



COAL COMBUSTION RESIDUAL LANDFILL

ANNUAL GROUNDWATER MONITORING REPORT

Calendar Year 2019

LOWER COLORADO RIVER AUTHORITY (LCRA)
FAYETTE POWER PROJECT, LA GRANGE, TEXAS
JANUARY 31, 2020



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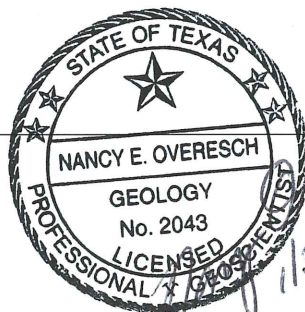


TABLE OF CONTENTS

Section	Page
1.0 BACKGROUND.....	4
2.0 PURPOSE.....	1
3.0 GROUNDWATER MONITORING SYSTEM.....	1
4.0 STATUS OF GROUNDWATER MONIROTING PROGRAM.....	2
5.0 STATISTICAL EVALUATIONS AND ALTERNATE SOURCE DEMONSTRATION.....	2
5.1 STATISTICAL ANALYSIS FIRST QUARTER 2019	2
5.2 STATISTICAL ANALYSIS THIRD QUARTER 2019	3
6.0 KEY ACTIONS	3

TABLES

TABLE 1	Groundwater Monitoring Well Details
TABLE 2	2019 CCR Groundwater Monitoring Events
TABLE 3	2019 Groundwater Monitoring Results Summary

FIGURES

FIGURE 1	CCR Unit and Monitoring Well Location Map
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APPENDICES

APPENDIX A	CCR Groundwater Detection Monitoring Program Evaluation of First and Third Quarters 2019 Potentiometric Surface Data Collected from the CBL, Wood Environmental and Infrastructure Solutions, Inc, December 12, 2019
APPENDIX B	CCR Groundwater Detection Monitoring Evaluation of First Quarter 2019 and Associated Resampling Data Collected form the CBL, Wood Environmental and Infrastructure Solutions, Inc, July 8, 2019
APPENDIX C	Groundwater Monitoring System Certification of Alternate Source Demonstration, Wood Environmental and Infrastructure Solutions, Inc, July 8, 2019
APPENDIX D	CCR Groundwater Detection Monitoring Evaluation of Third Quarter 2019 Data Collected form the CBL, Wood Environmental and Infrastructure Solutions, Inc, December 13, 2019
APPENDIX E	Analytical Data for Calendar Year 2019

2019 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 2 D in 2015, therefore both active cells are considered existing 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), 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 2019 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 2019. The location of the monitoring wells are shown on Figure 1.

In accordance with 40 CFR § 257.93(c), groundwater elevations were measured in each monitor 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, one along the western area having an approximate rate of 23- 26

feet per year and one along the eastern area, having a flow rate an approximate rate of 50-72 feet per year. Detailed information is contained in the December 12, 2019 Technical Memorandum prepared by Wood Environmental and Infrastructure Solutions, Inc. (Wood), which is included in Appendix A.

During the 2019 first quarter sampling event, the pH field reading for CBL301I was recorded as 7.50 on January 17, 2019. This value was found to be a clerical error in transferring data from field notes to the field sheets and the value was changed to 7.16 on 4/19/19 as indicated on the field sheet in Attachment E. The final analytical report originally issued on February 1, 2019 was revised and reissued on April 22, 2019 with the noted change.

Screening level statistical analysis indicated the January 17, 2019 sample event was anomalous for pH in monitoring well CBL-301I. A review of the field notes verified the groundwater sample was collected the day after purging due to lack of sufficient groundwater recharge immediately following purging. The field parameter Specific Conductance was anomalously low. Analysis of the sample indicated uncharacteristically low calcium and chloride concentrations and low field conductivity measurements. In response to this information, CBL-301I was resampled on May 2, 2019. Field parameters and analytical results for this sample were consistent with historic analytical results.

During the 2019 third quarter sampling event, CBL-306I was resampled due to anomalous and uncharacteristic values of analytes, including fluoride. The resampling occurred within the third quarter.

4.0 STATUS OF THE GROUNDWATER MONITORING PROGRAM

During calendar year 2019, 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. As discussed in Section 5, the CBL will remain in detection monitoring for 2020.

Although not expressly required by 40 CFR 257.90(e) or 257.105(h), Table 3 contains a summary of the analytic data collected in 2019.

5.0 STATISTICAL EVALUATIONS AND ALTERNATE SOURCE DETERMINATION

5.1 Statistical Analysis of First Quarter 2019 Data

In April 2019 WOOD completed the statistical analysis of the first quarter detection monitoring Appendix III constituent data utilizing the prediction limit intrawell method. The results indicated that there was a single exceedance for pH in monitoring well CBL-301I. Analysis of the sample indicated uncharacteristically low calcium and chloride concentrations and low field conductivity measurements. Field notes indicated the groundwater sample was collected the day after purging due to lack of sufficient groundwater recharge immediately following purging. Therefore, LCRA pursued an Alternate Source Demonstration and CBL 301I was resampled on May 2, 2019. The field parameters and analytical results were consistent with historic analytical results. Using the May 2, 2019, results, there were no SSIs for any constituents in any well. Detailed information is contained the July 8, 2019 Technical Memorandum prepared by WOOD which is included in Appendix B and the Alternate Source Demonstration prepared and certified by WOOD on July 8, 2019 which is included in Appendix C.

5.2 Statistical Analysis Third Quarter 2019 Data

In November 2019 Wood completed the statistical analysis of the third quarter detection monitoring Appendix III constituent data utilizing the prediction limit intrawell method. The results indicated that there were no SSI for any constituents in any well. Well 306I was resampled on August, 23, 2019 due to anomalous and uncharacteristic values, but within the third quarter and before conducting the statistical analysis. Detailed information is contained the December 13, 2019 Technical Memorandum prepared by Wood which is included in Appendix D.

6.0 KEY ACTIONS

Key actions for 2019 are detailed in Section 5. Key actions for 2020 include continued semi-annual detection monitoring with associated statistical analysis and responding in accordance with the CCR rules as new information is developed.

TABLE 1

MONITORING 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	12.5	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
2019 CCR GROUNDWATER MONITORING EVENTS

Well #	Date of sample collection	# samples collected for analysis	Monitoring program
CBL 340I	1/22/2019	1	Detection monitoring
	7/29/2019	1	Detection monitoring
CBL 301I	1/17/2019	1	Detection monitoring
retest	5/2/2019	1	Alternate Source Demonstration
	7/31/2019	1	Detection monitoring
CBL 302I	1/22/2019	1	Detection monitoring
	7/31/2019	1	Detection monitoring
CBL 306I	1/16/2019	1	Detection monitoring
	7/29/2019	1	Detection monitoring
retest	8/23/2019	1	Detection monitoring
CBL 308I	1/16/2019	1	Detection monitoring
	7/31/2019	1	Detection monitoring
CBL 341I	1/22/2019	1	Detection monitoring
	7/29/2019	1	Detection monitoring

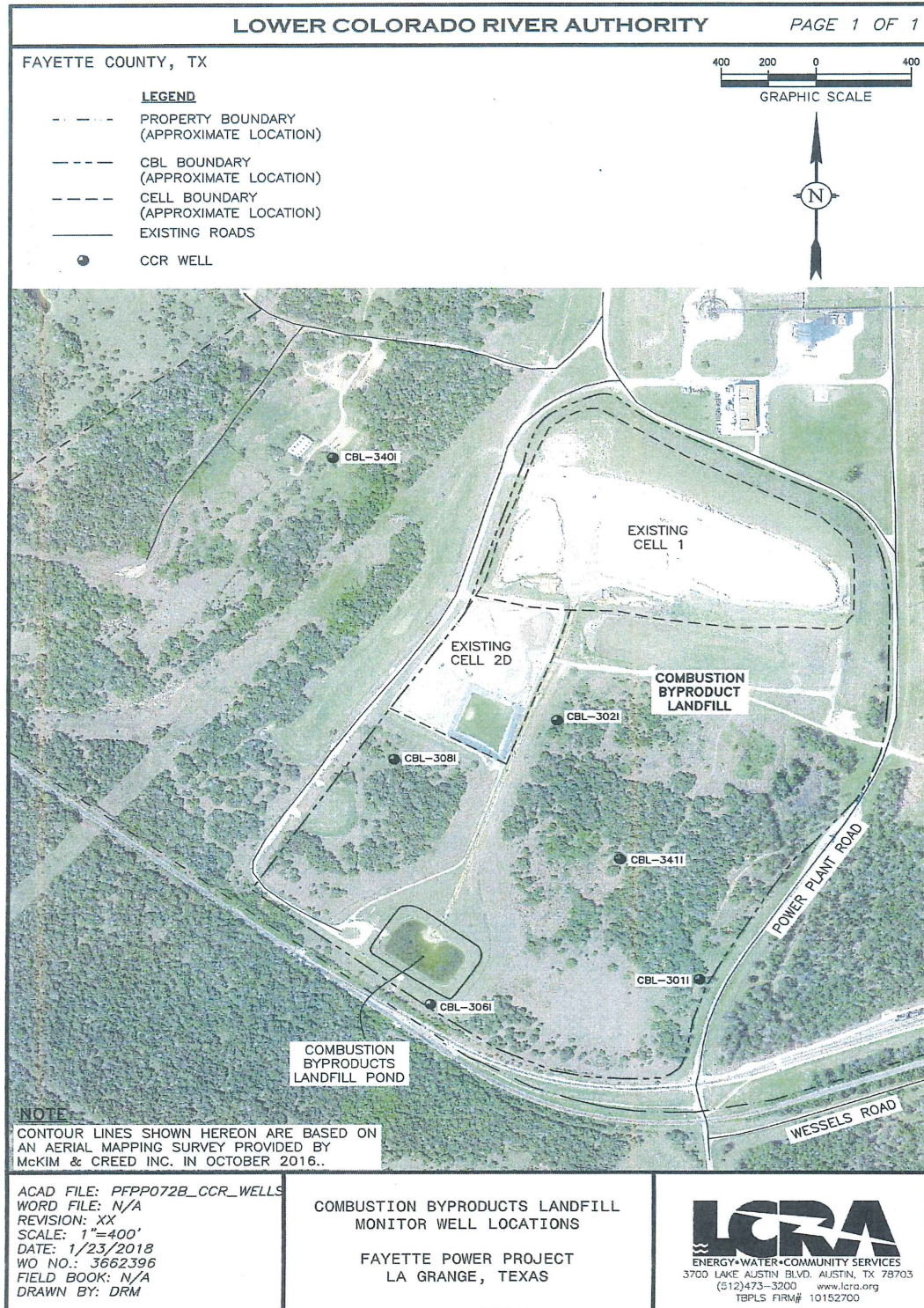
TABLE 3

2019 Groundwater Monitoring Results Summary

Sample ID/ Location	Date Sampled	Boron	Calcium	Chloride	Fluoride	pH	Sulfate	Total Dissolved Solids
CBL Background well								
CBL-340I	1/22/2019	<0.0500	518	2250	0.83	6.59	639	4720
CBL-340I	7/29/2019	0.124	518	2280	0.88	6.45	684	5560
CBL Wells								
CBL-301	1/17/2019	<0.05	156	619	0.219	7.16	104	1460
CBL-301 retest	5/2/2019	<0.05	762	1910	0.112	6.14	389	5650
CBL-301I	7/31/2019	<.05	783	2240	0.051	6.19	332	6040
CBL-302I	1/22/2019	<0.05	855	1690	0.0402	6.44	1250	5060
CBL-302I	7/31/2019	<0.05	914	1540	0.0605	6.15	1260	4190
CBL-306I	1/16/2019	<0.0500	180	215	1.98	6.78	292	1220
CBL-306I	7/29/2019	0.0824	106	538	9.26	6.92	816	676
CBL-306I retest	8/23/2019	<0.0500	226	318	2.66	6.83	387	1710
CBL-308I	1/16/2019	<0.0500	760	2440	1.68	6.39	1520	4760
CBL-308I	7/31/2019	<0.0500	840	2290	1.62	6.25	1420	5820
CBL-341I	1/22/2019	<0.05	782	1790	0.0546	6.38	358	3870
CBL-341I	7/29/2019	<0.05	714	1650	0.1	6.23	329	5370
<u>Notes:</u>								
All concentrations reported in mg/L (milligrams per liter).								

FIGURE 1

MONITOR WELL LOCATION MAP



APPENDIX A

CCR Groundwater Detection Monitoring Program
Evaluation of First and Third Quarter 2019
Potentiometric Surface Data Collected from the CBL,
Wood Environmental and Infrastructure Solutions, Inc,
December 12, 2019



Technical Memorandum

To: Nancy Overesch, PG
From: Charlie Macon, PG
Date: December 12, 2019

File No: 6706190019
cc: File

Subject: CCR GROUNDWATER DETECTION MONITORING PROGRAM
EVALUATION OF FIRST AND THIRD QUARTER 2019 POTENTIOMETRIC SURFACE DATA
COLLECTED FROM THE CBL
Fayette Power Project – La Grange, Texas

1.0 INTRODUCTION

This Technical Memorandum (Tech Memo) documents the evaluation of the Intermediate Sand groundwater bearing unit potentiometric surface data obtained during completion of the first quarter and third quarter 2019 groundwater monitoring events. The monitoring is being performed, as part of the Combustion Byproducts Landfill (CBL) Groundwater Monitoring Program (GMP) pursuant to the Coal Combustion Residuals (CCR) regulations as codified in 40 Code of Federal Regulations (CFR) 257.93.. The CBL is located at the Lower Colorado River Authority's (LCRA's) Fayette Power Project (FPP) facility near La Grange, Texas. This potentiometric surface evaluation, and subsequent determination of groundwater flow rate and direction, is conducted for each groundwater monitoring event pursuant to the GMP requirements of 40 CFR 257.93(c).

2.0 POTENTIOMETRIC SURFACE DATA COLLECTION AND MAPPING

All groundwater monitoring and sampling activities were performed by an LCRA technician. Prior to conducting well purging and collection of groundwater samples for chemical analysis, the technician used an electronic well probe to determine depth to the Intermediate Sand groundwater surface below the surveyed top of casing elevation. Table 1 presents the summary of groundwater measurements obtained from the CBL Groundwater Monitoring Well network in 2019.

Based on the measured groundwater elevations, potentiometric surface maps were prepared to document the January-First Quarter 2019 monitoring event (Figure 1), and the July-Third Quarter 2019 monitoring event (Figure 2). These maps show a relatively consistent groundwater potentiometric surface, and are similar to those presented for the February 2018 and July-August 2018 monitoring events.

3.0 GROUNDWATER FLOW DIRECTION AND FLOW RATE CALCULATION

Consistent with prior CBL GMP maps, a groundwater flow direction inferred by potentiometric surface elevation, is toward the south-southwest (Figures 1 and 2). The inferred groundwater gradient is slightly less to the west, consistent with past findings.

Groundwater flow rate was estimated along two transects for each event, one along the western area having a lesser gradient, and one along the eastern area. 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, based on rising-head slug test data obtained from monitoring well CBL-302I. In



calculating groundwater flow rate, this hydraulic conductivity value was utilized for the January 2019 and July 2019 events, consistent with past evaluations of the Intermediate Sand. In addition, also consistent with past evaluations, an assumed porosity value of 0.30 was utilized.

Groundwater gradients for the January 2019, and August 2019 events are estimated as follows:

January 2019 Event

Eastern Transect: 0.0335 feet/foot (ft/ft)

Western Transect: 0.0119 ft/ft

July 2019 Event

Eastern Transect: 0.0230 ft/ft

Western Transect: 0.0108 ft/ft

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

January 2019 Event

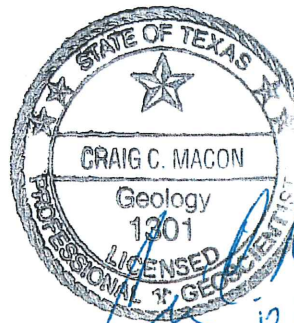
Eastern Transect: 72 feet per year (ft/yr)

Western Transect: 26 ft/yr

July 2019 Event

Eastern Tract: 50 ft/yr

Western Transect: 23 ft/yr



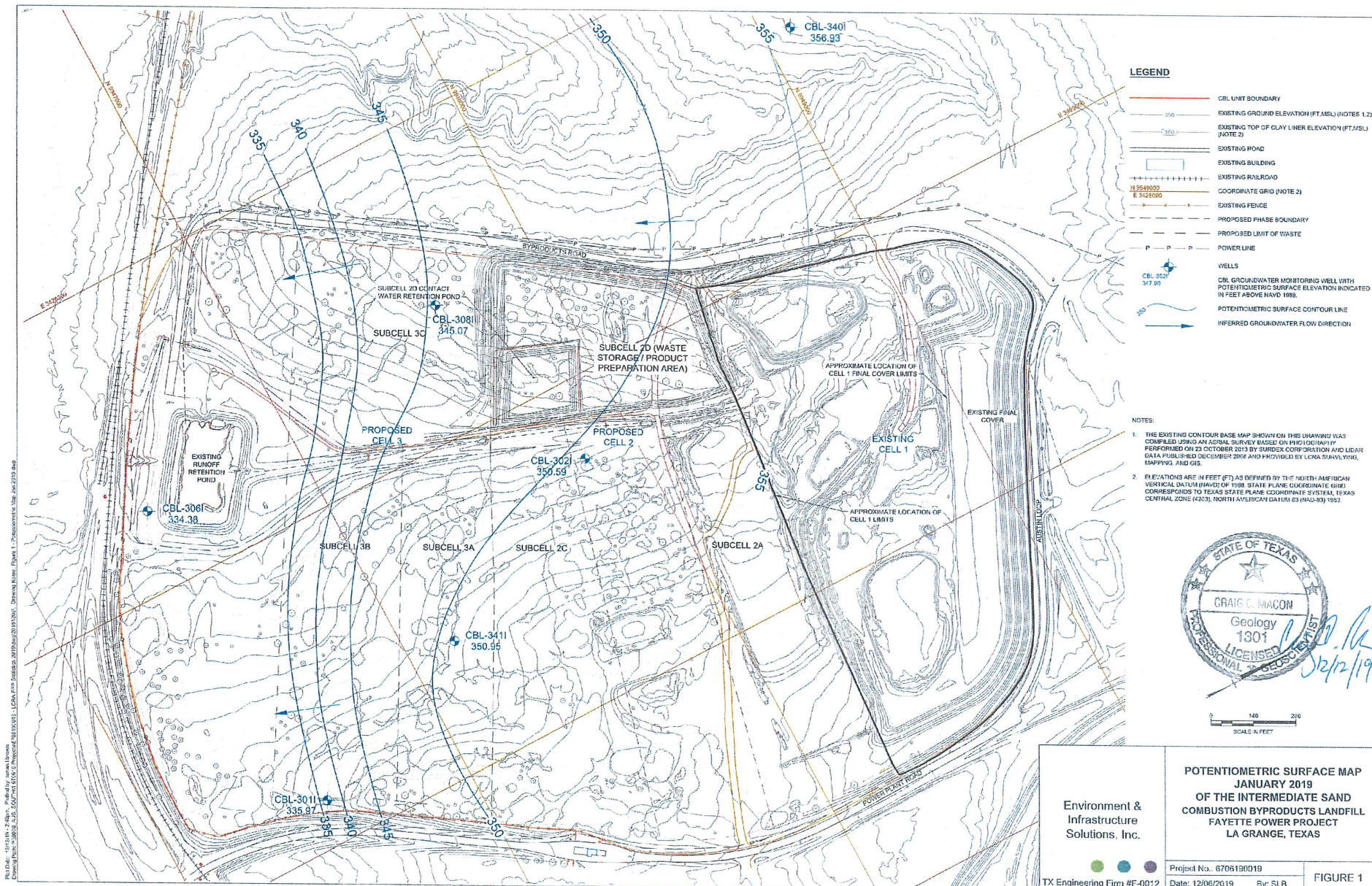
4.0 REFERENCES

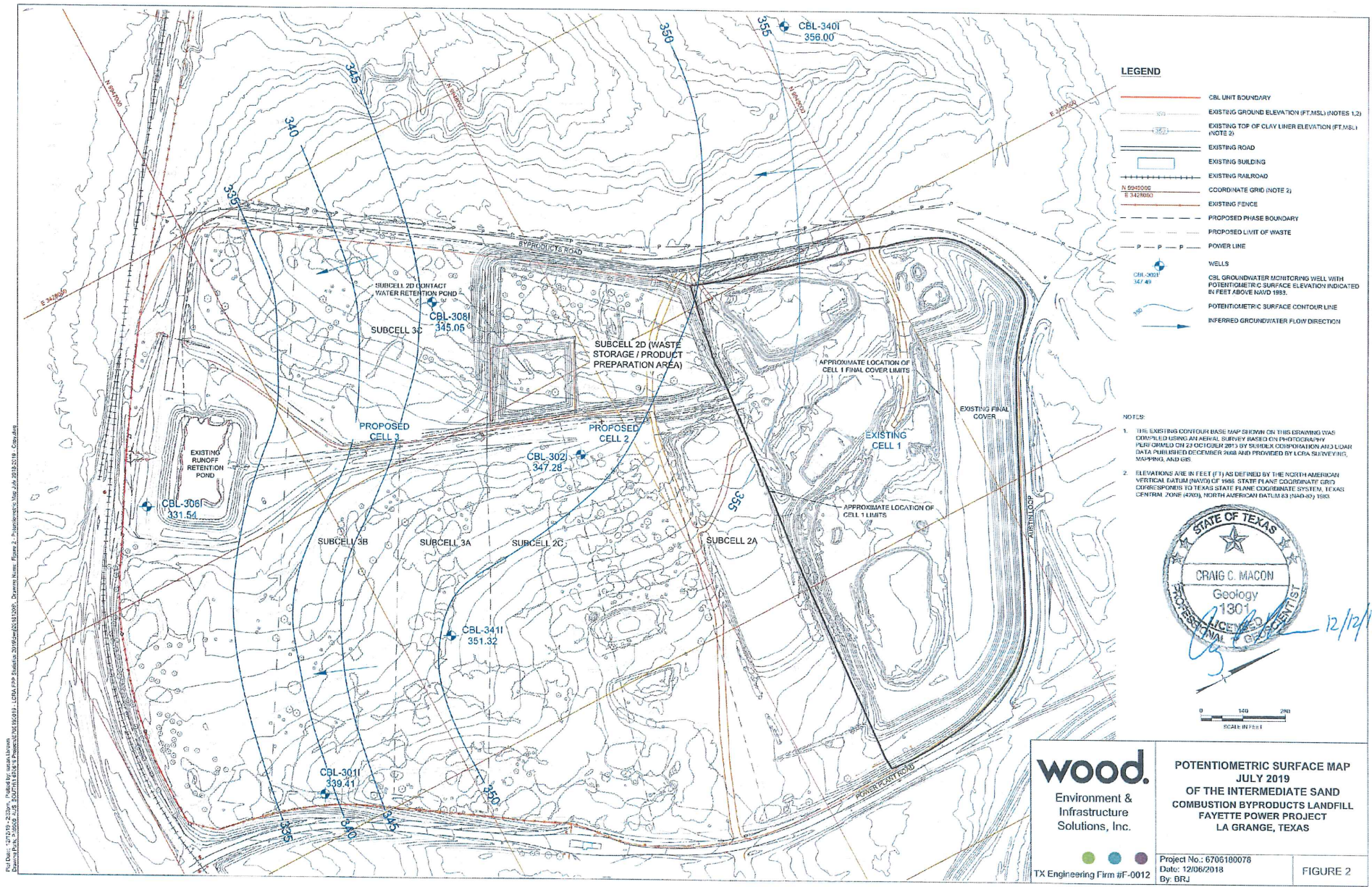
Amec Environment & Infrastructure, Inc. (Amec), 2013: *Hydrogeologic Evaluation of Combustion Byproducts Landfill (CBL) Area Report, Fayette Power Project*, December 2013.

TABLE 1
Combustion Byproducts Landfill
Groundwater Monitoring Well System
2019 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 NGVD)	DTW (ft btoc)	Elevation (ft NGVD)	DTW (ft btoc)	Elevation (ft NGVD)	DTW (ft btoc)	Elevation (ft NGVD)	DTW (ft btoc)	Elevation (ft NGVD)	DTW (ft btoc)	Elevation (ft NGVD)
1/16/2019	NM	NM	NM	NM	NM	NM	5.58	334.38	23.60	345.07	NM	NM
1/17/2019	NM	NM	36.14	335.97	NM	NM	NM	NM	NM	NM	NM	NM
1/22/2019	20.05	356.93	NM	NM	8.40	350.59	NM	NM	NM	NM	15.70	350.95
7/29/2019	20.98	356.00	NM	NM	NM	NM	8.42	331.54	NM	NM	15.33	351.32
7/30/2019	NM	NM	32.70	339.41	NM	NM	NM	NM	NM	NM	NM	NM
7/31/2019	NM	NM	NM	NM	11.71	347.28	NM	NM	23.62	345.05	NM	NM

Notes: NM = Not Measured
ft btoc = feet below top of casing
ft NGVD = feet above National Geodetic Vertical Datum





APPENDIX B

CCR Groundwater Detection Monitoring Evaluation of
First Quarter 2019 and Associated Resampling Data
Collected from the CBL, Wood Environmental and
Infrastructure Solutions, Inc, July 8, 2019



Technical Memorandum

To: Charlie Macon, PG
From: Carla Landrum, PhD
Date: July 8, 2019

File No: 6706190019
cc: File

Subject: **CCR GROUNDWATER DETECTION MONITORING
EVALUATION OF FIRST QUARTER 2019 AND ASSOCIATED RESAMPLING DATA
COLLECTED FROM THE CBL
Fayette Power Project – La Grange, Texas**

1.0 INTRODUCTION

This Technical Memorandum (Tech Memo) documents the statistical evaluation of detection monitoring data collected in the first quarter of 2019 (1Q 2019), and the subsequent resampling of one well from the Combustion Byproducts Landfill (CBL) located at the Lower Colorado River Authority's (LCRA) Fayette Power Project (FPP) facility. The evaluation consists of comparing CBL compliance (i.e., downgradient) sample data to Appendix III baseline threshold values (BTVs) using the intrawell prediction limit statistical method declared in the *Statistical Analysis Updates of Detection Monitoring Appendix III Constituent Data* (1Q 2018 Tech Memo) (AMECFW, 2018a). Therefore, CBL 340I is sampled as required by 40 CFR 257.94 but is not included in the intrawell statistical comparison. The 1Q 2018 Tech Memo is in support of the initial detection monitoring assessment results documented for the CBL (AMECFW, 2018b). This Tech Memo was prepared pursuant to 40 CFR § 257.93.

2.0 SAMPLING AND SCREENING LEVEL DATA EVALUATION

The 1Q 2019 sampling event constitutes the eleventh sampling round for the detection monitoring program for the CBL. Detection monitoring program sampling for 1Q 2019 was initiated on January 16, 2019, with the purging of monitoring wells CBL-301I, CBL-306I, and CBL-308I. Samples were collected using low-flow sampling techniques from CBL-306I and CBL-308I. Because CBL-301I purged dry, sample collection from this well was conducted the following day (January 17, 2019) using a disposable bailer, after allowing the well to recharge. Monitoring wells CBL-302I, CBL-340I, and CBL-341I were purged and sampled on January 22, 2019. LCRA received the final analytical data reports for all wells on February 1, 2019. Table 1 presents the 1Q 2019 sample results for Appendix III constituents.

Screening level statistical analysis was completed on April 11, 2019 and indicated a single initial exceedance for pH in monitoring well sample CBL-301I. Based on this initial exceedance, the LCRA used professional judgement to move forward with an Alternate Source Demonstration, as summarized below. A formal ASD certification, including Engineer's seal, has been provided to LCRA separately.

3.0 ALTERNATE SOURCE DEMONSTRATION

Screening-level statistical analysis indicated the January 17, 2019 sample event was anomalous for pH in monitoring well CBL-301I. A review of the field notes verified the groundwater sample was collected the day after purging due to lack of sufficient groundwater recharge immediately following purging. The field



parameter Specific Conductance was anomalously low. Analysis of the sample indicated uncharacteristically low calcium and chloride concentrations and low field conductivity measurements. These results suggested the sample was not representative of groundwater at this sample location (based on a comparison to past CBL 301I results).

In response to this information, a resampling event for this well was conducted on May 2, 2019. The field parameters and analytical results for the May 2, 2019 sampling event were consistent with historic analytical results and, therefore, confirm that the January 17th analyses was invalid and not representative of intrinsic groundwater conditions. These findings indicate the January 17th sample is invalid and should not be used in the statistical evaluation.

Table 1 presents the resampling data analysis for CBL-301I, and the intrawell BTVs for this 1Q 2019 and associated resampling statistical comparisons.

3.1 Updates to Temporal Trends and Baseline Threshold Values

The BTVs presented in Table 1 reflect those previously declared in the 2018 Tech Memo for the CBL with the following exceptions: calcium for monitoring well CBL-306I; chloride for monitoring well CBL-306I; and sulfate for monitoring wells CBL-302I and CBL-306I (Wood, 2018). In these specific cases, the prediction limits are time-dependent and are calculated around a persistent and statistically significant ($p < 0.05$) temporal trend; thereby, requiring the inclusion of the 10th sampling event (3Q 2018) to generate a BTV representative of the temporally variable intrinsic groundwater conditions. This update is conditional upon the 3Q 2018 sampling event not exhibiting a statistically significant increase (SSI) over its respective BTV (Wood, 2018). For reference, the results of the 3Q 2018 detection monitoring statistical evaluation are documented in the *CCR Groundwater Detection Monitoring Evaluation of Third Quarter 2018 Data Collected from the CBL* Technical Memorandum (3Q 2018 Tech Memo) (Wood, 2018). A discussion of updates to temporal trend significance and BTVs (by constituent) follows.

Temporal Trends. The premise of intrawell comparisons is to evaluate if constituent concentrations at a geographic location downgradient of the CBL are, in part, changing over time relative to a baseline concentration calculated for that specific geographic location. On this basis, intrawell statistical comparisons should consider the presence of statistically significant ($p < 0.05$) temporal trends to interpret if there is a release from the CBL, particularly if the temporal trend is: 1) increasing, 2) incongruent with the conceptual site model as it relates to alternative source demonstration(s) and/or 3) inconsistent with past temporal trend analyses. Table 1 color-codes constituents that exhibit statistically significant increasing (blue) or decreasing (yellow) temporal trends for the most recent sampling event. Many constituent/monitoring well pairs maintain their temporal trend declaration made in the 3Q 2018 Tech Memo (e.g., chloride in 302I). However, the most recent sampling event (1Q 2019) introduces the presence of statistically significant ($p < 0.05$) temporal trends in the following monitoring wells (constituent/trend direction/trend significance): CBL-308I (TDS/decreasing/ $p = 0.030$) and CBL-341I (calcium/decreasing/ $p = 0.02$ and pH/increasing/ $p = 0.02$). Table 1 also identifies well/constituent pairs that no longer support the presence of a previously declared statistically significant temporal trend ($p < 0.05$) when incorporating the 3Q 2018 and/or 1Q-2Q 2019 sample data, including CBL-301I (calcium, chloride and sulfate) and CBL-306I (fluoride). Recommendations follow to help manage changes in temporal trend significance over time.

Calcium. Monitoring well CBL-306I exhibits a statistically significant ($p < 0.05$) increasing temporal trend for calcium. The temporal trend significance and direction are consistent for the 1Q 2018, 3Q 2018 and 1Q 2019 sampling events. The approximate p -values for the Mann-Kendall trend test, range among

0.0047, 0.0024, 0.00060 and 0.0041 (all well below $p < 0.05$) for the initial 8 detection monitoring sampling events and subsequent inclusion of the 1Q 2018, 3Q 2018 and 1Q 2019 detection monitoring sampling events, respectively. The upper prediction limit in Table 1 for calcium in monitoring well CBL-306I reflects the temporal trend for the tenth sampling event. The eleventh sampling event is subsequently compared to this time-dependent upper prediction limit to complete this statistical evaluation. The upper prediction limit calculation honors a 1 of 2 resampling strategy and Equation 10-13 in the ProUCL Technical Guide (U.S. EPA, 2013).

Chloride. Monitoring well CBL-306I exhibits a statistically significant ($p < 0.05$) increasing temporal trend for chloride. The temporal trend significance and direction are consistent for the 1Q 2018, 3Q 2018 and 1Q 2019 sampling events. The approximate p-values for the Mann-Kendall trend test range among 0.018, 0.0046, 0.010 and 0.031 (all below $p < 0.05$) for the initial 8 detection monitoring sampling events and subsequent inclusion of the 1Q 2018, 3Q 2018 and 1Q 2019 detection monitoring sampling events, respectively. The upper prediction limit in Table 1 for chloride in monitoring well CBL-306I reflects the temporal trend for the tenth sampling event. The eleventh sampling event is subsequently compared to this time-dependent upper prediction limit to complete this statistical evaluation. The upper prediction limit calculation honors a 1 of 2 resampling strategy and Equation 10-13 in the ProUCL Technical Guide (U.S. EPA, 2013).

Sulfate. Monitoring wells CBL-302I and CBL-306I exhibit statistically significant increasing temporal trends for sulfate. The temporal trend significance and direction are consistent for the 1Q 2018, 3Q 2018 and 1Q 2019 sampling events. For monitoring well CBL-302I, the approximate p-values for the Mann-Kendall trend range among 0.023, 0.0059, 0.0015 and 0.0007 (all below $p < 0.05$) for the initial eight detection monitoring sampling events and subsequent inclusion of the 1Q 2018, 3Q 2018 and 1Q 2019 detection monitoring sampling events, respectively. For monitoring well CBL-306I, the approximate p-values for the Mann-Kendall trend test, range among 0.018, 0.0082, 0.016 and 0.043 for the initial 8 detection monitoring sampling events and subsequent inclusion of the 1Q 2018, 3Q 2018 and 1Q 2019 detection monitoring sampling events, respectively. The upper prediction limit in Table 1 for chloride in monitoring wells CBL-302I and CBL-306I reflect the temporal trend for the tenth sampling event. The eleventh sampling event for each well is subsequently compared to its respective time-dependent upper prediction limit to complete this statistical evaluation. The upper prediction limit calculation honors a 1 of 2 resampling strategy and Equation 10-13 in the ProUCL Technical Guide (U.S. EPA, 2013).

3.2 Exceedance Assessment

The LCRA pursued an ASD based on the initial exceedance shown in Table 1 for pH in monitoring well CBL-301I that was sampled on January 17, 2019. As described above, the May 2, 2019 resampling event yielded results consistent with past findings regarding both field collection data and analytical data. Accordingly, it has been determined through the ASD process that the initial exceedance for pH was due to sampling influences and not actual water quality.

As indicated in Table 1, there is insufficient statistical evidence to declare an initial exceedance for boron, calcium, chloride, fluoride, sulfate, pH or total dissolved solids in 1Q 2019 because sample concentrations are less than their respective BTVs.

4.0 RECOMMENDATIONS

Wood maintains the recommendation put forth in the 1Q 2018 Tech Memo (AmecFW, 2018a) declaring the reiterative calculation of the prediction limit if a statistically significant temporal trend is present for a constituent. This recommendation ensures that the prediction limit calculation honors the temporal trend, or systematic change in constituent concentrations over time. This recommendation assumes the temporal trend remains statistically significant over time, the data meet statistical assumptions and the CBL is not impacting groundwater (AMECFW, 2018a).

For the majority of monitoring well/constituent pairs, the intrawell BTVs derive from stationary datasets (no temporal trend is present) and, therefore, remain constant for each subsequent statistical comparison test. In these cases, the BTV was derived using a relatively small sample dataset (n=8). Therefore, this small dataset likely underrepresents local and regional temporal variability in constituent concentrations beneath the CBL. Wood recommends updating the intrawell BTVs in Table 1 for the 1Q 2020. Updating BTVs to reflect larger sample sizes over time will improve the overall power of future statistical tests. This recommendation is conditional upon the absence of initial exceedances in constituent concentrations above their respective BTVs.

For a few monitoring well/constituent pairs the temporal trend is inconsistent over time. In general, this is expected since the temporal trends are characterized by relatively few samples and a few of the temporal trends border on the threshold of being statistically significant. Trend definition and significance will improve as sample datasets build over time. Wood recommends testing the significance of temporal trends after each sampling event (e.g. semiannually).

5.0 REFERENCES

Amec Foster Wheeler (AMECFW), 2018a. Technical Memorandum – Client Draft. Statistical Analysis Updates of Detection Monitoring Appendix III Constituent Data. Fayette Power Project – La Grange, Texas. Technical Memorandum dated April 6, 2018.

Amec Foster Wheeler (AMECFW), 2018b. Technical Memorandum – Client Draft. Statistical Analysis of Initial Detection Monitoring Appendix III Constituent Data. Fayette Power Project – La Grange, Texas. Technical Memorandum dated January 14, 2018.

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Table 1
Statistical Results Summary - LCRA Combustion Byproducts Landfill
Appendix III Statistical Comparison

301I							
Appendix III Constituent	Boron (mg/L)	Calcium (mg/L)	Chloride (mg/L)	Fluoride (mg/L)	pH (S.U.)*	Sulfate (mg/L)	TDS (mg/L)
Intrawell Statistical Test	NP-UPL	P-UPLT	P-UPL	NP-UPL	NP-UPL/NP-LPL	P-UPLT	P-UPL
BTV	0.07	1135	2676	0.3	6.33/5.95	410	7905
First Quarter 2019 Compliance Sample Value	<0.0500	156 ^b	619 ^c	0.219	7.16	104 ^b	1460
ASD 2019 Resample Compliance Sample Value**	<0.0500	762 ^b	1910 ^b	0.112	6.14	389 ^b	5650
302I							
Appendix III Constituent	Boron (mg/L)	Calcium (mg/L)	Chloride (mg/L)	Fluoride (mg/L)	pH (S.U.)*	Sulfate (mg/L)	TDS (mg/L)
Intrawell Statistical Test	NP-UPL	P-UPL	P-UPL	P-UPL	P-UPL/P-LPL	P-UPLT	P-UPL
BTV	0.3	1154	2328	0.3	8.21/3.57	1565	7940
First Quarter 2019 Compliance Sample Value	<0.0500	855	1690 ^b	0.0402	6.44	1250 ^d	5060
306I							
Appendix III Constituent	Boron (mg/L)	Calcium (mg/L)	Chloride (mg/L)	Fluoride (mg/L)	pH (S.U.)*	Sulfate (mg/L)	TDS (mg/L)
Intrawell Statistical Test	P-UPL	P-UPLT	P-UPLT	P-UPL	P-UPL/P-LPL	P-UPLT	P-UPL
BTV	0.2	458	780	4	7.29/4.41	1077	2064
First Quarter 2019 Compliance Sample Value	<0.0500	180 ^d	215 ^d	1.98 ^a	6.78	292 ^d	1220 ^b
308I							
Appendix III Constituent	Boron (mg/L)	Calcium (mg/L)	Chloride (mg/L)	Fluoride (mg/L)	pH (S.U.)*	Sulfate (mg/L)	TDS (mg/L)
Intrawell Statistical Test	P-UCL	P-UPL	P-UPL	P-UPL	P-UPL/P-LPL	P-UPL	P-UPL
BTV	0.7	995	3079	3	7.15/5.26	1702	12186
First Quarter 2019 Compliance Sample Value	<0.0500	760	2440	1.68	6.38	1528	3870 ^c
341I							
Appendix III Constituent	Boron (mg/L)	Calcium (mg/L)	Chloride (mg/L)	Fluoride (mg/L)	pH (S.U.)*	Sulfate (mg/L)	TDS (mg/L)
Intrawell Statistical Test	P-UPL	P-UPL	P-UPL	NP-UPL	P-UPL/P-LPL	P-UPL	P-UPL
BTV	0.09	981	2661	0.53	6.69/4.93	466	6295
First Quarter 2019 Compliance Sample Value	<0.0500	782 ^c	1790	0.055 ^e	6.38 ^c	358	3870

Table 1
Statistical Results Summary - LCRA Combustion Byproducts Landfill
Appendix III Statistical Comparison

Footnotes:

^aThe temporal trend becomes statistically insignificant.

^bThe temporal trend maintains its statistical significance or insignificance status observed during the 3Q 2018 sampling event, however, the trend status is known to be inconsistent throughout the CCR Detection Monitoring program.

^cThe temporal trend becomes statistically significant.

^dThe temporal trend remains statistically significant. The prediction limit calculation honors the trend by incorporating the third quarter 2018 sample event.

^eThe temporal trend remains statistically significant and the prediction limit honors the non-parametric calculation.

*pH represents an upper and lower limit (upper limit method/lower limit method)

**ASD resampling event for monitoring well CBL-301I occurred on May 2, 2019. This sample holds precedence for detection monitoring.

Legend

There is insufficient evidence to declare an SSI
Statistically significant increasing temporal trend ($p < 0.05$)
Statistically significant decreasing temporal trend ($p < 0.05$)
<i>There is sufficient statistical evidence to declare an SSI</i>

NP-LPL: Non-Parametric Lower Prediction Limit

NP-UPL: Non-Parametric Upper Prediction Limit

P-UPL: Parametric Upper Prediction Limit

P-LPL: Parametric Lower Prediction Limit

P-UPLT: Parametric Upper Prediction Limit with a Trend

APPENDIX C

Groundwater Monitoring System Certification of
Alternate Source Demonstration, Wood Environmental
and Infrastructure Solutions, Inc,

July 8, 2019

**GROUNDWATER MONITORING SYSTEM
CERTIFICATION OF ALTERNATE SOURCE DEMONSTRATION
LOWER COLORADO RIVER AUTHORITY
COAL COMBUSTION RESIDUALS UNIT: COMBUSTION BYPRODUCTS LANDFILL
FAYETTE POWER PROJECT
La Grange, Texas**

WOOD ENVIRONMENT & INFRASTRUCTURE SOLUTIONS, INC. (Consultant) was retained by the Lower Colorado River Authority (LCRA) to perform an alternate source demonstration (ASD) in response to the April 11, 2019 screening level analysis identification of a statistically significant increase (SSI) for pH, detected in the groundwater monitoring system compliance well CBL-301I, for the Combustion Byproducts Landfill (CBL). The CBL is a coal combustion residuals (CCR) unit, at the Fayette Power Project in La Grange, Texas. The ASD was performed in accordance with 40 C.F.R. § 257.94(e)(2).

Additional discussion regarding the findings of the ASD, and the Professional Engineer's (P.E.'s) certification verifying the accuracy of the information used in making the ASD, are provided herein.

1.0 ALTERNATE SOURCE DEMONSTRATION

Semiannual compliance monitoring and analysis for the CBL groundwater monitoring program was conducted in January 2019, referenced as the 1Q 2019 event. The initial statistical screening of 1Q 2019 data identified a SSI for pH in monitoring well CBL-301I. As such, LCRA initiated an ASD.

The ASD task began with evaluation of the field conditions observed during groundwater sampling conducted on January 17, 2019 for CBL-301I. CBL-301I had been purged for sampling on the prior day, however, the well purged dry, and a sample could not be collected. On January 17, 2019, CBL-301I was accessed again for collection of a groundwater sample using a bailer, as the well appeared to have recharged sufficiently for sampling. However, it is evident that the field data showed anomalously low specific conductivity, and relatively elevated pH as compared to historic results.

Based on the anomalous field data, and analytical results, LCRA conducted a resampling of CBL-301I on May 2, 2019 for full Appendix III analyses. Field conditions (pH, specific conductivity, recharge rates) and analytical results were found to be generally consistent with historical conditions. The sample was collected using low-flow sampling technique the same day of purging.

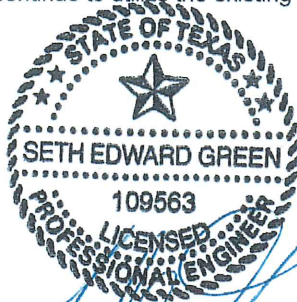
The resampling data underwent statistical evaluation, and it was confirmed that an SSI is not present. Based on the above findings, the January 17, 2019 sample for CBL-301I is considered invalid. The May 2, 2019 sampling event data for CBL-301I is accepted, and will be utilized in future statistical analyses and trend evaluations.

2.0 LIMITATIONS

The Consultant's signature on this document represents that, to the best of the Consultant's knowledge, information, and professional judgment, the aforementioned information is accurate as of the signature date. The Consultant's opinions and decisions are made on the basis of the Consultant's experience, qualifications, and professional judgment, and are not to be construed as warranties or guarantees. In addition, opinions relating to environmental, geologic, and geotechnical conditions (or other estimates) are based on available data, and actual conditions may vary from those encountered at the times and locations where data are obtained, despite the use of due care.

3.0 CERTIFICATION

I, **Seth Green**, being a Registered P.E. in the State of Texas, do hereby certify to the best of my knowledge, information, and belief, that the information used in the ASD is accurate, and that the SSI identified in the April 11, 2019 screening level analysis was not a result of a release from the monitored unit, but instead was a result of analysis of a January 17, 2019 sample deemed not representative of true groundwater conditions at CBL-301I. As such, per 40 C.F.R. § 257.94(e)(2), the Detection Monitoring Program shall continue, and shall continue to utilize the existing prediction limit intrawell analysis for identification of an SSI.



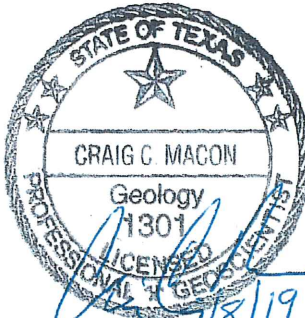
SIGNATURE

[Handwritten signature of Seth Green]
7/8/19

DATE

7/8/19

I, **Craig C. Macon**, being a Professional Geoscientist in the State of Texas, do hereby certify to the best of my knowledge, information, and belief, that information used in the ASD is accurate, and that the SSI identified in the April 11, 2019 screening level analysis was not a result of a release from the monitored unit, but instead was result of analysis of a January 17, 2019 sample deemed not representative of true groundwater conditions at CBL-301I. As such, per 40 C.F.R. § 257.94(e)(2), the Detection Monitoring Program shall continue, utilizing the prediction limit intrawell analysis for identification of an SSI.



SIGNATURE

[Handwritten signature of Craig C. Macon]

DATE

7/8/19

APPENDIX D

CCR Groundwater Detection Monitoring Evaluation of
Third Quarter 2019 Data Collected from the CBL, Wood
Environmental and Infrastructure Solutions, Inc,

December 13, 2019



Technical Memorandum

To: Charlie Macon, PG **File No:** 6706180078
From: Tim Glover, Senior Geochemist/Statistician **cc:** File
Date: December 13, 2019

Subject: **CCR GROUNDWATER DETECTION MONITORING
EVALUATION OF THIRD QUARTER 2019 DATA COLLECTED FROM THE CBL
Fayette Power Project – La Grange, Texas**

1.0 INTRODUCTION

This Technical Memorandum (Tech Memo) documents an evaluation of detection monitoring data collected in the third quarter of 2019 (3Q 2019) and subsequent resampling of one well from the Combustion Byproducts Landfill (CBL) located at the Lower Colorado River Authority's (LCRA) Fayette Power Project (FPP) facility. The evaluation consists of comparing CBL compliance (i.e., downgradient) sample data to Appendix III baseline threshold values (BTVs) using the intrawell prediction limit statistical method declared in the *Statistical Analysis Updates of Detection Monitoring Appendix III Constituent Data* (2018 Tech Memo) (AMECFW, 2018b). Therefore, CBL 340I is sampled as required by 40 CFR 257.94 but is not included in the intrawell statistical comparison. The 3Q 2019 Tech Memo is in support of the initial detection monitoring assessment results documented for the CBL (AMECFW, 2018b). This Tech Memo was prepared pursuant to 40 CFR § 257.93. Statistical comparisons and check for statistically significant increases were completed within 90 days of receipt of laboratory data.

2.0 EVALUATION

The 3Q 2019 sampling event constitutes the 12th sampling round for the detection monitoring program for the CBL. Wells were initially sampled July 29-31, 2019. Well CBL-306I was resampled on August 23, 2019 due to anomalous and uncharacteristic values of analytes, including fluoride. LCRA received the final analytical data reports dated August 13, 2019, and the CBL-306I resampling results on September 19, 2019. Table 1 presents the 3Q 2019 sample results for Appendix III constituents. Screening level statistical analyses were completed on November 13, 2019.

Table 1 presents the sample concentrations of Appendix III constituents collected from CBL compliance monitoring wells CBL-301I, CBL-302I, CBL-306I and CBL-308I on July 29-31, 2019, and monitoring well CBL-306I on August 23, 2019. Applicable BTVs are presented in Table 1 for this third quarter 2019 statistical comparison.

2.1 Updates to Temporal Trends and Background Threshold Values

The BTVs presented in Table 1 reflect those previously declared in the 2018 Tech Memo for the CBL with the following exceptions: calcium for monitoring well CBL-306I; chloride for monitoring well CBL-306I; and sulfate for monitoring wells CBL-302I and CBL-306I. In these specific cases, the prediction limits are time-dependent and are calculated around a persistent and statistically significant ($p < 0.05$) temporal trend;



thereby, requiring the inclusion of the **10th** sampling event (**3Q 2018**) to generate a BTV representative of the temporally variable intrinsic groundwater conditions. This update is conditional upon the 3Q 2018 sampling event not exhibiting a statistically significant increase (SSI) over its respective BTV (Wood, 2018). For reference, the results of the 3Q 2018 detection monitoring statistical evaluation are documented in the *CCR Groundwater Detection Monitoring Evaluation of Third Quarter 2018 Data Collected from the CBL* Technical Memorandum (3Q 2018 Tech Memo) (Wood, 2018). A discussion of updates to temporal trend significance and BTVs (by constituent) follows.

To provide context regarding the consistency of temporal trends over time, the initial detection monitoring trends (AMECFW, 2018a) and 1Q 2018 temporal trends are referenced below.

Temporal Trends. The premise of intrawell comparisons is to evaluate if constituent concentrations at a geographic location downgradient of the CBL are, in part, changing over time relative to a baseline concentration calculated for that specific geographic location. On this basis, intrawell statistical comparisons should consider the presence of statistically significant ($p < 0.05$) temporal trends to interpret if there is a release from the CBL, particularly if the temporal trend is: 1) increasing, 2) incongruent with the conceptual site model as it relates to alternative source demonstration(s) and/or 3) inconsistent with past temporal trend analyses. Using nonparametric Mann-Kendal trend testing, (3Q 2019) found the presence of statistically significant ($p < 0.05$) temporal trends in the following monitoring wells (constituent/trend direction):

- CBL-302I
 - Chloride/decreasing
 - Sulfate/increasing
- CBL-306I
 - Calcium/increasing
 - Chloride/increasing
 - Sulfate/increasing
 - Fluoride/increasing
 - TDS/increasing.
- CBL-308I
 - TDS/decreasing
- CBL-341I
 - Calcium/decreasing
 - Fluoride/decreasing
 - pH/increasing

Recommendations follow to help manage changes in temporal trend significance over time. Reference to the conceptual site model and professional judgement/interpretation are necessary to confirm if the temporal trends in the downgradient monitoring wells indicate there is a release from the CBL.

Calcium. Monitoring well CBL-306I continues to exhibit a statistically significant ($p < 0.05$) increasing temporal trend for calcium. The temporal trend significance and direction maintain consistency for the initial 8 detection monitoring sampling events and subsequent inclusion of events. The upper prediction limit in Table 1 for calcium in monitoring well CBL-306I reflects the trend for the 10th sampling event (Table

1). The upper prediction limit calculation honors a 1 of 2 resampling strategy and Equation 10-13 in the ProUCL Technical Guide (U.S. EPA, 2013).

Chloride. Monitoring well CBL-306I continues to exhibit a statistically significant ($p < 0.05$) increasing temporal trend for chloride. The temporal trend significance and direction maintain consistency for the initial 8 detection monitoring sampling events and subsequent inclusion of events. The upper prediction limit in Table 1 for chloride in monitoring well CBL-306I reflects the temporal trend for the 10th sampling event (Table 1). The upper prediction limit calculation honors a 1 of 2 resampling strategy and Equation 10-13 in the ProUCL Technical Guide (U.S. EPA, 2013).

Sulfate. Monitoring wells CBL-302I and CBL-306I continue to exhibit statistically significant increasing temporal trends for sulfate. The temporal trend significance and direction maintain consistency for the initial 8 detection monitoring sampling events and subsequent inclusion of events. The upper prediction limit in Table 1 for sulfate in monitoring wells CBL-302I and CBL-306I reflect the temporal trend for the 10th sampling event. The upper prediction limit calculation honors a 1 of 2 resampling strategy and Equation 10-13 in the ProUCL Technical Guide (U.S. EPA, 2013).

Fluoride and TDS. Monitoring well CBL-306I exhibits a statistically significant ($p < 0.05$) increasing temporal trend for fluoride and TDS. Additional sampling is needed to confirm these temporal trends.

2.2 Exceedance Assessment

As indicated in Table 1, there is insufficient evidence at this time to declare an initial exceedance for calcium, chloride, fluoride, pH, or total dissolved solids because the 3Q 2019 sample concentrations are less than their respective BTVs in either the initial sampling or a subsequent resampling.

There is a single potential initial exceedance for fluoride in monitoring well CBL-306I. Because of the potential exceedance and additional uncharacteristic values of the other analytes in that sample, a resampling event was completed approximately a month later (August 23, 2019). Review of these results suggest the initial sample result is anomalous across many analytes, and should not be included in future statistical analysis. On this basis, and the resampled fluoride concentration being below the BTV, there is insufficient evidence to declare an initial exceedance for fluoride at monitoring well CBL-306I for the 3Q 2019 sampling event.

3.0 RECOMMENDATIONS

There is no evidence of initial exceedances in any well or analyte at this time.

For the majority of monitoring well/constituent pairs, the initial detection monitoring sample events (AMECFW, 2018b) represent a non-trending (i.e. stationary) BTV and these BTVs remain constant for each statistical comparison test. A sample size equal to eight is relatively small and likely underrepresents long-term temporal variability in constituent concentrations beneath the CBL. Wood recommends updating the intrawell BTVs in Table 1 for the 3Q 2020 sampling event, which will incorporate sampling events between 1Q 2018 and 1Q 2020 into the intrawell BTV calculations. This recommendation is conditional upon the absence of initial exceedances in constituent concentrations above their respective BTVs. Updating BTVs to reflect larger sample sizes over time will improve the overall power of future statistical tests.

For a few monitoring well/constituent pairs the temporal trend is inconsistent over time. In general, this is expected since the trends are characterized by relatively few samples. Trend definition and significance will improve as sample datasets build over time. Wood recommends testing the significance of temporal trends after each sampling event (e.g. semiannually).

Wood maintains the recommendation put forth in the 2018 Tech Memo declaring the reiterative calculation of the prediction limit around a temporal trend for each statistical evaluation, assuming the temporal trend remains statistically significant over time and the dataset meet the method assumptions (AMECFW, 2018b).

4.0 REFERENCES

Amec Foster Wheeler (AMECFW), 2018a. Technical Memorandum – Client Draft. Statistical Analysis of Initial Detection Monitoring Appendix III Constituent Data. Fayette Power Project – La Grange, Texas. Technical Memorandum dated January 14, 2018.

Amec Foster Wheeler (AMECFW), 2018b. Technical Memorandum – Client Draft. Statistical Analysis Updates of Detection Monitoring Appendix III Constituent Data. Fayette Power Project – La Grange, Texas. Technical Memorandum dated April 6, 2018.

U.S. Environmental Protection Agency (U.S. EPA), 2013. ProUCL (Version 5.0.00) User Guide, Statistical Software for Environmental Applications for Data Sets with and without Nondetect Observations. EPA/600/R-07/041. Washington D.C. September.

U.S. Environmental Protection Agency (U.S. EPA), 2009. Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities Unified Guidance. EPA 530/R-09-007. Environmental Protection Agency Office of Resource Conservation and Recovery.

Table 1 Statistical Results Summary - LCRA Combustion Byproducts Landfill 3Q2019
Appendix III Statistical Comparison

301I							
	Boron	Calcium	Chloride	Fluoride	pH*	Sulfate	TDS
	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(S.U)	(mg/L)	(mg/L)
Intrawell Statistical Test	NP-UPL	P-UPLT	P-UPL	NP-UPL	NP-UPL/NP-LPL	P-UPLT	P-UPL
BTV	0.07	1135	2676	0.3	6.33/5.95	410	7905
Compliance Sample	<0.05	783	2240	0.051	6.19	332	6040

302I							
	Boron	Calcium	Chloride	Fluoride	pH*	Sulfate	TDS
	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(S.U)	(mg/L)	(mg/L)
Intrawell Statistical Test	NP-UPL	P-UPLT	P-UPL	NP-UPL	NP-UPL/NP-LPL	P-UPLT	P-UPL
BTV	0.3	1154	2328	0.3	8.21/3.57	1565	7940
Compliance Sample	0.05	914	1540	0.0605	6.15	1260	4190

306I							
	Boron	Calcium	Chloride	Fluoride	pH*	Sulfate	TDS
	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(S.U)	(mg/L)	(mg/L)
Intrawell Statistical Test	NP-UPL	P-UPLT	P-UPL	NP-UPL	NP-UPL/NP-LPL	P-UPLT	P-UPL
BTV	0.2	458	780	4	7.29/4.41	1077	2064
Compliance Sample	0.0824	106	538	9.26	6.92	816	676
Resample	<0.05	226	318	2.66	6.83	387	1710

308I							
	Boron	Calcium	Chloride	Fluoride	pH*	Sulfate	TDS
	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(S.U)	(mg/L)	(mg/L)
Intrawell Statistical Test	NP-UPL	P-UPLT	P-UPL	NP-UPL	NP-UPL/NP-LPL	P-UPLT	P-UPL
BTV	0.7	995	3079	3	7.15/5.26	1702	12186
Compliance Sample	<0.05	840	2290	1.62	6.25	1420	5820

341I							
	Boron	Calcium	Chloride	Fluoride	pH*	Sulfate	TDS
	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(S.U)	(mg/L)	(mg/L)
Intrawell Statistical Test	NP- UPL	P-UPLT	P-UPL	NP-UPL	NP-UPL/NP- LPL	P- UPLT	P-UPL
BTV	0.09	981	2661	0.53	6.69/4.93	466	6295
Compliance Sample	<0.05	714	1650	0.1	6.23	329	5370

*pH represents an upper and lower limit (upper limit method/lower limit method)

Green highlights - sample below or within limits

Yellow highlights - sample potentially exceeds limits

NP-LPL: Non-Parametric Lower Prediction Limit

NP-UPL: Non-Parametric Upper Prediction Limit

P-UPL: Parametric Upper Prediction Limit

P-LPL: Parametric Lower Prediction Limit

P-UPLT: Parametric Upper Prediction Limit with a Trend

APPENDIX E

Analytical Data for Calendar Year 2019



LCRA Environmental Laboratory Services
3505 Montopolis Drive
Austin, TX 78744
Phone: (512)730-6022
Fax: (512)730-6021

February 1, 2019

BECKIE LOEVE
FAYETTE POWER PLANT
6549 POWER PLANT RD
MAIL STOP FPP
La Grange, TX 78945

RE: Final Analytical Report
ELS Workorder Q1902854

Attn: BECKIE LOEVE

Enclosed are the analytical results for sample(s) received by LCRA Environmental Laboratory Services. Results reported herein conform to the most current NELAP standards, where applicable, unless otherwise narrated in the body of the report. This final report provides results related only to the sample(s) as received for the above referenced work order.

Thank you for selecting ELS for your analytical needs. If you have any questions regarding this report, please contact us at (512) 356-6022. We look forward to assisting you again.

Authorized for release by:

Jason Woods
Project Manager
jason.woods@lcra.org



Enclosures

Report ID: 364857 - 6920128

Page 1 of 12

Nancy Overesch

From: Jason Woods
Sent: Monday, April 22, 2019 8:16 AM
To: Nancy Overesch; Beckie Loeve
Cc: Ricky Nguyen; Madelyn Flannagan
Subject: FPP - Groundwater - CCR Wells - Revised Analytical Report and EDD
Attachments: Q1902854_FPP_CCR_Groundwater_Revised EDD.xlsx; Q1902854_FPP_CCR_Groundwater_Revised Report.pdf

Nancy,

I have attached the revised report generated on 4/22/2019 to reflect the correction of an incorrect field pH result on sample Q1902854001 for the report originally generated on 2/01/2019. There was a data entry error documenting the pH result on the field information form.

Please let me know if you have any questions.

Thank You,
Jason Woods
Senior Environmental Scientist
LCRA-Environmental Laboratory Services (EL-101)
3505 Montopolis Dr.
Austin TX 78744
512-730-5339
Jason.Woods@lcra.org
<http://els.lcra.org>

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LCRA Environmental Laboratory Services
3505 Montopolis Drive
Austin, TX 78744
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April 22, 2019

BECKIE LOEVE
FAYETTE POWER PLANT
6549 POWER PLANT RD
MAIL STOP FPP
La Grange, TX 78945

RE: Final Analytical Report
ELS Workorder Q1902854

Attn: BECKIE LOEVE

Enclosed are the analytical results for sample(s) received by LCRA Environmental Laboratory Services. Results reported herein conform to the most current NELAP standards, where applicable, unless otherwise narrated in the body of the report. This final report provides results related only to the sample(s) as received for the above referenced work order.

Thank you for selecting ELS for your analytical needs. If you have any questions regarding this report, please contact us at (512) 356-6022. We look forward to assisting you again.

Authorized for release by:

Jason Woods
Project Manager
jason.woods@lcra.org



Enclosures

Report ID: 364857 - 6920128

Page 1 of 13



LCRA Environmental Laboratory Services
3505 Montopolis Drive
Austin, TX 78744
Phone: (512)730-6022
Fax: (512)730-6021

SAMPLE SUMMARY

Workorder: Q1902854

Lab ID	Sample ID	Matrix	Date Collected	Date Received
Q1902854001	CBL - 301I	Aqueous	1/17/2019 14:00	1/18/2019 11:40
Q1902854002	CBL - 306I	Aqueous	1/16/2019 13:47	1/18/2019 11:40
Q1902854003	CBL - 308I	Aqueous	1/16/2019 14:50	1/18/2019 11:40

Report Definitions

LOD	Limit of Detection
LOQ	Limit of Quantitation
ML	Maximum Limit - Client Specified
DF	Dilution Factor
Qual	Qualifiers

Report ID: 364857 - 6920128

Page 2 of 13

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and with written approval from LCRA Environmental Laboratory Services.



LCRA Environmental Laboratory Services
3505 Montopolis Drive
Austin, TX 78744
Phone: (512)730-6022
Fax: (512)730-6021

PROJECT SUMMARY

Workorder: Q1902854

Workorder Comments

Revised report generated on 4/22/2019 to reflect the correction of an incorrect field pH result on sample Q1902854001 for the report originally generated on 2/01/2019. There was a data entry error documenting the pH result on the field information form.



LCRA Environmental Laboratory Services
 3505 Montopolis Drive
 Austin, TX 78744
 Phone: (512)730-6022
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ANALYTICAL RESULTS

Workorder: Q1902854

Lab ID: Q1902854001	Date Received: 1/18/2019 11:40	Matrix: Aqueous
Sample ID: CBL - 3011	Date Collected: 1/17/2019 14:00	Sample Type: SAMPLE
Project ID: FPP GWMP CCR		

Parameters	Results Units	LOQ	LOD	ML	DF	Prepared	By	Analyzed	By	Qual
INORGANICS										
Analysis Desc: E300.0, Anions		Preparation Method: E300.0, Anions								
		Analytical Method: E300.0, Anions								
Chloride	619 mg/L	10.0	4.00	10		01/23/19 15:12	ML	01/23/19 15:12	ML	
Fluoride	0.219 mg/L	0.0100	0.00400	1		01/22/19 23:52	FO	01/22/19 23:52	FO	
Sulfate	104 mg/L	10.0	4.00	10		01/23/19 15:12	ML	01/23/19 15:12	ML	
TOTAL DISSOLVED SOLIDS										
Analysis Desc: SM2540C, TDS		Preparation Method: SM2540C, TDS								
		Analytical Method: SM2540C, TDS								
Total Dissolved Solids(TDS)	1460 mg/L	125	125	50		01/23/19 12:34	ADG	01/23/19 12:34	ADG	
INORGANICS										
Analysis Desc: SW6010B ICP-AES		Preparation Method: SW3010A, Metals Prep								
		Analytical Method: SW6010B ICP-AES								
Boron Total	<0.0500 mg/L	0.0500	0.0200	1		01/25/19 10:34	ME	01/28/19 20:58	FM	
Calcium Total	156 mg/L	0.200	0.0700	1		01/25/19 10:34	ME	01/28/19 20:58	FM	
Field Parameters										
Analysis Desc: Field pH SM4500H+B TCEQ VOL 1		Preparation Method: Field pH SM4500H+B TCEQ VOL 1								
		Analytical Method: Field pH SM4500H+B TCEQ VOL 1								
pH	7.16 pH			1		01/17/19 14:00	ERS	01/17/19 14:00	ERS	N



LCRA Environmental Laboratory Services
 3505 Montopolis Drive
 Austin, TX 78744
 Phone: (512)730-6022
 Fax: (512)730-6021

ANALYTICAL RESULTS

Workorder: Q1902854

Lab ID: Q1902854002	Date Received: 1/18/2019 11:40	Matrix: Aqueous
Sample ID: CBL - 306I	Date Collected: 1/16/2019 13:47	Sample Type: SAMPLE
Project ID: FPP GWMP CCR		

Parameters	Results Units	LOQ	LOD	ML	DF	Prepared	By	Analyzed	By	Qual
INORGANICS										
Analysis Desc: E300.0, Anions		Preparation Method: E300.0, Anions								
		Analytical Method: E300.0, Anions								
Chloride	215 mg/L	10.0	4.00	10		01/23/19 00:10	FO	01/23/19 00:10	FO	
Fluoride	1.98 mg/L	0.100	0.0400	10		01/23/19 00:10	FO	01/23/19 00:10	FO	
Sulfate	292 mg/L	10.0	4.00	10		01/23/19 00:10	FO	01/23/19 00:10	FO	
TOTAL DISSOLVED SOLIDS										
Analysis Desc: SM2540C, TDS		Preparation Method: SM2540C, TDS								
		Analytical Method: SM2540C, TDS								
Total Dissolved Solids(TDS)	1220 mg/L	25.0	25.0	10		01/22/19 14:30	ADG	01/22/19 14:30	ADG	
INORGANICS										
Analysis Desc: SW6010B ICP-AES		Preparation Method: SW3010A, Metals Prep								
		Analytical Method: SW6010B ICP-AES								
Boron Total	<0.0500 mg/L	0.0500	0.0200	1		01/25/19 10:34	ME	01/28/19 21:04	FM	
Calcium Total	180 mg/L	0.200	0.0700	1		01/25/19 10:34	ME	01/28/19 21:04	FM	
Field Parameters										
Analysis Desc: Field pH SM4500H+B TCEQ VOL 1		Preparation Method: Field pH SM4500H+B TCEQ VOL 1								
		Analytical Method: Field pH SM4500H+B TCEQ VOL 1								
pH	6.78 pH			1		01/16/19 13:47	ERS	01/16/19 13:47	ERS	N



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ANALYTICAL RESULTS

Workorder: Q1902854

Lab ID: Q1902854003	Date Received: 1/18/2019 11:40	Matrix: Aqueous
Sample ID: CBL - 308I	Date Collected: 1/16/2019 14:50	Sample Type: SAMPLE
Project ID: FPP GWMP CCR		

Parameters	Results Units	LOQ	LOD	ML	DF	Prepared	By	Analyzed	By	Qual
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INORGANICS

Analysis Desc: E300.0, Anions Preparation Method: E300.0, Anions

Analytical Method: E300.0, Anions

Chloride	2440 mg/L	50.0	20.0	50	01/23/19 00:28	FO	01/23/19 00:28	FO	
Fluoride	1.68 mg/L	0.500	0.200	50	01/23/19 00:28	FO	01/23/19 00:28	FO	
Sulfate	1520 mg/L	50.0	20.0	50	01/23/19 00:28	FO	01/23/19 00:28	FO	

TOTAL DISSOLVED SOLIDS

Analysis Desc: SM2540C, TDS Preparation Method: SM2540C, TDS

Analytical Method: SM2540C, TDS

Total Dissolved Solids(TDS)	4760 mg/L	500	500	200	01/22/19 14:30	ADG	01/22/19 14:30	ADG	
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INORGANICS

Analysis Desc: SW6010B ICP-AES Preparation Method: SW3010A, Metals Prep

Analytical Method: SW6010B ICP-AES

Boron Total	<0.0500 mg/L	0.0500	0.0200	1	01/25/19 10:34	ME	01/28/19 21:09	FM	
Calcium Total	760 mg/L	1.00	0.350	5	01/25/19 10:34	ME	01/29/19 16:38	FM	

Field Parameters

Analysis Desc: Field pH SM4500H+B TCEQ VOL 1 Preparation Method: Field pH SM4500H+B TCEQ VOL 1

Analytical Method: Field pH SM4500H+B TCEQ VOL 1

pH	6.39 pH			1	01/16/19 14:50	ERS	01/16/19 14:50	ERS	N
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ANALYTICAL RESULTS QUALIFIERS

Workorder: Q1902854

PARAMETER QUALIFIERS

Lab ID: Q1902854001

N Not Accredited

Lab ID: Q1902854002

N Not Accredited

Lab ID: Q1902854003

N Not Accredited



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QUALITY CONTROL DATA

Workorder: Q1902854

QC Batch: WET/19037 **Analysis Method:** SM2540C, TDS
QC Batch Method: SM2540C, TDS
Associated Lab Samples: Q1902854002, Q1902854003

METHOD BLANK: 1186873

Parameter	Units	Blank Result	Reporting Limit	Qual
Total Dissolved Solids(TDS)	mg/L	<25.0	25.0	

LABORATORY CONTROL SAMPLE: 1186874

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Qual
Total Dissolved Solids(TDS)	mg/L	400	386	96.5	80 - 120	

SAMPLE DUPLICATE: 1186875 ORIGINAL: Q1902409001

Parameter	Units	Original Result	DUP Result	% Rec	% Rec Limit	RPD	Max Qual
Total Dissolved Solids(TDS)	mg/L	305	325			6.35	20

MATRIX SPIKE SAMPLE: 1186876 ORIGINAL: Q1902409001

Parameter	Units	Original Result	Spike Conc.	MS Result	MS % Rec	% Rec Limit	Qual
Total Dissolved Solids(TDS)	mg/L	305	400	686	95.2	70 - 130	

Qualifiers

- S - Spike Recovery Outside Recovery Limits
- R - RPD Outside Recovery Limits
- B - Analyte Detected in Method Blank



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QUALITY CONTROL DATA

Workorder: Q1902854

QC Batch: WET/19041 **Analysis Method:** E300.0, Anions

QC Batch Method: E300.0, Anions

Associated Lab Samples: Q1902854001, Q1902854002, Q1902854003

METHOD BLANK: 1187023

Parameter	Units	Blank Result	Reporting Limit	Qual
Chloride	mg/L	<1.00	1.00	
Fluoride	mg/L	<0.0100	0.0100	
Sulfate	mg/L	<1.00	1.00	

LABORATORY CONTROL SAMPLE: 1187024

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Qual
Chloride	mg/L	30	30.1	100	90 - 110	
Fluoride	mg/L	1	.97	96.6	90 - 110	
Sulfate	mg/L	30	29.8	99.5	90 - 110	

MATRIX SPIKE: 1187028 DUPLICATE: 1187029 ORIGINAL: Q1902854001

Parameter	Units	Original Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit	RPD	Max RPD	Qual
Fluoride	mg/L	.22	1	1.09	1.11	87.1	88.7	80 - 120	1.82	20	

Qualifiers

S - Spike Recovery Outside Recovery Limits

R - RPD Outside Recovery Limits

B - Analyte Detected in Method Blank



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QUALITY CONTROL DATA

Workorder: Q1902854

QC Batch: WET/19047 **Analysis Method:** SM2540C, TDS
QC Batch Method: SM2540C, TDS
Associated Lab Samples: Q1902854001

METHOD BLANK: 1187380

Parameter	Units	Blank Result	Reporting Limit	Qual
Total Dissolved Solids(TDS)	mg/L	<25.0	25.0	

LABORATORY CONTROL SAMPLE: 1187381

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Qual
Total Dissolved Solids(TDS)	mg/L	400	394	98.5	80 - 120	

SAMPLE DUPLICATE: 1187382 ORIGINAL: Q1902894001

Parameter	Units	Original Result	DUP Result	% Rec	% Rec Limit	RPD	Max Qual
Total Dissolved Solids(TDS)	mg/L	1060	1050			.948	20

MATRIX SPIKE SAMPLE: 1187383 ORIGINAL: Q1902894001

Parameter	Units	Original Result	Spike Conc.	MS Result	MS % Rec	% Rec Limit	Qual
Total Dissolved Solids(TDS)	mg/L	1060	400	1550	123	70 - 130	

Qualifiers

S - Spike Recovery Outside Recovery Limits
R - RPD Outside Recovery Limits
B - Analyte Detected in Method Blank



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QUALITY CONTROL DATA

Workorder: Q1902854

QC Batch: WET/19050 **Analysis Method:** E300.0, Anions
QC Batch Method: E300.0, Anions
Associated Lab Samples: Q1902854001

METHOD BLANK: 1187885

Parameter	Units	Blank Result	Reporting Limit	Qual
Chloride	mg/L	<1.00	1.00	
Sulfate	mg/L	<1.00	1.00	

LABORATORY CONTROL SAMPLE: 1187888

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Qual
Chloride	mg/L	30	30.1	100	90 - 110	
Sulfate	mg/L	30	29.8	99.4	90 - 110	

MATRIX SPIKE: 1187890 DUPLICATE: 1187891 ORIGINAL: Q1903072003

Parameter	Units	Original Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit	RPD	Max RPD	Qual
Chloride	mg/L	52.5	20	70.9	71	91.8	92.3	80 - 120	.141	20	
Sulfate	mg/L	39.5	20	58.7	58.7	96.2	96.1	80 - 120	0	20	

Qualifiers

S - Spike Recovery Outside Recovery Limits
R - RPD Outside Recovery Limits
B - Analyte Detected in Method Blank

QUALITY CONTROL DATA

Workorder: Q1902854

QC Batch: MEP/8965 **Analysis Method:** SW6010B ICP-AES
QC Batch Method: SW3010A, Metals Prep
Associated Lab Samples: Q1902854001, Q1902854002, Q1902854003

LABORATORY CONTROL SAMPLE: 1189017

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limit	RPD	Max	Qual
Boron Total	mg/L	1	.93	.94	93.2	93.7	80 - 120	.535	20	
Calcium Total	mg/L	10	10.5	10.5	105	105	80 - 120	0	20	

METHOD BLANK: 1189020

Parameter	Units	Blank Result	Reporting Limit	Qual
Boron Total	mg/L	<0.0500	0.0500	
Calcium Total	mg/L	<0.200	0.200	

MATRIX SPIKE: 1189021 DUPLICATE: 1189022 ORIGINAL: Q1902854001

Parameter	Units	Original Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit	RPD	Max RPD	Qual
Boron Total	mg/L	.02	1	.96	.95	95.6	94.5	75 - 125	1.16	20	
Calcium Total	mg/L	156	10	165	162	89.4	52.3	75 - 125	1.83	20	S

Qualifiers

S - Spike Recovery Outside Recovery Limits

R - RPD Outside Recovery Limits

B - Analyte Detected in Method Blank

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Workorder: Q1902854

Lab ID	Sample ID	Prep Method	Prep Batch	Analysis Method	Analysis Batch
Q1902854002	CBL - 306I			SM2540C, TDS	WET/19037
Q1902854003	CBL - 308I			SM2540C, TDS	WET/19037
Q1902854001	CBL - 301I			E300.0, Anions	WET/19041
Q1902854002	CBL - 306I			E300.0, Anions	WET/19041
Q1902854003	CBL - 308I			E300.0, Anions	WET/19041
Q1902854001	CBL - 301I			SM2540C, TDS	WET/19047
Q1902854001	CBL - 301I			E300.0, Anions	WET/19050
Q1902854001	CBL - 301I	SW3010A, Metals Prep	MEP/8965	SW6010B ICP-AES	MET/6945
Q1902854002	CBL - 306I	SW3010A, Metals Prep	MEP/8965	SW6010B ICP-AES	MET/6945
Q1902854003	CBL - 308I	SW3010A, Metals Prep	MEP/8965	SW6010B ICP-AES	MET/6945
Q1902854003	CBL - 308I	SW3010A, Metals Prep	MEP/8965	SW6010B ICP-AES	MET/6948
Q1902854001	CBL - 301I	Field pH SM4500H+B TCEQ VOL 1	FLD/0	Field pH SM4500H+B TCEQ VOL 1	FLD/0
Q1902854002	CBL - 306I	Field pH SM4500H+B TCEQ VOL 1	FLD/0	Field pH SM4500H+B TCEQ VOL 1	FLD/0
Q1902854003	CBL - 308I	Field pH SM4500H+B TCEQ VOL 1	FLD/0	Field pH SM4500H+B TCEQ VOL 1	FLD/0



LCRA - Environmental Lab
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<https://els.lcra.org>

LCRA Environmental Laboratory Services Request for Analysis Chain-of-Custody Record

Q1902854



Project:	FPP Groundwater	Client:		Report To:	FPP Becky Loeve	Lab ID#:	
Collector:	Colt Petr.	Contact:				Client PO:	
Event#:		Phone:				Invoice To:	FPP - Becky Loeve

LAB USE ONLY	Sample ID *	Collected *		Matrix* AQ = Aqueous S = Solid T = Tissue DW =Drinking Water	Container(s) Type/Preservative/Number *										Metals		Requested Analysis *																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
		Date*	Time * HH:MM		COMPOSITE Y/N	FILTERED Y/N	1-Liter	1-HNO3	250mL																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								

Transfers	Relinquished By	Date/Time	Received By	Date/Time	Cooler Temp (°C)				Client Special Instructions:
1	Caltre	1/17/19	Walt in fridge		#	T#	Obs.	Corr.	
2			R-Z	1/18/19 1140	1	6	1.02	1.05	
3					2				

Note: Relinquishing sample(s) and signing the COC, client agrees to accept and is bound by the ELS Standard Terms and Conditions. All fields with an asterisk (*) are required to be completed.



Q1902854 364857



Sample Date: 1/14/19 1/14/19

Sample Time: 1347

Sample ID: CRL3061

1	9	0	1	1	6	1	2	5	8	V=				2	5				4	5					6
PURGE DATE (YY MM DD)						START PURGE (2400 Hr. Clock)				WATER VOL IN CASING (Gallons)						3 X WELL VOL. IN (Gallons)				ACTUAL VOLUME PURGED (Gallons)					

Purging Equipment _____ Dedicated ☒ Y/N/I _____ Sampling Equipment _____ Dedicated ☒ Y/N/I

Purging Device	<input checked="" type="checkbox"/> B	A-Submersible Pump	D-Gas Lift Pump	G-Bailer	X-	
Sampling Device	<input checked="" type="checkbox"/> B	B-Peristaltic Pump	E-Venturi Pump	H-Scoop/Shovel	X-	Purging Other (Specify)
		C-Bladder Pump	F-Dipper/Bottle	I-Piston Pump	X-	Sampling Other (Specify)
Purging Material	<input checked="" type="checkbox"/> F	A-Teflon	C-Polypropylene	E-Polyethylene	X-	
Sampling Material	<input checked="" type="checkbox"/> F	B-Stainless Steel	D-PVC		X-	Purging Other (Specify)
					X-	Sampling Other (Specify)
Tubing-Purging	<input checked="" type="checkbox"/> F	A-Teflon	D-Polypropylene	F-Silicon	X-	
Tubing-Sampling	<input checked="" type="checkbox"/> F	B-Tygon	E-Polyethylene	G-Combination	X-	Purging Other (Specify)
				teflon/Polypropylene	X-	Sampling Other (Specify)
		C-Rope	X-			

Well Elevation	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> (ft/msl)	Land Surface Elevation	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> (ft/msl)
Depth to water		Depth to water	
From top of well casing = D_w	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> (ft)	From land surface	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> (ft)
Groundwater Elevation	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> (ft/msl)	Groundwater Elevation	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> (ft/msl)
Well Depth = D	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> (ft)	Pump Placement	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> (ft)
<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> (STD)	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> uS/cm	Sample Temp.	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> (°C)
PH	Specific Conductivity		

Bottle			Analysis	Field Filt. Y/N
Type	Size	Preservative		
P	250mL	HNO ₃	Metals	
P	250mL	ICE	Anion	
P	250mL	HNO ₃		
P	500mL	ICE		

Sample Appearance: Clear Odor: none Color: clear Turbidity: 2.58
Weather Conditions: Cloudy light rain East wind 58°
Other: Purge water is clear with no odor

Well Appearance Normal: Yes Y No _____
If No, Explain _____

$V = (D - D_w) (A) (7.48 \text{ gal ft}^{-3})$ where
 V = volume of standing water in well
 D = depth to bottom of well below measuring point
 D_w = depth to water below measuring point
 A = cross sectional area
 2" dia. $A = 0.0218$ 4" dia. $A = 0.0872$

Procedure: ELS Groundwater SAPS-70
Date: 1/16/19
Sampler: CP
Employer: LCRA



Field Information Form

Sample Date: 11/17/19
Sample Time: 1400
Sample ID: CBK30117

PURGING INFORMATION

PURGE DATE (YY MM DD) 11/01/16 START PURGE (2400 Hr. Clock) 1115 V= 3 WATER VOL. IN CASING (Gallons) 9 3 X WELL VOL. IN (Gallons) 2.5 ACTUAL VOLUME PURGED (Gallons)

PURGING AND SAMPLING EQUIPMENT

Purging Equipment Dedicated Y I I N Sampling Equipment Dedicated Y I I N

Purging Device A A-Submersible Pump D-Gas Lift Pump G-Bailer
Sampling Device G B-Peristaltic Pump E-Venturi Pump H-Scoop/Shovel X-
C-Bladder Pump F-Dipper/Bottle I-Piston Pump X-
Purging Material E A-Teflon C-Polypropylene E-Polyethylene X-
Sampling Material E B-Stainless Steel D-PVC X-
Tubing-Purging E A-Teflon D-Polypropylene F-Silicon X-
Tubing-Sampling E B-Tygon E-Polyethylene G-Combination X-
C-Rope X-
(Specify)

FIELD MEASUREMENTS

Well Elevation (ft/msl) Land Surface Elevation (ft/msl)
Depth to water (ft) Depth to water (ft)
From top of well casing = D_w 36.14 From land surface (ft)
Groundwater Elevation (ft/msl) Groundwater Elevation (ft/msl)
Well Depth = D 54.1 (ft) Pump Placement 48 (ft)
PH 7.50 (STD) 7.16 Specific Conductivity 220.6 2466 22.28 Sample Temp. 20.57 (°C)

Bottle			Analysis	Field Filt. Y/N
Type	Size	Preservative		
P	250mL	H ₂ O ₂	Metals	N
P	250mL	ICE	Anion	N

Sample Appearance: Clear Odor: none Color: Clear Turbidity: 9.21
Weather Conditions: Cloudy East wind 0-5 mph 58°
Other: Purge water is cloudy clearing after 2 gallons. Well when went dry after 2 1/2 gallons pumped slow

WELL VOLUME CALCULATION

V=(D-D_w) (A) (7.48 gal/ft³) where
V= volume of standing water in well
D= depth to bottom of well below measuring point
D_w=depth to water below measuring point
A= cross-sectional area
2" dia. A= 0.0218 4" dia. A= 0.0872

Well Appearance Normal: Yes ✓ No
If No, Explain

Procedure: ELS Ground water sop 5-7D

Date: 11/16/19
Sampler: CP
Employer: LCRA
CP
1/16/19



Field Information Form

Sample Date: 1/16/19
 Sample Time: 14:35
 Sample ID: CBL3087

PURGING INFORMATION

PURGE DATE (YY MM DD) 1/9/19 START PURGE (2400 Hr. Clock) 1410 V= 1.9 WATER VOL IN CASING (Gallons) 5.7 3 X WELL VOL. IN (Gallons) 6 ACTUAL VOLUME PURGED (Gallons)

PURGING AND SAMPLING EQUIPMENT

Purging Equipment Dedicated IN Sampling Equipment Dedicated IN

Purging Device B A-Submersible Pump D-Gas Lift Pump G-Bailer X-
 Sampling Device B B-Peristaltic Pump E-Venturi Pump H-Scoop/Shovel X-
 C-Bladder Pump F-Dipper/Bottle I-Piston Pump X-
 Purging Material F A-Teflon C-Polypropylene E-Polyethylene X-
 Sampling Material F B-Stainless Steel D-PVC X-
 Tubing-Purging F A-Teflon D-Polypropylene F-Silicon X-
 Tubing-Sampling F B-Tygon E-Polyethylene G-Combination X-
 C-Rope X-
 (Specify)

FIELD MEASUREMENTS

Well Elevation (ft/msl) Land Surface Elevation (ft/msl)
 Depth to water From top of well casing = D_w 23.6 (ft) Depth to water From land surface (ft)
 Groundwater Elevation (ft/msl) Groundwater Elevation (ft/msl)
 Well Depth = D 35.25 (ft) Pump Placement 28 (ft)
6.39 (STD) 8984 uS/cm Sample Temp. 21.92 (°C)
 PH Specific Conductivity

Bottle			Analysis		Field Filt. Y/N
Type	Size	Preservative			
P	250mL	HNO ₃	Metals		N
P	250mL	HNO ₃	Field Blank #2	Metals	N
P	250mL	HNO ₃	CBL-6082 Duplicate	Metals	N
P	250mL	ICE	Anion		N

Sample Appearance: Clear Odor: none Color: Clear Turbidity: 1.38
 Weather Conditions: Cloudy light rain East wind 0-5mph 58°
 Other: Large water is clear with no odor

WELL VOLUME CALCULATION

Well Appearance Normal: Yes X No
 If No, Explain

V=(D-D_w) (A) (7.48 gal/ft³) where
 V= volume of standing water in well
 D= depth to bottom of well below measuring point
 D_w=depth to water below measuring point
 A= cross-sectional area

2" dia. A= 0.0218 4" dia. A= 0.0872

Procedure: ELS Groundwater SOP 5-7A

Date: 1/16/19
 Sampler: CP
 Employer: LCRA



LCRA Environmental Laboratory Services
3505 Montopolis Drive
Austin, TX 78744
Phone: (512)730-6022
Fax: (512)730-6021

February 1, 2019

BECKIE LOEVE
FAYETTE POWER PLANT
6549 POWER PLANT RD
MAIL STOP FPP
La Grange, TX 78945

RE: Final Analytical Report
ELS Workorder Q1903004

Attn: BECKIE LOEVE

Enclosed are the analytical results for sample(s) received by LCRA Environmental Laboratory Services. Results reported herein conform to the most current NELAP standards, where applicable, unless otherwise narrated in the body of the report. This final report provides results related only to the sample(s) as received for the above referenced work order.

Thank you for selecting ELS for your analytical needs. If you have any questions regarding this report, please contact us at (512) 356-6022. We look forward to assisting you again.

Authorized for release by:

Jason Woods
Project Manager
jason.woods@lcra.org



Enclosures

Report ID: 365007 - 6920225

Page 1 of 15



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3505 Montopolis Drive
Austin, TX 78744
Phone: (512)730-6022
Fax: (512)730-6021

SAMPLE SUMMARY

Workorder: Q1903004

Lab ID	Sample ID	Matrix	Date Collected	Date Received
Q1903004001	CBL - 302I	Aqueous	1/22/2019 11:55	1/22/2019 14:00
Q1903004002	CBL - 340I	Aqueous	1/22/2019 11:07	1/22/2019 14:00
Q1903004003	CBL - 341I	Aqueous	1/22/2019 10:05	1/22/2019 14:00
Q1903004004	CBL - 641I	Aqueous	1/22/2019 10:05	1/22/2019 14:00
Q1903004005	EQB	Aqueous	1/22/2019 11:15	1/22/2019 14:00
Q1903004006	FB	Aqueous	1/22/2019 11:07	1/22/2019 14:00

Report Definitions

LOD	Limit of Detection
LOQ	Limit of Quantitation
ML	Maximum Limit - Client Specified
DF	Dilution Factor
Qual	Qualifiers

Report ID: 365007 - 6920225

Page 2 of 15

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ANALYTICAL RESULTS

Workorder: Q1903004

Lab ID: Q1903004001	Date Received: 1/22/2019 14:00	Matrix: Aqueous
Sample ID: CBL - 302I	Date Collected: 1/22/2019 11:55	Sample Type: SAMPLE
Project ID: FPP GWMP CCR		

Parameters	Results Units	LOQ	LOD	ML	DF	Prepared	By	Analyzed	By	Qual
INORGANICS										
Analysis Desc: E300.0, Anions		Preparation Method: E300.0, Anions								
		Analytical Method: E300.0, Anions								
Chloride	1690 mg/L	50.0	20.0	50		01/24/19 15:27	FO	01/24/19 15:27	FO	
Fluoride	0.0402 mg/L	0.0100	0.00400	1		01/29/19 14:05	ML	01/29/19 14:05	ML	
Sulfate	1250 mg/L	50.0	20.0	50		01/24/19 15:27	FO	01/24/19 15:27	FO	
TOTAL DISSOLVED SOLIDS										
Analysis Desc: SM2540C, TDS		Preparation Method: SM2540C, TDS								
		Analytical Method: SM2540C, TDS								
Total Dissolved Solids(TDS)	5060 mg/L	250	250	100		01/25/19 13:26	ADG	01/25/19 13:26	ADG	
INORGANICS										
Analysis Desc: SW6010B ICP-AES		Preparation Method: SW3010A, Metals Prep								
		Analytical Method: SW6010B ICP-AES								
Boron Total	<0.0500 mg/L	0.0500	0.0200	1		01/25/19 10:34	ME	01/28/19 21:15	FM	
Calcium Total	855 mg/L	1.00	0.350	5		01/25/19 10:34	ME	01/29/19 16:43	FM	
Field Parameters										
Analysis Desc: Field pH SM4500H+B TCEQ VOL 1		Preparation Method: Field pH SM4500H+B TCEQ VOL 1								
		Analytical Method: Field pH SM4500H+B TCEQ VOL 1								
pH	6.44 pH			1		01/22/19 11:55	ERS	01/22/19 11:55	ERS	N



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ANALYTICAL RESULTS

Workorder: Q1903004

Lab ID: Q1903004002	Date Received: 1/22/2019 14:00	Matrix: Aqueous
Sample ID: CBL - 340I	Date Collected: 1/22/2019 11:07	Sample Type: SAMPLE
Project ID: FPP GWMP CCR		

Parameters	Results Units	LOQ	LOD	ML	DF	Prepared	By	Analyzed	By	Qual
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INORGANICS

Analysis Desc: E300.0, Anions Preparation Method: E300.0, Anions

Analytical Method: E300.0, Anions

Chloride	2250 mg/L	50.0	20.0	50		01/24/19 14:17	FO	01/24/19 14:17	FO	
Fluoride	0.830 mg/L	0.500	0.200	50		01/24/19 14:17	FO	01/24/19 14:17	FO	
Sulfate	639 mg/L	50.0	20.0	50		01/24/19 14:17	FO	01/24/19 14:17	FO	

TOTAL DISSOLVED SOLIDS

Analysis Desc: SM2540C, TDS Preparation Method: SM2540C, TDS

Analytical Method: SM2540C, TDS

Total Dissolved Solids(TDS)	4720 mg/L	250	250	100		01/25/19 13:26	ADG	01/25/19 13:26	ADG	
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INORGANICS

Analysis Desc: SW6010B ICP-AES Preparation Method: SW3010A, Metals Prep

Analytical Method: SW6010B ICP-AES

Boron Total	<0.0500 mg/L	0.0500	0.0200	1		01/25/19 10:34	ME	01/28/19 21:20	FM	
Calcium Total	518 mg/L	0.400	0.140	2		01/25/19 10:34	ME	01/29/19 16:49	FM	

Field Parameters

Analysis Desc: Field pH SM4500H+B TCEQ VOL 1 Preparation Method: Field pH SM4500H+B TCEQ VOL 1

Analytical Method: Field pH SM4500H+B TCEQ VOL 1

pH	6.59 pH			1		01/22/19 11:07	ERS	01/22/19 11:07	ERS	N
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ANALYTICAL RESULTS

Workorder: Q1903004

Lab ID: Q1903004003	Date Received: 1/22/2019 14:00	Matrix: Aqueous
Sample ID: CBL - 341I	Date Collected: 1/22/2019 10:05	Sample Type: SAMPLE
Project ID: FPP GWMP CCR		

Parameters	Results Units	LOQ	LOD	ML	DF	Prepared	By	Analyzed	By	Qual
INORGANICS										
Analysis Desc: E300.0, Anions		Preparation Method: E300.0, Anions								
		Analytical Method: E300.0, Anions								
Chloride	1790 mg/L	25.0	10.0	25		01/24/19 14:35	FO	01/24/19 14:35	FO	
Fluoride	0.0546 mg/L	0.0100	0.00400	1		01/29/19 14:21	ML	01/29/19 14:21	ML	
Sulfate	358 mg/L	25.0	10.0	25		01/24/19 14:35	FO	01/24/19 14:35	FO	
TOTAL DISSOLVED SOLIDS										
Analysis Desc: SM2540C, TDS		Preparation Method: SM2540C, TDS								
		Analytical Method: SM2540C, TDS								
Total Dissolved Solids(TDS)	3870 mg/L	250	250	100		01/25/19 13:26	ADG	01/25/19 13:26	ADG	
INORGANICS										
Analysis Desc: SW6010B ICP-AES		Preparation Method: SW3010A, Metals Prep								
		Analytical Method: SW6010B ICP-AES								
Boron Total	<0.0500 mg/L	0.0500	0.0200	1		01/25/19 10:34	ME	01/28/19 21:26	FM	
Calcium Total	782 mg/L	1.00	0.350	5		01/25/19 10:34	ME	01/29/19 16:54	FM	
Field Parameters										
Analysis Desc: Field pH SM4500H+B TCEQ VOL 1		Preparation Method: Field pH SM4500H+B TCEQ VOL 1								
		Analytical Method: Field pH SM4500H+B TCEQ VOL 1								
pH	6.38 pH			1		01/22/19 10:05	ERS	01/22/19 10:05	ERS	N

ANALYTICAL RESULTS

Workorder: Q1903004

Lab ID: Q1903004004	Date Received: 1/22/2019 14:00	Matrix: Aqueous
Sample ID: CBL - 641I	Date Collected: 1/22/2019 10:05	Sample Type: SAMPLE
Project ID: FPP GWMP CCR		

Parameters	Results Units	LOQ	LOD	ML	DF	Prepared	By	Analyzed	By	Qual
INORGANICS										
Analysis Desc: E300.0, Anions		Preparation Method: E300.0, Anions								
		Analytical Method: E300.0, Anions								
Chloride	1740 mg/L	25.0	10.0	25		01/24/19 14:52	FO	01/24/19 14:52	FO	
Fluoride	0.0544 mg/L	0.0100	0.00400	1		01/29/19 14:38	ML	01/29/19 14:38	ML	
Sulfate	364 mg/L	25.0	10.0	25		01/24/19 14:52	FO	01/24/19 14:52	FO	
TOTAL DISSOLVED SOLIDS										
Analysis Desc: SM2540C, TDS		Preparation Method: SM2540C, TDS								
		Analytical Method: SM2540C, TDS								
Total Dissolved Solids(TDS)	3690 mg/L	250	250	100		01/25/19 13:26	ADG	01/25/19 13:26	ADG	
INORGANICS										
Analysis Desc: SW6010B ICP-AES		Preparation Method: SW3010A, Metals Prep								
		Analytical Method: SW6010B ICP-AES								
Boron Total	<0.0500 mg/L	0.0500	0.0200	1		01/25/19 10:34	ME	01/28/19 21:31	FM	
Calcium Total	844 mg/L	1.00	0.350	5		01/25/19 10:34	ME	01/29/19 16:59	FM	

ANALYTICAL RESULTS

Workorder: Q1903004

Lab ID: Q1903004005	Date Received: 1/22/2019 14:00	Matrix: Aqueous
Sample ID: EQB	Date Collected: 1/22/2019 11:15	Sample Type: SAMPLE
Project ID: FPP GWMP CCR		

Parameters	Results Units	LOQ	LOD	ML	DF	Prepared	By	Analyzed	By	Qual
INORGANICS										
Analysis Desc: E300.0, Anions		Preparation Method: E300.0, Anions								
		Analytical Method: E300.0, Anions								
Chloride	<1.00 mg/L	1.00	0.400		1	01/24/19 17:48	FO	01/24/19 17:48	FO	
Fluoride	<0.0100 mg/L	0.0100	0.00400		1	01/24/19 17:48	FO	01/24/19 17:48	FO	
Sulfate	<1.00 mg/L	1.00	0.400		1	01/24/19 17:48	FO	01/24/19 17:48	FO	

TOTAL DISSOLVED SOLIDS

Analysis Desc: SM2540C, TDS		Preparation Method: SM2540C, TDS								
		Analytical Method: SM2540C, TDS								
Total Dissolved Solids(TDS)	110 mg/L	25.0	25.0		10	01/25/19 13:26	ADG	01/25/19 13:26	ADG	

INORGANICS

Analysis Desc: SW6010B ICP-AES		Preparation Method: SW3010A, Metals Prep								
		Analytical Method: SW6010B ICP-AES								
Boron Total	<0.0500 mg/L	0.0500	0.0200		1	01/25/19 10:34	ME	01/28/19 21:37	FM	
Calcium Total	<0.200 mg/L	0.200	0.0700		1	01/25/19 10:34	ME	01/28/19 21:37	FM	



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ANALYTICAL RESULTS

Workorder: Q1903004

Lab ID: Q1903004006	Date Received: 1/22/2019 14:00	Matrix: Aqueous
Sample ID: FB	Date Collected: 1/22/2019 11:07	Sample Type: SAMPLE
Project ID: FPP GWMP CCR		

Parameters	Results Units	LOQ	LOD	ML	DF	Prepared	By	Analyzed	By	Qual
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INORGANICS

Analysis Desc: E300.0, Anions		Preparation Method: E300.0, Anions								
		Analytical Method: E300.0, Anions								
Chloride	<1.00 mg/L	1.00	0.400		1	01/24/19 13:24	FO	01/24/19 13:24	FO	
Fluoride	<0.0100 mg/L	0.0100	0.00400		1	01/24/19 13:24	FO	01/24/19 13:24	FO	
Sulfate	<1.00 mg/L	1.00	0.400		1	01/24/19 13:24	FO	01/24/19 13:24	FO	

TOTAL DISSOLVED SOLIDS

Analysis Desc: SM2540C, TDS		Preparation Method: SM2540C, TDS								
		Analytical Method: SM2540C, TDS								
Total Dissolved Solids(TDS)	<25.0 mg/L	25.0	25.0		10	01/25/19 13:26	ADG	01/25/19 13:26	ADG	

INORGANICS

Analysis Desc: SW6010B ICP-AES		Preparation Method: SW3010A, Metals Prep								
		Analytical Method: SW6010B ICP-AES								
Boron Total	<0.0500 mg/L	0.0500	0.0200		1	01/25/19 10:34	ME	01/28/19 21:42	FM	
Calcium Total	<0.200 mg/L	0.200	0.0700		1	01/25/19 10:34	ME	01/28/19 21:42	FM	



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ANALYTICAL RESULTS QUALIFIERS

Workorder: Q1903004

PARAMETER QUALIFIERS

Lab ID: Q1903004001
N Not Accredited

Lab ID: Q1903004002
N Not Accredited

Lab ID: Q1903004003
N Not Accredited



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QUALITY CONTROL DATA

Workorder: Q1903004

QC Batch: WET/19061 **Analysis Method:** E300.0, Anions
QC Batch Method: E300.0, Anions
Associated Lab Samples: Q1903004001, Q1903004002, Q1903004003, Q1903004004, Q1903004005, Q1903004006

METHOD BLANK: 1188733

Parameter	Units	Blank Result	Reporting Limit	Qual
Chloride	mg/L	<1.00	1.00	
Fluoride	mg/L	<0.0100	0.0100	
Sulfate	mg/L	<1.00	1.00	

LABORATORY CONTROL SAMPLE: 1188736

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Qual
Chloride	mg/L	30	32.9	110	90 - 110	
Fluoride	mg/L	1	.98	98.4	90 - 110	
Sulfate	mg/L	30	31.3	104	90 - 110	

MATRIX SPIKE: 1188738 DUPLICATE: 1188739 ORIGINAL: Q1903004006

Parameter	Units	Original Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit	RPD	Max RPD	Qual
Chloride	mg/L	0	20	19.8	19.8	99.2	99.2	80 - 120	0	20	
Fluoride	mg/L	0	1	.98	.98	98	98.2	80 - 120	.204	20	
Sulfate	mg/L	0	20	19.5	19.5	97.6	97.5	80 - 120	0	20	

METHOD BLANK: 1188743

Parameter	Units	Blank Result	Reporting Limit	Qual
Chloride	mg/L	<1.00	1.00	
Fluoride	mg/L	<0.0100	0.0100	
Sulfate	mg/L	<1.00	1.00	

Qualifiers

- S - Spike Recovery Outside Recovery Limits**
- R - RPD Outside Recovery Limits**
- B - Analyte Detected in Method Blank**

QUALITY CONTROL DATA

Workorder: Q1903004

LABORATORY CONTROL SAMPLE: 1188744

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Qual
Chloride	mg/L	30	30.2	101	90 - 110	
Fluoride	mg/L	1	.99	98.5	90 - 110	
Sulfate	mg/L	30	30.1	100	90 - 110	

MATRIX SPIKE SAMPLE: 1188745 ORIGINAL: Q1903004005

Parameter	Units	Original Result	Spike Conc.	MS Result	MS % Rec	% Rec Limit	Qual
Chloride	mg/L	0	20	19.6	98.2	80 - 120	
Fluoride	mg/L	0	1	.97	97.2	80 - 120	
Sulfate	mg/L	.01	20	19.3	96.5	80 - 120	

Qualifiers

S - Spike Recovery Outside Recovery Limits

R - RPD Outside Recovery Limits

B - Analyte Detected in Method Blank



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QUALITY CONTROL DATA

Workorder: Q1903004

QC Batch: WET/19062 **Analysis Method:** SM2540C, TDS
QC Batch Method: SM2540C, TDS
Associated Lab Samples: Q1903004001, Q1903004002, Q1903004003, Q1903004004, Q1903004005, Q1903004006

METHOD BLANK: 1188757

Parameter	Units	Blank Result	Reporting Limit	Qual
Total Dissolved Solids(TDS)	mg/L	<25.0	25.0	

LABORATORY CONTROL SAMPLE: 1188758

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Qual
Total Dissolved Solids(TDS)	mg/L	400	379	94.8	80 - 120	

SAMPLE DUPLICATE: 1188759 ORIGINAL: Q1903004006

Parameter	Units	Original Result	DUP Result	% Rec	% Rec Limit	RPD	Max Qual
Total Dissolved Solids(TDS)	mg/L	21	20			4.88	20

MATRIX SPIKE SAMPLE: 1188760 ORIGINAL: Q1903004006

Parameter	Units	Original Result	Spike Conc.	MS Result	MS % Rec	% Rec Limit	Qual
Total Dissolved Solids(TDS)	mg/L	21	400	372	93	70 - 130	

Qualifiers

S - Spike Recovery Outside Recovery Limits
R - RPD Outside Recovery Limits
B - Analyte Detected in Method Blank

QUALITY CONTROL DATA

Workorder: Q1903004

QC Batch: MEP/8965 **Analysis Method:** SW6010B ICP-AES
QC Batch Method: SW3010A, Metals Prep
Associated Lab Samples: Q1903004001, Q1903004002, Q1903004003, Q1903004004, Q1903004005, Q1903004006

LABORATORY CONTROL SAMPLE: 1189017

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limit	RPD	Max	Qual
Boron Total	mg/L	1	.93	.94	93.2	93.7	80 - 120	.535	20	
Calcium Total	mg/L	10	10.5	10.5	105	105	80 - 120	0	20	

METHOD BLANK: 1189020

Parameter	Units	Blank Result	Reporting Limit	Qual
Boron Total	mg/L	<0.0500	0.0500	
Calcium Total	mg/L	<0.200	0.200	

MATRIX SPIKE: 1189021 DUPLICATE: 1189022 ORIGINAL: Q1902854001

Parameter	Units	Original Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit	RPD	Max RPD	Qual
Boron Total	mg/L	.02	1	.96	.95	95.6	94.5	75 - 125	1.16	20	
Calcium Total	mg/L	156	10	165	162	89.4	52.3	75 - 125	1.83	20	S

Qualifiers

S - Spike Recovery Outside Recovery Limits

R - RPD Outside Recovery Limits

B - Analyte Detected in Method Blank



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QUALITY CONTROL DATA

Workorder: Q1903004

QC Batch: WET/19066 **Analysis Method:** E300.0, Anions

QC Batch Method: E300.0, Anions

Associated Lab Samples: Q1903004001, Q1903004003, Q1903004004

METHOD BLANK: 1189386

Parameter	Units	Blank Result	Reporting Limit	Qual
Fluoride	mg/L	<0.0100	0.0100	

LABORATORY CONTROL SAMPLE: 1189389

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Qual
Fluoride	mg/L	1	.98	97.8	90 - 110	

MATRIX SPIKE: 1189391 DUPLICATE: 1189392 ORIGINAL: Q1903484005

Parameter	Units	Original Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit	RPD	Max RPD Qual
Fluoride	mg/L	.29	1	1.32	1.3	102	100	80 - 120	1.53	20

Qualifiers

S - Spike Recovery Outside Recovery Limits

R - RPD Outside Recovery Limits

B - Analyte Detected in Method Blank

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Workorder: Q1903004

Lab ID	Sample ID	Prep Method	Prep Batch	Analysis Method	Analysis Batch
Q1903004001	CBL - 302I			E300.0, Anions	WET/19061
Q1903004002	CBL - 340I			E300.0, Anions	WET/19061
Q1903004003	CBL - 341I			E300.0, Anions	WET/19061
Q1903004004	CBL - 641I			E300.0, Anions	WET/19061
Q1903004005	EQB			E300.0, Anions	WET/19061
Q1903004006	FB			E300.0, Anions	WET/19061
Q1903004001	CBL - 302I			SM2540C, TDS	WET/19062
Q1903004002	CBL - 340I			SM2540C, TDS	WET/19062
Q1903004003	CBL - 341I			SM2540C, TDS	WET/19062
Q1903004004	CBL - 641I			SM2540C, TDS	WET/19062
Q1903004005	EQB			SM2540C, TDS	WET/19062
Q1903004006	FB			SM2540C, TDS	WET/19062
Q1903004001	CBL - 302I	SW3010A, Metals Prep	MEP/8965	SW6010B ICP-AES	MET/6945
Q1903004002	CBL - 340I	SW3010A, Metals Prep	MEP/8965	SW6010B ICP-AES	MET/6945
Q1903004003	CBL - 341I	SW3010A, Metals Prep	MEP/8965	SW6010B ICP-AES	MET/6945
Q1903004004	CBL - 641I	SW3010A, Metals Prep	MEP/8965	SW6010B ICP-AES	MET/6945
Q1903004005	EQB	SW3010A, Metals Prep	MEP/8965	SW6010B ICP-AES	MET/6945
Q1903004006	FB	SW3010A, Metals Prep	MEP/8965	SW6010B ICP-AES	MET/6945
Q1903004001	CBL - 302I	SW3010A, Metals Prep	MEP/8965	SW6010B ICP-AES	MET/6948
Q1903004002	CBL - 340I	SW3010A, Metals Prep	MEP/8965	SW6010B ICP-AES	MET/6948
Q1903004003	CBL - 341I	SW3010A, Metals Prep	MEP/8965	SW6010B ICP-AES	MET/6948
Q1903004004	CBL - 641I	SW3010A, Metals Prep	MEP/8965	SW6010B ICP-AES	MET/6948
Q1903004001	CBL - 302I			E300.0, Anions	WET/19066
Q1903004003	CBL - 341I			E300.0, Anions	WET/19066
Q1903004004	CBL - 641I			E300.0, Anions	WET/19066
Q1903004001	CBL - 302I	Field pH SM4500H+B TCEQ VOL 1	FLD/0	Field pH SM4500H+B TCEQ VOL 1	FLD/0
Q1903004002	CBL - 340I	Field pH SM4500H+B TCEQ VOL 1	FLD/0	Field pH SM4500H+B TCEQ VOL 1	FLD/0
Q1903004003	CBL - 341I	Field pH SM4500H+B TCEQ VOL 1	FLD/0	Field pH SM4500H+B TCEQ VOL 1	FLD/0



LCRA Environmental Laboratory Services
Request for Analysis Chain-of-Custody Record

LCRA - Environmental Lab
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Austin, TX 78744

Phone: (512) 356-6022 or 1-800-776-5272
Fax: (512) 356-6021
<https://els.lcra.org>

Q1903004

Project:	FPP - CCR - Groundwater	Client:	LCRA
Collector:	Erica Schensen / Jason Woods	Contact:	
Event#:	1432003 / 7853	Phone:	

Report To: BECKIE LOEVE
FAYETTE POWER PLANT
6549 POWER PLANT RD
MAIL STOP FPP
La Grange, TX 78945

Lab ID#:	
Client PO:	
Invoice To:	BECKIE LOEVE FAYETTE POWER PLANT 6549 POWER PLANT RD MAIL STOP FPP La Grange, TX 78945

LAB USE ONLY	Sample ID *	Collected *		Matrix* AQ = Aqueous S = Solid T = Tissue DW = Drinking Water	Container(s) Type/Preservative/Number *								Requested Analysis *											
		Date*	Time * HH:MM		COMPOSITE Y/N	FILTERED Y/N	1LPU	250PHNO3						2540-AMTDS	6010-AM	F-pH	300.0AM-28							
1																								
2	CBL - 302I	1/22/19	11:55	AQ	N	N	1	1						X	X	X	X							
3																								
4																								
5	CBL - 340I	1/22/19	1107	AQ			1	1						X	X	X	X							
6	CBL - 341I	1/22/19	1005	AQ	N	N	1	1						X	X	X	X							
7	CBL - 641I	I	1005	AQ	N	N	1	1						X	X		X							
8	EQB	I	1115	AQ	N	N	1	1						X	X		X							
9	FB	I	1107	AQ	N	N	1	1						X	X		X							

Transfers	Relinquished By	Date/Time	Received By	Date/Time	Cooler Temp:				Client Special Instructions:
1		1/22/19 14:00			#	T#	Obs.	Corr.	
2					1	6	3.1°C	3.1°C	
3					2				

Note: Relinquishing sample(s) and signing the COC, client agrees to accept and is bound by the ELS Standard Terms and Conditions. All fields with an asterisk (*) are required to be completed.





Field Information Form

Sample Date: 1/22/19
Sample Time: 1107
Sample ID: C|B|L|3|4|0|I

PURGING INFORMATION

PURGE DATE (YY MM DD) 1|9|0|1|2|2 START PURGE (2400 Hr. Clock)
V= 3|2|8 WATER VOL IN CASING (Gallons) 9|8|3 3 X WELL VOL. IN (Gallons)
ACTUAL VOLUME PURGED (Gallons) 5

PURGING AND SAMPLING EQUIPMENT

Purging Equipment Y Dedicated I|Y|I|I|I Sampling Equipment Y Dedicated I|Y|I|I|I

Purging Device	<u>B</u>	A-Submersible Pump	D-Gas Lift Pump	G-Bailer	X-	
Sampling Device	<u>B</u>	B-Peristaltic Pump	E-Venturi Pump	H-Scoop/Shovel	X-	Purging Other (Specify) _____
		C-Bladder Pump	F-Dipper/Bottle	I-Piston Pump		Sampling Other (Specify) _____
Purging Material	<u>F</u>	A-Teflon	C-Polypropylene	E-Polyethylene	X-	
Sampling Material	<u>F</u>	B-Stainless Steel	D-PVC		X-	Purging Other (Specify) _____
						Sampling Other (Specify) _____
Tubing-Purging	<u>F</u>	A-Teflon	D-Polypropylene	F-Silicon	X-	
Tubing-Sampling	<u>F</u>	B-Tygon	E-Polyethylene	G-Combination	X-	Purging Other (Specify) _____
				teflon/Polypropylene	X-	Sampling Other (Specify) _____
						C-Rope X- _____ (Specify) _____

FIELD MEASUREMENTS

Well Elevation (ft/msl) Land Surface Elevation (ft/msl)
Depth to water 20.05 (ft) Depth to water (ft)
From top of well casing = D_w From land surface
Groundwater Elevation (ft/msl) Groundwater Elevation (ft/msl)
Well Depth = D 40.14 (ft) Pump Placement 2.5 (ft)
6.59 (STD) 808.6 uS/cm Sample Temp. 22.28 (°C)
PH Specific Conductivity

Bottle			Analysis	Field Filt. Y/N
Type	Size	Preservative		
P	250ml	HNO ₃	metals	N
P	1L	Ice	Amox, TDS	N
P	250ml	HNO ₃	equipment blank metals	N
P	250ml	Ice	equipment blank amox	N

Sample Appearance: clear Odor: none Color: clear Turbidity: 0.84
Weather Conditions: cloudy, 50°F, calm
Other: purge water is clear w/ no odor

WELL VOLUME CALCULATION

V=(D-D_w) (A) (7.48 gal/ft³) where
V= volume of standing water in well
D= depth to bottom of well below measuring point
D_w=depth to water below measuring point
A= cross sectional area
2" dia. A= 0.0218 4" dia. A= 0.0872

Well Appearance Normal: Yes ✓ No _____
If No, Explain _____

Procedure: ELS groundwater SOP 5-7D

Date: 1/22/19
Sampler: Erica Sorenson / Jason Woods
Employer: Likha Enviro. Lab



LCRA Environmental Laboratory Services
3505 Montopolis Drive
Austin, TX 78744
Phone: (512) 730-6022
Fax: (512) 730-6021

May 20, 2019

BECKIE LOEVE
FAYETTE POWER PLANT
6549 POWER PLANT RD
MAIL STOP FPP
La Grange, TX 78945
BECKIE.LOEVE@LCRA.ORG

RE: Final Analytical Report Q1917642

Attn: BECKIE LOEVE

Enclosed are the analytical results for sample(s) received by LCRA Environmental Laboratory Services. Results reported herein conform to the most current NELAP standards, where applicable, unless otherwise narrated in the body of the report. This final report provides results related only to the sample(s) as received for the above referenced work order.

Thank you for selecting ELS for your analytical needs. If you have any questions regarding this report, please contact us at (512) 730-6022. We look forward to assisting you again.

Authorized for release by:

Jason Woods
Account Manager
jason.woods@lcra.org



Enclosures:



LCRA Environmental Laboratory Services
3505 Montopolis Drive
Austin, TX 78744
Phone: (512) 730-6022
Fax: (512) 730-6021

Sample Summary

Lab ID	Sample ID	Matrix	Method	Date Collected	Date Received
Q1917642001	CBL - 301	AQ	E300.0, Anions	5/2/2019 11:21	5/2/2019 14:00
Q1917642001	CBL - 301	AQ	Field pH SM4500H+B TCEQ VOL 1	5/2/2019 11:21	5/2/2019 14:00
Q1917642001	CBL - 301	AQ	SM2540C, TDS	5/2/2019 11:21	5/2/2019 14:00
Q1917642001	CBL - 301	AQ	SW6010B ICP-AES	5/2/2019 11:21	5/2/2019 14:00
Q1917642002	CBL - 801	AQ	SW6010B ICP-AES	5/2/2019 11:21	5/2/2019 14:00
Q1917642003	EQ Blank	AQ	SW6010B ICP-AES	5/2/2019 11:21	5/2/2019 14:00

Report Definitions

MRL - Minimum Reporting Limit
LOD - Limit of Detection
ML - Maximum Limit - Client Specified
MCL - Maximum Contaminant Level
MDL - Method Detection Limit
LOQ - Limit of Quantitation - Client Specified
DF - Dilution Factor
Qual - Qualifier
(S) - Surrogate Spike
QC Qual - red font indicates Result Value outside acceptable range
B- Analyte detected in method blank
S - Spike recovery outside limit
R - RPD outside duplicate precision limit
J - Analyte detected below quantitation limit
RPD - Relative Percent Difference



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Project Summary

Batch Comments

Sample Analysis Comments

Lab ID: Q1917642001

Sample ID: CBL - 301

- Not Accredited - pH



LCRA Environmental Laboratory Services
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Analytical Results

Lab ID: Q1917642001	Date Received: 5/2/2019 14:00	Matrix: Aqueous
Sample ID: CBL - 301	Date Collected: 5/2/2019 11:21	Sample Type: SAMPLE
Project ID: FPP GWMP CCR		

Parameter	Results	Units	MRL	LOD	ML	DF	Prepared	By	Analyzed	By	Qual
Field Parameters (Field pH SM4500H+B TCEQ VOL 1)											
pH	6.14	pH				1		CC P	05/02/19 11:21	CC P	*
INORGANICS (E300.0, Anions)											
Chloride	1910	mg/L	500	200		500	05/09/19 11:03	FO	05/09/19 14:17	FO	
Fluoride	0.112	mg/L	0.100	0.0400		10	05/15/19 07:08	FO	05/14/19 16:46	FO	
Sulfate	389	mg/L	10.0	4.00		10	05/15/19 07:08	FO	05/14/19 16:46	FO	
INORGANICS (SW3010A, Metals Prep/SW6010B ICP-AES)											
Boron Total	<0.0500	mg/L	0.0500	0.0200		1	05/07/19 14:44	ME	05/08/19 18:32	FM	
Calcium Total	762	mg/L	2.00	0.700		10	05/07/19 14:44	ME	05/09/19 11:36	FM	
TOTAL DISSOLVED SOLIDS (SM2540C, TDS)											
Total Dissolved Solids(TDS)	5650	mg/L	250	250		100	05/07/19 13:36	AD G	05/07/19 16:40	AD G	



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Analytical Results (cont.)

Lab ID: Q1917642002	Date Received: 5/2/2019 14:00	Matrix: Aqueous
Sample ID: CBL - 801	Date Collected: 5/2/2019 11:21	Sample Type: SAMPLE
Project ID: FPP GWMP CCR		

Parameter	Results	Units	MRL	LOD	ML	DF	Prepared	By	Analyzed	By	Qual
INORGANICS (SW3010A, Metals Prep/SW6010B ICP-AES)											
Boron Total	<0.0500	mg/L	0.0500	0.0200		1	05/07/19 14:44	ME	05/08/19 18:38	FM	
Calcium Total	977	mg/L	2.00	0.700		10	05/07/19 14:44	ME	05/09/19 11:41	FM	



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Analytical Results (cont.)

Lab ID: Q1917642003	Date Received: 5/2/2019 14:00	Matrix: Aqueous
Sample ID: EQ Blank	Date Collected: 5/2/2019 11:21	Sample Type: SAMPLE
Project ID: FPP GWMP CCR		

Parameter	Results	Units	MRL	LOD	ML	DF	Prepared	By	Analyzed	By	Qual
INORGANICS (SW3010A, Metals Prep/SW6010B ICP-AES)											
Boron Total	<0.0500	mg/L	0.0500	0.0200		1	05/07/19 14:44	ME	05/08/19 18:43	FM	
Calcium Total	<0.200	mg/L	0.200	0.0700		1	05/07/19 14:44	ME	05/08/19 18:43	FM	



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Quality Control

Preparation Batch: WET / 19717 **Analysis Method:** E300.0, Anions
Preparation Method: E300.0, Anions
Associated Lab IDs: Q1917642001

Laboratory Reagent Blank (1241715)

Parameter	Results	Units	MRL	LOD	Qualifier
Chloride	<1.00	mg/L	1.00	0.400	

Method Reporting Limit Check (1241717)

Parameter	Units	Spiked Amount	Spike Result	% Spike Recovery	Control Limits %
Chloride	mg/L	1	.83	82.5	50 - 150

Laboratory Fortified Blank (1241718)

Parameter	Units	Spiked Amount	Spike Result	% Spike Recovery	Control Limits %
Chloride	mg/L	30	28.9	96.5	90 - 110

Limit of Quantitation Check (1241719)

Parameter	Units	Spiked Amount	Spike Result	% Spike Recovery	Control Limits %
Chloride	mg/L	5	3.98	79.5	70 - 130

Laboratory Fortified Matrix (1242026) Original: Q1917314001; Lab Fortified Matrix Duplicate (1242027)

Parameter	Units	Spiked Amount	Spike Result	% Spike Recovery	Control Limits %	Dup Result	% Dup Recovery	RPD	RPD Limit %
Chloride	mg/L	100	122	98.2	80 - 120	120	97.1	1.65	20



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Quality Control (cont.)

Preparation Batch: MEP / 9218

Analysis Method: SW6010B ICP-AES

Preparation Method: SW3010A, Metals Prep

Associated Lab IDs: Q1917642001, Q1917642002, Q1917642003

Method Blank (1238553)

Parameter	Results	Units	MRL	LOD	Qualifier
Boron Total	<0.0500	mg/L	0.0500	0.0200	
Calcium Total	<0.200	mg/L	0.200	0.0700	

Lab Control Sample (1238551); Lab Control Sample Duplicate (1238552)

Parameter	Units	Spiked Amount	Spike Result	% Spike Recovery	Control Limits %	Dup Result	% Dup Recovery	RPD	RPD Limit %
Boron Total	mg/L	1	.99	98.5	80 - 120	.98	97.8	.713	20
Calcium Total	mg/L	10	10.5	105	80 - 120	10.4	104	.957	20

Matrix Spike (1238554) Original: Q1917642001; Matrix Spike Duplicate (1238555)

Parameter	Units	Spiked Amount	Spike Result	% Spike Recovery	Control Limits %	Dup Result	% Dup Recovery	RPD	RPD Limit %
Boron Total	mg/L	1	.96	96	75 - 125	.95	95	1.05	20
Calcium Total	mg/L	10	1020	2580	75 - 125	1010	2470	.985	20

S

Quality Control (cont.)

Preparation Batch: WET / 19749
Preparation Method: E300.0, Anions
Associated Lab IDs: Q1917642001

Analysis Method: E300.0, Anions

Laboratory Reagent Blank (1245440)

Parameter	Results	Units	MRL	LOD	Qualifier
Fluoride	<0.0100	mg/L	0.0100	0.00400	
Sulfate	<1.00	mg/L	1.00	0.400	

Method Reporting Limit Check (1245442)

Parameter	Units	Spiked Amount	Spike Result	% Spike Recovery	Control Limits %
Fluoride	mg/L	.01	.01	124	50 - 150
Sulfate	mg/L	1	.92	91.9	50 - 150

Laboratory Fortified Blank (1245443)

Parameter	Units	Spiked Amount	Spike Result	% Spike Recovery	Control Limits %
Fluoride	mg/L	1	.99	98.7	90 - 110
Sulfate	mg/L	30	30.1	100	90 - 110

Limit of Quantitation Check (1245444)

Parameter	Units	Spiked Amount	Spike Result	% Spike Recovery	Control Limits %
Fluoride	mg/L	.02	.02	86	70 - 130
Sulfate	mg/L	5	4.34	86.7	70 - 130

Laboratory Fortified Matrix (1245448) Original: Q1924410001; Lab Fortified Matrix Duplicate (1245449)

Parameter	Units	Spiked Amount	Spike Result	% Spike Recovery	Control Limits %	Dup Result	% Dup Recovery	RPD	RPD Limit %
Fluoride	mg/L	1	1.71	107	80 - 120	1.64	99.4	4.18	20
Sulfate	mg/L	20	46.9	101	80 - 120	46.5	98.2	.857	20



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Quality Control (cont.)

Preparation Batch: WET / 19698
Preparation Method: SM2540C, TDS
Associated Lab IDs: Q1917642001

Analysis Method: SM2540C, TDS

Method Blank (1238346)

Parameter	Results	Units	MRL	LOD	Qualifier
Total Dissolved Solids(TDS)	<25.0	mg/L	25.0	25.0	

Lab Control Sample (1238347)

Parameter	Units	Spiked Amount	Spike Result	% Spike Recovery	Control Limits %
Total Dissolved Solids(TDS)	mg/L	400	400	100	80 - 120

Duplicate (1238409); Original: Q1917559006

Parameter	Original	Duplicate	Units	RPD %	Limit	Qualifier
Total Dissolved Solids(TDS)	336	367	mg/L	8.82	20	

Matrix Spike (1238408) Original: Q1917559006

Parameter	Units	Spiked Amount	Spike Result	% Spike Recovery	Control Limits %
Total Dissolved Solids(TDS)	mg/L	400	746	102	70 - 130

Quality Control Cross Reference

Batch ID: MET/7149 - Analytical Method:SW6010B ICP-AES

Lab ID	Sample ID	Prep Batch	Prep Method
Q1917642001	CBL - 301	MEP/9218	SW3010A, Metals Prep
Q1917642002	CBL - 801	MEP/9218	SW3010A, Metals Prep
Q1917642003	EQ Blank	MEP/9218	SW3010A, Metals Prep

Batch Comment(s):

- Analytical Curve used from MET batch# 7148

Batch ID: MET/7154 - Analytical Method:SW6010B ICP-AES

Lab ID	Sample ID	Prep Batch	Prep Method
Q1917642001	CBL - 301	MEP/9218	SW3010A, Metals Prep
Q1917642002	CBL - 801	MEP/9218	SW3010A, Metals Prep

Batch Comment(s):

- Used opening QC and Curve from MET 200.7 batch 7150

Batch ID: WET/19698 - Analytical Method:SM2540C, TDS

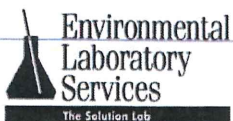
Lab ID	Sample ID	Prep Batch	Prep Method
Q1917642001	CBL - 301		

Batch ID: WET/19717 - Analytical Method:E300.0, Anions

Lab ID	Sample ID	Prep Batch	Prep Method
Q1917642001	CBL - 301		

Batch ID: WET/19749 - Analytical Method:E300.0, Anions

Lab ID	Sample ID	Prep Batch	Prep Method
Q1917642001	CBL - 301		



LCRA - Environmental Lab
3505 Montopolis Dr.
Austin, TX 78744

Phone: (512) 356-6022 or 1-800-776-5272
Fax: (512) 356-6021
<https://els.lcra.org>

LCRA Environmental Laboratory Services
Request for Analysis Chain-of-Custody Record

Q1917642

Project:	CCR Well	Client:	LCRA	Report To: BECKIE LOEVE FAYETTE POWER PLANT 6549 POWER PLANT RD MAIL STOP FPP La Grange, TX 78945	Lab ID#:
Collector:	ColtPetri/Erica Soransen	Contact:			Client PO:
Event#:	1442311 / 8499	Phone:			Invoice To: BECKIE LOEVE FAYETTE POWER PLANT 6549 POWER PLANT RD MAIL STOP FPP La Grange, TX 78945

LAB USE ONLY	Sample ID *	Collected *		Matrix* AQ = Aqueous S = Solid T = Tissue DW = Drinking Water	Container(s) Type/Preservative/Number *								Requested Analysis *											
		Date*	Time * HH:MM		COMPOSITE Y/N	FILTERED Y/N	500PU	250PHNO3						2540-AMTDS	6010-AM	F-pH	300.0AM-28							
1	CBL - 301	5/2/19	1121	AQ	✓	✓	1	1						X	X	X	X							
2	CBL - 801	↓	↓	AQ	↓	↓		1							X									
3	EQ Blank	↓	↓	AQ	↓	↓		1							X									
4																								
5																								
6																								
7																								

Transfers	Relinquished By	Date/Time	Received By	Date/Time	Cooler Temp:				Client Special Instructions:
1	ColtPetri	5/2/19 1400	D-Z	5/2/19 1400	#	T#	Obs.	Corr.	
2					1	6	1.3	1.3°C	
3					2				

Note: Relinquishing sample(s) and signing the COC, client agrees to accept and is bound by the ELS Standard Terms and Conditions. All fields with an asterisk (*) are required to be completed.



Q1917642 379645



Field Information Form

Sample Date: 5/2/19
Sample Time: 1121
Sample ID: CBL3011

PURGING INFORMATION

190502 PURGE DATE (YY MM DD) 0909 START PURGE (2400 Hrs. Clock) V= 3.3 WATER VOL IN CASING (Gallons) 9.9 3 X WELL VOL. IN (Gallons) 5 ACTUAL VOLUME PURGED (Gallons)

PURGING AND SAMPLING EQUIPMENT

Purging Equipment Dedicated Y N Sampling Equipment Dedicated Y N

Purging Device	<u>A</u>	A-Submersible Pump	D-Gas Lift Pump	G-Bailer	X-	
Sampling Device	<u>A</u>	B-Peristaltic Pump	E-Venturi Pump	H-Scoop/Shovel	X-	Purging Other (Specify)
		C-Bladder Pump	F-Dipper/Bottle	I-Piston Pump	X-	Sampling Other (Specify)
Purging Material	<u>E</u>	A-Teflon	C-Polypropylene	E-Polyethylene	X-	
Sampling Material	<u>E</u>	B-Stainless Steel	D-PVC		X-	Purging Other (Specify)
					X-	Sampling Other (Specify)
Tubing-Purging	<u>E</u>	A-Teflon	D-Polypropylene	F-Silicon	X-	
Tubing-Sampling	<u>E</u>	B-Tygon	E-Polyethylene	G-Combination	X-	Purging Other (Specify)
				teflon/Polypropylene	X-	Sampling Other (Specify)
		C-Rope X-				

(Specify)

FIELD MEASUREMENTS

Well Elevation (ft/msl) Land Surface Elevation (ft/msl)
Depth to water (ft) Depth to water (ft)
From top of well casing = D_w 33.91 From land surface (ft)
Groundwater Elevation (ft/msl) Groundwater Elevation (ft/msl)
Well Depth = D 54.1 (ft) Pump Placement 48 (ft)
6.14 (STD) 7597 uS/cm Sample Temp. 26.64 (°C)
PH Specific Conductivity

Bottle			Analysis	Field Filt. Y/N
Type	Size	Preservative		
P	250ml	HNO ₃	Metals	N
P	250ml	HNO ₃	Metals CBL 801 I Dup	N
P	250ml	HNO ₃	Field Blank	N

Sample Appearance: Clear Odor: none Color: Clear Turbidity: 11.0

Weather Conditions: Partly Cloudy calm 65°

Other: Purge water is milky in color clearing after 2 gallons. No odor.

Well went dry after 5 gallons. let well set & purged for sample after another 3 gallons

WELL VOLUME CALCULATION

V=(D-D_w) (A) (7.48 gal/ft³) where

V= volume of standing water in well

D= depth to bottom of well below measuring point

D_w=depth to water below measuring point

A= cross-sectional area

2" dia. A= 0.0218 4" dia. A= 0.0872

Well Appearance Normal: Yes X No
If No, Explain

Procedure: ELS Ground water SOP 5-70

Date: 5/2/19

Sampler: CP/ES

Employer: LCRA



LCRA Environmental Laboratory Services
3505 Montopolis Drive
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Phone: (512) 730-6022
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August 13, 2019

BECKIE LOEVE
FAYETTE POWER PLANT
6549 POWER PLANT RD
MAIL STOP FPP
La Grange, TX 78945
BECKIE.LOEVE@LCRA.ORG

RE: Final Analytical Report Q1949183

Attn: BECKIE LOEVE

Enclosed are the analytical results for sample(s) received by LCRA Environmental Laboratory Services. Results reported herein conform to the most current NELAP standards, where applicable, unless otherwise narrated in the body of the report. This final report provides results related only to the sample(s) as received for the above referenced work order.

Thank you for selecting ELS for your analytical needs. If you have any questions regarding this report, please contact us at (512) 730-6022. We look forward to assisting you again.

Authorized for release by:

Jason Woods
Account Manager
jason.woods@lcra.org



Enclosures:

Sample Summary

Lab ID	Sample ID	Matrix	Method	Date Collected	Date Received
Q1949183001	CBL - 301I	AQ	E300.0, Anions	7/31/2019 16:37	8/1/2019 07:30
Q1949183001	CBL - 301I	AQ	Field pH SM4500H+B TCEQ VOL 1	7/31/2019 16:37	8/1/2019 07:30
Q1949183001	CBL - 301I	AQ	SM2540C, TDS	7/31/2019 16:37	8/1/2019 07:30
Q1949183001	CBL - 301I	AQ	SW6010B ICP-AES	7/31/2019 16:37	8/1/2019 07:30
Q1949183002	CBL - 302I	AQ	E300.0, Anions	7/31/2019 14:44	8/1/2019 07:30
Q1949183002	CBL - 302I	AQ	Field pH SM4500H+B TCEQ VOL 1	7/31/2019 14:44	8/1/2019 07:30
Q1949183002	CBL - 302I	AQ	SM2540C, TDS	7/31/2019 14:44	8/1/2019 07:30
Q1949183002	CBL - 302I	AQ	SW6010B ICP-AES	7/31/2019 14:44	8/1/2019 07:30
Q1949183003	CBL - 306I	AQ	E300.0, Anions	7/29/2019 10:55	8/1/2019 07:30
Q1949183003	CBL - 306I	AQ	Field pH SM4500H+B TCEQ VOL 1	7/29/2019 10:55	8/1/2019 07:30
Q1949183003	CBL - 306I	AQ	SM2540C, TDS	7/29/2019 10:55	8/1/2019 07:30
Q1949183003	CBL - 306I	AQ	SW6010B ICP-AES	7/29/2019 10:55	8/1/2019 07:30
Q1949183004	CBL - 308I	AQ	E300.0, Anions	7/31/2019 15:42	8/1/2019 07:30
Q1949183004	CBL - 308I	AQ	Field pH SM4500H+B TCEQ VOL 1	7/31/2019 15:42	8/1/2019 07:30
Q1949183004	CBL - 308I	AQ	SM2540C, TDS	7/31/2019 15:42	8/1/2019 07:30
Q1949183004	CBL - 308I	AQ	SW6010B ICP-AES	7/31/2019 15:42	8/1/2019 07:30

Report Definitions

MRL - Minimum Reporting Limit
LOD - Limit of Detection
ML - Maximum Limit - Client Specified
MCL - Maximum Contaminant Level
MDL - Method Detection Limit
LOQ - Limit of Quantitation - Client Specified
DF - Dilution Factor
Qual - Qualifier
(S) - Surrogate Spike
QC Qual - red font indicates Result Value outside acceptable range
B- Analyte detected in method blank
S - Spike recovery outside limit
R - RPD outside duplicate precision limit
J - Analyte detected below quantitation limit
RPD - Relative Percent Difference



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Sample Summary (cont.)

Lab ID	Sample ID	Matrix	Method	Date Collected	Date Received
Q1949183005	CBL - 340I	AQ	E300.0, Anions	7/29/2019 10:25	8/1/2019 07:30
Q1949183005	CBL - 340I	AQ	Field pH SM4500H+B TCEQ VOL 1	7/29/2019 10:25	8/1/2019 07:30
Q1949183005	CBL - 340I	AQ	SM2540C, TDS	7/29/2019 10:25	8/1/2019 07:30
Q1949183005	CBL - 340I	AQ	SW6010B ICP-AES	7/29/2019 10:25	8/1/2019 07:30
Q1949183006	CBL - 341I	AQ	E300.0, Anions	7/29/2019 11:40	8/1/2019 07:30
Q1949183006	CBL - 341I	AQ	Field pH SM4500H+B TCEQ VOL 1	7/29/2019 11:40	8/1/2019 07:30
Q1949183006	CBL - 341I	AQ	SM2540C, TDS	7/29/2019 11:40	8/1/2019 07:30
Q1949183006	CBL - 341I	AQ	SW6010B ICP-AES	7/29/2019 11:40	8/1/2019 07:30
Q1949183007	CBL - 641I	AQ	E300.0, Anions	7/29/2019 11:40	8/1/2019 07:30
Q1949183007	CBL - 641I	AQ	SM2540C, TDS	7/29/2019 11:40	8/1/2019 07:30
Q1949183007	CBL - 641I	AQ	SW6010B ICP-AES	7/29/2019 11:40	8/1/2019 07:30
Q1949183008	EQB	AQ	E300.0, Anions	7/29/2019 11:50	8/1/2019 07:30
Q1949183008	EQB	AQ	SM2540C, TDS	7/29/2019 11:50	8/1/2019 07:30
Q1949183008	EQB	AQ	SW6010B ICP-AES	7/29/2019 11:50	8/1/2019 07:30
Q1949183009	FB	AQ	E300.0, Anions	7/29/2019 11:40	8/1/2019 07:30
Q1949183009	FB	AQ	SM2540C, TDS	7/29/2019 11:40	8/1/2019 07:30
Q1949183009	FB	AQ	SW6010B ICP-AES	7/29/2019 11:40	8/1/2019 07:30

Project Summary

Sample Analysis Comments

Lab ID: Q1949183001 **Sample ID:** CBL - 301I

- Not Accredited - pH

Lab ID: Q1949183002 **Sample ID:** CBL - 302I

- Not Accredited - pH

Lab ID: Q1949183003 **Sample ID:** CBL - 306I

- Not Accredited - pH

Lab ID: Q1949183004 **Sample ID:** CBL - 308I

- Not Accredited - pH

Lab ID: Q1949183005 **Sample ID:** CBL - 340I

- Not Accredited - pH

Lab ID: Q1949183006 **Sample ID:** CBL - 341I

- Not Accredited - pH



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Analytical Results

Lab ID: Q1949183001	Date Received: 8/1/2019 07:30	Matrix: Aqueous
Sample ID: CBL - 3011	Date Collected: 7/31/2019 16:37	Sample Type: SAMPLE
Project ID: FPP GWMP CCR		

Parameter	Results	Units	MRL	LOD	ML	DF	Prepared	By	Analyzed	By	Qual
Field Parameters (Field pH SM4500H+B TCEQ VOL 1)											
pH	6.19	pH				1		CC P	08/05/19 16:08	CC P	*
INORGANICS (E300.0, Anions)											
Chloride	2240	mg/L	50.0	20.0		50	08/02/19 06:56	FO	08/02/19 03:55	FO	
Fluoride	0.0510	mg/L	0.0500	0.0200		5	08/02/19 16:30	FO	08/02/19 14:32	FO	
Sulfate	332	mg/L	50.0	20.0		50	08/02/19 06:56	FO	08/02/19 03:55	FO	
INORGANICS (SW3010A, Metals Prep/SW6010B ICP-AES)											
Boron Total	<0.0500	mg/L	0.0500	0.0200		1	08/08/19 09:28	ME	08/12/19 15:25	FM	
Calcium Total	783	mg/L	1.00	0.350		5	08/08/19 09:28	ME	08/12/19 15:32	FM	
TOTAL DISSOLVED SOLIDS (SM2540C, TDS)											
Total Dissolved Solids(TDS)	6040	mg/L	250	250		100	08/05/19 09:43	AD G	08/05/19 14:29	AD G	



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Analytical Results (cont.)

Lab ID: Q1949183002	Date Received: 8/1/2019 07:30	Matrix: Aqueous
Sample ID: CBL - 302I	Date Collected: 7/31/2019 14:44	Sample Type: SAMPLE
Project ID: FPP GWMP CCR		

Parameter	Results	Units	MRL	LOD	ML	DF	Prepared	By	Analyzed	By	Qual
Field Parameters (Field pH SM4500H+B TCEQ VOL 1)											
pH	6.15	pH				1		CC P	08/05/19 16:06	CC P	*
INORGANICS (E300.0, Anions)											
Chloride	1540	mg/L	50.0	20.0		50	08/02/19 06:56	FO	08/02/19 01:52	FO	
Fluoride	0.0605	mg/L	0.0500	0.0200		5	08/02/19 16:30	FO	08/02/19 14:14	FO	
Sulfate	1260	mg/L	50.0	20.0		50	08/02/19 06:56	FO	08/02/19 01:52	FO	
INORGANICS (SW3010A, Metals Prep/SW6010B ICP-AES)											
Boron Total	<0.0500	mg/L	0.0500	0.0200		1	08/08/19 09:28	ME	08/12/19 15:39	FM	
Calcium Total	914	mg/L	1.00	0.350		5	08/08/19 09:28	ME	08/12/19 15:46	FM	
TOTAL DISSOLVED SOLIDS (SM2540C, TDS)											
Total Dissolved Solids(TDS)	4190	mg/L	250	250		100	08/05/19 09:43	AD G	08/05/19 14:29	AD G	



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Analytical Results (cont.)

Lab ID: Q1949183003	Date Received: 8/1/2019 07:30	Matrix: Aqueous
Sample ID: CBL - 306I	Date Collected: 7/29/2019 10:55	Sample Type: SAMPLE
Project ID: FPP GWMP CCR		

Parameter	Results Units	MRL	LOD	ML	DF	Prepared	By	Analyzed	By	Qual
Field Parameters (Field pH SM4500H+B TCEQ VOL 1)										
pH	6.92 pH				1		CC P	08/05/19 16:08	CC P	*
INORGANICS (E300.0, Anions)										
Chloride	538 mg/L	50.0	20.0		50	08/02/19 06:56	FO	08/02/19 04:30	FO	
Fluoride	9.26 mg/L	0.500	0.200		50	08/02/19 06:56	FO	08/02/19 04:30	FO	
Sulfate	816 mg/L	50.0	20.0		50	08/02/19 06:56	FO	08/02/19 04:30	FO	
INORGANICS (SW3010A, Metals Prep/SW6010B ICP-AES)										
Boron Total	0.0824 mg/L	0.0500	0.0200		1	08/08/19 09:28	ME	08/12/19 15:53	FM	
Calcium Total	106 mg/L	0.200	0.0700		1	08/08/19 09:28	ME	08/12/19 15:53	FM	
TOTAL DISSOLVED SOLIDS (SM2540C, TDS)										
Total Dissolved Solids(TDS)	676 mg/L	25.0	25.0		10	08/02/19 11:12	ML	08/02/19 11:57	ML	



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Analytical Results (cont.)

Lab ID: Q1949183004	Date Received: 8/1/2019 07:30	Matrix: Aqueous
Sample ID: CBL - 308I	Date Collected: 7/31/2019 15:42	Sample Type: SAMPLE
Project ID: FPP GWMP CCR		

Parameter	Results Units	MRL	LOD	ML	DF	Prepared	By	Analyzed	By	Qual
Field Parameters (Field pH SM4500H+B TCEQ VOL 1)										
pH	6.25 pH				1		CC P	08/05/19 16:07	CC P	*
INORGANICS (E300.0, Anions)										
Chloride	2290 mg/L	50.0	20.0		50	08/02/19 06:56	FO	08/02/19 05:06	FO	
Fluoride	1.62 mg/L	0.500	0.200		50	08/02/19 06:56	FO	08/02/19 05:06	FO	
Sulfate	1420 mg/L	50.0	20.0		50	08/02/19 06:56	FO	08/02/19 05:06	FO	
INORGANICS (SW3010A, Metals Prep/SW6010B ICP-AES)										
Boron Total	<0.0500 mg/L	0.0500	0.0200		1	08/08/19 09:28	ME	08/12/19 16:06	FM	
Calcium Total	840 mg/L	1.00	0.350		5	08/08/19 09:28	ME	08/12/19 16:13	FM	
TOTAL DISSOLVED SOLIDS (SM2540C, TDS)										
Total Dissolved Solids(TDS)	5820 mg/L	250	250		100	08/05/19 09:43	AD G	08/05/19 14:29	AD G	



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Analytical Results (cont.)

Lab ID: Q1949183005	Date Received: 8/1/2019 07:30	Matrix: Aqueous
Sample ID: CBL - 340I	Date Collected: 7/29/2019 10:25	Sample Type: SAMPLE
Project ID: FPP GWMP CCR		

Parameter	Results Units	MRL	LOD	ML	DF	Prepared	By	Analyzed	By	Qual
Field Parameters (Field pH SM4500H+B TCEQ VOL 1)										
pH	6.45 pH				1		CC P	08/05/19 16:06	CC P	*
INORGANICS (E300.0, Anions)										
Chloride	2280 mg/L	50.0	20.0		50	08/02/19 06:56	FO	08/02/19 05:41	FO	
Fluoride	0.880 mg/L	0.500	0.200		50	08/02/19 06:56	FO	08/02/19 05:41	FO	
Sulfate	684 mg/L	50.0	20.0		50	08/02/19 06:56	FO	08/02/19 05:41	FO	
INORGANICS (SW3010A, Metals Prep/SW6010B ICP-AES)										
Boron Total	0.124 mg/L	0.0500	0.0200		1	08/08/19 09:28	ME	08/12/19 16:20	FM	
Calcium Total	518 mg/L	1.00	0.350		5	08/08/19 09:28	ME	08/12/19 16:26	FM	
TOTAL DISSOLVED SOLIDS (SM2540C, TDS)										
Total Dissolved Solids(TDS)	5560 mg/L	250	250		100	08/02/19 11:12	ML	08/02/19 11:57	ML	



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Analytical Results (cont.)

Lab ID: Q1949183006	Date Received: 8/1/2019 07:30	Matrix: Aqueous
Sample ID: CBL - 341I	Date Collected: 7/29/2019 11:40	Sample Type: SAMPLE
Project ID: FPP GWMP CCR		

Parameter	Results	Units	MRL	LOD	ML	DF	Prepared	By	Analyzed	By	Qual
Field Parameters (Field pH SM4500H+B TCEQ VOL 1)											
pH	6.23	pH				1		CC P	08/05/19 16:05	CC P	*
INORGANICS (E300.0, Anions)											
Chloride	1650	mg/L	25.0	10.0		25	08/02/19 06:56	FO	08/02/19 05:58	FO	
Fluoride	0.100	mg/L	0.0500	0.0200		5	08/07/19 08:24	FO	08/06/19 10:15	FO	
Sulfate	329	mg/L	25.0	10.0		25	08/02/19 06:56	FO	08/02/19 05:58	FO	
INORGANICS (SW3010A, Metals Prep/SW6010B ICP-AES)											
Boron Total	<0.0500	mg/L	0.0500	0.0200		1	08/08/19 09:28	ME	08/12/19 16:33	FM	
Calcium Total	714	mg/L	1.00	0.350		5	08/08/19 09:28	ME	08/12/19 16:41	FM	
TOTAL DISSOLVED SOLIDS (SM2540C, TDS)											
Total Dissolved Solids(TDS)	5370	mg/L	250	250		100	08/02/19 11:12	ML	08/02/19 11:57	ML	



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Analytical Results (cont.)

Lab ID: Q1949183007	Date Received: 8/1/2019 07:30	Matrix: Aqueous
Sample ID: CBL - 641I	Date Collected: 7/29/2019 11:40	Sample Type: SAMPLE
Project ID: FPP GWMP CCR		

Parameter	Results	Units	MRL	LOD	ML	DF	Prepared	By	Analyzed	By	Qual
INORGANICS (E300.0, Anions)											
Chloride	1640	mg/L	25.0	10.0		25	08/02/19 06:56	FO	08/02/19 06:16	FO	
Fluoride	0.0960	mg/L	0.0500	0.0200		5	08/07/19 08:24	FO	08/06/19 10:33	FO	
Sulfate	327	mg/L	25.0	10.0		25	08/02/19 06:56	FO	08/02/19 06:16	FO	
INORGANICS (SW3010A, Metals Prep/SW6010B ICP-AES)											
Boron Total	<0.0500	mg/L	0.0500	0.0200		1	08/08/19 09:28	ME	08/12/19 16:47	FM	
Calcium Total	753	mg/L	1.00	0.350		5	08/08/19 09:28	ME	08/12/19 16:55	FM	
TOTAL DISSOLVED SOLIDS (SM2540C, TDS)											
Total Dissolved Solids(TDS)	5510	mg/L	250	250		100	08/02/19 11:12	ML	08/02/19 11:57	ML	



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Analytical Results (cont.)

Lab ID: Q1949183008	Date Received: 8/1/2019 07:30	Matrix: Aqueous
Sample ID: EQB	Date Collected: 7/29/2019 11:50	Sample Type: SAMPLE
Project ID: FPP GWMP CCR		

Parameter	Results	Units	MRL	LOD	ML	DF	Prepared	By	Analyzed	By	Qual
INORGANICS (E300.0, Anions)											
Chloride	<1.00	mg/L	1.00	0.400		1	08/02/19 06:56	FO	08/02/19 03:38	FO	
Fluoride	<0.0100	mg/L	0.0100	0.0040		1	08/02/19 06:56	FO	08/02/19 03:38	FO	
Sulfate	<1.00	mg/L	1.00	0.400		1	08/02/19 06:56	FO	08/02/19 03:38	FO	
INORGANICS (SW3010A, Metals Prep/SW6010B ICP-AES)											
Boron Total	<0.0500	mg/L	0.0500	0.0200		1	08/08/19 09:28	ME	08/12/19 17:02	FM	
Calcium Total	<0.200	mg/L	0.200	0.0700		1	08/08/19 09:28	ME	08/12/19 17:02	FM	
TOTAL DISSOLVED SOLIDS (SM2540C, TDS)											
Total Dissolved Solids(TDS)	<25.0	mg/L	25.0	25.0		10	08/02/19 11:12	ML	08/02/19 11:57	ML	



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Analytical Results (cont.)

Lab ID: Q1949183009	Date Received: 8/1/2019 07:30	Matrix: Aqueous
Sample ID: FB	Date Collected: 7/29/2019 11:40	Sample Type: SAMPLE
Project ID: FPP GWMP CCR		

Parameter	Results	Units	MRL	LOD	ML	DF	Prepared	By	Analyzed	By	Qual
INORGANICS (E300.0, Anions)											
Chloride	<1.00	mg/L	1.00	0.400		1	08/02/19 06:56	FO	08/02/19 08:02	FO	
Fluoride	<0.0100	mg/L	0.0100	0.0040		1	08/02/19 06:56	FO	08/02/19 08:02	FO	
Sulfate	<1.00	mg/L	1.00	0.400		1	08/02/19 06:56	FO	08/02/19 08:02	FO	
INORGANICS (SW3010A, Metals Prep/SW6010B ICP-AES)											
Boron Total	<0.0500	mg/L	0.0500	0.0200		1	08/08/19 09:28	ME	08/12/19 17:15	FM	
Calcium Total	<0.200	mg/L	0.200	0.0700		1	08/08/19 09:28	ME	08/12/19 17:15	FM	
TOTAL DISSOLVED SOLIDS (SM2540C, TDS)											
Total Dissolved Solids(TDS)	39.0	mg/L	25.0	25.0		10	08/02/19 11:12	ML	08/02/19 11:57	ML	

Quality Control

Preparation Batch: WET / 20236	Analysis Method: E300.0, Anions
Preparation Method: E300.0, Anions	
Associated Lab IDs: Q1949183001, Q1949183002, Q1949183006, Q1949183007	

Laboratory Reagent Blank (1302924)

Parameter	Results	Units	MRL	LOD	Qualifier
Fluoride	<0.0100	mg/L	0.0100	0.00400	

Method Reporting Limit Check (1302926)

Parameter	Units	Spiked Amount	Spike Result	% Spike Recovery	Control Limits %
Fluoride	mg/L	.01	.01	119	50 - 150

Laboratory Fortified Blank (1302927)

Parameter	Units	Spiked Amount	Spike Result	% Spike Recovery	Control Limits %
Fluoride	mg/L	1	1.04	104	90 - 110

Limit of Quantitation Check (1302928)

Parameter	Units	Spiked Amount	Spike Result	% Spike Recovery	Control Limits %
Fluoride	mg/L	.02	.02	98	70 - 130

Laboratory Fortified Matrix (1302933) Original: Q1949892001; Lab Fortified Matrix Duplicate (1302934)

Parameter	Units	Spiked Amount	Spike Result	% Spike Recovery	Control Limits %	Dup Result	% Dup Recovery	RPD	RPD Limit %
Fluoride	mg/L	1	1.17	103	80 - 120	1.18	104	.851	20

Quality Control (cont.)

Preparation Batch: WET / 20232 **Analysis Method:** SM2540C, TDS
Preparation Method: SM2540C, TDS
Associated Lab IDs: Q1949183003, Q1949183005, Q1949183006, Q1949183007, Q1949183008, Q1949183009

Method Blank (1302620)

Parameter	Results	Units	MRL	LOD	Qualifier
Total Dissolved Solids(TDS)	<25.0	mg/L	25.0	25.0	

Lab Control Sample (1302621)

Parameter	Units	Spiked Amount	Spike Result	% Spike Recovery	Control Limits %
Total Dissolved Solids(TDS)	mg/L	400	390	97.5	80 - 120

Matrix Spike (1302636) Original: Q1949771004

Parameter	Units	Spiked Amount	Spike Result	% Spike Recovery	Control Limits %
Total Dissolved Solids(TDS)	mg/L	400	928	111	70 - 130

Duplicate (1302637); Original: Q1949771004

Parameter	Original	Duplicate	Units	RPD %	Limit	Qualifier
Total Dissolved Solids(TDS)	484	492	mg/L	1.64	20	

Quality Control (cont.)

Preparation Batch: WET / 20238 **Analysis Method:** SM2540C, TDS
Preparation Method: SM2540C, TDS
Associated Lab IDs: Q1949183001, Q1949183002, Q1949183004

Method Blank (1303018)

Parameter	Results	Units	MRL	LOD	Qualifier
Total Dissolved Solids(TDS)	<25.0	mg/L	25.0	25.0	

Lab Control Sample (1303019)

Parameter	Units	Spiked Amount	Spike Result	% Spike Recovery	Control Limits %
Total Dissolved Solids(TDS)	mg/L	400	367	91.8	80 - 120

Duplicate (1303022); Original: Q1948755002

Parameter	Original	Duplicate	Units	RPD %	Limit	Qualifier
Total Dissolved Solids(TDS)	542	587	mg/L	7.97	20	

Matrix Spike (1303021) Original: Q1948755002

Parameter	Units	Spiked Amount	Spike Result	% Spike Recovery	Control Limits %
Total Dissolved Solids(TDS)	mg/L	400	1000	115	70 - 130

Quality Control (cont.)

Preparation Batch: WET / 20251 **Analysis Method:** E300.0, Anions
Preparation Method: E300.0, Anions
Associated Lab IDs: Q1949183006, Q1949183007

Laboratory Reagent Blank (1304853)

Parameter	Results	Units	MRL	LOD	Qualifier
Fluoride	<0.0100	mg/L	0.0100	0.00400	

Method Reporting Limit Check (1304855)

Parameter	Units	Spiked Amount	Spike Result	% Spike Recovery	Control Limits %
Fluoride	mg/L	.01	.01	113	50 - 150

Laboratory Fortified Blank (1304856)

Parameter	Units	Spiked Amount	Spike Result	% Spike Recovery	Control Limits %
Fluoride	mg/L	1	1.02	102	90 - 110

Limit of Quantitation Check (1304857)

Parameter	Units	Spiked Amount	Spike Result	% Spike Recovery	Control Limits %
Fluoride	mg/L	.02	.02	102	70 - 130

Laboratory Fortified Matrix (1304863) Original: Q1950505001; Lab Fortified Matrix Duplicate (1304864)

Parameter	Units	Spiked Amount	Spike Result	% Spike Recovery	Control Limits %	Dup Result	% Dup Recovery	RPD	RPD Limit %
Fluoride	mg/L	1	1.17	99.1	80 - 120	1.17	99.4	0	20

Quality Control (cont.)

Preparation Batch: WET / 20228 **Analysis Method:** E300.0, Anions
Preparation Method: E300.0, Anions
Associated Lab IDs: Q1949183001, Q1949183002, Q1949183003, Q1949183004, Q1949183005, Q1949183006, Q1949183007, Q1949183008, Q1949183009

Method Reporting Limit Check (1301901)

Parameter	Units	Spiked Amount	Spike Result	% Spike Recovery	Control Limits %
Chloride	mg/L	1	.69	68.6	50 - 150
Fluoride	mg/L	.01	.01	110	50 - 150
Sulfate	mg/L	1	.83	82.6	50 - 150

Limit of Quantitation Check (1301903)

Parameter	Units	Spiked Amount	Spike Result	% Spike Recovery	Control Limits %
Chloride	mg/L	5	4.14	82.8	70 - 130
Fluoride	mg/L	.02	.02	93	70 - 130
Sulfate	mg/L	5	4.34	86.7	70 - 130

Laboratory Reagent Blank (1301907)

Parameter	Results	Units	MRL	LOD	Qualifier
Chloride	<1.00	mg/L	1.00	0.400	
Sulfate	<1.00	mg/L	1.00	0.400	

Laboratory Fortified Blank (1301908)

Parameter	Units	Spiked Amount	Spike Result	% Spike Recovery	Control Limits %
Chloride	mg/L	30	30.6	102	90 - 110
Sulfate	mg/L	30	30.5	102	90 - 110

Laboratory Fortified Matrix (1301917) Original: Q1949122001; Lab Fortified Matrix Duplicate (1301918)

Parameter	Units	Spiked Amount	Spike Result	% Spike Recovery	Control Limits %	Dup Result	% Dup Recovery	RPD	RPD Limit %
Chloride	mg/L	20	49.2	95.6	80 - 120	49.2	95.5	0	20
Sulfate	mg/L	20	75.7	86.5	80 - 120	75.7	86.5	0	20

Laboratory Reagent Blank (1301910)

Parameter	Results	Units	MRL	LOD	Qualifier
Chloride	<1.00	mg/L	1.00	0.400	
Fluoride	<0.0100	mg/L	0.0100	0.00400	
Sulfate	<1.00	mg/L	1.00	0.400	

Laboratory Fortified Blank (1301911)

Parameter	Units	Spiked Amount	Spike Result	% Spike Recovery	Control Limits %
Chloride	mg/L	30	30.4	101	90 - 110
Fluoride	mg/L	1	1.02	102	90 - 110
Sulfate	mg/L	30	30.2	101	90 - 110

Laboratory Fortified Matrix (1301919) Original: Q1949183008; Lab Fortified Matrix Duplicate (1301920)

Parameter	Units	Spiked Amount	Spike Result	% Spike Recovery	Control Limits %	Dup Result	% Dup Recovery	RPD	RPD Limit %
Chloride	mg/L	20	19.7	98.7	80 - 120	19.6	98.1	.509	20
Fluoride	mg/L	1	1.01	101	80 - 120	1	100	.995	20

Quality Control (cont.)

Preparation Batch: WET / 20228

Analysis Method: E300.0, Anions

Preparation Method: E300.0, Anions

Associated Lab IDs: Q1949183001, Q1949183002, Q1949183003, Q1949183004, Q1949183005, Q1949183006, Q1949183007, Q1949183008, Q1949183009

(continued)

Parameter	Units	Spiked Amount	Spike Result	% Spike Recovery	Control Limits %	Dup Result	% Dup Recovery	RPD	RPD Limit %	Qual
Sulfate	mg/L	20	19.4	97	80 - 120	19.3	96.5	.517	20	

Laboratory Reagent Blank (1301913)

Parameter	Results	Units	MRL	LOD	Qualifier
Chloride	<1.00	mg/L	1.00	0.400	
Fluoride	<0.0100	mg/L	0.0100	0.00400	
Sulfate	<1.00	mg/L	1.00	0.400	

Laboratory Fortified Blank (1301914)

Parameter	Units	Spiked Amount	Spike Result	% Spike Recovery	Control Limits %
Chloride	mg/L	30	30.7	102	90 - 110
Fluoride	mg/L	1	1.04	104	90 - 110
Sulfate	mg/L	30	30.7	102	90 - 110

Laboratory Fortified Matrix (1301921) Original: Q1949183009; Lab Fortified Matrix Duplicate (1301922)

Parameter	Units	Spiked Amount	Spike Result	% Spike Recovery	Control Limits %	Dup Result	% Dup Recovery	RPD	RPD Limit %
Chloride	mg/L	20	19.7	98.5	80 - 120	19.7	98.6	0	20
Fluoride	mg/L	1	1.01	101	80 - 120	1.01	101	0	20
Sulfate	mg/L	20	19.4	97.1	80 - 120	19.4	97	0	20

Quality Control (cont.)

Preparation Batch: MEP / 9473

Analysis Method: SW6010B ICP-AES

Preparation Method: SW3010A, Metals Prep

Associated Lab IDs: Q1949183001, Q1949183002, Q1949183003, Q1949183004, Q1949183005, Q1949183006, Q1949183007, Q1949183008, Q1949183009

Lab Control Sample (1306799); Lab Control Sample Duplicate (1306800)

Parameter	Units	Spiked Amount	Spike Result	% Spike Recovery	Control Limits %	Dup Result	% Dup Recovery	RPD	RPD Limit %
Boron Total	mg/L	1	.94	94.1	80 - 120	.93	93	1.18	20
Calcium Total	mg/L	10	10.5	105	80 - 120	10.5	105	0	20

Method Blank (1306801)

Parameter	Results	Units	MRL	LOD	Qualifier
Boron Total	<0.0500	mg/L	0.0500	0.0200	
Calcium Total	<0.200	mg/L	0.200	0.0700	

Matrix Spike (1306802) Original: Q1949183001; Matrix Spike Duplicate (1306803)

Parameter	Units	Spiked Amount	Spike Result	% Spike Recovery	Control Limits %	Dup Result	% Dup Recovery	RPD	RPD Limit %
Boron Total	mg/L	1	1.04	104	75 - 125	1.02	102	1.94	20
Calcium Total	mg/L	10	1010	2240	75 - 125	1010	2270	0	20 S

Quality Control Cross Reference

Batch ID: MET/7309 - Analytical Method:SW6010B ICP-AES

Lab ID	Sample ID	Prep Batch	Prep Method
Q1949183001	CBL - 301I	MEP/9473	SW3010A, Metals Prep
Q1949183002	CBL - 302I	MEP/9473	SW3010A, Metals Prep
Q1949183003	CBL - 306I	MEP/9473	SW3010A, Metals Prep
Q1949183004	CBL - 308I	MEP/9473	SW3010A, Metals Prep
Q1949183005	CBL - 340I	MEP/9473	SW3010A, Metals Prep
Q1949183006	CBL - 341I	MEP/9473	SW3010A, Metals Prep
Q1949183007	CBL - 641I	MEP/9473	SW3010A, Metals Prep
Q1949183008	EQB	MEP/9473	SW3010A, Metals Prep
Q1949183009	FB	MEP/9473	SW3010A, Metals Prep

Batch ID: WET/20228 - Analytical Method:E300.0, Anions

Lab ID	Sample ID	Prep Batch	Prep Method
Q1949183001	CBL - 301I		
Q1949183002	CBL - 302I		
Q1949183003	CBL - 306I		
Q1949183004	CBL - 308I		
Q1949183005	CBL - 340I		
Q1949183006	CBL - 341I		
Q1949183007	CBL - 641I		
Q1949183008	EQB		
Q1949183009	FB		

Batch ID: WET/20232 - Analytical Method:SM2540C, TDS

Lab ID	Sample ID	Prep Batch	Prep Method
Q1949183003	CBL - 306I		
Q1949183005	CBL - 340I		
Q1949183006	CBL - 341I		
Q1949183007	CBL - 641I		
Q1949183008	EQB		
Q1949183009	FB		

Batch ID: WET/20236 - Analytical Method:E300.0, Anions

Lab ID	Sample ID	Prep Batch	Prep Method
Q1949183001	CBL - 301I		
Q1949183002	CBL - 302I		
Q1949183006	CBL - 341I		
Q1949183007	CBL - 641I		

Batch ID: WET/20238 - Analytical Method:SM2540C, TDS

Lab ID	Sample ID	Prep Batch	Prep Method
Q1949183001	CBL - 301I		
Q1949183002	CBL - 302I		
Q1949183004	CBL - 308I		

Batch ID: WET/20251 - Analytical Method:E300.0, Anions

Lab ID	Sample ID	Prep Batch	Prep Method
Q1949183006	CBL - 341I		
Q1949183007	CBL - 641I		

Q1949183

LCRA Environmental Laboratory Services

Request for Analysis Chain-of-Custody Record

LCRA - Environmental Lab
3505 Montopolis Dr.
Austin, TX 78744

Phone: (512) 730-6022 or 1-800-776-5272
Fax: (512) 356-6021
<https://els.lcra.org>



Project:	FPP - CCR - Groundwater	Client:	LCRA
Collector:	Jason Woods / Colt Petr	Contact:	Jason Woods
Event#:	1432240 / 9088	Phone:	(512)730-5339

Report To: BECKIE LOEVE
FAYETTE POWER PLANT
6549 POWER PLANT RD
MAIL STOP FPP
La Grange, TX 78945

Lab ID#:	
Client PO:	
Invoice To:	BECKIE LOEVE FAYETTE POWER PLANT 6549 POWER PLANT RD MAIL STOP FPP La Grange, TX 78945

LAB USE ONLY	Sample ID *	Collected *		Matrix* <small>AQ = Aqueous S = Solid T = Tissue DW = Drinking Water</small>	Container(s) Type/Preservative/Number *								Requested Analysis *											
		Date*	Time * HH:MM		COMPOSITE Y/N	FILTERED Y/N	1LPU	250PHNO3						2540-AMTDS	6010-AM	F-pH	300.0AM-28							
1	CBL - 301I	7/31/19	1637	AQ	N	N	1	1						X	X	X	X							
2	CBL - 302I	7/31/19	1444	AQ			1	1						X	X	X	X							
3	CBL - 306I	7/29/19	1055	AQ			1	1						X	X	X	X							
4	CBL - 308I	7/31/19	1542	AQ			1	1						X	X	X	X							
5	CBL - 340I	7/29/19	1025	AQ	N	N	1	1						X	X	X	X							
6	CBL - 341I	7/29/19	1140	AQ			1	1						X	X	X	X							
7	CBL - 641I	7/29/19	1140	AQ			1	1						X	X		X							
8	EQB	7/29/19	1150	AQ			1	1							X									
9	FB	7/29/19	1140	AQ			1	1							X									

Transfers	Relinquished By	Date/Time	Received By	Date/Time	Cooler Temp:				Client Special Instructions:			
1	Colt Petr	8/1/19 730	V-Z	8/1/19 730	#	T#	Obs.	Corr.				
2					1	G	212	212				
3					2							

Note: Relinquishing sample(s) and signing the COC, client agrees to accept and is bound by the ELS Standard Terms and Conditions. All fields with an asterisk (*) are required to be completed.

Lab U



01949183 411186



Field Information Form

Sample Date: 7/31/19
Sample Time: 1637
Sample ID: CBL3011

PURGING INFORMATION

PURGE DATE (YY MM DD) 1190730 START PURGE (2400 Hr. Clock) 113115 WATER VOL IN CASING (Gallons) V= 3.5 3 X WELL VOL. IN (Gallons) 110.5 ACTUAL VOLUME PURGED (Gallons) 30

PURGING AND SAMPLING EQUIPMENT

Purging Equipment Dedicated Y N Sampling Equipment Dedicated Y N

Purging Device	<u>A</u>	A-Submersible Pump	D-Gas Lift Pump	G-Bailer	X-	
Sampling Device	<u>G</u>	B-Peristaltic Pump	E-Venturi Pump	H-Scoop/Shovel	X-	Purging Other (Specify) _____
		C-Bladder Pump	F-Dipper/Bottle	I-Piston Pump	X-	Sampling Other (Specify) _____
Purging Material	<u>E</u>	A-Teflon	C-Polypropylene	E-Polyethylene	X-	Purging Other (Specify) _____
Sampling Material	<u>E</u>	B-Stainless Steel	D-PVC		X-	Sampling Other (Specify) _____
Tubing-Purging	<u>E</u>	A-Teflon	D-Polypropylene	F-Silicon	X-	Purging Other (Specify) _____
Tubing-Sampling	<u>E</u>	B-Tygon	E-Polyethylene	G-Combination teflon/Polypropylene	X-	Sampling Other (Specify) _____
		C-Rope X- _____				

(Specify)

FIELD MEASUREMENTS

Well Elevation	<u>11111</u> (ft/msl)	Land Surface Elevation	<u>11111</u> (ft/msl)
Depth to water	<u>113270</u> (ft)	Depth to water	<u>11111</u> (ft)
From top of well casing = D _w		From land surface	
Groundwater Elevation	<u>11111</u>	Groundwater Elevation	<u>11111</u> (ft/msl)
Well Depth = D	<u>1154110</u> (ft)	Pump Placement	<u>1152</u> (ft)
<u>116119</u> (STD)	<u>117673</u> uS/cm	Sample Temp.	<u>124.46</u> (°C)
PH	Specific Conductivity		

Bottle			Analysis	Field Filt. Y/N
Type	Size	Preservative		
P	250ml	HNO ₃	Metals	N
P	500ml	ICE	Anions	N

Sample Appearance: Clear Odor: None Color: Clear Turbidity: 18.8
Weather Conditions: Partly Cloudy South Wind 5-10 mph 101"
Other: Purge water is milky white turning clear after 4 gallons
Purged well dry after 30 gallons. Collected sample w/ bailer.

WELL VOLUME CALCULATION

$V = (D - D_w) (A) (7.48 \text{ gal/ft}^3)$ where
V = volume of standing water in well
D = depth to bottom of well below measuring point
D_w = depth to water below measuring point
A = cross sectional area
2" dia. A = 0.0218 4" dia. A = 0.0872

Well Appearance Normal: Yes X No _____
If No, Explain _____

Procedure: ELS Ground water SOP 5-7D
Date: 7/30/19
Sampler: CD
Employer: LCRA



Field Information Form

Sample Date: 7/31/19
Sample Time: 1444
Sample ID: CB4302

PURGING INFORMATION

190731

PURGE DATE
(YY MM DD)

1408

START PURGE
(2400 Hr. Clock)

V= 2.5

WATER VOL. IN CASING
(Gallons)

7.5

3 X WELL VOL. IN
(Gallons)

6

ACTUAL VOLUME PURGED
(Gallons)

PURGING AND SAMPLING EQUIPMENT

Purging Equipment Dedicated Y I I N I

Sampling Equipment Dedicated Y I I N I

Purging Device	<u>B</u>	A-Submersible Pump	D-Gas Lift Pump	G-Bailer	X-	
Sampling Device	<u>B</u>	B-Peristaltic Pump	E-Venturi Pump	H-Scoop/Shovel	X-	Purging Other (Specify) _____
		C-Bladder Pump	F-Dipper/Bottle	I-Piston Pump		Sampling Other (Specify) _____
Purging Material	<u>F</u>	A-Teflon	C-Polypropylene	E-Polyethylene	X-	Purging Other (Specify) _____
Sampling Material	<u>F</u>	B-Stainless Steel	D-PVC		X-	Sampling Other (Specify) _____
Tubing-Purging	<u>F</u>	A-Teflon	D-Polypropylene	F-Silicon	X-	Purging Other (Specify) _____
Tubing-Sampling	<u>F</u>	B-Tygon	E-Polyethylene	G-Combination teflon/Polypropylene	X-	Sampling Other (Specify) _____
			C-Rope X- _____			

(Specify)

FIELD MEASUREMENTS

Well Elevation	<u>1073.1</u> (ft/msl)	Land Surface Elevation	<u>1073.1</u> (ft/msl)
Depth to water	<u>11.7</u> (ft)	Depth to water	<u>11.7</u> (ft)
From top of well casing = D _w		From land surface	
Groundwater Elevation	<u>1073.1</u> (ft/msl)	Groundwater Elevation	<u>1073.1</u> (ft/msl)
Well Depth = D	<u>27.1</u> (ft)	Pump Placement	<u>21</u> (ft)
<u>6.15</u> (STD) PH		Sample Temp. <u>21.83</u> (°C)	
	<u>6923</u> uS/cm Specific Conductivity		

Bottle			Analysis	Field Filt. Y/N
Type	Size	Preservative		
P	250ml	HNO ₃	Metals	N
P	500ml	ICE	Anions	N

Sample Appearance: clear Odor: none Color: clear Turbidity: 0.76
Weather Conditions: Partly Cloudy Calm 105°
Other: Purge water is clear with no odor

WELL VOLUME CALCULATION

$V = (D - D_w) (A) (7.48 \text{ gal/ft}^3)$ where
V = volume of standing water in well
D = depth to bottom of well below measuring point
D_w = depth to water below measuring point
A = cross-sectional area
2" dia. A = 0.0218 4" dia. A = 0.0872

Well Appearance Normal: Yes X No _____
If No, Explain _____

Procedure: ELS Ground water SOP 5-7D

Date: 7/31/19
Sampler: CP
Employer: LCRA



Field Information Form

Sample Date: 7/31/19
Sample Time: 1542
Sample ID: CBL308

PURGING INFORMATION

PURGE DATE (YY MM DD) 11/9/07/31 START PURGE (2400 Hr. Clock) 11505 V= 11.2 WATER VOL. IN CASING (Gallons) 15.7 3 X WELL VOL. IN (Gallons) 15 ACTUAL VOLUME PURGED (Gallons)

PURGING AND SAMPLING EQUIPMENT

Purging Equipment Dedicated Y I N I Sampling Equipment Dedicated Y I N I

Purging Device	<u>B</u>	A-Submersible Pump	D-Gas Lift Pump	G-Bailer	X-	
Sampling Device	<u>B</u>	B-Peristaltic Pump	E-Venturi Pump	H-Scoop/Shovel	X-	Purging Other (Specify) _____
		C-Bladder Pump	F-Dipper/Bottle	I-Piston Pump	X-	Sampling Other (Specify) _____
Purging Material	<u>F</u>	A-Teflon	C-Polypropylene	E-Polyethylene	X-	
Sampling Material	<u>F</u>	B-Stainless Steel	D-PVC		X-	Purging Other (Specify) _____
					X-	Sampling Other (Specify) _____
Tubing-Purging	<u>F</u>	A-Teflon	D-Polypropylene	F-Silicon	X-	
Tubing-Sampling	<u>F</u>	B-Tygon	E-Polyethylene	G-Combination	X-	Purging Other (Specify) _____
				teflon/Polypropylene	X-	Sampling Other (Specify) _____

C-Rope X- _____ (Specify)

FIELD MEASUREMENTS

Well Elevation	<u>11111</u> (ft/msl)	Land Surface Elevation	<u>11111</u> (ft/msl)
Depth to water	<u>1123.62</u> (ft)	Depth to water	<u>11111</u> (ft)
From top of well casing = D _w		From land surface	
Groundwater Elevation	<u>11111</u>	Groundwater Elevation	<u>11111</u> (ft/msl)
Well Depth = D	<u>1135.25</u> (ft)	Pump Placement	<u>1129</u> (ft)
<u>116.25</u> (STD) PH		Sample Temp. <u>23.25</u> (°C)	
	<u>118995</u> uS/cm Specific Conductivity		

Bottle			Analysis	Field Filt. Y/N
Type	Size	Preservative		
P	250mL	HNO ₃	metals	N
P	250mL	HNO ₃	metals w/8 Dip	N
P	250mL	HNO ₃	metals	N
P	500mL	ICE	Anions	N
P	500mL	ICE	TDS	N

Sample Appearance: Clear Odor: none Color: Clear Turbidity: 1.03
Weather Conditions: Partly Cloudy Calm 105°
Other: Purge water is clear with no odor

WELL VOLUME CALCULATION

$V = (D - D_w) (A) (7.48 \text{ gal/ft}^3)$ where
V = volume of standing water in well
D = depth to bottom of well below measuring point
D_w = depth to water below measuring point
A = cross sectional area
2" dia. A = 0.0218 4" dia. A = 0.0872

Well Appearance Normal: Yes X No _____
If No, Explain _____

Procedure: ELS Ground water SOP 5-7D

Date: 7/31/19
Sampler: CP
Employer: LCRA



Sample Date: 7/29/2019 ③
Sample Time: 1140
Sample ID: CBL341 I

190729		V= 5.1	15.2	6
PURGE DATE (YY MM DD)	START PURGE (2400 Hr. Clock)	WATER VOL IN CASING (Gallons)	3 X WELL VOL. IN (Gallons)	ACTUAL VOLUME PURGED (Gallons)

Purging Equipment Dedicated Y I N I Sampling Equipment Dedicated Y I N I

Purging Device	<input checked="" type="checkbox"/> B	A-Submersible Pump	D-Gas Lift Pump	G-Bailer	X-	
Sampling Device	<input checked="" type="checkbox"/> B	B-Peristaltic Pump	E-Venturi Pump	H-Scoop/Shovel	X-	Purging Other (Specify)
		C-Bladder Pump	F-Dipper/Bottle	I-Piston Pump	X-	Sampling Other (Specify)
Purging Material	<input checked="" type="checkbox"/> F	A-Teflon	C-Polypropylene	E-Polyethylene	X-	
Sampling Material	<input checked="" type="checkbox"/> F	B-Stainless Steel	D-PVC		X-	Purging Other (Specify)
					X-	Sampling Other (Specify)
Tubing-Purging	<input checked="" type="checkbox"/> F	A-Teflon	D-Polypropylene	F-Silicon	X-	
Tubing-Sampling	<input checked="" type="checkbox"/> F	B-Tygon	E-Polyethylene	G-Combination teflon/Polypropylene	X-	Purging Other (Specify)
					X-	Sampling Other (Specify)
		C-Rope	X-			(Specify)

WELL INFORMATION											
Well Elevation	<div><div></div><div></div><div></div><div></div><div></div></div>				(ft/msl)	Land Surface Elevation	<div><div></div><div></div><div></div><div></div><div></div></div>				(ft/msl)
Depth to water	<div><div></div><div></div><div>1</div><div>5</div><div>3</div><div>3</div></div>				(ft)	Depth to water	<div><div></div><div></div><div></div><div></div><div></div></div>				(ft)
From top of well casing = D _w						From land surface					
Groundwater Elevation	<div><div></div><div></div><div></div><div></div><div></div></div>					Groundwater Elevation	<div><div></div><div></div><div></div><div></div><div></div></div>				(ft/msl)
Well Depth = D	<div><div></div><div></div><div>4</div><div>6</div><div>4</div><div>3</div></div>				(ft)	Pump Placement	<div><div></div><div></div><div></div><div></div><div>2</div><div>5</div></div>				(ft)
<div><div></div><div>6</div><div>2</div><div>3</div></div>					(STD)	<div><div></div><div></div><div>6</div><div>0</div><div>9</div><div>3</div></div>					uS/cm
PH						Sample Temp.	<div><div></div><div></div><div>2</div><div>4</div><div>0</div><div>5</div></div>				(°C)
Specific Conductivity											

Bottle			Analysis	Field Filt. Y/N
Type	Size	Preservative		
P	250	HNO ₃	Metals	N
P	500	ICE	Anions + TDS	N
P	250	HNO ₃	Metals Duplicate - CBL-641	N
P	500	ICE	Anions Duplicate - CBL-641	N

P 250 Hwey Field Blank #1 - 1140 - EQB-1140
 Sample Appearance: clear Odor: none Color: clear Turbidity: 0.60
 Weather Conditions: Partly cloudy, 10mph S wind 90°
 Other: Purge water is clear w/ no odor, collected after Field parameters stabilized.

$V = (D - D_w) (A) (7.48 \text{ gal ft}^{-3})$ where
 V = volume of standing water in well
 D = depth to bottom of well below measuring point
 D_w = depth to water below measuring point
 A = cross sectional area
 2" dia. $A = 0.0218$ 4" dia. $A = 0.0872$

Well Appearance Normal: Yes X No _____
If No, Explain _____

Procedure: EVS - Groundwater SOP - 5-7D
Date: 7/29/19
Sampler: Jason Woods
Employer: i-CRA -



LCRA Environmental Laboratory Services
3505 Montopolis Drive
Austin, TX 78744
Phone: (512) 730-6022
Fax: (512) 730-6021

September 19, 2019

BECKIE LOEVE
FAYETTE POWER PLANT
6549 POWER PLANT RD
MAIL STOP FPP
La Grange, TX 78945
BECKIE.LOEVE@LCRA.ORG

RE: Final Analytical Report Q1958908

Attn: BECKIE LOEVE

Enclosed are the analytical results for sample(s) received by LCRA Environmental Laboratory Services. Results reported herein conform to the most current NELAP standards, where applicable, unless otherwise narrated in the body of the report. This final report provides results related only to the sample(s) as received for the above referenced work order.

Thank you for selecting ELS for your analytical needs. If you have any questions regarding this report, please contact us at (512) 730-6022. We look forward to assisting you again.

Authorized for release by:

Jason Woods
Account Manager
jason.woods@lcra.org



Enclosures:



LCRA Environmental Laboratory Services
3505 Montopolis Drive
Austin, TX 78744
Phone: (512) 730-6022
Fax: (512) 730-6021

Sample Summary

Lab ID	Sample ID	Matrix	Method	Date Collected	Date Received
Q1958908001	CBL - 306I	AQ	E300.0, Anions	8/23/2019 11:48	8/23/2019 14:18
Q1958908001	CBL - 306I	AQ	SM2540C, TDS	8/23/2019 11:48	8/23/2019 14:18
Q1958908001	CBL - 306I	AQ	SW6010B ICP-AES	8/23/2019 11:48	8/23/2019 14:18
Q1958908001	CBL - 306I	AQ	TCEQ SOP V1	8/23/2019 11:48	8/23/2019 14:18

Report Definitions

MRL - Minimum Reporting Limit
LOD - Limit of Detection
ML - Maximum Limit - Client Specified
MCL - Maximum Contaminant Level
MDL - Method Detection Limit
LOQ - Limit of Quantitation - Client Specified
DF - Dilution Factor
Qual - Qualifier
(S) - Surrogate Spike
QC Qual - red font indicates Result Value outside acceptable range
B- Analyte detected in method blank
S - Spike recovery outside limit
R - RPD outside duplicate precision limit
J - Analyte detected below quantitation limit
RPD - Relative Percent Difference



LCRA Environmental Laboratory Services
3505 Montopolis Drive
Austin, TX 78744
Phone: (512) 730-6022
Fax: (512) 730-6021

Project Summary

Sample Analysis Comments

Lab ID: Q1958908001

Sample ID: CBL - 306I

- Not Accredited - Specific Conductance
- Not Accredited - Temperature
- Not Accredited - pH



LCRA Environmental Laboratory Services
 3505 Montopolis Drive
 Austin, TX 78744
 Phone: (512) 730-6022
 Fax: (512) 730-6021

Analytical Results

Lab ID: Q1958908001	Date Received: 8/23/2019 14:18	Matrix: Aqueous
Sample ID: CBL - 306I	Date Collected: 8/23/2019 11:48	Sample Type: SAMPLE
Project ID: FPP GWMP CCR		

Parameter	Results	Units	MRL	LOD	ML	DF	Prepared	By	Analyzed	By	Qual
Field Parameters (TCEQ SOP V1)											
Temperature	27.48	c				1			08/23/19 11:48	KDS	*
pH	6.83	pH				1			08/23/19 11:48	KDS	*
Specific Conductance	2478	us/cm				1			08/23/19 11:48	KDS	*
INORGANICS (E300.0, Anions)											
Chloride	318	mg/L	10.0	4.00		10			08/27/19 15:53	FO	
Fluoride	2.66	mg/L	0.100	0.0400		10			08/27/19 15:53	FO	
Sulfate	387	mg/L	10.0	4.00		10			08/27/19 15:53	FO	
INORGANICS (SW3010A, Metals Prep/SW6010B ICP-AES)											
Boron Total	<0.0500	mg/L	0.0500	0.0200		1	08/27/19 16:39	ME	08/29/19 09:51	FM	
Calcium Total	226	mg/L	0.200	0.0700		1	08/27/19 16:39	ME	08/29/19 09:51	FM	
TOTAL DISSOLVED SOLIDS (SM2540C, TDS)											
Total Dissolved Solids(TDS)	1710	mg/L	25.0	25.0		10			08/29/19 14:35	ADG	



LCRA Environmental Laboratory Services
 3505 Montopolis Drive
 Austin, TX 78744
 Phone: (512) 730-6022
 Fax: (512) 730-6021

Quality Control

Preparation Batch: WET / 20393	Analysis Method: SM2540C, TDS
Preparation Method: SM2540C, TDS	
Associated Lab IDs: Q1958908001	

Method Blank (1325772)

Parameter	Results	Units	MRL	LOD	Qualifier
Total Dissolved Solids(TDS)	<25.0	mg/L	25.0	25.0	

Lab Control Sample (1325773)

Parameter	Units	Spiked Amount	Spike Result	Spike Recovery	Control Limits
Total Dissolved Solids(TDS)	mg/L	400	415	104	80 - 120

Duplicate (1325775); Original: Q1960662002

Parameter	Original	Duplicate	Units	RPD %	Limit
Total Dissolved Solids(TDS)	331	351	mg/L	5.87	20

Matrix Spike (1325774) Original: Q1960662002

Parameter	Units	Spiked Amount	Spike Result	Spike Recovery	Control Limits
Total Dissolved Solids(TDS)	mg/L	400	774	111	70 - 130



LCRA Environmental Laboratory Services
 3505 Montopolis Drive
 Austin, TX 78744
 Phone: (512) 730-6022
 Fax: (512) 730-6021

Quality Control (cont.)

Preparation Batch: MEP / 9539	Analysis Method: SW6010B ICP-AES
Preparation Method: SW3010A, Metals Prep	
Associated Lab IDs: Q1958908001	

Lab Control Sample (1322461); Lab Control Sample Duplicate (1322462)

Parameter	Units	Spiked Amount	Spike Result	Spike Recovery	Control Limits	Dup Result	Dup Recovery	RPD	RPD Limit
Boron Total	mg/L	1	1.05	105	80 - 120	1.04	104	.957	20
Calcium Total	mg/L	10	10.9	109	80 - 120	10.9	109	0	20

Method Blank (1322463)

Parameter	Results	Units	MRL	LOD	Qualifier
Boron Total	<0.0500	mg/L	0.0500	0.0200	
Calcium Total	<0.200	mg/L	0.200	0.0700	

Matrix Spike (1322464) Original: Q1958908001; Matrix Spike Duplicate (1322465)

Parameter	Units	Spiked Amount	Spike Result	Spike Recovery	Control Limits	Dup Result	Dup Recovery	RPD	RPD Limit
Boron Total	mg/L	1	1.12	112	75 - 125	1.12	112	0	20
Calcium Total	mg/L	10	240	143	75 - 125	240	139	0	20

S

Quality Control (cont.)

Preparation Batch: WET / 20383
Preparation Method: E300.0, Anions
Associated Lab IDs: Q1958908001

Analysis Method: E300.0, Anions

Laboratory Reagent Blank (1324819)

Parameter	Results	Units	MRL	LOD	Qualifier
Chloride	<1.00	mg/L	1.00	0.400	
Fluoride	<0.0100	mg/L	0.0100	0.00400	
Sulfate	<1.00	mg/L	1.00	0.400	

Method Reporting Limit Check (1324821)

Parameter	Units	Spiked Amount	Spike Result	Spike Recovery	Control Limits
Chloride	mg/L	1	.71	71.1	50 - 150
Fluoride	mg/L	.01	.01	102	50 - 150
Sulfate	mg/L	1	.83	83	50 - 150

Laboratory Fortified Blank (1324822)

Parameter	Units	Spiked Amount	Spike Result	Spike Recovery	Control Limits
Chloride	mg/L	30	30.5	102	90 - 110
Fluoride	mg/L	1	1.01	101	90 - 110
Sulfate	mg/L	30	30.6	102	90 - 110

Limit of Quantitation Check (1324823)

Parameter	Units	Spiked Amount	Spike Result	Spike Recovery	Control Limits
Chloride	mg/L	5	4.21	84.2	70 - 130
Fluoride	mg/L	.02	.02	94	70 - 130
Sulfate	mg/L	5	4.4	87.9	70 - 130

Laboratory Fortified Matrix (1324831) Original: Q1959047001; Lab Fortified Matrix Duplicate (1324832)

Parameter	Units	Spiked Amount	Spike Result	Spike Recovery	Control Limits	Dup Result	Dup Recovery	RPD	RPD Limit
Chloride	mg/L	20	47.3	97.6	80 - 120	47.3	97.8	0	20
Fluoride	mg/L	1	1.17	99	80 - 120	1.18	100	.851	20
Sulfate	mg/L	20	40.6	103	80 - 120	40.7	104	.246	20



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Quality Control Cross Reference

MET/7349 - SW6010B ICP-AES

Lab ID	Sample ID	Prep Batch	Prep Method
Q1958908001	CBL - 306I	MEP/9539	SW3010A, Metals Prep

WET/20383 - E300.0, Anions

Lab ID	Sample ID	Prep Batch	Prep Method
Q1958908001	CBL - 306I		

WET/20393 - SM2540C, TDS

Lab ID	Sample ID	Prep Batch	Prep Method
Q1958908001	CBL - 306I		

Q1958908

LCRA Environmental Laboratory Services

Request for Analysis Chain-of-Custody Record

LCRA - Environmental Lab
3505 Montopolis Dr.
Austin, TX 78744

Phone: (512) 730-6022 or 1-800-776-5272
Fax: (512) 356-6021
<https://els.lcra.org>



Project:	FPP - Groundwater	Client:	LCRA
Collector:	Caltre	Contact:	Jason Woods
Event#:	1507140 / 9251	Phone:	(512)730-5339

Report To: BECKIE LOEVE
FAYETTE POWER PLANT
6549 POWER PLANT RD
MAIL STOP FPP
La Grange, TX 78945

Lab ID#:	
Client PO:	3540263
Invoice To:	BECKIE LOEVE FAYETTE POWER PLANT 6549 POWER PLANT RD MAIL STOP FPP La Grange, TX 78945

LAB USE ONLY	Sample ID *	Collected *		Matrix* AQ = Aqueous S = Solid T = Tissue DW =Drinking Water	Container(s) Type/Preservative/Number *										Requested Analysis *													
					COMPOSITE Y/N	FILTERED Y/N	500PU	250PHNO3									6020-AM	FId_FP	6010-AM	7470-AU	2540-AMTDS	300.0AM-28						
		Date*	Time * HH:MM																									
1	CBL - 306I	8/23/19	1148	AQ	N	N	1	1									X	X	X	X	X	X						
2																												
3																												
4																												
5																												
6																												
7																												

Transfers	Relinquished By	Date/Time	Received By	Date/Time	Cooler Temp:				Client Special Instructions:
1	Caltre	8/23/19	J-W	8/23/19 1218	#	T#	Obs.	Corr.	
2					1	6	542	542	
3					2				

Note: Relinquishing sample(s) and signing the COC, client agrees to accept and is bound by the ELS Standard Terms and Conditions. All fields with an asterisk (*) are required to be completed.



01958908

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Field Information Form

Sample Date: 8/23/19
Sample Time: 1048
Sample ID: CBL3061

PURGING INFORMATION

190823 PURGE DATE (YY MM DD) 0935 START PURGE (2400 Hr. Clock) V= 0.8 WATER VOL IN CASING (Gallons) 2.3 3 X WELL VOL. IN (Gallons) 3 ACTUAL VOLUME PURGED (Gallons)

PURGING AND SAMPLING EQUIPMENT

Purging Equipment Dedicated ☒ Y ☐ N Sampling Equipment Dedicated ☒ Y ☐ N

Purging Device	<input checked="" type="checkbox"/> B	A-Submersible Pump	D-Gas Lift Pump	G-Bailer	X-	
Sampling Device	<input checked="" type="checkbox"/> B	B-Peristaltic Pump	E-Venturi Pump	H-Scoop/Shovel	X-	Purging Other (Specify) _____
		C-Bladder Pump	F-Dipper/Bottle	I-Piston Pump	X-	Sampling Other (Specify) _____
Purging Material	<input checked="" type="checkbox"/> F	A-Teflon	C-Polypropylene	E-Polyethylene	X-	
Sampling Material	<input checked="" type="checkbox"/> F	B-Stainless Steel	D-PVC		X-	Purging Other (Specify) _____
					X-	Sampling Other (Specify) _____
Tubing-Purging	<input checked="" type="checkbox"/> F	A-Teflon	D-Polypropylene	F-Silicon	X-	
Tubing-Sampling	<input checked="" type="checkbox"/> F	B-Tygon	E-Polyethylene	G-Combination	X-	Purging Other (Specify) _____
				teflon/Polypropylene	X-	Sampling Other (Specify) _____
						C-Rope X- _____ (Specify)

FIELD MEASUREMENTS

Well Elevation (ft/msl) Land Surface Elevation (ft/msl)
Depth to water (ft) Depth to water (ft)
From top of well casing = D_w 10.12 From land surface (ft)
Groundwater Elevation (ft/msl) Groundwater Elevation (ft/msl)
Well Depth = D 14.80 (ft) Pump Placement 13 (ft)
70.3 (STD) 247.8 uS/cm Sample Temp. 27.48 (°C)
6.83 PH Specific Conductivity

Bottle			Analysis	Field Filt. Y/N
Type	Size	Preservative		
P	250ml	HNO ₃	Metals	N
P	500mL	ICE	Anions TDS	N

Sample Appearance: Clear Odor: None Color: Clear Turbidity: 21.8
Weather Conditions: Partly Cloud South Wind 0-5mph 95°
Other: Purge water is clear with no odor. Tank is dry + work removing dirt is on going. Well Purged dry after 3 gallons let well set for 1 hour + sampled

WELL VOLUME CALCULATION

V=(D-D_w) (A) (7.48 gal/ft³) where
V= volume of standing water in well
D= depth to bottom of well below measuring point
D_w=depth to water below measuring point
A= cross sectional area
2" dia. A= 0.0218 4" dia. A = 0.0872

Well Appearance Normal: Yes ☒ No ☐
If No, Explain _____

Procedure: ELS Groundwater SOP 5-7D

Date: 8/23/19
Sampler: CP
Employer: LCRA