits
- C - Sample Result or QC discussed in Case Narrative
- RL - Reporting Limit (MQL adjusted for moisture and sample size)
- SDL - Sample Detection Limit
- E - TPH pattern not Gas or Diesel Range Pattern

CLIENT:	BBA Engineering	**Client Sample ID:**	CBL-302I
Project:	Fayette CCR Program	**Lab ID:**	2407275-03
Project No:	24713-2-1	**Collection Date:**	07/22/24 03:40 PM
Lab Order:	2407275	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TOTAL METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Boron	0.137	0.0100	0.0300		mg/L	1	07/29/24 02:01 PM
Calcium	845	5.00	15.0		mg/L	50	07/29/24 01:33 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **KES**
Chloride	1650	30.0	100		mg/L	100	07/31/24 12:08 AM
Fluoride	0.101	0.100	0.400	J	mg/L	1	07/31/24 10:02 AM
Sulfate	1370	10.0	30.0		mg/L	10	07/31/24 04:56 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	4840	50.0	50.0		mg/L	1	07/26/24 04:45 PM

Qualifiers:

ND - Not Detected at the SDL	S - Spike Recovery outside control limits
J - Analyte detected between SDL and RL	C - Sample Result or QC discussed in Case Narrative
B - Analyte detected in the associated Method Blank	RL - Reporting Limit (MQL adjusted for moisture and sample size)
DF- Dilution Factor	SDL - Sample Detection Limit
N - Parameter not NELAP certified	E - TPH pattern not Gas or Diesel Range Pattern
See Final Page of Report for MQLs and MDLs	

DHL Analytical, Inc.

Date: *02-Aug-24*

CLIENT:	BBA Engineering	**Client Sample ID:**	CBL-306I
Project:	Fayette CCR Program	**Lab ID:**	2407275-04
Project No:	24713-2-1	**Collection Date:**	07/23/24 08:00 AM
Lab Order:	2407275	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TOTAL METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Boron	0.134	0.0100	0.0300		mg/L	1	07/29/24 02:03 PM
Calcium	115	1.00	3.00		mg/L	10	07/29/24 01:35 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **KES**
Chloride	10.2	0.300	1.00		mg/L	1	07/31/24 10:20 AM
Fluoride	0.823	0.100	0.400		mg/L	1	07/31/24 10:20 AM
Sulfate	70.7	1.00	3.00		mg/L	1	07/31/24 10:20 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	691	10.0	10.0		mg/L	1	07/26/24 04:45 PM

Qualifiers:

ND - Not Detected at the SDL	S - Spike Recovery outside control limits
J - Analyte detected between SDL and RL	C - Sample Result or QC discussed in Case Narrative
B - Analyte detected in the associated Method Blank	RL - Reporting Limit (MQL adjusted for moisture and sample size)
DF- Dilution Factor	SDL - Sample Detection Limit
N - Parameter not NELAP certified	E - TPH pattern not Gas or Diesel Range Pattern
See Final Page of Report for MQLs and MDLs	

CLIENT:	BBA Engineering	**Client Sample ID:**	CBL-308I
Project:	Fayette CCR Program	**Lab ID:**	2407275-05
Project No:	24713-2-1	**Collection Date:**	07/22/24 04:35 PM
Lab Order:	2407275	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TOTAL METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Boron	0.139	0.0100	0.0300		mg/L	1	07/29/24 02:05 PM
Calcium	683	5.00	15.0		mg/L	50	07/29/24 01:38 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **KES**
Chloride	2250	30.0	100		mg/L	100	08/01/24 05:25 PM
Fluoride	0.864	0.100	0.400		mg/L	1	07/31/24 10:38 AM
Sulfate	1430	10.0	30.0		mg/L	10	07/31/24 05:32 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	5810	50.0	50.0		mg/L	1	07/26/24 04:45 PM

Qualifiers:

ND - Not Detected at the SDL	S - Spike Recovery outside control limits
J - Analyte detected between SDL and RL	C - Sample Result or QC discussed in Case Narrative
B - Analyte detected in the associated Method Blank	RL - Reporting Limit (MQL adjusted for moisture and sample size)
DF- Dilution Factor	SDL - Sample Detection Limit
N - Parameter not NELAP certified	E - TPH pattern not Gas or Diesel Range Pattern
See Final Page of Report for MQLs and MDLs	

CLIENT:	BBA Engineering	**Client Sample ID:**	CBL-341I
Project:	Fayette CCR Program	**Lab ID:**	2407275-06
Project No:	24713-2-1	**Collection Date:**	07/22/24 02:40 PM
Lab Order:	2407275	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TOTAL METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Boron	0.119	0.0100	0.0300		mg/L	1	07/29/24 02:07 PM
Calcium	801	5.00	15.0		mg/L	50	07/29/24 01:41 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **KES**
Chloride	1960	30.0	100		mg/L	100	07/31/24 12:26 AM
Fluoride	<0.100	0.100	0.400		mg/L	1	07/31/24 10:56 AM
Sulfate	367	10.0	30.0		mg/L	10	07/31/24 05:50 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	3700	50.0	50.0		mg/L	1	07/26/24 04:45 PM

Qualifiers:

ND - Not Detected at the SDL
J - Analyte detected between SDL and RL
B - Analyte detected in the associated Method Blank
DF- Dilution Factor
N - Parameter not NELAP certified
See Final Page of Report for MQLs and MDLs

S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *02-Aug-24*

CLIENT:	BBA Engineering	**Client Sample ID:**	EB-CCR
Project:	Fayette CCR Program	**Lab ID:**	2407275-07
Project No:	24713-2-1	**Collection Date:**	07/23/24 10:05 AM
Lab Order:	2407275	**Matrix:**	EQUIP BLANK

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TOTAL METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Boron	0.0213	0.0100	0.0300	J	mg/L	1	07/29/24 02:09 PM
Calcium	2.11	0.100	0.300		mg/L	1	07/29/24 12:25 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **KES**
Chloride	0.500	0.300	1.00	J	mg/L	1	07/31/24 11:14 AM
Fluoride	<0.100	0.100	0.400		mg/L	1	07/31/24 11:14 AM
Sulfate	<1.00	1.00	3.00		mg/L	1	07/31/24 11:14 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	11.0	10.0	10.0		mg/L	1	07/26/24 04:45 PM

Qualifiers:

ND - Not Detected at the SDL
J - Analyte detected between SDL and RL
B - Analyte detected in the associated Method Blank
DF- Dilution Factor
N - Parameter not NELAP certified
See Final Page of Report for MQLs and MDLs

S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

CLIENT:	BBA Engineering	**Client Sample ID:**	FB-CCR
Project:	Fayette CCR Program	**Lab ID:**	2407275-08
Project No:	24713-2-1	**Collection Date:**	07/23/24 10:20 AM
Lab Order:	2407275	**Matrix:**	FIELD BLANK

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TOTAL METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Boron	0.0203	0.0100	0.0300	J	mg/L	1	07/29/24 02:11 PM
Calcium	1.42	0.100	0.300		mg/L	1	07/29/24 12:28 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **KES**
Chloride	<0.300	0.300	1.00		mg/L	1	07/31/24 11:32 AM
Fluoride	<0.100	0.100	0.400		mg/L	1	07/31/24 11:32 AM
Sulfate	<1.00	1.00	3.00		mg/L	1	07/31/24 11:32 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	<10.0	10.0	10.0		mg/L	1	07/26/24 04:45 PM

Qualifiers:

ND - Not Detected at the SDL
J - Analyte detected between SDL and RL
B - Analyte detected in the associated Method Blank
DF- Dilution Factor
N - Parameter not NELAP certified
See Final Page of Report for MQLs and MDLs

S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *02-Aug-24*

CLIENT:	BBA Engineering	**Client Sample ID:**	DUP-1-CCR
Project:	Fayette CCR Program	**Lab ID:**	2407275-09
Project No:	24713-2-1	**Collection Date:**	07/22/24
Lab Order:	2407275	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TOTAL METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Boron	0.144	0.0100	0.0300		mg/L	1	07/29/24 02:13 PM
Calcium	873	5.00	15.0		mg/L	50	07/29/24 01:43 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **KES**
Chloride	1620	30.0	100		mg/L	100	07/31/24 12:44 AM
Fluoride	0.106	0.100	0.400	J	mg/L	1	07/31/24 11:50 AM
Sulfate	1360	10.0	30.0		mg/L	10	07/31/24 06:44 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	4870	50.0	50.0		mg/L	1	07/26/24 04:45 PM

Qualifiers:	ND - Not Detected at the SDL	S - Spike Recovery outside control limits
	J - Analyte detected between SDL and RL	C - Sample Result or QC discussed in Case Narrative
	B - Analyte detected in the associated Method Blank	RL - Reporting Limit (MQL adjusted for moisture and sample size)
	DF- Dilution Factor	SDL - Sample Detection Limit
	N - Parameter not NELAP certified	E - TPH pattern not Gas or Diesel Range Pattern
	See Final Page of Report for MQLs and MDLs	

CLIENT: BBA Engineering
Work Order: 2407275
Project: Fayette CCR Program

ANALYTICAL QC SUMMARY REPORT

RunID: **ICP-MS4_240606B**

Sample ID: **DCS4-115670**	Batch ID: **115670**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **DCS4**	Run ID: **ICP-MS4_240606B**	Analysis Date: **6/6/2024 9:57:00 AM**	Prep Date: **6/5/2024**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0298	0.0300	0.0300	0	99.4	70	130	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: BBA Engineering
Work Order: 2407275
Project: Fayette CCR Program

ANALYTICAL QC SUMMARY REPORT

RunID: **ICP-MS4_240729D**

The QC data in batch 116428 applies to the following samples: 2407275-01A, 2407275-02A, 2407275-03A, 2407275-04A, 2407275-05A, 2407275-06A, 2407275-07A, 2407275-08A, 2407275-09A

Sample ID: **MB-116428** Batch ID: **116428** TestNo: **SW6020B** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS4_240729D** Analysis Date: **7/29/2024 1:43:00 PM** Prep Date: **7/26/2024**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	<0.0100	0.0300								

Sample ID: **LCS-116428** Batch ID: **116428** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS4_240729D** Analysis Date: **7/29/2024 1:45:00 PM** Prep Date: **7/26/2024**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.206	0.0300	0.200	0	103	80	120			

Sample ID: **LCSD-116428** Batch ID: **116428** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS4_240729D** Analysis Date: **7/29/2024 1:46:00 PM** Prep Date: **7/26/2024**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.218	0.0300	0.200	0	109	80	120	5.59	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: BBA Engineering
Work Order: 2407275
Project: Fayette CCR Program

ANALYTICAL QC SUMMARY REPORT

RunID: **ICP-MS4_240729D**

Sample ID: **ICV-240729** Batch ID: **R134316** TestNo: **SW6020B** Units: **mg/L**
SampType: **ICV** Run ID: **ICP-MS4_240729D** Analysis Date: **7/29/2024 9:55:00 AM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0958	0.0300	0.100	0	95.8	90	110			

Sample ID: **LCVL-240729** Batch ID: **R134316** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS4_240729D** Analysis Date: **7/29/2024 10:09:00 AM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0201	0.0300	0.0200	0	100	80	120			

Sample ID: **CCV4-240729** Batch ID: **R134316** TestNo: **SW6020B** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS4_240729D** Analysis Date: **7/29/2024 12:23:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.204	0.0300	0.200	0	102	90	110			

Sample ID: **CCV5-240729** Batch ID: **R134316** TestNo: **SW6020B** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS4_240729D** Analysis Date: **7/29/2024 2:23:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.216	0.0300	0.200	0	108	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: BBA Engineering
Work Order: 2407275
Project: Fayette CCR Program

ANALYTICAL QC SUMMARY REPORT

RunID: **ICP-MS5_240606A**

Sample ID: **DCS2-115670**	Batch ID: **115670**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **DCS2**	Run ID: **ICP-MS5_240606A**	Analysis Date: **6/6/2024 10:20:00 AM**	Prep Date: **6/5/2024**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.301	0.300	0.300	0	100	70	130	0	0	

Qualifiers:				
	B	Analyte detected in the associated Method Blank	DF	Dilution Factor
	J	Analyte detected between MDL and RL	MDL	Method Detection Limit
	ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
	RL	Reporting Limit	S	Spike Recovery outside control limits
	J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: BBA Engineering
Work Order: 2407275
Project: Fayette CCR Program

ANALYTICAL QC SUMMARY REPORT

RunID: **ICP-MS5_240729B**

The QC data in batch 116428 applies to the following samples: 2407275-01A, 2407275-02A, 2407275-03A, 2407275-04A, 2407275-05A, 2407275-06A, 2407275-07A, 2407275-08A, 2407275-09A

Sample ID: **MB-116428** Batch ID: **116428** TestNo: **SW6020B** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS5_240729B** Analysis Date: **7/29/2024 11:54:00 AM** Prep Date: **7/26/2024**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	<0.100	0.300								

Sample ID: **LCS-116428** Batch ID: **116428** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS5_240729B** Analysis Date: **7/29/2024 11:57:00 AM** Prep Date: **7/26/2024**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	4.82	0.300	5.00	0	96.4	80	120			

Sample ID: **LCSD-116428** Batch ID: **116428** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS5_240729B** Analysis Date: **7/29/2024 11:59:00 AM** Prep Date: **7/26/2024**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	4.87	0.300	5.00	0	97.4	80	120	1.03	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: BBA Engineering
Work Order: 2407275
Project: Fayette CCR Program

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_240729B

Sample ID: **ICV-240729** Batch ID: **R134315** TestNo: **SW6020B** Units: **mg/L**
SampType: **ICV** Run ID: **ICP-MS5_240729B** Analysis Date: **7/29/2024 9:44:00 AM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	2.49	0.300	2.50	0	99.8	90	110			

Sample ID: **LCVL-240729** Batch ID: **R134315** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS5_240729B** Analysis Date: **7/29/2024 9:51:00 AM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.0831	0.300	0.100	0	83.1	80	120			

Sample ID: **CCV3-240729** Batch ID: **R134315** TestNo: **SW6020B** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS5_240729B** Analysis Date: **7/29/2024 11:45:00 AM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	4.89	0.300	5.00	0	97.8	90	110			

Sample ID: **CCV4-240729** Batch ID: **R134315** TestNo: **SW6020B** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS5_240729B** Analysis Date: **7/29/2024 12:45:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	4.90	0.300	5.00	0	98.0	90	110			

Sample ID: **CCV5-240729** Batch ID: **R134315** TestNo: **SW6020B** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS5_240729B** Analysis Date: **7/29/2024 1:15:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	4.82	0.300	5.00	0	96.5	90	110			

Sample ID: **CCV6-240729** Batch ID: **R134315** TestNo: **SW6020B** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS5_240729B** Analysis Date: **7/29/2024 1:59:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	4.81	0.300	5.00	0	96.2	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

ANALYTICAL QC SUMMARY REPORT

RunID: **IC2_240724B**

Sample ID: **DCS2-116389**	Batch ID: **116389**	TestNo: **E300**	Units: **mg/L**
SampType: **DCS2**	Run ID: **IC2_240724B**	Analysis Date: **7/24/2024 2:09:35 PM**	Prep Date: **7/24/2024**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	0.532	1.00	0.5000	0	106	70	130	0	0	
Fluoride	0.244	0.400	0.2000	0	122	70	130	0	0	
Sulfate	1.69	3.00	1.500	0	112	70	130	0	0	

CLIENT: BBA Engineering
Work Order: 2407275
Project: Fayette CCR Program

ANALYTICAL QC SUMMARY REPORT

RunID: **IC2_240730A**

The QC data in batch 116480 applies to the following samples: 2407275-01B, 2407275-02B, 2407275-03B, 2407275-04B, 2407275-05B, 2407275-06B, 2407275-07B, 2407275-08B, 2407275-09B

Sample ID: **MB-116480** Batch ID: **116480** TestNo: **E300** Units: **mg/L**
SampType: **MBLK** Run ID: **IC2_240730A** Analysis Date: **7/30/2024 10:38:15 PM** Prep Date: **7/30/2024**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	<0.300	1.00								
Fluoride	<0.100	0.400								
Sulfate	<1.00	3.00								

Sample ID: **LCS-116480** Batch ID: **116480** TestNo: **E300** Units: **mg/L**
SampType: **LCS** Run ID: **IC2_240730A** Analysis Date: **7/30/2024 10:56:15 PM** Prep Date: **7/30/2024**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.2	1.00	10.00	0	102	90	110			
Fluoride	4.31	0.400	4.000	0	108	90	110			
Sulfate	30.8	3.00	30.00	0	103	90	110			

Sample ID: **LCSD-116480** Batch ID: **116480** TestNo: **E300** Units: **mg/L**
SampType: **LCSD** Run ID: **IC2_240730A** Analysis Date: **7/30/2024 11:14:16 PM** Prep Date: **7/30/2024**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.3	1.00	10.00	0	103	90	110	0.180	20	
Fluoride	4.32	0.400	4.000	0	108	90	110	0.371	20	
Sulfate	31.0	3.00	30.00	0	103	90	110	0.521	20	

Sample ID: **2407275-09BMS** Batch ID: **116480** TestNo: **E300** Units: **mg/L**
SampType: **MS** Run ID: **IC2_240730A** Analysis Date: **7/31/2024 1:02:16 AM** Prep Date: **7/30/2024**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	3430	100	2000	1623	90.4	90	110			
Fluoride	2070	40.0	2000	0	103	90	110			
Sulfate	3230	300	2000	1342	94.5	90	110			

Sample ID: **2407275-09BMSD** Batch ID: **116480** TestNo: **E300** Units: **mg/L**
SampType: **MSD** Run ID: **IC2_240730A** Analysis Date: **7/31/2024 1:20:16 AM** Prep Date: **7/30/2024**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	3430	100	2000	1623	90.4	90	110	0.024	20	
Fluoride	2070	40.0	2000	0	104	90	110	0.253	20	
Sulfate	3240	300	2000	1342	94.7	90	110	0.175	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: BBA Engineering
Work Order: 2407275
Project: Fayette CCR Program

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_240730A

Sample ID: **ICV-240730** Batch ID: **R134341** TestNo: **E300** Units: **mg/L**
SampType: **ICV** Run ID: **IC2_240730A** Analysis Date: **7/30/2024 10:39:18 AM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	25.0	1.00	25.00	0	100	90	110			
Fluoride	10.4	0.400	10.00	0	104	90	110			
Sulfate	76.5	3.00	75.00	0	102	90	110			

Sample ID: **CCV2-240730** Batch ID: **R134341** TestNo: **E300** Units: **mg/L**
SampType: **CCV** Run ID: **IC2_240730A** Analysis Date: **7/30/2024 10:02:15 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.3	1.00	10.00	0	103	90	110			
Fluoride	4.38	0.400	4.000	0	109	90	110			
Sulfate	31.4	3.00	30.00	0	105	90	110			

Sample ID: **CCV3-240730** Batch ID: **R134341** TestNo: **E300** Units: **mg/L**
SampType: **CCV** Run ID: **IC2_240730A** Analysis Date: **7/31/2024 4:20:15 AM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.1	1.00	10.00	0	101	90	110			
Fluoride	4.27	0.400	4.000	0	107	90	110			
Sulfate	30.5	3.00	30.00	0	102	90	110			

Sample ID: **CCV4-240730** Batch ID: **R134341** TestNo: **E300** Units: **mg/L**
SampType: **CCV** Run ID: **IC2_240730A** Analysis Date: **7/31/2024 8:32:16 AM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.2	1.00	10.00	0	102	90	110			
Fluoride	4.30	0.400	4.000	0	108	90	110			
Sulfate	30.7	3.00	30.00	0	102	90	110			

Sample ID: **CCV5-240730** Batch ID: **R134341** TestNo: **E300** Units: **mg/L**
SampType: **CCV** Run ID: **IC2_240730A** Analysis Date: **7/31/2024 12:44:15 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.1	1.00	10.00	0	101	90	110			
Fluoride	4.27	0.400	4.000	0	107	90	110			
Sulfate	30.5	3.00	30.00	0	102	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: BBA Engineering
Work Order: 2407275
Project: Fayette CCR Program

ANALYTICAL QC SUMMARY REPORT

RunID: **IC2_240801B**

The QC data in batch 116527 applies to the following samples: 2407275-02B, 2407275-05B

Sample ID: **MB-116527** Batch ID: **116527** TestNo: **E300** Units: **mg/L**
SampType: **MBLK** Run ID: **IC2_240801B** Analysis Date: **8/1/2024 12:52:44 PM** Prep Date: **8/1/2024**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	<0.300	1.00								

Sample ID: **LCS-116527** Batch ID: **116527** TestNo: **E300** Units: **mg/L**
SampType: **LCS** Run ID: **IC2_240801B** Analysis Date: **8/1/2024 1:10:44 PM** Prep Date: **8/1/2024**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.3	1.00	10.00	0	103	90	110			

Sample ID: **LCSD-116527** Batch ID: **116527** TestNo: **E300** Units: **mg/L**
SampType: **LCSD** Run ID: **IC2_240801B** Analysis Date: **8/1/2024 1:28:44 PM** Prep Date: **8/1/2024**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.3	1.00	10.00	0	103	90	110	0.635	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: BBA Engineering
Work Order: 2407275
Project: Fayette CCR Program

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_240801B

Sample ID: **ICV-240801** Batch ID: **R134416** TestNo: **E300** Units: **mg/L**
SampType: **ICV** Run ID: **IC2_240801B** Analysis Date: **8/1/2024 10:26:10 AM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	26.1	1.00	25.00	0	104	90	110			

Sample ID: **CCV1-240801** Batch ID: **R134416** TestNo: **E300** Units: **mg/L**
SampType: **CCV** Run ID: **IC2_240801B** Analysis Date: **8/1/2024 11:20:10 AM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.2	1.00	10.00	0	102	90	110			

Sample ID: **CCV1-240801** Batch ID: **R134416** TestNo: **E300** Units: **mg/L**
SampType: **CCV** Run ID: **IC2_240801B** Analysis Date: **8/1/2024 9:19:16 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.1	1.00	10.00	0	101	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: BBA Engineering
Work Order: 2407275
Project: Fayette CCR Program

ANALYTICAL QC SUMMARY REPORT

RunID: **WC_240726A**

The QC data in batch 116437 applies to the following samples: 2407275-01B, 2407275-02B, 2407275-03B, 2407275-04B, 2407275-05B, 2407275-06B, 2407275-07B, 2407275-08B, 2407275-09B

Sample ID: **MB-116437** Batch ID: **116437** TestNo: **M2540C** Units: **mg/L**
SampType: **MBLK** Run ID: **WC_240726A** Analysis Date: **7/26/2024 4:45:00 PM** Prep Date: **7/26/2024**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	<10.0	10.0								

Sample ID: **LCS-116437** Batch ID: **116437** TestNo: **M2540C** Units: **mg/L**
SampType: **LCS** Run ID: **WC_240726A** Analysis Date: **7/26/2024 4:45:00 PM** Prep Date: **7/26/2024**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	738	10.0	745.6	0	99.0	90	113			

Sample ID: **2407275-01B-DUP** Batch ID: **116437** TestNo: **M2540C** Units: **mg/L**
SampType: **DUP** Run ID: **WC_240726A** Analysis Date: **7/26/2024 4:45:00 PM** Prep Date: **7/26/2024**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	5220	50.0	0	5320				1.90	5	

Sample ID: **2407275-02B-DUP** Batch ID: **116437** TestNo: **M2540C** Units: **mg/L**
SampType: **DUP** Run ID: **WC_240726A** Analysis Date: **7/26/2024 4:45:00 PM** Prep Date: **7/26/2024**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	4510	50.0	0	4580				1.54	5	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

DHL Analytical, Inc. **Date:** *02-Aug-24*

CLIENT: BBA Engineering
Work Order: 2407275
Project: Fayette CCR Program

MQL SUMMARY REPORT

TestNo: E300	MDL	MQL
Analyte	**mg/L**	**mg/L**
Chloride	0.300	1.00
Fluoride	0.100	0.400
Sulfate	1.00	3.00

TestNo: SW6020B	MDL	MQL
Analyte	**mg/L**	**mg/L**
Boron	0.0100	0.0300
Calcium	0.100	0.300

TestNo: M2540C	MDL	MQL
Analyte	**mg/L**	**mg/L**
Total Dissolved Solids (Residue, Filt	10.0	10.0

Qualifiers: MQL -Method Quantitation Limit as defined by TRRP
MDL -Method Detection Limit as defined by TRRP

October 09, 2024

Charlie Macon
BBA Engineering
165 N. Lampasas St.
Bertram, TX 78605
TEL: (512) 585-7180
FAX:

Order No.: 2410023

RE: LCRA - FPP

Dear Charlie Macon:

DHL Analytical, Inc. received 1 sample(s) on 10/2/2024 for the analyses presented in the following report.

There were no problems with the analyses and all data met requirements of NELAP except where noted in the Case Narrative. All non-NELAP methods will be identified accordingly in the case narrative and all estimated uncertainties of test results are within method or EPA specifications.

If you have any questions regarding these tests results, please feel free to call. Thank you for using DHL Analytical.

Sincerely,

Joel Grice
Executive VP of Environmental

This report was performed under the accreditation of the State of Texas Laboratory Certification Number: T104704211 - TX-C24-00120

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DHL ANALYTICAL

2300 Double Creek Dr. Round Rock, TX 78664
Phone 512.388.8222
Web: www.dhlanalytical.com
Email: login@dhlanalytical.com

CHAIN-OF-CUSTODY

CLIENT: BBA
ADDRESS: 165 N. LAMPASAS ST BERTRAM, TX
PHONE: EMAIL:
DATA REPORTED TO: CHARLIE MACON
ADDITIONAL REPORT COPIES TO:

DATE: 10-1-24
PO#: 24713-2-1
PROJECT LOCATION OR NAME: LCRA - FPP
CLIENT PROJECT # 24713-2-1
COLLECTOR: JOHN BRAYTON

LAB USE ONLY
DHL WORKORDER #: 2410023

Authorize 5% surcharge for TRRP report? ☐ Yes ☐ No

W=WATER, L=LIQUID, S=SOIL, SO=SOLID, SE=SEDIMENT, P=PAINT, SL=SLUDGE

PRESERVATION: H_3PO_4 ☐, HCL ☐, HNO_3, H_2SO_4, NaOH ☐, Zn Acetate ☐, ICE ☐, UNPRESERVED ☐

ANALYSES: BTEX ☐ MTBE ☐ [METHOD 8260]; TPH 1005 ☐ TPH 1006 ☐ HOLD 1006 ☐; GRO 8015 ☐ DRO 8015 ☐; VOC 8260 ☐ VOC 624.1 ☐; SVOC 8270 ☐ SVOC 625.1 ☐; PAH 8270 ☐ HOLD PAH ☐; PEST 8270 ☐ 625.1 ☐ O-P PEST 8270 ☐; PCB 8082 ☐ 608.3 ☐ PCB 8270 ☐ 625.1 ☐; HERB 8321 ☐ T PHOS ☐ AMMONIA ☐; METALS 6020 ☐ 200.8 ☐ DISS. METALS ☐; RCRA 8 ☐ TX11 ☐; pH ☐ HEX CHROM ☐ ALKALINITY ☐ COD ☐; ANIONS 300 ☐ 9056 ☐; TCLP-SVOC ☐ VOC ☐ PEST ☐ HERB ☐; TCLP-METALS ☐ RCRA 8 ☐ TX-11 ☐ Pb ☐; RCI ☐ IGN ☐ DGAS ☐ OIL&GREASE ☐; TDS ☐ TSS ☐ % MOIST ☐ CYANIDE ☐; BORON

Field Sample I.D.	DHL Lab #	Collection Date	Collection Time	Matrix	Container Type	# of Containers	HNO_3	BORON	FIELD NOTES
CBL-3411	01	10-1-24	1350	W	P	2	X	X	PLEASE ANALYZE 1 BOTTLE AND HOLD THE 2ND BOTTLE FOR POSSIBLE ANALYSIS

Relinquished By: (Sign)	DATE/TIME	Received by:
John B	10-2-24 0759	[illegible signature]
Relinquished By: (Sign)	DATE/TIME	Received by:
Relinquished By: (Sign)	DATE/TIME	Received by:

TURN AROUND TIME (CALL FIRST FOR RUSH)
RUSH-1 DAY☐ RUSH-2 DAY☐ RUSH-3 DAY☐
NORMAL ☒ OTHER ☐
DUE DATE ______ ☐

LAB USE ONLY
THERMO #: 78
RECEIVING TEMP (°C): 1.0°C
IF >6°C, ARE SAMPLES ON ICE AND JUST COLLECTED? YES / NO
CUSTODY SEALS ON ICE CHEST: ☐ BROKEN ☐ INTACT ☒ NOT USED
CARRIER: ☐ LSO ☐ FEDEX ☐ UPS ☐ COURIER ☒ HAND DELIVERED

☐ DHL DISPOSAL @ $10.00 each

DHL Analytical, Inc.

Sample Receipt Checklist

Client Name: **BBA Engineering** — Date Received: **10/2/2024**

Work Order Number: **2410023** — Received by: **KAO**

Checklist completed by: (Signature) — Date: 10/2/2024 — Reviewed by: SH (Initials) — Date: 10/2/2024

Carrier name: Hand Delivered

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑ NA ☐
Water - pH<2 acceptable upon receipt?	Yes ☑	No ☐	NA ☐ LOT # 13171
	Adjusted? no		Checked by EL
Water - ph>9 (S) or ph>10 (CN) acceptable upon receipt?	Yes ☐	No ☐	NA ☑ LOT #
	Adjusted?		Checked by
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	

Cooler #	1
Temp °C	1.0
Seal Intact	NP

Any No response must be detailed in the comments section below.

Client contacted: Date contacted: Person contacted:

Contacted by: Regarding:

Comments:

Corrective Action:

Page 1 of 1

Laboratory Name: DHL Analytical, Inc.

Laboratory Review Checklist: Reportable Data

Project Name: LCRA - FPP	**LRC Date:** 10/9/2024
Reviewer Name: Angie O'Donnell	**Laboratory Work Order: 2410023**
Prep Batch Number(s): See Prep Dates Report	**Run Batch:** See Analytical Dates Report

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
		Chain-of-Custody (C-O-C)					
R1	OI	**1)** Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X				**R1-01**
		2) Were all departures from standard conditions described in an exception report?			X		
R2	OI	**Sample and Quality Control (QC) Identification**					
		1) Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X				
		2) Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X				
R3	OI	**Test Reports**					
		1) Were all samples prepared and analyzed within holding times?	X				
		2) Other than those results < MQL, were all other raw values bracketed by calibration standards?	X				
		3) Were calculations checked by a peer or supervisor?	X				
		4) Were all analyte identifications checked by a peer or supervisor?	X				
		5) Were sample detection limits reported for all analytes not detected?	X				
		6) Were all results for soil and sediment samples reported on a dry weight basis?			X		
		7) Were % moisture (or solids) reported for all soil and sediment samples?			X		
		8) Were bulk soils/solids samples for volatile analysis extracted with methanol per EPA Method 5035?			X		
		9) If required for the project, TICs reported?			X		
R4	O	**Surrogate Recovery Data**					
		1) Were surrogates added prior to extraction?			X		
		2) Were surrogate percent recoveries in all samples within the laboratory QC limits?			X		
R5	OI	**Test Reports/Summary Forms for Blank Samples**					
		1) Were appropriate type(s) of blanks analyzed?	X				
		2) Were blanks analyzed at the appropriate frequency?	X				
		3) Where method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	X				
		4) Were blank concentrations < MDL?	X				
		5) For analyte(s) detected in a blank sample, was the concentration, unadjusted for sample specific factors, in all associated field samples, **greater** than 10 times the concentration in the blank sample?			X		
R6	OI	**Laboratory Control Samples (LCS):**					
		1) Were all COCs included in the LCS?	X				
		2) Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	X				
		3) Were LCSs analyzed at the required frequency?	X				
		4) Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	X				
		5) Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	X				
		6) Was the LCSD RPD within QC limits (if applicable)?	X				
R7	OI	**Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Data**					
		1) Were the project/method specified analytes included in the MS and MSD?			X		
		2) Were MS/MSD analyzed at the appropriate frequency?			X		
		3) Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?			X		
		4) Were MS/MSD RPDs within laboratory QC limits?			X		
R8	OI	**Analytical Duplicate Data**					
		1) Were appropriate analytical duplicates analyzed for each matrix?			X		
		2) Were analytical duplicates analyzed at the appropriate frequency?			X		
		3) Were RPDs or relative standard deviations within the laboratory QC limits?			X		
R9	OI	**Method Quantitation Limits (MQLs):**					
		1) Are the MQLs for each method analyte included in the laboratory data package?	X				
		2) Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	X				
		3) Are unadjusted MQLs and DCSs included in the laboratory data package?	X				
R10	OI	**Other Problems/Anomalies**					
		1) Are all known problems/anomalies/special conditions noted in this LRC and ER?	X				**R10-01**
		2) Was applicable and available technology used to lower the SDL to minimize the matrix interference affects on the sample results?	X				
		3) Is the laboratory NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices and methods associated with this laboratory data package?	X				

Laboratory Name: DHL Analytical, Inc. **Laboratory Review Checklist (continued): Supporting Data**							
Project Name: LCRA - FPP			**LRC Date:** 10/9/2024				
Reviewer Name: Angie O'Donnell			**Laboratory Work Order: 2410023**				
Prep Batch Number(s): See Prep Dates Report			**Run Batch:** See Analytical Dates Report				
#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
S1	OI	**Initial Calibration (ICAL)**					
		1) Were response factors and/or relative response factors for each analyte within QC limits?	X				
		2) Were percent RSDs or correlation coefficient criteria met?	X				
		3) Was the number of standards recommended in the method used for all analytes?	X				
		4) Were all points generated between the lowest and highest standard used to calculate the curve?	X				
		5) Are ICAL data available for all instruments used?	X				
		6) Has the initial calibration curve been verified using an appropriate second source standard?	X				
S2	OI	**Initial and Continuing calibration Verification (ICCV and CCV) and Continuing Calibration blank (CCB):**					
		1) Was the CCV analyzed at the method-required frequency?	X				
		2) Were percent differences for each analyte within the method-required QC limits?	X				
		3) Was the ICAL curve verified for each analyte?	X				
		4) Was the absolute value of the analyte concentration in the inorganic CCB < MDL?	X				
S3	O	**Mass Spectral Tuning:**					
		1) Was the appropriate compound for the method used for tuning?	X				
		2) Were ion abundance data within the method-required QC limits?	X				
S4	O	**Internal Standards (IS):**					
		1) Were IS area counts and retention times within the method-required QC limits?	X				
S5	OI	**Raw Data (NELAC Section 5.5.10)**					
		1) Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X				
		2) Were data associated with manual integrations flagged on the raw data?	X				
S6	O	**Dual Column Confirmation**					
		1) Did dual column confirmation results meet the method-required QC?			X		
S7	O	**Tentatively Identified Compounds (TICs):**					
		1) If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X		
S8	I	**Interference Check Sample (ICS) Results:**					
		1) Were percent recoveries within method QC limits?	X				
S9	I	**Serial Dilutions, Post Digestion Spikes, and Method of Standard Additions**					
		1) Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			X		
S10	OI	**Method Detection Limit (MDL) Studies**					
		1) Was a MDL study performed for each reported analyte?	X				
		2) Is the MDL either adjusted or supported by the analysis of DCSs?	X				
S11	OI	**Proficiency Test Reports:**					
		1) Was the lab's performance acceptable on the applicable proficiency tests or evaluation studies?	X				
S12	OI	**Standards Documentation**					
		1) Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	X				
S13	OI	**Compound/Analyte Identification Procedures**					
		1) Are the procedures for compound/analyte identification documented?	X				
S14	OI	**Demonstration of Analyst Competency (DOC)**					
		1) Was DOC conducted consistent with NELAC Chapter 5 – Appendix C?	X				
		2) Is documentation of the analyst's competency up-to-date and on file?	X				
S15	OI	**Verification/Validation Documentation for Methods** (NELAC Chapter 5)					
		1) Are all the methods used to generate the data documented, verified, and validated, where applicable?	X				
S16	OI	**Laboratory Standard Operating Procedures (SOPs):**					
		1) Are laboratory SOPs current and on file for each method performed?	X				

1 Items identified by the letter "R" should be included in the laboratory data package submitted to the TCEQ in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
2 O = organic analyses; I = inorganic analyses (and general chemistry, when applicable).
3 NA = Not applicable.
4 NR = Not Reviewed.
5 ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Laboratory Data Package Signature Page – RG-366/TRRP-13

This data package consists of:

This signature page, the laboratory review checklist, and the following reportable data:

R1 Field chain-of-custody documentation;
R2 Sample identification cross-reference;
R3 Test reports (analytical data sheets) for each environmental sample that includes:
  a) Items consistent with NELAC Chapter 5,
  b) dilution factors,
  c) preparation methods,
  d) cleanup methods, and
  e) if required for the project, tentatively identified compounds (TICs).
R4 Surrogate recovery data including:
  a) Calculated recovery (%R), and
  b) The laboratory's surrogate QC limits.
R5 Test reports/summary forms for blank samples;
R6 Test reports/summary forms for laboratory control samples (LCSs) including:
  a) LCS spiking amounts,
  b) Calculated %R for each analyte, and
  c) The laboratory's LCS QC limits.
R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:
  a) Samples associated with the MS/MSD clearly identified,
  b) MS/MSD spiking amounts,
  c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
  d) Calculated %Rs and relative percent differences (RPDs), and
  e) The laboratory's MS/MSD QC limits
R8 Laboratory analytical duplicate (if applicable) recovery and precision:
  a) The amount of analyte measured in the duplicate,
  b) The calculated RPD, and
  c) The laboratory's QC limits for analytical duplicates.
R9 List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix;
R10 Other problems or anomalies.

The Exception Report for each "No" or "Not Reviewed (NR)" item in the Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory is not accredited under the Texas Laboratory Accreditation Program.

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory in the Exception Reports. By my signature below, I affirm to the best of my knowledge that all problems/anomalies observed by the laboratory have been identified in the Laboratory Review Checklist, and no information or data affecting the quality of the data has been knowingly withheld.

This laboratory was last inspected by TCEQ on May 30 - June 2, 2023. Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

Name: Joel Grice
Official Title: Executive VP of Environmental

Signature

10/09/2024
Date

Name: Don Winston
Official Title: Technical Director

CLIENT:	BBA Engineering
Project:	LCRA - FPP
Lab Order:	2410023

CASE NARRATIVE

Samples were analyzed using the methods outlined in the following references:

Method SW6020B - Metals Analysis

Exception Report R1-01

The samples were received and log-in performed on 10/2/2024. A total of 1 sample was received and analyzed. The sample arrived in good condition and was properly packaged.

Exception Report R10-01

Per project specification, MS/MSD/Duplicates are from this workorder or project samples only.

DHL Analytical, Inc.

Date: *09-Oct-24*

CLIENT:	BBA Engineering
Project:	LCRA - FPP
Lab Order:	2410023

Work Order Sample Summary

Lab Smp ID	Client Sample ID	Tag Number	Date Collected	Date Recved
2410023-01	CBL-341I		10/01/24 01:50 PM	10/02/2024

Lab Order: 2410023
Client: BBA Engineering
Project: LCRA - FPP

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
2410023-01A	CBL-341I	10/01/24 01:50 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/03/24 07:22 AM	117436

Lab Order: 2410023
Client: BBA Engineering
Project: LCRA - FPP

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
2410023-01A	CBL-341I	Aqueous	SW6020B	Total Metals: ICP-MS - Water	117436	1	10/03/24 03:14 PM	ICP-MS5_241003B

DHL Analytical, Inc. **Date:** *09-Oct-24*

CLIENT:	BBA Engineering	**Client Sample ID:**	CBL-341I
Project:	LCRA - FPP	**Lab ID:**	2410023-01
Project No:	24713-2-1	**Collection Date:**	10/01/24 01:50 PM
Lab Order:	2410023	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TOTAL METALS: ICP-MS - WATER		**SW6020B**					Analyst: **CMC**
Boron	0.136	0.0100	0.0300		mg/L	1	10/03/24 03:14 PM

Qualifiers:
ND - Not Detected at the SDL
J - Analyte detected between SDL and RL
B - Analyte detected in the associated Method Blank
DF- Dilution Factor
N - Parameter not NELAP certified
See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

CLIENT: BBA Engineering
Work Order: 2410023
Project: LCRA - FPP

ANALYTICAL QC SUMMARY REPORT

RunID: **ICP-MS5_240909A**

Sample ID: **DCS4-117075**	Batch ID: **117075**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **DCS4**	Run ID: **ICP-MS5_240909A**	Analysis Date: **9/9/2024 10:17:00 AM**	Prep Date: **9/6/2024**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0292	0.0300	0.0300	0	97.2	70	130	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: BBA Engineering
Work Order: 2410023
Project: LCRA - FPP

ANALYTICAL QC SUMMARY REPORT

RunID: **ICP-MS5_241003B**

The QC data in batch 117436 applies to the following samples: 2410023-01A

Sample ID: **MB-117436** Batch ID: **117436** TestNo: **SW6020B** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS5_241003B** Analysis Date: **10/3/2024 2:44:00 PM** Prep Date: **10/3/2024**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	<0.0100	0.0300								

Sample ID: **LCS-117436** Batch ID: **117436** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS5_241003B** Analysis Date: **10/3/2024 2:47:00 PM** Prep Date: **10/3/2024**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.192	0.0300	0.200	0	95.8	80	120			

Sample ID: **LCSD-117436** Batch ID: **117436** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS5_241003B** Analysis Date: **10/3/2024 2:49:00 PM** Prep Date: **10/3/2024**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.199	0.0300	0.200	0	99.4	80	120	3.73	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: BBA Engineering
Work Order: 2410023
Project: LCRA - FPP

ANALYTICAL QC SUMMARY REPORT

RunID: **ICP-MS5_241003B**

Sample ID: **ICV-241003** Batch ID: **R135514** TestNo: **SW6020B** Units: **mg/L**
SampType: **ICV** Run ID: **ICP-MS5_241003B** Analysis Date: **10/3/2024 10:12:00 AM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0951	0.0300	0.100	0	95.1	90	110			

Sample ID: **LCVL-241003** Batch ID: **R135514** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS5_241003B** Analysis Date: **10/3/2024 10:20:00 AM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0204	0.0300	0.0200	0	102	80	120			

Sample ID: **CCV3-241003** Batch ID: **R135514** TestNo: **SW6020B** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS5_241003B** Analysis Date: **10/3/2024 2:39:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.188	0.0300	0.200	0	94.0	90	110			

Sample ID: **CCV4-241003** Batch ID: **R135514** TestNo: **SW6020B** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS5_241003B** Analysis Date: **10/3/2024 3:31:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.205	0.0300	0.200	0	103	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

 Date: *09-Oct-24*

CLIENT:	BBA Engineering
Work Order:	2410023
Project:	LCRA - FPP

MQL SUMMARY REPORT

TestNo: SW6020B	**MDL**	**MQL**
Analyte	**mg/L**	**mg/L**
Boron	0.0100	0.0300

Qualifiers: MQL -Method Quantitation Limit as defined by TRRP
MDL -Method Detection Limit as defined by TRRP

DATA USABILITY SUMMARY – LCRA Analytical Reports 2407275 and 2410023

Bullock, Bennett & Associates, LLC has reviewed the analytical data packages to be included in Appendix D of the Coal Combustion Residual Landfill 2024 Annual Groundwater Monitoring Report (Annual Groundwater Report) that was produced by DHL Analytical, Inc. for the analysis of groundwater samples collected in July 2024 and October 2024 at the Fayette Power Project (FPP) site. The Data were reviewed for conformance to the groundwater sampling and analysis requirements of 40 CFR § 257.93/30 TAC 352.931 and adherence to project objectives.

Objectives of the Data: To provide current data on concentrations of COCs in groundwater at the site for purposes of comparing Combustion Byproducts Landfill (CBL) compliance sample data to Appendix III Control Limits. To accomplish the stated data objectives, all field and laboratory procedures were performed in accordance with industry-established protocol, and the FPP Sampling and Analysis Plan. Appropriate quality assurance/quality control (QA/QC) measures were utilized. As described within the body of the Annual Groundwater Report, field QA/QC protocols integrated into this project followed industry standards and involved, among other factors:

- Use of sampling equipment decontamination protocol;
- Proper sample handling, preservation, and shipping procedures; and
- Maintenance of the sample chain of custody.

Also, as presented in the individual laboratory data packages, laboratory QA/QC procedures integrated into this project followed industry standards and involved, among others:

- Maintenance of sample custody;
- Application of laboratory cross references to field sample identifications and to specific QC samples;
- Use of laboratory control samples (LCSs);
- Use of matrix spike/matrix duplicate spikes (MS/MSDs);
- Use of appropriate method and method reporting limit (MRL);
- Reporting of non-detect results as less than the value of the MRL;
- Use of surrogate recoveries;
- Calculation of relative percent differences (RPDs);
- Use of method and preparation blanks; and
- The application of data qualifiers.

Data Reviewed: The data reviewed consisted of laboratory submittals and field data as follows:

- Project Objectives (i.e., recoveries and relative percent differences);
- Analytical Results, including, as applicable, data qualifiers;
- Documentation of preservation and holding times;
- Field and laboratory equipment calibrations;
- Laboratory blanks;
- Internal Laboratory Control Standards and Surrogate Recoveries;
- Laboratory Control Samples;
- Matrix Spike/Matrix Spike Duplicates;
- Field Precision as determined by duplicate samples collected in the field; and
- Field Procedures.

The results of the supporting quality control analyses for each of these QC factors were summarized in Quality Control narratives provided by the laboratory, and field/laboratory-completed chain of custody forms, the field forms, and the standard operational field procedures, and groundwater sampling procedures. A review of each of these was included in this Data Usability Summary.

Based on the Data Usability Review, the groundwater data are usable for their intended purpose. All samples were collected in the field using industry-standard operating procedures (SOPs), including decontamination protocol, sample preservation, and chain of custody.

Also, as presented in detail in the attached laboratory data packages, all appropriate QA/QC protocol were accomplished by the analytical laboratory. Where applicable, data have been appropriately qualified in the laboratory reports and the data, therefore, have been used accordingly.

Exception Reports, including Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Issues were identified as follows:

- July 2024 sampling event (Report 2407275)
    - <u>Exception Report R1-01</u>
      The samples were received and log-in performed on 7/25/2024. A total of 9 samples were received and
      analyzed. The samples arrived in good condition and were properly packaged.
    - <u>Exception Report R10-01</u>
      Per project specification, MS/MSD/Duplicates are from this workorder or project samples only.

- October 2024 sampling event (Report 2410023)
    - <u>Exception Report R1-01</u>
      The samples were received and log-in performed on 10/2/2024. A total of 1 sample was received and analyzed. The sample arrived in good condition and were properly packaged.
    - <u>Exception Report R10-01</u>
      Per project specification, MS/MSD/Duplicates are from this workorder or project samples only.

All exceptions were documented and described in the Quality Control narratives and no conditions with regard to laboratory control samples, matrix spike/matrix spike duplicates, sample preservation and holding times, or equipment calibrations were identified that would cause any of the data not to be useable.